PRIMA

PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

Report 2018-2022

MUR

PRIMA
SEGRETARIATO ITALIANO

SANTA CHIARA LAB
Università di Siena 1240

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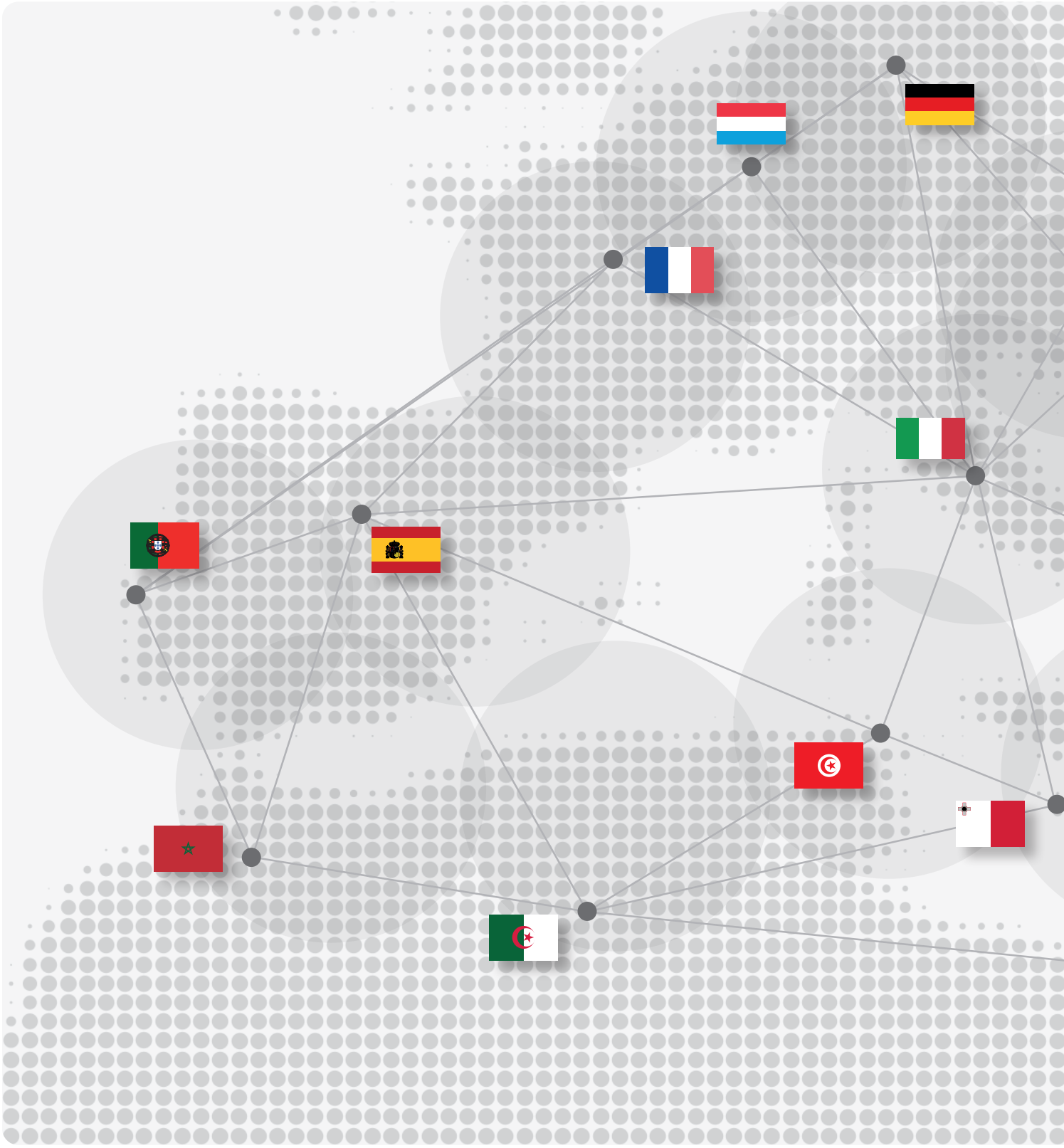

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FUNDO REGIONAL PARA A CIÊNCIA E TECNOLOGIA

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CDTI Centro para el Desarrollo Tecnológico Industrial

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البحث العلمي في خدمة المواطن

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TÜBİTAK

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Academy of Scientific Research And Technology
أكاديمية البحث العلمي والتكنولوجيا

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Ministry of Science, Technology & Space

רשות החדשנות
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ISERD
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Giordania

المملكة الأردنية الهاشمية
وزارة التعليم العالي والبحث العلمي
صندوق دعم البحث العلمي والابتكار

Il Ministero dell'Università e della Ricerca è promotore e principale finanziatore del Programma PRIMA, attuato dall'omonima Fondazione.
Il Segretariato italiano di PRIMA, con sede presso il Santa Chiara Lab dell'Università di Siena, è l'ente deputato alla disseminazione e promozione su scala nazionale delle attività previste nell'ambito del Partenariato.

PRIMA (Partnership for Research and Innovation in the Mediterranean Area) è un'iniziativa sostenuta e finanziata nell'ambito del Programma quadro europeo di ricerca e innovazione ai sensi dell'art. 185 del Trattato sul Funzionamento dell'Unione Europea.

Il presente report è stato elaborato dal Presidente della Fondazione PRIMA di Barcellona, Angelo Riccaboni, con la collaborazione dei componenti del Segretariato Italiano di PRIMA, ospitato dall'Università di Siena, Giovanni Stanghellini, coordinatore di progetto, Barbara Di Paola, responsabile della comunicazione, Guido Bellini, grafico, Monica Cavicchioli, segreteria e dei colleghi del Santa Chiara Lab Fiorino Iantorno, Direttore, Cristiana Tozzi, project manager progetti PNRR e Alessandra Rillo, segreteria amministrativa.

Si coglie l'occasione per ringraziare, per il prezioso contributo fornito in questi anni alle attività di PRIMA, i componenti del Board of Trustee e del Comitato Scientifico di PRIMA, che rappresentano fattivamente il sostegno dei 19 Paesi Euro-mediterranei e della Commissione Europea, i Commissari Europei alla Ricerca e Innovazione, Carlos Moedas, Mariya Gabriel e Iliana Ivanova e i responsabili delle unità della DG RTD per PRIMA, segnatamente John Bell, Maria Cristina Russo, Pavel Misiga, Elisabetta Balzi, Panagiotis Balabanis, Wanda Gaj, Katja Klasinc.

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Un sentito ringraziamento, infine, alle migliaia di ricercatori e ricercatrici, beneficiari dei bandi, con cui stiamo creando una vasta comunità scientifica e di innovatori che, costruendo ponti nel nostro amato Mediterraneo, contribuisce a rispondere alle sfide sociali, ambientali ed economiche che ci stanno di fronte.

Indice

Anna Maria Bernini
Ministro dell'Università
e della Ricerca

Nota introduttiva

È una soddisfazione potermi rivolgere a voi con questo indirizzo di saluto. Sento affidato a me l'annuncio di un lavoro importante che prosegue, un percorso che non si interrompe, la conferma che alle nostre aspettative è affidato il futuro. Si è concluso infatti in Europa l'iter di approvazione che consente di continuare il programma PRIMA per il periodo 2025-2027. Questo permetterà l'allineamento dell'iniziativa al prossimo Programma Quadro e il pieno sviluppo del partenariato lungo tutto Horizon Europe.

Alla luce del rapporto di valutazione intermedia della Commissione al Consiglio e al Parlamento europeo, l'iniziativa PRIMA dimostra solidità gestionale e un successo strategico, capace di raggiungere obiettivi e offrire finanziamenti per ricercatori e innovatori che altrimenti nessun altro strumento avrebbe potuto garantire, offrendo altresì un contributo qualificante in termini di diplomazia scientifica.

È motivo di orgoglio constatare il ruolo che l'Italia ha avuto e continua ad avere nella guida del Partenariato, a vantaggio in particolar modo dei nostri ricercatori ed innovatori che nei bandi PRIMA hanno potuto trovare un'importante occasione di crescita e finanziamento in un'area specifica, quale quella del Mediterraneo, strategica per il nostro Paese e su tematiche, quali il cibo, l'agricoltura sostenibile e la gestione delle acque, sulle quali l'Italia ha da sempre espresso attenzione ed eccellenze.

Con oltre 70 coordinamenti, 170 progetti finanziati e il più alto finanziamento ottenuto da fondi europei, i risultati dimostrano con chiarezza la competitività dei nostri ricercatori, l'interesse verso le tematiche trattate dal Programma PRIMA, l'utilità di un'iniziativa che guardi da una prospettiva europea al Mediterraneo.

Alla luce delle attuali sfide legate al tema del cambiamento climatico, dell'uso sostenibile delle risorse naturali, della sicurezza alimentare, all'affermazione di un modello europeo che investa in ricerca, innovazione e sviluppo in collaborazione con i Paesi del Mediterraneo, è mio auspicio che il Partenariato PRIMA, forte della sua esperienza, possa proseguire la propria preziosa azione nell'ambito della ricerca e nell'innovazione, quale piattaforma unica di cooperazione, sviluppo e crescita anche per il nostro sistema Paese.

Ho potuto apprezzare di persona le enormi potenzialità di PRIMA in occasione della missione diplomatica promossa dal Ministero degli Esteri italiano in Egitto sul tema della sicurezza alimentare, nell'ambito di un percorso che interessa anche altri Paesi del Mediterraneo e nella direzione, auspicata da tutti i soggetti coinvolti, di sostenere una efficace valorizzazione dei risultati della ricerca e un ampio utilizzo degli stessi da parte di consumatori, agricoltori, aziende, enti nazionali e cittadini.

PRIMA rappresenta un indiscusso caso di successo a guida italiana, che si è dimostrato capace di collaborare con analoghe esperienze nazionali, europee ed internazionali per accrescere ulteriormente il posizionamento del nostro Paese e l'impatto della ricerca. Consapevole dell'importanza di iniziative di lungo respiro, tanto più nel settore della ricerca e dell'innovazione, è mio augurio e impegno che PRIMA e quanto finora ottenuto possa consolidarsi, proseguire e crescere.

Mi sia concesso ringraziare anche tutti coloro che nel passato e sin dall'inizio del mio insediamento hanno contribuito, nel Ministero e nelle istituzioni competenti, al successo di questo Partenariato che intende continuare a servire gli interessi del nostro Paese, i valori della scienza e del merito, gli obiettivi europei ed internazionali di sviluppo sostenibile.

Paolo Borchia
Europarlamentare

La continuazione di PRIMA nel quadro del Parlamento europeo

L'iter istituzionale per il proseguimento della partecipazione dell'Unione al partenariato per la ricerca e l'innovazione nell'area del Mediterraneo (PRIMA) nell'ambito di Orizzonte Europa si è concluso in meno di sei mesi dall'assegnazione del relativo dossier legislativo presso la commissione ITRE (Industria, Ricerca ed Energia) del Parlamento europeo.

La rapidità con cui il Parlamento, in primo luogo, ha portato a termine il proprio iter costituisce senz'altro un unicum rispetto alle tempistiche normalmente seguite dalle procedure parlamentari.

La tempestiva reazione della commissione ITRE, e in particolare della squadra dei cosiddetti "relatori ombra" che, a nome dei rispettivi Gruppi politici di appartenenza, mi hanno accompagnato nella presentazione degli emendamenti e nei successivi negoziati con il Consiglio, testimonia innanzitutto l'alto riconoscimento riservato al Partenariato all'interno di questa istituzione.

La prontezza mostrata dalla commissione e dalla relativa squadra è stata inoltre dettata anche dalla consapevolezza che l'adesione alle consuete tabelle di marcia avrebbe inevitabilmente portato al protrarsi della procedura legislativa oltre il primo trimestre del 2024, con un ritardo che avrebbe con certezza messo a repentaglio l'implementazione dell'estensione del Partenariato.

Un elemento chiave alla base dei risultati dimostrati dalla commissione ITRE è stata la considerevole cooperazione trasversale di cui i diversi gruppi politici, per mezzo dei rispettivi "relatori ombra", si sono resi capaci. Questi ultimi hanno manifestato un impegno tangibile nel superare le tradizionali differenze politiche, collaborando con zelo e fiducia verso l'obiettivo comune, riuscendo così ad accorciare considerevolmente le tempistiche normalmente richieste dai negoziati istituzionali.

Un riconoscimento particolare va pertanto ai "relatori ombra" per il loro prezioso contributo, così come ai membri dello staff e del segretariato della commissione ITRE che hanno seguito gli aspetti tecnici del lavoro.

Con l'imminente conclusione del percorso legislativo per l'estensione di PRIMA, il lavoro svolto dalla squadra della commissione ITRE si caratterizza come un esempio di efficace cooperazione istituzionale, nonché dell'incrollabile impegno del Parlamento a promuovere innovazione, ricerca e sviluppo sostenibile nell'area mediterranea.

L'auspicio è che lo sforzo congiunto delle istituzioni, nazionali ed europee, e della Struttura di Implementazione del Partenariato si traduca in una partecipazione ancora maggiore, a beneficio collettivo dell'Unione nonché dei Paesi, europei e non, che condividono lo spazio comune del Mediterraneo.

Maria Cristina Russo
Direttrice per la Cooperazione Internazionale DG Ricerca e Innovazione, Commissione Europea

L'Importanza del Mediterraneo per l'Europa: le politiche della Commissione in materia di Ricerca e Innovazione

Ho avuto il piacere di contribuire, fin dai suoi albori, alla creazione del partenariato PRIMA che è stato e rimane una priorità per la Commissione Europea. Mi sono impegnata, a nome della Commissione, a negoziare e concludere rapidamente gli accordi internazionali che hanno permesso a paesi come la Giordania, l'Algeria, il Libano, l'Egitto e il Marocco di far parte di PRIMA allo stesso titolo degli Stati Membri dell'Unione Europea. Inoltre, ho anche potuto garantire la partecipazione di Israele, della Tunisia e della Turchia a PRIMA sulla base degli accordi di associazione al programma Orizzonte 2020 che avevo negoziato in precedenza.

Sono stata particolarmente contenta che la valutazione intermedia del partenariato PRIMA abbia messo in evidenza che, in questi anni, il partenariato è effettivamente riuscito a stabilire una collaborazione efficace e basata sulla fiducia tra i paesi delle due sponde del Mediterraneo ed a promuovere l'integrazione scientifica tra gli Stati partecipanti. I valori della co-titolarità, dell'interesse reciproco, dei benefici condivisi, come pure il principio di parità, sono per me particolarmente rilevanti per rafforzare il partenariato strategico tra l'UE e i suoi vicini del Mediterraneo meridionale, in linea con l'approccio strategico della Commissione che si evince tanto dalla "Nuova Agenda per il Mediterraneo" che dall' "Approccio Globale in materia di Ricerca ed Innovazione", entrambi adottati nel 2021.

Credo fermamente che lo sviluppo della ricerca e l'innovazione siano un presupposto importante per promuovere una crescita più inclusiva e sostenibile e che la cooperazione abbia un ruolo fondamentale nella regione del mediterraneo tanto per motivi scientifici che culturali e geopolitici. Per questo, ho sostenuto l'integrazione di tale cooperazione nell'ambito dell'Unione per il Mediterraneo, promuovendo la creazione di una piattaforma specifica per la ricerca e l'innovazione. Anche in questo contesto si è riconosciuta l'importanza di PRIMA, con il suo focus sul nesso tra agricoltura e risorse idriche, ed il suo contributo all'agenda strategica euro-mediterranea, insieme ad altre iniziative sviluppate nelle altre aree prioritarie riguardanti i cambiamenti climatici, la salute e l'energia rinnovabile.

Sono convinta che PRIMA rappresenti un'iniziativa unica essendo il primo e finora l'unico partenariato geografico strutturato nell'ambito del Programma di ricerca e d'innovazione dell'Unione Europea e contribuisca sia a colmare il divario socioeconomico tra i paesi del vicinato meridionale e orientale che a promuovere la diplomazia scientifica. Per tali motivi, sono stata felice di contribuire all'estensione del partenariato PRIMA per altri tre anni (2025-2027), per il quale la Commissione europea ha predisposto un bilancio aggiuntivo di 105 milioni di euro. Inoltre, mi sto personalmente adoperando con tutto l'impegno necessario per finalizzare il più rapidamente possibile gli accordi internazionali che permetteranno la partecipazione della riva sud del Mediterraneo, mantenendo lo stesso spirito di uguaglianza e co-titolarità.

La cooperazione internazionale rappresenta il cuore pulsante del partenariato PRIMA, un'opportunità unica per i paesi del Mediterraneo di affrontare congiuntamente sfide cruciali. Desidero ringraziare i diversi attori istituzionali implicati in questo processo come anche la Fondazione PRIMA per l'ottima collaborazione, che ha permesso di raggiungere risultati importanti ed obiettivi strategici che spero contribuiranno e promuovere la necessaria stabilità nella regione in un contesto geopolitico complesso.

Angelo Riccaboni
Presidente della Fondazione PRIMA

Gli elementi distintivi del Programma PRIMA e il suo valore aggiunto per il sistema della Ricerca e dell'Innovazione

Il presente rapporto si sofferma sui primi cinque anni dei bandi PRIMA, lanciati nel febbraio 2018 quale primo anno operativo della Fondazione PRIMA costituita pochi mesi prima, nel giugno 2017 a Madrid con atto notarile alla presenza di tre rappresentati ministeriali dei Paesi di Italia, Portogallo e Spagna. Tuttavia, questa storia che appare lontana nel tempo e che in poco tempo ha permesso di imprimere un segno decisivo all'ecosistema della ricerca e innovazione del Mediterraneo, è in realtà solo la parte operativa di un più articolato percorso che fin dal 2013 e poi progressivamente con maggiore intensità fino al 2017 ha interessato le istituzioni europee, i 19 Paesi coinvolti e il Ministero Università e Ricerca dell'Italia, in particolare, per avviare il Partenariato PRIMA nella forma istituzionalizzata ex. articolo 185 del Trattato sul Funzionamento dell'Europa, in un'area che mai aveva ottenuto tale attenzione. I risultati che oggi illustriamo e le riflessioni che intendiamo avviare con questo booklet poggiano anche sull'impegno negoziale e scientifico di molti che nel periodo 2013-2017 hanno reso possibile l'approvazione di tale iniziativa dall'alto valore strategico. Non posso che tributare gran parte di tale successo all'impegno italiano che ha saputo nelle sedi e nei tempi opportuni imporre in agenda la necessità di tale strumento, superare le iniziali resistenze e sostenere nel corso degli anni il pieno sviluppo del Partenariato che celebriamo con questa pubblicazione.

Come evidenziato dal rapporto di valutazione intermedia della Commissione al Parlamento e al Consiglio reso pubblico lo scorso maggio, l'esperienza di PRIMA ha saputo raggiungere obiettivi che, in sua assenza, non avrebbero potuto essere colti da nessun'altra iniziativa. Grazie alla collaborazione di tutti i Paesi, della Commissione europea e alla leadership del Ministero dell'Università e Ricerca è stato possibile creare la Fondazione, quale ente di diritto spagnolo presso Unione per il Mediterraneo, costituire una struttura efficiente con personale qualificato, proveniente dalle diverse aree del Mediterraneo, e creare un ecosistema della ricerca e dell'innovazione su aree tematiche di grande rilevanza.

Nel corso degli anni, il Partenariato ha saputo crescere e consolidarsi, accrescendo visibilità e attivando collaborazioni proficue con importanti istituzioni e organizzazioni nazionali, europei ed internazionali. Ne sono prova le attività svolte in preparazione, in occasione e a seguito del Summit delle Nazioni Unite sui Sistemi Alimentari nel 2021, il contributo offerto nell'ambito del percorso che ha portato alla Dichiarazione Ministeriale dei Ministri Ricerca e Innovazione dei Paesi del Mediterraneo in seno ad Unione per il Mediterraneo nel giugno 2022, l'attiva partecipazione alla COP27 in Egitto e la presenza alla recente COP28 che ha stabilito fin dai suoi documenti preparatori un chiaro collegamento tra lotta al cambiamento climatico e sistemi alimentari sostenibili. Ciò senza dimenticare altri importanti consessi ed iniziative quali la tradizionale Cairo Water Week, l'evento della Nazioni Unite sul tema delle risorse idriche che nel 2023 ha permesso di mettere in luce alcuni progetti PRIMA finanziati, la FOOD2030 Initiative promossa dalla Commissione europea, nonché i giorni FAO su Scienza e Innovazione e l'Iniziativa sulla sicurezza alimentare promossa per il Mediterraneo dal Ministero degli Affari Esteri italiano insieme a FAO ed altri Paesi.

Sono lieto di poter constare anche come, dal punto di vista scientifico, l'Iniziativa ha affrontato tematiche chiave quali la valorizzazione delle produzioni locali, la gestione efficiente delle risorse idriche, la tutela degli acquiferi e delle acque sotterranee, l'adattamento al cambiamento climatico attraverso tecniche genetiche per la resilienza delle coltivazioni, la promozione della biodiversità, digitalizzazione e tracciabilità delle filiere, pratiche di agro-ecologia, meccanismi di lotta contro lo spreco alimentare e sistemi di agricoltura di precisione per la gestione sostenibile delle risorse naturali, soluzioni per packaging intelligenti, nonché efficientamento dell'irrigazione in filiere importanti quali riso, olio, formaggio e nell'intero comparto ortofrutticolo.

Inoltre, il Partenariato ha saputo ogni anno rispondere con prontezza alle sfide inattese ed urgenti che il contesto internazionale ha imposto con lo scoppio della pandemia da COVID-19 e la guerra in Ucraina, aprendo bandi e finanziando soluzioni specifiche su alcuni dei temi ad essi connessi, quali la resilienza delle filiere, la sicurezza alimentare con particolare attenzione all'approvvigionamento dei cereali, al legame salute-alimentazione anche alla luce di una corretta valorizzazione dei prodotti della Dieta Mediterranea. Tutto nel quadro di un convinto e coerente allineamento agli indirizzi strategici che negli ultimi anni si sono andati delineando in Europa e che hanno avuto nel Green Deal, nella Farm to Fork, nella Strategia sulla Bioeconomia, nel Piano di Azione sull'Economia Circolare e nella Strategia sulla Biodiversità, nonché più recentemente con le Missioni europee.

Consapevoli che PRIMA rappresenta il più grande programma di ricerca e innovazione mai lanciato nel Mediterraneo, tutti gli attori coinvolti ed io personalmente siamo fortemente impegnati nel garantire l'eccellenza scientifica e l'impatto della ricerca a favore di aziende, comunità e cittadini, in linea con le aspettative dei decisori politici e della società nel suo complesso. Forti di oltre 200 progetti in portafoglio capaci di coinvolgere una rete di oltre 2000 unità di ricerca e circa 10000 ricercatori nel Mediterraneo, ci proponiamo di dare ulteriore sviluppo alle idee e alle soluzioni fin qui finanziate attraverso meccanismi diversificati che permettano un utilizzo più ampio e incisivo da parte delle aziende delle innovazioni proposte.

Con questa pubblicazione di sintesi dei primi cinque anni di attività, intendiamo altresì aprire una fase di riflessione strategica su quelle che possono essere le caratteristiche e le priorità del Programma PRIMA nella sua prosecuzione. Negli scorsi mesi, grazie alla fattiva collaborazione delle istituzioni europee e al rinnovato sostegno espresso di tutti i 19 Paesi attualmente aderenti a PRIMA, è stato possibile avviare e consolidare il percorso di approvazione della continuazione del Partenariato anche per il triennio 2025-2027 con risorse aggiuntive provenienti da Horizon Europe. Tale continuazione, a cui si aggiunge l'adesione da parte della Bulgaria quale nuovo Stato partecipante a PRIMA, dimostra la rilevanza strategica del Partenariato e offre l'opportunità per avviare un percorso di ascolto e sintesi in vista del Programmazione Quadro successiva ad Horizon Europe, dove il tema dei Partenariati sembra andrà incontro ad una significativa riorganizzazione. Come rappresentante italiano in PRIMA sono lieto di poter includere e rappresentare le diverse priorità e sensibilità che il sistema Paese vorrà esprimere per definire gli obiettivi, le caratteristiche e le azioni del Partenariato nel suo futuro. A tal proposito, il progetto europeo FUTURE4PRIMA, che in queste settimane andiamo ad iniziare e che vede un ruolo centrale del MUR assieme al coordinamento della Fondazione PRIMA, rappresenta un utile strumento per progettare assieme il futuro del Partenariato.

Grato verso tutti coloro che, a partire dal Ministro Anna Maria Bernini e dai suoi predecessori, dal Segretariato della Fondazione PRIMA e dal Segretariato italiano presso il Santa Chiara Lab dell'Università di Siena, hanno accompagnato le attività di PRIMA e sostenuto il mio incarico in questi anni, mi piace sottolineare l'eccellenza dei nostri ricercatori e delle nostre ricercatrici, i veri protagonisti a cui tutti guardiamo con speranza e riconoscenza. Proprio questo sguardo di speranza e riconoscenza è lo stesso che alimenta il mio personale ricordo di Fabio Donato, consigliere scientifico presso la Rappresentanza italiana a Bruxelles che tanto ha operato per promuovere e valorizzare PRIMA nelle discussioni europee. Specialmente a lui è idealmente dedicata questa breve pubblicazione.

Risultati dei bandi PRIMA 2018-2022 in sintesi

Risultati dei bandi PRIMA in sintesi

Dati complessivi 2018-2022

202
Progetti finanziati
di cui

Progetti per nazionalità Enti coordinatori

70 49 18
18 17 12
6 4 2
2 1 1
1 1

49 86 57 10

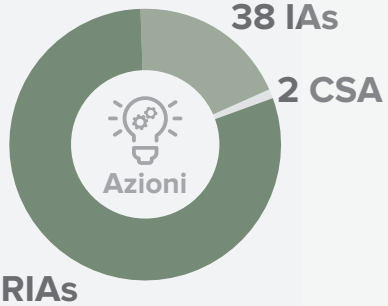
Progetti per Area tematica

Azioni

Research and Innovation Actions
43 76 41 2

Innovation Actions
6 10 16 6

Coordination and Support Actions
2



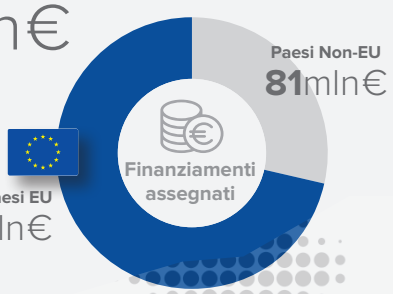
19 + 5 PS non-PRIMA
Paesi partecipanti
di cui

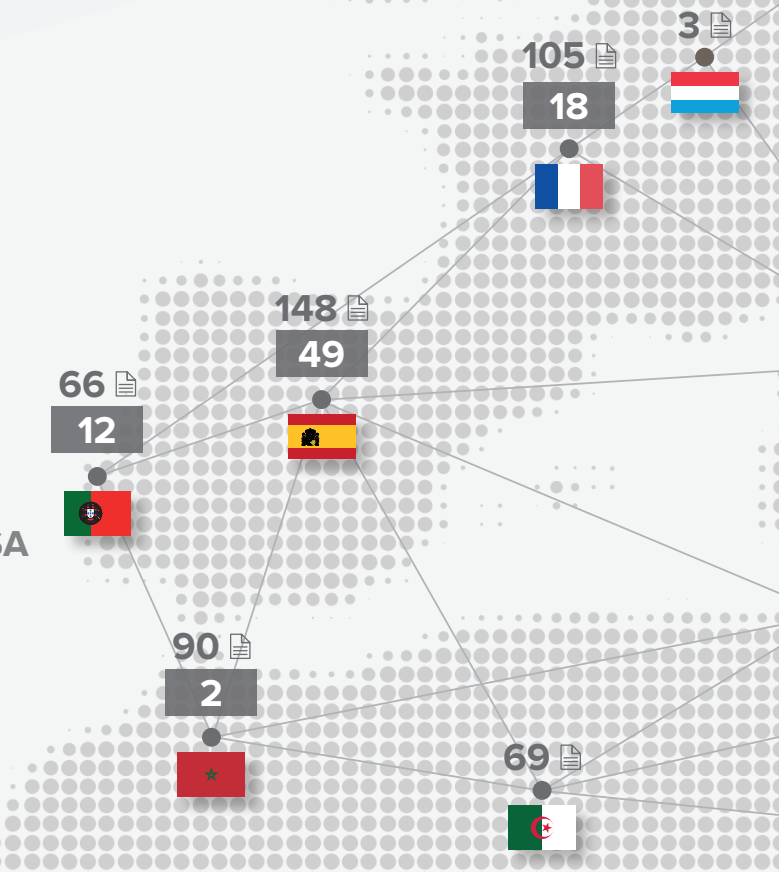
11 EU — CY HR FR DE GR IT LU MT PT SI ES

8 Non-EU — DZ EG IL JO LB MA TN TR

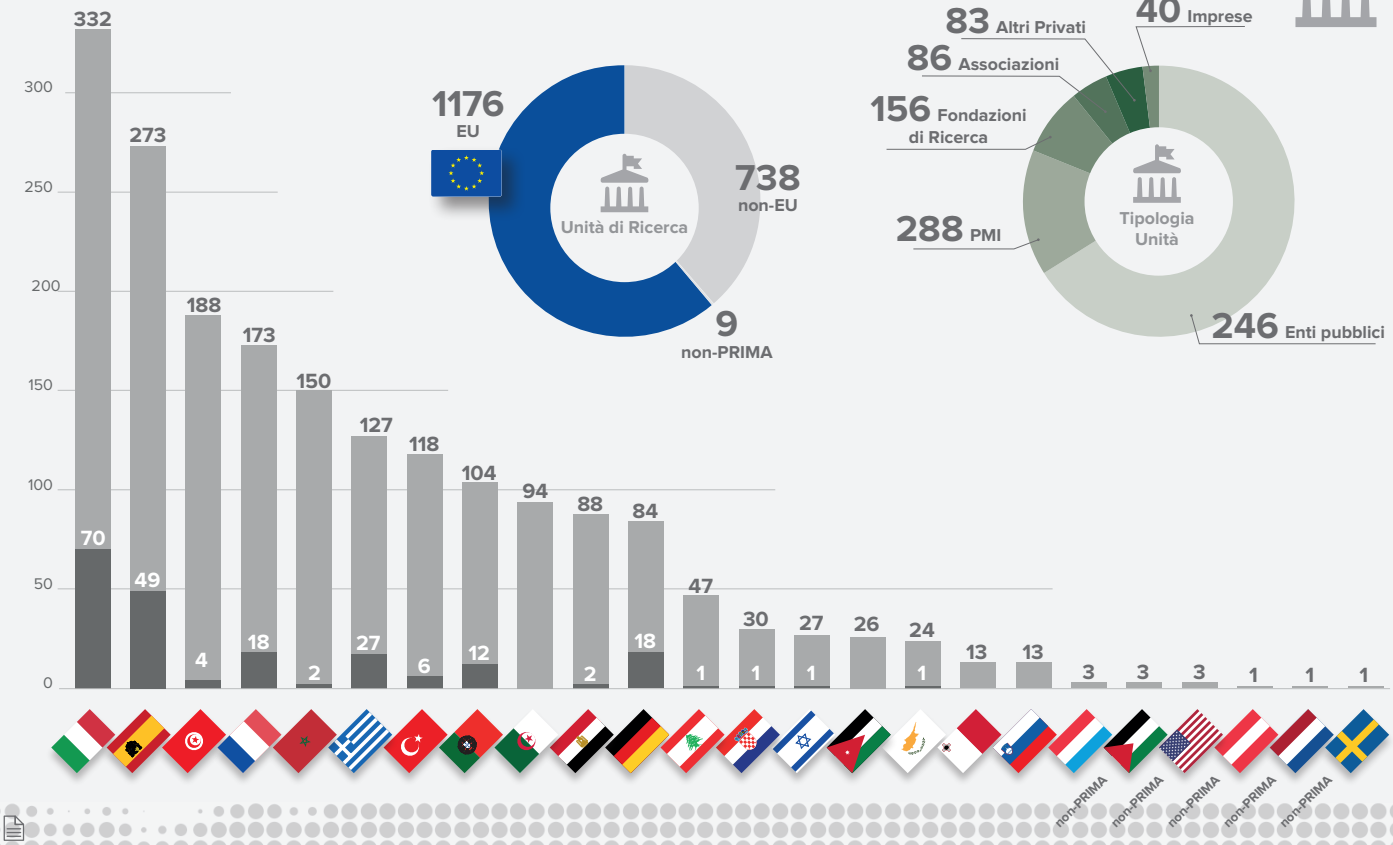
5 Non-PRIMA — AT NL PS SE US

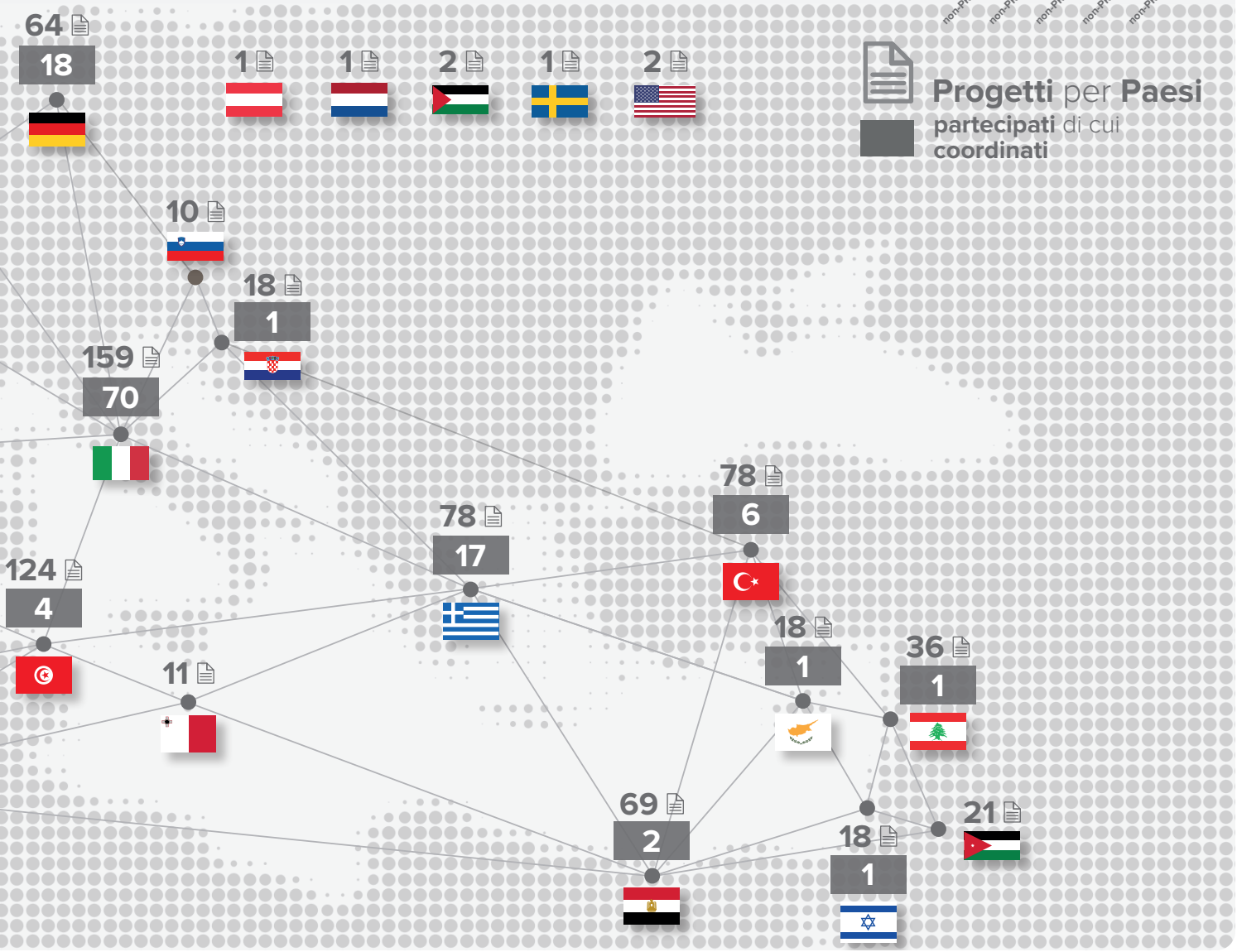
285.9 mln€
Budget
EU+Paesi





1914 Unità di Ricerca (+ 9 unità non-PRIMA) per nazionalità





Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

ALGERIA

Budget
8.8 Mln €

94
Unità di ricerca

69 Progetti
coinvolgono una o più unità di ricerca algerine

Progetti per area tematica

15 | 37 | 17

CIPRO

Budget
2.7 Mln €

24
Unità di ricerca

1 Progetto
è coordinato da una unità di ricerca cipriota

18 Progetti
coinvolgono una o più unità di ricerca cipriote

Progetti per area tematica

6 | 8 | 2 | 2

CROAZIA

Budget
3 Mln €

30
Unità di ricerca

1 Progetto
è coordinato da una unità di ricerca croata

18 Progetti
coinvolgono una o più unità di ricerca croate

Progetti per area tematica

2 | 7 | 9

Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

EGITTO

Budget
11.6 Mln €

88
Unità di ricerca

2 Progetti
sono coordinati da una unità di ricerca egiziana

69 Progetti
coinvolgono una o più unità di ricerca egiziane

Progetti per area tematica

17 | 26 | 20 | 6

FRANCIA

Budget
27 Mln €

173
Unità di ricerca

18 Progetti
sono coordinati da una unità di ricerca francese

105 Progetti
coinvolgono una o più unità di ricerca francesi

Progetti per area tematica

30 | 48 | 24 | 3

GERMANIA

Budget
1 Mln €

12
Unità di ricerca

18 Progetti
sono coordinati da una unità di ricerca tedesca

64 Progetti
coinvolgono una o più unità di ricerca tedesche

Progetti per area tematica

2 | 1 | 5

Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

GRECIA

Budget
21.1 Mln €

127
Unità di ricerca

17 Progetti
sono coordinati da una unità di ricerca greca

78 Progetti
coinvolgono una o più unità di ricerca francesi

Progetti per area tematica

15 | 37 | 19 | 7

GIORDANIA

Budget
3.9 Mln €

26
Unità di ricerca

21 Progetti
coinvolgono una o più unità di ricerca giordane

Progetti per area tematica

6 | 7 | 3 | 5

ISRAELE

Budget
5.2 Mln €

9
Unità di ricerca

1 Progetto
è coordinato da una unità di ricerca israeliana

18 Progetti
coinvolgono una o più unità di ricerca israeliane

Progetti per area tematica

7 | 1 | 5 | 5

Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

LIBANO

Budget
6.9 Mln €

47
Unità di ricerca

1 Progetto
è coordinato da una unità di ricerca libanese

36 Progetti
coinvolgono unità di ricerca libanesi

Progetti per area tematica

9 | 15 | 9 | 3

LUSSEMBURGO

Budget
335.5 k €

3
Unità di ricerca

3 Progetti
coinvolgono una o più unità di ricerca lussemburghesi

Progetti per area tematica

1 | 2

MALTA

Budget
2.1 Mln €

13
Unità di ricerca

11 Progetti
coinvolgono unità di ricerca maltesi

Progetti per area tematica

2 | 3 | 5 | 1

Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

MAROCCO

Budget
15.1 Mln €

150
Unità di ricerca

2 Progetti
sono coordinati da una unità di ricerca marocchina

90 Progetti
coinvolgono una o più unità di ricerca marocchine

Progetti per area tematica

21 | 45 | 20 | 4

PORTOGALLO

Budget
10.2 Mln €

104
Unità di ricerca

12 Progetti
sono coordinati da una unità di ricerca portoghese

66 Progetti
coinvolgono una o più unità di ricerca portoghesi

Progetti per area tematica

13 | 24 | 28 | 1

SLOVENIA

Budget
1.0 Mln €

13
Unità di ricerca

10 Progetti
coinvolgono una o più unità di ricerca slovene

Progetti per area tematica

6 | 3 | 1

Risultati dei bandi
PRIMA 2018-2022 in sintesi

Dati complessivi per paese

SPAGNA

Budget
49.7 Mln €

273
Unità di ricerca

49 Progetti
sono coordinati da una unità di ricerca spagnola

148 Progetti
coinvolgono unità di ricerca spagnole

Progetti per area tematica

40 | 60 | 42 | 6

TUNISIA

Budget
15.6 Mln €

188
Unità di ricerca

4 Progetti
sono coordinati da una unità di ricerca tunisina

124 Progetti
coinvolgono una o più unità di ricerca tunisine

Progetti per area tematica

29 | 56 | 33 | 6

TURCHIA

Budget
14.0 Mln €

118
Unità di ricerca

6 Progetti
sono coordinati da una unità di ricerca turca

78 Progetti
coinvolgono una o più unità di ricerca turche

Progetti per area tematica

16 | 33 | 27 | 2

Dati complessivi per paese

AUSTRIA
non-PRIMA PS

1 Progetto
coinvolge una unità di ricerca austriaca

1
Unità di ricerca

PAESI BASSI
non-PRIMA PS

1 Progetto
coinvolge una unità di ricerca olandese

1
Unità di ricerca

PALESTINA
non-PRIMA PS

2 Progetti
coinvolgono una o più unità di ricerca palestinesi

3
Unità di ricerca

STATI UNITI
non-PRIMA PS

2 Progetti
coinvolgono una o più unità di ricerca statunitensi

3
Unità di ricerca

SVEZIA
non-PRIMA PS

1 Progetto
coinvolge una unità di ricerca svedese

1
Unità di ricerca

Overview Italia 2018-2022

ITALIA - IT
2018-2022

36 68 48 7

Progetti per area tematica

159 Progetti su 202
coinvolgono unità di ricerca italiane

70 Progetti
sono coordinati da un'unità di ricerca italiana

Progetti per Regione

LOMBARDIA
34 progetti
di cui **11** coordinati

TRENTINO ALTO ADIGE
4 progetti
di cui **1** coordinato

FRIULI VENEZIA GIULIA
4 progetti

VENETO
11 progetti
di cui **1** coordinato

PIEMONTE
15 progetti
di cui **5** coordinati

EMILIA ROMAGNA
45 progetti
di cui **6** coordinati

LIGURIA
1 progetto

MARCHE
12 progetti
di cui **5** coordinati

TOSCANA
20 progetti
di cui **8** coordinati

ABRUZZO
2 progetti
di cui **1** coordinati

UMBRIA
7 progetti
di cui **6** coordinati

MOLISE
1 progetto

LAZIO
32 progetti
di cui **9** coordinati

CAMPANIA
18 progetti
di cui **3** coordinati

SARDEGNA
12 progetti
di cui **3** coordinati

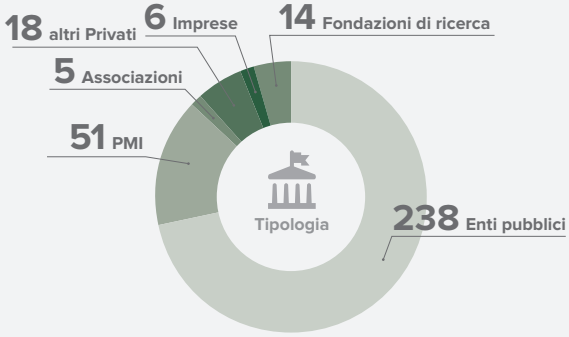
PUGLIA
17 progetti
di cui **3** coordinati

BASILICATA
7 progetti
di cui **3** coordinati

SICILIA
17 progetti
di cui **3** coordinati

CALABRIA
5 progetti
di cui **2** coordinati

332 Unità di ricerca/1914



Progetti per sezione

49 Sezione 1

110 Sezione 2

2018

28 /35

Progetti finanziati

di cui

11

Progetti coordinati

9 | 11 | 8

Progetti per area tematica

51 Unità di ricerca

9.8 mln€

2019

34 /48

Progetti finanziati

di cui

16

Progetti coordinati

6 | 15 | 11 | 2

Progetti per area tematica

70 Unità di ricerca

12 mln€

2020

35 /46

Progetti finanziati

di cui

16

Progetti coordinati

5 | 18 | 10 | 2

Progetti per area tematica

84 Unità di ricerca

16.1 mln€

2021

32 /39

Progetti finanziati

di cui

17

Progetti coordinati

5 | 19 | 6 | 2

Progetti per area tematica

67 Unità di ricerca

13.8 mln€

2022

30 /34

Progetti finanziati

di cui

10

Progetti coordinati

11 | 5 | 13 | 1

Progetti per area tematica

59 Unità di ricerca

13.1 mln€

2023

NEW

25 /37

Progetti finanziati

di cui

12

Progetti coordinati

3 | 5 | 14 | 3

Progetti per area tematica

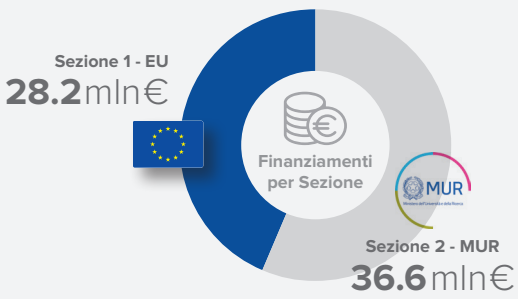
60 Unità di ricerca

14 mln€

Finanziamento

64.8 mln€ /285.9 mln €

Finanziamenti totali



Azioni

Research and Innovation Actions (RIAs)

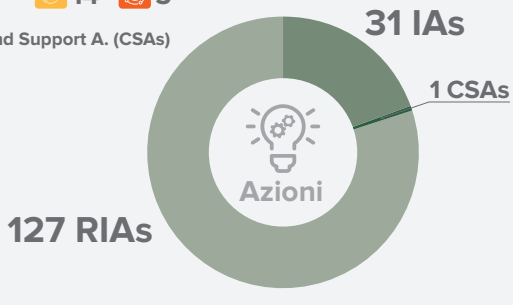
31 | 61 | 34 | 1

Innovation Actions (IAs)

5 | 7 | 14 | 5

Coordination and Support A. (CSAs)

1



Gianluigi Consoli

Direttore generale
dell'Internazionalizzazione
e della Comunicazione
Ministero dell'Università
e della Ricerca

PRIMA quale strumento di diplomazia scientifica

Nel ruolo di Direttore generale dell'Internazionalizzazione e della Comunicazione del Ministero dell'università e della ricerca, è un privilegio condividere il frutto del percorso fatto ed il contributo offerto dal MUR alla crescita della Partnership for Research and Innovation in the Mediterranean Area (PRIMA). Questa iniziativa, nata con l'obiettivo di stabilire un partenariato a lungo termine nell'ambito della ricerca e dell'innovazione nella regione mediterranea, ha manifestato un successo tangibile, coinvolgendo 19 Stati, tra cui membri dell'Unione Europea, Paesi Associati al Programma Quadro di Ricerca e Innovazione e, soprattutto, 5 Paesi Terzi del Mediterraneo.

Negli anni, il Ministero ha svolto un ruolo fondamentale nel consentire la nascita e la crescita di PRIMA, considerandola un'iniziativa tra le più rilevanti per il Mediterraneo e, contestualmente, di primaria importanza per l'Italia. Ora, possiamo affermare con orgoglio che la visione a medio e lungo termine del Ministero si è dimostrata corretta. I progetti finanziati attestano chiaramente il successo nel perseguire l'obiettivo generale di PRIMA: lo studio di soluzioni innovative comuni nel settore dell'approvvigionamento idrico e dei sistemi alimentari, che consenta il miglioramento dell'efficienza ed affronti le sempre maggiori sfide nei settori dell'alimentazione, della salute, del benessere e della migrazione.

L'Italia attribuisce un valore particolare a PRIMA, non solo perché consente un suo avanzamento tecnologico, ma anche perché ritiene che sia un rilevante strumento di diplomazia scientifica. Apprezzandolo come si può fare con una propria creatura, il Ministero dell'università e della ricerca ritiene PRIMA il più significativo strumento di cooperazione internazionale europeo per la Ricerca e l'Innovazione nel bacino del Mediterraneo.

Questo programma, oltre che per l'Italia, è di grande rilevanza per tutta la diplomazia dell'Unione Europea, avendo un focus sui sistemi agroalimentari e idrici, che si è dimostrato vincente nel contribuire al perseguimento delle priorità politiche dell'UE nel Mediterraneo.

Il Ministero è fermamente convinto che PRIMA possa continuare a cercare soluzioni per le sfide poste dal cambiamento climatico, compreso l'adattamento delle colture e, pertanto, ritiene che PRIMA debba essere sempre più riconosciuto per la sua valenza europea e che meriti di essere ampliato, coinvolgendo più Stati e trattando ulteriori tematiche. Il Ministero ha fortemente creduto nella proroga del programma per il prossimo triennio e fornirà pieno supporto affinché questa esperienza superi la scadenza naturale della attuale programmazione europea nel 2027. Ci auguriamo che il modello istituzionalizzato di questo partenariato possa essere confermato ancora per molti anni e che, con la sua maturazione, si possano contemplare nuove aree prioritarie complementari per affrontare le sfide europee in modo ancora più efficace.

Antonella Autino
Coordinatrice di Programma,
Fondazione PRIMA

Dalla istituzionalizzazione di PRIMA al FUTURE4PRIMA

Desidero condividere la mia prospettiva sui primi cinque anni dei bandi PRIMA, avviati nel febbraio 2018, in qualità di coordinatore del Programma presso il Segretariato della Fondazione PRIMA a Barcellona. Questo periodo, sebbene apparentemente breve, rappresenta solo la fase operativa di un percorso complesso che ha coinvolto 19 Paesi Euro Mediterranei con l'obiettivo di avviare il Partenariato PRIMA, un'iniziativa istituzionalizzata in base all'articolo 185 del Trattato sul Funzionamento dell'Unione Europea.

PRIMA è diventato uno strumento cruciale di cooperazione scientifica per l'UE verso il Nord Africa e il Medio Oriente. È la risposta nella ricerca e nell'innovazione alle numerose sfide presenti nell'area mediterranea, come rendere più resilienti ai cambiamenti climatici, efficienti, economicamente sostenibili e ambientalmente e socialmente sostenibili i sistemi di approvvigionamento idrico e alimentare.

Attualmente, PRIMA presenta un portafoglio di 238 progetti di ricerca e innovazione, con un budget complessivo di circa 343 milioni di euro, coinvolgendo in questi progetti circa 2300 team di ricerca. Questo rappresenta il programma di ricerca e innovazione più vasto mai avviato nella regione del Mediterraneo, come affermato dall'ex Commissario europeo Carlos Moedas. Tutti coloro che partecipano presso la Fondazione PRIMA e il suo Segretariato, me inclusa, sono fortemente impegnati nel garantire l'eccellenza scientifica e l'impatto della ricerca nella regione del Mediterraneo. Ad oggi, sono stati completati con successo 48 progetti, tra i 238 progetti iniziali, e stiamo ottenendo risultati tangibili e promettenti in diversi settori. Sebbene molti di questi progetti non abbiano un'applicazione immediata, molti di essi stanno producendo risultati concreti, spesso con impatti sociali di rilievo, e alcuni di essi potrebbero essere pronti per raggiungere il mercato. Ad esempio, nel campo della gestione delle risorse idriche, il Progetto FIT4REUSE, coordinato dall'Università di Bologna, ha sviluppato una serie di soluzioni per rimuovere inquinanti emergenti e rispettare la regolamentazione dell'UE. Queste soluzioni includono il sistema di fanghi anaerobici a flusso ascendente (USAB), constructed wetlands, miglioramenti nell'aerazione, polimeri molecolarmente stampati e desalinizzazione UV. Inoltre, è stato creato un innovativo sistema di desalinizzazione che combina nanofiltrazione, osmosi inversa ed energia rinnovabile per produrre acqua desalinizzata a prezzi competitivi.

Nel settore dell'agricoltura sostenibile, il Progetto MEDBERRY, coordinato anch'esso dall'Università di Bologna, ha identificato nuovi geni di resistenza nelle fragole, consentendo lo sviluppo di varietà più robuste e meno suscettibili alle malattie fungine. Allo stesso modo, il Progetto VEG-ADAPT, coordinato dall'Università di Torino, ha selezionato genotipi di pomodoro, peperone e melone più resistenti agli stress come la siccità, il calore e la salinità, e ha creato una guida pratica per la gestione integrata di parassiti e malattie, sotto la guida del coordinatore dell'Università di Torino. Inoltre, il Progetto IMPRESA, sotto la guida del coordinatore dell'Università della Tuscia, ha lavorato sul frumento duro e ha scoperto una linea ricombinante altamente tollerante al calore e al sale, offrendo soluzioni per affrontare condizioni ambientali avverse.

Nel settore agroalimentare, il Progetto SURFISH, coordinato da un'impresa italiana, ENCO srl, ha contribuito a valorizzare i pesci tradizionali del Mediterraneo e a garantire la tracciabilità e l'autenticità dei prodotti ittici. Il Progetto Veggie-Med Cheeses, coordinato dall'Università politecnica delle Marche, ha sviluppato estratti acquosi per la produzione di formaggi tradizionali preparati con caglio di cardo, sempre sotto la guida del coordinatore dell'Università politecnica delle Marche. Inoltre, a partire dal 2019, PRIMA ha adottato con successo l'approccio Nexus WEFE (acqua-energia-cibo-ecosistemi), che si focalizza sull'integrazione dei settori chiave dell'acqua, dell'energia, del cibo e degli ecosistemi. Questo significa che PRIMA sta lavorando su progetti che cercano di comprendere e affrontare le interconnessioni tra questi settori, riconoscendo che le decisioni in uno di essi possono avere un impatto significativo sugli altri.

Attualmente, ci sono 22 progetti finanziati da PRIMA che seguono questa approccio Nexus WEFE. Questi progetti mirano a sviluppare soluzioni innovative che tengano conto delle complesse dinamiche tra l'acqua, l'energia, il cibo e gli ecosistemi nel contesto della regione del Mediterraneo. Questa integrazione significa che le soluzioni proposte dovrebbero non solo essere efficaci in uno dei settori, ma anche contribuire a migliorare la sostenibilità e la resilienza dell'intero sistema. Attualmente, l'unico progetto WEFE ad ora terminato è AWESOME, che ha implementato la tecnologia dell'acquaponica e dell'acquacoltura per rendere l'agricoltura senza suolo più economica ed efficiente, con notevoli risparmi d'acqua e un aumento significativo della produttività agricola.

Gran parte del merito del programma PRIMA e del suo sviluppo va al Prof. Riccaboni, che ha promosso con determinazione l'agenda necessaria per l'istituzione di questo strumento e ha superato le iniziali resistenze. Nel corso degli anni, il Partenariato PRIMA ha raggiunto obiettivi ambiziosi, e la mia esperienza personale è stata una parte integrante di questo processo sin dai primi passi a supporto del Prof. Riccaboni per lo sviluppo del programma.

Nel 2014, mentre lavoravo presso l'Università di Siena, ho avuto l'onore di contribuire alla costruzione di questo programma insieme al Prof. Riccaboni, già Rettore dell'Università di Siena e presidente dell'iniziativa. Insieme ai 19 paesi partecipanti al programma, abbiamo lavorato instancabilmente per delineare un piano congiunto di lavoro (joint programme) che è stato presentato al Commissario Moedas alla fine del 2014 per una valutazione d'impatto accurata dell'iniziativa. Nel 2016, abbiamo ricevuto un parere positivo dalla Commissione per la partnership ai sensi dell'articolo 185 del Trattato di Funzionamento dell'Unione Europea (TFEU).

Questo è stato un momento cruciale, poiché ci ha permesso di definire la Strategia congiunta di Ricerca (SRIA) con il sostegno finanziario della Commissione nell'ambito del progetto H2020 "4PRIMA". In questa fase, ho avuto il privilegio di coordinare il progetto insieme al Ministero dell'Università e Ricerca e al Prof. Riccaboni. La SRIA è stata poi validata dai ministri della ricerca e dalla Commissione durante la conferenza interministeriale sulla ricerca tenutasi a Valletta nel 2017. Assistere alla trasformazione del nostro lavoro in realtà è stato estremamente gratificante.
Successivamente, nel 2017, è stata firmata la costituzione della sede di implementazione della Fondazione PRIMA a Madrid, in Spagna. Questa fondazione ha ricevuto la delega da parte della Commissione Europea per gestire i fondi dell'Unione Europea destinati a PRIMA. Questo è stato un passo cruciale per il successo di PRIMA e ha segnato l'inizio del mio ruolo ancora più centrale come coordinatore del programma presso la sede del Segretariato di PRIMA a partire dal 2018.
Nel mio ruolo di coordinatore del programma, sono il principale punto di contatto con la Commissione Europea per tutte le attività relative a PRIMA.

Questo include la redazione del documento di lavoro annuale (annual work plan) e le attivita di reporting alla Commissione garantendo che il programma PRIMA fosse allineato agli obiettivi e agli standard di eccellenza richiesti dalla Commissione europea.

Un'altra contributo cruciale al programma è stata la valutazione intermedia del programma, fornendo input fondamentali agli esperti valutatori esterni ed alla EC per redigere il report di valutazione che ha avuto esito positivo. Proprio grazie alla valutazione positiva del programma, il Consiglio e il Parlamento europeo hanno raggiunto un accordo provvisorio per la continuazione della partecipazione dell'UE a PRIMA in qualita di partenariato istituzionalizzato (ex art 185) nell'ambito di Orizzonte Europa per il periodo 2025-2027.

La Bulgaria ha appena espresso la sua volonta di entrare nel partenariato a partire dal 2025. L'impegno finanziario totale richiesto per garantire la continua e senza soluzione di continuità del programma PRIMA è stimato in una somma di 215 milioni di EUR. È importante notare che sono già stati raccolti impegni per un valore di oltre 104 milioni di EUR da parte dei partecipanti di PRIMA, dimostrando un forte impegno per la sostenibilità futura del programma.

Pensando al futuro del partenariato PRIMA, assieme ad un consorzio di 23 partner provenienti da 16 paesi, ho l'onore di coordinare il progetto FUTURE4PRIMA finanziato in risposta alla call WIDE ERA Horizon EUROPE 2023. Tale progetto mira a definire una nuova agenda strategica di ricerca che possa guidare il futuro di PRIMA nel prossimo programma quadro. Questa agenda più ampia considera aspetti aggiuntivi oltre all'acqua e all'agroalimentare, come ad esempio l'approccio sistemico acqua-energia-cibo e salute (one health), e mira a espandere il campo geografico di PRIMA integrando le esigenze di ricerca e innovazione dei paesi limitrofi nel bacino del Mediterraneo come ad esempio i Balcani.

In conclusione, il mio ruolo chiave nella Fondazione PRIMA e nell'implementazione del programma è stato un'esperienza gratificante e significativa. Ho visto PRIMA crescere e diventare una forza motrice nell'ecosistema della ricerca e dell'innovazione nel Mediterraneo.

Massimo Iannetta
Dirigente di Ricerca,
Responsabile della Divisione
Biotecnologie e Agroindustria,
Presidente del CTS del Cluster
Tecnologico Nazionale
AgriFood CLAN

PRIMA e le sfide nel contesto del Mediterraneo

Tutti i Paesi del Mediterraneo dovranno affrontare problematiche comuni per la produzione di cibo, in scenari di forte criticità dal punto di vista dei cambiamenti climatici e di instabilità dei mercati. La collaborazione tra ricercatori che devono trovare soluzioni ad un problema condiviso sarà sempre più rilevante. Da questo punto di vista PRIMA ha permesso di concentrare gli sforzi su criticità comuni all'area mediterranea, che non sono affrontabili in modo così focalizzato attraverso altre iniziative europee di ricerca, sviluppo ed innovazione.
Il fatto che tra il 2020 e il 2050 si prevede un aumento della popolazione a livello globale (9,5 Miliardi) e che circa 1 miliardo è concentrato in Africa (da 1,1 a 2,3 Miliardi), considerando un'ipotesi media di sviluppo, questa aumenterà del 121% nell'Africa subsahariana e del 58% nell'Africa del nord, con una struttura per età giovanissima (18 anni in media) ed un aumento dell'aspettativa di vita. Tutto questo porta a considerare l'area del Mediterraneo strategica per le grandi opportunità economiche di un mercato in forte evoluzione, creando importanti opportunità di cooperazione e sviluppo.

È ora il momento di agire per affinare gli strumenti della diplomazia scientifica tra i Paesi del Mediterraneo e contaminarsi sempre di più nell'ottica dell'open innovation e della formazione di nuove competenze.

Il percorso avviato da ENEA nell'ambito del programma PRIMA in questi anni guarda alle seguenti aree di innovazione, condivise con i partner dei Paesi partecipanti:

- AGRICOLTURA CONSERVATIVA, in termini di Soil Health and Food (Gestione del Suolo Agricolo), biosoluzioni e transizione agroecologica per la salvaguardia della Biodiversità;
- DIGITALIZZAZIONE per l'AGRICOLTURA di PRECISIONE, tecnologie dell'informazione per un uso ottimale delle risorse (acqua, fertilizzanti, prodotti fitosanitari, energia, ecc.);
- BIOECONOMIA CIRCOLARE RIGENERATIVA, per la piena valorizzazione delle matrici biologiche e la creazione di nuove filiere;
- INNOVAZIONE DI PROCESSO E DI PRODOTTO, passando dalla scala banco alla scala pre-industriale;
- METROLOGIA PER l'AGRIFOOD, per la Qualità, Sicurezza, Tracciabilità, Origine ed Autenticità delle produzioni agroalimentari.

Occorre fare di più sui seguenti fronti, in vista delle sfide future che il Mediterraneo dovrà affrontare:

- BIOTECNOLOGIE, attraverso le TEA (Tecniche di Evoluzione Assistita) e il PMF (Plant Molecular Farming) per il miglioramento quali-quantitativo delle produzioni agroalimentari;
- INTEGRAZIONE TRA AGRICOLTURA ED ENERGIE RINNOVABILI, usando gli spazi e le risorse delle imprese agricole per generare anche energia, preservando il paesaggio, grazie all'approccio Nexus;
- RIDURRE LE PERDITE E GLI SPRECHI ALIMENTARI, per garantire alle diverse produzioni in campo di arrivare nelle migliori condizioni sulle tavole dei consumatori;
- NUTRIZIONE E SALUTE, per migliorare le condizioni di vita riducendo le malattie associate ad una alimentazione e ad una dieta non corretta.

Tutto questo sarà possibile se riusciremo a condividere un nuovo approccio alla ricerca e all'innovazione attraverso transizioni virtuose:

- dall'approccio Lineare alla Circolarità dei processi produttivi;
- dalla logica di Settore a quella di Sistema di produzione e consumo;
- dall'Azienda al Territorio con tutte le sue interazioni e le forme possibili di simbiosi.

In questa ottica la rinnovata programmazione di PRIMA sui Sistemi Agroalimentari Sostenibili del Mediterraneo diventerà sempre di più elemento innovativo di congiunzione tra l'uomo, l'ambiente e la loro salute.

Giuseppina Monacelli
Responsabile Servizio
per il sistema informativo
nazionale ambientale ISPRA

La gestione delle risorse idriche nel Partenariato PRIMA

Gli argomenti relativi alla gestione delle risorse idriche riportati nell'Agenda Strategica di Ricerca e Innovazione nell'area tematica "MANAGEMENT OF WATER Integrated and sustainable management of water for arid and semi-arid Mediterranean areas" hanno trovato riscontri positivi, in termini di partecipazione alle proposte, con 49 progetti finanziati, agli eventi e alle opportunità di rete offerte dalle piattaforme realizzate.

I consorzi di ricerca dei progetti sono stati spesso costituiti da enti pubblici e privati che per la prima volta hanno avuto l'opportunità di collaborare per la soluzione di problemi di fondamentale importanza per la vita degli individui e delle comunità mediterranee colpite dai rischi idrologici estremi, in particolare dagli impatti delle siccità sempre più severe e frequenti, e dagli squilibri negli usi della scarsa risorsa idrica.

L'agricoltura è certamente l'utente prevalente e l'irrigazione è necessaria ad ottenere dei raccolti in grado di soddisfare la domanda di cibo, per questo molti dei progetti hanno riguardato lo sviluppo di tecnologie tese a minimizzare gli sprechi nel rispetto dell'esigenza idrica delle colture. Ma l'acqua è necessaria anche per gli usi domestici, fondamentale per una corretta igiene a tutela della salute della popolazione, e per lo sviluppo industriale.

Per rispondere alla scarsità della risorsa naturalmente disponibile i ricercatori hanno sviluppato metodologie, processi e tecnologie per la sua produzione "non convenzionale", da dissalazione, riuso, o riciclo anche prendendo in considerazione le altre matrici coinvolte. L'approccio integrato WEFE (Water, Energy, Food, Environment) Nexus ha trovato applicazione in 10 progetti finalizzati ad una equa gestione della risorsa idrica.

È infatti importante che i decisori abbiano un supporto scientificamente basato per garantire contemporaneamente la coesione sociale, mitigando i conflitti socio-economici, e la sostenibilità ambientale. Un approccio, questo, che ha richiesto il superamento delle analisi settoriali a favore di un dialogo fra diverse discipline per pervenire a risultati che meglio rispondano alla complessità dei temi. Ha sicuramente prevalso l'obiettivo di trovare soluzioni valide e facilmente trasferibili dalla ricerca all'operatività superando le difficoltà dovute ad un contesto regionale complesso sia dal punto di vista dell'assetto naturale che di quello antropico e dove gli eventi estremi sono sempre più esacerbati dai cambiamenti climatici.

In qualità di Presidente della Water JPI (Joint Programming Inititive Water Challenges for a Changing World), che sta trasferendo le esperienze di oltre 10 anni di attività alla Partnership Water4All Water Security for the Planet, ho promosso e continuo con convinzione a promuovere la realizzazione di PRIMA perchè solo una combinazione di programmi, risorse e investimenti a livello locale, regionale e internazionale consentirà di raggiungere gli SDGs dell'Agenda 2030, il sesto dei quali, in particolare, per una gestione più efficiente dell'acqua.

Le importanti sinergie maturate fra le iniziative citate hanno portato all'organizzazione di attività comuni, dall'evento, Strengthening EU-Africa cooperation in Water RDI: opportunities and challenges, nel contesto della Cairo Water Week 2021 al recente seminario in ECOMONDO 2023, WATER PROJECTS EUROPE @ ECOMONDO: clusters, synergies and interface with market players and problem owners, fino alla comune partecipazione al progetto WidERA SD WHEESHES di valorizzazione e diffusione dei risultati.

Francesco Capozzi
Direttore Centro Interdipartimentale
di Ricerca Industriale
su Agroalimentare
Alma Mater Studiorum
Università di Bologna

L'esperienza PRIMA e la sua evoluzione nel corso degli anni

Nel 2014 è iniziata l'avventura di un gruppo di rappresentanti di università e centri di ricerca italiani, coordinati dal prof. Angelo Riccaboni. Il momento cruciale per la nascita di questa iniziativa è stato nell'agosto 2014, con l'incontro a Siena con importanti funzionari della Commissione Europea, durante il quale è stato definito il perimetro entro il quale sviluppare il programma euromediterraneo PRIMA, complementare al principale Programma Quadro di finanziamento europeo H2020. Tra gli altri, era fondamentale indicare le ragioni per cui era necessario istituire un programma di ricerca indipendente, rispetto a H2020, ai sensi dell'art. 185 del Trattato TFUE.

Al tavolo erano presenti anche alcuni rappresentanti degli enti di ricerca francesi e spagnoli, principali partner dell'Italia sul versante europeo. Il tavolo è stato arricchito dalla presenza di rappresentanti governativi di alcuni Paesi del Nord Africa e del Medio Oriente, già interessati a far parte del programma fin dall'inizio. In quel frangente è stato necessario definire le aree tematiche rilevanti per il sistema agroalimentare mediterraneo, toccando temi cruciali come la gestione efficiente delle risorse idriche e del suolo e la sostenibilità dei sistemi agroalimentari, in risposta ai cambiamenti climatici e ai fenomeni migratori. Queste dinamiche hanno coinvolto profondamente l'area geografica delle due sponde del bacino del Mediterraneo.

Quattro anni dopo, nel luglio 2017, Parlamento e Consiglio Europei hanno approvato il programma di finanziamento PRIMA con l'obiettivo di istituire un partenariato di ricerca e innovazione a lungo termine nell'area del Mediterraneo, con un budget complessivo di circa 500 milioni di euro distribuiti su 7 anni, 220 milioni dalla Commissione Europea, 274 milioni dai 19 Paesi partecipanti. Dopo i primi tre anni di attuazione del programma, la Commissione Europea ha riconosciuto gli importanti risultati raggiunti, in termini di maggiore cooperazione, fiducia reciproca e allineamento delle normative nazionali, non solo a livello europeo ma anche e soprattutto coinvolgendo i Paesi del Nord Africa e del Medio Oriente. Per la prima volta si parlava di diplomazia scientifica, poiché, attraverso la condivisione della conoscenza scientifica oltre i confini europei, su temi emblematici come la sicurezza alimentare e la sostenibilità, si potevano trasmettere cultura e conoscenze scientifiche volte ad arricchire il capitale umano in un'area caratterizzata da forti instabilità sociali.

Il momento era maturo perché le crisi generate dal cambiamento climatico diventavano sempre più pressanti. Nonostante questo fosse un tema già al centro del più ampio programma H2020, era chiaro che le soluzioni non potevano essere applicate in modo generalizzato all'intero territorio continentale, poiché localmente questi cambiamenti non erano gli stessi ovunque: siccità per alcuni territori mentre per altri si sono verificate condizioni estreme, manifestate da alluvioni e gelate tardive. Questa specificità territoriale ha richiesto che la ricerca fosse condotta applicando a problemi insistenti su scala globale soluzioni sviluppate localmente.

La resistenza alle malattie delle colture orticole e della zootecnia che caratterizzano il territorio, la dieta mediterranea e la resilienza della biodiversità come strategia per contrastare la debolezza dell'agricoltura monoculturale alle avversità ambientali erano altri temi che avrebbero caratterizzato il programma dell'agenda strategica di PRIMA.
Uno degli aspetti più difficili da affrontare, con interesse trasversale da parte di tutti i partner coinvolti nella costruzione dell'agenda strategica, è stato quello della sicurezza alimentare e dell'adeguatezza nutrizionale delle produzioni agroalimentari.

Sembrava esserci una divergenza nell'individuazione delle priorità tra gli Stati partecipanti del Sud Europa rispetto a quelli del versante nordafricano, quest'ultimo più orientato agli aspetti quantitativi della produzione, con l'obiettivo di soddisfare i bisogni alimentari responsabili delle carenze nutrizionali, mentre gli stati europei hanno mostrato forte preoccupazione per l'avanzamento delle malattie legate alla malnutrizione causata da un eccesso di nutrienti, come l'obesità.

Questa apparente divergenza è stata superata quando un'analisi più approfondita dei dati nutrizionali ha evidenziato che l'incidenza di malattie legate a diete squilibrate era in aumento anche nei paesi nordafricani. Tutti concordi, quindi, sulla necessità di avviare ricerche mirate, con adeguati stanziamenti di finanziamenti, messi in campo per dare a tutti l'accesso ad una dieta equilibrata.

A differenza dei programmi di ricerca puramente volti a trovare soluzioni tecnologiche ai problemi produttivi posti dal cambiamento climatico e dal depauperamento delle risorse naturali, la specificità territoriale del programma PRIMA ha dovuto prestare particolare attenzione agli aspetti economici per la crescita territoriale necessari a mitigare le cause di flussi migratori, con un focus dedicato alla valorizzazione delle produzioni tipiche locali nel contesto di un mercato globalizzato, con una finalità non marginale di salvataggio di posti di lavoro. Per questo motivo, non potevano essere trascurati dal programma gli aspetti di innovazione organizzativa, attraverso strumenti che presuppongono una profonda campagna di alfabetizzazione digitale e di crescita culturale del capitale umano, attraverso azioni di capacity building.

L'impegno dei Paesi che partecipano al programma con fondi propri, oltre a quelli messi a disposizione dalla Commissione Europea, è servito ad allineare la ricerca nazionale con gli obiettivi strategici della comunità internazionale. In questo modo è stato possibile creare sinergie tra i programmi di ricerca dei diversi Stati partecipanti, indirizzando i fondi nazionali verso il tetto cumulativo di 500 milioni di euro raccolto dal programma euromediterraneo. Era però chiaro che, ai fini di una corretta gestione dei bandi, i fondi nazionali non potevano essere mescolati con quelli europei.

Per questo motivo l'agenzia PRIMA ha realizzato due distinte sezioni di finanziamento, la prima basata su fondi comunitari e la seconda utilizzando fondi nazionali. In questo modo, la gestione della valutazione di tutte le proposte progettuali è stata implementata a livello internazionale da parte della Fondazione PRIMA, mentre la funzione amministrativa è stata svolta a livello centrale solo per le proposte presentate in una prima sezione, lasciando la gestione amministrativa della seconda sezione ai singoli Stati partecipanti.

In questo modo le norme nazionali valevano solo per la seconda sezione, creando una diversificazione anche nelle tipologie di progetti presentati dai consorzi, essendo quelli della prima sezione più orientati ad azioni di innovazione. Tale scelta in considerazione del fatto che i finanziamenti europei sono più compatibili con la partecipazione di piccole e medie imprese, per le quali le norme nazionali non sono facilmente attuabili.

I finanziamenti sono stati assegnati attraverso bandi distinti per ciascuna delle tre aree tematiche inizialmente individuate, ovvero gestione delle acque, agricoltura (produzioni primarie) e sfruttamento del suolo, creazione della catena del valore alimentare, successivamente integrate da un'ulteriore area denominata "Water, Energy, Food and Ecosystem (WEFE) Nexus".

A livello nazionale è stato istituito un segretariato italiano con l'obiettivo di favorire la partecipazione di ricercatori e aziende, attraverso incontri, webinar o visite organizzate presso gli uffici di ricerca delle diverse istituzioni.

Il tavolo di lavoro IT4PRIMA ha svolto un ruolo fondamentale nel raccogliere le esigenze di ricerca delle parti interessate attraverso consultazioni con un meccanismo bottom-up e quindi incanalare le informazioni raccolte verso il comitato scientifico del programma.

Si è creato così un filo comune tra i centri di ricerca e le università e i membri del tavolo IT4PRIMA che si è concretizzato in un elevato numero di progetti finanziati da consorzi coordinati o partecipati da partner italiani.

Progetti finanziati 2018-2022

Progetti coordinati da unità di ricerca italiane

I progetti sono in ordine temporale dal 2018 al 2022
I diversi colori indicano l'area tematica:

- Water Management
- Farming Systems
- Agri-food Value Chain
- Nexus

All'interno di ciascuna area tematica,
i progetti sono elencati in ordine alfabetico

Progetti coordinati da unità di ricerca italiane

2018

Area tematica

Water Management

Azione e Topic

IA - Water reuse and water desalination for agricultural and food production

Budget

2.020.000 €

Durata

36 mesi

Ente coordinatore

Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico: TOSCANO, Attilio

Paesi partecipanti

7

Francia
Grecia
Israele
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

9

Enti italiani partecipanti

2

Università Politecnica delle Marche

Istituto superiore per la protezione e la ricerca ambientale - ISPRA

Sezione I / 2018

FIT4REUSE

SaFe and sustaInable soluTions FOR the integRatEd USE of non-conventional water resources in the Mediterranean agricultural sector

Contesto

High treatment costs, possible negative effects and actual low public acceptance can hinder and restrict the safe usage of non-conventional water resources (NCWR, i.e. treated wastewater and desalinated water) that can help the Mediterranean region to overcome water scarcity in agriculture.

Obiettivi e contenuti

FIT4REUSE aims to tackle these challenges through three main pillars of the project: i) innovation of treatment technology, ii) application in simulated/relevant environment and iii) assessment and regulation, insured by the inclusion of research, governmental and industrial partners from different parts of the Mediterranean region.

The first pillar will concentrate on the wastewater treatment and desalination to optimize the treatment technologies and to offer sustainable solutions. In particular, nature-based solutions and intensive wastewater treatment will be tested singularly or combined to provide the best possible quality of alternative water resources that can later be safely used in agriculture. Once water of suitable quality is obtained, the second pillar will study direct and indirect water reuse schemes.

Different irrigation technologies and practices, together with the effects that NCWR have on soil and food safety will be studied. In the case of aquifer recharge with treated wastewater, the application pillar will aim to find the best way to preserve aquifer water quality and its ecological balance, improving also the soil treatment and the infiltration processes.

The third pillar will study the results obtained and analyse economic, social and environmental impacts of the solutions proposed. Moreover, the reasons for low public acceptance of NCWR will be analysed and solutions offered to overcome problems connected to it within the actual policies and regulatory framework.

Risultati e impatti attesi

Overall, since FIT4REUSE aims to provide regular, sustainable and safe water supply in agriculture, it will have a tangible positive impact on society, economy and environment.

The most affected players in the FIT4REUSE field are agricultural farmers, operators of water/wastewater treatment facilities, agricultural advisors, technology developers and consultants SMEs.

Finally, guidelines to standardise water reuse safety planning will be developed to minimise the threats and support regulation and water policies in Mediterranean regions.

Area tematica

Water Management

Azione e Topic

RIA - Water reuse and water desalination for agricultural and food production

Budget

1.426.208 €

Durata

36 mesi

Ente coordinatore

Università degli studi di Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

Coordinatore scientifico:
FACCHI, Arianna

Paesi partecipanti

6
Egitto
Israele
ITALIA
Portogallo
Spagna
Turchia

Unità di ricerca

11

Enti italiani partecipanti

2

Ente Nazionale Risi

Università Cattolica del Sacro Cuore

Sezione II / 2018

MEDWATERICE

Towards a sustainable water use in Mediterranean rice-based agro-ecosystems

Contesto

In the Mediterranean basin, rice is cultivated over an area of 1,300,000 hectares. The most important rice-producing countries are Italy and Spain in Europe (72% of the EU production; 345,000 ha), and Egypt and Turkey among the extra-EU countries (almost totality of the production; 789,000 ha).

Traditionally, rice is grown under continuous flooding; thus, it requires much more irrigation than non-ponded crops. On the other hand, rice is strategic for food security in some countries (Egypt), and human consumption in the whole Mediterranean is steadily increasing.

Obiettivi e contenuti

The project aims at exploring sustainability of innovative irrigation options, in order to reduce rice water consumption and environmental impacts, and to extend rice cultivation outside of traditional paddy areas to meet the escalating demand. The MEDWATERICE consortium includes universities, research centres and private companies operating in the Mediterranean area (IT, ES, PT, EG, TR, IL).

Case studies will be conducted in pilot farms of the countries involved in the project. Alternative irrigation methods to be tested will be tailored to local conditions using a participatory action research approach through the establishment of Stake-Holder Panels (SHPs) in each country, which will include regional authorities, water managers, farmers' associations and consultants, and private companies of the rice production chain. For each irrigation solution, innovative technologies and the most appropriate rice varieties and agronomic practices will be adopted to minimize impacts on yield quantity and quality. Data collected at the farm level will be extrapolated to the irrigation district level to support water management decisions and policies. Indicators for quantitative assessment of environmental, economic and social sustainability of the irrigation options will be defined.

Risultati e impatti attesi

Outcomes generated by MEDWATERICE are aimed at injecting tailored and updated knowledge to improve the sustainability of rice production in the countries of the Mediterranean area, with particular attention to the adoption of water-saving techniques.

The MEDWATERICE consortium believes that the main barriers/obstacles to the achievement of the expected impacts are the economic sustainability of the proposed innovations and their social acceptance.

For this reason, the project will: carry out an overall sustainability assessment of the irrigation solutions (including the economic dimension); be developed in close cooperation with the SHPs in all the project's phases, to improve the communication among all the actors involved and the transfer of project's results to the agricultural sector and decision makers; include the preparation and dissemination of technical best practice documents to support the effective implementation of irrigation solutions.

Area tematica

Water Management

Azione e Topic

RIA - Sustainable, integrated water management

Budget

1.390.397 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Cagliari

UNIVERSITÀ DEGLI STUDI DI CAGLIARI

Coordinatore scientifico:
MONTALDO, Nicola

Paesi partecipanti

7
Algeria
Cipro
Egitto
Francia
ITALIA
Spagna
Tunisia

Unità di ricerca

10

Enti italiani partecipanti

2

Ente Acque della Sardegna - ENAS

Agenzia forestale regionale per lo sviluppo del territorio e dell'ambiente della Sardegna

Sezione II / 2018

SWATCH

Strategies for increasing the WATer use efficiency of semi-arid Mediterranean watersheds and agrosilvopastoral systems nder climate Change

Contesto

The Mediterranean regions are subjected to a large variety of climates, ranging from arid to semi-arid with summers characterized by high temperatures and low precipitation. At the same time the water scarcity highlights the need for careful water resources management and planning in Mediterranean regions. Over the past century, climate change has been affecting precipitation regimes across the world.

In the Mediterranean regions there is a persistent declining trend of precipitation and runoff decreases, contributing to a desertification process with dramatic consequences for agricultural and water resources sustainability.

Climate change projections point to an amplification of changes in global precipitation patterns and trends, with further drier trends for the Mediterranean area. These trends will have dramatic consequences on water resources for both managed (e.g., agricultural) and natural systems.

Obiettivi e contenuti

The overarching goal of this research project is to develop and apply innovative methodologies to increase the social-ecological water use efficiency of managed ecosystems along the Mediterranean biome and climate types, in the face of drier and more extremes climates.

We will focus on a diverse set of seasonally dry ecosystems, spanning a large gradient of mean annual rainfall (from 35 to 935 mm/y) across the Mediterranean biome.

Case studies will examine the Mediterranean Sea basin from west to east and north to south providing the exceptional opportunity to develop, identify and compare water resources management and planning strategies for contrasting climate conditions in the Mediterranean region.

Risultati e impatti attesi

The project objectives respond to common priorities on societal challenges of most of the international organizations dealing with the protection of the planet's natural renewable resources and food security, which are enhanced due to the increase of human pressure and of climatic changes on fresh water.

The project economic impact will be significant for agricultural development and its sustainability since it will increase the system efficiency and decrease the overall costs. Stakeholders will be involved and will have a main role in the project.

The project will provide to the stakeholders the scientific approach and results for defining the planning and management strategies for both current and future climates.

Area tematica

Farming Systems

Azione e Topic

RIA - Preventing and controlling emergence of animal and plant pests and diseases

Budget

687.283 €

Durata

36 mesi

Ente coordinatore

Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise

Coordinatore scientifico: SAVINI, Giovanni

Paesi partecipanti

4
Egitto
Francia
ITALIA
Tunisia

Unità di ricerca

4

Sezione II / 2018

BLUEMED

A novel integrated and sustainable approach to monitor and control Bluetongue in the Mediterranean Region

Contesto

The world's climate appears now to be changing at an unprecedented rate. Although it is a complex phenomenon and its full-scale impacts are hard to predict far in advance, it is well established that it influences the emergence of diseases particularly vector-borne diseases (VBDs).

The potential impact of climate change on vector distribution and VBD incidence is of very significant and immediate concern. There is considerable evidence that changes in the phenology and distribution of a wide range of arthropod species have occurred in response to climate change worldwide. No region is immune from the negative impact of climate change. The Mediterranean region is also vulnerable to climatic changes and it is expected that the incidence of VBD in the region will increase in the next coming years.

Several outbreaks of different VBDs have been recently documented in the region and it clearly appears that it has been playing a crucial role in emerging and spreading animal diseases particularly those transmitted by vectors such as Bluetongue (BT), Epizootic Haemorragic disease (EHD), Lumpy Skin disease etc. These are severe diseases, which have caused and are causing dramatic losses on the livestock industry with strong economic and social con sequences.

This project mainly deals with BT, which has been one of the most feared VBDs occurring in the Mediterranean region in the last two decades with an impact ranging from 85 million to 1.4 billion/year at national level.

Obiettivi e contenuti

In our intention, BT should represent a model not only for the other Orbiviruses (such as African horse sickness virus or EHDV, which shares the same vector species) but also for other insect transmitted diseases, including those which infect humans.

Using a multidisciplinary approach, which includes veterinarians, biologists, entomologists, pathologists, statisticians, epidemiologists and bioinformaticians and through an integrative and sustainable surveillance program where, exploiting web facilities and new technologies, entomological, virological and serological data will be integrated with relevant climatic and environmental variables, this project aims at obtaining scientific knowledge on this viral disease and at understanding what is behind a new strain incursion and spreading.

Risultati e impatti attesi

This information will be fundamental to design preventive actions capable of limiting the incursion and spread of these viruses in Northern Africa and Europe. Their application will mitigate the impact of the disease on the region with great benefit to the health and welfare of farm animals, which will ultimately support the family farmers and the economic development of the agricultural sector in the area.

Area tematica

Farming Systems

Azione e Topic

RIA - Adaptation of agriculture to climate change

Budget

1.680.950 €

Durata

36 mesi

Ente coordinatore

Università degli studi di Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

Coordinatore scientifico:
BASSI, Daniele

Paesi partecipanti

9
Algeria
Egitto
Francia
Grecia
ITALIA
Marocco
Spagna
Tunisia
Turchia

Unità di ricerca

15

Enti italiani partecipanti

3
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA
Università di Catania
Cconsiglio Nazionale delle Ricerche - CNR

Sezione II / 2018

FREECLIMB

Fruit crops adaptation to climate change in the Mediterranean basin

Contesto

The climatic scenario predicted for the Mediterranean areas poses specific challenges for agricultural productions. The vulnerability of agricultural sectors to the modification of agro-climatic conditions depends on both the expected regional climate change and the sectors' ability to adapt. For their perennial status, fruit tree crops are particularly exposed to environmental change. Quality and quantity of fruit productions are strongly affected by genotype x environment interactions.

Obiettivi e contenuti

The FREECLIMB project is built to match topic 2.1 of the PRIMA framework in developing smart and sustainable farming systems in Mediterranean countries, to preserve natural resources (water and land use) by increasing production efficiency. This will be pursued by advancing knowledge on mechanisms of plant environmental adaptation and biotic/abiotic stress resilience.

The project targets major fruit tree species with the aim of improving the availability of breeding and germplasm material adapted to limited external resources (input) and future climatic scenarios predicted for the Mediterranean area, through the characterization and exploitation of local biodiversity.

The project will focus on key ideotypes elaborated in collaboration with Fruit Farming Actors (FFAs, breeders, nurseries, growers) with the core objective of providing a toolkit (diverse germplasm, tools and methods) to accelerate exploitation, breeding and selection of resilient varieties in key traditional fruit crops of Mediterranean agriculture (stone fruits such as peach, apricot and almond; Citrus spp.; grape and olive).

Risultati e impatti attesi

Considering Southern countries climate as representative of changing scenarios predicted for Northern ones, FREECLIMB will strongly benefit from collaboration between the South and North Mediterranean shores: for each species targeted by the project at least two countries are involved one from the North and one from the South. The balanced composition of the consortium ensures an equal footing approach with particular attention to co- ownership of results, mutual interest and shared benefits.

Area tematica

Farming Systems

Azione e Topic

RIA - Adaptation of agriculture to climate change

Budget

1.266.367 €

Durata

36 mesi

Ente coordinatore

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

Coordinatore scientifico:
FRICANO, Agostino

Paesi partecipanti

7
Algeria
Egitto
Germania
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

9

Enti italiani partecipanti

1
Università degli Studi di Milano

Sezione II / 2018

GENDIBAR

Utilization of local genetic diversity understand and exploit barley adaptation to harsh environments and for pre-breeding

Contesto

In the Mediterranean region, barley is a key cereal crop that contributes to ensure food security of the Southern populations because of its adaptability in low rainfall and less favourable, low input and stress prone environments. Climate change is expected to jeopardize barley yield, yield stability and, therefore, food security across the entire Mediterranean region, a trend already substantiated in some areas during the last years.

These challenges, along with the need of a greater barley production for food and feed, make it urgent to target barley genetics and management practices to boost barley yield.

Obiettivi e contenuti

GENDIBAR aims to acquire new knowledge in the genomics and agronomy field on the physiological and molecular mechanisms related to the barley adaptation to abiotic stresses caused by climate changes in the Mediterranean basin, enhancing the biodiversity of local ecotypes through the pre-breeding. Pre-breeding includes a whole series of activities aimed at identifying desirable characters coming from materials that are not suitable for use in varietal development, and at transferring these characters to an intermediate set of materials to create new varieties. GENDIBAR will adopt solutions based on the molecular characterization and sequencing of local barley ecotypes, working on gene expression studies during specific development phases and on new simulation algorithms for the creation of high productivity ideotypes.

Risultati e impatti attesi

GENDIBAR will acquire new knowledge to fill the existing research gaps to adapt barley farming in relation to the projected climate change and shifts of the agroecological zones, which in turn will contribute to ensure food security in the Mediterranean. To valorise barley biodiversity, sequencing data, pre-breeding material and phenotyping results will be shared with scientists and other project stakeholders, using publicly available databases of biological information. One of the legacies of GENDIBAR will be the deployment of the pattern of genetic variants in selected genotypes, which will allow other scientists to sustain current and future barley breeding programmes in different agro-ecological zones of the Mediterranean

Area tematica

Farming Systems

Azione e Topic

RIA - Adaptation of agriculture to climate change

Budget

715.238 €

Durata

36 mesi

Ente coordinatore

Università della Tuscia

Coordinatore scientifico: CEOLONI, Carla

Paesi partecipanti

4
Algeria
ITALIA
Tunisia
Turchia

Unità di ricerca

6

Enti italiani partecipanti

1
Agenzia Nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile - ENEA

Sezione II / 2018

IMPRESA

Improving resilience to abiotic stresses in durum wheat: enhancing knowledge by genetic, physiological and "omics" approaches and increasing Mediterranean germplasm biodiversity by crop wild relatives-based introgressiomics

Contesto

Sustainable production and management of biological resources are key agricultural drivers within a changing world. To ensure adequate food supply whilst safeguarding the environment, crop performance needs to be improved and environmental challenges (e.g. reduced arable land and water resources, abiotic stress conditions like temperature extremes and drought) addressed. Unconventional breeding strategies are required for a challenge-proof production of durum wheat (DW), strategic commodity and staple crop for countries surrounding the Mediterranean basin, and target species of IMPRESA.

Obiettivi e contenuti

As natural diversity of crops, including DW, has been depleted by breeding for high yield under optimal conditions, the overall objective of IMPRESAnis to widen DW genetic basis by resorting to wild wheat relatives (WWRs), naturally adapted to stressful environments, hence valuable sources of tolerance genes. Focusing on DW lines possessing variable amounts of WWRs' genomes and genes therein, the operative strategy will be to integrate extensive trials, under natural (across countries) and induced abiotic stress conditions, with study of mechanisms/genes that increase DW performance under stress. The ultimate goal is to improve knowledge of the processes contributing to drought, heat and salinity tolerance, and to set-up solid bases to exploit the new knowledge and the unique genetic materials through the breeding pipeline, transferring the target traits into country-adapted DW varieties.

Risultati e impatti attesi

Overall, IMPRESA is expected to enhance knowledge of the way DW and its wild relatives interact with the environment and to improve breeding effectiveness within Mediterranean countries. Specific expected impacts include:

1. Increased knowledge of genetic, physiological and metabolic mechanisms of plant response to major abiotic stresses affecting the Mediterranean area, focusing on the main cereal crop of the region, durum wheat, and its wild relatives, still largely untapped for the project's target traits;

2. Translation of results from laboratory to field, i.e. application of acquired knowledge to crop improvement strategies, aiming to develop stress-proof and adapted DW cultivars, with higher yield performance and stability. This, in turn, will enhance the market value of local DW germplasm;

3. Wider public engagement, through dissemination among project partners and local stakeholders of awareness of the advantages of the sustainable project's approach (use of WWRs and of non-GMO, "chromosome engineering" strategies) to maximize valorisation of natural and local biodiversity;

4. Implementation of "participatory" approaches, through close interaction with farmers and end-users;

5. Training and qualification of high-potential actors for future management and leadership in the field of sustainable, molecular-assisted and climate-responsive breeding.

Area tematica

Farming Systems

Azione e Topic

RIA - Preventing and controlling emergence of animal and plant pests and diseases

Budget

1.264.011 €

Durata

36 mesi

Ente coordinatore

Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico:
BARALDI, Elena

Paesi partecipanti

5
Francia
ITALIA
Marocco
Spagna
Turchia

Unità di ricerca

9

Enti italiani partecipanti

2

Università Politecnica delle Marche

Università degli Studi di Milano

Sezione II / 2018

MEDBERRY

Developing new strategies to protect strawberry crop in Mediterranean countries

Contesto

Strawberry is fundamental crop for Mediterranean countries. Up to 26% of the world strawberries are produced and important strawberry industries and scientific community are active here. Strawberry fruits have unique flavour and precious nutritional properties and their economic value is extremely high. Growing healthy strawberry using sustainable protection solutions that preserve the fruits quality and yield, and respect human health and environment is a challenging task, specially under the temperature increase in Mediterranean basin.

In this project complementary expertise of researchers from public and private institutions from Italy, Spain, France, Morocco and Turkey are joined in the effort to develop innovative tools, protocols and strategies suited to revise the pathogen control strategies in view of innovative concepts of protection management. Here, conventional instruments (e.g. traditional breeding programs made with local germplasm) are integrated with New Breeding Techniques (NBT) able to develop new plants and products that counteract the most aggressive pathogens and the new phytosanitary emergences

Obiettivi e contenuti

Med-Berry has 4 objectives:

1. Resistant genes identification and exploitation. Local resistant germplasm will be used to develop resistant varieties against fungal diseases

2. Development of NBT protocols, and RNA interference molecules. Intragenesis protocols will be applied to study the role of key strawberry defense genes to increase fruit resistance. Specific dsRNA molecules will be designed to target pathogen key genes by topical application on plants (SIGS).

3. Socio-economic impact analysis. The economic sustainability of the developed solutions and their social acceptability across the Mediterranean countries will be evaluated to obtain realistic measure of the potential application of the new strategies.

4. Dissemination. Large effort will be put to disseminate results in different farming and industrial contexts and to share the newly achieved knowledge through the strawberry research network and the organization of training activities.

Risultati e impatti attesi

Med-Berry results will lead to

i) a lower risk of increase in infection rate and severity of fungal diseases due to climate change in Mediterranean countries, through development of new strawberry varieties and new agrochemicals;

ii) a higher economic, social and environmental sustainability of the disease control in Mediterranean countries;

iii) development of new agrochemicals and strawberry industries innovation;

iv) healthier and safer fruits to consumers.

Area tematica

Farming Systems

Azione e Topic

RIA - Developing farming systems able to generate income, to create employment and to contribute to a balanced territorial development

Budget

985.331 €

Durata

36 mesi

Ente coordinatore

Università di Pisa

Università di Pisa

Coordinatore scientifico:
PARDOSSI, Alberto

Paesi partecipanti

5
Francia
Germania
ITALIA
Malta
Turchia

Unità di ricerca

8

Enti italiani partecipanti

2

Alma Mater Studiorum Università di Bologna

Università degli Studi di Milano

Sezione II / 2018

SIMTAP

Self-sufficient Integrated Multi-Trophic AquaPonic systems for improving food production sustainability and brackish water use and recycling

Contesto

The demand of the EU seafood market is currently supplied for 25% from EU fisheries, 65% from imports and only 10% from EU aquaculture. Aquaculture is one of the pillars of the Common Fisheries Policy (CFP) and the Blue Growth agenda. The increase in fish farming has various environmental impacts due to the production of feed ingredients, the disposal of farm effluents, disease transmission, dispersal of non-native species and destruction of habitats. Integrated Multitrophic Aquaculture (IMTA) is one of the most promising pathways to sustainable aquaculture systems. IMTA integrates complementary species of the trophic chain living in different compartments of the ecosystem. Inorganic and organic wastes from fed aquaculture species (e.g. finfish) are respectively assimilated by autotrophic species (e.g. phytoplankton, micro/macroalgae and higher plants) and heterotrophic species (e.g. oysters, mussels, crustacean, echinoderms and polychaetes) that are co-cultured with the fed aquaculture species.

Obiettivi e contenuti

This project moves from the IMTA approach towards an innovative self-sufficient integrated multi-trophic aquaponic system (SIMTAP) for small scale, labour-intensive and environmentally-friendly marine fish and halophytic plants production adapted to the typical socio-economic and climatic condition of Mediterranean areas.

The main goal of SIMTAP is to define, design, set up and test an innovative food production system that drastically reduces, on one side, the required fish feed inputs (e.g., fishmeal, fish oil, soybean, etc.) and the consumption of resources (water, energy), and, on the other side, the production of waste and pollution, decreasing the Life Cycle impact on the environment of this segment of the food industry.

Moreover, SIMTAP can be coupled with the re-use of the effluents from greenhouse soilless cropping systems, in a cascade effect acting both as a bioremediation of wastewater (run-off) from greenhouse cultivations, and as a recycling of the nutrients still contained in the same wastewater, thus helping the SIMTAP cycle. Besides, the water source can be either brackish or marine. Life Cycle Assessment (LCA), analysis of energy consumption, emergy assessment and Life Cycle Cost (LCC) of SIMTAP will be performed to quantify and compare the potential environmental and economic impacts with the conventional hydroponic and aquaculture systems.

Risultati e impatti attesi

Creation of a SIMTAP system aimed at the partial / full replacement of raw materials (i.e. fish meal, fish oil and vegetable proteins) in marine aquaculture; reduction of environmental impact; reduction of the volatility of production costs for a more stable profitability; reduction of dependence on international markets; design of public policies aimed at improving the adoption of innovations; provision of participatory approaches.

Area tematica

Farming Systems

Azione e Topic

RIA - Adaptation of agriculture to climate changet

Budget

2.016.695 €

Durata

36 mesi

Ente coordinatore

Università degli studi di Torino

UNIVERSITÀ DEGLI STUDI DI TORINO

Coordinatore scientifico:
SCHUBERT, Andrea

Paesi partecipanti

8
Francia
Germania
Giordania
Grecia
ITALIA
Marocco
Spagna
Turchia

Unità di ricerca

13

Sezione II / 2018

VEG-ADAPT

Adapting Mediterranean vegetable crops to climate change-induced multiple stress

Contesto

Climate change is causing serious limitations to horticultural crops in the Mediterranean, due to the increasing frequency of stress conditions, often concurrent, such as drought, heat and salinity. VEG-ADAPT brings together farmers, industry and research in eight Mediterranean countries, with the common goal of increasing the tolerance of three major vegetable crops (tomato, pepper and melon) to stress induced by climate change in this area.

Obiettivi e contenuti

To increase the tolerance of three important Mediterranean vegetable crops (tomato, pepper and melon) to stress induced by climate change in the Mediterranean region. To this end, the project will follow three lines of research:

1. Characterization and selection of local varieties and new hybrids tolerant to climate change;

2. Research on the physiological processes that contribute to the tolerance of these crops and related genetic markers;

3. Optimization of crop management techniques that reduce sensitivity to climatic stress.

Risultati e impatti attesi

The selection process will provide lines to be used for physiological and genetic studies and to be compared in the field; genetic and metabolic markers will help select genotypes; field experiments will assess the stress performance of selected varieties, soil amendments and smart irrigation techniques. The socio-economic effect of the agronomic tools and techniques developed within VEG-ADAPT will be evaluated.

The results will be disseminated and demonstrated to farmers and industry. It will be possible to transfer the results of VEG-ADAPT to other vegetable crops. VEGADAPT will impact on Mediterranean farmers by providing ready solutions to the limitations induced by climate change; for the industry, offering varieties and genetic traits to be used in breeding; for researchers, discovering new metabolic and molecular processes; and society, improving the sustainability of vegetable crops.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Valorising food products from traditional Mediterranean diet

Budget

959.750 €

Durata

36 mesi

Ente coordinatore

Università Politecnica delle Marche

UNIVERSITÀ POLITECNICA DELLE MARCHE

Coordinatore scientifico: AQUILANTI, Lucia

Paesi partecipanti

4
Grecia
ITALIA
Spagna
Tunisia

Unità di ricerca

5

Enti italiani partecipanti

1
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Sezione II / 2018

VEGGIEMED CHEESE

Valorisation of thistle-curdled cheeses in mediterranean marginal areas

Contesto

In Western and Southern Mediterranean areas, herbaceous perennial plants, commonly referred to as "thistles", have been used since ancient times as coagulating agents in the manufacture of traditional cheeses made from raw ewes' or goats' milk, either directly on- farm or at small dairies, most often located in marginal areas (high altitude pastures, arid dry lands, islands, etc.).

Though these cheeses are greatly appreciated by consumers for their unique, distinctive flavor, their manufacturing is actually an occasional and unpredictable event since the availability of fresh leaves or flowers from spontaneously grown thistles largely depends on seasonal variations (e.g. higher average temperatures), and is limited to narrow time windows.

Obiettivi e contenuti

The present project aspires to a full valorization of these local cheeses through a multidisciplinary integrated research work performed in 4 countries of the Mediterranean basin covering the whole natural growth zone of spontaneous thistles. The research work will be focused on the characterization of thistle species and ecotypes spontaneously growing in these countries, as well as on their sustainable cultivation.

The aqueous extracts (CEs) from spontaneously grown and cultivated thistles will be fully characterized as well, and further used for cheese-making of two cheeses traditionally manufactured with thistle rennet, namely Caciofiore and Torta del Casar, and two cheeses traditionally produced with animal rennet, namely Queso de Murcia and Feta.

All the cheeses will be characterized through physicochemical, chemical, microbiological, textural, colorimetric and sensory analyses; nutritionally valuable, health-beneficial and hazardous substances ascribable to the use of CEs will be also investigated, as well as consumer needs, preferences and acceptance towards thistle-curdled cheeses.

Risultati e impatti attesi

A fully compliance of the Project to topic 3.1 of the call is envisaged; more specifically it intends to provide a support to the sheep and goat dairy sector in its capacity to deliver both food products and public goods, such as environmental and biodiversity conservation, by increasing efficiency and production of Mediterranean sheep and goat's milk cheeses, mostly located in less favoured areas.

Progetti coordinati da unità di ricerca italiane

2019

Area tematica

Water Management

Azione e Topic

RIA - Sustainable groundwater management in water-stressed Mediterranean areas

Budget

1.240.000 €

Durata

48 mesi

Ente coordinatore

Università degli studi di Pavia

UNIVERSITÀ DI PAVIA

Coordinatore scientifico:
MEISINA, Claudia

Paesi partecipanti

4
Giordania
ITALIA
Spagna
Turchia

Unità di ricerca

8

Enti italiani partecipanti

2

Università degli Studi di Padova

Consorzio di Bonifica di secondo grado per il Canale Emiliano Romagnolo, CER

Sezione I / 2019

RESERVOIR

Sustainable groundwater RESources managEment by integrating earth observation deriVed monitoring and flOw modellng Results

Contesto

In Mediterranean areas groundwater resources are taking a more prominent role in providing fresh water supplies in the framework of climatic global changes. Hence, the compound challenges that water planners have to face will require a new generation of more efficient aquifer management plans to address the broad impacts on aquifer storage and aquifer water quality as a result of land subsidence and salinization, respectively. Target zones are farmlands, groundwater-dependent ecosystems, and touristic sites.

Obiettivi e contenuti

The aim of RESERVOIR is to provide new products and services for a fruitful and sustainable management of the groundwater to be developed and tested in four water-stressed Mediterranean areas (in Italy, Spain, Turkey and Jordan) and then applicable in other regions. The specific project objectives are the following: The developed innovative methodology for the hydrogeological characterisation (models) will be tested in selected aquifers located in the Mediterranean areas. Tested aquifers will be selected based on:

a) vulnerability to drought,

b) occurance and/or frequency of occurance of important dry periods,

c) intensive exploitation for agriculture and/or touristic purposes and d) availability of hydrogeological (i.e. piezometric measurements, etc.) and geological data.

In some pilot areas, agriculture is traditionally the most important economic activity, but it is being progressively replaced by urban and touristic activities, which also have an important impact on groundwater resources.

Risultati e impatti attesi

The main expected outcomes of RESERVOIR project are new capabilities (i.e. optimized and advanced numerical models) in an operational groundwater management environment, tested and validated in four pilot sites to develop procedures, wo kflows, communication strategies, etc. and demonstrate their potentiality and the possibility to be implemented in other areas. Hence, these activities will allow to move from TRL3 to TRL 5 (technology validated in relevant environment).

Namely, the specific expected outcomes are:

1 - Innovative approach for the aquifer characterisation and monitoring using low-cost and non-invasive EO data;

2 - New methodologies and tools for groundwater flow and geomechanical models;

3 - Mapping of land subsidence and related hazards such as seawater intrusion area in coastal aquifers, land loss, flooding and groundwater abstraction effects that can provide different management strategies for policy maker and land reclamation authorities;

4 - Best practises to support the decision makers.

Area tematica

Water Management

Azione e Topic

RIA - Bridging the gap between potential and actual irrigation performance in the Mediterranean

Budget

966.089 €

Durata

36 mesi

Ente coordinatore

Politecnico di Milano

Coordinatore scientifico: MANCINI, Marco

Paesi partecipanti

7

Egitto
Francia
ITALIA
Lussemburgo
Marocco
Spagna
Tunisia

Unità di ricerca

14

Enti italiani partecipanti

3

Consiglio Nazionale delle Ricerche - CNR

Università della Tuscia

METEO OPERATIONS ITALIA

Sezione II / 2019

SMARTIES

Real time smart irrigation management at multiple stakeholders' levels

Contesto

EU Water Framework Directive 2000/60/EC and the Common Agricultural Policy (CAP) in Europe together with the present national policies of the Northern Africa countries, and UN SDGs goals, act as international guides and policies to improve water irrigation management towards its sustainable use, economic saving and food security. It is well known in fact that agriculture uses large volumes of water with low irrigation efficiency, accounting in Europe for around 24% of the total water use, with peak of 80% in the Southern Mediterranean part and may reach the same percentage in Mediterranean non-EU countries.

Obiettivi e contenuti

The objective of the project is to improve farm and irrigation district water use efficiency and farm profitability developing a real-time operational water and economic management web-gis system for parsimonious and precise irrigation optimizing exact water use and relative water productivity, integrating farm analysis into irrigation district ones. The tool will allow to monitor and forecast the soil moisture behaviour to define the right irrigation volume, optimizing water and economic indicators. The tool supports different levels of stakeholder:

i) farmers who control soil moisture avoiding plant water and saline stress,

ii) irrigation consortia which allocates water among users;

iii) water authorities which manage water withdraw from reservoirs.

In addition, the tools present also the possibility to be used as simulator of water allocation supporting decision strategy in real time and for seasonal forecast scenarios. Multi satellite data, ground measurements, daily and seasonal meteorological forecast, soil water budget numerical modelling, crop growth model and economic analysis will support the tool. The proposed tool will be applied in different case studies of the Mediterranean area: Italy, Spain, Egypt Tunisia and Morocco and also in China, characterized by different climatic conditions, fresh and saline water availability, crop types, irrigation practices, polices and water pricing.

Risultati e impatti attesi

The parsimonious use of water as achieved by SMARTIES is the key concept that fits with most of the challenging ideas, policies and investments, that characterize international and national actions for improving: environmental quality, conservation and protection of ecosystems natural equilibrium, sustainable food production, water user conflicts mitigation, agricultural society resilience to climate change and anthropic pressure.

These actions contribute to improve quality of life promoting as well modern methodologies in an ancient traditional agriculture transforming traditional farmers into technological farmers. The integration of all activities described in this proposal starts from a TRL 4 – technology validated in lab, and we regard that at the end of the project it will be positioned in the segment TRL 7 – system prototype demonstration in operational environment.

Area tematica

Farming Systems

Azione e Topic

RIA - Conserving water and soil in Mediterranean dry-farming, smallholder agriculture

Budget

1.486.299 €

Durata

42 mesi

Ente coordinatore

Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico: MONTI, Andrea

Paesi partecipanti

7
Algeria
Francia
Grecia
ITALIA
Marocco
Spagna
Tunisia

Unità di ricerca

11

Enti italiani partecipanti

1
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Sezione I / 2019

4CEMED

Camelina: a Cash Cover Crop Enhancing water and soil conservation in MEDiterranean dry-farming systems

Contesto

Mediterranean dry-farming systems mostly rely on cereals generally grown as monocultures or in rotation with very few species. These systems are very intensive in term of agronomic inputs resulting in negative impacts on the environment. Crop diversification can considerably help prevent soil erosion, nitrogen leaching and land pressure and, at the same time, it is expected to increase soil water availability, soil organic matter and biodiversity.

Despite well-known environmental and economic benefits, conservation agriculture (CA) is still not popular in the Mediterranean basin. By contrast, CA would be very suitable for the Mediterranean where agriculture is suffering by market pressure and desertification.

Under those conditions of threat posed by land abandonment and the ageing rural population it is urgent to offer solutions to increase the sustainability of farming systems in the Mediterranean area. Mediterranean dry-farming systems mostly rely on cereal production, generally sole crop, that are generally highly impacting on the environment. Conservation agriculture (CA) is still not widespread among Mediterranean farmers despite the evidence of many advantages associated with its use, such as the reduction of soil erosion and nitrogen leaching, and the increase of soil water availability, organic matter and biodiversity.

Obiettivi e contenuti

In this context, the 4CE-MED project aims at developing innovative, diversified and resilient cropping systems, through a participatory approach, consistently with the principles of CA.

These cropping systems include Camelina, an emerging oilseed cash cover crop enabling to enhance soil and water conservation. Camelina (Camelina sativa L. Crantz) is particularly interesting due to environmental sustainability and the quality of its oil rich in omega-3. Camelina is currently grown on a commercial level n US ad Canada where it is commonly grown as a no-till cover crop replacing fallow between two summer crops., whereas in Europe it is still virtually absent. The 4CE-MED project will investigate on the opportunity to develop camelina as a cash cover crop or double crop in the Mediterranean area. Site-specific tailor-made 4CE-MED systems will be co-designed locally through multi-stakeholder platforms across seven PRIMA Countries (Algeria, France, Greece, Italy, Morocco, Spain, and Tunisia).

Camelina seeds have a high content of both protein (~30%) and oil (~40%), which increases its potential market uptake for food, feed (including aquaculture) and bio-based applications, due to a dramatic shortage of vegetable proteins and fats in Europe. The 4CE-MED project will address all the three principles of CA: growing Camelina as cash cover crop or double crop will allow increasing organic cover soil while diversifying crop rotations; moreover, Camelina will be grown under no-till/minimum tillage systems to prevent soil disturbance.

Risultati e impatti attesi

The introduction of camelina into conventional cropping systems would help increasing wintertime soil coverage, preventing N-leaching and soil erosion. Furthermore, it would reduce agronomic inputs, disease incidence and weed pressure, bringing significant benefits to the environment and possible valorization of marginal soils affected by salinization and desertification. 4CE-MED will improve knowledge on technical, spatial and organizational dynamics of Mediterranean production systems to promote adoption of innovations by farmers also by integrating farmers' knowledge in the value chains.

Area tematica

Farming Systems

Azione e Topic

RIA - Conserving water and soil in Mediterranean dry-farming, smallholder agriculture

Budget

1.500.000 €

Durata

36 mesi

Ente coordinatore

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

Coordinatore scientifico:
RINALDI, Michele

Paesi partecipanti

8
Algeria
Francia
Grecia
ITALIA
Marocco
Portogallo
Spagna
Tunisia

Unità di ricerca

13

Enti italiani partecipanti

1
Agromnia Societá Cooperativa

Sezione I / 2019

CAMA

Research-based participatory approaches for adopting Conservation Agriculture in the Mediterranean Area

Contesto

Among the major challenges in the multidisciplinary fields of research, agricultural entrepreneurship and sustainable development science in the Mediterranean there are some related to encourage the spread of innovative techniques in agronomics to improve soil fertility and at the same time ensure satisfactory harvests, even in the presence of a reduced availability of water due to the growing drought. According to studies and estimates of the White Paper on Agriculture and Climate Change of the Ministry for Agricultural Policies, 75% of Italian soil is at risk of accelerated erosion due to the steepness and non-conservative management practices.

According to an ISPRA's Report, Italy, due to water erosion of the soil, i.e. the loss of the most superficial layer of the soil due to the action of rainwater, is losing 8.77 tons of soil per hectare every year with levels above the EU average. Crop management in Mediterranean rainfed cropping systems, is usually finalized to a more efficient water use. Most soils have low soil organic content, due to low water availability, high temperature and tillage intensity.Conservation agriculture (CA) – no soil layers inversion, plant residues mulching and crop rotations - could reduce the risk of soil quality degradation and improve nutrient and water use efficiencies.

Obiettivi e contenuti

The funding will be used to study the main social, economic and agronomic obstacles that prevent the implementation of conservative agriculture by small farmers from different areas of the Mediterranean in order to preserve soil quality and reduce water erosion, thanks to innovative practices of conservative agriculture and testing of new varieties of legumes, to the recovery of traditional association practices and cover crops.

The main activities will be evaluation, monitoring, dissemination of knowledge and exchange of know-how on the Italian and other countries of the researchers and farmers of the CAMA project team. The presence in the consortium of farmers' associations, public research institutes and a post-graduate education center will guarantee a strong multidisciplinary, multicultural interaction and exchange at local and international level between scholars and all final beneficiaries.

Risultati e impatti attesi

The research activity based on farmers' needs will bring to new crop rotations, breeding of legume crops, technological innovations and will identify new cropping systems in semi-arid environments requiring reduced water and nitrogen fertilisers application amount.

Researches on rainfall water infiltration, soil water depletion, the effect of mulching on the reduction of rainfall impact, water use efficiency assessment in several case-studies of CA will be carried out, also by means of simulation models. Legume crops will be improved genetically and evaluated in diversity-based systems of CA tailored for specific condition.

Cost-efficient genomic selection of drought-tolerant legume crops will be validated and compared to conventional phenotypic selection in conditions of crop monoculture and intercropping. Some CAMA's activities can be considered in the stage "from idea to application", while others fall into the "from lab to market" stage.

The project will cover Technology Readiness Levels from 3 to 7 at its conclusion. A range of dissemination activities of the research results will be carried out, with specific international training courses.

Area tematica

Farming Systems

Azione e Topic

RIA - Use and management of biodiversity as a major lever of sustainability in farming systems

Budget

1.198.570 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Bari Aldo Moro

Coordinatore scientifico: GADALETA, Agata

Paesi partecipanti

7
Egitto
Grecia
Libano
ITALIA
Marocco
Spagna
Turchia

Unità di ricerca

11

Enti italiani partecipanti

2

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Alma Mater Studiorum Università di Bologna

Sezione II / 2019

CEREALMED

Enhancing diversity in Mediterranean cereal farming systems

Contesto

Climate change is already having profound consequences on people's lives and life diversity of our planet. The livelihoods of farmers, who have contributed least to climate change, are already suffering most from the global temperature increase and the associated extreme weather events that damage infrastructure, erode natural resources, increase the risk of devastating crop disease epidemics and endanger species, ultimately affecting food security.

Moreover, the current intensive agriculture schemes are not only unsuitable for a sustainable agriculture in the forecast of the climate change scenario, but also led to a widespread decline in crop and soil-microbiome biodiversity. On the other hand, the biodiversity based agriculture relies on high diversification of the farming system in terms of crop genetics diversity (both at species and genotype level) and of management practices with beneficial effects on the ecosystem as a whole.

Obiettivi e contenuti

CerealMed will pursue and achieve the following specific objectives: evaluate the available wheat, lentil and chickpea biodiversity, both domesticated relatives and landraces, by testing collections/populations for adaptation to different environmental conditions, disease resistance and quality traits across the Mediterranean region, create new wheat, lentil and chickpea-related biodiversity through the development of "new germplasm" by inter-generic and interspecific crosses such the example of Tritordeum. valorise the wheat, lentil and chickpea biodiversity by re-designing and optimizing a sustainable wheat-based cropping system.

Biodiversity-based agriculture practices considering the spatial and temporal combinations of wheat and legumes (rotation/consociation) will be tested under conservative agriculture management, together with the use of tailored microorganisms applications, to achieve relevant ecosystem targets:

Agricultural targets: new high nutritional, value-added food products as well as new alternative products from cereal straw or farming side products;

Environmental targets: restoration of soil fertility, enrichment of soil biodiversity, reduction of chemical input (mineral fertilizer, pesticides). compare the different options of biodiversity-based wheat farming in respect to more traditional/local agricultural systems in term of environmental and technical-economic outcomes/consequences to assess their profitability and their sustainability at regional level. Implement an integrated bioeconomic model for the assessment of the sustainability at farming level.

Risultati e impatti attesi

In the longer term, CerealMed will increase the efficiency of business activities of agro farm through the transfer and implementation of innovative systems and proper tools allowing them to increase the performance of their final products.

In addition, the identification of waste and residues of wheat cropping that can be valorised into bio-based alternative end-products, will support the development of new economic activities and new job opportunities in rural and periurban areas.

On the overall, the project will affect changes in the employment structure of the local/regional communities in which outputs of the project are adopted, and relevant new activities developed.

Area tematica

Farming Systems

Azione e Topic

RIA - Use and management of biodiversity as a major lever of sustainability in farming systems

Budget

836.998 €

Durata

36 mesi

Ente coordinatore

Università degli Studi della Tuscia

Coordinatore scientifico:
ASTOLFI, Stefania

Paesi partecipanti

4
Algeria
ITALIA
Spagna
Tunisia

Unità di ricerca

5

Enti italiani partecipanti

1
Università degli Studi di Torino

Sezione II / 2019

EXPLOWHEAT

Exploring durum wheat genotypes to minimize drought stress impact on grain yield and nutritional quality

Contesto

Low-resource environments (e.g., dry or infertile soils) result in limited growth and development, which in turn constrain crop productivity. Drought is viewed as the single most important environmental stress decreasing crop productivity and it will be a major challenge for European agriculture due to climate change projections. Drought may cause nutrient deficiencies even in fertilized fields.

The mechanisms that plants have evolved for nutrient uptake, translocation and assimilation may not function optimally under drought conditions. It is generally accepted that fertilization is most effective when plants are not water-stressed, and that irrigation is most effective when nutrients are not limited.

Considering that most vegetable and seed crops are cultivated in semiarid areas and in regions suffering from temporary drought, it is important not only to ascertain how water stress affects the nutrient uptake and assimilation capability of these crops but also to identify genes/genotypes to increase crop resilience to face drought and nutrient deficiency under an indisputable climate change.

Obiettivi e contenuti

EXPLOWHEAT will focus on durum wheat, a strategic staple food crop in the Mediterranean area and the overall ambition of the project is to exploit Mediterranean biodiversity to identify more resilient genes and/or crop genotypes able to cope with suboptimal water, and with unbalanced nutrient availability deriving from drought, in order to underpin improvement of crop management strategies for future agricultural use.

The final goal will be to optimise the crop efficiency and sustainability of water, soil nutrients and fertilizer use, to improve the competitiveness and sustainability of Mediterranean agriculture whilst minimizing environmental impacts. Taken as a whole, this strategy has the objective of exploiting Mediterranean biodiversity for a more sustainable agriculture in terms of water and nutrient use efficiency (WUE and NUE).

Risultati e impatti attesi

EXPLOWHEAT impact will be diverse and multifaceted affecting the entire spectrum of stakeholders throughout the food production and utilization chain. Several stakeholders will directly benefit from project's results: the breeding and seed industry (including millers), fertiliser industry, agricultural associations (particularly local farmer associations), environmental agencies, academics and scientists, policy makers, media.

Specifically, EXPLOWHEAT benefits will include: a more rational use of natural genetic resources, increased crop productivity and quality, decreased pollution, reduced energy needs and greenhouse gas emissions.

The project stems from background information and experimental evidence at TRL4 and aims to move to applications at TRL6.

Area tematica

Farming Systems

Azione e Topic

RIA - Use and management of biodiversity as a major lever of sustainability in farming systems

Budget

537.786 €

Durata

36 mesi

Ente coordinatore

Università di Pisa

Coordinatore scientifico: GIORDANI, Tommaso

Paesi partecipanti

4
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

5

Sezione II / 2019

FIGGEN

Valorising the diversity of the fig tree, an ancient fruit crop for sustainable Mediterranean agriculture

Contesto

Climate change is dramatically impacting the Mediterranean region and solutions are needed to be found to adapt agricultural farming systems practices to rising temperatures, drought and soil salinity.

The adoption of mixed cropping systems as agroforestry can counteract loss of agro-biodiversity and the reduction of soil fertility.

The fig tree (Ficus carica L.) has a great potential for expansion thanks to valuable nutritional and nutraceutical characteristics, combined with the ability to adapt to dry, calcareous and saline environments, making this species extremely interesting for sustainable commercial production in Mediterranean region, also inrelation to the climate change.

Obiettivi e contenuti

FIGGEN impacts on valorisation and conservation of biodiversity analysing 300 fig genotypes of fig germplasm including neglected or under-utilized cultivars from countries which are the main fig growing countries in the Mediterranean region. It aims to evaluate performances and genetic variability of fig varieties integrating new knowledge and technologies in assessing biodiversity with knowledge coming from local farmers and stakeholders. This will allow selecting genotypes better adapted to drought/salt condition that can be introduced within traditional agricultural systems to obtain mixing cropping systems as agroforestry.

Risultati e impatti attesi

The introduction in agricultural systems of new fig cultivars better adapted to drought/salt conditions will help fig sustainable production of the future. This will contribute to implement biodiversity-based agriculture, more resilient to climate uncertainties, and more sustainable, producing beneficial effects in terms of conservation of natural resources including above and below ground biodiversity, soil and water conservation, poor soil valorisation and, consequently, better ecosystem services. This will have impact both on well-being and income of farmers, on agro-ecosystem and fig production allowing to invert the decreasing trend of fig production in Mediterranean area recorded in the last years.

Concerning scientific impact, the identification of genes or molecular markers linked to yield and drought/salt condition adaptation developed through (GWAS) will contribute to the genetic improvement of this species developing knowledge on genetics and physiology of plant under abiotic stresses and new varieties better adapted to a changing climate.

Area tematica

Farming Systems

Azione e Topic

RIA - Small scale farming systems innovation

Budget

707.573 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

Coordinatore scientifico: SELLI, Elena

Paesi partecipanti

3
Egitto
ITALIA
Tunisia

Unità di ricerca

4

Enti italiani partecipanti

1
Università degli Studi di Padova

Sezione II / 2019

FISHPHOTOCAT

Photocatalytic water remediation for sustainable fish farming

Contesto

One of the great negative aspects of fish culture practices consists in the untreated wastewater laden containing uneaten feed and fish feces, thus rich in organic compounds containing nitrogen, phosphorous, and organic matter. Many fish culture facilities consist in open rearing systems, where water is taken from a natural basin, used in the tanks and then restituted to the main water body.

This implies the use of large amounts of water every day and the discharge of waters rich in organic nutrients and inorganics that may affect the aquatic environment. Also the aquaculture recirculating system (RAS), useful to reduce water sourcing, needs to be equipped with filtering systems to remove suspended particles in water, convert ammonia into nitrogen compounds and sanitize water.

In general, proper means of disposal are necessary to ensure the safe discharging of the produced effluents into the aquatic ecosystems, fish production and sustainability.

Obiettivi e contenuti

The project aims at investigating the efficiency of a smart purification system to improve water quality, fish production and environmental sustainability in aquaculture systems, through the remediation of nitrogen containing compounds in water and the biocidal action of a TiO2-based photocatalytic treatment.

The photocatalytic reactor will be developed, integrated to aquaculture traditional filters and tested, both in fresh and saltwater, on RAS (recirculating aquaculture systems) farming of two important aquaculture species: the Rainbow trout and the Gilthead seabream.

The effect of the treated water on fish health will be assessed by means of: evaluation of the water quality in terms of residual nitrogen-containing compounds and microbial community; morpho-functional analysis in the early life stage to evaluate development, growth, deformities and environmental stress response; morpho-functional analyses at the commercial size to evaluate productivity, fillet quality and safety.

In addition, the purification system will be tested in vitro for its ability to degrade pharmaceutical residues such as antibiotics commonly used in aquaculture and specific pathogens that undermine fish production.

Risultati e impatti attesi

Besides the proposed innovative technique, this project is directed to:

- educate fish farmers on how to reduce environmental impact;

- inform aquaculture depuration systems producers about this technique to collaborate for innovation licensing;

- involve policy makers to spread information about the results of the project and about the availability of this innovative low cost remediation technique.

Since the Fish-photoCAT project aims at remediating exhaust water in aquaculture falls, its readiness has different TRL steps, starting from the TRL starting point of Basic principles observed TRL 1, to the final with Technology demonstrated in relevant environment TRL 6 (demo fish farms).

Area tematica

Farming Systems

Azione e Topic

RIA - Sustainability and competitiveness of Mediterranean greenhouse and intensive horticulture

Budget

1.597.700 €

Durata

48 mesi

Ente coordinatore

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Coordinatore scientifico: NAVARRO GARCIA, Alejandra Juana

Paesi partecipanti

4

ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

9

Enti italiani partecipanti

2

Università di Pisa

Bioplanet s.c.a.

Sezione I / 2019

IGUESSMED

Innovative greenhouse support system in the mediterranean region: efficient fertigation and pest management through IoT based climate control

Contesto

In the Mediterranean basin, the second largest area of horticultural crops grown under plastic (first is China) is concentrated in an estimated area of 220 kha. Turkey (75kha), Spain (70kha) and Italy (43kha) ranking the first positions in the protected crops world industry, accounting for more than 80% of the total surface in the Mediterranean basin.

The next challenges for the sector include climate change, water scarcity in terms of quantity and quality, needs for reduced input of chemicals, and increasing population. High water and nutrient leaching, excess use of pesticides and fungicides, poor (basic) passive climate control are characteristics of the sector.

More sustainable and circular production system are therefore mandatory. Important efforts to update and modernize greenhouse systems have been done in the last decades by Mediterranean countries. Thus, important results have been achieved with estimating tools, like ready-made software available on the market. These solutions cover a range of individual software for optimizing plant water requirements, fertigation strategies or integrated pest management. However, most of these tools remain looseness in the data accuracy or only deal with one of these issues separately, since on their own, most of these solutions are built for addressing a single farm operation and implemented as an isolated solution.

The main consequence of this situation on the market is that each single farm must use multiple solutions. iGUESS-MED will pave the way for setting up an innovative DSS by combining and integrating existing tools in a one and unique device to streamline the greenhouse horticulture sector in the whole Mediterranean basin.

Obiettivi e contenuti

The Overarching goal of iGUESS-MED is to support a transition toward innovative, sustainable and competitive Mediterranean horticultural greenhouses by developing, validating and transferring an pioneering Decision Support System (DSS) for the MED greenhouses, which is able to:

(i) reduce the nutrient leakages into sub-surface and groundwaters by optimizing the fertigation management (both irrigation and fertilization) under low quality water conditions (i.e., saline water);

(ii) reduce the use of chemicals by a sustainable and integrated pests and diseases control;

(iii) increase the productivity by an improved and cost-effective efficiency of climatic control procedures, introducing specific low-cost solutions to apply to pre-existent greenhouse structures (i.e., use of diffusing cover films, improved natural ventilation).

The work will be carried out on tomato as reference crop, in soil and soilless culture in low-tech greenhouses typical of the Mediterranean region, by applying participatory and integrated interdisciplinary toolkit of novel and emerging technologies such as sensor technology, IoT, advanced agronomic management, simulation models and self-calibrating mathematical algorithms.

Risultati e impatti attesi

inserting deflectors, and using low pressure air humidification systems.

- New protocols of IPM (and IDM) improved by forecast models and by biocontrol agents of pests and pathogens.

- Improvement of closed system cultivation with gutter subirrigation using good quality waters and drip irrigation in semi closed system using low-quality waters, maximizing the fertigation efficiency at low costs in low tech MED greenhouses

- New models of ETc using saline waters, including new equations for ETo suitable for greenhouses at different latitudes.

- Design, development, validation and market replication of a smart DSS able to manage efficiently fertigation, prevent diseases and pests, and improve climatic control procedures.

Area tematica

Farming Systems

Azione e Topic

RIA - Use and management of biodiversity as a major lever of sustainability in farming systems

Budget

1.240.190 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Firenze

UNIVERSITÀ DEGLI STUDI FIRENZE

Coordinatore scientifico: MARTINELLI, Federico

Paesi partecipanti

8
Algeria
Croazia
Libano
Germania
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

11

Enti italiani partecipanti

3

Consiglio Nazionale delle Ricerche - CNR

Agrifutur

Scuola Superiore Sant'Anna Pisa

Sezione II / 2019

LEGUMED

Legumes in biodiversity-based farming systems in Mediterranean basin

Contesto

Biodiversity-based agriculture (BBA) is an ecocentric approach that relies on high diversification of biological components in farming systems to maximize fertility, productivity, and resilience to external perturbations. BBA approaches are not exempt of weaknesses. It is urgent to develop and test new models and approaches allowing to exploit and manage BBA in legume-based, Mediterranean traditional farming systems while providing better ecosystem services and better resilience to environmental stresses linked to climate change.

Obiettivi e contenuti

LEGU-MED objective is to valorize, restore and manage legume biodiversity in future Mediterranean farming systems with enhanced environmental sustainability.

We have assembled a multi-disciplinary consortium composed by 11 partners from 8 countries and consisting of 5 public universities, 5 research centers and 1 company. Our activities are designed to increase ecosystem services, maintain soil fertility, minimize the use of synthetic chemical compounds, and maintain a satisfactory and steady income for growers.

LEGU-MED will use a participatory process where a subset of stakeholder's community will be involved in the co-creation of innovative solutions.

Risultati e impatti attesi

The proposal is structured in 4 work packages (WP) to obtained the following expected impacts:

1) identification of new genes, molecular markers involved in the expression of key traits important to enhance Mediterranean farming system sustainability (WP1),

2) delivery of at least 2-5 new lentil and chickpea genotypes more adapted for biodiversity-based agriculture in 5 different geographic regions of Mediterannean basin (WP1),

3) new tailor-made cropping systems, management innovations based on integration of agro-biodiversity at any level (genetic, species and habitat) with natural capability of coping with biotic and abiotic stresses exacerbated by climate change (WP2),

4) selection of elite rhizobial strains with enhanced BNF with selected germplasm valorising multiple biotic interactions (belowground interactions) (WP3),

5) significantly reducing the use of any chemical inputs through a smart management of agro-biodiversity (particularly pulses) and maintaining high agricultural production (WP3),

6) promote more participatory process between multi-actors in the design, performance, transfer and exploitment of innovations in BBA (WP4).

Area tematica

Farming Systems

Azione e Topic

RIA - Small scale farming systems innovation

Budget

664.000 €

Durata

36 mesi

Ente coordinatore

Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta

Coordinatore scientifico: ACUTIS, Pier Luigi

Paesi partecipanti

4

Grecia
ITALIA
Spagna
Tunisia

Unità di ricerca

6

Enti italiani partecipanti

2

Azienda Agricola Canali Cavour S.S.

Università degli Studi di Udine

Sezione II / 2019

SUPERTROUT

Improving SUstainability and PERformance of aquaculture farming system: breeding for lactococcosis resistance in rainbow TROUT

Contesto

Aquaculture represents the winning strategy to face the depletion of fish resources due to the constant growth of world population. Small-scale farming systems are common in the Mediterranean area and trout farming is suitable for this purpose, efficiently exploiting surface and underground water resources. Italy, Turkey, Spain and Greece are at the top of the list of the main producers of rainbow trout (Oncorhynchus mykiss).

The increase in the demand for aquaculture products brings with it the need to make production systems more efficient and sustainable: this entails a management and technological improvement, including the development of vaccines, the reproductive aspect and the genetic selection of characters related both to productive traits and to disease resistance.

Obiettivi e contenuti

SUPERTROUT has been designed to face infectious diseases, a major concern in aquaculture farming systems, using novel approaches, and improving at the same time environmental sustainability and profitability of small-scale farming system. In particular, Lactococcus garvieae is reported to be responsible for significant economic losses in aquaculture worldwide: the loss due to this infection is 10-60% of the total rainbow trout production; mortality increasing are reported when water temperature exceeds 15 °C. This is a critical issue for the Countries bordering the Mediterranean Sea where the temperate climate, associated with the global warming, in recent years, favoured the durability and diffusion of lactococcosis outbreaks. The overall objective of this project is to improve sustainability and profitability of small-scale farming system facing lactococcosis in rainbow trout applying an innovative strategy.

Risultati e impatti attesi

Using this approach costs related to disease control will be reduced, increasing profitability, while sustainability will be enhanced reducing environmental contamination due to antibiotic treatment and reducing antibiotic resistant strains. 20% of reduction of the economic losses due to the infectious disease lactococcosis and 10% of improvement of the reproductive performances are expected. The expected Technology Readiness Level (TRL), define for each scientific WP, are reported in the table below:

- Exploitation of natural genetic resistance of trout through marker assisted selection;
- Development of recombinant vaccine to be administered by immersion;
- Improvement of reproductive performances exploiting trout genetic features.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Extending shelf-life of perishable Mediterranean food products

Budget

1.282.397 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Catania

Coordinatore scientifico:
MARTINELLI, Federico

Paesi partecipanti

6
Algeria
Francia
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

14

Enti italiani partecipanti

4

Centro Siciliano di Fisica Nucleare e di Struttura della Materia

Decco Italia srl

Laboratory for Molecular Surfaces and Nanotechnology LAMSUN

Organizzazione dei produttori di Agrumi - OP Cosentino

Sezione II / 2019

BIOORANGEPACK

Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit

Contesto

Quality standard, health of the consumers and a long shelf-life are fundamental aspects affecting the competitiveness of citrus fruits produced by Mediterranean countries on both domestic and international markets. Rots caused by fungi and bacteria are the main cause of post-harvest losses (average of 30%) of citrus fruits and may consistently reduce their shelf life.

The presence of quarantine fungal pathogens can be a reason for rejecting imported fruits or an obstacle to their export. Some post-harvest fungal pathogens produce toxins that can also be found in juices and are therefore a concern for human health.

Prevention of post-harvest rots of citrus fruits is usually carried out with synthetic fungicides; however, increasingly restrictive laws and regulations have reduced or prohibited the use of pesticides and promoted eco-friendly post-harvest fruit conservation techniques aimed at extending fruit shelf-life.

The perishability of citrus fruit limits their international trade and long-distance transport and make the management of logistics a critical aspect of citrus trade. Logistics costs amount to about 30% of the total agri-food system. It is estimated that in the EU the average cost of transport of citrus fruits is 0.10-0.15 €/kg. An important issue in the citrus supply chain is the expansion of fresh citrus fruit trade to distant markets like China and the consequent extension of shipping times of up to 45-50 days.

Obiettivi e contenuti

The overall objective of the project is to increase the efficiency, sustainability and competitiveness of the organic citrus fruit post-harvest supply chain by addressing the weaknesses and unresolved problems.

Risultati e impatti attesi

Biocidal substances and innovative diagnostics:

(a) non-toxic anti-fungal substances and smart bio-products to reduce losses caused by fruit rots from 30 to 0.5%, extend the shelf-life of oranges to 45-50 days, prevent the presence of mycotoxins in organic citrus fruits and juices;

(b) practical and low-cost diagnostic kits. Green & Smart packaging: a new type of packaging for shipping (Citrus pack), based on biocides that can be registered for post-harvest treatment of organic fruits. Biocide coating made from citrus pulp is a virtuous example of circular green economy; it could add value to organic citrus fruit in niche markets of EU countries and help the organic citrus fruit market in Europe to expand from the current 15% to 25% and retail prices of organic citrus fruits to increase by 30%.

ICT-based logistics:

(a) implementation of a multisensory system for the detection of rotten fruit during transport (Citrus e-nose);

(b) prototype of a navigation platform (Citrus navigator), which aims to minimise fruit losses due to rots by optimising delivery times and routes (20% increase in shipment efficiency and exclusion of complaints or cuts by GDO).

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Extending shelf-life of perishable Mediterranean food products

Budget

905.000 €

Durata

36 mesi

Ente coordinatore

Università di Pisa

Università di Pisa

Coordinatore scientifico:
CONTI, Barbara

Paesi partecipanti

5
Francia
Grecia
ITALIA
Marocco
Tunisia

Unità di ricerca

9

Enti italiani partecipanti

3

Alma Mater Studiorum Università di Bologna
Azienda Furio Salvadori
Caseificio Sound

Sezione II / 2019

FEDKITO

FrEsh FooD sustainable packaging in the cIrcular ecOnomy

Contesto

Fresh Food (FF), such as fruits, vegetables, meat and dairy products, is highly susceptible to spoilage during harvesting, post-farming, and storage. Every year, the 15 to 50% of the world-wide produced FF is lost because of mechanical damages, fungal pathogens contamination, insect pests attack, and oxidation of unsaturated fatty acids.

The lack of adequate hygienic conditions and transportation, storage, and logistics technologies affects the quality and the shelf life of FF. All the biological threats not only reduce the market value of food but also expose consumers to the risk of ingestion of toxic metabolites, mycotoxins included.

Obiettivi e contenuti

FEDKITO intends to develop innovative strategies for the control of insects and fungi at the post-harvest and storage stages. The insect key species include Ceratitis capitata (Diptera Tephritidae) for fresh fruits, Spodoptera littoralis (Lepidoptera Noctuidae) for vegetables, Calliphora vomitoria and Lucilia sericata (Diptera Calliphoridae) for meat, and Piophila casei (Diptera Piophilidae) for dairy products.

The target fungal pathogens are Penicillum spp., causal agents of blue and green moulds, and in particular the mycotoxin-producer P. expansum. The solution proposed by FEDKITO is to create innovative packaging materials using chitosan (CHT), an edible and biodegradable polymer derived from chitin deacetylation, alone or aromatized with essential oils (EOs) extracted from aromatic plants.

The smart active packages will be also improved by low-cost electrochemical paper- based nanobiosensors. They will monitor the presence of mycotoxins and chemical residues and constantly check the food quality characteristics during storage and distribution. This innovative technology will establish new protocols for FF processing, storage and trading, to promote food security and waste reduction. Also, to pursue the circular economy criteria, CHT used within FEDKITO will be obtained starting from the chitin-rich pupae and larvae of the black soldier fly, Hermetia illucens (Diptera Stratiomyidae). The fly will be massively reared on FF by-products and waste resulting from the selection of tradable products.

Risultati e impatti attesi

FEDKITO aims to improve the Green Management of the target species of insects and fungi that attack FF in post-farming, considerably reducing the use of chemicals. The active smart packaging and biosensors developed within the project will improve processing and storing efficacy and efficiency, to give FF a longer shelf life, microbial stability and real-time control of the level of potential contaminants. The information obtained by the biosensors will contribute to the planning and optimization of transportation and storage.

The recycling of by-products operated by the fly H. illucens will reduce the amount of FF waste from farms and industries, also adding value to the by-products themselves thanks to the production of CHT. The impact of all the new technical solutions on the nutritional and sensory attributes of FF will be evaluated. The overall Technology Readiness Level (TRL) of the project is classified as “From idea to application”, 2-6. The initial TRL of CHT production from insects is 2 and the expected is 5; the CHT film production is estimated to grow from 3 to 5, the smart packaging from 4 to 5/6, the aromatized CHT from 4 to 5, and the nanobiosensors from 3/4 to 5/6.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Extending shelf-life of perishable Mediterranean food products

Budget

1.009.017 €

Durata

36 mesi

Ente coordinatore

Università Politecnica delle Marche

UNIVERSITÀ POLITECNICA DELLE MARCHE

Coordinatore scientifico: MARTINELLI, Federico

Paesi partecipanti

5
Cipro
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

11

Enti italiani partecipanti

2

Università degli Studi di Bari Aldo Moro

Università degli Studi di Torino

Sezione II / 2019

STOPMEDWASTE

Innovative Sustainable technologies TO extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE

Contesto

Postharvest losses of fruit, vegetables and aromatic plants have high economic impact in the Mediterranean area, and contribute to food waste. One of the United Nations Priorities, the ZeroHunger Challenge, consists of cutting food waste by half by 2030, as adopted by European Parliament in May 2017.

In the EU, every year, food waste amounts to 88 million tonnes, as 173 kg/person, for an emission of 170 million tons of carbon dioxide. This waste occurs from the field to the consumer, and thus innovative sustainable technologies are needed to extend the shelf-life of perishable Mediterranean fresh fruit, vegetables, and aromatic plants.

Obiettivi e contenuti

The overall objective of StopMedWaste is to preserve perishable Mediterranean fresh fruit, vegetables and aromatic plants through innovative strategies that are safe for consumers, to reduce waste of agricultural products, and at the same time to minimise or reduce the application of synthetic pesticides.

Project StopMedWaste aims to extend the shelf-life of this produce by applying physical means (gaseous ozone, ozonated water, electrolysed water), natural compounds (chitosan, essential oils, antifungal edible coatings [AECs]) and biocontrol agents.

Risultati e impatti attesi

The StopMedWaste Project results will contribute to PRIMA Operational Objective 7/ REDUCE LOSSES AND WASTES. This will be achieved through the application of innovative and sustainable physical means, natural compounds and biocontrol agents, which will have economic, environmental and social impacts. Smart packaging will be developed for visual demonstration of the quality of fresh fruit, vegetables and aromatic plants for the consumer. The life-cycle assessment of these technologies will be monitored to define their sustainability.

Moreover, logistic solutions and ICT devices with remote control will monitor environmental conditions during storage and transportation. Training activities for operators will be organised and dissemination will be performed to share gained experiences and best practices among players and stakeholders through the whole supply chain, including consumers.

Project StopMedWaste includes a multi-actor approach, with skills from researchers to companies involved in processing, storage and transportation, to move from production to consumer, following the properties of the produce under simulated and commercial retailer conditions.

In this context, the sustainability of food chains will be improved using alternative processes to synthetic fungicides to preserve the quality and safety of fresh Mediterranean perishable fruit, vegetables and aromatic plants.

Area tematica

Agri-food Value Chain

Azione e Topic

IA - Implementation of analytical tools and digital technology to achieve traceability and authenticity control of traditional Mediterranean foods

Budget

1.597.025 €

Durata

36 mesi

Ente coordinatore

ENCO Srl

Coordinatore scientifico:
DE LA FELD, Marco

Paesi partecipanti

5
Egitto
Libano
ITALIA
Spagna
Tunisia

Unità di ricerca

13

Enti italiani partecipanti

1

Università degli Studi di Napoli Federico II

Sezione I / 2019

SUREFISH

Fostering Mediterranean fish assuring traceability and authenticity

Contesto

One of the key components of Mediterranean diet is fish, which contributes to a healthy and balanced diet since it is rich in protein, vitamins and minerals. In addition, fishery provides an important income and trade opportunities in many coastal Mediterranean countries. However, fish chain is particularly vulnerable to fraud, primarily to species substitution and mislabelling. Frauds mainly affect imported/local processed products since they cannot be clearly verified.

International legislation stipulates that fish from wild as well as from farmed origin, must provide consumer information concerning the geographical origin, production method and nutritional labeling.

For this purpose, the SUREFISH project proposes an integrated solution to ensure safety, traceability and authenticity all along the Mediterranean fishery supply chain (fishing, on board processing, in land processing, retailers/importer).

Obiettivi e contenuti

The main goal of SUREFISH is to valorise traditional Mediterranean fish by fostering the supply-chain innovation and consumer confidence on Mediterranean fish products through deploying innovative solutions to achieve unequivocal traceability and confirming their authenticity, thus preventing frauds.

The SUREFISH project will implement and demonstrate a global solution to assure fish authentication and reduce fraud. The solution is based on RFID, Blockchain, TTI and tamper-proof technologies developed within the supply chain of four fish species.

Thus, four pilot use cases are foreseen in

i) Tunisia (lighthouse pilot);

ii) Egypt;

iii) Lebanon;

iv) Spain (followers) on different fish species:

i) fresh and marinated anchovies;

ii) farmed fresh tilapia filets;

iii) fresh groupers;

iv) Bluefin Tuna.

In addition, SUREFISH will harmonize and validate analytical methods to ensure fish authenticity with the aim to increase consumer confidence of Mediterranean fish. In particular, consumers will be provided with a mobile APP to provide information on traceability and authenticity, linked to the Blockchain platform. The SUREFISH project will also get in touch with relevant infrastructures and pre-existing databases in order to optimize their use and assure interoperability.

The activities performed in the project will span from the validation/demonstration in an operational environment (TRL5-6) to system complete and qualified in operational environment (TRL8).

Risultati e impatti attesi

The SUREFISH project is expected to achieve the development of knowledge and common innovative solutions in the Mediterranean basin by following the intention of PRIMA SRIA.

Among its thematic areas, the SRIA calls for sustainable Mediterranean agro-food value chain for regional and local development tackling issues related to inappropriate logistic infrastructure and lack of safety, quality and traceability standards.

Perfectly in line with this goal, SUREFISH addresses the need for a digital revolution based on cost-effective and affordable technologies and methods in the fishery sector, generating the necessary enabling knowledge and technologies to innovate the fish value chain from fishing to consumers.

Area tematica

Nexus

Azione e Topic

RIA - Assessing social, technical and economic benefits of a crosssectoral governance of the Water- Ecosystems-Food Nexus

Budget

1.795.726 €

Durata

42 mesi

Ente coordinatore

Politecnico di Milano

Coordinatore scientifico: CASTELLETTI, Andrea

Paesi partecipanti

5
Egitto
Grecia
Israele
ITALIA
Germania

Unità di ricerca

7

Enti italiani partecipanti

1
FEEM - Fondazione Eni Enrico Mattei

Sezione I / 2019

AWESOME

mAnaging Water, Ecosystems and food across sectors and Scales in the sOuth MEditerranean

Contesto

Global trends in population growth and rising economic prosperity are expected to increase the demand for energy, food and water in the Mediterranean region to a point where they may compromise the sustainable use of natural resources. This context calls for the adoption of integrated and participatory approaches that explicitly account for the water-ecosystem-food (WEF) Nexus to explore tradeoffs, synergies, and nested interdependencies across sectors and to generate shared economic, environmental, and societal benefits.

Obiettivi e contenuti

The main objective of AWESOME is developing a decision-analytic platform based on a multi-level, integrated WEF model to address the Nexus and explore the interdependencies and feedbacks across a hierarchy of spatial scales, from the macroeconomic development, to regional planning down to the single farm.

The platform will allow simulating the impacts of alternative WEF planning portfolios composed of regional policies, river-basin strategic planning solutions, and technological options demonstrated at the local scale, across the different and often competing components of the WEF Nexus. At the local scale AWESOME will develop a demo-site of smart agricultural solutions including solar powered hydroponics, aquaculture, and aquaponics which will provide indications on suitability and sustainability of these new technology to back up existing systems in drying future.

Risultati e impatti attesi

AWESOME will make substantial progress in systems approaches to support the transition towards a more sustainable and resilient agriculture in southern Mediterranean countries under diverging water availability and demand due to the projected impacts of changing climate and society.

The integration of models running at different spatial scales allows a better characterization of different technological solutions to produce water and food, namely soilless agriculture and aquaculture, demonstrated at the micro-scale to inform the systems model supporting strategic planning at the river basin scale, and a more realistic representation of macro-scale processes and regional policies influencing river basin dynamics in terms of land use, water and energy demands, and ecosystem services.

Progetti coordinati da unità di ricerca italiane

2020

Sezione I / 2020

ACQUAOUNT

Adapting to Climate change by QUantifying optimal Allocation of resOUrces and socio-ecoNomic inTerlinkages

Area tematica

Water Management

Azione e Topic

IA - Implementing sustainable, integrated management of water resources in the Mediterranean, under climate change conditions

Budget

2.474.006 €

Durata

48 mesi

Ente coordinatore

Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici

Coordinatore scientifico: MEREU, Simone

Paesi partecipanti

6

Giordania
Grecia
ITALIA
Libano
Spagna
Tunisia

Unità di ricerca

9

Enti italiani partecipanti

3

Università degli Studi di Sassari

Nature 4.0, Soc. Benefit srl

ABINSULA srl

Contesto

Due to the increasing competition for good-quality water among diff erent sectors, water availability for agriculture is declining, especially in water-scarce MED countries that will require new solutions to narrow the gap between freshwater demand & supply. Agriculture is by far the most water demanding sector in the Mediterranean. Combined with economic growth, sustainable use of water cannot be achieved without improving irrigation effi ciency and water productivity.

In this historical moment, with national economies dampened by the COVID-19 pandemic, investments in the water sector would be a powerful instrument to reboot the economy while accelerating advancements towards Sustainable Development Goals (SDGs). Goals must not be put aside as climate projections assess a decrease in water supplies and increased water demand for agriculture in the Mediterranean because of climate change (CC) and population growth.

The current heavy depletion of water sources leads to water scarcity and degradation, deterioration of ecosystem services, conflicts with domestic and industrial uses, and, in general, poses limitations to economic growth. These trends will be exacerbated by CC. Digitalization of the water sector is considered a crucial strategic step in attaining a sustainable IWRM.

Obiettivi e contenuti

The ACQUAOUNT project aims to improve IWRM and sustainable irrigation by deploying innovative tools, smart water services and solutions, for public and private use while contributing to climate resilience.

ACQUAOUNT will develop a suite of creative tools covering monitoring and control (IoT), interoperability and standardization (WoT), effi cient operation and recommendations for water and production efficiency (weather and complex dynamic modelling tools combined with data analytics and a decision-support tool) and innovative visualization and data exploration (KPIs-based visualization).

These tools will simulate complex interactions and feedback across several time horizons and multiple related environmental and socio-economic dimensions, leading to policy recommendations and CC adaptation strategies. These innovations will be demonstrated at a large scale in basins of four Mediterranean countries (Italy, Jordan, Lebanon, and Tunisia), where water effi ciency is a must to cope with water scarcity and climate change.

Risultati e impatti attesi

ACQUAOUNT will support partner countries in adopting those measures necessary to improve digital devices that can be used in the water and agriculture sectors. The Web of Thing Platform (WoT) will provide a series of standardized services and methodologies to diff erent end-users, allowing the exchange of information between other actors to ensure decision-making processes based on a holistic vision of the system to improve the governance of the Integrated Water Resource Management (IWRM).

It is expected that the tools developed in ACQUAOUNT will support the monitoring of progress toward the targets of the UN SDGs 2030 for freshwaters (i.e., SDG 6), economic development (i.e., SDG 8), resilient and sustainable communities (i.e., SDG 11), climate change (i.e., SDG 13) and engender progress in the Degree of Implementation of IWRM (SDG 6.5.1).

The project will provide non-profi t and profi t-oriented business models scaled up across the Mediterranean with a long-term vision and future sustainability. ACQUAOUNT will off er policy recommendations for diff erent stakeholders and tools for farmers to improve water management capacities and adaptation strategies.

Area tematica

Water Management

Azione e Topic

RIA - Low cost, lean solutions for enhancing irrigation efficiency of small-scale farms

Budget

1.020.180 €

Durata

36 mesi

Ente coordinatore

Consiglio Nazionale delle Ricerche - CNR

Consiglio Nazionale delle Ricerche

Coordinatore scientifico: MATESE, Alessandro

Paesi partecipanti

5
Francia
ITALIA
Marocco
Portogallo
Spagna

Unità di ricerca

7

Enti italiani partecipanti

2

Terre Regionali Toscane

Consorzio di Bonifica 6 Toscana Sud

Sezione II / 2020

DATI

Digital Agriculture Technologies for Irrigation efficiency

Contesto

Water is becoming the most limiting factor for crop production, with irrigated agriculture being one of the main water-consuming sectors, which is a challenge for substantial water savings. The continuous technological development has made available to the farmer innovative technical solutions (TS) capable of optimising water use according to a precision irrigation approach that minimises water waste according to the needs detected in the soil-plant system.

The monitoring system represents a critical issue between the technologies involved. There are many solutions on the market; however, frequently, the costs and complexity of these systems do not allow them to be widely used by medium-small companies. These are often proprietary systems with non-open technology, which further limit the fl exibility of use.

This represents a signifi cant problem, especially for agricultural realities in developing countries, which fi nd it challenging to apply sustainable techniques for water resources.

In addition, given that these companies are often placed in climatic contexts characterised by drought and water scarcity, fi nding a solution to this problem becomes a priority.

Obiettivi e contenuti

The DATI project aims to develop and implement new Digital Agriculture (DA) technological solutions and innovative digital procedures. To enhance irrigation effi ciency by developing low-cost and lean solutions for small-scale farmers, primarily using low-cost hardware simplifi ed data-driven models.

The DATI project will take advantage of innovative low-cost technologies such as Wireless Sensors Networks (WSN) for agrometeorological monitoring, Unmanned Aerial Vehicles (UAV) coupled with diff erent sensors, free satellite imagery, decision support systems (DSS).

The systems will be developed in pilot demo farms located in fi ve representative Mediterranean countries: Italy, Portugal, Spain, France, and Morocco. The technological components will be aff ordable, fl exible, and adaptable to be replicated in diff erent locations and applied to other crops and farming systems.

More specifi cally, each technical solution will be developed as a lean package and support Mediterranean small-scale farmers. It aims at increasing the profi tability of irrigation and achieve optimal crop yields while ensuring water quality and quantity through the optimisation of water use effi ciency with a low-cost approach.

Risultati e impatti attesi

Applying the tools developed during this project will reduce water use between 15-20% compared to conventional irrigation management.

Moreover, DATI will save water without any decrease in crop yield by increasing the water use effi ciency through more precise use of the water amount applied to the crops at the right location and time.

Area tematica

Water Management

Azione e Topic

IA - Implementing sustainable, integrated management of water resources in the Mediterranean, under climate change conditions

Budget

1.985.000 €

Durata

36 mesi

Ente coordinatore

Università della Calabria

Coordinatore scientifico:
CALABRÒ, Vincenza

Paesi partecipanti

6
Algeria
Francia
ITALIA
Spagna
Tunisia
Turchia

Unità di ricerca

13

Enti italiani partecipanti

1
Consiglio Nazionale delle Ricerche - CNR

Sezione I / 2020

TRUST

Management of industrial Treated wastewater ReUse as mitigation measures to water Scarcity in climaTe change context in two Mediterranean regions

Contesto

TRUST will focus on challenging cases in terms of effi cient wastewater treatment of the textile and pharmaceutical industries from Tunisia and Turkey where water scarcity is a major concern and irrigation is a large water-consuming sector.

By implementing appropriate advanced treatment to achieve TRL 6-7, TRUST will not only reduce the environmental impact but also save water resources by allowing reuse after pollution control. Indeed, non-conventional water such as wastewater is currently only partially reused in these regions (about 20%) but appropriate treatment would generate a new source of clean water to be used and an opportunity to enhance water security.

The impact on groundwater resources of the mitigation measure of water reuse will be modelled at the specifi c case study's local/regional scale by comparing scenarios including potential climate change in the medium and long term. TRUST's water reuse strategy will also contribute reducing business instability by developing the market. In this perspective new business models will be developed according to site specifi c socio-economic and legal constraints and the economic assessment of the diff erent water allocation ways will be performed.

Obiettivi e contenuti

TRUST's specifi c objectives addressing the aforementioned challenges are:

- Provide novel, environmental and economic sustainable wastewater treatment solutions for challenging industrial wastewaters, applying a circular economy approach and in a synergic collaboration between technology providers, economists and LCA expert. Quantifi ed targets of wastewater treatment performance and reuse, and valuable substances recovery at pilot level will be indicators of achieving the objective of economic and environmental effi ciency of wastewater treatment. In addition, reduction in the unit cost of wastewater treatment with the new technology will be another indicator.
- Propose optimal management strategies based on reuse of water at multiple allocations levels, in partnership with water utilities, industries, local and regional water authorities including policy-makers. The local and regional stakeholders in the countries of interest will be involved in a participatory approach. In addition, socio- economic partners will step in to ensure enhancing the implementation of European environmental strategies and policies at territorial and local levels.
- Present concrete scenarios highlighting the impact of water reuse and thus water resource saving in the light of climate change, taking into account the regional constraints identifi ed by hydrologists and hydrogeologists. Indicators will be the achievement of hydrogeological models (3 per pilot project: SWAT, WEAP, MODFLOW), and of guidelines for regional water management bodies on treated wastewater.
- Identify business models based on a regional approach in order to contribute in sustainable resources management and sustainable business operations through saving of fresh water, reducing operating expenses and developing regional-scale facilities. Potential market and expected number of replicas of the project and expected growth rate of industrial reclaimed water use will be indicators of achieving the objectives.

Risultati e impatti attesi

Water scarcity is not only ecological phenomena for the world, but it is also directly related with economy, energy, industrial investments and social life. The use of wastewater is one of the most sustainable alternatives to cope with water shortage TRUST's expected added values from the technical solutions are multiple:

- to close the loop in case of water and valuable substances, for example, to allow water reuse allocation for diff erent purposes (irrigation, in industrial process, in aquifer recharge); to use the recovered salt further in textile dyeing processes; to combine recovery/savings of valuable resources and energy,
- to enhance the use of chemicals with less environmental impacts while effi ciently depolluting wastewaters, and
- to give clues to adapt these innovative treatment processes to other industries' wastewaters in a circular economy approach.

TRUST's implemented wastewater treatment technologies will consider the quality of the treated water to be reused and overall sustainability by applying Life Cycle and Life Cycle Costing Assessment tools.

Area tematica

Farming Systems

Azione e Topic

RIA - Re-design the agro-livelihood systems to ensure resilience

Budget

641.000 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Perugia

Coordinatore scientifico: PUGLIA, Debora

Paesi partecipanti

4
Algeria
ITALIA
Spagna
Tunisia

Unità di ricerca

5

Sezione II / 2020

4BIOLIVE

Production of Biostimulants, Biofertilizers, Biopolymers and Bioenergy from OLIVE-oil chain residues and byproducts

Contesto

The state of the art reports a massive use of synthetic organic compounds and chemical fertilizers with a high environmental impact. The 4BIOLIVE project, aiming to reduce the carbon footprint circularly, recovers bioactive compounds and nutrients to produce biostimulants and bio-fertilizers from olive oil milling waste (olive pomace and wastewaters). It is expected that biostimulants and biofertilizers will improve their effi cacy by inclusion in natural biopolymers, which will help crops to cope with the adverse eff ects of salinity and drought stress (conventional farming systems are severely aff ected by drought and salinity and therefore consume large amounts of non-renewable natural resources).

4BIOLIVE innovatively uses olive waste products, proposing an environmentally sustainable solution to promote plant growth and productivity: the combined use of nanoparticles (from lignin) and natural biopolymers will have the advantage of replacing both synthetic and non-biodegradable polymers currently used for the controlled release of fertilizer or stimulant, and eff ectively releasing active compounds, thanks to the nanoparticle bio-materials large surface area, easy fi xation and rapid mass transfer.

4BIOLIVE will also help publicize these new agricultural practices for optimizing production in developing countries, with limited knowledge of alternative techniques to the widely established ones.

Obiettivi e contenuti

4BIOLIVE, through an integrated approach, combines skills, knowledge and background from diff erent sectors: agricultural sector (development of new biofertilizers and biostimulants to improve soil quality and protect crops from abiotic stresses and dangerous pathogens that can cause damage and economic losses in nurseries, greenhouses and open fi elds), materials science (through processing and characterization of biobased materials from natural sources to be used in the production of engineered nanocarriers for product treatment in the agricultural sector) and chemistry (through optimization of separation and functionalization procedures aimed at adsorbing, binding and encapsulating active ingredients on/into selected nanostructured lignin to improve their availability, stability and promote their controlled release).

Risultati e impatti attesi

The project, through the valorization and innovative use of by-products from the olive chain, aims to promote the transition of the current management systems in agriculture to eco-sustainable options, to reduce the dependence on non-renewable resources by moving from a linear to a circular approach, to minimize the risk of failure associated with yield losses due to inappropriate farming systems and environmental stresses.

This approach will have positive effects on the resilience, stability and robustness of the agro-ecosystems. The biostimulants and biofertilizers developed in 4BIOLIVE will improve soil fertility, in terms of organic matter and nutrients, through a more effective release of beneficial substances into the soil. The use of innovative biostimulation and bio fertilization materials in 4BIOLIVE, enhanced by lignin nanoparticles and biopolymers, will increase the nutritional value of crops, avoiding the negative impact of environmental stresses on their Content.

Water management will benefit from the ability of innovative bioproducts to stimulate beneficial physiological responses in plants, improving their water use efficiency. These beneficial effects will increase the adaptive capacity and resilience of agricultural systems, thus reducing their vulnerability.

Sezione 1 / 2020

CHANGE-UP

Innovative agroecological APProaches to achieving resilience to climate CHANGE in Mediterranean countries

Area tematica

Farming Systems

Azione e Topic

RIA - Re-design the agro-livelihood systems to ensure resilience

Budget

1.061.944 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Parma

UNIVERSITÀ DI PARMA

Coordinatore scientifico: GALAVERNA, Gianni

Paesi partecipanti

5
Algeria
Francia
ITALIA
Marocco
Tunisia

Unità di ricerca

7

Enti italiani partecipanti

1
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Contesto

Cereals are the base for human nutrition and are cultivated mainly in all the Mediterranean area. Wheat is the most widely grown among cereals, with 61 M ha in Europe, 7.1 M ha in Northern Africa and about 8 M ha in Eastern Mediterranean countries (FAOSTAT 2018). In these areas, wheat plays a signifi cant role in food security.

Climate change has already resulted in unstable wheat production and increased vulnerability of the rural population. It is, therefore, crucial to enhancing cereal – and wheat mainly – production and resilience. Intensive agricultural systems based on optimizing the productivity of monocultures through large quantities of external inputs are widely criticized today for their negative environmental impacts, including soil erosion and degradation, chemical contamination, loss of biodiversity, and fossil fuel use.

Conversely, highly diversifi ed cropping systems based on ecological principles have been shown to have potential advantages in productivity, stability of outputs, resilience to disruption and environmental sustainability. However, they are sometimes considered harder to manage.

Obiettivi e contenuti

CHANGE-UP will test solutions for an eff ective and environmentally sustainable type of agriculture able to mitigate climate change eff ects and promote the conservation of natural resources while ensuring farmers' economic stability and food security in the Mediterranean area.

The technological strategy is the integration of Evolutionary Populations of cereals (EPs – barley, common wheat, durum wheat, triticale) under crop rotation with a range of leguminous plants and New Perennial Grains (NPGs, perennial wheat lines).

Cereal EPs possess a high degree of within crop genetic diversity (heterogeneity), thus having a higher buff ering capacity than homogeneous varieties to adapt to various abiotic and biotic stresses. NPGs are new species obtained by hybridization and/or domestication holding great potential in facilitating soil physical-chemical properties, biodiversity and food web composition. NPGs and EPs embrace the agroecological principle of assuring optimized and stabilized yields by taking advantage of the synergies they can establish with the various elements of the environment such as soil properties, rainfalls and moisture level, biotic characteristics, thus reducing or nullifying the need for external inputs.

Risultati e impatti attesi

The project will assess and increase farming activity's economic and social sustainability by identifying drivers and gaps and taking actions for improvements focusing on local specificities and readiness of transferability. At least 200 farmers (with the target of 50% women farmers) will participate at different levels directly in the experimental work by either hosting the field trials or evaluating the field trials, workshops and T-groups, or by dissemination activities (field visits, events).

The project will quantify the farmers' mean increased incomes and satisfaction due to cereal yield stability and increase, together with the reduced use of agrochemicals (at least 50%) achieved thanks to rotation practices, crop diversification (legumes), EPs and NPGs adoption. Women and men farmers hosting the field trials will have the capacity and receive the necessary support, to access, maintain and increase their income from the use of Eps that increase production. At the same time, they retain yield stability and ecosystem resilience under changing climate conditions.

Farmers will be left with seeds and practices to continue to use them well beyond the project duration. They will be testimonials for further extension of the approach during and after the project. Cereal EPs favour a more farmer centred seed and food production system where local farmers and small business enterprises engage in regional value chains to produce and sell high-quality foods.

Area tematica

Farming Systems

Azione e Topic

RIA - Re-design the agro-livelihood systems to ensure resilience

Budget

779.816 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Napoli Federico II

Coordinatore scientifico: RINALDI, Laura

Paesi partecipanti

7
Algeria
Australia
Francia
Grecia
ITALIA
Svizzera
Tunisia

Unità di ricerca

8

Enti italiani partecipanti

1
Istituto Zooprofilattico Sperimentale del Lazio e della Toscana M. Aleandri

Sezione II / 2020

ECHINOSAFEMED

New sustainable tools and innovative actions to control cystic ECHINOcoccosis in sheep farms in the MEDiterranean area: improvement of diagnosis and SAFEty in response to climatic changes

Contesto

Small ruminant production systems are a signifi cant component of the dairy and meat sector in the Mediterranean region and the only possible enterprises in less-favoured areas. Thus, it is fundamental to ensure sustainability and prevent diseases (e.g., parasitic diseases) aff ecting small ruminants' production, health, and welfare. Cystic echinococcosis (CE) is one of the most important parasitic diseases of grazing sheep in the Mediterranean. CE is caused by the larval stages of the small tapeworm Echinococcus granulosus, a zoonotic Taeniidae of veterinary and public health importance.

The life cycle of E. granulosus includes dogs and other canids as the defi nitive hosts of the adult parasite and livestock (mainly sheep) and humans as intermediate hosts. To date, the control and prevention of this disease are complicated due to the complex epidemiology of E. granulosus and the lack of suitable diagnostic tools and sustainable control strategies. Climatic changes (e.g., global warming) may influence the epidemiology of CE, due to their direct eff ect on the survival and the viability or infectivity of eggs released in the environment by the dog, and an indirect impact on sheep, through increased exposure to the parasite.

Therefore, sustainable control strategies are needed to mitigate the adverse eff ects of the increasing spread of CE in these areas.

Obiettivi e contenuti

The main aim of ECHINO-SAFE-MED is to implement the pasture-based livestock farming systems by delivering sustainable and cost-eff ective tools, as well as innovative strategies to control cystic echinococcosis (CE) in sheep farms with the fi nal goal to improve health, welfare and productivity of small ruminant livestock sector in the Mediterranean regions. This will be obtained by using high throughput diagnostic, surveillance and control strategies to establish guidelines for sustainable CE control to be further extended to other endemic Mediterranean areas.

The project's objectives will be achieved by constructing an international network for sharing practices, methods, and data to promote effi cient approaches to help animals and farming systems adapt to climate change in a concerted and organized way. Furthermore, a multi-level approach will be adopted. It involves local participating vets and national sheep farmer's organizations to collect information on standard practices per country/region and assess the farmers' attitude towards sustainable helminth control and their potential adoption for novel diagnostics and novel concepts of CE control.

Risultati e impatti attesi

ECHINO-SAFE-MED will provide new solutions for improving agrosystem resilience to climatic change in the Mediterranean area, developing sustainable solutions to control CE to increase sheep productivity, thus improving the agro-livelihood, income and satisfaction by farmers in these areas.

Furthermore, ECHINO-SAFE-MED will promote novel management practices based on sustainable and efficient use of natural resources (increasing sheep productivity) and decrease chemical inputs (e.g., vaccination of animals). ECHINO-SAFE-MED improves control of CE in Mediterranean areas. It will render benefits at different levels:

i) for farmers, redesigning the applied management systems against CE minimizing the risk of production losses due to inappropriate prevention/treatment systems and secure farmers' income protection in the same time public health;

ii) to the scientific community, improving knowledge on CE, allowing the development of standardized tools and protocols;

iii) to the authorities, supporting government/commission regulation agencies policy in CE, reporting and monitoring harmonization according to national legislation;

iv) to the society, contributing to food safety by establishing consistent protocols for their ultimate application in monitoring and controlling CE, optimizing drug use.

Finally, in perspective of the "One Health" concept, ECHINO-SAFE-MED activities will also impact CE on human health, reducing the burden of human disease in the Mediterranean area.

Sezione II / 2020

PROSIT

Plant microbiomes in sustainable viticulture

Area tematica

Farming Systems

Azione e Topic

RIA - Re-design the agro-livelihood systems to ensure resilience

Budget

1.050.608 €

Durata

48 mesi

Ente coordinatore

Università degli Studi di Padova

Università degli Studi di Padova

Coordinatore scientifico: ZOTTINI, Michela

Paesi partecipanti

4
Algeria
Francia
Germania
ITALIA

Unità di ricerca

8

Enti italiani partecipanti

2

Consiglio Nazionale delle Ricerche - CNR

Università degli Studi di Milano

Contesto

The grapevine industry is an economically important sector for several Mediterranean countries, and the pressure of growing market demand has accelerated the whole production process. The intensifi cation of grapevine cultivation is causing a progressive simplifi cation of the agroecosystems associated with a progressive loss of biodiversity with possible negative consequences on the functions and ecosystem services.

In this context, it is necessary to define management protocols that promote sustainability by supporting the maintenance and improvement of biodiversity within the vineyard agroecosystem. In the field, plants are continuously exposed to severe abiotic stresses often associated with extreme weather events that have been more frequent in the last decades because of the global climate changes. Recently, different groups highlighted the emerging role of endophytic microbes in agriculture to enhance/improve nutrient uptake and resistance to abiotic and biotic stresses.

The use of microbial endophytes as biological control agents encompasses several advantages. These microbial inoculants are environmentally safe, show a more negligible risk for human and animal health and the environment, and allow a reduction of agrochemical inputs. Also, and importantly, beneficial microbial endophytes are eff ective for a targeted activity for plant diseases and stress control, thus allowing a reduced development of pathogen resistance and preserving the balance between microbial ecosystems.

Obiettivi e contenuti

The overall goal of PROSIT is to characterise and harness the plant-associated microbial biodiversity in making typical Mediterranean agroecosystems more resilient to climate change. A transdisciplinary approach that encompasses physiological, metagenomic, transcriptomic, metabolomics, and epigenomics will be developed. It aims at unravelling the microbiome-driven molecular pathways associated with plant drought resilience, taking the Grapevine case study, a signifi cant crop in all Mediterranean Countries. This aims at testing the efficiency of natural microbiomes on drought tolerance. PROSIT will also determine the efficiency of natural microbiomes transferred from Grapevine adapted to arid climate on drought tolerance to commonly cultivated grapevine cultivars. This will be achieved using two different strategies: stem grafting and direct inoculation. Upon its completion, PROSIT will deliver innovative and cost-effective tools and innovative farming systems to help maintain grapevine productivity in a drier Mediterranean climate and expand its cultivation to semi-arid areas.

Risultati e impatti attesi

PROSIT will unravel the microbiome-grapevine association's role in the plant's response to drought stress and harness the potential of natural biodiversity of microbiome arisen in regions with different climatic conditions to define microbe consortia to be used in sustainable viticultural practices in the future adverse environmental conditions. More closely, our research aims to understand to which extent different Vitis vinifera varieties adaptation to water deficit is influenced by the microbiome and whether such a beneficial microbiome is transmissible to other varieties.

PROSIT will bring direct benefits in reducing the workload associated with irrigation operations, reducing costs for the construction and maintenance of water supply and distribution systems, and replacing senescent plants due to the impact of water stress. In addition, PROSIT outcomes will allow wine producers to valorise their products, responding to the requests of consumers who are increasingly sensitive not only to the quality of the wine but also to managing environmentally-friendly vineyards.

The transition to more sustainable and resilient farming systems will be investigated. Implementing an endophyte will open a new vision for agriculture to optimise natural resources' benefits and set up an agrobiological system by optimising natural resources available on site. The use of endophytes for stress management is a new way to optimise grapevine capacity to struggle with drought, pests, and diseases.

Sezione II / 2020

PROSMALLAGRIMED

Promoting soil fertility, yield and income in smallholder agriculture of semiarid and arid Mediterranean regions by management of benefi cial soil microbiota, conservationagriculture and intercropping

Area tematica

Farming Systems

Azione e Topic

RIA - Low cost, lean solutions for enhancing irrigation efficiency of small-scale farms

Budget

1.066.375 €

Durata

36 mesi

Ente coordinatore

Università del Piemonte Orientale Amedeo Avogadro

UNIVERSITÀ DEL PIEMONTE ORIENTALE

Coordinatore scientifico: LINGUA, Guido

Paesi partecipanti

5
Algeria
Francia
ITALIA
Marocco
Tunisia

Unità di ricerca

12

Enti italiani partecipanti

2

Università degli Studi di Palermo

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Contesto

Several large regions of the Mediterranean area are characterized by arid or semiarid climates. In this context, agronomic practice is hampered by low water availability and reduced soil fertility. Therefore, yield can be poor and highly variable in time. In addition, productivity is exposed to climate change-related risks. Conservation agriculture can help improve the soil features in the short and long term, especially relying on species that can grow and produce even in the diffi cult conditions mentioned above. Cactus pear is incredibly resilient in arid and semiarid climates because of its extraordinary effi ciency in water use and ability to tolerate aridity.

Under field conditions, plants interact with several benefi cial microorganisms, like arbuscular mycorrhizal fungi and plant growth-promoting bacteria. Such interactions have repeatedly been related to improved plant growth, health, productivity, and ability to tolerate biotic and abiotic stress. The use of intercropping (the cultivation of two or more species simultaneously) can increase the complexity and resilience of agroecosystems, improving their economic, agronomic, and ecologic traits. Intercropping, associated with benefi cial soil microbiota, increases the plant and microbial diversity of the agroecosystems. This is especially effective when the system involves perennial species that are drought-tolerant, like a cactus pear. In addition, arbuscular mycorrhizal fungi connect, by means of the "common mycorrhizal networks", the roots of diff erent plants in the same area, with positive eff ects on the plant yield and the preservation of the hyphal networks.

Obiettivi e contenuti

The project ProSmallAgriMed aims to promote the rational use of beneficial soil microbiota and improve small farmer agronomic practices to enhance the productivity of inter-cropped perennial (cactus pear) and short-term species (fi eld crops and vegetables) and promote synergistic cooperation between farmers and the value chain.

The optimization of such practices in water-limited environments will contribute to food security by

(1) enhancing carbon sequestration and ensuring soil fertility;

(2) expanding land coverage in space and time, thus supporting soil conservation and water use effi ciency;

(3) improving yields for consumption as food, feed, or industrial transformation;

(4) increasing the nutritional quality of crop products;

and (5) guaranteeing water and soil quality by decreasing chemical inputs.

Such goals will be pursued by stimulating smallholder associations by increasing their expert knowledge and ability to interact each other and with various actors of the value chain, and by modulating new agronomic practices to be tested in real-life field conditions.

The technological transfer to Maghreb farmers of know-how in the improvement of water efficiency and use of targeted beneficial soil microbial inocula will give farmers a competitive advantage in the production of high-quality products and promote the establishment of start-ups specialized in the production of targeted inocula, based on indigenous beneficial soil microbes.

Risultati e impatti attesi

The outcomes of the project will be instrumental in increasing the food and by-product production per unit area and time, and in upgrading

(i) the ecological and agro-ecological conditions of semiarid and arid areas through a rationalization of the use of chemical inputs, a reduction of soil erosion and water loss, and increased resilience to climate change;

(ii) the social and economic conditions of farmers;

(iii) the social and economic conditions of the countries hosting new enterprises; and (iv) the ability of local smallholder farmers to exploit important agronomic information from similar areas and adapt it and apply it to their areas.

Sezione II / 2020

REVINE

Regenerative agricultural approaches to improve ecosystem services in Mediterranean vineyards

Area tematica

Farming Systems

Azione e Topic

RIA - Re-design the agro-livelihood systems to ensure resilience

Budget

827.835 €

Durata

36 mesi

Ente coordinatore

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Coordinatore scientifico:
PERNIOLA, Rocco

Paesi partecipanti

4
Cipro
Egitto
Francia
ITALIA
Portogallo
Tunisia

Unità di ricerca

15

Enti italiani partecipanti

5

Agenzia Nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile - ENEA

Consorzio Nuove Varietà di Uve da Tavola

Società Agricola D'Alessandro

Azienda Agricola San Marco

ERMES sas

Contesto

The possibility to apply sustainable agriculture is infl uenced by enhancing the environment it operates. Due to the excess use of chemical inputs, modern agriculture has enormously reduced the agroecosystem's biodiversity, thus lowering plants' ability to adapt to a changing environment. On the contrary, regenerative agriculture practices may favour soil health and biodiversity and benefi t from the presence of other living organisms linked to synergistic and antagonistic relationships, such as rhizobacteria that promote plant growth (PGPR) and fungi (PGPF).

Therefore, the REVINE project aims to increase the Vitis reliance on biotic and abiotic stresses by using regenerative cultivation approaches to favour the biodiversity of the viticultural agro-system (both table and wine grapes) in the Mediterranean Area.

REVINE, combining new knowledge of physiology, pathology, genomics, together with innovative applications in cultivation processes and management, intends to prove that the application of regenerative agricultural practices directly in viticulture companies located in Mediterranean areas can preserve water resources and soil fertility, controlling its erosion and creating physical-chemical conditions of the soil that favour the presence of benefi cial microorganisms, thus obtaining a better adaptation to climate change.

Obiettivi e contenuti

The general aim is to provide more eco-sustainable alternatives for soil management and plant defence in viticulture, thus reducing chemical inputs and improving food safety and plant health. REVINE proposes to:

- Enhance vineyard wastes, developing protocols that effi ciently produce biochar, compost and digested from pomaces and pruning residues, thus allowing the re-use of these residues as amendments and biofertilizers (circular economy approach);
- Characterize the eff ect of the produced biochar and digested on the soil microbial community and vines in response to biotic and abiotic stresses
- Characterize the effect of beneficial microorganisms existing in the microbial collections available from project partners on the ability of vines to cope with biotic and abiotic stresses;
- Study the Vitis genotypes tolerant/resistant to diseases and abiotic stresses already adapted to the pedo-climatic conditions of Mediterranean areas; Identify the species more suitable for use in associations with the vine, capable of increasing the farm's profitability;
- Evaluate the environmental and economic sustainability of the proposed regenerative approaches and their socio-economic impact in the Mediterranean areas under study and evenly elaboration a proposition within the framework of the new Green Deal and the forthcoming Community Agricultural Policies.

Risultati e impatti attesi

About 20% of production costs in viticulture is related to fungicides use. This may strongly reduce the development of new eco-sustainable strategies for grape production, as we propose in REVINE.

We expect results both as new products (such as new tolerant/resistant genotypes, microbial consortia, etc.) and new protocols for more sustainable vineyard management. These will allow the reduction of costs needed for production and defence management in the companies directly involved in the project and, as future perspective, a better adaptation of the company supply to the market demand, thus increasing competitiveness of the whole chain in the markets in which it already operates, and beneficial effects both in economic and employment terms for companies in the Mediterranean region. With a view to a circular economy, REVINE will promote the enhancement of vineyard waste, developing protocols to produce biochar, compost and biofertilizers starting from pomaces and prune residues.

The direct involvement of companies in the project will allow the dissemination and exploitation of the proposed innovations to significant areas in the Mediterranean. Indeed, new tolerant grape genotypes may arouse the interest of Mediterranean producers and winegrowers because directly selected in those areas, therefore more adapted to pedo-climatic Mediterranean conditions, for sustainable production.

Area tematica

Farming Systems

Azione e Topic

RIA - Conservation and valorization of local Animal Genetic Resources

Budget

1.750.000 €

Durata

48 mesi

Ente coordinatore

Università Cattolica del Sacro Cuore

Coordinatore scientifico: AJMONE-MARSAN, Paolo

Paesi partecipanti

5

Algeria
Francia
ITALIA
Marocco
Tunisia

Unità di ricerca

17

Enti italiani partecipanti

4

Consiglio Nazionale delle Ricerche - CNR

Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici,

Agenzia Regionale per la Ricerca in Agricoltura, AGRIS Sardegna

Nature 4.0, Soc. Benefit

Sezione I / 2020

SCALA-MEDI

Improving sustainability and quality of Sheep and Chicken productions by leveraging the Adaptation potential of LocAl breeds in the MEDIterranean area

Contesto

Sheep and chicken are the most important livestock species in the Southern Mediterranean countries. They are the basis of the local diets and are reared in marginal areas of the Northern Mediterranean. In Europe, the management of local sheep and chicken breeds is well characterised. Still, in North Africa, local and regional populations and breeds are poorly defi ned while possessing unique adaptation to the harsh environment. Accelerated selection for thermal tolerance and resilience to new endemic diseases is becoming urgent to counteract the detrimental eff ect of climate change on livestock welfare, as it is the valuation and conservation of local breeds as a reservoir of unique gene variants. Genomics plays a vital role in this respect, with phenotype recording and epidemiological and environmental data collection. Breeding for adaptation to climate change and mitigation of livestock's impact on climate change is probably the most complex challenge the sector has ever faced.

Obiettivi e contenuti

The SCALA-MEDI project will characterise the genetic and phenotypic diversity of Mediterranean local breeds of sheep and chicken and study their ability to adapt to harsh environments and management systems. The project will leverage data produced in EU projects and generate new data. It includes traditional production traits and new technologies for remote phenotyping of adaptation-related traits, genotyping, and exploring the genome methylation status of animals reared in different environmental conditions. Data and samples will be collected on local breeds from Tunisia, Algeria, and Morocco (16 sheep breeds and village chicken populations from different bio-climatic environments), taking advantage of local expertise in Italy and France. Local resources will be characterised for the farming system, diversity, distinctiveness, and adaptive traits. Genomic data will be analysed to identify loci controlling adaptation traits and product authenticity. It will create decision-making tools to improve conservation and selection programmes and management strategies for the Mediterranean livestock production system to face future climate change scenarios.

Risultati e impatti attesi

Tools to manage diversity, breeding and crossbreeding strategies will be designed to improve sustainable production and exploit adaptation and increase the value of local populations. This will promote their use and safeguard local genetic resources through on-farm conservation. The tools will be showcased in nucleus flocks, and breeding centres as part of comprehensive dissemination and knowledge transfer plans to ensure project outputs are applied. The added value of local populations will foster the exploitation of results beyond the end of the project. SCALA-MEDI will use the data collected on genetic diversity to optimise strategies for cryo-conservation to ensure biodiversity backup in case of need. Existing local Biobanks in North Africa will receive training in the latest techniques and be reinforced by creating links with biobanks operating across the Mediterranean basin. SCALA-MEDI has an international, interdisciplinary team in including experts in animal farming, animal breeding, animal physiology, veterinary science, conservation biology, population genetics, molecular genetics, reproduction biotechnologies, statistics, and socioeconomics, plus a super-computing centre, breeder associations and SMEs.

Area tematica

Farming Systems

Azione e Topic

IA - Genetic conservation and animal feeds

Sub-topic B - Alternative animal feeds

Budget

2.209.000 €

Durata

48 mesi

Ente coordinatore

Università degli Studi di Perugia

Coordinatore scientifico: FANTOZZI, Francesco

Paesi partecipanti

3
ITALIA
Libano
Marocco

Unità di ricerca

5

Enti italiani partecipanti

1
Tecnologie per la Riduzione delle Emissioni Engineering

Sezione I / 2020

SURFOLY

SUstainable Ruminants Feed with OLive pomace and polYphenols enriched charred olive stone

Contesto

Sheep and goat farming is a source of employment in disadvantaged agricultural areas. The high-quality products obtained are universally recognized as the result of a multifunctional and sustainable form of agriculture that contributes eff ectively to the safeguard of the environment and the social cohesion of rural areas. The sector, however, does not guarantee economic sustainability nor in the MENA region nor the EU. Any action that increases yields and quality of products or makes available feed and supplements with better value for money is an essential contribution to the sector's sustainability.

The regions bordering the Mediterranean share the cultivation of olive trees and the consequent olive oil industry among the primary sources of profi tability. The sector concentrates in a few months a high production of by-products (pomace and wastewaters), which is associated with a signifi cant environmental impact, exceptionally high for wastewaters, where the presence of polyphenols can be toxicto vegetation and microbial population when used in soils and contributes to the eutrophication of waterways.

On the other hand, the dried pomace finds application in the feed sector or as a fuel, although the use is much lower than the availability. It is possible to increase the added value of the entire supply chain, both for breeders and for operators in the olive and oil agro-industry, through an integrated approach that valorizes the by-products of the oil industry into an innovative feed for sheep and goats. At the same time, this can be done by signifi cantly reducing the environmental impact on the supply chain's life cycle and through a mixed crop-livestock system.

Obiettivi e contenuti

SURFOLY promotes and demonstrates an innovative business and sustainable development model in the circular economy to produce two innovative animal feeds for lactating and fattening small ruminants (sheeps and goats) while supporting mix crop-livestock system and the olive industry in the Mediterranean area.

The new feed contains olive oil by-products (pomace, stone, and polyphenols from wastewaters) utilised in an innovative way to improve performance and product quality and reduce the overall environmental impact on the life cycle of the combined system olive mill - feed manufacturer - farm.

Olive stone or dried pomace are then pyrolyzed in an innovative regenerative, rotary kiln to obtain biochar used to reduce the COD (Chemical Oxygen Demand) of olive mill wastewaters by absorbing polyphenols, hence significantly reducing the polluting impact of their use as a fertilizer or disposal.

The polyphenol's enriched char has antioxidant potential and can reduce methane emissions from ruminants; therefore, it is added to dried pomace to produce a nutrient mix which is eventually pelletised and used as an ingredient in the new formula for sheep and goats. To further increase the mix crop-livestock model introduced by SURFOLY, when small ruminants are allowed to graze in olive orchards, digested biochar is released back as a carbon sink in the fields.

Risultati e impatti attesi

SURFOLY's scientific impact is substantial because it will produce experimental data, currently not available in the literature, on various aspects such as biochar quality and production efficiency from olive stone and pomace in the removal of polyphenols from wastewaters; the energy and economic sustainability of the pyrolysis process on solid mill residues.

The effect of biochar and the release of polyphenols in the diet of meat and dairy small ruminants, in terms of animal welfare, palatability, quality and yield of products, and enteric emissions of methane, through direct measurements. The environmental benefit introduced by SURFOLY with the integrated business model cultivation-industry-feed-farming in a circular economy is also substantial.

Finally, the economic impact of SURFOLY for farmers and the olive agro-industry and olive oil is significant, contributing respectively to a potential increase in the economic value of cheese and meat, thanks to the combined effect of improving yield and product quality, and to a reduction in the cost of disposal of vegetation water, with a competitive cost expected for bio-char production. Given the high selling price of biochar, this can effectively contribute to the added sustainability of olive mills.

Sezione II / 2020

MED-LINKS

Data-Enabled Business Models and Market Linkages Enhancing Value Creation and Distribution in Mediterranean Fruit and Vegetable Supply Chains

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - New optimization models of the agro food supply chain system to fair price for consumers and reasonable profi t share for farmers

Budget

1.082.267 €

Durata

36 mesi

Ente coordinatore

Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico: CAMANZI, Luca

Paesi partecipanti

5
Egitto
Francia
Grecia
ITALIA
Marocco

Unità di ricerca

11

Enti italiani partecipanti

2

Romagna Tech scpa

Università degli Studi di Cassino e del Lazio Meridionale

Contesto

MED-LINKS consortium includes eleven partners from fi ve countries. MED-LINKS Consortium partners have been selected based on their scientifi c excellence in various disciplines, including agronomy, agricultural economics, consumer studies, engineering, information technology, management, food safety, and sustainable development, as well as based on their networking capacity and their experience in other international research projects.

MED-LINKS Consortium will develop innovative and theme-specifi c operational methodologies for participative Pilot Actions to demonstrate, test, and evaluate innovative IT and management solutions for FV value chains in the Mediterranean region.

Sustainability certifi cation schemes such as PGS will also encourage the active participation of relevant stakeholders based on networks and knowledge exchange. These certifi cations boost the direct involvement of producers and consumers who can give feedback and state preferences on specifi c products' attributes.

Producer associations, consultants, and experts of the fi eld are also actively involved in the fi rst selection and evaluation of certifi cations and business strategies and the operational activities of the pilot actions together with farmers and consumers.

Obiettivi e contenuti

MED-LINKS aims to provide small-scale producers with tailored and practical solutions to enhance effi ciency, sustainability, and fairness in Mediterranean countries along fruit and vegetable supply chains. MED-LINKS approach is based on the combination of three groups of optimisation tools:

1. Quality and sustainability standards and protocols;
2. Digital platform empowered with blockchain technology (smart contracts);
3. Managerial tools and coordination strategies (i.e., Business Models).

These will be customised based on the actual conditions of local actors participating in three diff erent supply chain systems representative of commercial circuits in the Mediterranean region, namely: a) local Short Food Supply Chains, b) Green Public Procurement, c) Export-Oriented Supply Chains. The project will target and engage local clusters of small-scale producers in Egypt, France, Greece, Italy, and Morocco to enhance their capability to adopt quality, environmental and social standards and thus to connect with other supply chain actors and profitability while meeting final consumers' needs.

Risultati e impatti attesi

MED-LINKS was conceived to improve the business environment of Mediterranean FV supply chains. The successful implementation of the project will be measured against a series of Key Performance Indicators (KPIs), inclusive of the supply chain network, which will identify potential hotspots and provide a mechanism for assessment and control.

EI 1 - New technology tools and business models for market access, suited to local clusters and SMEs, and new generations of young entrepreneurs.

EI 2 - New insights into the competitiveness of local clusters with innovative integrated planning and institutional solutions for sustainability and profitability.

EI 3 - New IT solutions to increase the added value of products from local clusters to lower the transaction costs and increase the competitiveness of the supply chains under evaluation.

EI 4 - Transparencies in fair trade and shortening Agri-food chain beneficial for smallholders. The project will realise a survey on Supply Chains' competitive and value distribution performances.

EI 5: Verified consumer feedback on quality and safety of products from smallholders, locally produced or obtained in inter Mediterranean country trade.SSWM and on major global natural resource issues in the region (CC, food security, biodiversity loss, etc.).

Sezione I / 2020

MEDWHEALTH

Development of new wheat-derived foods of the Mediterranean diet with improved nutritional and health value

Area tematica

Agri-food Value Chain

Azione e Topic

IA - Valorising the health benefi ts of Traditional Mediterranean food products

Budget

1.877.500 €

Durata

36 mesi

Ente coordinatore

Università degli Studi della Tuscia

Coordinatore scientifico: SESTILI, Francesco

Paesi partecipanti

6
Algeria
ITALIA
Libano
Marocco
Tunisia
Turchia

Unità di ricerca

9

Enti italiani partecipanti

2

Consiglio Nazionale delle Ricerche - CNR

Promolog

Contesto

Noncommunicable diseases (NCDs), comprising essential pathologies such as cardiovascular diseases, cancer, chronic respiratory diseases and diabetes, account for most deaths worldwide (71%), making their prevention a signifi cant challenge for sustainable development as planned in the 2030 Agenda.

Among the key risk factors for NCDs incidence, the World Health Organization identified some incorrect dietary behaviors based on the excessive consumption of ready meals, rich in sugar and fat, and low in essential nutrients. In this scenario, it is highly desirable to boost the "Mediterranean diet" (Med-Diet), known to be more beneficial for human health by preventing NCDs, when compared with other dietary patterns.

The health issues associated with incorrect diet habits arising from modern stressful lifestyles have not spared populations in the Mediterranean area. Therefore, it is urgent to adopt actions to answer people's needs for fast foods and the health value of locally traditional diets. For this purpose, MEDWHEALTH will redesign a selection of typical Med-Foods along with a pool of niche-regional foods by using innovative raw materials, namely durum wheat, barley and lentils, products of specific breeding programs focused on the biofortifi cation in healthy compounds such as dietary fiber and proteins.

Obiettivi e contenuti

The fi rst objective of MEDWHEALTH is to improve the nutritional value of durum-based foods that are traditional to the Mediterranean area by using the following innovative materials:

i) high amylose durum wheat, to improve RS content, antioxidant, and anti-infl ammatory properties;

ii) soft durum wheat, to enhance sustainability, nutritional and technological quality;

iii) meal fl ours from other cereals and legumes, to boost mineral, protein and fi ber content.

Another issue is the reduction of anti-nutritional components, such as phytic acid and fl atulence-causing oligosaccharides, as caused by pulse pre-malting. The second objective of the project is to evaluate the eff ects of the innovative Med-Foods on human health. For this purpose, the newly developed products will be tested in clinical studies on subjects with low to moderate symptoms of chronic metabolic and inflammatory disease, where main health parameters will be measured. The last objective of MEDWHEALTH is to identify critical elements practical to manage the future business linked to the diffusion of the new food products. Information and data gathered from fields, laboratories, and pilot processing plants will be used to assess the new products' production costs and environmental impact.

These data are aimed to evaluate the pros/cons of a new value chain based on re-formulated Mediterranean products. Women cooperatives in Morocco, Lebanon, Turkey, Algeria, and Tunisia will be trained on new recipes. Their feedback will be important in refining the products to ensure their acceptance in the local diets. Their active participation in the project is intended to contribute to women emancipation in Med-countries according to gender.

Risultati e impatti attesi

MEDWHEALTH aims to impact the wellness of Mediterranean people by improving health, social and economic conditions. MEDWHEALTH will establish a novel durum wheat-based food chain producing traditional Mediterranean foods enriched in healthy compounds by employing local workers' knowledge and skills, mainly focusing on women, thus contributing to their social power.

A set of foods from Med-Diet re-designed with enhanced bioactive content will be developed: semolina, pasta, couscous, bulgur, freekeh, leavened and flatbreads, snacks (frise and taralli), tarhana (fermented soup base), bsissa, azenbou, boumeghlouth, mermez, biscuits with reduced glycemic index and high protein content. Regarding health, MEDWHEALTH will produce new food products of the Med-Diet with "healthy" attributes, resulting in positive impacts on human health, preventing the onset of NCDs. At social and economic levels, the project will improve the competitiveness of the participant countries across the entire agri-food value chain, providing new market opportunities.

The main stakeholders of the supply chain (e.g., farmers, millers, Med-Foods's producers) will benefit from the availability of products with higher added health. Moreover, the participation of women cooperatives will contribute to increasing decision-making power and leadership for women involved in the project.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - New optimization models of the agro food supply chain system to fair price for consumers and reasonable profi t share for farmers

Budget

888.826 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

Coordinatore scientifico:
BRECCHIA, Gabriele

Paesi partecipanti

4
Egitto
Francia
ITALIA
Tunisia

Unità di ricerca

10

Enti italiani partecipanti

2

Università degli Studi di Perugia

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Sezione II / 2020

ORABBIT2020

Omega RABbit: food for health BenefIT

Contesto

The ratio of omega 6 and 3 fatty acids in the human diet is considered regular about 4/1. In Western countries, the diet is unbalanced, as this ratio ranges from 15-20/1, contributing to increased incidence of cardiovascular diseases, obesity, diabetes, and reducing fertility, especially male fertility.

Considering these data, a strategy that could reduce this ratio is introducing the human diet of products with a high content of n-3. In this context, integrating the animal diet with fl ax and/or algae products with a high content of α-linolenic acid essential precursor of n-3 can improve the reproductive and productive performance, the quality of the meat, and welfare and the sanitary status of the rabbit.

Consequently, the production and consumption of innovative functional food, Ωrabbit rabbit meat, and having a positive impact on health, can lead to an improvement in the nutritional and socio-economic conditions of the populations of the Mediterranean area.

Obiettivi e contenuti

The project has the following aims:

1. to develop specifi c feeds for reproducing and growing rabbits based on the supplementation of linen derived products and algae, to reach a higher n-3 fatty acids content in meat, and to assess the role of "n-3 fi xation booster";
2. to increase the fertility of rabbits to make more effi cient the rabbit farming systems, including in hot climatic conditions also related to "global warming";
3. to improve the sanitary status in the rabbit farms through a higher resistance to infectious diseases, by increasing the immunological response of the animals and thus leading to reduce the use of antibiotics and to improve the animal welfare;
4. to produce a new innovative, high quality and functional food (Ωrabbit meat) that can be produced by SMEs and can link local agricultural producers to urban, national, and international markets;
5. to develop an innovative method of packaging that allows to maintain the quality of Ω rabbit meat and to prolong its shelf-life contributing to its commercialization in the domestic market and also for export (to reverse the import trend in the agricultural sector in some Mediterranean countries);
6. to create a new market and supply food chain (ΩRABBIT Consortium) that includes under its discipli nary and logo, farmers, breeders and research centres that produce Ωrabbit meat as a guarantee of a high quality product and under the principle "from the farm to the fork".

Risultati e impatti attesi

The project plans to create new types of feed for rabbits, integrated with products derived from flax and algae, rich in n-3, capable of improving reproductive and productive performance, resistance to infection (reduction of the use of antibiotics) and animal welfare.

New packaging models will also be developed to maintain the quality of the meat unchanged and extend its shelf-life, favouring its marketing. Finally, the Project plans to create a new functional food enriched in n-3 (Ωrabbit meat) capable of improving human health, produced within a new model of the agri-food chain in the Mediterranean area.

Dissemination of the results can contribute to the launch of this new functional product in the European and world market. The production of Ωrabbit meat can positively impact the local market, exports, and knowledge-based work.

The consumption of Ωrabbit can increase the protein intake in some areas and help balance the n-6/n-3 ratio of the diet in other countries, with beneficial effects on human health. The consortium can give the supply chain the ability to compete with non-EU rabbit producers and, at the same time, guarantees high product quality standards and traceability to the consumer.

Area tematica

Nexus

Azione e Topic

IA - Demonstrating benefits of the Water-Ecosystem-Food Nexus approach in delivering optimal economic development, achieving high level of environmental protection and ensuring fair access to natural resources

Budget

2.998.000 €

Durata

42 mesi

Ente coordinatore

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Coordinatore scientifico: CASTELLETTI, Andrea

Paesi partecipanti

6
Giordania
Grecia
Israele
ITALIA
Spagna
Tunisia

Unità di ricerca

13

Enti italiani partecipanti

3

Università degli Studi di Padova

Consiglio Nazionale delle Ricerche (CNR)

ETIFOR

Sezione I / 2020

LENSES

Learning and action alliancEs for NexuS EnvironmentS

Contesto

In the last decades, signifi cant eff orts have been made to facilitate the understanding of the Water-Ecosystem-Food production nexus as a conceptual approachable to guarantee security in the management of natural resources in line with the principles of sustainable development. Going beyond a scientifi c understanding of the nexus concept, it is necessary to encourage collective learning processes through engagement active, inclusive, and equitable of all decision-makers and stakeholders involved in the management of water resources in agriculture, considering at the same time the results in terms of food production and the protection of ecosystems.

Therefore, what is needed is adequate tools to analyse and manage the synergies between the sectors concerned to obtain integrated and sustainable resources management at the territorial level. The concept of nexus takes place within the constraints of renewable natural resources and recognises complex systems' uncertainty. LENSES will create and mobilise broad partnerships that use tools and methods to support cross-sectoral policies, integrates, and informed decisions on adaptation measures through monitoring and evaluation cycles.

Obiettivi e contenuti

The main aim of LENSES is, therefore, to improve the understanding of WEF systems to reveal their complexity and manage their uncertainty about their dynamic evolution. Address uncertainty and understand is essential for building Nexus sustainable systems and adapting quickly to changes and variations. Through the activation of collective learning, LENSES, therefore, plans to build resilient nexus systems capable of coping with changing context conditions (climate change, social mutations, variation of available technologies), developing adaptive capacities capable of involving everyone: the sectors involved, from the political level to the territorial level, to the business system.

All this favouring mainly a bottom-up approach involving local communities and the various target groups of the company, including businesses. More in detail, in the fi rst phase, the boundaries of the reference system (intrinsic characteristics) will be defi ned by activating processes of organisation and cooperation (LAAs - Learning and Action Alliances) and developing collective learning models (PSDM - Participatory System Dynamic Models) thus defi ning scenarios/strategies shared with stakeholders at various levels.

This proposed approach will be implemented through specifi c case studies in the six pilot areas representative of the leading agricultural and geographical characteristics of the Mediterranean basin. It will consider the specifi cities of the Mediterranean region.

Risultati e impatti attesi

The project's main results will be to contribute to the development of an operational approach to the interconnected management of water-ecosystems-food.

The main results are also to guarantee the feasibility and replicability of the demonstration cases; create strong cross-sectoral links between institutions, including grassroots benefi ciaries and relevant public authorities governing the Nexus approach; allow the achievement of SDGs interconnected with the WEF Nexus concept at diff erent levels of governance; strengthen scientific capacities and the creation of collaborative space in the WEF Nexus perspective throughout the Mediterranean region.

Using participatory approaches to support the development of collective learning processes in decision-making and policymaking will help overcome confl icts in using sectoral resources. By explicitly considering multiple stakeholders' needs, preferences, interests, and objectives, the project results will represent fundamental input for political decision-makers, subjects in charge of territorial planning, bodies managing water resources (basin/district authorities) reclamation consortia.

Area tematica

Nexus

Azione e Topic

IA - Demonstrating benefits of the Water-Ecosystem-Food Nexus approach in delivering optimal economic development, achieving high level of environmental protection and ensuring fair access to natural resources

Budget

2.850.000 €

Durata

36 mesi

Ente coordinatore

Università per Stranieri di Perugia

Università per Stranieri di Perugia

Coordinatore scientifico: NARDI, Fernando

Paesi partecipanti

7
Cipro
Egitto
Francia
Germania
ITALIA
Spagna
Tunisia

Unità di ricerca

13

Enti italiani partecipanti

5

Università degli Studi di Firenze
Politecnico di Milano
Università Sant'Anna di Pisa
Urby et Orbit
Fondazione Eni Enrico Mattei

Sezione I / 2020

NEXUS-NESS

NEXUS Nature Ecosystem Society Solution: Fair and Sustainable Resource Allocation Demonstrator of the Multiple WEFE Nexus Economic, Social and Environmental Benefi ts for Mediterranean Regions

Contesto

Water scarcity, climatic and demographic change stressors impact most of the Mediterranean regions. Governors are called to take important decisions to support a fair allocation of resources, mitigate confl icts and sustain social cohesion while managing socio-economic pressures and support environmental sustainability. Science studies validated methods and data for investigating and quantifying the interlinkages of the Water-Energy-Food-Ecosystem (WEFE) Nexus components providing solid proof of the fundamental importance of embracing a Nexus approach. Nevertheless, WEFE Nexus knowledge and technology transfer is still falling behind. Several technical and non-technical barriers still avoid the transition towards WEFE Nexus approaches.

Multi-Sector (among diff erent economic - growing and often resource competing - sectors), Multi-Disciplinary (merging eff orts of earth/environment and social sciences towards transdisciplinarity) and Multi-Actor (i.e. Multi-Stakeholder also including citizens) cross-cooperation and mutual trust are still lacking in actual water and land management strategies.

Social and economic governing dynamics are still bounded within sector-confi ned decision-making frameworks. Heterogeneous data, different solutions and unbalanced policies characterize water, energy, food and ecosystem management strategies that tend to overlap rather than work in synergy. Stakeholders and citizens are not adequately informed and involved perceiving to receive technological and policy advancements as top-down enforcement, like a burden, rather than understanding their multiple benefi ts towards safer and healthier water, energy, food production.

Obiettivi e contenuti

The NEXUS Nature Ecosystem Society Solution or NEXUS-NESS solution aims to co-produce and co-test with stakeholders WEFE Nexus management plans for fair and sustainable allocation of resources. NEXUS-NESS will produce trans-disciplinary datasets and scenarios that integrate a core WEFE nexus model, based on large-scale WATNEEDS and river basin scale FREEWAT eco-hydrological models for building an operational NEXUS-NESS Service (NNS) transferring science-driven WEFE Nexus knowledge to address real case issues. Multi-Sector trans-disciplinary approaches will empower the NEXUS-NESS solution that will interlink the WEFE Nexus components with a threefold conceptualization of the Ecosystem component (Environment, Economy, Engagement/Society).

NEXUS-NESS will operationalize adopting a WEFE Nexus bottom-up approach in four different climatic, environmental, socio-economic and cultural WEFE Nexus case studies employing Living Lab and Responsible Research And Innovation (RRI) principles (namely the RRI Roadmap).

Four Nexus Ecosystem Labs (NELs) in Italy, Spain, Egypt and Tunisia will be set up. A WEFE Nexus Innovation Ecosystem Approach (IEA) supported by a novel Multi-Stakeholder and User Platform will effectively engage all stakeholders, including the private sector, to create long-lasting Innovation Ecosystems based on collaboration among academia and industry, different levels of the public sector and citizens.

Risultati e impatti attesi

The project NEXUS-NESS has the ambition to conceive, develop, validate and deploy WEFE Nexus Services (NNS) and WEFE Nexus management plans to address real problems co-identified with stakeholders in the four Nexus Ecosystem Labs. NEXUS-NESS will not merely conceive data, guidelines and services on paper to only understand how to tackle the significant challenges. Still, NNS will be effectively tested and demonstrated to lay a basis for realizing real change towards a WEFE Nexus strategy.

The four diverse living labs of Val di Cornia in coastal Tuscany (Italy), the Duero basin (Spain), the Wadi Naghamish (Egypt) and the Wadi Jir basin (Tunisia) will share successful experiences as well as lessons learned from failed attempts engaging a wide range of WEFE Nexus governmental actors and stakeholders. The viability and replicability of the NEXUS-NESS solution will be supported by developing further demonstration cases. A novel WEFE Nexus Forum will support a roadmap for comprehensive awareness and application of the NEXUS-NESS solution to set up a collaborative WEFE Nexus space across and beyond the Mediterranean region.

The project will also pave the way to new market opportunities, strengthen the competitiveness and growth of companies supported by data and tools linked to the WEFE Nexus services and management plans unveiling the multiple socio-economic and environmental benefits for society of mainstreaming Nexus compliant strategies.

Progetti coordinati da unità di ricerca italiane

2021

Area tematica

Water Management

Azione e Topic

RIA - Alleviating Mediterranean water scarcity through adaptive water governance

Budget

1.049.850 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Firenze

UNIVERSITÀ DEGLI STUDI FIRENZE

Coordinatore scientifico:
BRESCI, Elena

Paesi partecipanti

7
Algeria
Egitto
Grecia
ITALIA
Paesi Bassi
Spagna
Tunisia

Unità di ricerca

8

Enti italiani partecipanti

1
Politecnico di Milano

Sezione II / 2021

AGWAMED

Advancing non conventional water management for innovative climate-resilient water governance in the Mediterranean Area

Contesto

The AG-WaMED project aims at unveiling Non-Conventional Water (NCW) future potential to reinforce climate change adaptation in the Mediterranean, by piloting comprehensive and inclusive technological solutions to support multiple stakeholders addressing water scarcity issues.

Obiettivi e contenuti

To achieve this aim, the AG-WaMED project has the following goals within the 3-year duration of the project:

i. Foster participatory and equitable water governance models for Mediterranean catchments which are also socially sustainable and cost-effective, developing innovative procedures for multi-actor stakeholders involvement in selected demo site;

ii. Innovate water resources and crop production systems modelling procedures and Decision Support Systems (DSS) by including NCW as a method for increasing water availability also considering climate change scenarios;

iii. Cover the implementation gap between European, national and international rules and societal and institutional compliance through the definition of integrated watershed management plans in the demo sites and at regional scale;

iv. To exploit and out-scale AG-WaMED approach through communication, dissemination and exploitation, including production of local-, national-, and Mediterranean-scale policies for better land and water governance, water allocation and stakeholders involvement, and including training activities.

Risultati e impatti attesi

In accordance with the expected impacts and priorities of the call, the project will follow the approach fostered by the “European R&I partnership on agroecology living labs and research infrastructures” creating Living Labs where all the relevant stakeholders will evaluate existing NCW solutions (i.e. Managed Aquifer Recharge, Flood spreading structures, Wastewater reuse and Desalination) and will codesign future scenario development through a dedicated software platform (including hydrological modelling, water and crop allocation modelling and socio-economic analysis).

The full process will inform new water allocation models and will produce an innovative framework for improving water governance and reducing conflicts in water-stressed contexts of the Mediterranean.

Sezione I / 2021

SALAM-MED

Sustainable Approaches to LAnd and water Management in Mediterranean Drylands

Area tematica

Water Management

Azione e Topic

RIA - Sustainable soil and water management for combating land degradation and desertification and promoting ecosystem restoration

Budget

2.835.714 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Sassari

Coordinatore scientifico:
ROGGERO, Pier Paolo

Paesi partecipanti

8
Egitto
Francia
Grecia
ITALIA
Marocco
Palestina
Spagna
Tunisia

Unità di ricerca

16

Enti italiani partecipanti

3

Università degli Studi di Firenze

Consiglio Nazionale delle Ricerche, Istituto per la Protezione Sostenibile delle Piante

Primo Principio Società Cooperativa

Contesto

Land degradation and desertification in dryland Mediterranean (MED) socio-ecological systems emerge from the structural coupling of ecological and socio-economic processes in areas where climatic pressures are combined with weak adaptive capacity. Transformational changes require a paradigm shift from a human-centred vs biophysical world dualism to a socio-ecological system perspective. The capacity to restore degraded land or enhance the resilience of endangered socio-ecological systems in the MED drylands requires an integrated approach, combining a top-down process based on new scientific knowledge and tools on critical water-related ecological processes, and a bottom-up process based on enhanced societal capacity, through new social learning spaces, generating opportunities, particularly for young people and women. The sustainability of rural activities in endangered drylands depends on the ability of local stakeholders to adopt systemic innovations, supported by innovative tools and services that lead to timely effective decisions, minimize external inputs and consider soil fertility and water conservation as the best option for encouraging long term investments and provide new business opportunities. The heterogeneity of environmental and social conditions leads to sharp regional differences in water and land use across the MED drylands, requiring tailored solutions to boost sustainable development and prevent or mediate environmental conflicts.

Obiettivi e contenuti

SALAM-MED is designed to identify, test and validate tailored, "nature-based" practical solutions to enhance the resilience of endangered MED dryland socio-ecological systems or to restore degraded ecosystems in arid and hyper-arid land. New knowledge, integrated tools and processes will be co-developed with stakeholders through the Living Labs (LL) across "hotspots" located in Egypt, Greece, Italy, Morocco, Spain and Tunisia, encapsulating a wide range of societal, agricultural, forestry and climatological conditions. The LL validated technologies will facilitate the efficient usage of 'every last drop' of water for civic, agricultural and ecosystem services and enhance the potential of scaling-up at the policy-making level and scaling-out to other MED socio-ecological systems. All relevant stakeholders and end-users will be actively engaged to test the effectiveness of the emerging solutions. The analytical framework of SALAM-MED is based on four pillars sustaining a systemic and transdisciplinary research practice:

P1. The living lab approach based on a social learning process of knowledge-sharing for the knowledge generation.

P2. Co-researching and improvement of new technologies for sustainable land and water management by bridging knowledge gaps on water-related land degradation processes

P3. Exploring, identifying and testing business opportunities based on an extended cost-benefit analysis of a range of context-sensitive management options.

P4. Disseminating SALAM-MED's outcomes to different audiences and scaling out of the solutions for land restoration and the enhancement of socio-ecosystem resilience in MED drylands.

Risultati e impatti attesi

SALAM-MED is designed to positively impact the following dimensions of the socio-ecological complexity of drylands:

• The social dimension promotes active stakeholders' engagement in the LL and participatory water and land resources governance.

• The economic dimension identifies new business opportunities with stakeholders, emerging from the extended cost-benefit analysis and the promotion of public and private investments on the latest solutions for sustainable land and water management.

• Gender dimension, as the project's gender-sensitive approach, will promote job opportunities for women and equal participation in the LL to address the gaps to achieve gender balance in dryland management.

• Environmental dimension, with the scaling out of the practical solutions tested in the LL for water harvesting and ecosystems adaptation to emerging anthropic, ecological and climate pressures.

• Political dimension, as the restoration of degraded ecosystems and improved land productivity, will remove the causes of unemployment and migration of climate refugees and potential environmental conflicts.

• Capacity and knowledge development dimensions, as the LL is designed to provide innovative tools and learning spaces to generate long-lasting learning processes to empower local stakeholders beyond the project duration. LL is designed with and for local stakeholders to take over the process.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.066.341 €

Durata

36 mesi

Ente coordinatore

Università degli studi di Torino

UNIVERSITÀ DEGLI STUDI DI TORINO

Coordinatore scientifico: GASCO, Laura

Paesi partecipanti

6
Germania
Grecia
ITALIA
Marocco
Portogallo
Spagna

Unità di ricerca

6

Sezione I / 2021

ADVAGROMED

ADVanced AGROecological approaches based on the integration of insect farming with local field practices in MEDiterranean countries

Contesto

The intensification of current agricultural production systems is one of the primary drivers of biodiversity loss. Currently, biodiversity loss is accelerating globally, with agriculture and animal production being primary causal agents.

The main components of agricultural intensification that have been identified to affect biodiversity negatively are the loss of natural habitats by conversion to agricultural land, the large field and farm size, and the extensive inputs of chemical fertilizers and pesticides. The increasing demand for agricultural land over the past 50 years to cover the nutrient needs of a continuously growing population has led to considerable natural habitats destruction with direct negative impacts on biodiversity. The large size of agricultural farms is also related to decreased habitat heterogeneity at the farm level.

Finally, the extensive use of plant protection products and the widespread contamination of ecosystems with pesticides and synthetic fertilizers are also responsible for the deterioration of biodiversity in agricultural farming systems. Therefore, urgent systemic changes in the current farming practices are needed to address this issue. Integrating agroecological practices with current agricultural farming systems could offer a sustainable means to conserve and enhance the endangered farming biodiversity and increase ecosystems services.

Obiettivi e contenuti

ADVAGROMED aims to develop a “new”, innovative, holistic agricultural production system based on agroecological principles and circular economy practices. ADVAGROMED introduces sustainable farming practices to increase the resilience of the agro livelihood systems. Using a multi-actor approach, ADVAGROMED applies the Circular Economy / zero waste principle developing a sustainable and innovative farming system in the Mediterranean Area. ADVAGROMED uses by-products of local agricultural productions for rearing insects (Hermetia illucens and Tenebrio Molitor), which deliver different products:

1) insect frass to be used as fertilizer to improve farm soil quality, enhance plant health and soil microbial biodiversity, and deliver an antimicrobial effect (decreasing the use of inorganic fertilizers and pesticides),

and 2) live larvae to feed local poultry breeds ensuring good animal performances, health and product quality, decreasing the use of imported feeds. Biodiversity is promoted at various levels, i.e. at the farm level, by using the genetic variability of local crops and varieties/animal breeds, but also at a regional level by minimizing the negative impact of synthetic pesticides on the microfauna through the exploitation of insect frass as biopesticide and plant immune modulator.

This innovative farming system aims to be adopted by small farms, generating additional income for farmers across the Mediterranean.

Risultati e impatti attesi

ADVAGROMED research activities:

• help the Mediterranean agricultural production systems to make better use and exploit locally available resources, such as the agricultural side-streams, for the local production of feedstuff rich in nutrients (insect) to decrease the dependency on imported ones;

• improve economic and social resilience of Mediterranean smallholder farming systems to climate change through the valorisation of agricultural by-products, the production of new products to enhance the quality of soil or use as poultry feed. ADVAGROMED offers local farmers an alternative farming system with small failure risks to generate entrepreneurship, employment, and income;

• contribute to the zero-waste farming systems;

• decrease the use of chemical inputs and develop alternative solutions: insect frass is used as sustainable bio fertiliser, biopesticide and plant immune stimulant, offering a sustainable solution for fertilisation;

• increase the stability and resilience of Mediterranean smallholder farming systems by properly exploiting locally available organic side-streams and their up-cycling and bioconversion to nutrients (insect biorefinery);

• engage youth and empower women using a participatory approach. ADVAGROMED equips skilled youth/women to increase their employability to access meaningful and sustainable employment and self-employment through entrepreneurship;

• encourage consumption of food produced using more sustainable practices.

Sezione I / 2021

AGRECOMED

New AGRoecological approach for soil fertility and biodiversity restoration to improve ECOnomic and social resilience of MEDiterranean farming systems

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

920.165 €

Durata

36 mesi

Ente coordinatore

Università degli Studi della Basilicata

UNIVERSITA' DEGLI STUDI DELLA BASILICATA

Coordinatore scientifico: PERNIOLA, Michele

Paesi partecipanti

4
ITALIA
Marocco
Spagna
Tunisia

Unità di ricerca

8

Enti italiani partecipanti

2

Università degli Studi di Bari Aldo Moro

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA

Contesto

The European Green Deal represents a challenge that engages the whole scientific community. It aims to support agricultural production and the economy through an ecological approach (ecological transition). The Farm to Fork strategy (EC, 2020), an essential component of the European Green Deal, aims to increase the sustainability of the European agri-food system through environmental and social goals to be achieved by 2030. In addition, it focuses on promoting sustainable food consumption, intensifying the fight against food waste, making more significant investments in research and innovation, and promoting the transition to sustainable agri-food chains. The agroecological approach has a solid territorial connotation beyond the ecological and agronomic aspects and includes the social, economic and cultural dimensions and the agri-food system policy. Indeed, the proposal on the standard agricultural policy (CAP) for the period 2021-27 gives prominent importance to increasing the sustainability of the agricultural sector through an agroecological transition, which, together with the economic and social development of rural areas and the competitiveness of farms, should contribute to achieving the environmental and climate objectives of the European Union and the Mediterranean area.

Obiettivi e contenuti

The main objective of the AgrEcoMed project is to fill the research gaps for implementing a biodiversity-based strategy for primary crops as cereal farming systems through an Agroecological approach adapted to environments in Mediterranean countries, efficient use of natural resources, reduction of pollution, circular economy. Such a goal will be achieved through innovative approaches to support the sustainable production of staple foods in the present and future climate changes.

The objective will be achieved through:

1. Sustainable agricultural practices and restoration of soil fertility;
2. Increase and valorise the natural biodiversity of ancient grains and reintroduce local wheat or old varieties, better adapted to climate change in Mediterranean conditions;
3. Farming and screening of alternative species (medicinal plants);
4. Management of crop residues and processing and valorisation of farming crop residues;
5. The valorisation of crop residues and by-products of the agricultural chain through bioconversion by the Diptera (Hermetia illucens);
6. Addressing the economic potentiality and viability of agroecological transition;
7. Valuation of agroecological farming systems' environmental and economic assessment (LCA) concerning the conventional one;
8. Fostering women empowerment and youth employment.

The project aims to up-scale field practices based on agroecological practices to increase ecosystem services and biodiversity, adapt the small farming systems to climate change, and increase farmers' income.

Risultati e impatti attesi

The expected impacts concern the environmental, social and economic benefits for farmers and local communities and the improvement of resilience to climate changes in the Mediterranean regions. In detail, the expected impact will be on:

- A more sustainable agriculture and food production system with more efficient use of natural resources and better resilience to climate change, adaptation and mitigation.
- Improved economic and social resilience of Mediterranean smallholder farming systems to climate change.
- Contribution to the zero waste farming systems and new bioconversion of cropping residues in a frame of the circular economy.
- Decreasing the use of chemical inputs and developing alternative solutions (new bio-based products, techniques, and policies).
- Increasing income of the farmers from biodiversity use.
- Fostering the empowerment of youth and women.
- Greater presence of qualified farmers in the agriculture sector and the Mediterranean area.

It is expected that the AgrEcoMed project will be able to: 1. facilitate the adoption of innovation; 2. optimise the use of resources through the development of more effective and efficient management systems; 3. improve marketing systems, with the definition of innovative business models; 4. defining new skills that can constitute, especially for young people and women, and employment and permanence opportunity in the most disadvantaged regional internal areas.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

577.800 €

Durata

36 mesi

Ente coordinatore

Università di Camerino

Coordinatore scientifico:
VITTORI, Sauro

Paesi partecipanti

3
Algeria
ITALIA
Spagna

Unità di ricerca

4

Enti italiani partecipanti

1
Consiglio Nazionale delle Ricerche - CNR

Sezione II / 2021

AGRIFISH2021

Circular economy application: from the field to the net. Sustainable and innovative feeds from agricultural wastes for a resilient and high-quality aquaculture

Contesto

The Agrl-fiSh project proposes the adoption of an innovative farming system, which directly links agriculture with aquaculture productions through circular economy principles, to respond to the environmental and socio-economic challenges face by climate change in the Mediterranean region.

The project focuses on the innovative use of the waste products of the agriculture sectors as a resource for aquaculture. The wastes analyzed within the project will derive from organic and climate-smart agriculture and will be used for the testing of innovative feeds for freshwater aquaculture in Algeria, Italy and Spain. The nutraceutical potential of defined wastes, such as grape seeds and pomace, cereals and legumes, will be assessed together with the potential for the use of natural antimicrobial substances to be added to the feed.

To date wastes produced by wine, processing are currently only used for livestock feed and have demonstrated a high-quality potential due to a significant presence in lipid, protein, carbohydrate, and other nutraceutical biocompounds.

Obiettivi e contenuti

The project inscribes in the Call 2 - Thematic Area 2- Farming systems - Topic 2.2.1. and proposes an innovative model with a mixed farming system, which focuses on the valorisation of the local dimension of the farming and production systems. It will serve for better management of natural resources throughout the development of a virtuous system, which will help in reducing discards and pollutants, and develop better and efficient use of resources and freshwaters, while limiting the use of antibiotics and pesticides along the entire process.

The overall aim of the project will be to contribute to the national and European strategies in mitigating and adapting to climate change and is in line with the Green Deal. It will reduce the environmental footprint of the aquaculture sector, create new social and economic potential at the local levels, and enhance the competitiveness of the sector. Agriculture and aquaculture will be directly linked, enhancing their mutual potentials in a circular process, and strengthening the sustainability of the local communities.

The project will contribute to cooperation, knowledge sharing and capacity building enhancement among different supply chains, such as winery and agriculture, milling, feed production, and aquaculture, which will mutually benefit from the support of the research community.

Risultati e impatti attesi

The project will upscale the valorization of such agricultural wastes to the creation of sustainable feeds for aquaculture. In addition to the wastes, the feeds will be composed also of the percentage of medicinal plants and lactic acid bacteria (LAB) from goat whey discards, with the scope to reduce the use of antibiotics for disease control in aquaculture and strength the immune system of fish.

The nutraceutical potential of such wastes, in combination with other bio components (e.g. whey, cereals, medical herbs), will foster animal and human health with consequent benefits for the environment and society. In fact, the nutritional potential of the wastes is significant and such concentration of substances has shown to be useful for human health also with indirect consumption.

The Agrl-fiSh project will contribute to the transition to a more resilient agro-system through an innovative and sustainable farming system, which promotes efficient use of biological and natural resources with an increase in productivity, with consequent benefits for the local economies. At the environmental level, the project is conceived to be resilient by preventing form pollutant discards; limiting the use of animal feeds and promoting instead vegetal components for aquaculture feeds; limiting the costs of agricultural discards; and promoting sustainable agriculture.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.582.799 €

Durata

36 mesi

Ente coordinatore

Consiglio Nazionale delle Ricerche - CNR, Istituto per la Protezione Sostenibile delle Piante - IPSP

Coordinatore scientifico: GUERRIERI, Emilio

Paesi partecipanti

8
Algeria
Grecia
ITALIA
Marocco
Portogallo
Spagna
Tunisia
Turchia

Unità di ricerca

15

Enti italiani partecipanti

2

Università del Piemonte Orientale Amedeo Avogadro

Università di Catania

Sezione II / 2021

ASTER

Agroecology-inspired Strategies and Tools to Enhance Resilience and ecosystem services in tomato crop

Contesto

Tomato is a crucial crop worldwide, particularly in the Mediterranean Basin. Its market value in the EU represents about seven billion euros. Italy, Spain, Greece, and Portugal contribute over 90% to EU production. Turkey is the fourth largest tomato producer of the world tomato production. In the north of Africa, tomato is the main crop in Morocco and Tunisia whilst constantly expanding in Algeria. Tomato can be grown in an open field or protected conditions, and short or long production periods can be possible due to the large availability of commercial varieties. Regardless of the type of cultivation or the duration of the cycle, increasing quantities of external inputs (pesticides, fertilisers, herbicides) are required to cope with:

i) nutrition issues linked to the deployment of the soil;

ii) resident and invasive species made more aggressive by the climatic change and the development of resistance to pesticide;

iii) water limitation which is more critical in arid and semi-arid climates of the Mediterranean area due to climatic change.

An emerging issue is the decline of pollinators, whose role in enhancing tomato production has been widely recorded. In small farm systems, ecosystem services, such as plant nutrition, pollination and naturally occurring biocontrol, are much needed since they all improve yield and quality while limiting the external inputs. The agroecological approach, whose main pillars are the conservation (protection), the enhancement and exploitation of functional biodiversity, the sustainable protection from biotic and abiotic stresses, and the production chain's circularity, offers efficient solutions that progressively reduce the external inputs and the management costs.

Obiettivi e contenuti

ASTER aims to build up a management model for small tomato producers of the Mediterranean Basin based on the application of main agroecology principles such as:

- the protection (conservation) and the enhancement of functional biodiversity both above and belowground, to increase and exploit the ecosystem services (protection, nutrition, pollination) in alternative to the use of external synthetic inputs;
- the sustainable control of main pests and pathogens to reduce the environmental impact of plant protection practices;
- the circularity of the production chain to approach the "zero waste" objective. The model will improve the resilience of this entire crop in the economy of all Mediterranean Basin countries where it can be grown in an open field or protected systems, during the whole annual season, particularly in small farms.

Four specific objectives (SO) and relative ways to realise them have been identified:

- SO1 (WP1, WP6) Develop a two-way exchange of information between academic groups and stakeholders through an interactive platform;
- SO2 (WP2, WP3, WP4) Design field interventions to protect, enhance and exploit the functional biodiversity and plant defences for improving ecosystem services, resilience and sustainability;
- SO3 (WP5) Validate protocols for maximising ecosystems services and stability by considering their environmental, economic and social sustainability;
- SO4 (WP1, WP6) To ensure effective coordination, communication dissemination and formation.

Risultati e impatti attesi

ASTER promotes specific tools (root symbionts, biobased tools) and strategies improving the use of resources (water, nutrients), the adaptation to climate change (e.g., drought, invasive species) and the environmental conditions for rural populations. Conservation, increase, and exploitation of functional biodiversity will foster the tomato crop system's sustainability and resilience in the top world productive countries, all located in the Mediterranean Basin. ASTER targets small farmers by promoting a management model based on crop diversification that guarantees an enhanced resilience in response to social, economic, and environmental stresses, particularly those linked to climatic change. The ASTER model generates extra income by reducing external inputs and specific companion plants (as replaced by ecosystem services). The support received by a large certification company (Agroqualità s.p.a., Italy) shows how the ASTER model is considered reliable and feasible. ASTER promotes the use of symbionts, antagonists, bio-based tools, and strategies to dramatically reduce the dependence on chemical inputs (pesticides, fertilisers, herbicides). ASTER devoted a specific WP to dissemination and formation that involves from the beginning the stakeholders (P8 and nineteen supporters including leading farmers associations and one certification agency) via the interactive platform (SIP) to widely publicise its results via web, social channels, videos and on-site meetings, didactic farms.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

833.736 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Pavia

UNIVERSITÀ DI PAVIA

Coordinatore scientifico:
BALESTRAZZI, Alma

Paesi partecipanti

8
Algeria
Francia
Germania
Grecia
ITALIA
Marocco
Portogallo
Tunisia

Unità di ricerca

11

Sezione II / 2021

BENEFIT-MED

Boosting technologies of orphan legumes towards resilient farming systems in the Greater Mediterranean Region: from bench to open field

Contesto

The current Climate Change scenario predicts that global warming will dramatically impact the Mediterranean Basin, posing added threats to the sustainability of current farming systems. Pulses provide balanced nutrition combined with high resilience to drought, soil acidity and salinity, and heat, adding value to rotation systems and intercropping and supporting sustainable agricultural practices. In this Context, orphan legumes are a biodiversity niche adapted to extreme soil and climate conditions, tailored to face changing environments. There is limited information about orphan legumes' characteristics, use, integration into farming systems, and sustainable treatments to enhance their climate resilience and productivity further. The value of orphan legumes as climate-ready crops could be significantly enhanced by improving seed quality through dedicated priming techniques. Based on these premises, the BENEFIT-Med project focused on improved seed germination as a starting point to valorise orphan legumes and promote local socio-economic development in North Africa and the Mediterranean area. Enhanced germination capacity defines high-quality seeds as a proxy of successful crop yields, and a well-structured seed system is required to boost the production and use of orphan crops.

Obiettivi e contenuti

BENEFIT-Med aims to develop innovative technology for sustainable crop production, relying on highly resilient legume accessions and 'on-farm' seed biopriming with bacteria inoculants to enhance seed vigour and seedling performance under pressure adverse climatic conditions. The availability of primed seeds of Mediterranean orphan legumes will improve food production at the local level and buffer economic/social/environmental shocks, supplying higher incomes to smallholder farmers, particularly women. In this Context, open-field trials will be set up to assess the impact of priming on agronomic performance and yield stability of the target accessions while climate change and variability on existing and new farming systems will be quantified. Local legumes will also be valorised as components of a resilient and sustainable food system whose relevance has been dramatically shown by the COVID-19 pandemic. A database will be set up to integrate the available data on orphan legumes with knowledge gathered by BENEFIT-Med. A multi-stakeholder platform will be set up to promote the new farming system at multiple levels (participatory model), focusing on specific training/ability building activities. The farmers' socio-economic benefits from the BENEFIT-Med model implementation will be shown through LCA/LCC analyses, highlighting profitability, resilience, and environmental sustainability.

Risultati e impatti attesi

The anticipated effects of BENEFIT-Med will include:

- Increased food/feed availability by minimising the risk of crop failure and yield losses due to inappropriate farming models, despite climate worsening.
- Adoption of environmentally, socio-economically sustainable agroecosystems with proven evidence of increased yield stability and quality compared to current farming systems under challenging environments.
- Increased efficiency of using natural resources; the orphan legumes addressed by BENEFIT-Med show inherent tolerance to water deficit, a trait that will be further enhanced by seed priming with beneficial bacteria; the incorporation ofdrought-resilient crops into farming systems will increase the efficient use of water.
- Increased soil fertility. Legumes fix atmospheric nitrogen, reducing the cost of fertiliser inputs; legume seeds primed with beneficial microorganisms are expected to improve soil fertility when universally used in farming systems.
- Yield stability and quality compared to standard farming systems under challenging environmental conditions; stability of agricultural outputs in the long-term and across different spatial environments is crucial to define the success of a new farming system.
- Increased income and satisfaction by the farmers.
- Promote the circular bioeconomy approaches to achieve local populations' sustainable growth and economic resilience.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.085.571 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Perugia

Coordinatore scientifico: PROIETTI, Primo

Paesi partecipanti

6
Francia
ITALIA
Libano
Marocco
Spagna
Tunisia

Unità di ricerca

11

Enti italiani partecipanti

2

Consiglio Nazionale delle Ricerche - CNR, Istituto di Bioscienze e Biorisorse

Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile - ENEA, Divisione Biotecnologie e Agroindustria

Sezione II / 2021

BIOMENEXT

Modelling integrated biodiversity-based next-generation Mediterranean farming systems

Contesto

Mediterranean fruit groves will be affected by climate change due to decreasing water availability, rainfall, irrigation resources and progressive salinization, and extreme climate events, leading to reducing suitable crop areas, lowering yields and obtaining poor-quality food products. To support fruit production in the Mediterranean in a context of resource reduction, extreme climatic events and loss of biodiversity.

It is urgently needed to develop alternative and innovative approaches to valorize the genetic and environmental resources available at the field level based on a holistic approach. Olive, the most typical fruit crop of the Mediterranean basin, could represent a model system for studying new cultivation strategies and testing their application to improve plant production and reduce pollution, resource consumption and genetic erosion. We aim to demonstrate that it will be possible to sustain plant production and guarantee farmer incomes by exploiting biodiversity, adapting farming systems to face climate change and increasing ecosystem services.

Obiettivi e contenuti

The BIOMEnext overall objective is to implement innovative, composite and eco-friendly farming systems to enhance the resilience of Mediterranean fruit farming to climate change, a significant challenge for agriculture. The project aims to design an olive grove that combines, in a holistic logic, the valorization of traditional genotypes showing the best resilience traits, the development of new microorganism consortia, able to increase biotic and environmental stress tolerance and the introduction of new practices and remodel the traditional ones, to reduce external inputs and negative discharges to the environment. The proposed new olive growing models will aim to maintain high quantitative and qualitative production levels, even in limiting environmental contexts, in a logic of increased sustainability. These models will be evaluated under a circular economy and an LCA approach for socio-economic and ecological impact. The models developed in the project can be replicated, with appropriate adaptations, to other Mediterranean fruit species. Accordingly, the BIOMEnext specific objectives include:

- valorize local unconventional varieties and wild olives from extreme environments and develop new stress-tolerant and eco-friendly hybrids;
- identify microbial consortia able to enhance abiotic stress tolerance and improve plant nutrition at the whole field level;
- develop new efficient farming systems and remodel traditional agricultural practices, able to reduce water and chemical inputs, limit emissions and enhance CO2 sequestration;
- assess environmental and socio-economic impacts of newly developed crop systems.

Risultati e impatti attesi

A wide range of technologies will provide small farmers with tools to face the new challenges brought about by ongoing climate change and the excessive use of energy-intensive technologies; Reconversion of agriculture enhancing local natural resources, more resilient to adverse abiotic conditions; Software applications, indicators and diagnostic tools to optimize the composting process and the irrigation water management, to enhance the circular economy and simplify the olive cultivar recognition; New formulations of microorganisms and microbial inoculants specifically selected from extreme environments, or previously selected for other crops, to improve the productive and vegetative performance of trees and increase their resilience to environmental stresses; The reintroduction of autochthonous weeds into cultivation and the association with cover crops, particularly adapted to particular environmental conditions, not competing with fruit trees during the crucial phenological phases (e.g. flowering, fruit development), making it possible to improve soil conservation, reducing mechanical interventions and decreasing the use of chemicals; Impact evaluation on different agro-systems, genotypes, plant/microbes and plant/ plant associations, in terms of Carbon Footprint, Water Footprint, Life Cycle Cost and Life Cycle Assessment, allowing to define which factors most affect environmental sustainability, to guide choices towards most environment-friendly practices and reduce farming wastes; Investigation on farmers' attitudes and motivations, allowing to selection the most effective farming models; Estimation of environmental sustainability of farming systems, contributing to increasing the social concern about food consumer's attitudes and driving consumers towards environmentally sustainable products, respectful of biodiversity conservation, environment protection and well-being and livelihoods of producers.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.332.706 €

Durata

36 mesi

Ente coordinatore

Alma Mater Studiorum Università di Bologna

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Coordinatore scientifico:
MORANDI, Brunella

Paesi partecipanti

5
Francia
Grecia
ITALIA
Marocco
Spagna

Unità di ricerca

8

Sezione II / 2021

DREAM

Diversified orchards for REsilient and sustAinable Mediterranean farming systems

Contesto

The current climate change scenario foresees several risks such as the increased frequency of extreme weather events, abiotic stressors, reduced biodiversity, soil quality loss, and pollination deficit. Modern orchards are generally highly intensive systems, primarily relying on considerable chemical inputs and low plant diversity, resulting in reduced natural habitats, progressive loss of biodiversity, wild pollinator decline and consequent pollination deficit.

These conditions make modern orchard systems much more vulnerable to climate change and market fluctuations than annual crops due to their perennial behaviour and long life span, which expose them to higher risks. This scenario leads to high economic instability for all farmers, but especially for smallholders, jeopardizing Mediterranean fruit production's current and future sustainability.

Therefore, it is essential to introduce new alternative approaches to improve the resilience of fruit farms to climate change-related risks while maintaining their economic, environmental and social values within the Mediterranean basin.

Obiettivi e contenuti

DREAM aims at providing Mediterranean fruit growers with an alternative new cultivation approach for high quality and diversified fruit production to improve resilience, functional biodiversity as well as environmental and economic sustainability of small farming systems. The DREAM agroecosystem will be characterized by the following basic principles which go beyond conventional agricultural systems:

i) a multi-variety orchard with different, scalar fruit varieties and exploiting a range of genetic resistance to biotic and abiotic stressors;

ii) consociation with a cover crop mixture, able to prolong blooming, increase soil nutrients and water status, attract natural enemies and repelling phytophagous insects by attracting natural enemies;

iii) adoption of Regulated Deficit Irrigation strategies, aimed at increasing the system water use efficiency, as well as improving fruit quality.

The new agroecosystem will be co-designed with the help of local living labs to adapt it to local environmental, economic and social conditions in three fruit-producing areas: Italy and Morocco for apple and Spain for pear, thus reflecting the local fruit economy. The new agroecosystem will be tested in each site regarding physiological and productive efficiency, biodiversity level, farm economic stability, and ecosystem services. The agroecosystem will be managed using the "Integrated Pest and Pollinator Management paradigm" (IPPM), a new approach that aims to enhance Integrated Pest Management (IPM) compatibility with crop pollination management.

Risultati e impatti attesi

DREAM responds to the challenge of developing a novel cultivation approach to adapt the small farming systems to climate change, increase farmers' incomes as well as their ecosystem services and biodiversity. This new approach, particularly suited to small farm holdings, will enhance functional biodiversity and the beneficial synergies among the different species (i.e. trees, herbaceous crops, pollinating insects, soil microbiome). It will promote using a low level of inputs such as water, fertilizers and chemicals, reducing the environmental pollution.

Thanks to the natural resistances of the fruit genotypes and their scalar vegetative cycle, it will allow a diversified production and higher resilience to extreme weather events such as frost, hailstorms, and heatwaves biotic stressors. The project will follow a multi-actor approach as growers, fruit cooperatives and consultants, and consumers, with particular attention to women and youth, will be involved in living labs to actively contribute to the adaptation and possible adoption of the DREAM agroecosystem in the different sites.

Studies on consumer acceptance and alternative marketing strategies for the derived niche products will also be conducted to guarantee higher revenues for the growers and improved economic stability at the farm level.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.479.069 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Palermo

Coordinatore scientifico: CUSUMANO, Antonino

Paesi partecipanti

7
Algeria
Germania
Grecia
ITALIA
Marocco
Tunisia
Turchia

Unità di ricerca

10

Enti italiani partecipanti

1
Università degli Studi Mediterranea di Reggio Calabria

Sezione II / 2021

ECOBOOST

Boosting functional biodiversity to maximize ecosystem services for Mediterranean crop production

Contesto

Crops are currently managed with unsustainable practices that cause the loss of biodiversity. In particular, pest management in the Mediterranean region still largely relies on chemical pesticides that negatively affect beneficial insects, disturb healthy microbial communities in the soil, threaten agroecosystem stability and food security. Novel strategies alternative to chemical control are required to combat biotic and abiotic stresses in the most efficient and environmental-friendly manner. Implementing agroecological practices that boost functional biodiversity and maximise ecosystem services is an eco-friendly and promising alternative to pesticide use in agriculture. Yet, agroecological practices, in addition, to being respectful of the environment, need also to preserve farmers' income. It is becoming increasingly evident that functional biodiversity has to be promoted in multiple ways. For example, biodiversity at the crop level (crop biodiversity) holds great potential for Mediterranean agriculture: by rediscovering local varieties that cope well with abiotic and biotic stresses, external energetic inputs can be minimised. Another critical component of biodiversity is represented by beneficial arthropods that deliver the ecosystem services of pollination and pest control (aboveground biodiversity). Finally, an essential source of biodiversity is hidden in the soil of the farms (belowground biodiversity) since soil constitutes the main reservoir of microorganisms and provide several functions to support agriculture.

Obiettivi e contenuti

ECOBOOST with developing and validating novel agroecological practices that boost functional biodiversity and maximise ecosystem services in solanaceous crops while minimising the negative environmental impacts of agriculture. This goal will be achieved following a holistic approach that will provide Mediterranean farmers with the knowledge and tools needed to implement agroecological practices and promote biodiversity at different levels: a) aboveground, with the use of wild flowering plants in non-managed habitats to promote beneficial insects; b) belowground, with the use biostimulants for seed coating and soil inoculation with selected critical microbes to promote soil and crop health; c) at crop biodiversity level with the exploitation of germplasm of solanaceous crops, by screening local varieties/breeds which are adapted to biotic and abiotic stresses that occur under Mediterranean conditions. To reach ECOBOOST objectives, a combination of laboratory and small experimental assays will identify the most promising wild Mediterranean plants, microbial stimulants and local varieties of solanaceous crops. Then pilot demonstration trials targeting end-users (farmers, SMEs) directly will validate the effect of the previously identified candidates as tools to improve the resilience of small-scale Mediterranean farms. In addition, ECOBOOST will increase public awareness of agroecological practices and carry out environmental and socio-economic analyses to assess the impact of their implementation in agriculture and the determinants of the acceptance by end-users.

Risultati e impatti attesi

ECOBOOST will produce new knowledge, tools and services to promote functional biodiversity and maximise ecosystem services for crop production.

ECOBOOST's new knowledge may be summarised as:

- how to manage complex interactions that occur at the farm scale among trophic levels (microbe-crop-pest-beneficial organisms);
- increased understanding of the genetic bases of crops programmed for a fastresponse against pest attack.

ECOBOOST's new tools may be summarised as:

- identification of tomato/eggplant/pepper local varieties (landraces) that are resistant to salt, nitrogen-limiting stresses and pests;
- effective soil microbes that boost plant growth and defences;
- wild Mediterranean plants that attract natural enemies and pollinators.

ECOBOOST's new services may be summarised as:

- online platform to inform stakeholders about the results of the project about the proposed innovative tools, its long term beneficial effects on health and agricultural productivity;
- mediterranean network of scientists and stakeholders working on innovative methods/tools to sustainably control in tomato, eggplant and pepper;
- online platform to inform farmers about the risks associated with pesticide use, the alternative eco-friendly solutions to pesticides and the risk farmers might face in the future about climate change and extreme climate events.

It is expected that implementing the proposed agroecological practices will increase the stability of the agroecosystems and, therefore, reduce the costs that farmers incur to control pests, thus increasing farmers' income and zero-pollution ambition in the Mediterranean countries.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.340.320 €

Durata

36 mesi

Ente coordinatore

Università degli Studi della Basilicata

Coordinatore scientifico:
BRIENZA, Monica

Paesi partecipanti

8
Algeria
Francia
Grecia
ITALIA
Libano
Marocco
Spagna
Tunisia

Unità di ricerca

12

Enti italiani partecipanti

2

Consiglio Nazionale delle Ricerche - CNR, Istituto Ricerca sulle Acque

Università di Roma La Sapienza

Sezione II / 2021

SAFE

Sustainable water reuse practices improving safety in agriculture, food and environment

Contesto

Smallholder farmers are globally the main producers of food. In Mediterranean countries, smallholders provide from 60 to 80 per cent of the food. Due to the increase of the world population, these farmers are under growing pressure to enhance their productivity and ensure food security and safety, especially for rural poor regions. Among numerous stressors that make farming increasingly difficult (e.g., climate change, land degradation, post-harvest losses), water scarcity is one of the significant challenges. Water reuse for agricultural field irrigation may be feasible to mitigate water scarcity. However, direct reuse may risk introducing organic micro-pollutants, excessive content of nutrients, and/or increased soil salinity. Thus, agricultural crop production, quality of produce, and soil quality can suffer the consequences of inadequate reuse practices. Improving the quality of reused irrigation water will improve food safety and security, preserve the biodiversity and microorganisms in the soil, and increase the crop yield of small farmers. There is an urgent need to help farmers increase yields through good quality wastewater effluent recycling for irrigation, soil and pest management, access to a better quality of salinity resistance plants, and improved agricultural practices (i.e. irrigation, fertiliser use, grafting).

Obiettivi e contenuti

SAFE will optimise the proposed water reuse strategies, ensuring their safety for the environment and human health. The developed engineering strategies will increase sustainability, decrease water stress, and fulfil farm necessities. These strategies will boost the local economy of agricultural regions. Main specific objectives are:

• Development, test, and validate novel low cost and low energy urban decentralised wastewater treatments to enhance renewable water supply.

• Evaluation of wastewater treatments impact on plants/crops performance using modern -omics tools.

• Study the impacts on local biodiversity and its co-benefits.

• Promotion of environment respectful practices like pest management by biofertilisers such as Trichoderma sp., including knowledge transfer for their practical implementation.

• Safety evaluation related to the proposed approaches, including monitoring emerging pollutants, in water, soil, and produced crops.

• Development of general management models to simulate local and decentralised agroecological practices in several scenarios.

• Optimisation of the implemented approach in techno-economic analysis, environmental impact, and local feasibility.

• Local promotion of the proposed solutions regarding farmers' acceptability and valorisation of their economic value.

Risultati e impatti attesi

SAFE will tackle innovation capacities, increase the state of knowledge, and develop innovative solutions for the sustainable management of agro-food systems. Benefits will result from integrated water provision in the Mediterranean area. SAFE provides a more sustainable agricultural production system with more efficient use of natural resources and better climate change resilience. The innovations developed by SAFE (for low-cost wastewater treatments and respectful practices) increase crop performance and water quality and improve the economic and social resilience of Mediterranean smallholder farming systems to climate change. Quantity and quality of available water will be more consistent compared to surface water achieving reduced production costs (-10%), sustained agricultural production (+15%) and an associated increase in employment opportunities (+20%). Furthermore, these strategic practices will reduce cultivation costs (-10%), overall water consumption (-35%), and treatment needs for pumping & importing water, building dams, seawater desalination (-15%). Mediterranean smallholders adopting innovations developed in SAFE will increase their incomes by 40%, achieved by a combination of higher yields and reduced production costs for water, nutrients, fertiliser and pesticides while ensuring food security and certification of products. SAFE will encourage the consumption of food produced using more sustainable practices and contribute to the zero-waste farming systems' target.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

964.600 €

Durata

36 mesi

Ente coordinatore

Università Politecnica delle Marche

UNIVERSITÀ POLITECNICA DELLE MARCHE

Coordinatore scientifico: AQUILANTI, Lucia

Paesi partecipanti

5
Croazia
Francia
ITALIA
Tunisia
Turchia

Unità di ricerca

8

Enti italiani partecipanti

2

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA, Centro di Ricerca Alimenti e Nutrizione

RINCI Srl

Sezione II / 2021

SEAFENNEL4MED

Innovative sustainable organic sea fennel (Crithmum maritimum L.) - based cropping systems to boost agrobiodiversity, profitability, circularity, and resilience to climate changes in Mediterranean small farms

Contesto

The project objective deals with the introduction of Mediterranean sea fennel (C. maritimum L) germplasm well adapted to climate change and Mediterranean conditions (water shortage, low soil fertility, high salinity) for the development of new sustainable organic cropping systems, able to increase the resilience of the agro livelihood system based on agroecological principles, that contribute to the zero-pollution ambition, and to cope with limited resources and environmental constraints, with the final objectives of enhancing food production stability over time as well as increasing farmers' incomes.

Obiettivi e contenuti

Specific objectives of the project are:

i) selection of sea fennel ecotypes, well adapted to the Mediterranean climate;

ii) introduction of sustainable farming systems for the production of organic sea fennel crops in the Mediterranean;

ii) development of new/improved high-value products from the organic sea fennel crops;

iii) valorization of sea fennel by-products for the production of functional food ingredients/nutraceuticals/soil amendments;

(iv) demonstration of socio-economic benefits, environmental impacts and sustainability of the proposed innovations;

(iv) dissemination of sustainable halophyte-based cropping solutions and products in the Mediterranean.

These objectives will be reached thanks to a strong synergy between 9 Partners from 6 Mediterranean countries, including Public Universities and Research Institutes, a Research Foundation, a farm producing sea fennel crops and sea fennel-based foods. Different test sites across the Mediterranean will be used for the selection of sea fennel ecotypes with the highest nutritional/biological potential.

Risultati e impatti attesi

Selected ecotypes will be assayed in the demo and open fields. After multiple analyses, the new organic crops and their by-products will be exploited for the formulation of new foods and food ingredients/nutraceuticals/soil amendments, respectively. The socio-economic and environmental impacts of the proposed innovations will be evaluated.

The project addresses all the specific challenges of this thematic area by:

I. introducing more sustainable agriculture and food production systems with more efficient use of a natural resource (sea fennel) with a high climate change resilience/adaptation, high economic potential;

II. improving economic and social resilience of Mediterranean smallholder farming systems to climate change;

III. contributing to the zero waste farming systems target;

IV. decreasing use of chemical inputs;

V. increasing income of the farmers from biodiversity use, improved farming techniques and organic certification;

VI. promoting youth engagement and women empowering;

VII. encouraging consumption of food produced using more sustainable practices.

Area tematica

Farming Systems

Azione e Topic

RIA - Up-scaling field practices based on agroecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes

Budget

1.566.293 €

Durata

36 mesi

Ente coordinatore

Università Cattolica del Sacro Cuore

Coordinatore scientifico: PUGLISI, Edoardo

Paesi partecipanti

8

Egitto
Francia
Grecia
ITALIA
Marocco
Portogallo
Spagna
Tunisia

Unità di ricerca

10

Enti italiani partecipanti

1

OpenTea srl

Sezione II / 2021

SIRAM

Sustainable innovations for Regenerative Agriculture in the Mediterranean area

Contesto

SIRAM will supply a comprehensive integration and implementation of sustainable solutions for regenerative agriculture across different Mediterranean areas, addressing at the same time issues of low incomes at the smallholder farm level. A multidisciplinary team involving agronomists, microbiologists, soil scientists, plant pathologists, nematologists, agricultural chemists, economists, and experts in dissemination will tackle issues related to soil degradation, over-use of chemical inputs, climate change, desertification, environmental risks, and low incomes at smallholder farms level.

SIRAM will help to cope with the main challenges that the agricultural sector is facing in the 21st century: 1) securing viable food production in the face of escalating food demands (expected to double by 2050); ii) ensuring sustainable management of natural resources and climate action to avoid the progressive deterioration of soil and water resources and the loss of biodiversity; iii) decreasing residue concentrations in vegetables and iv) contributing to a balanced territorial development of the EU's rural areas and their communities.

These issues will be tackled by a multidisciplinary approach based on four main pillars:(i) beneficial microorganisms for plant growth and pest control; (ii) crop varieties with resistance towards abiotic and biotic stresses; (iii) agronomical practices to safeguard soil quality and fertility; and (iv) bioeconomy approaches to recycle and valorise waste biomasses that restore soil organic matter and have biostimulant properties.

Obiettivi e contenuti

The broad objective of SIRAM is to develop intelligent, sustainable, and resilient agricultural systems and economies, which agree with UN Sustainable Development Goals (SDGs) and EU Green Deal towards 2030 and beyond. The broader objective of SIRAM will be enriched by main specific objectives (SO):

SO1 Development of tailored approaches to address climate change, desertification, pollution, and low-income issues under different smallholder farming systems in the Mediterranean area

SO2 Reduction of chemical inputs, restoration, and regeneration of soil health through an integrated approach based on beneficial microorganisms, organic fertilisers, biostimulants, organic waste biomasses, resistant local crops and agronomical practices including no-tillage and cover crops

SO3 Improvement of structural and functional biodiversity of bacteria, fungi, and plants under the principles of regenerative agriculture

SO4 Understanding of the mechanisms through which certain microorganisms induce systematic plant resistances to be biotic and abiotic stress

SO5 Understanding and exploitation of mechanisms through which plants can select beneficial microorganisms in the rhizosphere

SO6 Investigating the use of non-microbial biostimulants from biomasses as a sustainable tool to improve agricultural production in the framework of regenerative agriculture

SO7 Socio-economic evaluation and economic sustainability of the tested methodologies

SO8 Dissemination and exploitation of the tested methodologies, including upscaling to EU level, taking into account possible technical, socio-economic, and political barriers.

SO9 Improvement in knowledge, skills and competencies of young scientists, professionals, and other interested parties through a dedicated training programme.

Risultati e impatti attesi

The results of the SIRAM activities will benefit NGOs, producer associations and farmers' networks from the various Mediterranean countries. The address will be to restore and enhance agro- and functional diversity. Such new practices will improve the sustainability and resilience of the farming systems as support to plant growth and resilience/tolerance to pests.

SIRAM will help fill some knowledge gaps on the mechanisms by which biostimulants explicate their inhibitory effects on pathogen/parasite growth. Outcomes will be helpful to improve plant response to stresses (biotic and abiotic) and develop high quality and efficient pilot products that can be available for scale production and delivery on the market by spin-offs and SMEs. SIRAM will contact industrial partners to translate the obtained research findings into practice. Tools will be given to farmers by partners companies operating in biological control and other inputs that will have contributed to their integrated control management strategies in market garden crops. The project will be an asset for a training program for young scientists/Training sessions on biological control of soilborne pathogens, including telluric fungi, bacteria and nematodes, on molecular tools to study plant micro-biome interaction (development of markers, genes expression, and bioinformatics)/BCASs yearly Meetings/ International symposia. Scientific publications from the SIRAM team will affect the general knowledge on regenerative agriculture, soil quality, biocontrol of pests and plant immune systems.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Increasing the resilience of small-scale farms to global challenges and COVID-like crisis by using adapted technologies, smart agri-food supply chain and crisis management tools

Budget

709.434 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Milano

UNIVERSITÀ DEGLI STUDI DI MILANO

Coordinatore scientifico:
BANTERLE, Alessandro

Paesi partecipanti

5
Germania
Grecia
Israele
ITALIA
Turchia

Unità di ricerca

7

Sezione II / 2021

GREENDRIEDFRUITS2021

Application of extreme temperatures in dried figs, dates, and currants disinfestation: sustainability in practice

Contesto

Following a lab-to-market strategy, the project aims to develop, implement, and test highly efficient species-specific and commodity-specific post-harvest pest management solutions based on extreme low or high temperatures (i.e., extreme cold or heat) to the stored fruit commodities. Research activities (from lab experiments to real-setting applications) will be geared at developing the highest insecticidal effectiveness meanwhile preserving the sensory and nutritional quality of dried fruits. The thermal treatments (TT) are expected to increase the sustainability and resilience of all firms operating in the dried fruit supply chain, including small producers and processors. To maximise the impact of the TT protocols, a user-friendly Sensor-App system will be developed and tested to facilitate the adoption of the TT methods. Furthermore, the stakeholders will open demonstration facilities to facilitate knowledge transfer for a successful shift towards pesticide-free production. Both the supply-side and demand-side economic analysis will be conducted. These will be geared toward identifying market opportunities fostering international trade and developing marketing strategies to boost the market for the dried fruits.

Obiettivi e contenuti

GreenDriedFruits aims to develop, test, and implement the effectiveness of novel sustainable technologies that can contribute to increasing the resilience and sustainability of the durable commodity value chains. The proposal focuses on dried fruits (i.e., figs, dates, and currants) that represent the primary agricultural commodities in the Mediterranean basin area. Consumers highly appreciate their sensory properties and nutritional characteristics and they have a primary economic impact in terms of local production and international trade. GreenDriedFruits aims to provide sustainable solutions for post-harvest pest control in dried fruit commodities that the firms can efficiently and quickly adopt in substitution for pesticide use. In fact, in addition to the well-known negative environmental impact, pesticide use also has essential drawbacks that limit the economic performances of the firms operating in the chain (e.g., impossibility to access the organic market, high food losses, increased health risks) and decrease product quality.

Risultati e impatti attesi

The project addresses the scope/challenges of the call by developing pest management solutions that:

• overcome the main inefficiencies of the current pest management methods;

• allow firms to adopt and apply TT in automated and highly controlled conditions to obtain optimal results;

• can be extended to various other durable commodities (including staple commodities). From a longer-term perspective, this will represent a key line of resilience for firms due to the increased automation of the process, its sustainability, the reduction of food losses and health risks;

• allow firms to comply with EU policy strategies (especially SDG 12 and Farm to Fork Strategy), possibly opening new commercial channels, such as the critical organic market.

The ambition of GreenDriedFruits is to translate scientific evidence into concrete solutions for firms that can enable a transition towards a more sustainable pesticide-free implementation of integrated pest management, as encouraged by the F2F strategy. GreenDriedFruits also aspires to become a pilot for further development and application of the TT technologies to various other durable commodities. Important ones would be wheat, rice, maise, flour, pasta, legumes, etc. These are of enormous importance in global food security. TT could also be applied to other high-value durable commodities, such as herbs, nuts, tobacco etc. The proposed TT protocols could also be extended to quarantine and pre-shipment pest control Contestos from a longer-term perspective.

Sezione I / 2021

PROMEDLIFE

PROmotion of MEDiterranean LIFEstyle and healthy diet

Area tematica

Agri-food Value Chain

Azione e Topic

IA - Increase adherence to the Mediterranean diet as a sustainable pattern including environmental, social and health aspects

Budget

2.363.973 €

Durata

36 mesi

Ente coordinatore

Fondazione Edmund Mach

FONDAZIONE EDMUND MACH

Coordinatore scientifico: BONTEMPO, Luana

Paesi partecipanti

5

Grecia
ITALIA
Marocco
Slovenia
Tunisia

Unità di ricerca

12

Enti italiani partecipanti

4

Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile - ENEA, Divisione Biotecnologie e agroindustria

Hortus Novus

Università di Parma

Contento Trade

Contesto

The need to maintain the production of local foods characterized by a high nutritional index, update traditional food production methodologies by developing attractive tech-based approaches, promote healthy eating habits that meet consumers' preferences and acceptability, as well as reduce the complexity of supply chains (Farm to Fork) must be addressed to ensure food and nutrition security. This is especially true in Mediterranean countries undergoing dietary and nutritional changes that affect their inhabitants' health while creating many socio-economic and environmental challenges. These changes have happened despite the health benefits of consuming a Mediterranean diet demonstrated in numerous epidemiological studies, and because dietary interventions are effective, it is essential to identify and address perceived barriers to healthy eating. In PROMEDLIFE, we identified opportunities for improving the adherence to the Mediterranean diet, incorporating a tailored design beyond the state-of-the-art allowing the rapid transference of innovations to industry and local policy bodies. The PROMEDLIFE approach employs food nutritional quality to help drive consumer awareness, perceptions and the use of food high in nutrients while recognizing foods, the consumption of which should be limited. The educational activities will be tailored to the specific characteristics of each participating country. These practical actions will target the entire 'family system' deeply entrenched in the Mediterranean area and essential for the welfare function.

Obiettivi e contenuti

PROMEDLIFE aims to reverse the decline in adherence to the Mediterranean diet pattern by adopting a multi-actor approach in four lines of intervention:

1) Analysis of socio-economic, cultural and personal factors driving consumers in adopting a healthy Mediterranean lifestyle involving children, adolescents and family caregivers in Greece, Italy, Morocco, Slovenia and Tunisia.

2) Promotion of tailored and country-specific educative actions using "learning through play and living labs approach" targeting primary and high school students and their families/carers in a series of initiatives using novel tools and strategies to address regional cultural specificities and apply validated educational techniques in different cultural environments.

3) Creation and acceptability test of new healthy snacks targeted at young and older adults, based on traditional Mediterranean premium ingredients produced optimizing traditional and innovative eco-friendly food processing technologies and tools to preserve the nutritional value. Strong high-throughput chemical characterization and bioassays from raw materials to the final products, to monitor their bioactivity and sensorial properties. New cultivation technologies and agronomical practices will be applied and tested.

4) Codification and valorization of local Mediterranean products through the development of food labelling using innovative tools to increase people's connection with their cultural and local heritage and improve their awareness of food healthy choices. The link with local Mediterranean sources will be exploited as a tool for valorizing the PROMEDLIFE novel Mediterranean food products.

Risultati e impatti attesi

PROMEDLIFE addresses the negative consequences of human health from consuming low-quality meals (fast-/junk-food) using a holistic approach based on the valorisation of traditional Mediterranean crops/varieties/recipes/products with a strong cultural connection to specific Northern and Southern areas. Although challenging but possible, PROMEDLIFE will change the snacking habits and create a dietary shift towards a Mediterranean lifestyle by offering healthy and bioactive-enriched food products. The project will also promote the sustainability of high-quality food along the food value chain due to cooperation between research organizations and businesses. In addition, it will promote innovative, short supply chains with the possibility of supplying raw materials from local areas and products with recognized traceability. Further, it will create conditions for the sustainable development of the cross-border territory, varieties, agricultural practices, and adaptation to climate change. Overall, revisiting the Mediterranean diet proposed in a more modern and appealing way through a transversal approach will guarantee the link between the innovativeness of PROMEDLIFE and the productive sector. PROMEDLIFE will aspire to understand the factors affecting consumers' healthy choices and turn to education to promote adherence to the Mediterranean lifestyle in the young generation and their families. It will also promote adherence to the Mediterranean diet taking advantage of its health benefits for young people and families by developing novel and attractive products. By doing this, PROMEDLIFE will conserve local biodiversity and exploit its uniqueness for both cultural and regional economic development while improving the value chain and market competitiveness of locally produced sustainable Mediterranean food products.

Sezione II / 2021

SMALLDERS

Smart Models for Agrifood Local vaLue chain based on Digital technologies for Enabling covid-19 Resilience and Sustainability

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Increasing the resilience of small-scale farms to global challenges and COVID-like crisis by using adapted technologies, smart agri-food supply chain and crisis management tools

Budget

1.061.328 €

Durata

36 mesi

Ente coordinatore

Università della Calabria, Modeling & Simulation Center Laboratory of Enterprise Solutions

Coordinatore scientifico: LONGO, Francesco

Paesi partecipanti

4
Francia
ITALIA
Spagna
Tunisia

Unità di ricerca

5

Enti italiani partecipanti

1
Università di Parma

Contesto

The COVID-19 pandemic has highlighted the need for more resilient food systems to effectively and efficiently address supply chain disruptions. More specifically, this global disaster has emphasised the problems of smallholders in the Mediterranean area, who generally operate in challenging conditions: infrastructures (e.g., roads, distribution channels) are often inadequate, access to credit is complicated, business growth opportunities are minimal.

Due to the health emergency, many governments have taken drastic measures intending to limit the spread of the infection, resulting in the closure of the main distribution channels of smallholders, such as bars, restaurants, school canteens, open-air markets.

In addition, travel restrictions and COVID-19 symptoms have severely limited the availability of the workforce in many fields. As a result, the amount of food wasted has grown enormously because, in some cases, it was not possible to complete the harvesting activities on time. In contrast, the goods remained in finished goods warehouses until they perished due to the multiple restrictions in the distribution stage. The SMALLDERS' platform aims to address all these issues.

Obiettivi e contenuti

The overall aim of the project is to carry out basic research as well as industrial research and development activities to identify a framework that encompasses innovative strategies, methodologies, technologies and business models to increase the resilience of small-scale farms in the Mediterranean area, to effectively and efficiently face unexpected and disruptive events such as the COVID-19 pandemic. The project will also aim to bring technological improvements to reduce water consumption, improve storage conditions, and reduce food waste.

The SMALLDERS project-specific objectives (SOs) are the following:

SO1: Increasing saleability and perceived value of smallholder products to be resilient and address any supply chain disruption in the event of a crisis.

SO2: Increasing smallholder products traceability, quality, safety and perceived value.

SO3: Helping smallholders to cope with the shortage of workforce due to the COVID-like crisis.

SO4: Helping smallholders to increase the farm production efficiency.

SO5: Increasing the Multi-Capital Sustainability of Smallholders processes.

Risultati e impatti attesi

Increase profitability facing COVID-like crises: the use of blockchain technology will increase the transparency of the supply chain, then the safety and traceability of food products, therefore justifying the price to the final consumer. As for production costs, it will be possible to evaluate multiple scenarios using simulation models and quickly take countermeasures in case of inefficiencies. Moreover, the smallholder will choose the most convenient freight transport company day-by-day based on the routes made available on the platform.

Greater efficiency and sustainability in processes and use of resources: the platform will provide a dashboard layer, characterised by multi-capital sustainability indicators, which will make it possible to monitor the performance of the agri-food chain under multiple scenarios.

Increase mitigation capability: supply-side disruptions are limited as the platform facilitates supply-demand matching in the job market. Demand-side disruptions are faced by creating consortia of smallholders and/or using an e-commerce channel to sell directly to consumers.

Decrease in food loss: the SMALLDERS platform allows smallholders to provide and/or request a workforce. Therefore, it will be possible to organise and carry out the activities of harvesting, processing, and producing agri-food goods in the best possible way, reducing potential food losses. Furthermore, production inefficiencies will be facilitated through storage monitoring and production tracking via QR Code technology.

Area tematica

Agri-food Value Chain

Azione e Topic

IA - Increase adherence to the Mediterranean diet as a sustainable pattern including environmental, social and health aspects

Budget

2.799.000 €

Durata

36 mesi

Ente coordinatore

ENCO Consulting Srl

Coordinatore scientifico:
MINCIONE, Simona

Paesi partecipanti

8
Egitto
Grecia
ITALIA
Libano
Marocco
Spagna
Tunisia
Turchia

Unità di ricerca

18

Enti italiani partecipanti

2
Università di Parma
Regione Campania

Sezione I / 2021

SWITCHTOHEALTHY

Switching Mediterranean consumers to Mediterranean sustainable healthy dietary patterns

Contesto

Profound dietary changes occur across Mediterranean countries due to cultural and socio-economic-driven lifestyle changes, leading to the erosion of Mediterranean food cultures.

The modernisation of the diet is particularly clear, implying modifying food preferences towards unhealthy foods and adherence to sedentary activities, leading to an imbalance between energy intake and expenditure. This has negative health consequences, like the continuously growing prevalence of excess weight and other dietary-related chronic diseases coexisting with undernutrition (nutrient deficiencies and stunting).

The latest data show that two billion adults are overweight while 678 million are obese. These trends worsen among children and teens.

The WHO COSI showed that Greece, Italy, and Spain had the highest rates of childhood obesity (approx. 20%). Overweight and obesity prevalence rates in Turkey, Morocco and Lebanon are 23%, 14% and 30%, respectively. Estimated weighted regional averages for stunting, wasting and underweight in the Eastern Mediterranean Region were about 28%, 9% and 18%, respectively.

Obiettivi e contenuti

SWITCHtoHEALTHY project aims to generate a dietary behaviour change by demonstrating and reinforcing the role of the family in promoting a sustainable transition towards enhancing the adherence to the Mediterranean dietary pattern of the family members (adults, adolescents, and children). This will be done by making available to families a combination of hands-on educational material and digital tools and complementing the dietary and lifestyle recommendations with easy-to-eat healthier snacking products.

In this approach, while the parents will use digital interactive tools (SWITCHto-HEALTHY App) to prepare weekly healthier dietary plans for the main meals for them and their children, the educational material will be used to support their families in buying healthier habits and to educate children and adolescents. Finally, healthy and nutritious plant-based snacks will be introduced in the children's dietary plans to complement and substitute less healthy options in-between meals.

Risultati e impatti attesi

SWITCHtoHEALTHY will result in increasing the adherence to MD by taking an intra-familiar systemic approach taking the family context into account and assess mutual influence of children/adolescents-parents and their roles in healthy eating and lifestyle; developing innovative solutions (plant-based snacks) based on proximity of ingredients, sustainability and healthy consumption to support agri-food producers (especially SMEs) in finding new business opportunities; job creation opportunities and diversification in traditional Mediterranean food sector; supporting food companies in getting through the barriers to market uptake and achieving a sustainable competitive advantage by designing innovative consumer-oriented BMs; raising awareness of the healthy benefits derived from a high adherence to a MD, increasing knowledge on local Med products thus contributing to improve healthy food choices among families; synergising cross-sectorial policy coherence across agriculture, health, education, environment, trade, etc. from local to national and international level and discussing with all actors of society.

Progetti coordinati da unità di ricerca italiane

2022

Area tematica

Water Management

Azione e Topic

RIA - Prevent and reduce land and water salinization and pollution due to agri-food activities

Budget

980.613 €

Durata

36 mesi

Ente coordinatore

Università Federico II di Napoli

Coordinatore scientifico: ESPOSITO, Giovanni

Paesi partecipanti

4
Egitto
Francia
ITALIA
Turchia

Unità di ricerca

6

Sezione II / 2022

MEDINCIRCLE

Future-proofing the Mediterranean agri-food chain through integrated and circular management of contaminant-safe water, nutrients and bioresources

Contesto

In the Mediterranean region, the nexus between global dynamics such as climate change, water scarcity and food insecurity, has the potential to lead to highly severe consequences

The agri-food compartment is particularly exposed to such consequences, and urgently calls for the implementation of innovative and eco-efficient solutions. In view of this, the MedInCircle project aims at advancing the state of the art of the circular management of water, nutrients and bioresources, fostering the transition towards a more sustainable and resilient agri-food chain.

More specifically, MedInCircle will pursue the development of a modular technological platform targeting the on-site treatment, recovery and valorization of water, wastewater and solid waste arising from typical Mediterranean agri-food activities.

Obiettivi e contenuti

The goal of MedInCircle is to engineer, test and validate innovative nutrient recycling and sustainable ferti-irrigation practices. The specific objectives of the project involve

i) the development of new biological treatments to enable a safe and effective domestic wastewater ferti-irrigation as well as the direct reuse of the collected agricultural drainage water,

ii) the recovery and the valorisation of the nutrient content of domestic wastewater and agri-food waste,

iii) the upcycling of carbon and nutrients from industrial wastewater under the form of slow-release microbial fertilizers and biostimulants,

iv) the evaluation of the fertilizing and the growth-promoting properties on typical Mediterranean crops, as well as the impact on the soil microbiome, of the recovered water and nutrient streams and biological agronomic additives,

v) the assessment of the cost-benefit balance of the developed innovation to promote the acceptance and the integration of the proposed technical solutions among the stakeholders of the Mediterranean agri-food chain.

To achieve its objectives, the MedInCircle project will implement a research and development trajectory based on the integration of innovative waste and wastewater treatments and agronomic practices, enabling nutrient recycling and sustainable ferti-irrigation in a Mediterranean rural context.

The specific solutions will involve the development and validation up to TRL 4-5 of moving bed membrane bioreactors to biologically treat and decontaminate domestic and agricultural drainage water, high solid anaerobic digestion to recover the nutrient content of agri-food waste and to synthesize plant growth promoting rhizobacteria through the recovered biogas, heterotrophic aerobic assimilation for the synthesis of slow-release nitrogen fertilizers and biostimulants.

MedInCircle will pursue its objectives by integrating cutting-edge, multidisciplinary scientific knowledge and innovation potential across the fundamental and applied research.

Risultati e impatti attesi

The successful completion of the project will thus enable

i) the circular valorisation of waste flows from sewage and agri-food processing to generate liquid and solid fertilizers with specific features that can be effectively and safely applied on agricultural fields,

ii) promoting the growth of autochthonous crops by shielding the effects of excess salinity in the Mediterranean soil through the application of halo-protective bioinoculants,

iii) capturing the agricultural drainage water, thereby circumventing the contamination of surface water bodies and underground aquifers,

and iv) replenishing the nitrate content and abate contaminants in agricultural drainage water through an innovative aerobic biological process integrating the membrane bioreactor and the moving bed biological reactor technologies.

Area tematica

Water Management

Azione e Topic

RIA - Prevent and reduce land and water salinization and pollution due to agri-food activities

Budget

1.324.078 €

Durata

36 mesi

Ente coordinatore

Università degli Studi della Basilicata

UNIVERSITA' DEGLI STUDI DELLA BASILICATA

Coordinatore scientifico: COPPOLA, Antonio

Paesi partecipanti

5
Francia
Israele
ITALIA
Marocco
Spagna

Unità di ricerca

8

Enti italiani partecipanti

1

Università degli Studi di Cagliari

Sezione II / 2022

NPP-SOL

Modelling And Technological Tools To Prevent Surface And Ground-Water Bodies From Agricultural Non-Point Source Pollution Under Mediterranean Conditions

Contesto

Several countries in the Mediterranean are affected by agricultural Non-Point Source (NPS) nitrate and phosphorus pollution of aquifers and surface waters (estuaries, lakes, wetlands, etc.), widespread in areas of intensive agriculture and livestock activity.

The complexity of NPS pollution requires adopting specialized, interdisciplinary and multi actors approaches and different solutions from farmers and Water Resources Managers, Water Users Associations and regional and national Environmental Agencies.

Therefore, there is a need for a paradigm change, looking for more site-specific approaches that support farmers rather than sanctioning and limiting their entrepreneurship. It might be the way for maintaining the trade-off between the needs of sustaining farmers' income and detrimental environmental impacts of NPS pollutants, which is a cornerstone of sustainable agriculture.

Obiettivi e contenuti

NPP-SOL overall objective is to prevent diffuse pollution of water resources due to NPS agricultural pollutants under the Mediterranean soil and environmental conditions, according to the goals of the new Green Deal and Farm-to-Fork strategies. NPP-SOL will integrate site-specific best management practices to improve soil, water, fertilizers, and crop management with site-tailored and affordable-cost technologies to prevent natural bodies pollution. Common to all the adopted methodologies-technologies will be their sustainability, economic effciency, and adherence to circular economy approach.

NPP-SOL co-designs and tests Site-Specific Best Management Practices and Pollution-Preventing Technologies enhancing a multi-stakeholder participatory approach considering context-related needs and challenges, whether the proposed innovations are appropriate or not, and whether they can sustainably adopt the knowledge generated by NPP-SOL. The aim is to intercept and remove NPS pollutants before reaching the groundwater and surface water bodies. Technologies such as Bioreactors and Constructed Wetlands will be set up to remove nutrients and pesticides from surface runoff and/or drainage water coming from agricultural fields. Anaerobic Digestors will treat livestock slurries before spreading them to the soil.

Modelling Tools such as the agro-hydrological model FLOWS-HAGES (FLOws of Water and Solute Transport in Heterogeneous Agricultural and Environmental Systems) and the bio-economic model DAHBSIM (Dynamic Agricultural Household Bio-economic SImulation Model) are provided. FLOWS-HAGES produces information on the time evolution of water and solutes balance and all the functional processes involved (evapotranspiration, root uptake of water and solutes, irrigation volumes, groundwater recharge, drainage, runoff, nutrient transport). As for solute transport, the model allows for salts, pesticides, phosphorus and nitrogen transport simulations. DAHBSIM maximizes household objectives subject to constraints and resources allocation patterns by linking several sub-modules related to economic, production (including livestock), and consumption decisions.

Risultati e impatti attesi

Technical Capacity Building assets of technicians from key stakeholders guarantee the application and spreading of the NPP-SOL outputs, the monitoring of the effectiveness of applied technologies, the maintenance and fine-tuning over time. Farmer Awareness is monitored and strengthened throughout the project. NPP-SOL is implemented in four Case Studies (Israel, Italy, Morocco and Spain).

The multi-disciplinary consortium provides expertise in surface and subsurface hydrology, soil science, agronomy, chemistry, microbiology, economics, and social sciences. NPP-SOL aims to overturn the traditional top-down approach, seeking more site-specific models and techniques focused on supporting farmers. It privileges small-to-medium scale actions spread throughout the agricultural basin and avoids large-scale interventions, thus making farmers involved and directly responsible for the management practices applied on their farms.

Area tematica

Water Management

Azione e Topic

RIA - Prevent and reduce land and water salinization and pollution due to agri-food activities

Budget

1.400.950 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Perugia

Coordinatore scientifico:
FARNESELLI, Michela

Paesi partecipanti

7
Cipro
Croazia
Germania
Israele
ITALIA
Spagna
Turchia

Unità di ricerca

7

Sezione II / 2022

SAFE-H2O-FARM

Innovative farm strategies that integrate sustainable N fertilization, water management and pest control to reduce water and soil pollution and salinization in the Mediterranean

Contesto

Intensive agricultural production utilizes large amounts of chemical input such as nitrogen and pesticides that are applied to the crop or soil to secure high crop yields.

Mismanagement of these inputs in combination with excessive irrigation poses high risks of water and soil pollution in the Mediterranean regions where the agri-food activities represent two of the most important economic sectors.

Within these agri-food chains, tomato (Solanum Lycopersicon L) and olive (Olea europaea L.) represent tho most widespread species cultivated in the Mediterranean.

Obiettivi e contenuti

The project aims to propose innovative farm management strategies able to prevent and reduce nitrate, pesticide environmental pollution and salinization related to agricultural practices, with an approach that will consider the management of the main chemical inputs involved in the agricultural production and their interaction with the irrigation management.

The project will focus on two of the most widespread crops in the Mediterranean basin as tomato within vegetable crops (grown in open field and greenhouse conditions) and olive for fruit tree crops. The specific objectives are:

1) Improvement of N fertilization management with different N sources (organic and/ or mineral fertilizers, green manuring, biostimulants), doses and crop N monitoring tools (optical sensors, quick tests) to increase crop N use effciency while reducing N leaching;

2) Reduction of the use of pesticides (herbicides and copper to control plant diseases) to avoid or minimize the risk of water and soil pollution by chemical inputs;

3) Improvement of combined irrigation and salinity management strategies to reduce N leaching, pesticides movement with the soil water, and salinization of soil and water bodies;

4) Scaling of optimal N fertilizer, pesticide and irrigation management across the different soil-climate situations in Mediterranean countries using agro-ecosystem modeling;

5) Socio-economic evaluations to assess the cost and benefit of the innovative proposed management strategies. Field trials, pot/greenhouse experiments and on farm-fields will be set in different countries of the Mediterranean basin to achieve the objectives described above.

Risultati e impatti attesi

The effects of the proposed agricultural strategies on the reduction of pollution in soil and water (soil solution and groundwater bodies) and salinization will be evaluated through a multidisciplinary approach thanks to the several experts involved in the partnership (agronomists, hydrologists, plant physiologists, plant pathologists, geoecologists, chemists, economists) that will work in seven different countries around the Mediterranean basin.

The ambition of our project is to combine these approaches to offer an integrated panel of agricultural practices that will consider all these aspects (salinity, N leaching. pesticides) and that can be easily transferred to farmers. Moreover, the outputs from this proposal will be integrated with results from previous national and international research activities linked to this project and carried out in the same environments to improve the parameterisation of agroecosystem models and to better evaluate socio-economic effects.

In such a way, these results may be extended to a wider environment or to future changed climatic conditions. Indices and/or ranges for soil and water chemical parameters will be carried out for stakeholder uses. The project will contribute to developing sustainable agricultural practices for food systems according to “Farm to fork” strategies. The proposed N management strategies will allow respecting the European Nitrate Directive.

With the proposed agricultural technologies Safe-H2O-Farm aims to contribute to improved surface water quality (reduction in Biochemical Oxygen demand) and reduced nitrate leaching to groundwater. We also aim to contribute to SDG6.3, especially Indicator 6.3.2 and to SDG 6.4, Indicator 6.4.1. The expected results will reach TRLs ranging from 3 to 7.

Area tematica

Water Management

Azione e Topic

RIA - Prevent and reduce land and water salinization and pollution due to agri-food activities

Budget

1.131.730 €

Durata

36 mesi

Ente coordinatore

Centro Siciliano di Fisica Nucleare e di Struttura della Materia

Coordinatore scientifico: TRICOMI, Alessia Rita

Paesi partecipanti

6
Algeria
Egitto
Francia
ITALIA
Spagna
Tunisia

Unità di ricerca

16

Enti italiani partecipanti

4

Università di Catania

Consiglio Nazionale delle Ricerche - CNR

Università degli Studi di Palermo

Agrumaria Corleone spa

Sezione II / 2022

SWRIPS

Sustainable Wastewater Re-use with Innovative Purification and Sensing system for the agrifood supply chain

Contesto

The problem of scarcity of freshwater and of excessive salinization of the soil and contamination of aquifers, is particularly critical in the Mediterranean areas.

Obiettivi e contenuti

The overall objective of SWRIPS project is to increase the efficiency, sustainability and competitiveness of the water usage in the agri-food supply chain (SC) in the EU-Med area under a circular economy approach aimed to saving water and minimize the external use of resources, avoiding further contamination of land and water. It aims to recover the wastewater produced in the agri-food processing and to reuse the purified water for fertigation purpose while at the same time recovering the substances produced in the process as a matrix for fertilizer, thus putting in place a virtuous cycle that reduces the overall consumption of freshwater, guarantees water availability to farmers, reduce soil drying out and the overall amount of additional fertilizers, is cost effective both for agri-food industries and farmers and, finally, is environmental and human-health friendly.

SWRIPS will achieve it by implementing a circular economy and management system based on a Life Cycle Assessment: the environmental impact would be considered along the entire production chain, from the cultivation to the food processing andend-of-life water cycle.

Risultati e impatti attesi

SWRIPS aims to demonstrate the possibility to

- reduce the need of external fertilizers and therefore the presence of nitrates, phosphates, sulphates etc. through the re-use of water and excess sludge produced in the purification process;

- provide, thanks to an innovative integrated monitoring system, a continuous control of the quality of purified water, also guaranteeing the possibility of early warning in case of excessive pollutant levels (organic components, pesticides, metals) in any of the purification phases;

- control, through microbiology and chemical-physical analyses, all the relevant water, soil and crop parameters involved in the process to define fertiliser application better tailored to crop needs, soil conditions, and the agroecosystem's nitrogen cycle;

- develop a flexible and cost-effective system that allows an optimized use based on crop seasonality and characteristics of the water to be treated, typical of the agri-food industry under study.

SWRIPS identifies 3 fundamental innovative technical elements:

- an innovative multi-stage purification system based on aerobic granular biomass and nanocomposite and photocatalyst based filters to remove pollutants;

- an integrated test system for continuous monitoring of the physical and microbio-chemical parameters of the purified water, consisting of a compact solid-state UV spectroscopy apparatus and visible sensing system for early warning;

- the usage of innovative deep-learning algorithms to optimize the whole water/crop cycle and reduce water footprint and environmental impact on water basins, soil and crop itself.

SWRIPS foresees a very strong consortium combining expertise in the development and set-up of innovative wastewater treatment and sensors with those of control software development and advanced optimization algorithms. SWRIPS partners have documented experience in quality water and fertilization crop control. These experiences are complemented by the technical-engineering ones on water distribution.

An added value for SWRIPS is the presence of the end-users of the process: agricultural consortia and agri-food industries. This will allow not only to test the system in the laboratory and through software models but also to test its functionality in the field, in different operating and environmental conditions.

Area tematica

Farming Systems

Azione e Topic

RIA - Developing integrated soil data for the Mediterranean Region: a gateway for sustainable soil management

Budget

4.099.366,95 €

Durata

36 mesi

Ente coordinatore

Università di Pisa

Coordinatore scientifico: SAIA, Sergio

Paesi partecipanti

9
Algeria
Croazia
Francia
Grecia
ITALIA
Marocco
Spagna
Tunisia
Turchia

Unità di ricerca

11

Enti italiani partecipanti

1
Agrinscarl

Sezione I / 2022

SHARINGMED

Soil Health and Agriculture Resilience through an Integrated Geographical information systems of Mediterranean Drylands

Contesto

Soil is an essential resource and a vital part of the natural environment from which most of the global food is produced. Although it is essential to have as much information as possible about soils to understand Earth system processes to enable the management of major natural resource problems, it is equally necessary to underline that information about soils must first be collected in a harmonized way; otherwise, experiences cannot be shared and combined. This is of utmost importance, for example, to utilize soil information for policy development and the building of observation systems. Harmonization and establishing guidelines and standards should not be a goal per se of the GSP. Standardization always implies a cost for the various stakeholders and therefore a clear cost/benefit analysis needs to be provided to justify any standardization activity. Results obtained from different analytical pipeline are often non comparable.

Obiettivi e contenuti

The general objective of SHARInG-MeD is building an open and concerted soil monitoring scheme to integrate physico-chemical, biological (microbes, nematodes, invertebrates, plants), agronomic, economic and environmental indicators of the Mediterranean croplands; build models of the soil properties at the wide scale; changes of soil properties at the fine scale; relationship between land or crop (especially soil) management practices with environmental and economic performances of the agricultural systems or crops; models of harmonization of soil data among various public databases; and foster the diffusion of the soil improving practices (conservation agriculture, application of organic materials, use of beneficial microbes) in the Mediterranean drylands, with special emphasis to the West Asia and Nord Africa (WANA). These data and models will increase the agriculture sustainability by informing stakeholders on the use of and relationships among these indicators for Mediterranean landscape and crop sustainable managements and will provide a tool to modulate the contribution of agriculture on the mitigation of the climate change. To achieve SHARInG-MeD aim, the soil sampling campaigns from two wide land collection strategies in Europe (LUCAS soil module) and Africa (H2020 Soil4Africa) and the Soil Atlas of the Mediterranean Region will be derived, along with data from the literature on the methodologies of soil and crop analyses. The sampling scheme of SHARInG-MeD will include both new sites and resampling of known sites in LUCAS soil module, Soil4Africa, and Soil Atlas and covering their lack of sampling. Sampling will be conducted in paired land uses (including a cropland, and considering areas affected by salinity and/or overgrazing) or field experiments dealing with soil improving management practices. The above-mentioned soil properties (including soil life indicators) and potential GHG emissions will be measured. In the field experiments, economic fluxes and Life Cycle Assessment will be measured. Models will be built to harmonize these sampling schemes. The models produced in SHARInG-MeD will undergo both an internal and an external validation against published data in national, EU, and non-EU research repositories, infrastructures, and living labs.

Risultati e impatti attesi

These aims and expected results cover all requirements of the specific topic by providing a tool for the measurement of the soil degradation process, and crop profitability and environmental impact, thus enabling an environment for the protection, restoration and improvement of soil health in the Mediterranean drylands; providing harmonization models and indicators of agricultural health from both environmental and human needs; by validating these models in actual conditions; by performing an evidence synthesis of the state of monitoring and existing soil data in the Mediterranean area and providing models for the existing physico-chemical, biological, agronomic, economic and other environmental indicators for region-wide assessment of soil ecosystem health; by identifying and establishing synergies with other H2020, PRIMA, national projects and initiatives, research infrastructures and living labs; by providing a tool for the harmonization of the National Soil Surveys in the Soil Atlas; by engaging general public and stakeholders in fruitful dissemination and communication activities.

Area tematica

Farming Systems

Azione e Topic

RIA - Developing integrated soil data for the Mediterranean Region: a gateway for sustainable soil management

Budget

4.100.000,00 €

Durata

42 mesi

Ente coordinatore

Università degli Studi di Sassari

Coordinatore scientifico:
ZUCCA, Claudio

Paesi partecipanti

9
Croazia
Egitto
Francia
Giordania
ITALIA
Libano
Spagna
Tunisia
Turchia

Unità di ricerca

16

Enti italiani partecipanti

6

Centro Ricerca Sviluppo e Studi Superiori in Sardegna

Joint Research Centre of the EC

CIHEAM Bari

Università degli Studi di Milano

Università degli Studi di Palermo

Università Federico II di Napoli

Sezione I / 2022

SOILS4MED

SOIL health monitoring and information systems FOR sustainable soil management in the MEDiterranean region

Contesto

Soil is an essential resource and a vital part of the natural environment from which most of the global food is produced. Although it is essential to have as much information as possible about soils to understand Earth system processes to enable the management of major natural resource problems, it is equally necessary to underline that information about soils must first be collected in a harmonized way; otherwise, experiences cannot be shared and combined.

This is of utmost importance, for example, to utilize soil information for policy development and the building of observation systems. Harmonization and establishing guidelines and standards should not be a goal per se of the GSP. Standardization always implies a cost for the various stakeholders and therefore a clear cost/benefit analysis needs to be provided to justify any standardization activity. Results obtained from different analytical pipeline are often non comparable.

Obiettivi e contenuti

SOILS4MED has the following objectives:

1) Engage with stakeholders (SH) in line with the EU Soil Mission's Living Lab approach, develop capacities, and raise SH awareness on the benefits deriving from increased investment in soil data and information (SDI);

2) develop policy relevant integrated indicator sets and a LUCAS-like soil monitoring protocol, adapted to the environmental specificities and SH needs of the Mediterranean region (MR), for region-wide harmonized assessment of soil ecosystem health;

3) validate the monitoring protocol in study areas representing major agroecologies and soil types across the MR, generating the first ever large harmonized soil health open access dataset for the MR.

4) Demonstrate the capacity of the SDI produced by the protocol, integrated by legacy soil data, to feed multiple state of art tools to support sustainable soil and water management (SSWM), land degradation neutrality, ecosystem service assessment, precision farming, and to support the generation of regional soil condition maps including carbon stock maps;

and 5) design and implement a tailored, easily accessible, standardized soil information system (SIS) for the effective management and use of SDI for the assessment of soil health in the MR.

Risultati e impatti attesi

These project objectives will be achieved by developing and adapting innovative methods and also by investing in SH engagement and scientific integration, in capacity development, and in dissemination and awareness raising.

The latter will be supported by an innovative knowledge management online platform and by the use of social media. Strong collaborations and synergies with relevant international projects and initiatives will be major enablers of the project success and impact. The project will particularly synergize with SDI harmonization efforts conducted by FAO's Global Soil Partnership and with ongoing regional soil health mapping initiatives by JRC and FAO.

The project objectives have been explicitly designed to address all the specific Call challenges, scope, and impacts, as pointed out in detail by the proposal. This alignment stems from the partners' long time engagement to support international initiatives on SDI availability and use in the MR. SOILS4MED fully shares the Call vision that in the MR there is an urgent need to improve availability and accessibility of SDI and to harmonise methodologies to develop standardised soil information systems (SIS), and that this change is an essential enabling condition towards protecting, restoring, improving SEH, and towards informing decisions on SSWM and on major global natural resource issues in the region (CC, food security, biodiversity loss, etc.).

Area tematica

Farming Systems

Azione e Topic

RIA - Improving the sustainability of agropastoralism in the Mediterranean Region under the context of climate change

Budget

1.164.999 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Firenze

Coordinatore scientifico: PUGLIESE, Carolina

Paesi partecipanti

5
Egitto
ITALIA
Marocco
Spagna
Tunisia

Unità di ricerca

8

Enti italiani partecipanti

2

Consiglio Nazionale delle Ricerche

Kontor 46

Sezione II / 2022

SUREPASTOR

Management Strategies to Enable SUstainable REsilient AgroPASTORalism

Obiettivi e contenuti

SUREPASTOR aims at increasing the resilience of the Mediterranean agro-pastoral sector, by introducing a series of innovative management approaches for sheep farming systems in areas where the sector is traditionally linked to the exploitation of marginal lands, improving its environmental, economic and social sustainability. The project will last 36 months and in the first phase the Mediterranean agro pastoral systems will be investigated, focusing on the relationships between sheep farming with traditional breeds and rangeland management.

A preliminary analysis will be carried out in 5 Mediterranean countries such as Italy, Spain, Tunisia, Morocco and Egypt to make the state of art on farm characteristics, pastoral areas, small ruminants management and performance, local trends related to climate change, and social issues. This information will be then used to identify new management strategies (e.g. best practices, new technologies, digital tools) for their improvement in terms of climate change adaptation, resilience, environmental and socio-economic sustainability, gender and youth issues, market promotion. Models of intervention and promotion will be formulated in close collaboration with the farmers with a special focus on women and younger generations needs, leveraging technology and innovative agronomic managements to enable sustainable, resilient agropastoral farming.

Risultati e impatti attesi

A Life Cycle Assessment (LCA) will be performed to quantify the impacts of the innovations proposed on the basis of also a modelling approach to estimate pasture productivities, stocking rates while maintaining the ecosystem services. The second phase of the project will be focuses in test and validate ad-hoc protocols based on specific needs of each case study country (at least 2 selected extensive sheep farms per each country, with a total of 10 pilot farms), leveraging on local or traditionally adapted breeds. At farm level, experimental plots will be settled so as to identify constraints, barriers and incentives to be promoted and sustained to counteract climate change and as strategies for adaptation. Best practices to increase soil fertility and Carbon stock will be implemented (relevance to Call: Proposals, building on good pastoral practices in the Mediterranean Area, should promote an enabling environment for viable agro-pastoral farming and rational use of rangelands: land, water and biodiversity management (including local animal breeds), Carbon, Nitrogen and overall GHG footprint.

The possibility of exploiting innovative technologies of Precision Livestock Farming Technologies will be also tested and evaluated.

Animal performance will be also analysed in terms of animal intake, forage digestibility, milk yield and its composition, and average daily gain. Moreover, meat production and quality will be analysed, taking into consideration the physical and chemical characteristics of the product of the supply chain (relevance to Call: Proposals should also consider products´ quality in terms of consumers' health and safety, provision of socio-ecosystem services, questions of social, gender and generational dynamics).

The project will analyse the entire value chain to identify feasible and effectivestrategies, to promote and exploit traditional pastoral products in the Mediterranean market.

Social Life Cycle Assessment (S-LCA) will also be performed to analyse the socio-economic consequences of the proposed strategies in the different sheep farming systems along their life cycle, in order to assess the environmental and socio-economic performance of the best practices identified in the project and to highlight eco-innovative solutions that will support an effective transition to a more sustainable Med agro-pastoral system.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Enabling the transition to healthy and sustainable dietary behaviour

Budget

487.430 €

Durata

36 mesi

Ente coordinatore

Università degli Studi di Bari Aldo Moro

Coordinatore scientifico: PORTINCASA, Piero

Paesi partecipanti

4
ITALIA
Libano
Portogallo
Tunisia

Unità di ricerca

5

Enti italiani partecipanti

1
Università di Genova

Sezione II / 2022

B4HT

Box for Health by Tradition & Innovation: promoting sustainable mediterranean diet by Healthy Foods

Contesto

Recently a syndemic combination hit dramatically the populations worldwide. The COVID-19 pandemic has developed on top of the chronic metabolically-related non-communicable pandemic (obesity, cardiovascular diseases). During lockdowns and social restrictions, the health status of people has deteriorated by increasing diagnostic delay, cardiometabolic risk and tumorigenesis. This has underlined the urgency of ensuring access to affordable healthy diets and lifestyles.

The Mediterranean Diet (MD) is a dietary pattern rooted in the cuisine of Mediterranean countries such those involved in the proposal (Italy, Portugal, Lebanon, and Tunisia). The MD not only refers to eating habits, but it is a cultural model involving the way through which foods are selected, produced, processed, distributed, and UNESCO recognised the MD as an “Intangible Cultural Heritage of Humanity”. Association of MD with reduced appearance of metabolic and neurodegenerative diseases and cancers, and its low environmental impact were established. The MD foods promoting health include local and traditional vegetables, legumes, nuts, fruits, olive oil and seafood.

In the Mediterranean basin, two dietary/health problems exist: (i) the high prevalence of risk of non-communicable disorders co-exist with some macro- and micronutrient deficiencies; (ii) individual choices influence food security and the population’s health and nutrition (climate change, ecosystem health, environment sustainability).

The modern lifestyle shifted dietary habits of Mediterranean regions towards highly processed takeaway (“junk”) food, containing hypercaloric, sweet, salted unhealthy ingredients, but with easy and quick access, being often arranged as a ready-to-eat box/bag. Unhealthy diets together with physical inactivity are risk factors for chronic non-communicable disorders. Tailored strategies based on a correct healthy diet and education/information are crucial to improve the quality of life.

Obiettivi e contenuti

Our proposal aims to help the adoption of healthy diets and lifestyles through implementing a B4HT combining in “a Box” tangible healthy food plus the APP iFoodMed.

We envision a ready-to-use meal as lunch-box, easy-to-make, easy-to-cook, easy-to-export, easy-to-find (locally), eco-friendly, culturally sound, and nutritionally adequate.

Because adoption of the MD outside the Mediterranean region entails diffculties relevant to cultural differences, lifestyles, poor education, higher cost, our box could make available a healthy MD to all european citizens.

B4HT will address both healthy and metabolically-unhealthy populations. We will enrol 450 adults among the countries participating the study (33% healty normal-weighty and 67% obese/overweight people). Through validated approaches, we will analyse the dietary pattern of both cohorts to target the best lifestyle intervention. Based on dietary habits, we will provide specific B4H not containing animal proteins in favour of low-processed and pre-assembled local, biodiverse, and sustainable plant-based products (legumes, whole cereals), added of healthy accessible and attractive Mediterranean ingredients (dried fruit and/or vegetables, spices). The box will be developed to be used in an affordable and smart way. Several combinations of ingredients will be tested/implemented to obtain boxes that meet the nutritional recommendations, but also the sensorial acceptability. B4HT will be supplied with a smart APP (iFoodMed) providing tailored information and guidelines and a link to participate in nline surveys toll make easier adoption of MD and lifestyles. iFoodMed will act as a “virtual nutritionist” making possible an easy access to diet and lifestyle notion.

Risultati e impatti attesi

In both healthy and unhealthy people, we expect a better adherence to the MD resulting in health ‘risk’ and obesity rate reduction. The economic impact of B4HT on preventing h morbidity and mortality will be calculated by specific algorithms.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Enabling the transition to healthy and sustainable dietary behaviour

Budget

1.399.495 €

Durata

36 mesi

Ente coordinatore

Consiglio Nazionale delle Ricerche - CNR, Istituto di Biologia e Biotecnologia Agraria

Coordinatore scientifico: DE FILIPPO, Carlotta

Paesi partecipanti

6
Croazia
Germania
Israele
ITALIA
Spagna
Turchia

Unità di ricerca

10

Enti italiani partecipanti

2

Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - CREA, Centro di Ingegneria e Trasformazioni Agroalimentari (CREA-IT)

Consorzio Italbiotec

Sezione II / 2022

FEED

From edible sprouts to healthy food

Contesto

Sprouts are defined by the EU regulation 208/2013 as "the products obtained from seed germination, harvested before the development of the first leaf and fully consumed including the seed". These vegetable foods are rich in phytonutrients, such as polyphenols, glucosinolates, isoflavones, vitamins and minerals. Compared to seeds, sprouts represent a higher source of nutrients, since the germination process reactivates metabolism, resulting in the new synthesis of secondary metabolites with potential health benefits, and in the reduction of antinutrients compounds. Depending on plant species, sprouts synthesize bioactive compounds with specific biological activities (antioxidant, antidiabetic, hypocholesterolemic, anti-obesity and anti-cancer), crucial to cope with chronic diseases.

Obiettivi e contenuti

In this context, the objective of FEED will be to improve the development of a new trend towards the consumption of "functional foods", using fresh or dried sprouts of different botanical origins, with particular attention to traditional, local and wild edible species. Sprouts will be characterized for their bioactive compounds, antioxidant and anti-inflammatory activities. In addition, the study of microbiota changes, associated with diets enriched with specific sprouts, will establish a relationship between diet and the inflammatory status of the cells.

Moreover, as fresh sprouts are very perishable and possess a short shelf-life, new bio-based and biodegradable active packaging will be developed by formulating antioxidants and antimicrobial sprout-derived compounds in bio-based and biodegradable edible coatings and active thermoplastic packaging, with the aim of extending the sprout shelf-life and safety.

FEED will also propose the production of new functional foods using dried sprout powder through innovative and sustainable technologies: Microencapsulation and three-dimensional (3D) food printing. Microencapsulation will be realized to produce two different traditional Turkish foods: a drinkable yogurt "Ayran" and Turkish noodles "Eri^{2}te". 3D food printing and non-thermal innovative pre-treatments (e.g., high-power ultrasound, pulsed electric fields) will be carried out to produce snacks, juices and low-sugar jellies that will meet individual customer requirements in terms of colour, shape, taste, texture and nutritional value.

FEED also takes into account the environmental sustainability for the packaging of the fresh sprouts through the preparation of biodegradable edible active packaging. The carbon footprint analyses of the developed products will aid to assess the environmental impacts of the products by estimating the GHGs emission for the entire life cycle of the products (from cultivation to packaging). This evaluation represents a winning marketing strategy for a consumer that is more and more aware of the environmental impacts of its purchases.

Risultati e impatti attesi

Aiming at developing new vegetable-based products active on chronic diseases (i.e., cardiovascular, inflammatory), the project will thus contribute to reducing the pressure on the healthcare systems. In this context, FEED will be addressing the SDG 3, target 3.4: "By 2030 reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being".

Moreover, FEED will link to relevant EU policies and objectives in the context of the European Green Deal (Farm to fork strategy) in the action of reducing the use of pesticides, antimicrobials and excess fertilisation, since the sprout production does not involve intensive agriculture.

Area tematica

Agri-food Value Chain

Azione e Topic

RIA - Enabling the transition to healthy and sustainable dietary behaviour

Budget

864.980 €

Durata

36 mesi

Ente coordinatore

Università di Camerino

Coordinatore scientifico: VINCENZETTI, Silvia

Paesi partecipanti

5
Croazia
ITALIA
Portogallo
Spagna
Turchia

Unità di ricerca

6

Enti italiani partecipanti

1
Università degli Studi della Basilicata

Sezione II / 2022

TOOL4MEDLIFE

From Tradition to Innovation: New Foods and Educational Toolkits for a Healthy and Sustainable Mediterranean Lifestyle

Contesto

Le régime méditerranéen (DM) est un régime alimentaire sain qui améliore l'état de santé en contribuant à la prévention de l'obésité et de la plupart des maladies non transmissibles et chroniques. Au cours des dernières années, une diminution de l'adhésion au DM. Les changements culturels et sociaux ont déplacé le mode de vie des gens vers un régime alimentaire occidental, entraînant un apport insuffsant en macro et micronutriments qui jouent un rôle central dans l'atteinte et le maintien d'un bon état nutritionnel. Il est important d'enquêter sur la consommation alimentaire et de mettre en oeuvre des actions correctives par la conception et la production de nouveaux aliments spécifiques et le développement de stratégies éducatives spécifiques.

Obiettivi e contenuti

Les objectifs du projet sont d'étudier l'adhésion au DM et les comportements alimentaires dans les communautés locales méditerranéennes (pays partenaires du projet) et de mettre en oeuvre des actions correctives en concevant de nouveaux aliments sains basés sur la tradition méditerranéenne, y compris certains aliments enrichis en molécules fonctionnelles, et le développement de stratégies inclusives (boîtes à outils pédagogiques) pour aider la population à adopter des comportements alimentaires sains méditerranéens.

Pour atteindre les objectifs du projet, cinq WP complémentaires seront structurés: WP1- Gestion et coordination du projet. WP2-Réaliser des enquêtes nutritionnelles et sociales spécifiques sur les habitudes alimentaires des communautés méditerranéennes ciblant différents groupes en tenant compte de l'âge, du statut socio-économique, du sexe, du niveau d'éducation, de la profession, des attitudes et des croyances. L'attention sera portée sur l'état nutritionnel et de santé des personnes, les habitudes alimentaires et les éventuelles insuffsances nutritionnelles, l'observance du DM et les facteurs pouvant avoir un impact sur l'adoption de pratiques nutritionnelles saines. WP3-Concevoir et produire de nouveaux aliments sains pour aider les gens à couvrir leurs besoins nutritionnels : huile d'olive extra vierge enrichie, fromage faible en gras et aliments dérivés du lait (boissons au lactosérum, collations au fromage, laits fermentés) enrichis en molécules bioactives (vitamines, antioxydants). Les molécules bioactives seront extraites en utilisant des méthodologies vertes à partir de déchets végétaux organiques selon le modèle d'économie circulaire. WP4-Développer des stratégies éducatives adaptées et inclusives pour améliorer l'adhésion au DM, la sensibilisation aux comportements alimentaires sains et sensibiliser les gens à l'impact bénéfique d'une alimentation saine. Des instruments et actions spécifiques seront conçues en tenant compte des méthodes d'éducation non formelles et innovantes. WP5-Communication, diffusion et exploitation des résultats du projet.

Risultati e impatti attesi

La proposition répond au défi spécifique de l'appel puisqu'il vise à promouvoir la santé physique et mentale humaine, conformément au pacte vert européen, à la stratégie de la ferme à la fourchette et aux objectifs du partenariat Horizon Europe pour un système alimentaire sûr et durable pour les personnes, la planète & climat, en promouvant des comportements liés au mode de vie méditerranéen. Un réseau existant d'acteurs (y compris un agriculteur local, un petit exploitant, des écoles maternelles, une école primaire et secondaire, des universités, une organisation à but non lucratif et une maison de retraite) sera impliqué dans une approche de co-création dans laquelle les acteurs et les consommateurs joueront un rôle central dès la étape de démarrage des processus de conception à la production.

Progetti con unità di ricerca italiane

I progetti sono in ordine temporale dal 2018 al 2022
I diversi colori indicano l'area tematica:

- Water Management
- Farming Systems
- Agri-food Value Chain
- Nexus

All'interno di ciascuna area tematica,
i progetti sono elencati in ordine alfabetico

I topic trattati dai singoli progetti sono richiamati in forma sintetica ed espressi in forma estesa nell'annex di p.159 dove ciascun topic è riportato per area tematica

ALTOS

Managing water resources within Mediterranean agrosystems by accounting for spatial structures and connectivities

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T2

Budget
1.042.491 €

Durata
36 mesi

Paesi partecipanti
6

FRANCIA
Italia
Libano
Marocco
Spagna
Tunisia

11 Unità di ricerca
di cui **1 italiana**

Università di Cagliari

DSWAP

Decision support-based approach for sustainable water reuse application in agricultural production

Anno 2018
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T1

Budget
2.000.000 €

Durata
36 mesi

Paesi partecipanti
7

Cipro
Francia
Germania
ISRAELE
Italia
Portogallo
Spagna

10 Unità di ricerca
di cui **1 italiana**

Università di Salerno

INWAT

Quality and management of intermittent rivers and associated groundwaters in the Mediterranean basins

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T3

Budget
1.510.439 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Francia
Germania
Giordania
Italia
SPAGNA
Tunisia
Turchia

9 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Bari Aldo Moro

KARMA

Karst Aquifer Resources availability and quality in the Mediterranean Area

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T2

Budget
1.457.224 €

Durata
36 mesi

Paesi partecipanti
6

Francia
GERMANIA
Italia
Libano
Spagna
Tunisia

7 Unità di ricerca
di cui **1 italiana**

Università di Roma La Sapienza

MEDSAL

Salinization of critical groundwater reserves in coastal Mediterranean areas

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T2

Budget
1.268.000 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Cipro
Germania
GRECIA
Italia
Tunisia
Turchia

9 Unità di ricerca
di cui **1 italiana**

Università Politecnica di Bari

SUSTAIN COAST

Sustainable coastal groundwater management and pollution reduction through innovative governance in a changing climate

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T3

Budget
1.107.208 €

Durata
36 mesi

Paesi partecipanti
6

Francia
Germania
GRECIA
Italia
Tunisia
Turchia

7 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Sassari

GEMED

Prevention and control of new and invasive geminiviruses infecting vegetables in the Mediterranean

Anno 2018
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T7

Budget
916.545 €

Durata
36 mesi

Paesi partecipanti
5

FRANCIA
Giordania
Italia
Marocco
Tunisia

7 Unità di ricerca
di cui **2 italiane**

CNR
Esasem Spa

LAGMED

Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control

Anno 2018
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T7

Budget
832.988 €

Durata
36 mesi

Paesi partecipanti
6

Algeria
Francia
Italia
PORTOGALLO
Spagna
Tunisia

9 Unità di ricerca
di cui **1 italiana**

Istituto zooprofilattico sperimentale della Lombardia e dell'Emilia Romagna

PLANT B

A sustainable mixed cropping-beekeeping system in the Mediterranean basin

Anno 2018
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T5

Budget
2.082.675 €

Durata
36 mesi

Paesi partecipanti
6

Algeria
Egitto
Francia
GRECIA
Italia
Spagna

10 Unità di ricerca
di cui **2 italiane**

Università della Tuscia
CoNaProA

SUSTAINOLIVE

Novel approaches to promote the SUSTAInability of OLIVE groves in the Mediterranean

Anno 2018
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T5

Budget
1.913.450 €

Durata
48 mesi

Paesi partecipanti
6

Grecia
Italia
Marocco
Portogallo
SPAGNA
Tunisia

22 Unità di ricerca
di cui **5 italiane**

Università di Parma
Università Mediterranea di Reggio Calabria
Alma Mater Studiorum Università di Bologna
AIAB
Coldiretti, Unaprol

ARTISANEFOOD

Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods

Anno 2018
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T11

Budget
1.353.817 €

Durata
36 mesi

Paesi partecipanti
9

Algeria
Francia
Grecia
Italia
Marocco
PORTOGALLO
Spagna
Tunisia
Usa

11 Unità di ricerca
di cui **1 italiana**

Alma Mater Studiorum Università di Bologna

BOOMERANG

Healthier bio-fortified Mediterranean grains

Anno 2018
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T11

Budget
1.120.009 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Egitto
Germania
Italia
SPAGNA
Tunisia
Turchia

11 Unità di ricerca
di cui **2 italiane**

Università di Perugia
CNR ISAFOM

CAMELMILK

Boost the production, transformation and consumption of camel milk in the Mediterranean basin

Anno 2018
Sezione I

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T9

Budget
2.000.000 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Croazia
Francia
Germania
Italia
SPAGNA
Turchia

9 Unità di ricerca
di cui **1 italiana**

Food and Agriculture Requirements - FARE

DAINME SME

Dairy Innovation for Mediterranean SME

Anno 2018
Sezione I

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T9

Budget
1.956.857 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Francia
Italia
SPAGNA
Tunisia
Turchia

10 Unità di ricerca
di cui **2 italiane**

Alimenta Srl
Spread European Safety Geie, SPES

MED4YOUTH

Mediterranean Enriched Diet for tackling Youth Obesity

Anno 2018
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T12

Budget
1.028.480 €

Durata
36 mesi

Paesi partecipanti
5

Giordana
Israele
Italia
Portogallo
SPAGNA

6 Unità di ricerca
di cui **1 italiana**

Università di Parma

MEDITOMATO

Bringing innovation and durability throughout the value chain of the Mediterranean tomato industry

Anno 2018
Sezione I

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T12

Budget
1.999.380 €

Durata
36 mesi

Paesi partecipanti
6

Grecia
Germania
Italia
SPAGNA
Tunisia
Turchia

10 Unità di ricerca
di cui **1 italiana**
Arca 2010 s.c.a.r.l.

MILKQUA

Milk quality all along the dairy chain for a sustainable MILK

Anno 2018
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA -T11

Budget
872.973 €

Durata
36 mesi

Paesi partecipanti
5

FRANCIA
Italia
Portogallo
Spagna
Tunisia

10 Unità di ricerca
di cui **1 italiana**
Università degli Studi di Milano

SAFFROMEDFOOD

Valorisation of saffron and its floral by-products as sustainable innovative sources for the development of high added-value food products

Anno 2018
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T10

Budget
1.292.780 €

Durata
36 mesi

Paesi partecipanti
6

Algeria
Francia
Germania
Italia
Portogallo
SPAGNA

9 Unità di ricerca
di cui **1 italiana**
Università di Parma

2019

GOTHAM

Governance tool for sustainable water resources allocation in the Mediterranean through stakeholder's collaboration. Towards a paradigm shift in groundwater management by end-users

Anno 2019
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T13

Budget
1.599.999 €

Durata
36 mesi

Paesi partecipanti
5

Francia
Giordania
Italia
Libano
SPAGNA

7 Unità di ricerca
di cui **2 italiane**

Istituto per la Cooperazione Universitaria Onlus
Engineering - Ingegneria Informatica

IDEWA

Irrigation and Drainage monitoring by remote sensing for Ecosystems and WAter resources management

Anno 2019
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T15

Budget
645.240 €

Durata
36 mesi

Paesi partecipanti
4

FRANCIA
Italia
Marocco
Spagna

5 Unità di ricerca
di cui **1 italiana**

CNR

INTHEMED

Innovative and Sustainable Groundwater Management in the MED

Anno 2019
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T13

Budget
1.589.000 €

Durata
36 mesi

Paesi partecipanti
7

Germania
Grecia
Italia
Portogallo
SPAGNA
Tunisia
Turchia

7 Unità di ricerca
di cui **1 italiana**

Università di Parma

RESIDUE2019

Risk reduction of chemical residues in soils and crops – impact due to wastewater used for irrigation

Anno 2019
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T14

Budget
1.111.488 €

Durata
36 mesi

Paesi partecipanti
4

GERMANIA
Israele
Italia
Spagna

5 Unità di ricerca
di cui **1 italiana**

Consorzio Italbiotec

BIODIVERSIFY

Boost ecosystem services through highly Biodiversity-based Mediterranean Farming sYstems

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T18

Budget
1.273.600 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
FRANCIA
Germania
Grecia
Italia
Spagna
Tunisia

9 Unità di ricerca
di cui **1 italiana**

BRASEXPLORER

Wide exploration of genetic diversity in Brassica species for sustainable crop production

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T18

Budget
871.372 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Egitto
FRANCIA
Italia
Slovenia
Spagna
Tunisia

12 Unità di ricerca
di cui **2 italiane**

CREA
Università degli Studi di Palermo

CAMELSHIELD

Camel breeding systems: actors in the sustainable economic development of the northern Sahara territories through innovative strategies for natural resource management and marketing

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T17

Budget
871.372 €

Durata
48 mesi

Paesi partecipanti
4

Algeria
FRANCIA
Italia
Marocco

6 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Bari Aldo Moro

DIVICIA

Use and management of Vicia species for sustainability and resilience in biodiversity-based farming systems

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T18

Budget
1.000.000 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
FRANCIA
Italia
Libano
Marocco
Portogallo
Spagna
Tuisia

13 Unità di ricerca
di cui **1 italiana**

Università Politecnica delle Marche

GREENPALM2019

Development of sustainable date palm-based agro systems by preserving their biodiversity

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T21

Budget
703.600 €

Durata
36 mesi

Paesi partecipanti
5

Algeria
Italia
Portogallo
SPAGNA
Tunisia

5 Unità di ricerca
di cui **1 italiana**

CNR

HALOFARMS

Development and optimization of halophyte-based farming systems in salt-affected Mediterranean soils

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T18

Budget
847.872 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Francia
Italia
Portogallo
Spagna
TUNISIA

8 Unità di ricerca
di cui **1 italiana**

Università di Pisa

SUSMEDHOUSE

Efficient, Eco-Friendly, Sustainable Mediterranean Greenhouse Integrated with Artificial Intelligence, Hi-Tech Automation and Control System

Anno 2019
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T17

Budget
1.549.990 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Germania
Italia
Portogallo
Spagna
TURCHIA

7 Unità di ricerca
di cui **1 italiana**

CNR

BIOPROMEDFOOD

Bio-protective cultures and bioactive extracts as sustainable combined strategies to improve the shelflife of perishable Mediterranean food

Anno 2019
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T21

Budget
831.641 €

Durata
36 mesi

Paesi partecipanti
5

Croazia
Italia
Slovenia
Spagna
TURCHIA

10 Unità di ricerca
di cui **1 italiana**

Università Cattolica del Sacro Cuore Roma

FRUALGAE

Sustainable technologies and methodologies to improve quality and extend product shelf life in the Mediterranean agro-food supply chain

Anno 2019
Sezione II

Area tematica
Agrl-food Value Chain

Azione e topic
RIA - T21

Budget
1.220.000 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Germania
GRECIA
Italia
Libano
Portogallo

8 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Modena e Reggio Emilia

MEDFOODTTHUBS

Trace & Trust Hubs for MED food

Anno 2019
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T20

Budget
1.519.000 €

Durata
36 mesi

Paesi partecipanti
7

Egitto
Giordania
GRECIA
Italia
Portogallo
Spagna
Tunisia

10 Unità di ricerca
di cui **1 italiana**

Tecnoalimenti S.C.p.A.

MEDISMART

Mediterranean Citrus: innovative soft processing solutions for SMART (Sustainable, Mediterranean, Agronomically evolved, nutRitionally enriched, Traditional) products

Anno 2019
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T22

Budget
1.112.512 €

Durata
36 mesi

Paesi partecipanti
5

EGITTO
Italia
Portogallo
Spagna
Turchia

6 Unità di ricerca
di cui **1 italiana**

Stazione Sperimentale per l'Industria delle Conserve Alimentari

NANO4FRESH

Nanomaterials for an environmentally friendly and sustainable handling of perishable products

Anno 2019
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T21

Budget
666.332 €

Durata
36 mesi

Paesi partecipanti
4

Italia
Marocco
PORTOGALLO
Spagna

5 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Camerino

WILDFOOD

Eating the wild: improving the value chain of Mediterranean Wild Food Products (WFP)

Anno 2019
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T22

Budget
814.220 €

Durata
36 mesi

Paesi partecipanti
6

Algeria
Italia
Portogallo
Slovenia
SPAGNA
Tunisia

10 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Padova

PHEMAC

Participatory Hub for Effective Mapping, Acceleration and Capitalization and of EU-MPC NEXUS best practices

Anno 2019
Sezione I

Area tematica
Nexus

Azione e topic
CSA - T24

Budget
1.100.000 €

Durata
36 mesi

Paesi partecipanti
8

Egitto
Francia
Giordania
Italia
Libano
Marocco
SPAGNA
Tunisia

12 Unità di ricerca
di cui **2 italiane**

Innolabs Srl
Net7 Srl

2020

HANDYWATER

Handy tools for sustainable irrigation management in Mediterranean crops

Anno 2020
Sezione II

Area tematica
Water Management

Azione e topic
IA - T26

Budget
897.226 €

Durata
36 mesi

Paesi partecipanti
5

Egitto
Germania
Italia
Marocco
SPAGNA

9 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Catania
IRRITEC spa

TALAONA WATER

Talanoa Water Dialogue for Transformational Adaptation to Water Scarcity Under Climate Change

Anno 2020
Sezione I

Area tematica
Water Management

Azione e topic
IA - T25

Budget
2.500.000 €

Durata
48 mesi

Paesi partecipanti
6

Egitto
Francia
Italia
Libano
SPAGNA
Tunisia

8 Unità di ricerca
di cui **2 italiane**

Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici
Geographic Environmental COnsulting srl GECOsistema

DROMAMED2020

Capitalization of Mediterranean maize germplasm for improving stress tolerance

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.455.721 €

Durata
36 mesi

Paesi partecipanti
9

Algeria
Francia
Germania
Italia
Marocco
Portogallo
SPAGNA
Tunisia
Turchia

11 Unità di ricerca
di cui **2 italiane**

Alma Mater Studiorum Università di Bologna
CREA

MA4SURE

Mediterranean Agroecosystems for Sustainability and Resilience under Climate Change

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
997.294 €

Durata
36 mesi

Paesi partecipanti
5

Egitto
Francia
Italia
Slovenia
SPAGNA

8 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Firenze
Terre Regionale Toscana

MEDIBEES

Monitoring the Mediterranean Honey Bee subspecies and their resilience to climate change for the improvement of sustainable agro-ecosystems

Anno 2020
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T27

Budget
1.750.000 €

Durata
48 mesi

Paesi partecipanti
8

Algeria
Giordania
Italia
Malta
Marocco
Portogallo
SPAGNA
Turchia

9 Unità di ricerca
di cui **1 italiana**

CREA

OPTIMUSPRIME

Optimal usage of natural product and biological priming agents to improve resilience of agrosystems to climate change

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.140.588 €

Durata
36 mesi

Paesi partecipanti
6

Cipro
Grecia
Italia
Marocco
SPAGNA
Turchia

9 Unità di ricerca
di cui **3 italiane**

CNR
Agenzia Lucana di Sviluppo e di Innovazione in Agricoltura
La Semiorto Sementi srl

RECROP

Bioinocula and CROPping systems: an integrated biotechnological approach for improving crop yield, biodiversity and Resilience of Mediterranean agro-ecosystems

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.398.127 €

Durata
36 mesi

Paesi partecipanti
7

Egitto
Francia
Italia
Marocco
PORTOGALLO
Spagna
Tunisia

12 Unità di ricerca
di cui **1 italiana**

CNR

RESCHEDULE

RESilient to Climate CHange Extremes MeDiterranean AgricUltural Systems: LEveraging the Power of Soil Health and Associated Microbiota

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.277.728 €

Durata
36 mesi

Paesi partecipanti
5

Germania
GRECIA
Italia
Portogallo
Tunisia

9 Unità di ricerca
di cui **1 italiana**

CNR

SAFEAGROOBEE

Safeguarding agroecosystem's resilience under climate change through efficient pollination and sustainable beekeeping

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.191.940 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Cipro
Croazia
Francia
GRECIA
Italia
Libano
Slovenia

13 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Brescia
Acme21 srl

SUSTAVIANFEED

Alternative animal feeds in Mediterranean poultry breeds to obtain sustainable products

Anno 2020
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T27

Budget
2.299.388 €

Durata
48 mesi

Paesi partecipanti
4

Italia
SPAGNA
Tunisia
Turchia

8 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Torino
Fondazione Slow Food per la Biodiversità Onlus

TRANSITION

Innovative resilient farming systems in Mediterranean environments

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.149.450 €

Durata
36 mesi

Paesi partecipanti
6

Algeria
Egitto
Grecia
Italia
Francia
SPAGNA

10 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Catania

UTOPIQ

Use of Tomato lines tolerant to Proximity shade to Increase yield and Quality in intercropping agrosystems

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
890.812 €

Durata
36 mesi

Paesi partecipanti
4

Francia
Italia
Marocco
SPAGNA

5 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Napoli Federico II

AGRICOMPET

Governing the agri-food supply chain: how to improve smallholders competitiveness

Anno 2020
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T30

Budget
1.128.096 €

Durata
36 mesi

Paesi partecipanti
5

Italia
Francia
Grecia
SPAGNA
Turchia

7 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Verona
Libera Unversità di Bolzano

FLATBREAD MINE

Flat Bread of Mediterranean area INnovation and Emerging process and technology

Anno 2020
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T29

Budget
2.072.042 €

Durata
36 mesi

Paesi partecipanti
10

Croazia
Egitto
FRANCIA
Giordania
Grecia
Italia
Libano
Malta
Portogallo
Spagna

18 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Bari Aldo Moro
Matarrese srl

FUNTOMP

Functionalized Tomato Products

Anno 2020
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T29

Budget
1.905.211 €

Durata
48 mesi

Paesi partecipanti
8

Croazia
Grecia
Italia
Libano
Portogallo
Spagna
Tunisia
TURCHIA

16 Unità di ricerca
di cui **1 italiana**

CNR

GOURMED

Governance of food supply chain to equilibrate price and profits of high quality and safe Mediterranean foodsFermented Foods

Anno 2020
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T30

Budget
952.609 €

Durata
36 mesi

Paesi partecipanti
5

Algeria
Germania
GRECIA
Italia
Tunisia

6 Unità di ricerca
di cui **1 italiana**

Alma Mater Studiorum Università di Bologna

LAB4SUPPLY

Multi-agent Agri-food living labs for new supply chain Mediterranean systems; towards more sustainable and competitive farming addressing consumers' preferences and market changes

Anno 2020
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T30

Budget
1.120.070 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Egitto
Francia
Grecia
Italia
Marocco
SPAGNA

9 Unità di ricerca
di cui **1 italiana**

Horta srl

LOCALNUTLEG

Developing of innovative plant-based added-value food products through the promotion of LOCAL Mediterranean NUT and LEGume crops

Anno 2020
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T29

Budget
2.000.000 €

Durata
42 mesi

Paesi partecipanti
8

Francia
Germania
Israele
Italia
Marocco
Portogallo
SPAGNA
Turchia

20 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Milano
Zini Prodotti Alimentari spa

VALLCET

Valorise foods and Improve Competitiveness through Emerging Technologies applied to food by-products within the circular economy framework

Anno 2020
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T30

Budget
987.000 €

Durata
36 mesi

Paesi partecipanti
5

Francia
Italia
Portogallo
SPAGNA
Tunisia

9 Unità di ricerca
di cui **3 italiane**

ProdAl scarl
F.lli Santorelli sas
CTI FoodTech srl

2021

AGREEMED

Innovative Aquifers Governance for Resilient Water Management and Sustainable Ecosystems in Stressed Mediterranean Agricultural Areas

Anno 2021
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T33

Budget
1.300.140 €

Durata
36 mesi

Paesi partecipanti
7

Francia
Germania
Giordania
Italia
MAROCCO
Spagna
Tunisia

10 Unità di ricerca
di cui **1 italiana**

IRIDRA Srl

MARA-MEDITERRA

Safeguarding the livelihood of rural communities and the environment in the Mediterranean through Nature-based Solutions

Anno 2021
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T32

Budget
2.549.850 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Egitto
Francia
GRECIA
Italia
Libano
Malta
Turchia

8 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Firenze

REACT4MED

Inclusive Outscaling of Agro-ecosystem REstoration ACTions for the MEDiterranean

Anno 2021
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T32

Budget
2.750.000 €

Durata
36 mesi

Paesi partecipanti
9

Cipro
Egitto
Germania
GRECIA
Israele
Italia
Marocco
Spagna
Turchia

11 Unità di ricerca
di cui **2 italiane**

SoftWater srl
CIHEAM

FARMS4CLIMATE

Smart governance and operational models for agroecological carbon farming

Anno 2021
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T34

Budget
2.749.438 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Grecia
Italia
Libano
SPAGNA
Tunisia

12 Unità di ricerca
di cui **3 italiane**

Università Cattolica del Sacro Cuore
Università degli Studi della Basilicata
Agreenment srl

HALOSHEEP

Agroecological sheep/ goat production system based on the valorisation of halophytes of saline area in the méditerranéen basin

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
644.135 €

Durata
36 mesi

Paesi partecipanti
6

Francia
Grecia
Italia
Spagna
TUNISIA
Turchia

7 Unità di ricerca
di cui **1 italiana**

CRPA

MEDPOME-STONE

Valorizing some pome and stone fruit germplasm variability to ensure resilience to climate change in the Mediterranean area

Anno 2021
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
620.150 €

Durata
36 mesi

Paesi partecipanti
4

Italia
Marocco
Spagna
TURCHIA

5 Unità di ricerca
di cui **1 italiana**

Università di Catania

MOUNTAINHER

Empowering women associations as drivers for agro-ecological transformation to generate income for Mountain farming communities

Anno 2021
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T34

Budget
2.750.000 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Croazia
Italia
Libano
MAROCCO
Spagna
Tunisia

9 Unità di ricerca
di cui **2 italiane**

Birrificio Emiliano srl
Open Fields srl

PASTINNOVA

Innovative models for sustainable future of Mediterranean pastoral systems

Anno 2021
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T34

Budget
2.750.000 €

Durata
36 mesi

Paesi partecipanti
12

Algeria
Cipro
Croazia
Francia
GRECIA
Italia
Libano
MAROCCO
Spagna
Slovenia
Tunisia
Turchia

20 Unità di ricerca
di cui **3 italiane**

Università Politecnica delle Marche
CNR
APPIA - Rete della Pastorizia Italiana

SUSTEMICROP

Development of eco-sustainable systemic technologies and strategies in key Mediterranean crops systems, contributing to small farming socio-economic resilience

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
1.374.049 €

Durata
36 mesi

Paesi partecipanti
7

Francia
Italia
Libano
Marocco
SPAGNA
Slovenia
Tunisia

10 Unità di ricerca
di cui **1 italiana**

Birrificio Emiliano srl
Open Fields srl

VALMEDALM

VALorization of MEDiterranean ALMond orchards through the use of intercropping integrated strategies

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
1.215.104 €

Durata
36 mesi

Paesi partecipanti
6

Croazia
Egitto
Italia
Israele
Marocco
PORTOGALLO

9 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Palermo

VINEPROTECT

Ecological survey for biological management and protection of Mediterranean vineyards facing climate changes

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
760.722 €

Durata
36 mesi

Paesi partecipanti
4

Italia
Marocco
PORTOGALLO
Turchia

7 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Verona

DELICIOUS

UnDErstanding consumer food choices & promotion of healthy and sustainable Mediterranean diets and LIfestyles in Children through behavIOUral change actionS

Anno 2021
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T36

Budget
2.606.875 €

Durata
36 mesi

Paesi partecipanti
5

Egitto
Italia
Libano
Portogallo
SPAGNA

10 Unità di ricerca
di cui **2 italiane**

Provincia d'Italia dei Fratelli Maristi delle Scuole
Università di Catania

TECHONEY

Development of a blockchain-based ecosystem that allows an improved positioning of small producers of honey on local and international markets

Anno 2021
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T37

Budget
1.248.531 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Francia
Italia
Lussemburgo
Marocco
SPAGNA
Tunisia
Turchia

13 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Napoli Federico II
Università di Roma La Sapienza

BONEX

Boosting Nexus Framework Implementation in the Mediterranean

Anno 2021
Sezione I

Area tematica
Nexus

Azione e topic
IA - T38

Budget
3.992.044 €

Durata
36 mesi

Paesi partecipanti
8

Germania
Giordania
Italia
Libano
Marocco
Portogallo
SPAGNA
Tunisia

17 Unità di ricerca
di cui **2 italiane**

Consorzio della Bonifica Renana
Alma Mater Studiorum Università di Bologna

SURE_NEXUS

Ensure Fair NEXUS transition for climate change adaptation and sustainable development

Anno 2021
Sezione I

Area tematica
Nexus

Azione e topic
IA - T38

Budget
3.891.543 €

Durata
36 mesi

Paesi partecipanti
8

Egitto
Francia
Grecia
Italia
Israele
Marocco
SPAGNA
Tunisia

17 Unità di ricerca
di cui **3 italiane**

Università Politecnica delle Marche
Planet di Villa Alessandro & C.Sas
REM TEC Srl

2022

NATMED

Nature-based Solutions on existing infrastructures for resilient Water Management in the Mediterranean

Anno 2022
Sezione I

Area tematica
Water Management

Azione e topic
IA - T39

Budget
4.089.297 €

Durata
36 mesi

Paesi partecipanti
5

Algeria
Grecia
Italia
SPAGNA
Turchia

12 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Sassari

OURMED

Sustainable water storage and distribution in the Mediterranean

Anno 2022
Sezione I

Area tematica
Water Management

Azione e topic
IA - T39

Budget
4.092.637 €

Durata
36 mesi

Paesi partecipanti
10

Francia
GERMANIA
Giordania
Grecia
Italia
Marocco
Spagna
Portogallo
Tunisia
Turchia

15 Unità di ricerca
di cui **3 italiane**

Università Federico II di Napoli
Università di Parma
Università degli Studi di Sassari

FUNZYBIO

Fungal and enzymatic degradation of antibiotics: safe reuse of livestock residues for agriculture

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
1.110.829 €

Durata
36 mesi

Paesi partecipanti
5

FRANCIA
Italia
Marocco
Spagna
Tunisia

9 Unità di ricerca
di cui **2 italiane**

Università degli Studi di Milano
CNR

PROMEDRICE

Effective farming practices to protect water resources in Mediterranean rice-based agroecosystems

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
1.645.589 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Italia
Marocco
Portogallo
SPAGNA
Turchia

11 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Milano

PURECIRCLES

Maximising resource use effciency within the energy, water and nutrient nexus for sustainable agriculture in Mediterranean marginal environments

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
1.645.589 €

Durata
42 mesi

Paesi partecipanti
8

Egitto
Francia
GERMANIA
Italia
Marocco
Portogallo
Spagna
Tunisia

12 Unità di ricerca
di cui **2 italiane**

CNR
Università degli Studi di Salerno

SAFWA

Alternative biopesticides for safe integrated pest and water management around mediterranean

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
1.357.183 €

Durata
36 mesi

Paesi partecipanti
7

Francia
Germania
Italia
Libano
Spagna
TUNISIA
Turchia

10 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Scienze Gastronomiche di Pollenzo

TELENITRO

New low cost strategies of crop based on biodiversity and remote sensing to reduce the application of nitrogen fertilizers in the Mediterranean area

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
875.000 €

Durata
36 mesi

Paesi partecipanti
4

Italia
Marocco
SPAGNA
Tunisia

5 Unità di ricerca
di cui **1 italiana**

CNR

MEDGOAT

Goat farming systems characterization and novel strategies to sustain production in the changing climate scenario in the Mediterranean regions

Anno 2022
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T42

Budget
1.286.883 €

Durata
36 mesi

Paesi partecipanti
6

FRANCIA
Italia
Marocco
Portogallo
Spagna
Tunisia

13 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Milano

PAS-AGRO-PAS

The Making of Fragile Agro-ecosystems Productive, Adaptive and Sustainable: Multifunctional Agro-pastoralism

Anno 2022
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T42

Budget
1.682.185 €

Durata
36 mesi

Paesi partecipanti
8

Cipro
Egitto
Francia
Italia
Marocco
PORTOGALLO
Spagna
Tunisia

11 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Milano

CIPROMED

Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T43

Budget
4.054.641 €

Durata
36 mesi

Paesi partecipanti
10

Cipro
Germania
GRECIA
Israele
Italia
Malta
Marocco
Portogallo
Spagna
Tunisia

16 Unità di ricerca
di cui **3 italiane**

Alma Mater Studiorum Università di Bologna
Università di Torino
CNR

IM-PACK

Technological and economic potential of the active packaging obtained by supercritical techniques for the preservation of Mediterranean fresh food

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
1.557.691 €

Durata
36 mesi

Paesi partecipanti
7

Algeria
Francia
Italia
Marocco
Portogallo
SPAGNA
Tunisia

9 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Udine

INNOSOL4MED

Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
4.054.641 €

Durata
36 mesi

Paesi partecipanti
10

Cipro
Germania
GRECIA
Israele
Italia
Malta
Marocco
Portogallo
Spagna
Tunisia

16 Unità di ricerca
di cui **3 italiane**

Alma Mater Studiorum Università di Bologna
Università di Torino
CNR

MEDACORNET

Rescuing acorns as a Mediterranean traditional superfood

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
812.643 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Croazia
Italia
Marocco
PORTOGALLO
Spagna
Tunisia
Turchia

11 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Bari Aldo Moro

MEDIET4ALL

A Transnational movement to support the sustainable transition towards a healthy and Eco-friendly Agri-Food System through the promotion of MEDIET and its lifestyle in modern society

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
1.628.933 €

Durata
36 mesi

Paesi partecipanti
8

Algeria
Francia
GERMANIA
Italia
Lussemburgo
Marocco
Spagna
Tunisia

10 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Palermo

MOREMEDDIET

Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
1.422.307 €

Durata
36 mesi

Paesi partecipanti
7

Egitto
Francia
Italia
Marocco
SPAGNA
Tunisia
Turchia

12 Unità di ricerca
di cui **3 italiane**

CNR
Università di Parma
Università degli Studi di Firenze

MUSH-MED

Transition to Healthy Mediterranean Functional Food via Integrating Mushroom Beta-glucans and Proteins: Promoting Body Homeostasis After Stress-Related Health Problems

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
528.000 €

Durata
36 mesi

Paesi partecipanti
4

EGITTO
Italia
Portogallo
Turchia

4 Unità di ricerca
di cui **1 italiana**

Università degli Studi di Messina

OLI4FOOD

Microbial resources for a sustainable olive oil system and a healthier Mediterranean food: from by-products to functional food

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
1.263.586 €

Durata
36 mesi

Paesi partecipanti
6

Egitto
Germania
Italia
Marocco
Spagna
TURCHIA

9 Unità di ricerca
di cui **2 italiane**

Università di Catania
Università Politecnica delle Marche

PROXIMED

Exploration and Implementation of Products with Alternative Proteins in the Mediterranean Region

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T43

Budget
4.095.700 €

Durata
48 mesi

Paesi partecipanti
10

Egitto
GERMANIA
Grecia
Italia
Libano
Malta
Portogallo
Spagna
Tunisia
Turchia

17 Unità di ricerca
di cui **1 italiana**
Università di Parma

VALOSTONES

Valorization of olive stone by-product as a green source of innovative and healthy value-added products in the context of the circular bioeconomy and sustainability

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
1.041.896 €

Durata
36 mesi

Paesi partecipanti
7

Francia
Italia
Malta
Marocco
Spagna
TUNISIA
Turchia

9 Unità di ricerca
di cui **1 italiana**
Università degli Studi di Udine

FRONTAGNEXUS

Impact of Climate- Smart & Water-Saving Frontier Agriculture on WEFE Nexus in Arid Mediterranean Regions

Anno 2022
Sezione I

Area tematica
Nexus

Azione e topic
IA - T45

Budget
3.012.345,00 €

Durata
36 mesi

Paesi partecipanti
8

GERMANIA
Giordania
Grecia
Israele
Italia
Malta
Tunisia
Turchia

10 Unità di ricerca
di cui **1 italiana**
Alma Mater Studiorum Università di Bologna

Altri progetti

I progetti sono in ordine temporale dal 2018 al 2022
I diversi colori indicano l'area tematica:

- Water Management
- Farming Systems
- Agri-food Value Chain
- Nexus

All'interno di ciascuna area tematica,
i progetti sono elencati in ordine alfabetico

I topic trattati dai singoli progetti sono richiamati
in forma sintetica ed espressi in forma estesa
nell'annex di p.159 dove ciascun topic
è riportato per area tematica

CONSIRS

A novel Condensation Supported Greenhouse Irrigation System

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T4

Budget
690.000 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
4

PRECIMED

Precision Irrigation Management to Improve Water Use Efficiency in the Mediterranean Region

Anno 2018
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T4

Budget
757.499 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
5

WATERMED 4.0

Efficient use and management of conventional and non-conventional water resources through smart technologies applied to improve the quality and safety of Mediterranean agriculture in semi-arid areas

Anno 2018
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T1

Budget
1.862.042 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
7

ADAPT-HERD

Management strategies to improve herd resilience and efficiency by harnessing the adaptive capacities of small ruminants

Anno 2018
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T7

Budget
634.945 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
7

INTOMED

Innovative tools to combat crop pests in the Mediterranean

Anno 2018
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T7

Budget
812.338 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
9

SUPROMED

Sustainable production in water limited environments of Mediterranean agro-Ecosystem

Anno 2018
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T5

Budget
2.030.000 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
10

ZEROPARASITIC

Innovative sustainable solutions for broomrapes: prevention and integrated pest management approaches to overcome parasitism in Mediterranean cropping systems

Anno 2018
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T7

Budget
1.322.500 €

Durata
36 mesi

Paesi partecipanti
8

Unità di ricerca
10

2019

EADANMBRT

Evaluation and development of anaerobic membrane bioreactor (AnMBR) technology to promote unrestricted wastewater reuse and mitigate compromised surface water quality in the Mediterranean region

Anno 2019
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T14

Budget
415.000 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
4

E-GROUNDWATER

Citizen science and ICT-based enhanced information systems for groundwater assessment, modelling and sustainable participatory management

Anno 2019
Sezione I

Area tematica
Water Management

Azione e topic
RIA - T13

Budget
1.600.000 €

Durata
48 mesi

Paesi partecipanti
5

Unità di ricerca
9

HUBIS

Open innovation Hub for Irrigation Systems in Mediterranean agriculture

Anno 2019
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T15

Budget
1.170.706 €

Durata
36 mesi

Paesi partecipanti
7

Unità di ricerca
12

SMACUMED

Smart irrigation cube for sustainable agriculture in the Mediterranean region

Anno 2019
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T14

Budget
991.800 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
6

ADAMEDOR

Adapting Mediterranean Orchards – sciencebased design of resilient fruit tree portfolios for the Mediterranean region

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T18

Budget
738.000 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
8

AZMUD

Improvement of Mediterranean greenhouses performance by the use of innovative plastic materials, natural additives and novelty irrigation technologies

Anno 2019
Sezione I

Area tematica
Water Management

Azione e topic
IA - T17

Budget
1.593.025 €

Durata
42 mesi

Paesi partecipanti
5

Unità di ricerca
9

CONSERVETERRRA

Overcoming the physical and mental barriers for upscaling Conservation Agriculture in the Mediterranean

Anno 2019
Sezione I

Area tematica
Farming systems

Azione e topic
RIA - T16

Budget
1.499.924 €

Durata
48 mesi

Paesi partecipanti
5

Unità di ricerca
16

HORTIMED

Towards circular horticulture: closing the loop on Mediterranean greenhouses

Anno 2019
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T17

Budget
1.556.500 €

Durata
48 mesi

Paesi partecipanti
3

Unità di ricerca
4

VALUEFARM

VALorization of Mediterranean small-scale FARMs by cropping wild UnExploited species

Anno 2019
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T19

Budget
1.242.435 €

Durata
36 mesi

Paesi partecipanti
8

Unità di ricerca
11

BIOFRESHCLOUD

Enhancing Mediterranean Fresh Produce Shelf-life using Sustainable Preservative Technologies and communicating knowledge on dynamic shelf-life using Food Cloud Services and Predictive Modelling

Anno 2019
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T21

Budget
704.000 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
7

MEDIFIT

An interlinked digital platform for Food Integrity and Traceability of relevant MEDIterranean supply chains

Anno 2019
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T20

Budget
1.494.200 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
12

PULPING

Development of Pumpkin Pulp Formulation using a Sustainable Integrated Strategy

Anno 2019
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T22

Budget
912.689 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
9

TRACE-RICE

Tracing rice and valorizing side streams along Mediterranean blockchain

Anno 2019
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
IA - T20

Budget
1.599.500 €

Durata
48 mesi

Paesi partecipanti
3

Unità di ricerca
11

SIGMA-NEXUS

Sustainable Innovation and Governance in the Mediterranean Area for the WEF Nexus

Anno 2019
Sezione I

Area tematica
Nexus

Azione e topic
RIA - T23

Budget
1.544.750 €

Durata
48 mesi

Paesi partecipanti
3

Unità di ricerca
4

2020

INTEL-IRRIS

Intelligent Irrigation System for Low-cost Autonomous Water Control in Small-scale Agriculture

Anno 2020
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T26

Budget
1.038.680 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
8

IRRIWELL

A novel plant-based approach to estimate irrigation water needs of orchards for an optimal water management

Anno 2020
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T26

Budget
1.038.941 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
7

MAGO

Mediterranean wAter management solutions for a sustainable aGriculture supplied by an Online collaborative platform

Anno 2020
Sezione I

Area tematica
Water Management

Azione e topic
IA - T1

Budget
2.495.500 €

Durata
48 mesi

Paesi partecipanti
5

Unità di ricerca
11

MED-WET

Improving MEDiterranean irrigation and Water supply for smallholder farmers by providing Efficient, low-cost and nature-based Technologies and practices

Anno 2020
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T26

Budget
1.030.219 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
8

BIOPESTICIDES

Development of Bio-Pesticides and -Herbicides for Sustainable Agricultural Crop Production

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
1.030.219 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
8

ISFERALDA

Improving Soil FERtility in Arid and semi-arid regions using Local DAte palm residues

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
719.182 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
8

MIDIWINE

Innovative Approaches Promoting Functional Microbial Diversity for a Sustainable Grapevine Health and Productivity in Vineyard Systems of Mediterranean Areas

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T28

Budget
807.874 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
9

NEWFEED

Turn food industry by-products into secondary feedstuffs via circular-economy schemes

Anno 2020
Sezione I

Area tematica
Farming systems

Azione e topic
IA - T27

Budget
2.057.528 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
14

SUSFORAGE

Sown forage mixtures for sustainable agroecosystems in the Mediterranean area

Anno 2020
Sezione II

Area tematica
Farming systems

Azione e topic
IA - T28

Budget
787.609 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
6

IMPULSE

Innovation in the by-product supply chain of citrus in the Mediterranean area

Anno 2020
Sezione I

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T30

Budget
1.334.599 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
15

OIL4MED

Open platform and falrness olive oil supplY chain for MEDiterranean small farmers

Anno 2020
Sezione II

Area tematica
Agro-food Value Chain

Azione e topic
RIA - T30

Budget
589.800 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
5

2021

AGREEMAR

Adaptive agreements on benefits sharing for managed aquifer recharge in the Mediterranean region

Anno 2021
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T33

Budget
1.000.909 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
6

CICLICA

Smart agriCulture optimization to CLImate Change Adaptation

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
1.016.686 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
8

MED4PEST

Novel Ecologically-Based ROdent management DEvelopment in Mediterranean countries

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
527.460 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
5

QUINOA4MED

Quinoa as a climate-smart crop diversification option for higher income generation from marginal lands in the Mediterranean

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
1.747.173 €

Durata
36 mesi

Paesi partecipanti
6

Unità di ricerca
9

REME-DIATION

Resilient Mediterranean with a holistic approach to sustainable agriculture: Addressing challenges of water, soil, energy and biodiversity

Anno 2021
Sezione II

Area tematica
Farming systems

Azione e topic
RIA - T35

Budget
606.804 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
5

INOVFARMER.MED

Improving Mediterranean supply chain through innovative agro-food business to strengthen small-scale farmers competitiveness, using prickly pear and fig as case study

Anno 2021
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T36

Budget
674.100 €

Durata
36 mesi

Paesi partecipanti
5

Unità di ricerca
9

RESILINK

Increasing Resilience of Smallholders with Multi-Platforms Linking Localized Resource Sharing

Anno 2021
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T37

Budget
766.966 €

Durata
48 mesi

Paesi partecipanti
4

Unità di ricerca
7

2022

MAEWA

Mitigation of Agricultural eects in Mediterranean soils and wetlands: bioremediation technologies, environmental and economic benefits

Anno 2022
Sezione II

Area tematica
Water Management

Azione e topic
RIA - T40

Budget
1.465.000 €

Durata
36 mesi

Paesi partecipanti
9

Unità di ricerca
12

MEDDIETMENUS4CAMPUS

Promoting stakeholder adherence to Mediterranean Diet on Campus through menu interventions and social marketing strategies

Anno 2022
Sezione II

Area tematica
Agri-food Value Chain

Azione e topic
RIA - T44

Budget
444.000 €

Durata
36 mesi

Paesi partecipanti
3

Unità di ricerca
7

ECOFUTURE

A socio-ecological approach to combat desertification for a sustainable future

Anno 2022
Sezione I

Area tematica
Nexus

Azione e topic
IA - T45

Budget
3.036.403 €

Durata
36 mesi

Paesi partecipanti
4

Unità di ricerca
9

WEFE4MED

Title Towards a Mediterranean WEFE Nexus Community of Practice

Anno 2022
Sezione I

Area tematica
Nexus

Azione e topic
CSA - T46

Budget
1.999.635 €

Durata
48 mesi

Paesi partecipanti
10

Unità di ricerca
12

Annex - Topic per area tematica

2018	T1	Water reuse and water desalination for agricultural and food production
2018	T2	Water resources availability and quality within catchments and aquifers
2018	T3	Sustainable, integrated water management
2018	T4	Irrigation technologies and practices
2019	T13	Sustainable groundwater management in water-stressed Mediterranean areas
2019	T14	Management of low quality waters under water scarcity and climate change conditions
2019	T15	Bridging the gap between potential and actual irrigation performance in the Mediterranean
2020	T25	Implementing sustainable and integrated management of water resources in the Mediterranean under climate change conditions
2020	T26	Low-cost, lean solutions to improve irrigation efficiency in smallholder farms
2021	T32	Sustainable soil and water management for combating land degradation and desertification and promoting ecosystem restoration
2021	T33	Alleviating Mediterranean water scarcity through adaptive water governance
2022	T39	Sustainable and integrated management of natural and artificial water storages and distribution infrastructures
2022	T40	Prevent and reduce land and water salinization and pollution due to agri-food activities
2018	T5	Improving the sustainability of Mediterranean agro-ecosystems
2018	T6	Adaptation of agriculture to climate change
2018	T7	Preventing and controlling emergence of animal and plant pests and diseases
2018	T8	Developing farming systems able to generate income, to create employment and to contribute to a balanced territorial development
2019	T16	Conserving water and soil in Mediterranean dry-farming, smallholder agriculture
2019	T17	Sustainability and competitiveness of Mediterranean greenhouse and intensive horticulture
2019	T18	Use and management of biodiversity as a major lever of sustainability in farming systems
2019	T19	Small scale farming systems innovation
2020	T27	Genetic preservation and animal feed
2020	T28	Redesign of agricultural livelihood systems to ensure their resilience
2021	T34	Increasing the environmental and socio-economic performance of small scale farming systems through improvements in organisational aspects and new value chain
2021	T35	Up-scaling field practices based on agro-ecological practices to increase ecosystem services and biodiversity, to adapt the small farming systems to climate change and to increase farmers incomes
2022	T41	Developing integrated soil data for the Mediterranean Region: a gateway for sustainable soil management
2022	T42	Improving the sustainability of agropastoralism in the Mediterranean Region under the context of climate change
2018	T9	Implementing innovation in Mediterranean Agro-food Chains by smallholders and SMEs
2018	T10	Valorising food products from traditional Mediterranean diet
2018	T11	Food safety in local food chains
2018	T12	Implications of dietary shifts and sustainable diets for the Med populations and food industry
2019	T20	Implementation of analytical tools and digital technology to achieve traceability and authenticity control of traditional Mediterranean foods
2019	T21	Extending shelf-life of perishable Mediterranean food products
2019	T22	Enhancing horizontal and vertical integration in Mediterranean agro-food value-chains
2020	T29	Enhancement of the health benefits of typical diet foods in the Mediterranean
2020	T30	New models of optimising the agri-food chain, ensuring a fair price for consumers and a reasonable profit share for farmers
2021	T36	Increase adherence to the Mediterranean diet as a sustainable pattern including environmental, social and health aspects
2021	T37	Increasing the resilience of small-scale farms to global challenges and COVID-like crisis by using adapted technologies, smart agri-food supply chain and crisis management tools
2022	T43	Alternative protein sources for the Mediterranean food value chain. From production, extraction, processing and marketing, to societal acceptance
2022	T44	Enabling the transition to healthy and sustainable dietary behaviour
2019	T23	Assessing social, technical and economic benefits of a cross-sectoral governance of the Water-Ecosystems-Food Nexus
2019	T24	Platform for mapping and capitalisation of best practices from on-going and past experiences related to Farming system, Water management and Food Value chain in the Med area
2020	T31	Demonstrating benefits of the Water-Ecosystem-Food Nexus approach in delivering optimal economic development, achieving high level of environmental protection and ensuring fair access to natural resources
2021	T38	Leveraging knowledge on the Nexus management of Water-Energy-Food-Ecosystems resources in the Mediterranean region: from concepts to practical solutions
2022	T45	Predicting and testing options of socio-economic adaptation to declining WaterEnergy-Food-Ecosystem (WEFE) resources in the Mediterranean Region
2022	T46	Development of a Mediterranean Water-EnergyFood-Ecosystem Community of Practice