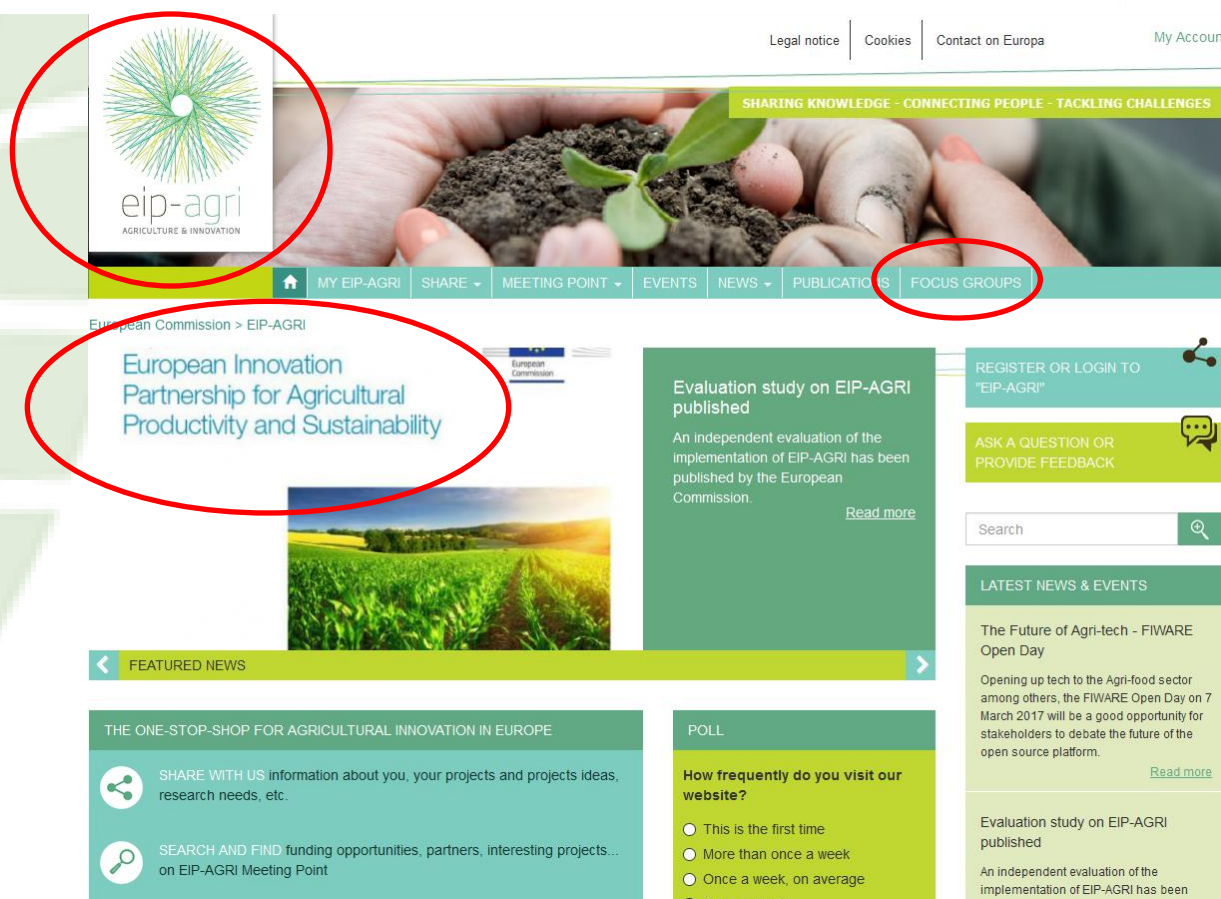
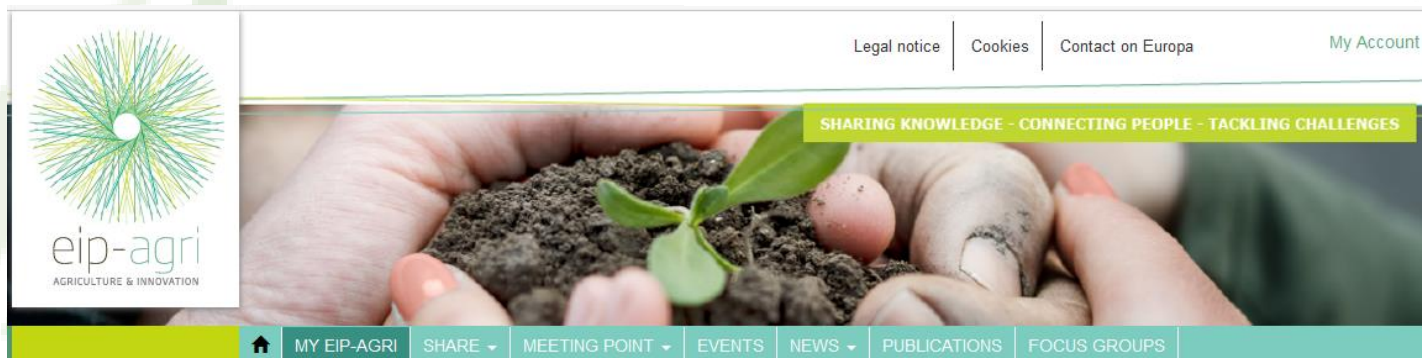


14:30 – 14:40 Strategie di adattamento alla scarsità idrica a scala aziendale: le proposte dell'EIP-AGRI FOCUS GROUP "WATER AND AGRICULTURE" Mastrorilli M., CREA SCA



The screenshot shows the EIP-AGRI website interface. At the top right, there are links for 'Legal notice', 'Cookies', 'Contact on Europa', and 'My Account'. Below these is a banner with the text 'SHARING KNOWLEDGE - CONNECTING PEOPLE - TACKLING CHALLENGES' and an image of hands holding soil with a small plant. A navigation bar contains links: 'HOME', 'MY EIP-AGRI', 'SHARE', 'MEETING POINT', 'EVENTS', 'NEWS', 'PUBLICATIONS', and 'FOCUS GROUPS'. The 'FOCUS GROUPS' link is circled in red. Below the navigation bar, the breadcrumb 'European Commission > EIP-AGRI' is visible. The main content area features a large title 'European Innovation Partnership for Agricultural Productivity and Sustainability' circled in red, followed by a landscape image. To the right, there is a section titled 'Evaluation study on EIP-AGRI published' with a 'Read more' link. Further right are buttons for 'REGISTER OR LOGIN TO "EIP-AGRI"', 'ASK A QUESTION OR PROVIDE FEEDBACK', and a search bar. Below these are sections for 'LATEST NEWS & EVENTS' (listing 'The Future of Agri-tech - FIWARE Open Day') and 'THE ONE-STOP-SHOP FOR AGRICULTURAL INNOVATION IN EUROPE' (with links to 'SHARE WITH US' and 'SEARCH AND FIND'). A 'POLL' section asks 'How frequently do you visit our website?' with radio button options.



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Operational groups

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The agricultural European Innovation Partnership (EIP-AGRI) works to foster competitive and sustainable farming and forestry that 'achieves more and better from less'. It contributes to ensuring a steady supply of food, feed and biomaterials, developing its work in harmony with the essential natural resources on which farming depends.

The EIP-AGRI is part of the EU's growth strategy for this decade

The European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) has been launched in 2012 to contribute to the European Union's strategy 'Europe 2020' for smart, sustainable and inclusive growth. This strategy sets the strengthening of research and innovation as one of its five main objectives and supports a new interactive approach to innovation: *European Innovation Partnerships*.

[Read more](#)

The EIP-AGRI pools funding streams to boost interactive innovation

Having an idea is one thing, turning it into an innovation action is another. Different types of available funding sources can help get an agricultural innovation project started, such as the **European Rural Development policy** or the EU's research and innovation programme **Horizon 2020**. The EIP-AGRI contributes to integrating different funding streams so that they contribute

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Benchmarking farm performance

Dairy production systems

Diseases and pests in viticulture

Ecological Focus Areas

Fertiliser efficiency

Forest biomass

Genetic resources

High Nature Value

IPM for Brassica

Livestock emissions

Mixed farming systems

New entrants into farming

Nutrient recycling

Organic farming

Permanent grassland

Precision farming

Protein crops

Short food supply chains

Soil organic matter

Soil-borne diseases

Water & agriculture

3 new EIP-AGRI Focus Groups

The topics to be covered by three new Focus Groups are:

- Robust and resilient dairy production systems
- Agroforestry: introducing woody vegetation into specialised crop and livestock systems
- Diseases and pests in viticulture

Over 240 experts applied to this call which closed on 11 July 2016 23:59 hrs CET (Brussels time). The Focus Group experts will be selected in September 2016.

You can read more about how Focus Groups work and their expected results in the EIP-AGRI [Focus Group charter](#) and the [Focus Group brochure](#).

EIP-AGRI Focus Groups are temporary groups of selected experts focusing on a specific subject, sharing knowledge and experience.

Each group explores practical innovative solutions to problems or opportunities in the field, and draws on experience derived from related useful projects. Each EIP-AGRI Focus Group meets twice and produces a recommendations and outcomes report.

The EIP-AGRI Focus Groups also discuss and document research results, best practices and identify the implications for further research activities that will help to solve practical problems in the sector. These may be related to production, processing, consumption, transport or other issues.

In short, the **objectives** of an EIP-AGRI Focus Group are:

- Taking stock** of the state of the art of practice in the field of the EIP-AGRI Focus Group activity, listing problems and opportunities;
- Taking stock** of the state of the art of research in this field, summarising possible solutions to the problems listed;
- Identifying** needs from practice and possible directions for further research;
- Highlighting** priorities for innovative actions by suggesting potential practical Operational Groups or other project formats to test solutions and opportunities, including ways to disseminate the practical knowledge gathered.

Do you have an idea for an EIP-AGRI Focus Group? Is the topic focused and the question well defined? Then why not suggest a new EIP-AGRI Focus Group topic.

Related content:

EIP-AGRI Brochure on EIP-AGRI Focus Groups



eip-agri
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European Commission > EIP-AGRI > Water & agriculture: adaptive strategies at farm level

- Agroforestry: woody vegetation
- Animal husbandry
- Benchmarking farm performance
- Dairy production systems
- Diseases and pests in viticulture
- Ecological Focus Areas
- Fertiliser efficiency
- Forest biomass
- Genetic resources
- High Nature Value
- IPM for Brassica
- Livestock emissions
- Mixed farming systems
- New entrants into farming

Water & agriculture: adaptive strategies at farm level

What farm level adaptation strategies exist or can be developed to deal with water scarcity?

The **final report** of this Focus Group has been published.

Get all the information at a glance in the **Water and Agriculture factsheet**.

Tasks:

- **Make an inventory** of competitive farming management practices and strategies which are currently available and/or adopted to tackle water scarcity at farm/local level in the EU. How will they cushion against feed and food insecurity and rural vulnerability? What working examples can be found in the EU?
- **List** promising alternative and cost effective, competitive (novel) crops and/or cropping/livestock/agricultural systems that are able to deal with water scarcity.
- **Assess** the potential for soil and landscape management to improve water holding capacity.
- **Identify the success (or the fail) factors** (financial, environmental, societal...) concerning the transferability of adaptive strategies beyond the farm/local boundaries as well as to farms in different European regions.
- **Identify needs from practice and possible gaps in knowledge** on particular issues concerning adaptation(s) to water scarcity which may be solved by further research.
- **Identify the main challenges** farmers have to face when changing "business as usual" to counter the effects of water



Acqua & agricoltura: le strategie di adattamento in azienda

Quali sono le strategie, attuali e future, di adattamento alla carenza idrica?

Per trovare una risposta a questa domanda, 19 esperti si sono riuniti nel Focus Group EIP "acqua e agricoltura". Hanno cominciato a lavorare a giugno 2015 e le loro conclusioni sono state riportate in un report consegnato a marzo 2016.

Il Focus Group ha preso in considerazione le pratiche agricole aziendali che tendono ad aumentare la disponibilità di acqua per colture e allevamenti, l'efficienza d'uso dell'acqua, la resilienza delle aziende in caso di penuria di acqua. Gli esperti, in base alle loro conoscenze pratiche, hanno suggerito 5 azioni per l'immediato futuro:

- ▶ Gestione del suolo e dei residui colturali per aumentare la disponibilità di acqua: aumento del contenuto di sostanza organica nel suolo, agricoltura conservativa, pacciamatura, circolazione controllata dei mezzi agricoli, lavorazioni che non rimescolano gli strati di terreno (sub-arature)
- ▶ Scelta di cultivar migliorate (adatte ai nuovi sistemi di coltura) e introduzione di nuove colture che tollerano la siccità
- ▶ Ricorso a strumenti informatici per migliorare la gestione delle colture e dell'azienda (modelli colturali e sistemi di supporto alle decisioni)
- ▶ Programmazione dell'irrigazione con dispositivi specifici: sensori "pianta"; servizi "on line" per il consiglio irriguo, irrigazione con volumi ridotti (regulated deficit irrigation); irrigazione di precisione
- ▶ Utilizzazione di acque di qualità inferiore (reflue e salmastre) per irrigare

14:30 – 14:40 *Strategie di adattamento alla scarsità idrica a scala aziendale: le proposte dell'EIP-AGRI FOCUS GROUP "WATER AND AGRICULTURE" Mastorilli M., CREA SCA*

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EIP-AGRI Focus Group Water & agriculture: adaptive strategies at farm level

MINIPAPER: Soil management for improved water availability

**Marcello Mastroianni, Gottlieb Basch, Martin Collison,
Janjo de Haan, Marek Krysztoforski, Linda Larsson,
Paolo Mantovi, Vaseleios Takavakoglou, Laima
Taparauskiene**

Soil management for improv

1. Summarizing problems / solutions

The soil water content is a dynamic parameter. At the farm scale, it results from the balance between "gain" (precipitation, irrigation, run-on, capillary rise) and "loss" (evapotranspiration, run-off, percolation) of water (fig. 1). The storage capacity of a soil is ultimately a function of its depth and texture, but can be reduced by problems such as poor structure. However, the soil water availability for a crop depends on the root system depth and soil porosity and both parameters do change at the farm

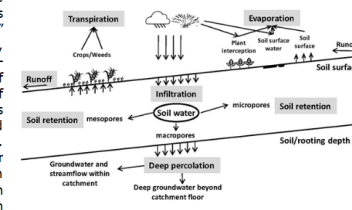


Figure 1: Water fluxes over a landscape or watershed and destinations of rain and irrigation water

MINIPAPER: SOIL MANAGEMENT FOR IMPROVED WATER AVAILABILITY 01, 05, 015

"Infiltrability". For that purpose, it is necessary to distinguish whether infiltration is controlled surface or by soil profile. At the soil surface the control of infiltration is possible if water is supplied by irrigation (by regulating amount and intensity). Under rainfed conditions, the infiltration of soil surface layer and in subsurface is controlled by the hydraulic conductivity of the soil profile. Infiltration can be improved by either increasing its rate or by extending the time water infiltrates. Whereas the former is strongly enhanced in the presence of continuous macropores (mainly biopores created by macrofauna activity and former root channels), the latter depends on soil surface roughness and the slope of the field. An increase of roughness is often a unintentionally through any form of soil tillage, or intentionally achieved through tillage operations along contour lines or by creating "pockets" or "basins" or "terraces" over the soil surface. Infiltration rate, however, can only be improved where soil management contributes to:

- surface aggregate stability, avoiding aggregates to breakdown by the kinetic impact of rain (or overhead or furrow irrigation) or the mechanical impact of soil tillage or wheeling consequently particle detachment, sealing and crusting;
- maintain the soil covered permanently to dissipate the energy load of raindrops before the soil surface.

Thus management practices which contribute to improving the infiltrability (fig. 3) aim at:

- minimizing soil disturbance (aggregate disruption)
- increasing soil OM content
- applying soil amendments that enhance aggregate stability

Regarding profile-controlled infiltration limitations (occurring in layered soil profiles or in the presence of compacted layers), subsoiling breaks restrictive soil layers (fig. 4). As long term strategy only the promotion of the development of vertically oriented macropores through earthworm and other macro activities and/or the maintenance of former root channels, both achieved through the absence of soil disturbance, is able to improve profile-restricted infiltration rates.

After water infiltrates the soil, its movement in or through the soil is mainly influenced by gravitational forces and suction gradients. The amount of soil water available to the plant depends on the porosity (amount and pore size distribution) and on the soil volume explored by roots. While pore size distribution is strongly affected by soil properties such as texture, structure and soil OM, the total pore volume from which plants may extract water depends on the effective rooting depth. Thus, in order to increase the amount of plant available soil water, specific soil management practices can be adopted. They aim to increase:

- 1) rooting depth. Vertical tillage is capable to break compacted soil layers (hard pans), free originated by heavy machine load under moist soil conditions or previous tillage operations. Although effective in breaking physical subsoil constraints (from natural or anthropogenic), deep-loosening effects are often of short duration, especially if not accompanied additional measures, such as subsoil conditioners (i.e. gypsum), installation of primer or reduced or controlled traffic.



Fig. 3: Infiltration under two tillage systems

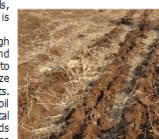


Fig. 4: Vertical tillage or subsoiling

main issue remains soil porosity, the change and size

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- 2) percentage meso-macropores. Tillage in moist soil (near the field capacity) is the first cause of soil compaction (and losing meso-macroporosity). In the absence of soil disturbance (no-till systems) biological macropores, earthworm micro-galleries, former root channels, and voids between soil structural units are preserved. In that conditions effective deep percolation is allowed. However, tillage treatments alone make little difference to deep drainage. Though, the higher drainage losses in soil conservation systems can mainly be attributed to greater water intake and soil water storage where residues are maintained at the soil surface.



Fig. 5: Examples for tillage induced subsoil compaction

Unproductive soil water losses through evaporation, especially under high evaporative demand conditions, can affect crop available water considerably. Evaporative water losses are enhanced immediately after any form of soil tillage. At a later stage, however, the superficial layer of dry soil creates a barrier ("soil mulch") for the further rise and consequent evaporation of subsurface soil water. Under no-till conditions this process is not interrupted unless soil cover provides this barrier.

In summary, improving water availability through soil management, whether under rainfed or irrigated conditions, must always aim at the reduction of runoff and evaporation, and the enhancement of the volume of plant available water (rooting depth and pore size). Apart from chemical amendments to increase water infiltration and retention, tillage operations, either to retain rain or irrigation water for a longer time at the soil surface or to break surface crusts or compacted subsoil layers are widely used to reduce these losses and to allow roots to access deeper soil layers. Conservation Agriculture principles (mainly minimum soil disturbance and permanent soil cover) have shown to improve soil water availability considerably both through higher infiltration rates (intake) and reduced evaporation losses, and an enhanced water holding capacity as a result of an increase in the volume of mesopores and soil organic matter. Comparing the different options, the Conservation Agriculture approach appears to be the most cost-effective way of soil management to improve water availability at farm level.

4. Collecting relevant examples of good practice

The good practices can be divided in two categories:
A) those for increasing the volume of water stored in the soil profile:
• Ripper subsoiling (non-inversion tillage). Deep tillage (fig. 4) is necessary wherever a hard pan is present for breaking up hard layers and increasing available soil depth (by slicing thinly through the pan vertically, while lifting and then dropping the soil). Moreover it allows the root growth into deeper layers, particularly where reduced tillage is practiced, but ripping is not well-suited in tree stands. However, it is an expensive operation (requiring high energy and specific machinery) and should be repeated whenever a hard layer appears into the soil profile.



Fig. 6: Soils having different OM contents



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Latest events

EIP-AGRI events create, support and boost the EIP-AGRI network. They are organised by the European Commission's Directorate-General for Agriculture and Rural Development from 2013 onwards. Find out more on past and future [EIP-AGRI events](#).

Many other interesting events are organised all over Europe, in the [European Calendar](#) you will find future events related to innovation in agriculture and forestry.

If you are interested in a specific topic, use the form below to search for other events.

Should you wish to share information about interesting events in the coming months, please let us know through newsletter@eip-agri.eu

Today

<

>

February 2017

Day

Week

Month

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
		8:00 - 12:15 LIGNOFUELS 2017: Advanced Biofuels & Materials 12:15 Study day of the Group on Irrigation Studies (GRUSI)-Actions of the decree MIPAAF 31 LUGLIO 2015 for the estimation of irrigation volumes:				



European Commission > EIP-AGRI > Study day of the Group on Irrigation Studies (GRUSI)-Actions of the decree MIPAAF 31 LUGLIO 2015 for the estimation of irrigation volumes

Study day of the Group on Irrigation Studies (GRUSI)-Actions of the decree MIPAAF 31 LUGLIO 2015 for the estimation of irrigation volumes:

Type of event	Other
Location	Italy

The guidelines MIPAAF approved by the Ministry Decree of July 31, 2015 (Official Gazette 213 of 14 September 2015) define the cases in which Italian regions must establish measurement requirements of irrigation volumes, related to withdrawals, refunds and use, both for collective and autonomous irrigation. Where it is not mandatory to install meters or where their installation is pending, the Decree requires the estimation of irrigation volumes using the methods specified by the permanent Board, coordinated by the Head of the Department of European and international policies of the Italian Ministry of Agriculture and Rural Development with the technical support of CREA.

The activities of the Board led to the definition of methodologies for estimating water volumes for collective irrigation and self-supply, as well as for refunds to the hydrographical network and releases to underground water flows. The Guidelines have been implemented by specific regulations that almost all the regions have approved by 31 December 2016. The group on irrigation studies, in collaboration with CREA and the ANBI, proposes a discussion on the implementation of estimation methods of irrigation volumes for different realities in Italy, to highlight potential problems and possibly steer the solution.

For more information, check the [preliminary program here](#).

Venue Address:

Cavour Room; Ministry of Agriculture, Forestry and Food Policies. Rome, Italy

Attachment	Size
 grusi_bozzaprogramma2017_v5.pdf	600.13 KB

14:30 – 14:40 *Strategie di adattamento alla scarsità idrica a scala aziendale: le proposte dell'EIP-
AGRI FOCUS GROUP "WATER AND AGRICULTURE" Mastrorilli M., CREA SCA*



Focus Group
experts in the field

grazie

RI FOCUS GROUP WATER & AGRICULTURE SEPTEMBER 2016



eip-agri



Water Focus Group Experts

Per agevolare l'adozione di buone pratiche:

- I benefici che derivano dall'uso limitato di acqua devono essere identificati chiaramente in termini economici e ambientali, a breve e lungo termine
- Lo scambio di conoscenze tra tutti gli attori è indispensabile per individuare e risolvere problemi tecnici e operativi connessi al risparmio idrico
- Le buone pratiche dovrebbero essere divulgate in campi dimostrativi presso aziende reali
- I manuali operativi devono essere chiari e disponibili quando si intende promuovere tecniche nuove e complesse

- Adattare alle realtà locali le pratiche di agricoltura conservativa, in particolare la gestione dei residui culturali per la copertura del terreno e le tecniche di lavorazione
- Ottimizzare rotazioni e diversificazione colturale, includendo specie aromatiche e medicinali
- Anticipare le semine delle colture a ciclo primaverile-estivo, ricorrendo a cultivar che tollerano le basse temperature
- Stabilire per ogni ambiente valori standard di fabbisogno irriguo e produttività da utilizzare come valori di riferimento per misurare gli effetti delle strategie proposte
- Concepire nuove strategie irrigue (irrigazione di soccorso, deficitaria) in base al bilancio idrico del suolo e a sensori di stato idrico del terreno o della pianta
- Proporre l'irrigazione di precisione col supporto del telerilevamento
- Sviluppare soluzioni innovative per l'utilizzo di acque alternative per l'irrigazione (acque di bassa qualità, reflue, salmastre)
- Valutare l'impatto delle politiche, dell'impronta idrica e delle tariffe sul consumo di acqua in azienda

Domande di ricerca dal mondo operativo

- Sviluppare ricerche direttamente nelle aziende agricole per sperimentare le strategie in termini di: salvaguardia della risorsa idrica, agronomici, economici, ambientali
- Favorire studi a lungo termine per dimostrare i benefici delle strategie volte ad aumentare il contenuto di sostanza organica del suolo: agricoltura conservativa, pacciamatura vegetale, cover crop, sovescio, rotazioni colturali
- Calibrare e validare localmente i sistemi di supporto alle decisioni, renderli accessibili e facili da usare; dimostrare con chiarezza i benefici che derivano dalla loro utilizzazione
- Realizzare sensori a prezzi accessibili e semplici da usare, per monitorare in tempo reale lo stato idrico della vegetazione di diverse colture
- Valutare in condizioni di azienda reale i sistemi irrigui sito-specifici, che erogano l'acqua a dosi variabili
- Formulare chiaramente protocolli e consigli per prendere le decisioni che riguardano l'irrigazione
- Sperimentare in azienda sistemi economicamente validi per riciclare l'acqua
- Dimostrare la validità in coltura protetta di sistemi che utilizzano limitate porzioni di terreno (colture in verticale) e di quantità d'acqua (sistemi idroponici a ciclo chiuso)