

L'acqua e l'agricoltura: la necessità di un uso più razionale della risorsa

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RETERURALE
NAZIONALE
20142020



- <https://www.youtube.com/watch?v=xTYGWa6Njlk>



ACCADEMIA DEI GEORGOFILI

INTERNATIONAL MEETING

Water in agriculture: a better use for a better world

September 15th, 2021 - 9.30 a.m.

The connubium water-agriculture is indissoluble.

Crop productivity is strongly dependent on water supply, and the need of irrigation is becoming more and more urgent in most countries and for most crops. Climate change and variability increase the fluctuations in precipitation and surface supplies and largely pose a major threat on water availability. Agriculture irrigation accounts for 70% of water use worldwide and competes with the needs of rising population and energy and industry sectors. An adequate agriculture's management of this precious resource and the preservation of its quality are therefore essential to a sustainable and productive agro-food sector in each country.

This meeting aims to address some of those aspects, rising the attention of decision and policy makers, technical consultants, stakeholders, general public and citizens on the increasing need to address sustainable water use and re-use.

Co-organized by: Accademia dei Georgofili; ANBI (Associazione nazionale consorzi di tutela gestione territorio e acque irrigue); CER (Consorzio di bonifica di secondo grado per il Canale Emiliano Romagnolo); CNR-IBE (Institute of BioEconomy).



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Water in agriculture: a better use for a better world

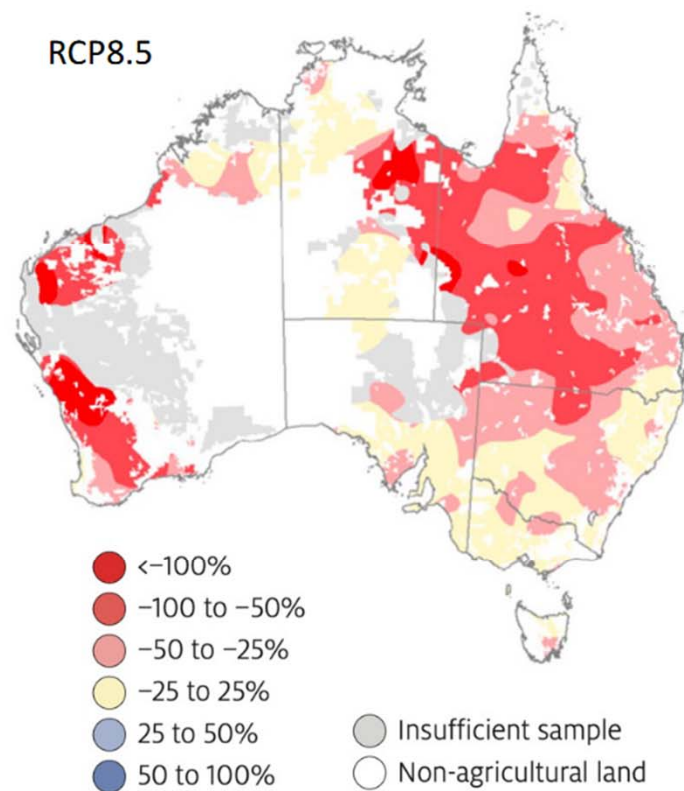
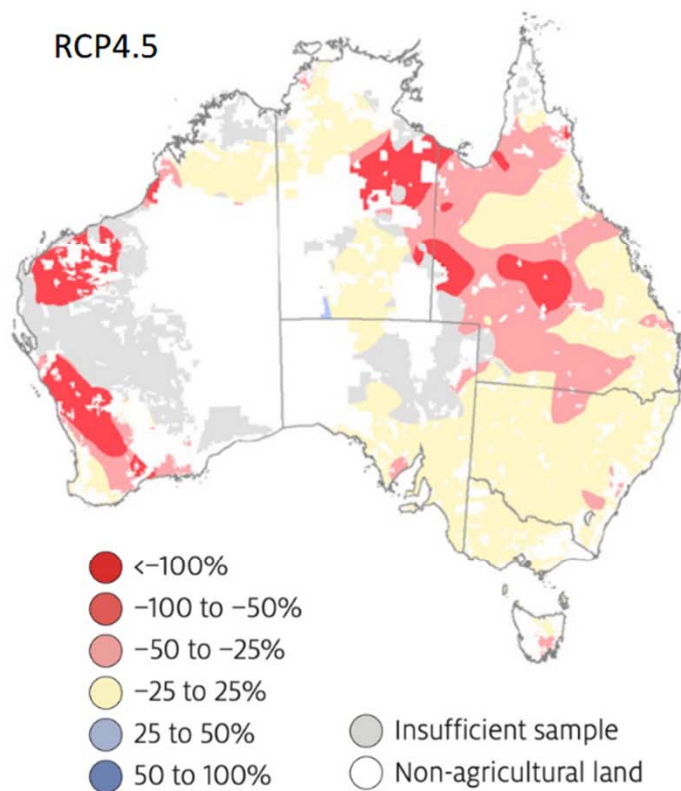
Mercoledì 15 settembre 2021





Projected change in farm profits around 2050

- with no further adaptation or technological advancement



Improving Irrigation Water Productivity



Centre for Agricultural Engineering

- Develop and increasing use of automated surface irrigation systems
 - Use hardware, software and improved management systems to improve irrigation performance
 - Increasing yield per unit of water
- Use sensors for crop, soil and atmosphere, and use the data in models to help make real-time decisions
- Build decision support tools for irrigation scheduling, soil moisture monitoring, auditing and performance monitoring

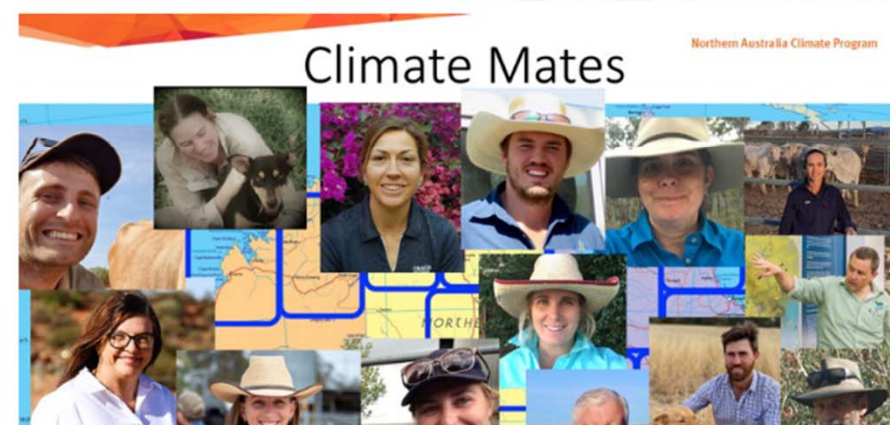
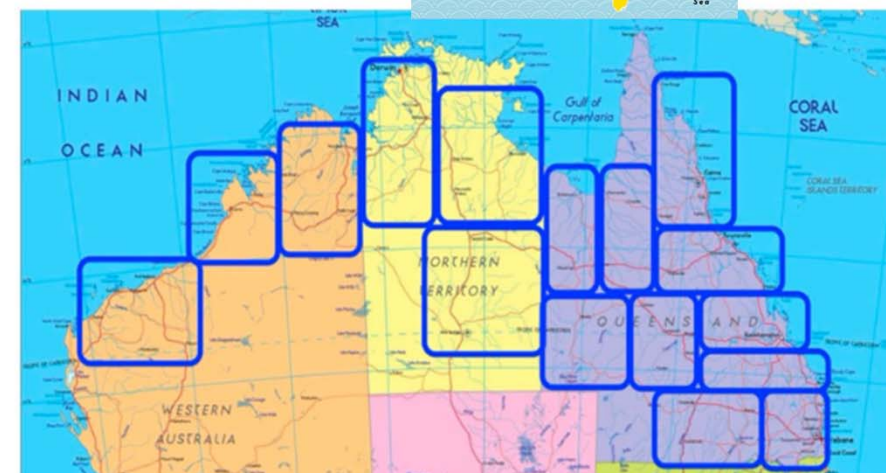


• Advances in technology to assist monitoring and decision making

Intermediaries: climate-trained local farmers, advisors and consultants

“Climate Mates”

- trained farmers, trainers, and consultants
- live, work and trusted in the community
- champion and explain the use of meteorological and climate information
- ascertain farmer needs for tailored products, and farmer views on prototypes
- have ready access to weather and climate experts at the Bureau of Meteorology and USQ
- Receive ongoing training





Response to weather



- Farmers cannot change weather

But farmers can:

- Know what can be changed and act on it
 - By changing crops
 - By increasing biodiversity in cropping & farming systems



Learn to cope with climate change and variability



Livestock Adaptation for lack water

Use local adapted breeds:

- Only 2% weight loss in Afrikaner after 24 h without water BUT 15% in exotic breed.
- Deprivation of water for 24h period did not reduce feed intake of Afrikaner, BUT exotic breed feed intake was reduced by 24%.



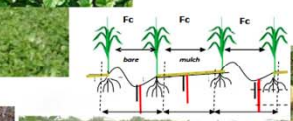
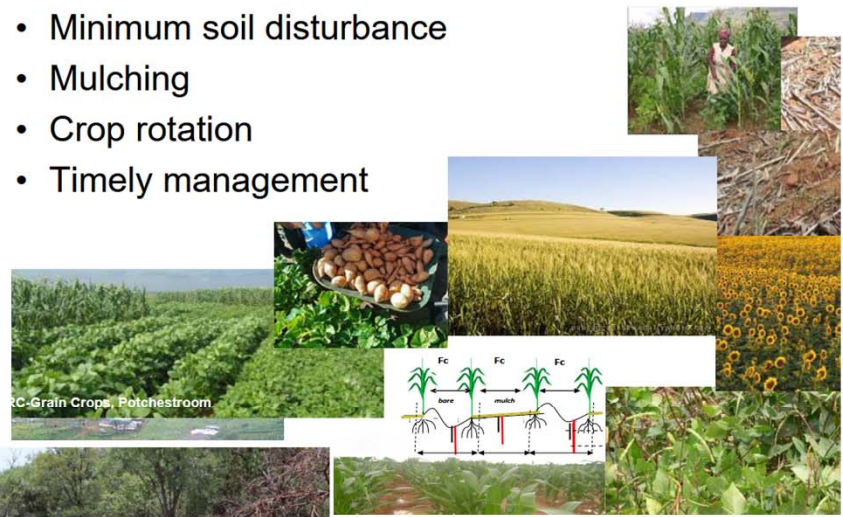
Drought Resistant Maize Hybrids

- Protection from drought
- Bt hybrids released
Protection from stalk borer and fall armyworm



Conservation Agriculture Principles

- Minimum soil disturbance
- Mulching
- Crop rotation
- Timely management



Excessive use of Water in Rice & Sugarcane Cultivation

- Rice as grown in India is a water-guzzler, because farmers use on an average 15,000 litres to produce one kg of paddy.
- No more than 600 litres is needed if proper water management techniques are followed.
- Given that 45 per cent of the country's total irrigation water is used solely for rice cultivation, the need to improve farming methods imperative.
- Besides being wasteful, excessive use of water results in lower yields and adverse environmental effects such as soil salinity and waterlogging.



Traditional Knowledge

- Farmers in India traditionally relied—and still rely—on knowledge passed on from one generation to the next, generally through oral traditions.
- Unfortunately, due to the climate crisis and variability of weather patterns, these traditional knowledge systems are now proving inadequate. Farmers require inputs that are of a specialised nature.

Alternate Wetting and Drying (AWD)

Groundwater Mapping & Aquifer Management

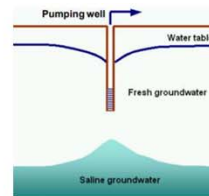
Promoting water-use-efficiency:

Promotion of micro-irrigation practices through government programs has been localized in a few States—7.7 million hectares of micro-irrigation, 95 % of which is in 10 states.

Management Strategies for Groundwater Salinity

Watershed Development

- Watershed Development (WSD) in India has been a part of the national approach to improve agricultural production and alleviate poverty in rainfed regions since the 1970s.



System of Crop Intensification

- System of Crop Intensification involves soil preparation and management, decreasing crop density per acre and appropriate crop spacing/crop geometry, systematic application of organic inputs and reducing dependence on chemical inputs, spraying of micro-nutrients, and using high quality seeds.
- Promotes the SCI method through plot demonstration during Farmer Field Schools where the farmers are exposed to new farming techniques, field demonstrations and coping mechanisms within the context of **water scarcity and climate variability**.

Water Budgeting

- Water Budgeting (WB) is a unique approach towards ensuring optimum, equitable and most efficient use of water.
- This involves gaining an understanding of water availability, a community's existing needs and requirements of water, crop planning based on water availability, optimising irrigation, equitable sharing of water, and considered decisions on groundwater use.
- Jal Sevaks (Water Volunteers) from the villages as representatives to supervise and implement water budgeting activities.
- Jal Sevaks work as motivators and facilitators, serving village communities in implementing water stewardship.
- They are trained to address various challenges in water management.
- Each Jal Sevak leads the project activities in his own and the neighbouring 3-4 villages.



**THE MOST RESTRICTIVE IMPACT IS RAIN.
INADEQUATE VALUES -DISTRIBUTION
OR EVEN EXCESS**

**AFFECTING -
QUALITY OF PRODUCTS
INADEQUATE PEST AND DISEASE
CONTROL
LOSS OF PRODUCTIVITY**



**TO BETTER SUPPORT WATER AND FOOD SECURITY PROCESSES -
SOME ASPECTS TO BE CONSIDERED**

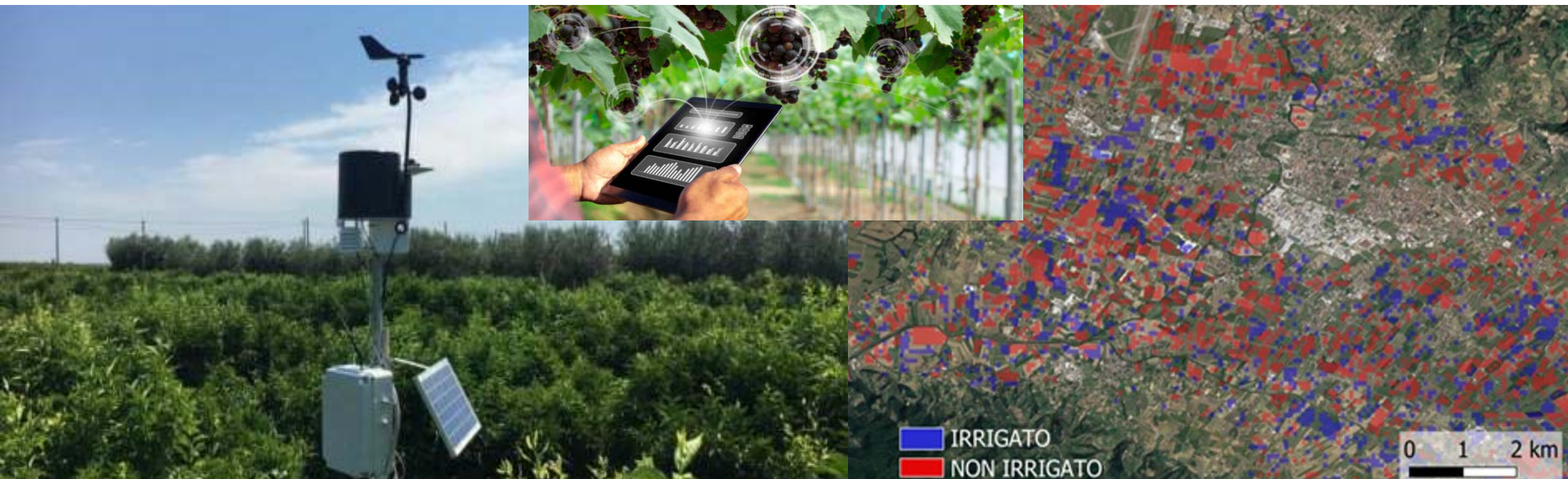
- 1. THERE IS A CLEAR TREND TOWARD CHANGE IN THE TEMPERATURE REGIME, ESPECIALLY IN TERMS OF MINIMUM AIR TEMPERATURE. THIS CHANGE MAY BE RELATED TO GLOBAL CLIMATE CHANGES OR SEASONAL OSCILLATION.**
- 1. THE ASPECTS THAT ARE INHERENT TO CLIMATE VARIABILITY MUST NOT BE DISREGARDED; THEY MUST INDEED BE ASSESSED IN CONJUNCTION WITH THE CLIMATE CHANGE SCENARIOS.**
- 2. FOR THE STATE OF SÃO PAULO – PREVIOUS STUDIES INDICATE A DISTINCT CHANGE IN THE BEGINNING OF THE RAINY SEASON: FROM SEPTEMBER, TO THE END OF OCTOBER OR BEGINNING OF NOVEMBER.**
- 3. STUDIES CONCERNING THE ADAPTATION OF CROPS TO NEW CLIMATE SCENARIOS MUST BE CONSIDERED TO THE INTERACTIVE ASPECTS OF CROPPING SYSTEM, GENETIC BREEDING, WATER RESOURCES, AGROMETEOROLOGY, AND SOILS HAVE BEEN JOINTLY ASSESSED.**
- 4. WATER BALANCE MUST NOT BE INTERPRETED SEPARATELY, AS A TOOL FOR THE INDICATION OF CLIMATE CHANGES OR CLIMATE RISK ASSESSMENTS.**



Il messaggio «chiave» :
Adattarsi attraverso il cambiamento

La «via» per farlo:

- conoscere meglio alla piccola scala locale e temporale gli impatti del cambiamento climatico (cooperazione tra chi studia il clima e chi studia l'acqua)
- gestire meglio risorse, infrastrutture, ecosistemi.
- supportare i decisori (finanziamenti, **innovazioni**)



Copernicus is the European Union's Earth observation programme. Information from this programme is provided through six thematic services: land, marine, atmosphere, climate change, emergency management and security. All information is free and openly accessible to all users. The Land Service is divided into four main components:



Global

provides a series of bio-geophysical products on the status and evolution of the land surface at global scale at mid and low spatial resolution



Pan-European

provides information about land cover and land use and its changes, as well as bio-geophysical parameters at European scale at high resolution



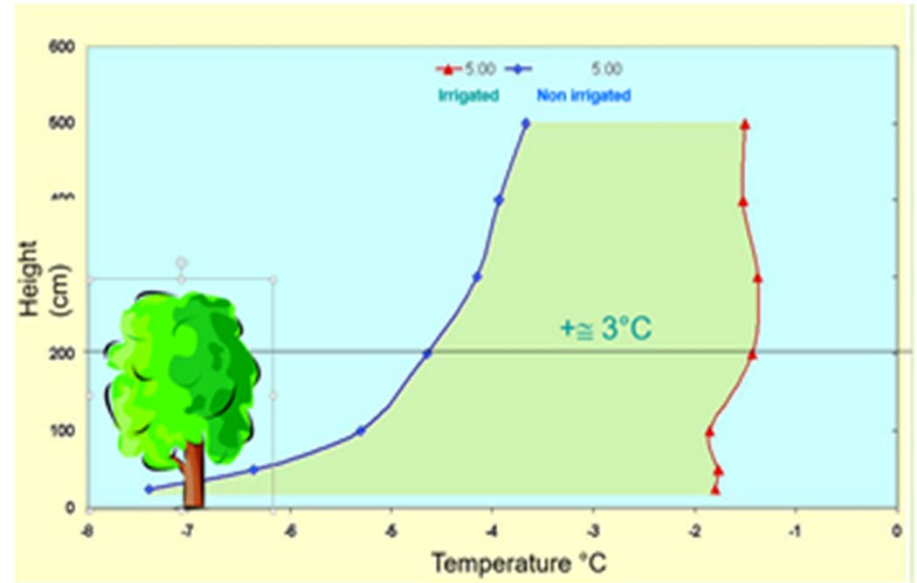
Local

focuses on different hotspots, i.e. areas that are prone to specific environmental challenges and problems

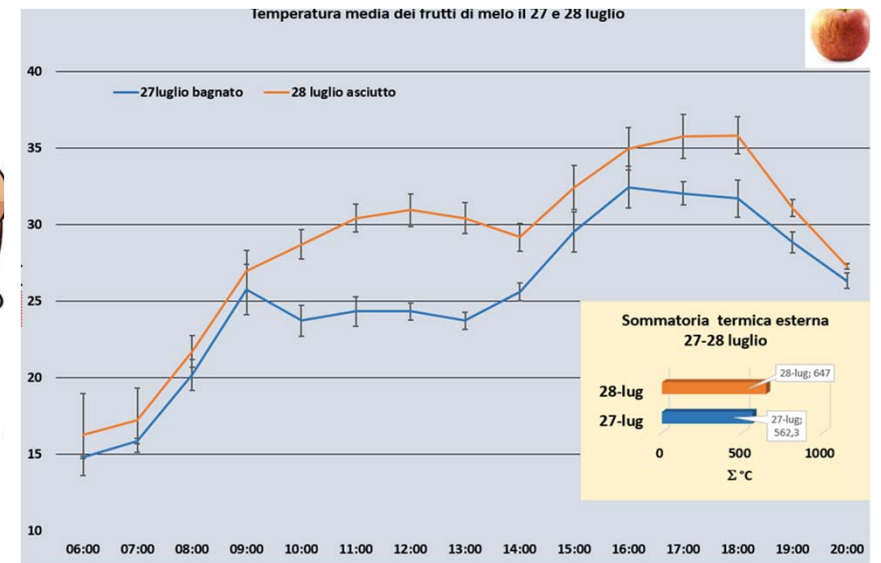


Imagery and reference data

satellite imagery forms the input for the creation of our products; and in order to ensure the efficient use of satellite imagery, in-situ data is required



NON SOLO IRRIGAZIONE



AGRICOLTURA «CLIMATE SMART» – l'evoluzione in condizione di cambiamenti climatici e sociali: un processo «culturale» e «cOlturale»

SUSTAINABLY INCREASES

PRODUCTIVITY AND INCOME

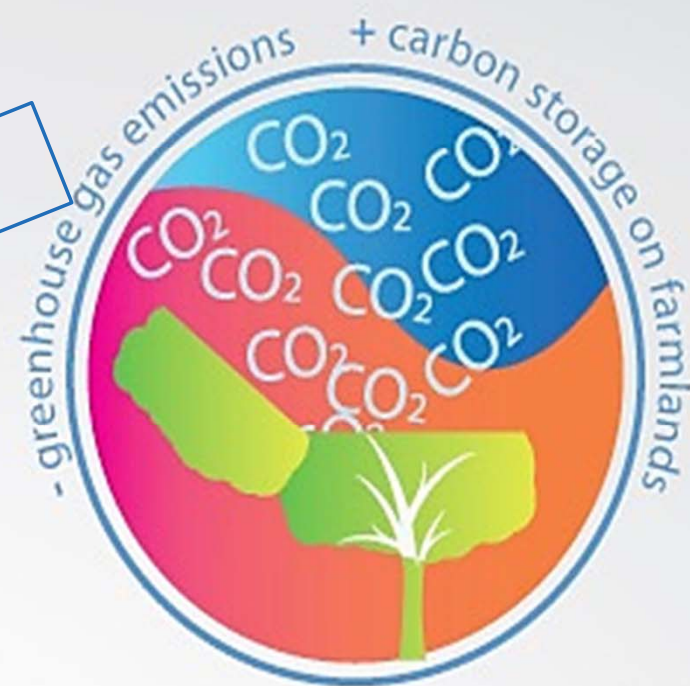


STRENGTHENS RESILIENCE

TO CLIMATE CHANGE AND VARIABILITY



REDUCES AGRICULTURE'S
CONTRIBUTION TO CLIMATE CHANGE



La gestione dell'acqua è una chiave!



...spazio alle
innovazioni

Grazie !!!!