



# SOLMACC FINAL CONFERENCE

## Farmers tackling climate change:

Systemic solutions for greater mitigation and adaptation of EU's agriculture sector

16 May 2018

9:30 – 13:15 Representation of the State of Hessen to the EU, Brussels





# Part I

## **Changing farming practices to tackle climate change – SOLMACC project introduction**

### **Italian context within SOLMACC**

**Daniele Fontanive, SOLMACC national coordinator Italy, AIAB**

# Location of the Italian farms



- As can be seen from the map, the 4 Italian farms are located in the territory from north to south and for this reason they represent 4 climate and agricultural models very different from each other.
- Fontanabona Paolo (Veneto)
- Claudio Caramadre (Lazio)
- Mannucci Droandi (Tuscan)
- Tamburello (Sicily)



# Farming practices implemented



OPTIMISED ON-FARM  
NUTRIENT RECYCLING



OPTIMISED CROP  
ROTATIONS

**CLIMATE-FRIENDLY  
PRACTICES**



OPTIMISED TILLAGE  
SYSTEM



AGROFORESTRY



# Paolo Fontanabona

Castel d'Azzano (VR) – Italy

3 hectares greenhouse and 4 hectares of orchard (Kiwi)

- Very specialized farm on spring and autumn winter vegetables, sold to a cooperative.
- The project focused on the part of horticultural crops in greenhouse
- begin: leguminous plants were not inserted in the rotation.
- *problem: time and how to insert leguminous plants in the rotation or make a green manure with leguminous plants and some problems with the composting management (cover and no turn of the piles)*



# Implemented practises

- Crop rotation with green manure (leguminouse plants for e.g. Crotalaria) or sudan grass.
- improvement of composting techniques and greater attention to the turning of the pile, for the management of temperatures and humidity.
- reduction of the soil tillage, no deep ploughing, weeds are contained by mulching with plastic film (nylon white or black).



## Result

- Composting farmyard manure and mushroom bed residues helps to reduce  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emissions, compared to the emissions of a manure pile. Additionally, compost application helps to reduce fertilizer application in the following years.
- Reduces the number of viable seeds in the fertilizer.
- A stabilized organic matter and therefore a slower release of nutrients.
- Legume crops contribute to N fixation and therefore reduce the amount of fertilizers needed in the following years.
- Crop biodiversity on the arable fields.
- Stabilization/enhancement of soil fertility by N-fixation of legumes.
- Reducing the depth of tillage helps to reduce fossil fuel consumption.
- Potential increase of organic top soil and reduce soil erosion



## CLAUDIO CARAMADRE

Farm is located in the Agro-Romano. It includes two different areas: one located in Maccarese (7.5 hectares wide including 2 hectare of cold greenhouses) with mainly fruit production and another area in Torre in Pietra (13 hectares wide) and it consists of all organically cultivated fields.

- The project focused on the part of horticultural crops. A field dedicated to the tests of the project.
- begin: leguminous plants were not inserted in the rotation; the farmer did not use organic fertilizers;
- Which Problems: the typical problems of a farm that produces different types of vegetables and must always offer its customers certain products throughout the year. The challenge was to change the type of crop rotation and make it efficient from different points of view, agronomic, environmental and in terms of profit.





# Implemented practises



- The farmer introduced legumes into the crop rotation.
- They included green manure, broad bean or field beans. In the greenhouse crotalaria was introduced as a green manure legume.
- Before the project, the farmer ploughed all of his crop cultures. Now, he reduced the depth of tillage for all crops, by only working superficial.
- The agricultural areas are surrounded by tree strips of pines and eucalyptus. Their main function is to protect the agricultural areas against the wind and increase biodiversity in the farm area.



# Results

- A stabilized organic matter and therefore a slower release of nutrients
- Legume crops contribute to N fixation and therefore reduce the amount of fertilizers needed in the following years.
- Crop biodiversity on the arable fields
- Stabilization/enhancement of soil fertility by N-fixation of legumes
- Reducing the depth of tillage helps to reduce fossil fuel consumption.
- Trees and hedges help to sequester atmospheric carbon into plant biomass and soils. Therefore, they function as a carbon sink.





## MANNUCCI DROANDI

The farm consists of two areas: Campolucci and Ceppetto. The former is located on the eastern slopes of the Chianti hills at an altitude of 250 m above sea level. The second part of the estate, Ceppetto, consists of vineyards and olive groves surrounded by dense oak and chestnut woodland. It is situated on the west side of the Chianti hills at 350 m above sea level.

*farm conducted in organic for more than 20 years*

# Implemented practises

- The fertility of the soil is maintained with the permanent grassing that has been maintained in the vineyards for more than twenty years, in addition to the shredding of the pruning sarments.
- The sowing of grasses and legumes has been done in the past few years, then gradually a permanent grassy turf has been created where no work is carried out, only mowing and openings of the ground with a ripper in alternating rows over the years.
- The farm consists of 8 ha olive groves, 25 ha vineyards .The boundary trees were diversified and new trees were planted (e.g. Robinia and Oak).
- With permanent grassing, tillage has been considerably reduced



# Results

- Trees help to sequester atmospheric carbon into plant biomass and soils. Therefore, they function as a carbon sink.
- biodiversity protection and bee food and protection.
- a stabilized organic matter and therefore a slower release of nutrients.
- avoiding tillage helps to reduce fossil fuel consumption.
- Potential increase of organic top soil and helps to reduce soil erosion.
- Living habitat for diverse animals (biodiversity protection), diversified income source.
- reduction of phytosanitary treatments against harmful insects (as a result of a high level of biodiversity).
- reduction of water consumption
  
- grassing of the vineyard, reduction of tillage, biodiversity in terms of useful insects also due to the woods surrounding the farm, minor plant health measures with products allowed in organic farming.
- It is innovative, always!!





## FARM TAMBURELLO

Monreale (PA) - Italy

The Tamburello farm is placed in the valley of the Belice river, on the "Wine Route" It covers about 60 hectares and the land is very diverse with vineyards, olive groves.



## Implemented practises

- Practises of the project implemented on the olive grove
- In the olive groves (15 ha) green forage manure, consisting of a mixture of leguminous (*Trifolium* spp.) and graminaceae was cultivated. Instead of leaving the soil coverless. The green manure is cut 1-2 times per year with a shredding machine.
- The farmer reduced the tillage depth in the olive groves (15 ha) to 5-10 cm. Only superficial tillage.
- In the farm context there are areas with trees and hedges near water, the characteristics of the climate of the area make it difficult to grow plants that can survive over time. Maintenance of volunteer tree species in the area.



## Results

- Reducing the depth of tillage helps to reduce fossil fuel consumption
- Stabilization/enhancement of soil fertility by N-fixation of legumes
- Trees and hedges help to sequester atmospheric carbon into plant biomass and soils



# Final considerations on the experience of the project



- As AIAB coordinator for the project, I can communicate my satisfaction in having participated in activities aimed at reducing greenhouse gas emissions into the atmosphere and the dissemination of experiences made together with farmers to the various stakeholders involved, farmers, technicians and advisors, students, final consumers of the product.
- AIAB's participation in this sense is linked to the construction of a model that is not imposed from above, but which is a direct and positive experience in most cases of the various farms involved in the project.
- The results shown were obtained by proposing or reinforcing practices which were known to farms but which were either not carried out or were applied marginally.
- The further result of the work carried out was to demonstrate the reproducibility of these agricultural practices and their validity, both in terms of respect for the environment and in terms of economic profit.



# Thank you for your attention!



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