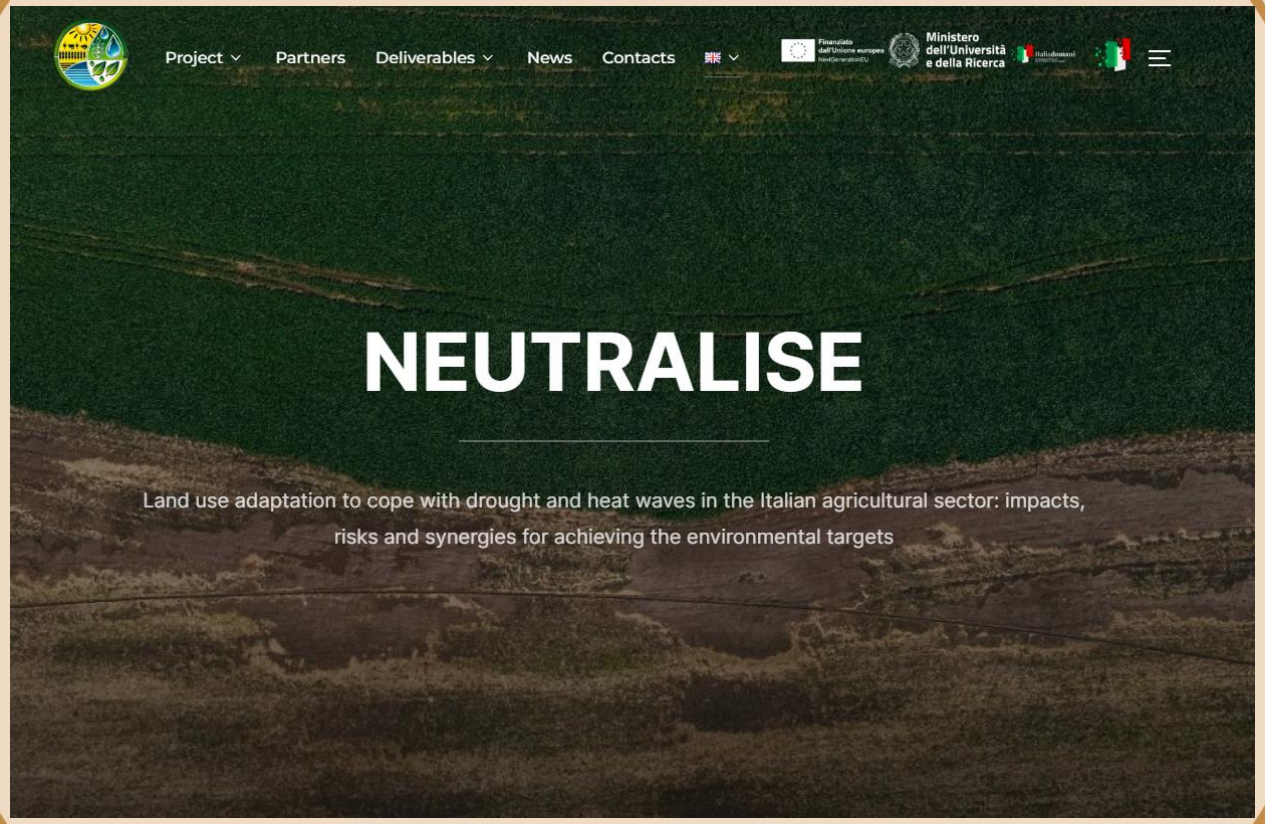
Introduction to the NEUTRALISE project: activities, objectives and expected outcomes



Evaluation of the productive and economic impacts on Italian farms

Rebecca Buttinelli

buttinelli@unitus.it

Università degli Studi della Tuscia, Dipartimento di Scienze Agrarie e Forestali (DAFNE) Viterbo (VT).

mercoledì 13 novembre 2024 ore 10:00

sala Silvestri del CNR in Piazzale Aldo Moro, 7 Roma

Irrigation Needs Estimation

Irrigation Needs Estimation

- «Crop evapotranspiration - Guidelines for computing crop water requirements - FAO Irrigation and drainage paper 56»:

$$ET_p = \sum_{i=k}^{m} ET_0 \cdot k_c$$

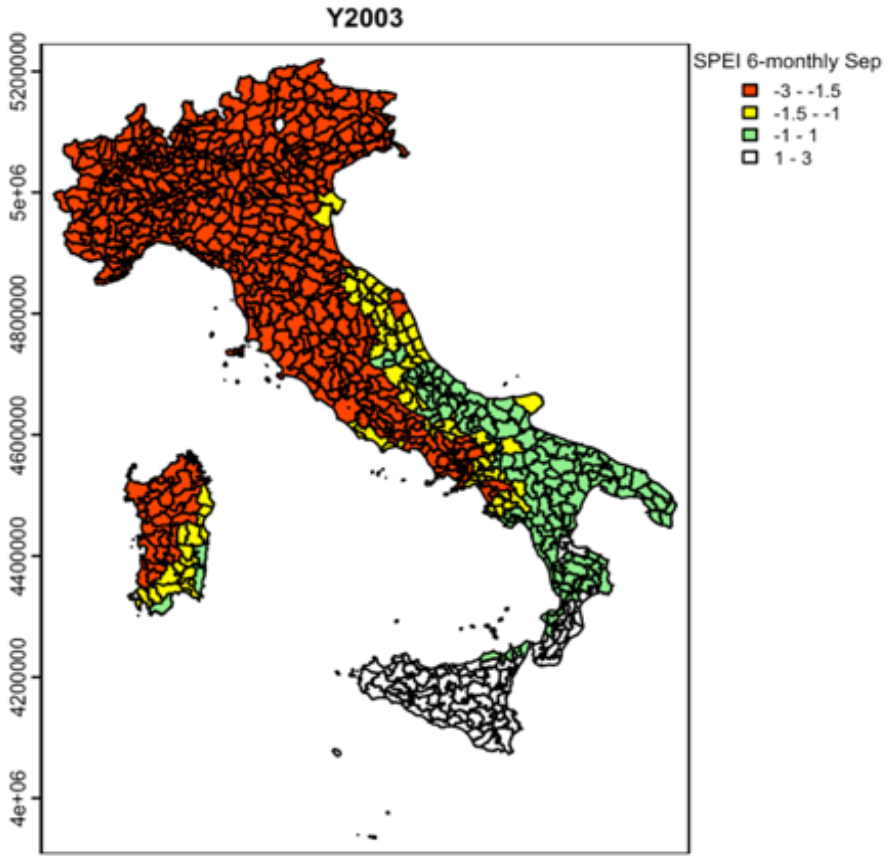
- "Tavolo permanente per la quantificazione dei volumi irrigui" (Articolo 3 del D.M. MIPAAF, 31 luglio 2015):

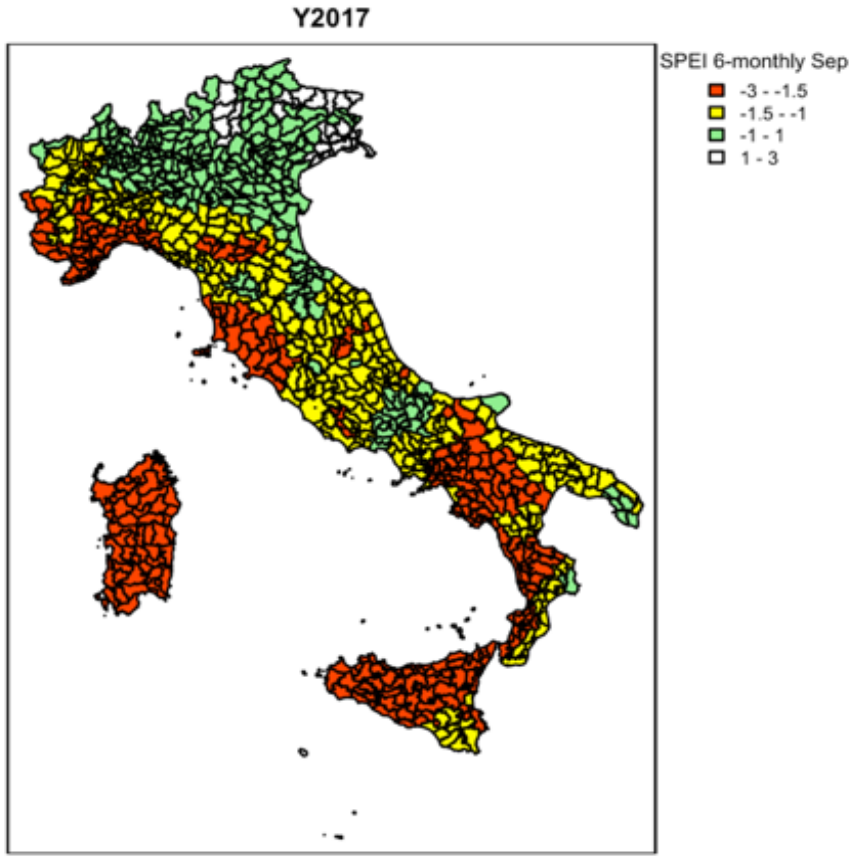
$$W_{winter\_veg} = \sum_{i=182}^{365} \frac{|ET_p - P_n|}{e_{ap} e_d} \cdot 10 \qquad W_{winter} = \left(\sum_{i=1}^{90} \frac{|ET_p - P_n|}{e_{ap} e_d} + \sum_{i=274}^{365} \frac{|ET_p - P_n|}{e_{ap} e_d} \right) \cdot 10 \qquad W_{summer} = \sum_{i=91}^{273} \frac{|ET_p - P_n|}{e_{ap} e_d} \cdot 10$$

- Where W denotes the irrigation requirement, A is the area considered in hectares, Δt is the time interval in days, and P_n represents the estimated effective rainfall (> 5 mm).
- The denominator includes the following irrigation efficiency coefficients:
  - Field application efficiency e_{ap};
  - Distribution system efficiency e_d;

We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Climate Scenarios



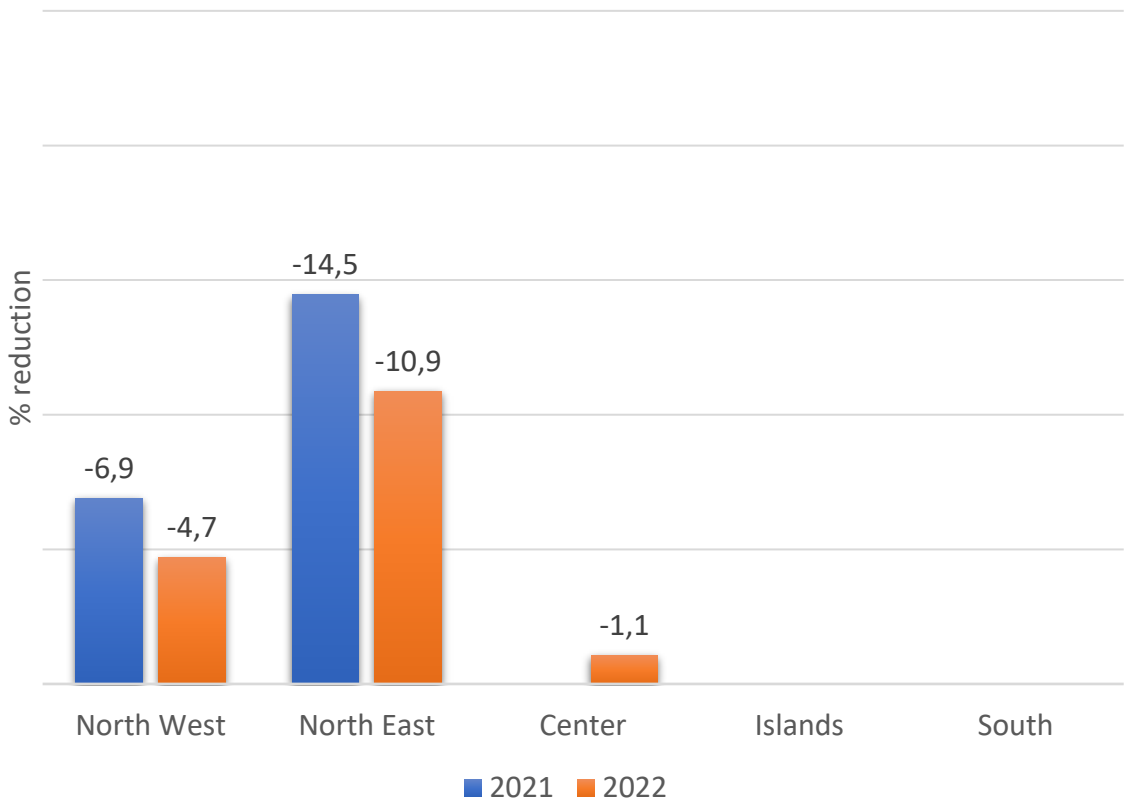


We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

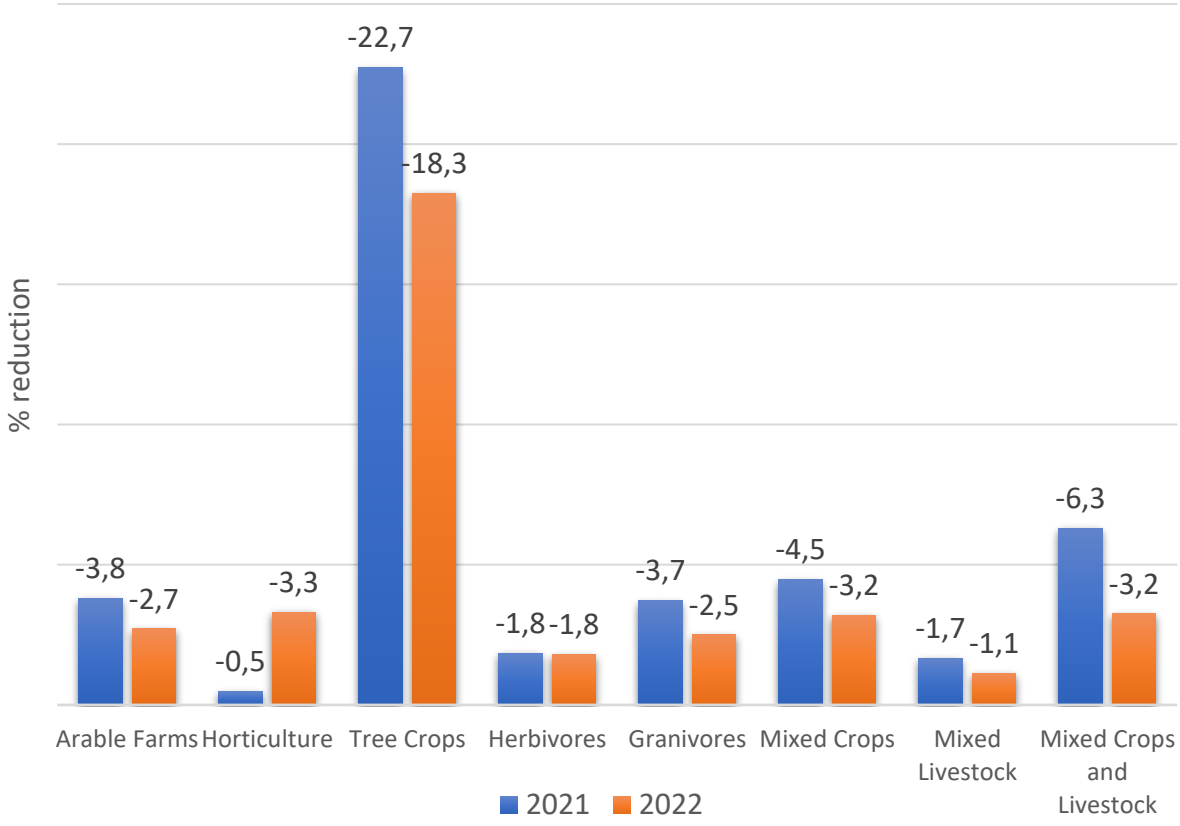
Economic Impacts

Impacts on Income – Scenario 2003

Area

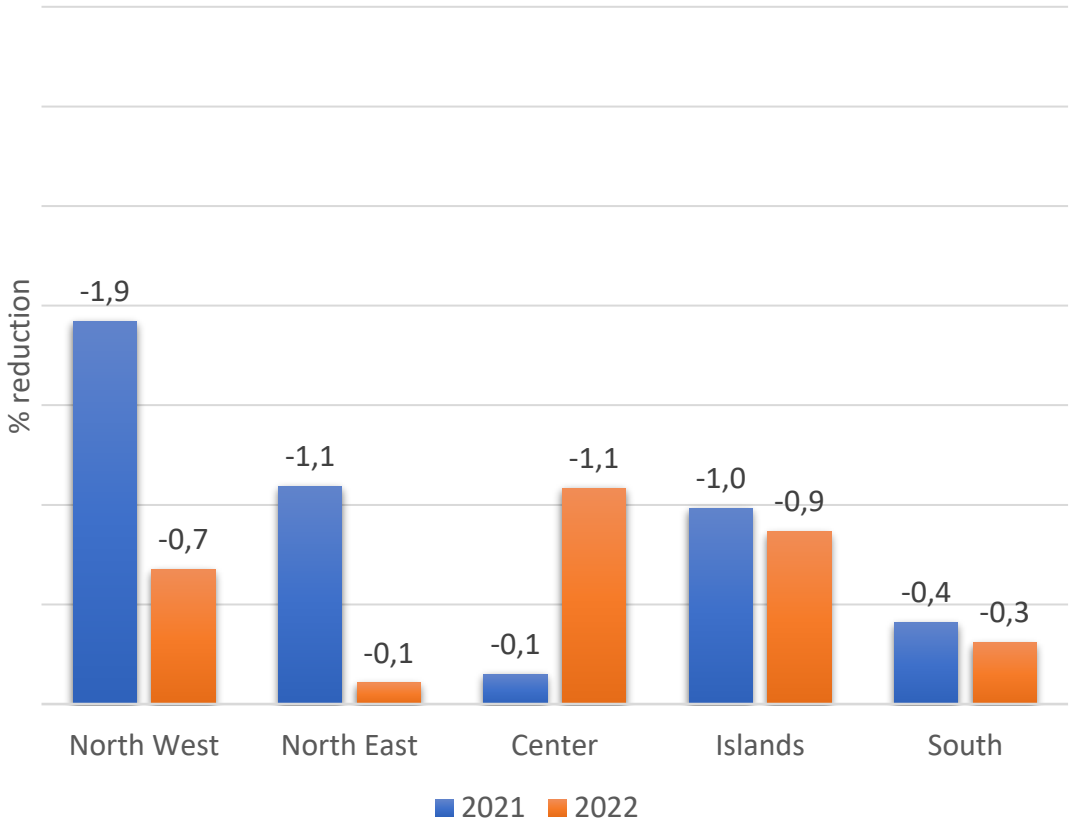


Type of Farming

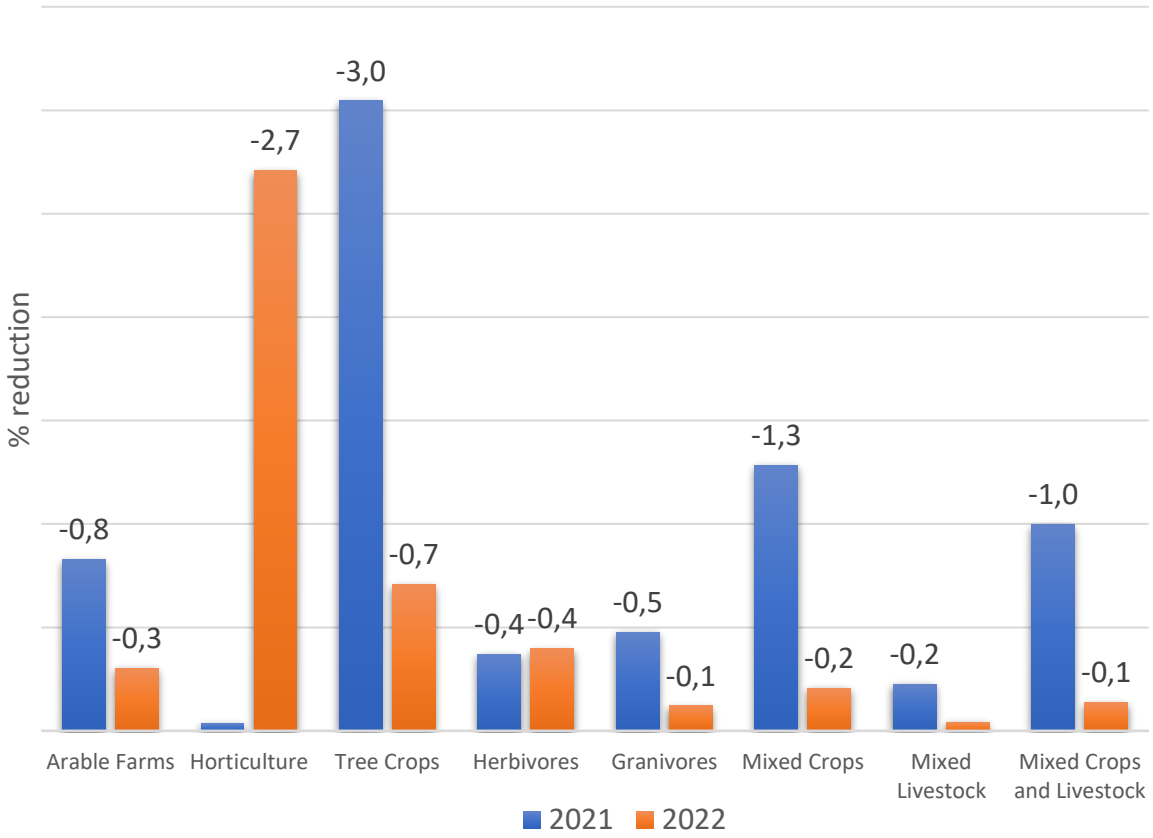


Impacts on Income – Scenario 2017

Area



Type of Farming

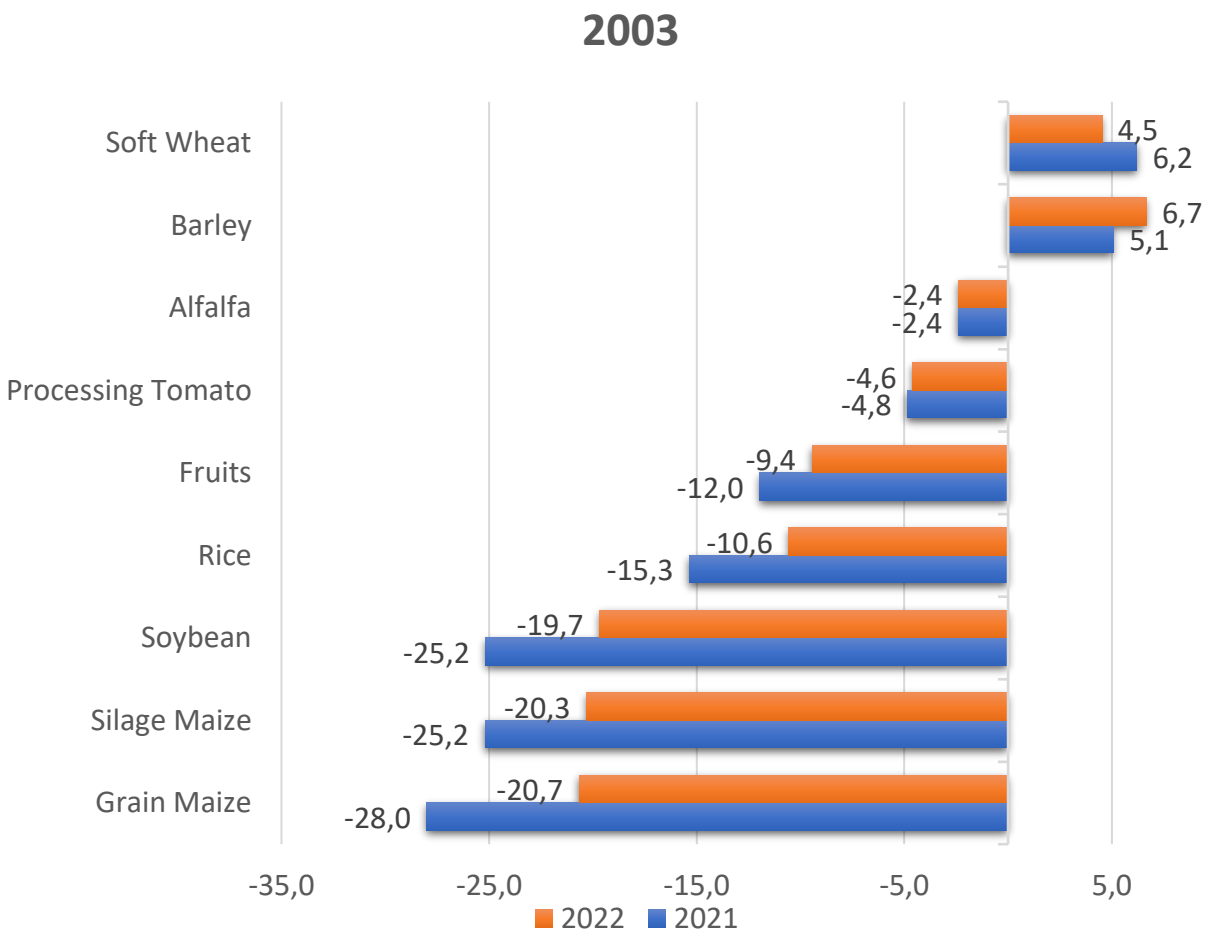


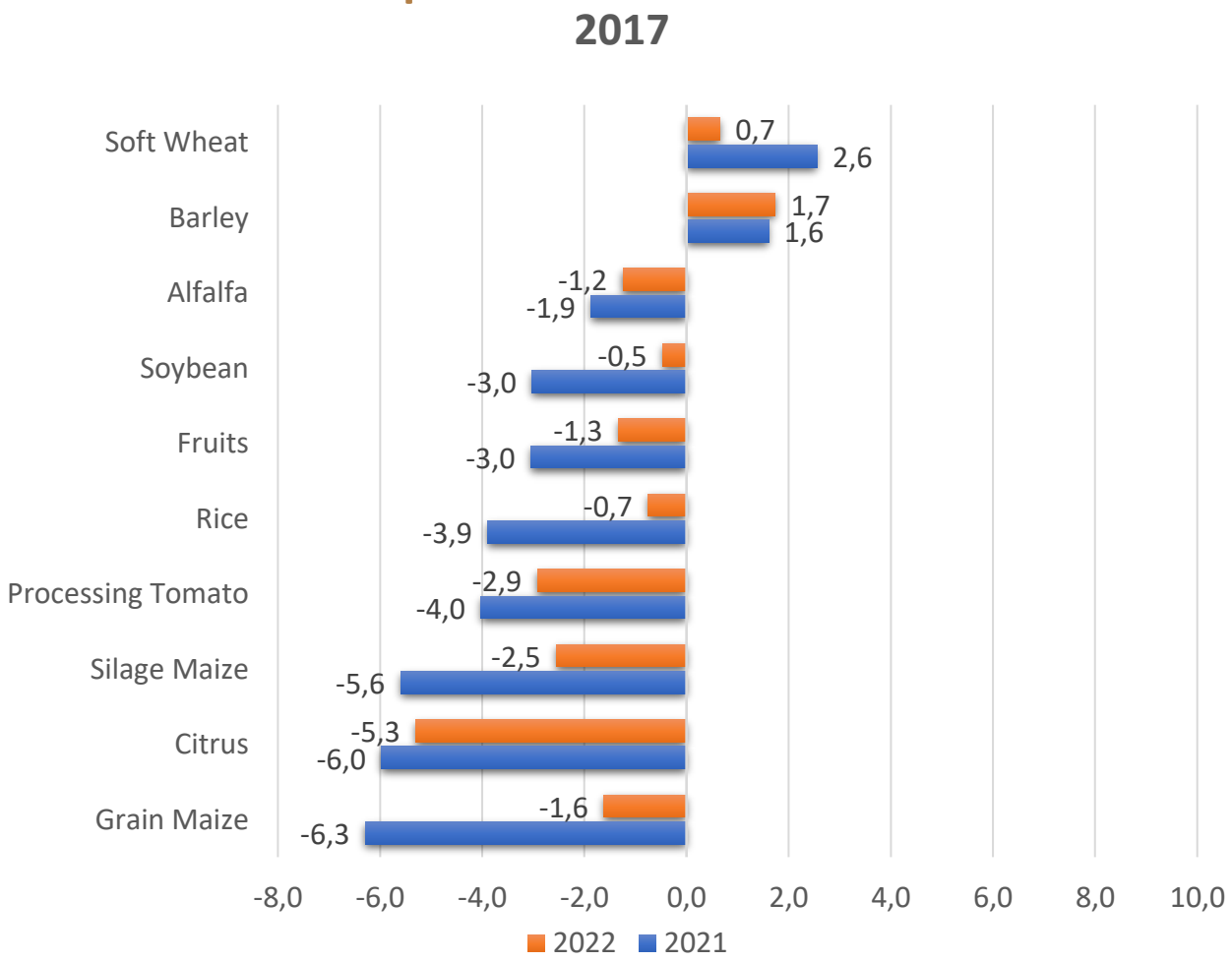
Scenario 2017			
2021		**2022**	
Type of Farming	**%**	**Type of Farming**	**%**
Specialized Fresh Fruit Production (excl. citrus and nuts)	-7.8	*Specialized Citrus Production*	-2.3
Mixed Crops - Arable	-4.3	*Specialized Mixed Fresh Fruit (incl. citrus and nuts)*	-1.6
Mixed Permanent Crops and Herbivores	-3.1	*Combination of Tree Crops*	-1.2
Specialized Citrus Production	-2.2	*Vineyards Specialized in Non-Quality Wine*	-1.0
Combined Horticulture and Tree Crops	-1.8	*Specialized Open-Field Horticulture*	-0.7
Diverse Combinations of Tree Crops	-1.6	*Cattle Farming: Combination of Milk, Breeding, and Fattening*	-0.7
Specialized Mixed Fresh Fruit (incl. citrus and nuts)	-1.5	*Specialized Fresh Fruit Production (excl. citrus and nuts)*	-0.7
Combined Arable and Tree Crops	-1.3	*Specialized Grape Production*	-0.6
Mixed Crop Production	-1.3	*Other Types of Vineyards*	-0.6
Specialized Open-Field Horticulture	-1.3	*Mixed Cereals and Dairy Cattle*	-0.5

We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Land Use Change

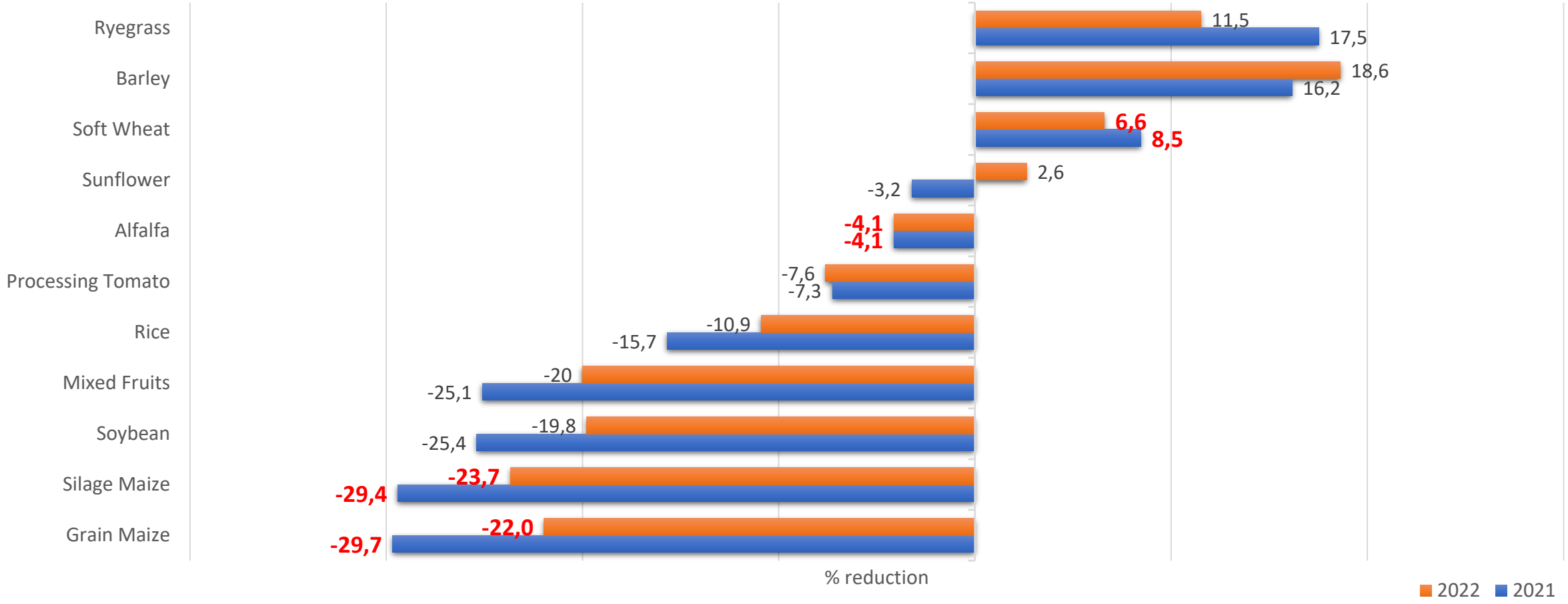
Impacts on Crops Area on Total Sample





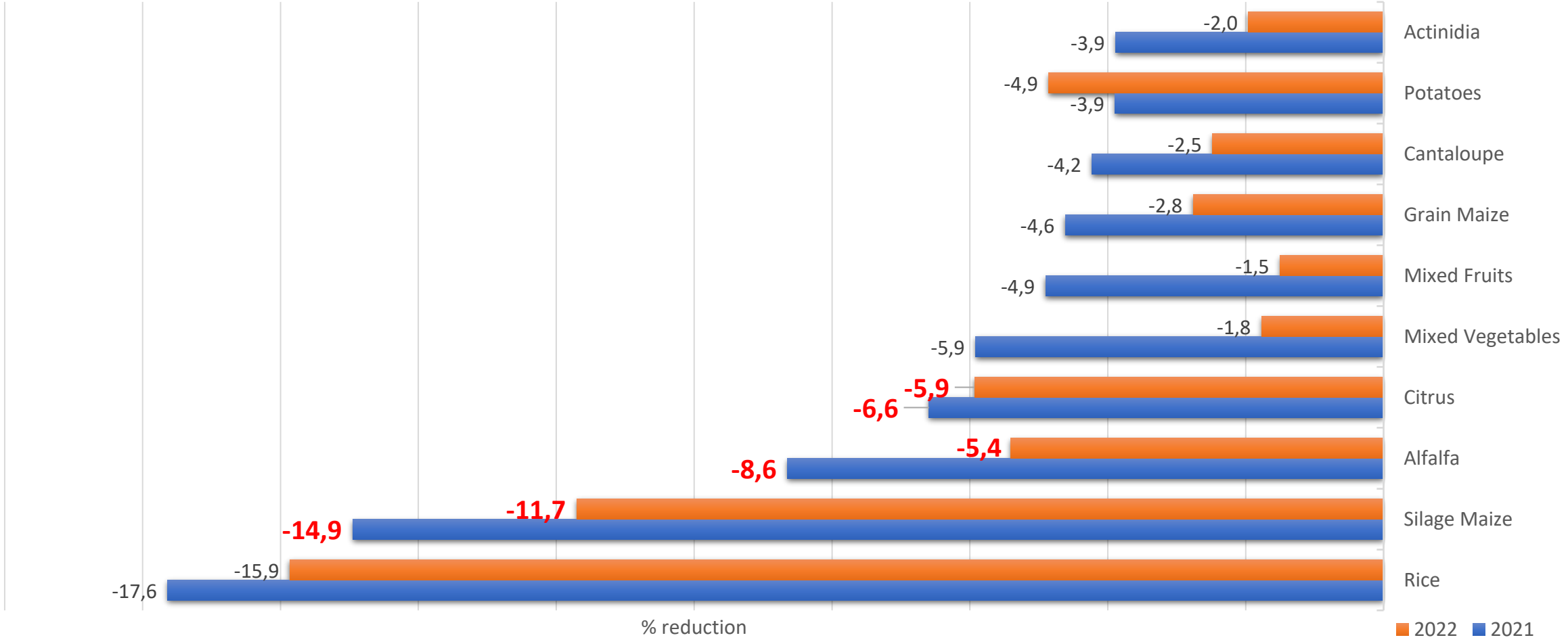
We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Scenario 2003 – Impact on Northern Regions



We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Scenario 2017 – Impact on Southern Regions (incl. Sicily and Sardinia)



We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Next Steps and Scenarios

CLIMATE + CAP 2023-2027

Basic Income support for sustainability (BISS)

- Internal Convergence

Coupled Income Support (CIS)

Income Support for Young Farmers (CIS-YF)

Complementary Redistributive Income Support for Sustainability (CRISS)

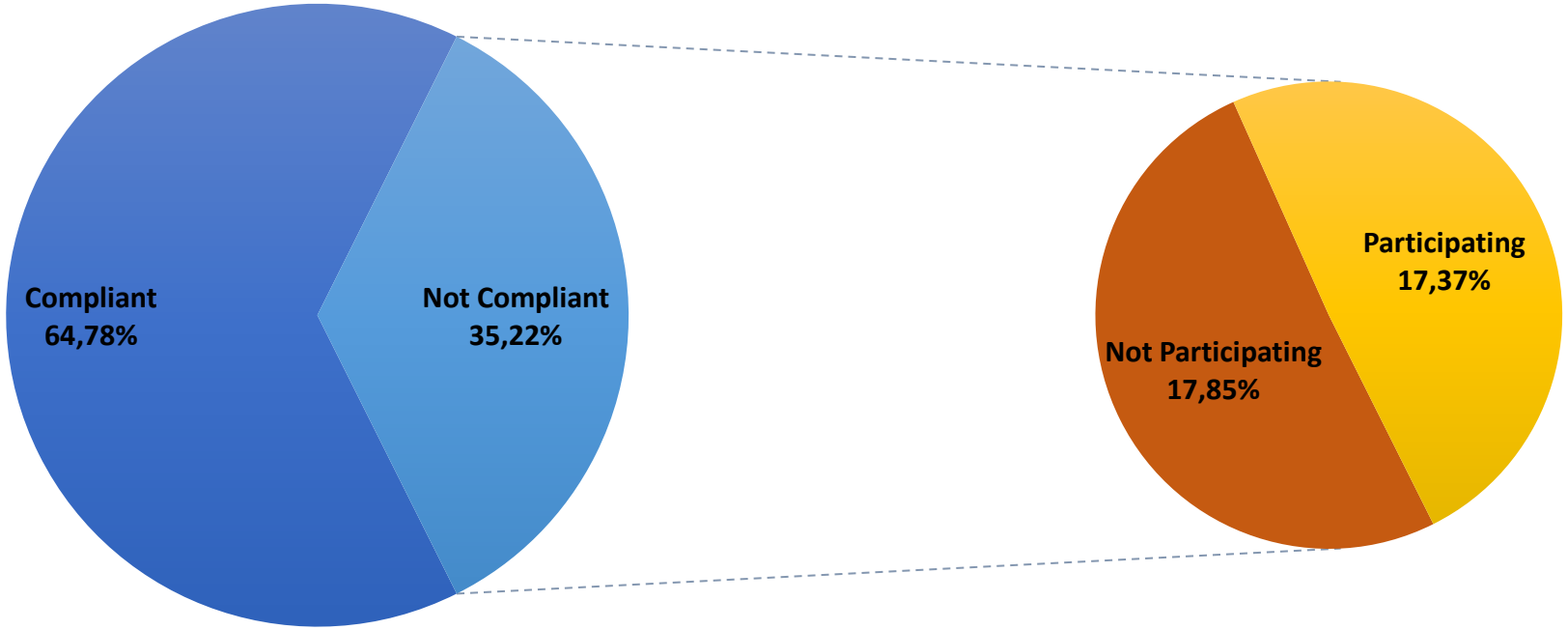
Eco-schemes

- **ES1** : Payment for the reduction of antimicrobial resistance and animal welfare;
- **ES4**: Payment for extensive forage systems with crop rotation.

We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Eco-Scheme 4

"Extensive forage systems with rotation“ Eco-Scheme aims to promote biennial rotation of break crops and other crops, mainly cereals. This scheme has the potential to appeal to a significant proportion of arable farms, offering a possible integration to any reduction in direct payments.



We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Drivers of Eco-Scheme 4 Participation

	Coef.	*St.Err.*	*[95% Conf*	*Interval]*	*Sig*	*Impact*
Cereals Margin	-1.936	.175	-2.279	-1.594	***	-
Irrigated Area	-1.677	.248	-2.164	-1.19	***	-
Farm Size	-.002	.001	-.004	0	**	-
Water Source	.585	.277	.043	1.127	**	+
Hired Labor	.502	.157	.193	.81	***	+
Location (North)						
Center	.493	.187	.127	.858	***	+
South	.348	.173	.009	.686	**	+
Type of Farming	-.586	.146	-.872	-.3	***	-
Crop Diversification	.328	.039	.251	.406	***	+
Time	.044	.095	-.141	.23		
Constant	-.773	.246	-1.255	-.29	***	

**** p<.01, ** p<.05, * p<.1*

We acknowledge financial support under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2, Investment 1.1, by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU– Project Title NEUTRALISE

Thank you for your attention!

Introduction to the NEUTRALISE project: activities, objectives and expected outcomes

Evaluation of the productive and economic impacts on Italian farms

Rebecca Buttinelli, buttinelli@unitus.it

UNITUS-DAFNE

mercoledì 13 novembre 2024

sala Silvestri del CNR in Piazzale Aldo Moro, 7 Roma