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

# Pacioli 28, Ptuj SI

## EVALUATING THE IMPACT OF POLITICAL STRATEGIES ON DRIP-IRRIGATION ADOPTION: EVIDENCE FROM ITALIAN VEGETABLE AND FRUIT FARMS

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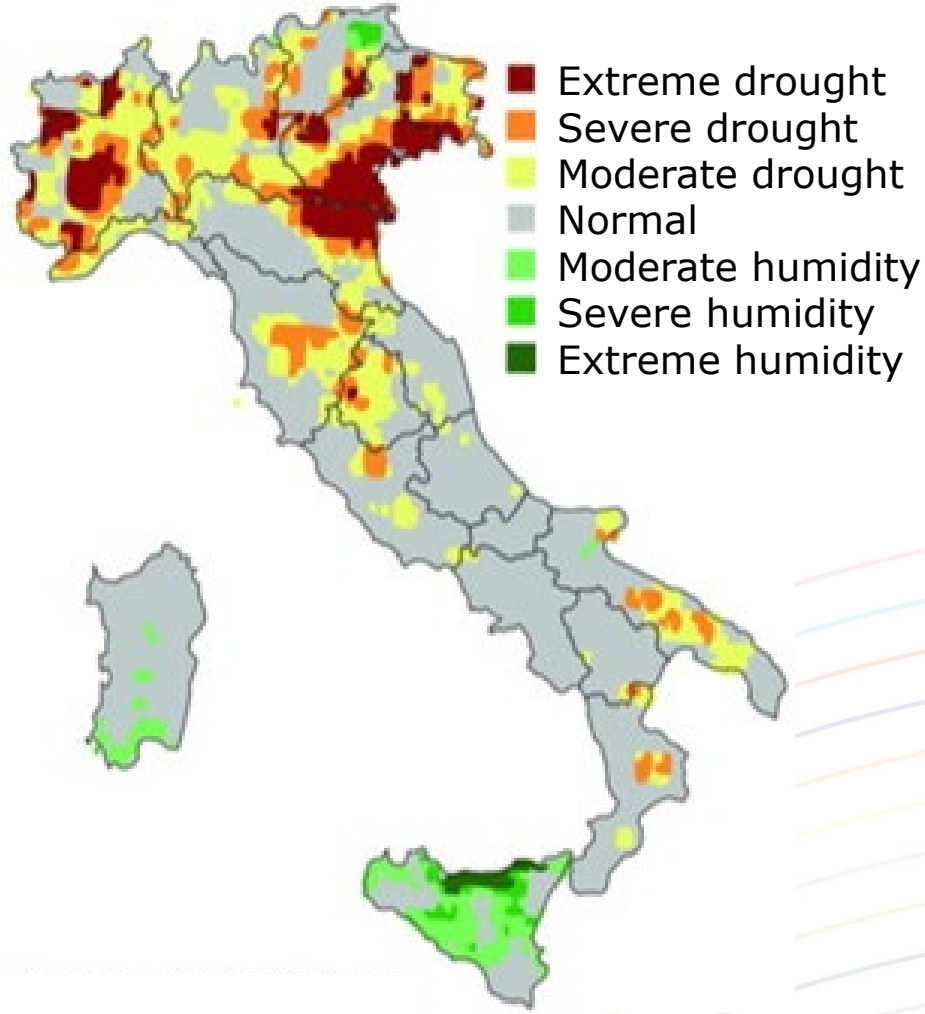
# 2022 was the warmest year since 1800




*Standardized Precipitation Index 12/2021 – 11/2022*

- 49% of irrigated agricultural lands has been affected by severe to extreme drought
- The national agri-food sector has incurred losses to 10% of production, with a value exceeding 6 billion euros

# Political strategies

## Italian strategy

## Funding irrigation infrastructure

**NRRP**

4 billion euros has been allocated for new primary water infrastructure, repairs, digitalization, and integrated monitoring of water networks

**CAP**

The SRD08 intervention includes the allocation of investment funds for infrastructure with environmental purposes, including irrigation-related projects

One of the initial steps that must be taken is the transition from less sustainable irrigation systems to water-saving technologies

Flooding system

Sprinkler

Drip-irrigation

# Objectives

The decision to adopt water-saving irrigation systems remains with the farmer

Identifying the determinants in the choice of drip-irrigation adoption

Sequential Logit

Forecasting the potential effects of increased funding for irrigation infrastructure

Founding response model

# Data collection

Sample

FADN
Total sample

Years 2010 – 2020

Irrigated UAA > 0

TF: horticulture indoor, horticulture outdoor, fruit

**Unbalanced panel**

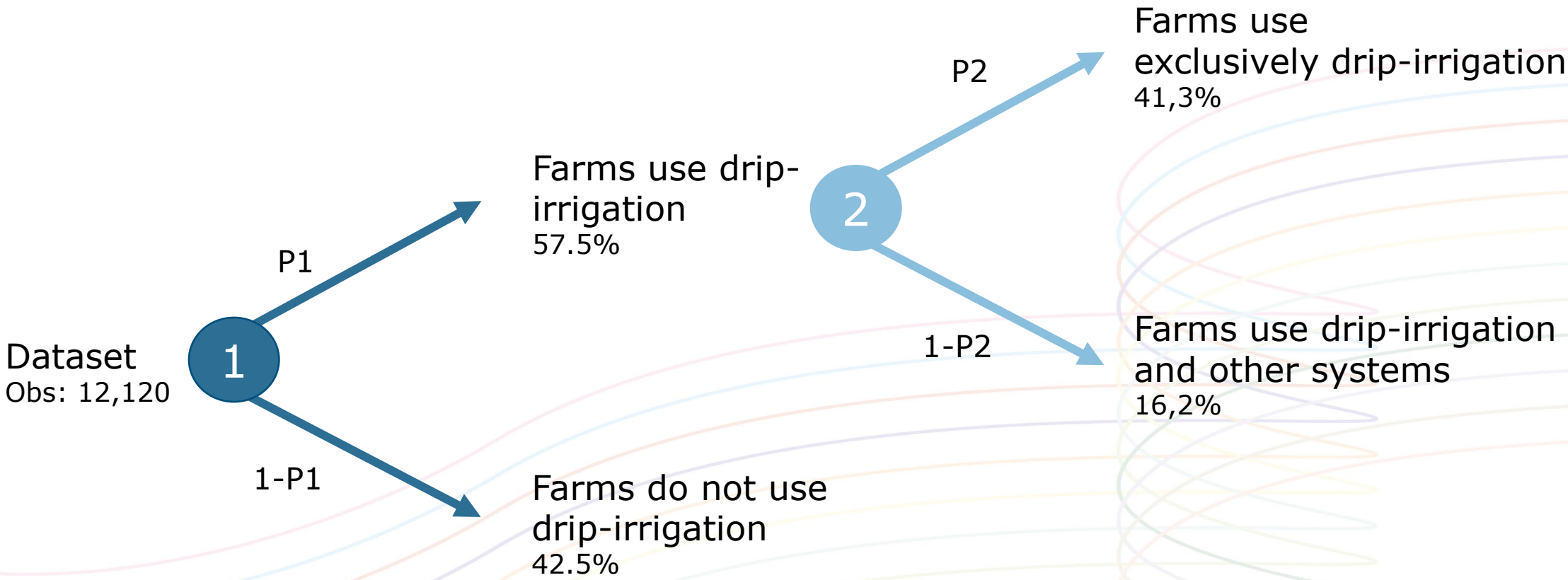
**3,733 farms**

**12,120 obs**

Variables

| Sources | Scale | Variables |
|---|---|---|
| FADN | Farm | Farm's holder characteristics |
| | | Farm's characteristics |
| | | Economic structure |
| ISTAT | Provincial | Climatic factors |
| RRN | Regional | Measure 4 focus area 5A |

# Sequential Logit analysis



# Sequential Logit regression results

Obs = 12,120

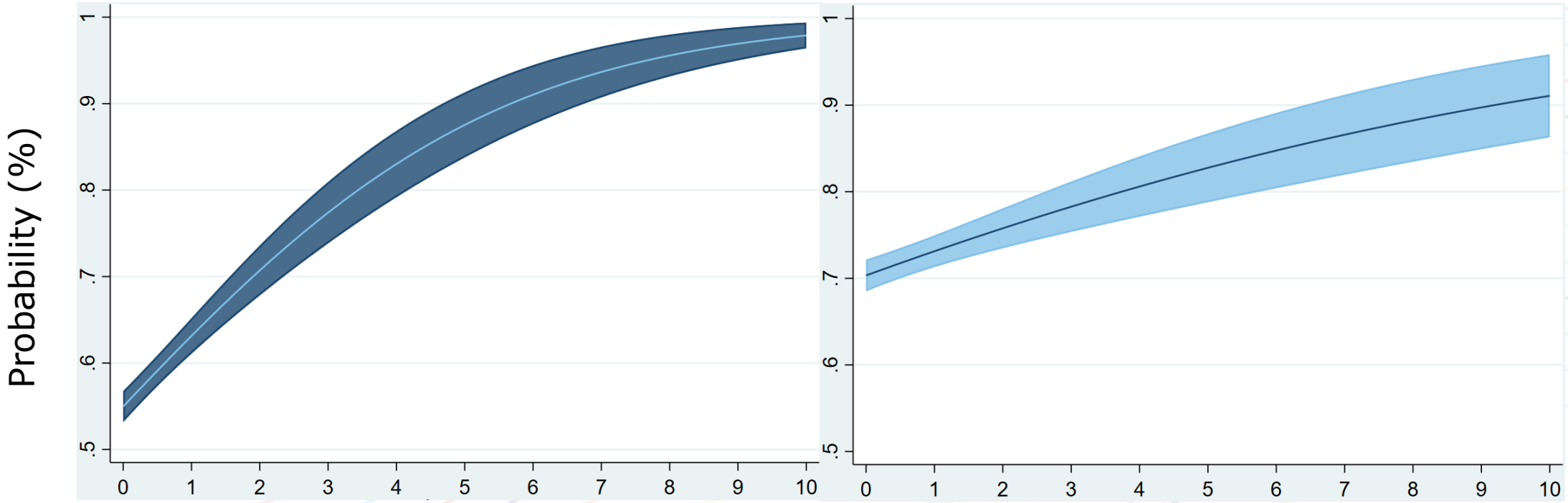
SE clustered by farm (3,733)

| | 1 Farms use drip-irrigation (vs not use) | | 2 Exclusively drip-irrigation (vs not exclusively) | |
|---|---|---|---|---|
| | **Odds Ratio** | **SE robust** | **Odds Ratio** | **SE robust** |
| Year (trend) | 1.059*** | 0.01 | 0.966*** | 0.015 |
| Age | 0.989*** | 0.003 | 0.991** | 0.005 |
| Education | 1.029 | 0.053 | 0.892 | 0.063 |
| ***Area (North)*** | | | | |
| Central | 2.763*** | 0.402 | 1.133 | 0.211 |
| South | 1.922*** | 0.261 | 2.895*** | 0.450 |
| ***Altitude zone (Mountain)*** | | | | |
| Hill | 1.862*** | 0.274 | 3.501*** | 0.702 |
| Plain | 2.828*** | 0.389 | 2.725*** | 0.515 |
| ***TF (Horticulture outdoor)*** | | | | |
| Fruit | 2.190*** | 0.208 | 1.934*** | 0.260 |
| Horticulture indoor | 5.022*** | 0.765 | 2.778*** | 0.506 |
| Irrigated UAA | 0.994*** | 0.002 | 0.986*** | 0.003 |
| Added value (1,000 €) | 1.001** | 0.000 | 1.000 | 0.000 |
| Laborers | 1.037** | 0.018 | 1.005 | 0.018 |
| Founding (0,1 %) | 1.400*** | 0.004 | 1.180*** | 0.000 |
| Temperature (C°) | 1.017 | 0.031 | 1.113** | 0.011 |
| Precipitation (10 mm) | 0.998* | 0.001 | 0.991 | 0.001 |
| Constant | 1.29e-51 | 2.75e-50 | 3.96e+29 | 1.20e+31 |
| Pseudo R2 | 0.1271 | | 0.1925 | |

# Founding response model

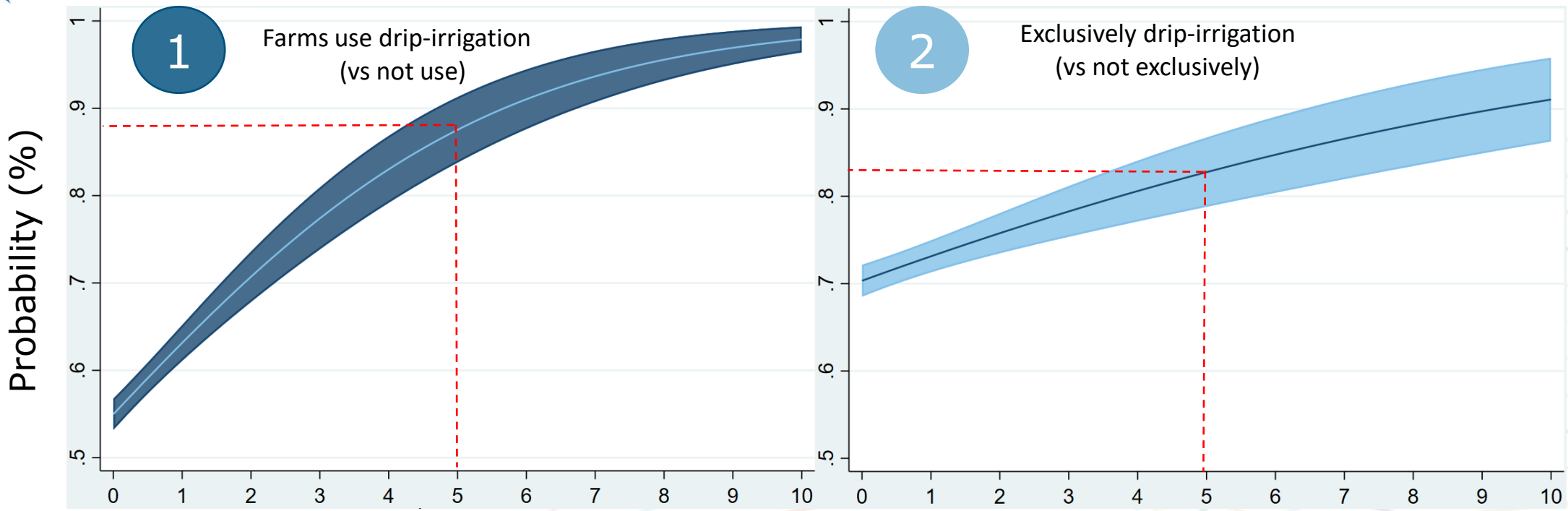
1 Farms use drip-irrigation (vs not use)

2 Exclusively drip-irrigation (vs not exclusively)




Measure 4 focus area 5A expenditure % of total RDP

# Founding response model




Measure 4 focus area 5A expenditure % of total RDP

If regions were to allocate 5% of their RDPs resources to this measure, which on average amounts to approximately 23 million euros, we would see nearly 90% of farms adopting drip-irrigation, with more than 80% of them exclusively utilizing this system.

# Discussion and conclusions

Transition towards employing water-saving techniques requires careful consideration of multiple factors

Sensitivity towards environmental issues

Perception of resource scarcity

Economic factors

Installation and management difficulty

The increase public support for irrigation infrastructure plays a fundamental role in this process

From this assessment, it is possible to presume the effectiveness that planned political strategies will have in this regards

# FADN discussion and conclusions

Good integration of FADN data with other data sources

Significance of utilizing this data for policy assessment

Capacity to employ forecasting models to predict policy impact

Requiring a thorough understanding of the FADN database for its utilization in econometric analysis

Limited number of studies that make use of FADN irrigation data

## FSDN

A new variable will define the amount of water applied through irrigation (m3/ha) depending on type of irrigation, season and crop

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# *THANKS FOR YOUR ATTENTION*

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