

**PRIN: RESEARCH PROJECTS OF RELEVANT NATIONAL INTEREST – Call 2020
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“Towards a holistic approach to Sustainable Risk management in agriculture” Sus-Risk



Policy Brief Feasibility studies of innovative RM tools

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ABSTRACT FOR POLICY BRIEF (300 Words)

Background

Climate and extreme weather events, including drought, heat, and excess rainfall, significantly impact agricultural production, limiting smallholder farmers' ability to invest in productivity-enhancing technologies. Agroecological practices like crop diversification, genetic diversity preservation, and water conservation can improve resilience, while risk management strategies such as irrigation, pest control, mutual funds, and crop insurance offer additional coping mechanisms (Vroege and Finger, 2020). Weather index-based insurance, which links payouts to independent weather indices, has gained attention as a tool for mitigating weather-induced crop losses but faces challenges like basis risk (Dalhaus et al., 2018; Bucheli et al., 2022), which may result in payouts not aligning with actual losses.

Topic

In a recent study (Tappi et al., 2023), we investigate the role of temporal and design specifications in econometric models assessing weather-yield relationships for durum wheat in Italy. We focus on improving weather index-based insurance design to enhance its effectiveness and reduce basis risk.

Objectives

- Assess how temporal and design specifications influence yield-weather relationships.
- Examine how weather events during specific phenological stages affect durum wheat yields.
- Provide policy recommendations to improve weather index-based insurance design and uptake.

Main Findings

The study reveals that both temporal and design specifications significantly influence the observed yield-weather relationships. Minimum temperatures negatively impact yields during early stages, while maximum temperatures and heavy precipitation affect flowering and maturity stages, respectively. Temporal variations, such as shifts in sowing dates, alter yield-loss estimations, highlighting the importance of localised and phenology-specific insurance indices.

Policy Implications

- Use publicly available data to calibrate weather index-based insurance indices tailored to crop phenology and location-specific risks.
- Address basis risk by refining temporal and spatial specifications, incorporating multiple weather stations, and leveraging advanced modeling techniques.
- Strengthen incentives for weather index-based insurance adoption by enhancing trust through transparent and accurate weather indices.
- Support further development of farm-level weather datasets for improved calibration and risk assessment.

References

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