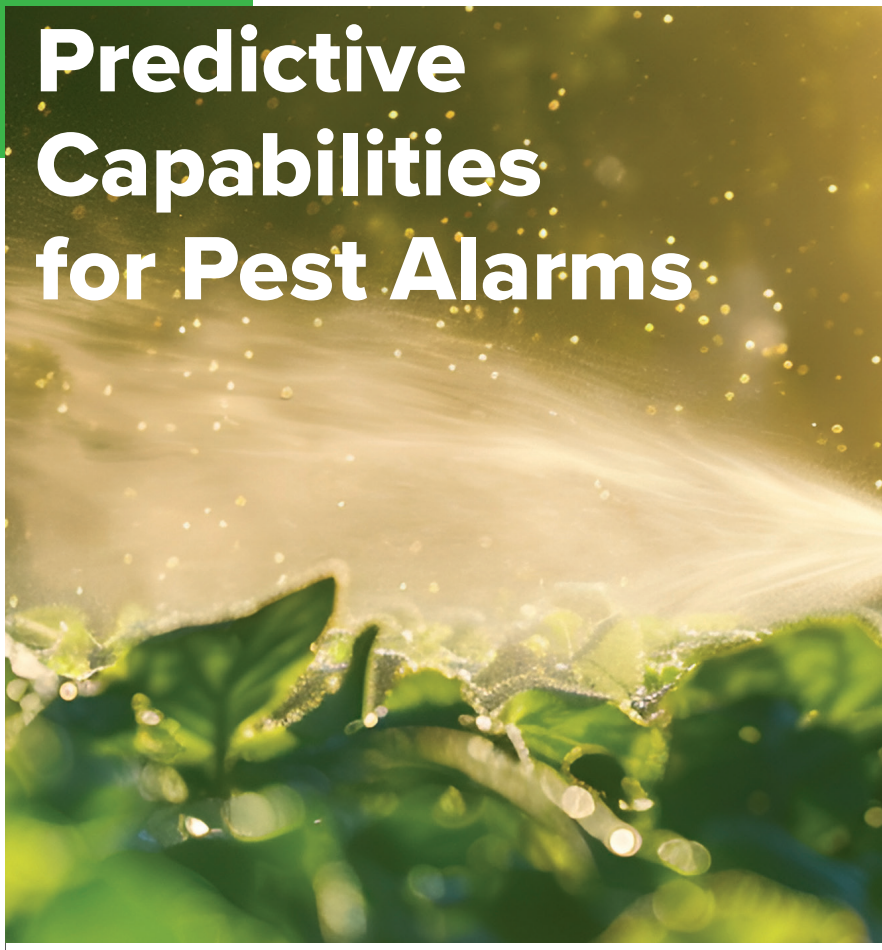
EFRA
EXTREME FOOD RISK ANALYTICS

Enhanced Predictive Capabilities for Pest Alarms



Boosting prediction accuracy and providing optimized recommendations for pest management.

Funded by the European Union

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Lead Partner

AGRIVI

Scientific Partner

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Market's Challenges

Pests are a major threat to crop health, causing significant yield losses and economic damage. They spread rapidly, often going undetected until damage is irreversible, disrupting food supply chains and farmer livelihoods.

The EFRA Goal

EFRA aims to strengthen pest risk prediction by increasing accuracy and relevance across different crops and climates. The goal is to help farmers act earlier and more effectively, reducing crop losses and promoting sustainable practices.

This use case supports that goal by combining two components:

- AI-Enhanced Pest Prediction Alerts:
  A weather-based algorithm predicts pest risk across different crops
- Real-Time Farmer Feedback Loop: Farmers validate alerts in the field, improving prediction accuracy

Together, these elements enhance decision-making and support climate-resilient, sustainable farming.

Exploited Data

Private Data

Includes agro-climatological and meteorological data, as well as AGRIVI's own expert recommendations on chemical applications.

Piloting Data

(Collected by AGRIVI in 2024–2025)

Field data gathered through pilot projects, including pest appearance records and validation of algorithm outputs in real-world conditions.

METHODOLOGY

Pilot Phase I – Initial Testing (2024)
The first version of the algorithm was piloted on corn fields. Feedback was collected directly from farmers and agronomists in the field.

Pilot Phase II – Expanded Validation (2025)
The algorithm was refined based on insights from the initial phase. The pilot was extended to include wheat and sunflower. The number of participating farms increased from 4 to 24, enabling testing across a wider range of climates and locations.

The system is based on three key weather indicators:

• Humidity • Temperature • Rainfall

For each, minimum, maximum, and average values are taken into account.

Each pest is associated with specific appearance criteria. When current weather conditions match those criteria, alerts are automatically triggered and sent to users.

Part of the bigger EFRA picture

This use case is developing an updated, highly precise algorithm to detect pest presence before it occurs. It is a pest prediction tool aiming to reduce pesticide usage. With this algorithm, users of the EFRA platform can use their own weather data to receive pest predictions for specific locations.

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ABOUT EFRA

Revolutionizing food safety with AI-powered risk predictions, EFRA transforms scattered food data into real-time insights. By mining multilingual sources, structuring vast datasets, and training green AI models, EFRA strengthens the entire food supply chain— shifting from reaction to prevention.

Driver of this transformation is the EFRA Platform, ensuring the integrity, privacy, and reliability of food safety insights while combining high-performance computing with cutting-edge analytics to detect and prevent food risks before they happen.

TRANSFORMING FOOD RISK PREDICTIONS WITH AI-POWERED ANALYTICS

Agroknow

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Stockholm University

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RAINNO INNOVATION RAINMAKERS

SGS DIGICOMPLY Dynamic Intelligence Effective Risk Management

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