Introducing CROPSAFE

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The security of Europe's key food crops is at a crossroads

Pest control is a key pillar of modern agriculture, vital for protecting crops and safeguarding food security.

However, traditional pest control products are damaging our soil, harming our wildlife, and threatening our own health. As a result, the use of these products in our food systems is being more closely regulated, and as early as next year, **farmers could lose access to key pest control products through de-authorisation pathways**.

Farmers are therefore searching for new crop protection products, but safe, effective and accessible options simply don't exist yet, and **time is running out to find alternatives.**

Three crops are critically at risk:

- **Potatoes:** Particularly in the UK, which is an important provider of seed potatoes to the rest of Europe.
- **Tomatoes:** Particularly in Italy, which is currently losing a battle against climate change to control the spread of devastating pests.
- **Bananas:** Particularly in the Canary Islands, which produce more than half of the bananas consumed in Europe.



Figure 1. CROPSAFE's key crop targets.

Circular Bio-based Europe Joint Undertaking
Bio-based Industries Consortium
Co-funded by the European Union
The project is supported by the Circular Bio-based Europe Joint Undertaking and its members, with additional support for associated partners from SERI.
Project funded by
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

Potatoes: Europe's foundation

EU potato growing is underpinned by a supply of Scottish **seed potatoes**.

Potato Cyst Nematode (PCN) is spreading through Scottish seed potato fields and biosecurity laws prevent future cultivation of seed crops in any affected area. Fosthiazate pesticide, the current solution, is only partially effective and **will lose approval in 2027.**

Tomatoes: Racing against climate

Root Knot Nematode (RKN) currently devastates southern European tomato crops, causing **up to 65% losses**.

Climate change will push this pest northward, threatening crops across Europe.

Fosthiazate and metham sodium are the last chemical defences but **face de-authorisation by 2027**.

Bananas: A double threat

Banana Weevil (BW) destroys crops and spreads fungal diseases, including an aggressive variant of **'Panama Disease'** which threatens the global survival of the Cavendish banana. Lambda-cyhalothrin, a key chemical defence against BW, is toxic to pollinators and its **approval expires in 2026.**

Without new, safe, sustainable pesticides, with proven efficacy against PCN, RKN and BW, **future production of these staple crops is at serious risk.**

CROPSAFE: revolutionizing crop protection



Figure 2. The CROPSAFE consortium

CROPSAFE, a Horizon Europe project, kicked off in June 2025 with a mission to address this challenge. Coordinated by researchers at **Universidad de Alicante**, a multidisciplinary consortium of leading companies, research institutions, and farmer cooperatives from Norway, the UK, Belgium, Denmark, Italy, and Switzerland, are building on existing research to develop nature-based alternatives to harmful pesticides.

Transforming agriculture with nature-based solutions

From biomass to breakthrough: CROPSAFE will turn natural waste materials into powerful weapons against agricultural pests.

First, we are developing a versatile library of **nature-sourced crop protection compounds**. These compounds can be extracted from widely available natural waste streams including:

- **Used coffee grounds:** waste from instant coffee production
- **Woodchip and bark:** waste from wood processing
- **Seaweed:** byproducts from kelp farming
- **Fungi:** waste from industrial citric acid production

We are scaling up new, environmentally friendly, zero-waste processing steps to **extract the highly active compounds** from these four biomass sources.

Next, **lab testing** will identify the most promising candidates for protecting potato, tomato and banana crops. Selected compounds will be **formulated** into easy-to-use pesticides and plant protection products. Real-world **testing in greenhouses** will help us select the best performing formulations for large-scale, pan-European **field trials** on our target crops. Along the way, we will ensure safety for humans, beneficial insects, and soil microbes. **Advanced modelling** will underpin the entire project, enabling data-driven guidance on precise application strategies that maximise effectiveness, target protection only where it is needed, and minimise costs for farmers.

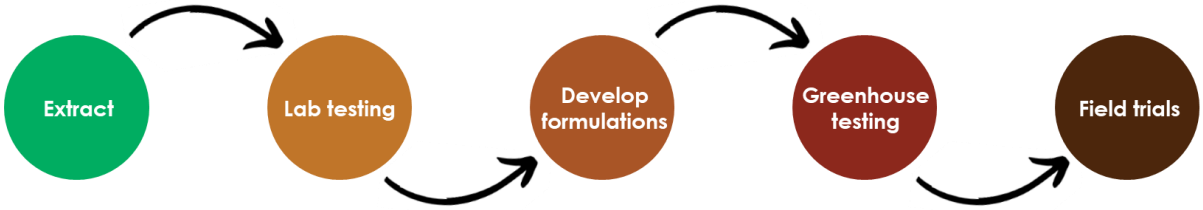


Figure 3. The CROPSAFE Journey: six stages

By tackling the most urgent threats to Europe's staple food crops, CROPSAFE aims to enable **safer, more resilient food systems,** delivering **higher crop yields** without environmental damage, **healthier soils** that regenerate naturally, and **reduced climate impact** through sustainable practices.

CROP SAFE

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