RESEARCH & INNOVATION PROGRAMME

THE OLEFINE PROJECT goes out with a bang

The OLEFINE project has demonstrated economic and environmental sustainability of pheromones - that is good news for bees and other beneficial insects ▲

As the OLEFINE project is drawing to a close, its partners can take pride in having established a truly market-disrupting technology

Not only has the OLEFINE project created a novel technology for efficient, low-cost production of biological insect pheromones. It has also successfully demonstrated the viability of biological pheromones as safe and environmentally friendly insecticide substitutes.

As a growing global population is putting pressure on our ability to protect food and feed crops against pests in a sustainable way, insect pheromones are seen as a promising alternative to chemical insecticides. Yet, despite decades of research demonstrating their efficacy and sustainability, insect pheromones have traditionally been produced by chemical synthesis from petroleum-derived chemicals, making them too expensive to compete with insecticides.

Having demonstrated that insect pheromones can be produced affordably from renewable raw materials using yeast fermentation, the OLEFINE project has removed the cost barrier to widespread application of pheromones. As insect pheromones become available to farmers worldwide, they will revolutionise pest control in agriculture and forestry. The global market for pheromone-based Integrated Pest Management (IPM) products is estimated at €1.6 billion per annum and growing rapidly.

The OLEFINE project has developed a market-disrupting technology that makes it possible to produce insect pheromones at an industrial scale at a competitive cost with a low environmental footprint. The ensuing acceleration of pheromone-based pest control will in general have far-reaching environmental and socio-economic benefits.

The OLEFINE project's industrial partners have developed mating disruption products with biological pheromones as active ingredients for use in row crops such as cotton ►

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> **OLEFINE has irrevocably shown that insect pheromones produced via yeast fermentation are economical and environmentally friendly alternatives to insecticides.**
>
> OLEFINE Technical Manager Irina Borodina

Major OLEFINE results

- Development of a biological production platform based on yeast fermentation for two different moth pheromones – with more in the pipeline.
- Development of mating disruption products with biological pheromones as active ingredients.
- Demonstrating efficacy of biologically produced pheromones being the same as that of chemically synthesised pheromones (laboratory and field tests).
- Demonstrating environmental sustainability of production and field application of biological pheromones combined with a techno-economic assessment.

OLEFINE breakthrough technologies

Having developed a market-disrupting technology as the foundation for a whole new value chain – from production to application of biological insect pheromones – it goes without saying that the OLEFINE project has pioneered several breakthrough technologies, including, but not constrained to the development of:

- High-yielding yeast strains for large-scale production of pheromones
- Production processes for fermentation of various pheromones
- High-throughput methods for screening of enzyme activity
- Enzymes optimised for industrial production
- Novel long-lasting pheromone formulations for row crop application
- Methods for testing efficacy of pheromone products

The OLEFINE project has developed a biological technology platform for production of insect pheromones that outshines conventional chemical synthesis on techno-economic parameters ▲

Scientific publications

During its lifetime, several OLEFINE peer-reviewed articles have been produced. We have published them here:

Peer-reviewed publications

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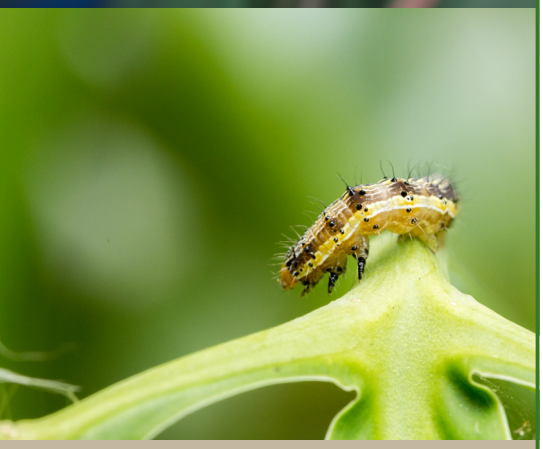
What's next for OLEFINE?

The OLEFINE project has developed a novel technology for pheromone production via microbial fermentation and demonstrated the efficacy of fermented pheromones in the field. As the next step, OLEFINE partners are dedicated to bringing pheromone-based products to the market. For more information about commercial products, please visit the websites of relevant OLEFINE partners:

- Pheromone products (BioPhero)
- Mating disruption products (Novagrica)
- Mating disruption products (ISCA)

Future OLEFINE news will be publicised here: www.olefine.eu



Rice stemborer and cotton bollworm are two of the insect pests targeted by the OLEFINE project ▲

OLEFINE who's who?

The (OLEaginous yeast platforms for FINE chemicals) project brought together six scientific partners and four industrial partners:

DTU Technical University of Denmark · BioPhero · Lund University · NovAgrica Biological Products & Solutions · Demokritos National Center for Scientific Research · ISCA · Manchester 1824 The University of Manchester · biotrend experts in bioprocessing · University of Liverpool · Fraunhofer IBP

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The OLEFINE project has demonstrated the efficacy of biologically produced pheromones in field tests ▶