

Inagro is a leading centre of applied research and dissemination for agriculture and horticulture with a diversified range of expertise and services. Its focus is on supporting farmers and providing future-oriented perspectives for primary production.

«To achieve this optimally, we collaborate across the entire agrifood chain - from suppliers to the processing industry and retail - both domestically and internationally,» says business developer Katrien De Dauw. «We prioritize diversity in research themes and expertise to adapt flexibly to changes and transitions in the sector.»



© Inagro

Since its inception as a research centre, Inagro has been committed to improving cultivation techniques through trials on a practical scale. Its 240 employees, mainly scientific and technical experts, conduct practice-oriented research on farms and within Inagro's own extensive research infrastructure. Examples include 35 hectares of trial fields, pilot scaled research facilities for mushroom and Belgian endive production, aquaculture, insect breeding, and a plug-and-play biogas installation.

Key partner

«This makes Inagro a key R&D partner for farmers and technology providers in the transition to a more sustainable society,» says deputy director and research manager Greet Ghekiere. «Our research agenda focuses on developing solutions to meet the goals of the European Farm to Fork strategy. We aim to quickly implement research findings into practice within the shortest possible time, by conducting our validation and demonstration projects in real-life environments, such as our Future Farming Hub and our research greenhouse Agrotopia.»



© Inagro

Climate-resilient agriculture

«We've always kept an eye on new trends, not just in agriculture and food, but also in broader social contexts,» says Ghekiere. «This includes finding solutions to mitigate farming's impact on the climate, particularly regarding livestock farming. Inagro focuses on developing technological solutions and management practices to reduce greenhouse gas emissions, such as methane from cows. Solutions are based on resilient soil management and fine-tuned water and food management.»

Protein shift

Inagro's researchers experiment with soy, quinoa, chickpeas and even duckweed, crops that could provide locally produced protein sources. In collaboration with a major retailer, Inagro has even developed Belgian chickpea-based hummus and falafel. Research into professional insect farming for alternative protein production shows promising results. «Our focus spans the entire food chain,» explains Ghekiere.

Future Farming Hub

Inagro is advancing nature-based solutions to reduce chemical pesticide and nutrient use in primary production. «Within our Future Farming Hub, we're developing production practices for the future in conventional, organic, and agroforestry farming systems,» says De Dauw. The hub tests the effectiveness of biopesticides and biocontrol agents, while also developing smart, data-driven decision support systems for crop protection. These systems are designed to improve integrated pest management and prevent nutrient and pesticide leaching into the environment.»

Agrotopia and vertical farming

In 2021, Inagro opened Agrotopia. This rooftop greenhouse contains a wide range of state-of-the-

art hydroponic growing systems for both leafy crops and fruit vegetables, and different types of vertical farms. Agrotopia is also a pilot for food production in highly urbanised environments, in which a more circular economy is put into practice by e.g. access to a heat network and use of waste water from food processing industries.

Vertical farming is an innovative method to grow crops in vertically stacked layers, often in controlled indoor environments. The layers usually consist of trays or gutters, and do not contain soil. Instead, they are fed with nutritious water solutions, which ensures efficient use of resources such as water and space. Currently, Inagro has three vertical farms. The most recent (2024) system consists of three 10-meter-high towers, each with 18 rotating tables. Unlike fully closed systems, this one uses natural sunlight.



© Inagro

«The main challenge in current vertical farming systems is the energy requirement for lighting and climate control. This system benefits from natural light, as it is placed in Agrotopia’s facade greenhouse,» says De Dauw. «We believe that vertical farming can be a valuable addition to the current horticultural practice, e.g. for the production of qualitative plantlets and cuttings. The fully controlled environment also allows for targeted research into, among other things, light recipes and the effect of biostimulants.»

Research partner for agribusiness

Within Inagro’s system approach of the agribusiness chain, cooperation with a broad range of stakeholders is pursued. Business developer Katrien De Dauw illustrates: «Private companies can participate in Inagro’s research in different ways. We offer confidential R&D, demo trials, and participation in research projects. This way we can be a partner in development, validation and demonstration of the companies’ innovations.»

Inagro’s practice-oriented expertise comprises a diverse range of topics. These can be applied to a broad variety of crops, such as open field vegetables, arable crops (e.g. grains, potatoes), greenhouse vegetables, mushrooms, strawberries, and more. Circularity is a hot topic, but we bring it into practice by applying it to both inputs and outputs. Water, energy, cultivation materials, valorisation of waste streams, and more are comprised in many projects. Digitalization is another important factor of modern horti- and agriculture, both in the field and the

greenhouse. Inagro's smart farming department incorporates robotization and precision agriculture.



© Ilse Louwagie for Inagro

«Sensors help us to 'hear' the plants' needs. Challenges concerning climate change or diseases and pests can be tackled by developing new cultivation techniques. IPM and sustainable crop protection are intertwined in many of the previously named topics. And we explore and optimise the cultivation of new crops, such as protein or fibre crops, and diversification of the existing vegetable assortment.»

«We consider multi-actor working as an essential part of our approach,» Inagro director Mia Demeulemeester adds. «We prefer to work in co-creation with not only the agro-industrial chain, but with all relevant stakeholders. We offer them to participate in our research projects. Significant for this approach is that Inagro manages two ENOLL approved living labs, one for greenhouse agriculture and the other dedicated to the development of concepts for the circular use of water, energy, biomass and nutrients.»



Inagro

Ieperseweg 87
B-8800 Rumbeke-Beitem
Tel.: +32 (0)51 27 32 00
Email: info@inagro.be
<https://inagro.be/eng>