Gentse Gronden Expo

Vlaanderen
is landbouw & zeevisserij

Annual report 2024

ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

www.ilvo.vlaanderen.be

Publisher Joris Relaes

Coordination Ellen Claeys
Greet Riebbels
Frederik Ampe
Nele Jacobs
Louise Pauwels
Els Van Poucke
Sandra Leroy

Translation Miriam Levenson

Photographs ILVO

Lay-out Nancy De Vooght

To order

by email ilvo@ilvo.vlaanderen.be
by telephone +32 9 272 25 00
by mail Burg. Van Gansberghelaan 92
9820 Merelbeke-Melle
Belgium
reference 'Annual report 2024'

www.ilvo.vlaanderen.be

For information, questions or suggestions

T +32 9 272 25 00

ilvo@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

Volg ILVO: ILVOvlaanderen

facebook.com/ILVOvlaanderen
youtube.com/@ILVO.vlaanderen
linkedin.com/company/ILVO
vimeo.com/ILVO
instagram.com/ILVOvlaanderen

Foreword

Dear reader,

This ILVO 2024 annual report opens with a picture of *Gentse Gronden*, an exhibition that ran this year at the city museum of Ghent (STAM). The expo was largely based on ILVO research on the importance of public lands for Flemish agriculture. Many debates, workshops and seminars organized as part of the expo brought this research not only to other scientists, but also to policy makers and the general public. The impact is considerable, given that public lands have been included in administrative agreements at the Flemish, provincial and municipal levels.

In *Gentse Gronden* we brought science and culture together. Just like in the time of Leonardo da Vinci and Michelangelo, where art, technology and science went hand in hand, we at ILVO are constantly looking for creative ways to make knowledge accessible. Our AgriCulture evenings are another great example, where artists and authors share their agriculturally-themed work with our staff.

2024 was the year of a new Flemish coalition agreement. Where possible, ILVO research aligns with the aims of this governmental agreement. We continue to focus on sustainable innovation and digitalization. With DjustConnect we continue the construction of a Flemish dataspace for the agri-food sector. The Klimrek project develops tools for climate monitoring that are already being applied in dairy farming. In arable farming and horticulture, we are investigating how agroecological and regenerative agriculture, organic farming and agroforestry can be implemented in Flanders.

Climate research is of course still a spearhead, with additional attention to water management and climate adaptation. In livestock farming, we are investing in the Stable of the Future with innovations that help reduce nitrogen and methane emissions. We are also committed to speeding up the approval of new low-emission techniques and management measures, and we continue to carry out our reference tasks regarding emissions in livestock farming.

ILVO's pioneering work continues in the fields of food innovation and biodiversity. We actively contribute to the dialogue between agriculture and nature and work on biodiversity monitoring at the agro-ecological site in Hansbeke. In the Food Pilot, we support the food industry in developing sustainable and safe products. We are also committed to protein diversification, including through microbial proteins, in cooperation with Bio Base Europe Pilot Plant.

In fisheries, we have taken a big step in digital transformation. VISTOOLS is now implemented on 37 vessels, an important step toward real- time data collection. This data makes the fishing fleet a platform for data collection and will eventually support an ecosystem approach to fisheries management.

In short, at ILVO we continue to work with conviction for a sustainable, innovative and future-oriented agriculture, fisheries and food sector.

Enjoy your read!

Joris Relaes
Administrator-general

Own Capital (EV) Management Committee

Members ILVO:

- Joris Relaes,
  administrator-general, chair
- Kristiaan Van Laecke, secretary
  department head
- Bart Sonck,
  department head
- Lieve Herman,
  department head
- Greet Riebbels
  communications consultant
- Katrien De Bruyn
  financial coordinator

Head of the Agency for Agriculture & Marine Fisheries:
Patricia De Clercq, administrator general

Flemish Minister of Science Policy representative:
Liselotte De Vos

SALV (Strategic Advisory Council on Agriculture and Fisheries) representative:
Loes Lysens

Inspectorate of Finance representative:
Marc Verelst, inspector general

Advisory Committee

Effective members

Joris Relaes, ILVO
Greet Riebbels, ILVO
Björn Possé, ILVO
Lieve Herman, ILVO-T&V
Kristiaan Van Laecke, ILVO-Plant
Bart Sonck, ILVO-Dier
Elke Rogge, ILVO-L&M
Patricia De Clercq, Agency of Agriculture and Fisheries
Isabelle Magnus, Agency of Agriculture and Fisheries
Jan Pieters, UGent
Patrick De Clercq, UGent
Stefaan De Smet, UGent
Frank Devlieghere, UGent
Annemie Geraerd, KU Leuven
Nadine Buys, KU Leuven
Liesbet Vranken, KU Leuven
Nico de Storme, KU Leuven
Kris Vissenberg, Universiteit Antwerpen
Nadia Lapage, Fevia
Steven Dessein, Plantentuin
Katrien D'hooghe, BFA
Loes Lysens, SALV
Hendrik Vandamme, SALV
Justine Arkens, SALV
An Jamart, BioForum Vlaanderen
Koen Carels, SALV

Substitutes

Lieve Herman
Nele Jacobs
Cathy Plasman
Jurgen Vangeyte
Isabel Roldan
Sam De Campeneere
Fleur Marchand
Danny Vandenbossche
Els Lapage
Danny Geelen
Steven Maenhout
Veerle Fievez
Mia Eeckhout
Tomas Norton
Johan Buyse
Erik Mathijs
Chris Michiels

Inge Arents, Flanders' FOOD
Johan Colpaert, Fedagrim
Mia Demeulemeester, Inagro
Joris van Olmen
Mark Wulfrancke
Sarah Samyn
Alexander Claeys

Mission & Vision

Research for a changing world

ILVO wants its research to be a useful foundation for a changing world.

Globally, challenges are emerging that put pressure on the planet, on our health and on the food supply. We focus our research on these changes.

ILVO's vision document reveals our concern for the essential needs and values of society.

Read the full text at www.ilvo.vlaanderen.be


ILVO
Flanders Research Institute for
Agriculture, Fisheries and Fo
... AND THE ROLE OF TECHNOLOGY
AND INNOVATION
The
footprint
of food
Veerle Van Linden
FTI The Summit, Gent, 21-03-2024

Research 2024

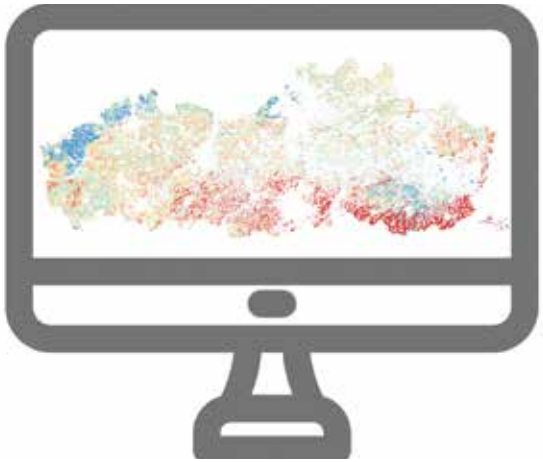
Soil and Cultivation

This year we reached two big milestones: 10 years of agroforestry research and the end of the EJP Soil project. ILVO's agroforestry researchers possess a solid knowledge base for everyone wishing to get serious about agroforestry. The EJP Soil consortium succeeded in getting the topic of soil health all the way onto the policy table, in part because of strong efforts by ILVO. Soil and cultivation are increasingly clearly at the crossroads between 'maintaining production', 'sustainability objectives' and 'a rapidly changing climate'. The pressure is on to find timely answers to these challenges. Some 150 ILVO employees are dedicated to this crucial work.

contact: kristiaan.vanlaecke@ilvo.vlaanderen.be

Soil and cultivation

RESULT



How do rotation changes and reduced fertilization affect soil carbon stocks?

Changes in rotation and reduced fertilization create small effects on soil carbon stocks. Importantly, these effects are influenced by regional conditions, so a carbon sequestration policy must be customized according to context. The EJP SOIL SIMPLE project assumed a hypothetical reduction in mineral fertilization (as advocated in the European Farm-to-Fork strategy) and then looked at the impact on crop yield, greenhouse gas emissions and carbon sequestration. ILVO conducted regional simulations for Flanders with the RothC model, evaluating scenarios of lower fertilization and adjusted crop rotations. The results show the trade-offs: a 20% reduction in mineral fertilization leads to a decrease of 0.03 tons of carbon per hectare per year in soil carbon stock. Losses are especially noticeable in wheat, rapeseed, and maize. At the same time, a change in crop rotation, such as replacing 10% silage maize with winter barley, can yield a gain of 0.013 t C/ha/year.

contact: greet.ruysschaert@ilvo.vlaanderen.be
project: EJP SOIL SIMPLE

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

RESULT

Coping with peaks in rainfall: how much does sustainable soil management help?

Soils that accumulated more organic carbon over an extended period of time do not appear to be significantly more resistant to precipitation peaks and long periods of drought. The rate at which water is drained or the amount made available to the plant ranks similarly for "healthier managed plots" as on plots with traditional soil management. This was the result of in-depth analyses of long-term field trials across Europe.

The EJP SOIL project SoilX investigated the potential for reducing the effects of precipitation extremes on crop productivity and other ecosystem services (such as nutrient cycling and carbon sequestration) through sustainable soil management practices. A monitoring campaign in several long-term field trials along a north-south gradient across Europe provided two insights:

First, more sustainable management practices do contribute to an accumulation of organic carbon in the soil when the organic matter is added from crop residues, plant roots, biomass from green cover crops, compost and animal (barnyard) manure. The second insight is that this does not lead to a marked improvement in soil structure and water balance.

contact: tommy.dhose@ilvo.vlaanderen.be
jeroen.schreel@ilvo.vlaanderen.be
project: EJP SOIL - SOILX

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

RESULT

Soil compaction mapping in a changing climate

Until this project, no systematic and comprehensive inventory of the distribution and severity of subsoil compaction in Europe had been done. The EJP SOIL project SoilCompaC analyzed soil density data from large-scale monitoring campaigns in several European member states and found that about 36% of fields feature problematic levels of subsoil compaction.
The methodology used, analysis of drone images throughout the season, proved to be a valuable tool for estimating soil compaction down to plot level.

Some solutions were unearthed during a review of scientific literature. Compacted soils benefit more from the more sustainable biological remedial measures versus the mechanical approaches. Deep-rooting crops, either combined with deep tillage or not, show promise but need additional study. Furthermore, in most cases soil compaction cannot be 100% reversed.

contact: tommy.dhose@ilvo.vlaanderen.be
project: EJP SOIL - SOILCOMPAC

EJP SOIL SoilCompaC

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

RESULT

Monitoring of soil ecosystem services

A monitoring framework for soil ecosystem services was developed within this project. The framework establishes clear links between the proposed indicators, the three pillars of soil health as defined in the Soil Monitoring Act - physical, chemical and biological - and the associated ecosystem services.

The first goal of this project was to determine which ecosystem services a soil can provide, then to be able to monitor these ecosystem services with direct (measurements) and indirect indicators (e.g., data based on already available data such as from satellites or management). Second, monitoring was performed on a network of pilot farms to reveal the impact of (agroecological) soil management practices on the evolution of ecosystem services and soil health. Long-term field experiments were also used to examine the extent to which sustainable agricultural practices can contribute to greater yield stability under climate extremes.

This research plan used existing data from the long-term BOPACT field trial in Flanders. The analysis showed that drought and extreme rainfall had affected the yield and yield stability of maize and spring barley, but this effect could not be traced to the different cropping practices.

Before we can make firm conclusions about the influence of land management practices on the effectiveness of ecosystem services, more data will need to be collected over more years.

contact: ioanna.panagea@ilvo.vlaanderen.be
project: EJP SOIL - ARTEMIS

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

EJP SOIL ARTEMIS

RESULT

Satellite imagery used to estimate soil organic carbon

Soil experts joined specialists in digital image analysis to explore the possibilities of estimating soil organic carbon contents of cropland across Europe using the European Space Sentinel-2 satellites. Their conclusions are twofold: first, current Sentinel-2-based prediction models are not accurate enough (for now) to detect the relatively small changes in slow soil carbon accumulation. However, the Sentinel-2 images do have some potential for establishing cost-effective sampling strategies because the images give an idea of the variance in the soil.
Tracking soil organic carbon via classical sampling and laboratory analyses is an expensive matter. This project investigated whether remote soil sensing techniques can offer a cheaper yet still valid alternative that allows estimates to be made with relatively high spatial and temporal resolution. The answer is "not yet".

contact: adriaan.vanderhasselt@ilvo.vlaanderen.be
panos.ilias@ilvo.vlaanderen.be
project: EJP - STEROPES

EJP SOIL STEROPES
EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

NEW

A European network of advisors on fertilization, soil quality and nutrient loss

This new project will identify 48 good practices that reduce nutrient loss and maintain soil fertility based on a review of scientific literature on bio-based fertilizers, improved soil quality and precision agriculture. A European network of agricultural advisors will then be developed to share this knowledge on integrated fertilizer management among European farmers in a fast and efficient way. The farmers get a digital platform. The advisors will also organize field demonstrations and site visits to enhance the learning experience. ILVO's responsibilities include feasibility analyses of fertilization practices and identification of user needs for the digital knowledge platform.

contact: thibault.cloet@ilvo.vlaanderen.be
project: STRATUS

RESULT

Soil: trade-offs between carbon sequestration and nitrous oxide emissions

Based on a meta-analysis of European field trials, monitoring of long-term field experiments, and simulations, we now know that the climate gains from efforts to achieve more carbon storage in soil appear to be more important than the additional nitrous oxide emissions (a strong greenhouse gas) that arise as a result of those efforts. The preliminary conclusion is that in most cases the drawbacks (emissions) remain smaller than the benefits (carbon storage). There is a clear and favorable evaluation for the application of compost and biochar. The SOMMIT team examined how certain soil management practices can increase carbon storage in soils while minimizing trade-offs such as N_2O and CH_4 emissions and nitrogen leaching. The generalist SOMMIT index - a tool that can rate specific practices regarding crop yield, carbon storage, greenhouse gas emissions and nitrogen leaching – was developed. Several knowledge gaps were identified, however. SOMMIT was one of the EJP Soil projects where ILVO made a significant contribution.

contact: peter.maenhout@ilvo.vlaanderen.be
project: EJP SOIL - SOMMIT

EJP SOIL SOMMIT
EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

NEW

Limiting nitrous oxide emissions from Flemish agricultural soils

In the LILA project (VLAIO), ILVO joined the Environmental Department of Ghent University and Boerenbond to investigate gaseous emissions from agricultural soils in Flanders. An estimated 15% of total greenhouse gas emissions in agriculture come from soils. Nitrous oxide (N_2O) is the main component of these soil emissions. LILA maps these N_2O emissions under Flemish agricultural conditions. The project examines how these emissions can be reduced, and measures the balance between (climate favorable) carbon build-up in soils versus (unfavorable) N_2O emissions. Multi-year field trials monitor nitrous oxide emissions after use of mineral fertilizers and animal manure. In this way, we track whether innovative measures can reduce emissions, what trade-offs occur with other nitrogen losses, and how these can controlled. Models analyze the effects of carbon farming practices on gaseous nitrogen losses. LILA provides an accurate picture of nitrous oxide emissions in Flanders and suggests effective measures.

contact: peter.maenhout@ilvo.vlaanderen.be
project: LILA

NEW

Guidance for better soil and water quality extended

For the next four years (until 2028) ILVO is participating in the specialized advisory service of B3W. In early 2021, the Flemish Land Agency established this separate service for well-reasoned fertilization and soil care. ILVO is one of the 10 Flemish knowledge centers that share their practical knowledge on sustainable nutrient management and soil quality with the Flemish agriculture and horticulture sector. The aim is to reduce nutrient losses to water, soil and air while also improving soil fertility.

B3W organizes three types of activities: (i) thematic exchange sessions with demos on example farms, (ii) focus groups in which farmers join up to develop and apply knowledge, and (iii) individual coaching to improve customized nutrient management.

contact: maarten.deboever@ilvo.vlaanderen.be
project: B3W

VLAAMSE
LAND
MAATSCHAPPIJ

NEW

Young farmers learn about sustainable soil management

This demonstration project is led by the *Groene Kring* and *Voedsel Anders,* with soil expertise from ILVO. The aim is to increase knowledge about healthy soils among young farmers and horticulturists and to develop their skills in optimal soil management. Webinars, visits to 'lighthouse' farms and a learning network supported by experts all bring young farmers into contact with the practices and measures that boost soil quality.
The credo is that healthy soils are key to addressing challenges such as climate change, stringent legislation and more difficult growing conditions. At a time when soil quality is declining worldwide – including in Flanders - restoring our soil capital is a priority.
This project aligns with the European Biodiversity Strategy and the new Soil Monitoring Law, both of which will play a role in the continued resilience of the agricultural sector.

contact: koen.willekens@ilvo.vlaanderen.be
project: JOBOLEGRO

NEW

Direct seeding in arable farming. Worth considering?

Can direct seeding at the beginning of the season offer a workable alternative to tillage in order to prevent moisture loss, compaction and disruption of soil life? That is the question for an EIP operational group led by Praktijkpunt Landbouw Vlaams- Brabant. A diverse group of pioneering arable farmers, machinery experts and researchers are working together to build knowledge and practical experience. ILVO has gained expertise on direct seeding via the Experimental Platform for Agroecology in Hansbeke. The project combines training (in France), farm visits (in Wallonia) and field trials with test plots for main and intermediate crops.

The goal is to gain insight not only into the agronomic benefits, but also into the financial profitability of direct seeding machinery for Flemish farms and whether contract workers would like to invest in this. In other countries, direct seeding is already often used as a cost-saving strategy. This project also investigates whether this might improve the economic aspect of arable farming in Flanders.

contact: koen.willekens@ilvo.vlaanderen.be
project: POTDIRZA

Europees Landbouwfonds voor Plattelandsontwikkeling: Europa investeert in zijn platteland

RESULT

Collective farm composting works: case 'Grenspark Groot Saeftinghe'

Compost from local biomass streams can contribute to sustainable agricultural practices by enhancing soil health, improving water retention and reducing fertilizer use. However, producing and applying farm compost requires a lot of effort from individual farmers. This project viewed soil care and farm composting as a collective challenge that requires not only action by individual farmers, but also regional cooperation and shared infrastructure. Prior to the project (2020-2022), some local farmers had already tested the use of quality compost, which clearly improved soil quality. ILVO investigated the feasibility of a scaled-up, regional composting project in the Groot Saeftinghe Border Park. The strategic use of public biomass streams was decisive for choosing this case. The project offers numerous opportunities for cooperation in the region. After clearing some legislative hurdles at the Flemish level, this project will provide a blueprint for how to scale up in other areas.

contact: hans.vandermaelen@ilvo.vlaanderen.be
project: COMPOSTERING GGS

NEW

Winter weeds in organic arable and vegetable farming: a proactive approach

A better understanding of the growth potential of winter weeds helps researchers develop a more effective weed control technique that also contributes to healthier soil and more sustainable organic cropping systems.
Winter weeds such as chickweed, street grass and true chamomile pose a challenge in organic arable and vegetable production. They thrive in warm, moist winters and are difficult to suppress in winter cereals under a no-till regime. The weeds also cause problems in seedbed preparation and spring sowing.

"By analyzing seed banks on 50 organic plots in Flanders, we clarify the relationship between the seed bank size of winter weeds, soil, and weed management. Based on this analysis, practice-oriented strategies (e.g. use of species-rich green cover crops) are developed and tested in field trials."

Within this project UGent takes the lead, Inagro selects the field plots, and ILVO performs the soil analyses.

contact: koen.willekens@ilvo.vlaanderen.be
project: WIONKRUBIO

NEW

How do ancient grain varieties perform in the field and in 'special bread' ?

The EIP operating group 'GraanWaardig' is exploring the possibilities for a sustainable chain for agroecologically cultivated ancient grains, where the grain is also locally processed by a baker. This temporary research collaboration consists of five farmers and a bakery group from Hofstade that have experience with baking artisanal bread made from ancient grain varieties. ILVO and INBO are involved as research partners to monitor the soil, crops and biodiversity around the fields. ILVO's agricultural economists are also looking for the key factors for a durable business model. Although ancient grains produce significantly lower yields, the short chain and ecological (sales) value may yield a financial benefit. The project promotes knowledge sharing about ancient cereal varieties and aims for a transparent collaboration that will continue after the project ends.

contact: koen.willekens@ilvo.vlaanderen.be
project: GRAWA

ILVO policy advice (in Dutch):
https://ilvo.vlaanderen.be/uploads/documents/PB/2024.02-NL-Kansen-en-hindernissen-voor-agro-ecologie-in-het-Vlaamse-voedselsysteem-3.pdf

NEW

A 100% Belgian pasta chain

This EIP operational group investigates the potential of durum wheat in Flanders, with a focus on agroecological cultivation and value-added creation within the chain. The cooperation between farmers from the Pajottenland and Heuvelland regions and a buyer/processor forms the core of a sustainable value chain. The project is led by Boerenbond and House of Agro-ecology. On-farm monitoring and co-creation with ILVO researchers leads to an increase in agroecological knowledge and sharing of practical experience. ILVO staff are responsible for monitoring soil quality and nutrient availability using analyses and field measurements. The project aligns with the Flemish charter 'Food Connects Farmer and Citizen', strengthening the link between agriculture, processors and consumers, with sustainability and local production as spearheads. "We expect to learn about the success factors of the cooperation model developed between farmers and processors around innovative products based on local ingredients."

contact: koen.willekens@ilvo.vlaanderen.be
project: BASTA!

NEW

EU network of advisors to reduce pesticide use and risks

The AdvisoryNetPEST project is establishing an EU-wide knowledge network to reduce pesticide use and associated risks, and to promote the adoption of innovative practices. The network connects advisors and actors within the AKIS (Agricultural Knowledge and Innovation System) in 27 EU member states and the United Kingdom. Within this network, innovative practices are identified, adapted to the local context and further disseminated throughout Europe. Knowledge exchange and training for advisors and students stimulate large-scale implementation. Demonstration events are strategically linked to other national and EU projects and initiatives. The project is closely aligned with the EU Farm to Fork strategy and the European Green Deal, which aim at fair, healthy and environmentally friendly food systems. This network hopes to play a crucial role in achieving reduced pesticide use.

contact: laure.triste@ilvo.vlaanderen.be
project: ADVISORYNETPEST

16 recommendations are listed in this proactive ILVO policy advice (in Dutch).
https://ilvo.vlaanderen.be/uploads/documents/Agroforestry/Beleidsnota_gewasbescherming_antibiotica-_NL_def.pdf

IN THE SPOTLIGHT

IMPACT OF GOOSE FORAGING DAMAGE ON GRASSLANDS

In response to the increased populations of certain species of geese in Flanders and the increase in damages paid, ILVO conducted a study commissioned by the Flemish Agency for Nature and Forests (ANB). To assess the amount of grazing damage done to grasslands by geese, researchers Paul Pardon and Peter Lootens set up a grazing experiment. Under controlled conditions, a plot of English ryegrass was grazed by domesticated geese. Grazing pressure varied according to predetermined values. Through field measurements, ILVO studied yield, weed pressure and biomass through the 1st and 2th grass cuts. The yield of both cuts was partly monitored by drone measurements.
The report formulates conclusions and makes recommendations for follow-up research.

contact: paul.pardon@ilvo.vlaanderen.be
peter.lootens@ilvo.vlaanderen.be

Report (in Dutch):
https://ilvo.vlaanderen.be/uploads/documents/Rapport-Impact-van-vraatschade-door-ganzen-op-graslanden.pdf

NEW

FLEMISH VITICULTURE IS GROWING, WITH BETTER CULTIVATION TECHNIQUES AND ECONOMIC LITERACY

This project investigates how Flemish grape growers can improve their yield, quality and profitability. That includes, among others, adapted cultivation measures and quality-enhancing techniques. Flemish viticulture is growing rapidly, with an annual increase of 20% in acreage since 2020 and a production of more than 3 million liters of wine in 2022. Nevertheless, the sector suffers from a lack of specific knowledge about growing conditions in Flanders. Many cultivation measures are based on foreign practices, which can lead to suboptimal results in this region.
A specific economic calculation tool is also in the works, together with an extension of ILVO's LandbouwVerdienWijzer economic tool specific to this sector. This will help viticulturists make farm-specific choices that will increase their returns.

contact: thibault.cloet@ilvo.vlaanderen.be
project: VITITYP

PRESS RELEASE

CRISPR-CAS TECHNIQUE IN POTATO: SUCCESS IN SIMULTANEOUS MODIFICATION OF MULTIPLE GENES FOR PEST SUSCEPTIBILITY

For the first time, researchers have succeeded in simultaneously modifying multiple genes implicated in susceptibility to the dreaded late potato blight Phytophthora infestans. PhD student Ania Lukasiewicz (ILVO-VIB) used the 'new breeding technique' CRISPR-Cas for this purpose. More testing is needed to determine whether the genes are effectively switched off and if the new potato plants are indeed resistant to late blight. This scientific breakthrough is the first step toward development of a new generation of potato varieties endowed with durable resistance.

contact: tom.eeckhaut@ilvo.vlaanderen.be
project: CRISPR-SOLANUM

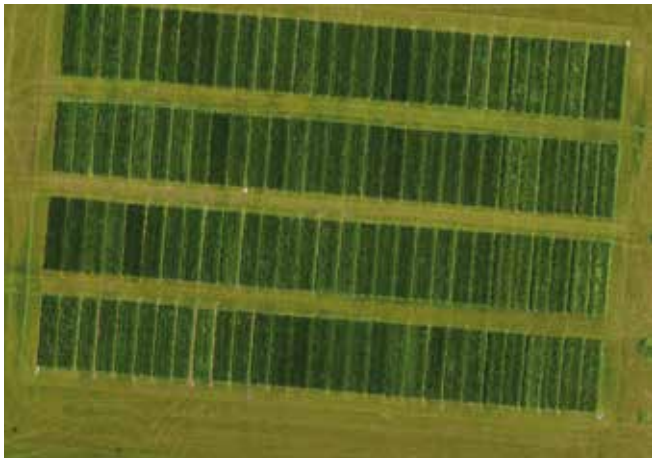
PRESS RELEASE

Toward chicory with more inulin using the CRISPR/Cas technique

Soon, breeders may be able to achieve chicory inbred lines within two years instead of eight. That opens up prospects for a faster path to inulin-rich chicory varieties – that's good news for farmers and processors who extract inulin into an interesting ingredient for food companies. Using the CRISPR-Cas technique, Evelien Waegneer (PhD researcher ILVO - KU Leuven) succeeded in altering specific genes in several individual chicory plants with the aim of making haploids via these plants. A haploid plant possesses only one set of chromosomes instead of two, and can therefore produce the desired inbred line via chromosome duplication, which in turn shows remarkably more vigor after crossing into a so-called F1. In the case of chicory, this results in roots that contain up to 15% more inulin compared to current chicory varieties.

contact: evelien.waegneer@ilvo.vlaanderen.be
project: CENH3-CHIC

RESULT



English ryegrass automatic phenotyping via image analysis

ILVO has developed an innovative image analysis technique, with one of the uses in the breeding of English ryegrass. This technique provides fast and accurate data on growth rate, plant architecture and root development. Notable is that this technique also adds data on the underground condition and actions of the plant. The special technological "umbrella" that makes this possible is the High-Throughput Field Phenotyping (HTFP) platform. That deploys drones with advanced sensors for large-scale data collection in experimental fields.
The technique has already been widely used to analyze growth dynamics under different growing conditions, such as mowing regimes and fertilization. Root growth is examined via scanned images and software tools. The data collected feed models that describe plant growth and stress response.

This technology has a very promising future and a broad field of application: it not only accelerates genetic progress in breeding programs but also supports research on biomass estimates, carbon sequestration and crop optimization, with direct benefits for farming and climate management.

contact: peter.lootens@ilvo.vlaanderen.be
project: FENOGRAS

RESULT

Making variety trials more sustainable using innovative evaluation tools

As one of the knowledge centers that organizes and optimizes variety research, ILVO has played a key role in the international INVITE project. The consortium spent 5 years working on improved methods for variety research with a focus on sustainability. To better evaluate variety performance, drone technology has been introduced, together with phenotyping and genotyping tools and well-developed crop models.

Breeding companies strive to develop new plant varieties that are more resistant to biotic and abiotic stresses as well as being more resource-efficient. For evaluators in variety trials, charting those factors requires sophisticated technology and more data. The studies resulted in more intensive scoring of candidate varieties under more diverse growing conditions. The evaluators got insight into traits that improve resilience and efficiency.

The research focused on major crops in the EU.

contact: joke.pannecoucque@ilvo.vlaanderen.be
project: INVITE

PRESS RELEASE

ILVO variety list for fodder beet and maize 2024

How do farmers choose the most appropriate variety of maize or fodder beet? The new independent Variety List is a good start. Maize and fodder beet still show large differences among varieties. Farmers need to tailor their variety choice to their own specific farm situation. A good variety for the farmer down the road neighbor is not necessarily a good choice for the own farm. It is important for farmers to be informed, to study the different characteristics of the varieties and determine what is most important for their own situation A golden tip: choices should be based only on multi-year figures from independent (non-commercial) sources. The ILVO variety list, published annually, is an excellent source of information.

contact: joke.pannecoucque@ilvo.vlaanderen.be
project: RASSENONDERZOEK

PRESS RELEASE

Three new soy varieties on Belgian variety list

Three new soybean varieties have been admitted to the variety list. They were created by a spin-off of VIB and ILVO called Protealis. Soy is originally a subtropical crop. In order to grow soybean in northwestern Europe, varieties are being bred that are better adapted to our weather and soil conditions.
Pro Helicon, Pro Jacinto and Pro Vesuvio, the three Flemish soybean varieties that passed the variety testing, got excellent scores in terms of yield and protein content. This proves that Protealis' breeding program is bearing fruit, bringing profitable soybean cultivation in Belgium another step closer.

contact: joke.pannecoucque@ilvo.vlaanderen.be
project: RASSENONDERZOEK

RESULT

Making rhododendrons suitable for calcareous soils?

A bioassay has been developed to efficiently screen rhododendrons in breeding programs for their tolerance to soils with higher acidity (pH). Rhododendron is a very popular garden plant, that is important in Flanders too, with millions of plants sold worldwide each year.
Normally the plant grows well only in acidic soil (pH 4.5- 6), while many gardens have neutral or even basic soil. Through targeted breeding and selection, the ornamental industry aims to develop rhododendron cultivars that can thrive in more gardens.

An ecological benefit would be that the more pH-tolerant rhododendrons would no longer need less or no pH-reducing peat in their substrate. Peat is a fossil resource that has a great impact on climate change when it gets mined. Over the longer term ornamental horticulture would like to phase out peat in growing media completely and these new rhodoendrons can play an important part in that.

contact: leen.leus@ilvo.vlaanderen.be
project: RHODOLIME

RESULT

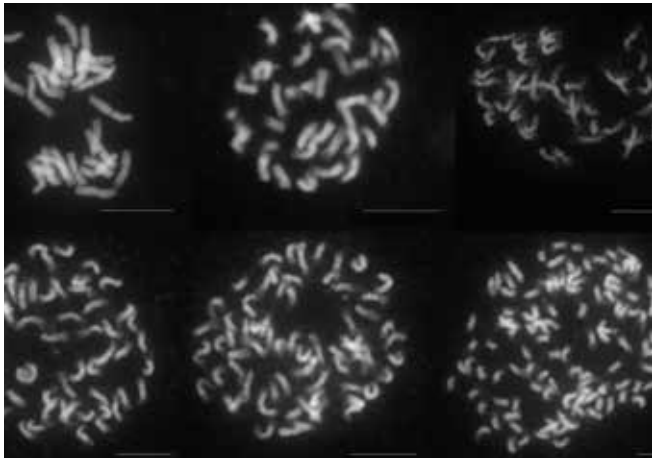
The dream of winter-hardy geraniums

This doctoral research helped address a major bottleneck in ornamental plant breeding. As of now, more and better starting material can be made available in ornamental plant breeding, especially for growing winter-hardy geraniums.
The researcher performed intensive methodological work using challenging laboratory techniques such as embryo rescue, polyploidization, and the insertion of rol genes via bacteria (Rhizobium rhizogenes). The aim of using the latter technique was to develop a new variety of compact geraniums. Growing the hairy roots was successful, but growing new plants of interest from the hairy roots proved difficult.

Regardless one can now combine traits in geranium faster and better, and previous obstacles in crossing geraniums with large genetic distances can now be overcome.

Winter-hardy geraniums are important for bee-friendly gardens and biodiversity, and they are becoming increasingly popular in the ornamental plant industry. They represent an additional ecological and economic asset.

contact: johan.vanhuylenbroeck@ilvo.vlaanderen.be
project: GERANIUM



NEW

Ornamental plants: also for nutrition and ecosystem services?

What ecosystem services and nutritional potential can woody ornamental shrubs and bushes provide? Which cultivars stand out? This question is being answered by the VLAIO project SIER+. Consumers increasingly demand ornamental plants with added value driven by climate change, biodiversity conservation and sustainable local food production. The functional added value of ornamental plant products is often not well known and is mainly based on the experience of tree growers, amateur gardeners and experts. This information is collected and will be the basis for a publicly accessible plant database with information on species and cultivars.
The researchers are standardizing methodologies for measuring ecosystem services such as nectar and pollen delivery for pollinators, and the nutritional potential of edible parts. Knowledge dissemination is done through VLAM, among others. Ornamental tree growers and the (public) green sector can use the new knowledge to respond to production and promotion of multifunctional ornamental plants. Breeders can target ornamental value in combination with functional added value.
ILVO and Viaverda are research partners in SIER+.

contact: ewout.vanoost@ilvo.vlaanderen.be
project: SIER+

SIER+
sierplanten met meerwaarde
voor voeding en ecosysteem

PRESS RELEASE

PhD shows pathway to frost-resistant lavender for the garden

Lavender is one of the most traded drought-tolerant garden and patio plants in our area. One drawback is that many lavender species of Mediterranean origin (e.g., butterfly lavender) freeze to death during our winters. This is changing with the doctoral research of Ewout Van Oost (ILVO - UGent). His genetic and physiological research in a large collection of lavender species and cultivars led to identification of the most frost-tolerant individuals, as well as determination of the parameters and methods for testing frost tolerance.
Ewout Van Oost: "We can now reliably measure frost resistance in large groups of plants. Ornamental plant breeders can now better predict which of their crosses will lead to new, frost-resistant lavender cultivars that will be equally beautiful and drought-tolerant."

contact: ewout.vanoost@ilvo.vlaanderen.be
project: LAVENDELKOUDE&ZIEKTE

PRESS RELEASE

10 years of Agroforestry Flanders: knowledge gained, now a rollout?

In 2024, the Consortium for Agroforestry in Flanders that ILVO helped found, will celebrate 10 years of research. That decade saw a great accumulation of knowledge.
At the event "Farming with trees: the road to 2035" Mark Shepard, American pioneer and author of Restorative Agriculture, gave the keynote speech at ILVO. To sum up 10 years of research on agroforestry in Flanders: the system has a proven potential because it has a higher overall productivity despite an average 20% lower yield of agricultural crops; a business model that is profitable under most scenarios; up to 7 tons of additional carbon storage per hectare per year; good ecosystem services with a protective microclimate; better water management; and higher biodiversity.

contact: bert.reubens@ilvo.vlaanderen.be

Agroforestry Flanders website:
https://www.agroforestryvlaanderen.be/en

RESULT

Agroforestry: resilient and profitable when approached wisely

Several forms of local agroforestry were examined economically and ecologically in this VLAIO project. The aim was to get clarity on profitability and cost/benefit analyses, and to optimize certain components. Some optimizations included spatial design, choice of species and varieties for trees and crops, management and production in the tree row. Agroforestry - if thoughtfully implemented - appears to be a profitable and resilient agricultural model. It increases biodiversity, utilizes natural resources and provides opportunities in the chain. Agroforestry 2025 experimented with change in nine participatory action clusters. Each received intensive knowledge support. The project developed a set of viable economic development paths, more efficient management practices and technical best practices.

contact: bert.reubens@ilvo.vlaanderen.be
project: AGROFORESTRY.2025

RESULT

Food forests as inspiration for sustainable agriculture

In the Operational Group FoodForward, four agroforestry farmers joined with three knowledge centers including ILVO to analyze how to improve the professional expansion and economic feasibility of food forests. Multi-annual plant combinations, minimal inputs and soil tillage, and combining closed cycles with short chain marketing does present challenges. The most concrete results are the facilitation of a digital marketplace, a practice-oriented roadmap for the construction of an economically efficient food forest system, a start for a financial, logistical and labor-related cost-benefit analysis, and proposals for regulatory simplifications.

contact: jolien.bracke@ilvo.vlaanderen.be
project: FOODFORWARD

IN THE SPOTLIGHT

Food forest as a revenue model reviewed for the first time

An example of a fact sheet with business calculations: a fictitious 0.8 ha food forest will at least break even if the food forest farmer organizes part of his sales through self-picking, supplements that with workshops or tours, sells both fresh and processed products, and receives investment subsidies of up to 30% of his total start-up cost.

Roadmap for food forests in agriculture (in Dutch):
https://ilvo.vlaanderen.be/uploads/documents/Agroforestry/20240602_Eindrapport-FoodForward.pdf

Fact sheet on food forests (in Dutch):
https://ilvo.vlaanderen.be/nl/nieuws/voedselbos-als-verdienmodel-voor-het-eerst-doorgelicht

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

RESULT

Potential of Flemish nut cultivation and processing

Research into possibilities for expanded walnut and hazelnut cultivation in Flanders has received a cautiously positive answer. A market study among consumers and producers identified supply and demand. A monitoring program identified the most suitable nut varieties. Analysis of oil, protein and nutritional value clarified the economic value of nut products and by-products. The results are summarized in fact sheets about analyses of nutmeats, by-products, consumer survey, market study and monitoring. A fact sheet on business models sets out a vision for the development of a Flemish nut sector.

contact: yvana.vankerkhove@ilvo.vlaanderen.be
erwin.wauters@ilvo.vlaanderen.be
project: NAN. (NOOD AAN NOOT)

RESULT

Agroforestry and climate neutrality?

This project shows that agroforestry makes an important contribution to climate goals through carbon sequestration. Research and local collaborations between farms, CO_2- offsetting companies and citizens led to new insights into carbon storage, practical arrangements and business models. Collaborations were established between farms and companies wishing to offset CO_2. Farmers were guided through five concrete case studies. The lessons were integrated into BOS+'s Treecological platform and a comprehensible project brochure.

contact: paul.pardon@ilvo.vlaanderen.be
bert.reubens@ilvo.vlaanderen.be
project: PDPO CARBONFARMING

RESULT

Flanders and Netherlands team up for faster rollout of agroforestry

In this project, agroforestry online course materials were developed in part after three pilot farms in North Brabant (Netherlands) were tracked by the project partners and given a customized plan. An Agro Farm Forestry Label was developed and launched. The project knowledge, educational tools, master classes, a twelve- part course and the label have been made available via the Dutch Agroforestry Knowledge Bank (https://kennisbank.agroforestrynetwerk.nl/) and the Flemish platform website www.agroforestryvlaanderen.be.

contact: marlinde.koopmans@ilvo.vlaanderen.be
project: FARMLIFE

NEW

Accelerating agroforestry in Flanders and the netherlands

The INTERREG project Cambium, which focuses on knowledge sharing, inspiration through 'lighthouse' farms and advice, started in early 2024. The aim is to make agroforestry more profitable and more widely applicable in Flanders and the Netherlands. Demonstration projects, an instrument to support farms in transition, and training courses for becoming an agroforestry advisor are included.

contact: sarah.carton@ilvo.vlaanderen.be
bert.reubens@ilvo.vlaanderen.be
project: CAMBIUM

Interreg Vlaanderen-Nederland
Gefinancierd door de Europese Unie
CAMBIUM

PRESS RELEASE

Online learning platform

ILVO is launching the free learning platform "E-Academy Agroforestry" for both farmers and teachers in agriculture and horticulture education, policy makers and advisors building their knowledge on agroforestry. The 6 interactive modules deal with such topics as the interactions between tree, animal and crop that make the system robust or practical planting, tree selection and maintenance. There are promising sounds from the agricultural and horticultural education community about using the platform.

contact: sarah.carton@ilvo.vlaanderen.be

The teaching platform is available for free on the Consortium's website: https://www.agroforestryvlaanderen.be/en/news?type=teaching-module&page=1

The project Farming the Future – Building Rural Networks for Climate-Adaptive Agriculture - FARM LIFE – is co-funded by the LIFE Programme of the European Union under contract number LIFE17 CCA/ NL/000093

Farmlife ILVO van hall larenstein AGENTSCHAP INNOVEREN & ONDERNEMEN Vlaanderen

RESULT

Mixed farming systems and agroforestry for resilient agriculture: European proposals

How can we achieve mixed farming and agroforestry systems in Europe that combine agroecological and socio-economic benefits? The Horizon2020 project AGROMIX, with Coventry University and ILVO as partners, provides answers in the form of tools and recommendations for policy and practice. Eight experimental sites in Europe and 12 participatory groups of farmers and stakeholders took part in an interdisciplinary design process for system change. Three tools were born: the Treefiles App Group, the Resilience Self-Assessment Tool and the Land-Use Change Interactive Map. A white paper was developed for European policy makers.

contact: bert.reubens@ilvo.vlaanderen.be
project: AGROMIX

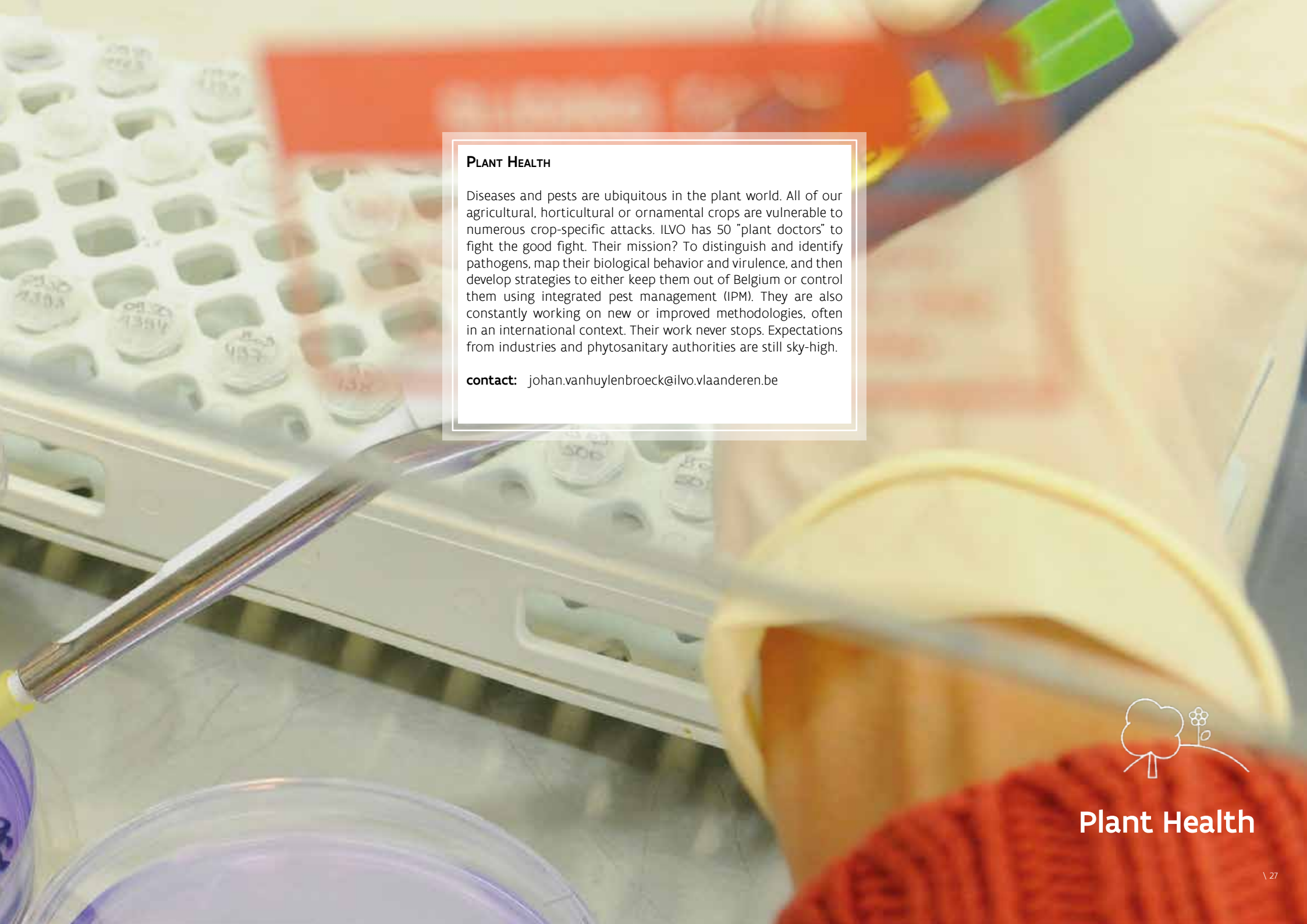
RESULT

European advisory network for interactive innovation in agriculture and forestry

The i2connect project strengthens European agricultural consulting by promoting interactive innovation processes. With a network of trained advisors, a comprehensive inventory of advisory organizations and practice-based solutions, the project connects science and practice. In interactive innovation, actors with complementary knowledge work together to develop and widely disseminate sustainable and productive agricultural solutions.

i2connect organized 40 training and networking events, developed training materials and a toolbox for advisors and policymakers, and published 100 case studies. This contributed to a better connected and future-proof advisory network in 30 countries, supported by updated AKIS reports. The project plays a key role in knowledge transfer, rural development and more sustainable agricultural practices in Europe.

contact: lies.debruyne@ilvo.vlaanderen.be
project: I2CONNECT



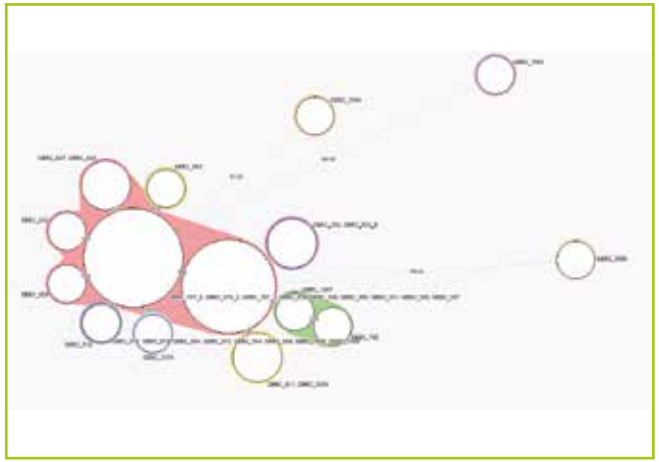
Plant Health

Diseases and pests are ubiquitous in the plant world. All of our agricultural, horticultural or ornamental crops are vulnerable to numerous crop-specific attacks. ILVO has 50 "plant doctors" to fight the good fight. Their mission? To distinguish and identify pathogens, map their biological behavior and virulence, and then develop strategies to either keep them out of Belgium or control them using integrated pest management (IPM). They are also constantly working on new or improved methodologies, often in an international context. Their work never stops. Expectations from industries and phytosanitary authorities are still sky-high.

contact: johan.vanhuylenbroeck@ilvo.vlaanderen.be

Plant Health

NEW



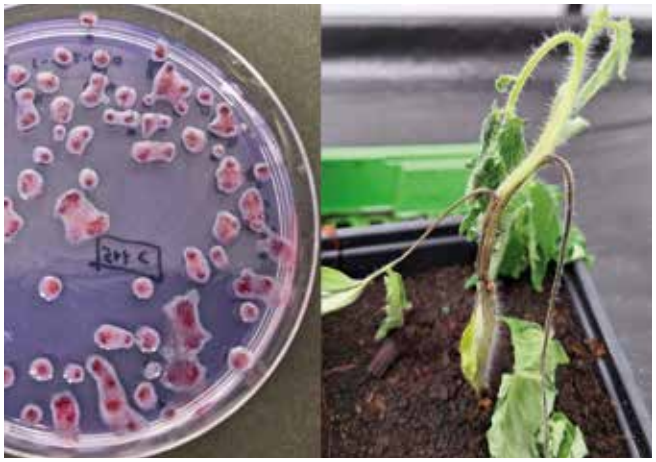
Bacteria in potato: back to the source

Bacteria causing brown rot and ring rot in tubers may be detectable in a collection of water samples that spans three decades. Can we figure out the original source of infection in infected tubers? To answer that question ILVO researchers are deploying a reverse contact tracing approach using advanced DNA sequence analysis techniques.

For more than 30 years, the quarantine bacteria Ralstonia solanacearum and Clavibacter sepedonicus have posed a danger to our potatoes, tomatoes and eggplants. They must absolutely stay out of these crops, and in some "protection zones" it is still forbidden for farmers to irrigate with surface water.
The researchers are applying reverse tracing to both the (old) bacterial cultures collected from infections in potatoes since 1989 and the related natural systems of infection. The goal is to gain insight into the introduction and course of spread. Isolates from new infection clusters can then be more accurately connected to each other and, if applicable, to previous infection (clusters).

contact: johan.vanvaerenbergh@ilvo.vlaanderen.be
project: SOURCETRACK

NEW



New members of the Ralstonia family under the microscope

Bacteria from the *Ralstonia solanacearum* species complex (RSSC) are known to cause wilt symptoms in potato, tomato and geranium, among others. This project focuses on two species within the RSSC, namely *R. pseudosolanacearum* and *R. syzygii,* which currently cause problems, especially in tropical areas. These species could pose a threat to European agriculture and horticulture if they were to encroach into our regions. They both have the status of quarantine pathogens with zero tolerance policies.
Twenty partners are working together to learn about the genetic diversity and evolutionary dynamics within the RSSC. In addition, efforts are being made to harmonize detection and identification methods. ILVO is making an inventory of bacterial strains, analyzing their genomes, validating diagnostic methods and launching an interactive tool for epidemiological monitoring.

contact: jolien.venneman@ilvo.vlaanderen.be
project: EXORAL

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

Euphresco

NEW

Worrying plant viruses in tomato and potato?

High-throughput sequencing (HTS) has become an indispensable technology within plant health research and diagnostics in recent years, especially in plant virology. HTS is often used as a broad, non-targeted virus screening technique that detects known viruses in expected hosts, but also detects less characterized pathogenic viruses in novel hosts or even totally new viruses. Especially for the latter two categories, the phytosanitary risks are insufficient or unknown, although they can be significant. In many research projects, there is no time or budget to look at exactly these unexpectedly detected viruses and their potential risks. The VIRISK project responds to this. Among other things, it focuses on three of the most worrisome viruses: Physostegia chlorotic mottle virus (PhCMoV), potato yellowing virus (PYV) and tomato fruit blotch virus (ToFBV).

These are subject to evaluation with a standardized framework that helps prioritize biological characterization and risk assessment. Inventories, bioassays and surveys provide valuable biological knowledge.

contact: kris.dejonghe@ilvo.vlaanderen.be
project: VIRISK

RESULT

IPM approach against thrips in outdoor vegetables

In this VLAIO project, ILVO together with project partners PSKW, Viaverda and Inagro demonstrated that the right choice of leek and white cabbage variety is the most effective strategy against the pest called *Thrips tabaci*. The researchers used genetic analyses to map the different Thrips populations. They turned out to be different from one another and they also respond very differently to insecticides. This underscores the importance of customization and of monitoring by species.

During the research project, the warning systems were refined with well-developed diurnal degree models and with information sheets for better identification.
Two cultivation measures had a positive effect: inter-seeding *Phacelia* as a catch plant and providing pollen to promote the attraction of natural enemies. Still, no significant reduction in thrips damage has yet been achieved. Other measures such as irrigation and cover materials offer rather limited benefits. Finally, the researchers collected data on consumer acceptance of minor insect damage on plants such as leeks.
The findings were widely shared to promote implementation by growers.

contact: negin.ebrahimi@ilvo.vlaanderen.be
project: IPMTRIPS

RESULTAAT

Important for greenhouses: viral load of whitefly *B. tabaci* now better understood

Now we know more about which harmful plant viruses are spread by the "whitefly" (*Bemisia tabaci*). But the exact risks of EU and non-EU populations of whitefliesfor Belgium are not yet entirely clear. This is the result of the VIRTAB project. Whitefly is considered a devastating pest on greenhouse crops such as tomato and cucumber. The insect family causes yield losses of more than 1 billion euros per year worldwide.
Using PCR, high-throughput sequencing and phylogenetic analyses, the researchers examined EU populations (Belgium, Italy, Greece, Portugal, Spain) and non-EU populations (including Israel, Nigeria, Togo) of *B. tabaci* for biotype and presence of viruses. EU populations consisted mainly of the MED biotype, while non-EU populations showed a greater diversity of biotypes. Harmful viruses such as begomo, crini and poleroviruses were found in both EU and non-EU populations. 'The results already prove how crucial monitoring and risk management are to protect our Belgian greenhouse horticulture as well.'

contact: wannes.dermauw@ilvo.vlaanderen.be
project: VIRTAB

RESULT

Sustainable ALTernatives for CHEMical soil disinfection (ALTCHEM)

How well do non-chemical soil disinfection techniques and microbial biocontrol organisms (BCOs) control soilborne pathogens such as *Rhizoctonia solani* (black rot) in head lettuce, *Pythium sylvaticum* (yellowing disease) in lamb's lettuce, and clerotinia sclerotiorum (white mold) in soil-grown Belgian endive? Answers to that question have been found.
Steaming proved effective against soil diseases, but is unrealistic due to high energy costs. With anaerobic soil fumigation and biofumigation, soil variability is a challenge, and additional nitrogen is released. BCOs including *Trichoderma* and *Pythium oligandrum* strains did not work adequately for now.

One of ILVO's contributions to ALTCHEM was an LCA study that compared the environmental sustainability of the techniques. This VLAIO project was done by Inagro (coordinator), ILVO, Viaverda, *Proefcentrum voor de Groenteeelt* and *Praktijkpunt landbouw Vlaams-Brabant*.

contact: jane.debode@ilvo.vlaanderen.be
project: ALTCHEM

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

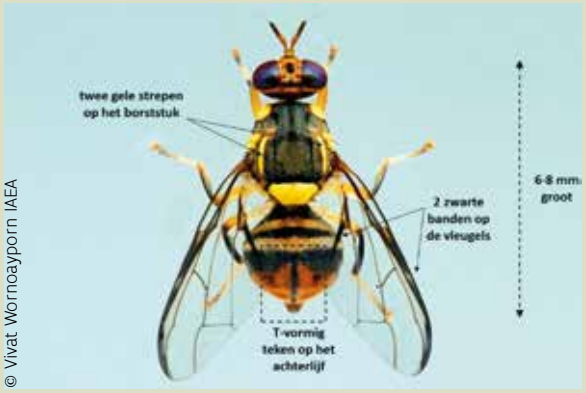
NEW

For the pear: diagnostic work started on decaying disease pear decline

Flemish pear growers are hoping that for Pear Decline, a bacterial plant disease spread by the pear leaf flea (*Cacopsylla* sp.) do not find their orchards. Other names for Pear Decline are pear decay phytoplasma, *Candidatus Phytoplasma pyri* or PD for short. Reports from Italy describe pear orchards struck by sudden and widespread decay. One feature of the disease is that it sometimes remains latent, and it can also sometimes on a smaller scale lead to small, tasteless fruit on the trees.
The goal of this LA research project is to provide practical solutions for Flemish pear cultivation and nurseries. With diagnostics via remote sensing and broad-spectrum sequencing, the researchers will map infections and co-infections.
A factor study is planned to understand the conditions that promote or inhibit the disease. Research on rootstock-resistant or -tolerant variants for the crucial pear varieties is also forthcoming. Last on the agenda is improved vector control against the pear leaf flea, and field trials to validate the recommended management measures.

contact: kris.dejonghe@ilvo.vlaanderen.be
project: DISARM PEAR DECLINE

BLOG



© Vivat Wornoayporn IAEA

Plant pest(s): oriental fruitfly

The EU wants to avoid the introduction of the Oriental fruit fly (Bactrocera dorsalis) at all costs, with controls on imported fruits and vegetables from non-EU countries at all borders. In 2023, adult flies of this insect were found for the first time in Belgium. That led ILVO to devote a blog post to in the plant disease and pests section. ILVO is involved in the intensive monitoring of this fly through the PESTFLY project. This project places additional traps near markets and appeals to citizens to report fruit flies appearing on their compost heaps. Genetic analyses are used to find out where the flies come from. This detective work is needed to find the countries that are at risk of spreading the fly in fruit exports.

contact: wannes.dermauw@ilvo.vlaanderen.be
jochem.bonte@ilvo.vlaanderen.be

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

RESULT

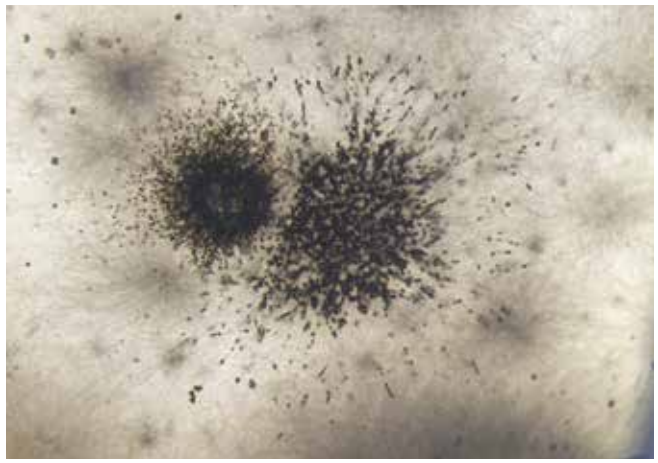
Better detection of vegetable and fruit damaging borer flies

In this project, researchers from 19 knowledge centers from 14 countries have compiled all available rapid molecular methods for the identification of Tephritidae species in imported fruits and vegetables. In particular, these include LAMP, qPCR, species-specific (multiplex) PCR and DNA barcoding. The inventory showed that the techniques were only effective for only a limited number of Tephritidae species.

These particular borer flies are among the most damaging invasive pests in fruits and vegetables. They cause significant crop losses and pose a threat to producers and traders worldwide.
The project validated the best protocols through international collaboration. A Test Performance Study was able to confirm the reliability of the LAMP assay for the detection of *Ceratitis cosyra*. Training and knowledge exchange reinforced the practical application of the techniques. DNA sequences from databases were analyzed to identify existing taxonomic gaps. It remains necessary to collect many samples in endemic regions.
Efforts from the TEPHRIFADE project are already contributing to faster and more effective control of invasive pest species worldwide.

contact: negin.ebrahimi@ilvo.vlaanderen.be
project: TEPHRIFADE

NEW



Harmful fungi in flax

The regions of northern France, Wallonia and Flanders are world leaders in flax production. But the cultivation is struggling with fungal diseases such as *Verticillium*, *Septoria* and *Podosphaera*. In this Interreg project ILVO, Inagro, UGent, CRA-W and Arvalis strive for sustainable control strategies that help flax to meet the requirements of the Green Deal while continuing to contribute to a greener economy. The focus is on biocontrol solutions, monitoring techniques for disease resistance in flax varieties, and grower awareness. ILVO plays a key role in developing molecular detection technology for *Verticillium dahliae*, screening of varieties and biocontrol strains, and raising awareness around Septoria.

contact: kurt.heungens@ilvo.vlaanderen.be
project: TRANS-PATHOFLAX 2.0

Interreg
Cofinancé par l'Union Européenne
Medegefinancierd door de Europese Unie
France - Wallonie - Vlaanderen
Biocontrol
Trans-Pathoflax 2.0

NEW

Risk-based detection of 12 tree-damaging insects

Early detection of 12 harmful tree-related EU quarantine insects is getting a boost. ILVO, CRA-W and Viaverda are developing specialized monitoring programs in Belgium. Risk maps show introduction routes, climate suitability and host plants. A sampling plan ensures targeted surveillance in forests, parks and public green spaces. Botanical gardens and arboretums are unique hotspots in this regard due to their diversity of plants and imports of non-native material.

The project strengthens the monitoring in the field through awareness campaigns and a reporting tool aimed at rapid identification and warning. The results lead to risk-based guidelines for the FASFC, facilitating cooperation with national and international bodies such as EPPO and EFSA.

contact: jochem.bonte@ilvo.vlaanderen.be
project: SURQUAPUB

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

NEW

Management of soil pests in outdoor ornamental cultivation

Flemish ornamental plant cultivation is increasingly troubled by underground pests such as grubs, leatherjackets and vine weevil larvae. The VLAIO project BODEMPLAGEN, a partnership between ILVO, HOGENT and Viaverda, focuses on sustainable monitoring and control of these pests. Innovative monitoring methods such as pheromone traps and soil sampling are being developed, and preventive and curative strategies are being tested such as crop rotation, natural enemies and parasitic organisms. A cost-benefit analysis ensures practical applicability. Flemish ornamental growers of perennial crops have an turnover of about € 400 million. This project will help safeguard their business security. The researchers plan wide dissemination of the results, through manuals, consultation tools and demo days.

contact: willem.desmedt@ilvo.vlaanderen.be
project: BODEMPLAGEN

NEW

Towards rapid molecular identification of pests

Quarantine pest insects in Belgium are still often identified using traditional morphological determination and PCR tests. This approach is time-consuming, less versatile and hinders rapid decision making. In the RAP-ID project innovative molecular methods for identification are being developed. 'In particular, we will test Oxford Nanopore Technology (ONT) sequencing on larvae of Bactrocera and Spodoptera species. We are optimizing MALDI-TOF mass spectrometry for larvae of quarantine Tephritidae.'
Both techniques can be done independently of primers and outside companies, an improvement. Identification will be faster, as fast as in one day.

contact: wannes.dermauw@ilvo.vlaanderen.be
project: RAP-ID

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

NEW

More global phytosanitary research cooperation

This project takes the first steps toward global alignment of phytosanitary (plant health) research for the purpose of controlling plant diseases and pests. Such control is under pressure due to global trade, increased travel and climate change. The researchers see potential to optimize strategies through more effective collaboration and coordination.
The success of the Euphresco network as a platform for coordinating European phytosanitary research put the researchers on track to develop broader initiatives, meeting the needs of other regions of the world.

Initially, a strategic research agenda will be developed. The network also plans to launch an annual "call" for collaborative research projects.

contact: kris.dejonghe@ilvo.vlaanderen.be
project: EUPHRESCO III

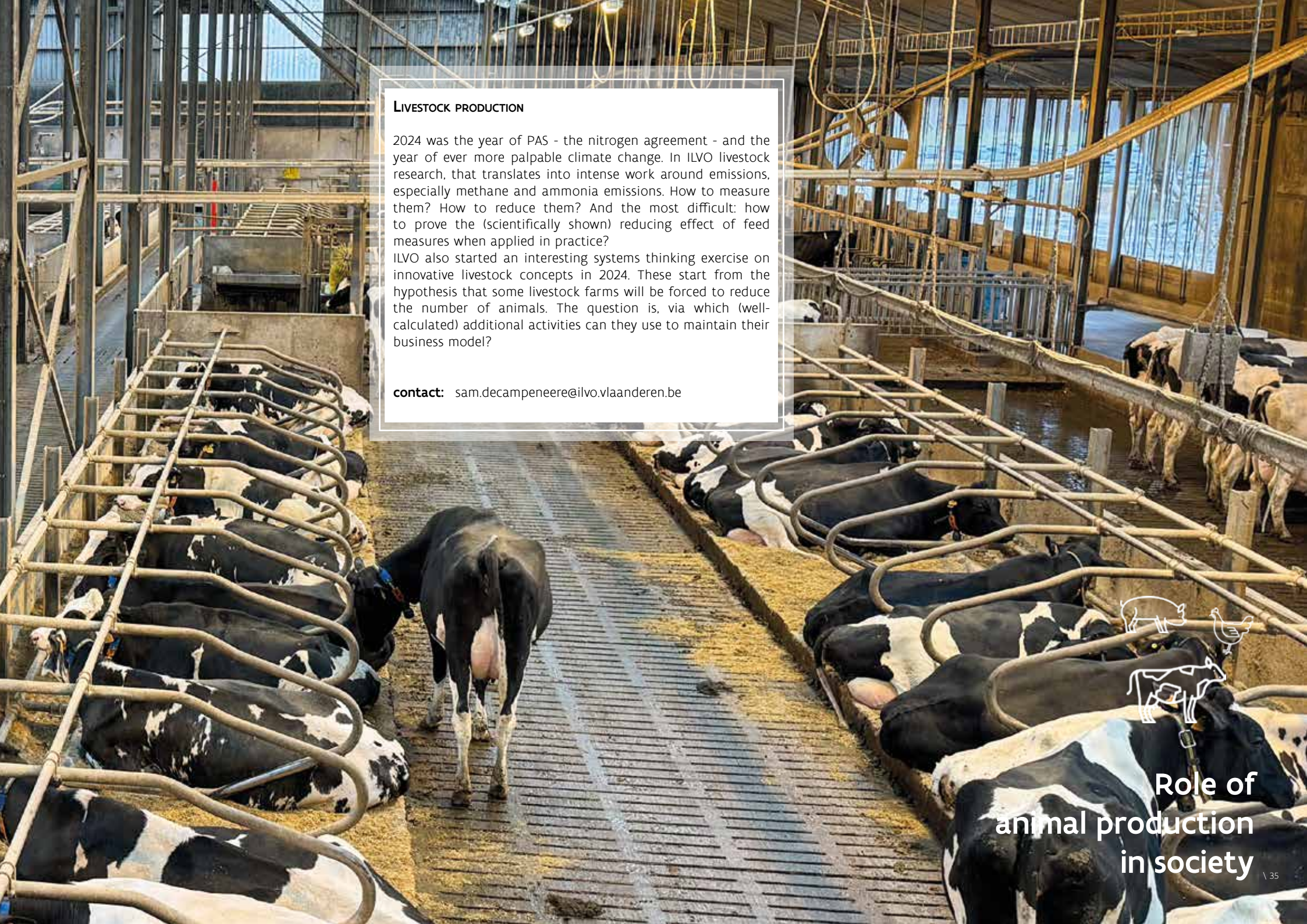
RESULT

How accurate is nucleic acid extraction (and thus the diagnosis of plant disease)?

Each plant health laboratory uses different DNA and RNA extraction methods for its diagnostic tests. This project addressed one specific bottleneck in that process: standardization and publishing of guidelines for quality controls of nucleic acid extractions. With input from more than 30 laboratories, internal controls were tested and 14 appropriate methods were selected. The now standardized procedures increase the reliability and comparability of diagnostic results. This is important for the agricultural sector.

The guidelines now support National Plant Protection Organizations and diagnostic laboratories in their rapid and reliable detection of pathogens. 'Guaranteeing uniform diagnostic quality immediately promotes international cooperation and trade and increases the efficiency of plant protection worldwide.'

contact: kris.dejonghe@ilvo.vlaanderen.be
project: IVENAD



Livestock production

2024 was the year of PAS - the nitrogen agreement - and the year of ever more palpable climate change. In ILVO livestock research, that translates into intense work around emissions, especially methane and ammonia emissions. How to measure them? How to reduce them? And the most difficult: how to prove the (scientifically shown) reducing effect of feed measures when applied in practice?
ILVO also started an interesting systems thinking exercise on innovative livestock concepts in 2024. These start from the hypothesis that some livestock farms will be forced to reduce the number of animals. The question is, via which (well-calculated) additional activities can they use to maintain their business model?

contact: sam.decampeneere@ilvo.vlaanderen.be

Role of animal production in society

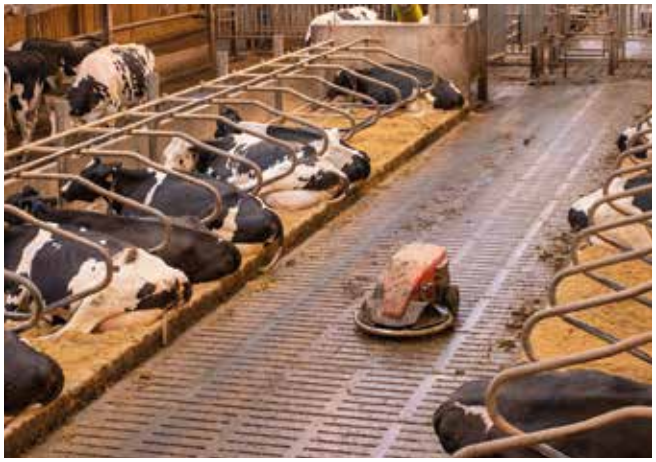
RESULT

Reducing ammonia through feed measures: how can farmers prove it's working?

ILVO is intensifying research into feed-based solutions to the nitrogen problem. Previous research shows that less protein in feed is an effective measure. But as a cattle farmer, how do you prove that you are applying this measure? That is the focus of VoederPAS and ELP-Beef. For dairy cattle, taking milk samples seems to be an appropriate measure. In controlled experimental conditions, a clear relationship can already be found between milk urea concentration and crude protein content in feed, a relationship that becomes even stronger with the addition of other milk parameters such as milk creatinine. The second part of VoederPAS looks at whether that correlation can be found under field conditions. For beef cattle, a feed register is seen as the best proof. In the ELP-Beef project, four beef cattle farmers spent a year working with this feed register, which produced a series of technical recommendations for the controlling authorities. The aim of both projects is to get additional measures on the official PAS list, giving livestock farmers new options for achieving the sector-level objective (15% less nitrogen emissions by 2030).

contact: nympha.deneve@ilvo.vlaanderen.be (VoederPAS)
karen.goossens@ilvo.vlaanderen.be (ELP-Beef)
project: VoederPAS, ELP-Beef

NEW



Manure management decision tool

The NUTRITIVE project investigates the most efficient and sustainable strategies for manure management in livestock production while considering environmental, economic and social requirements. By developing a decision tool, the project aims to reduce air, water and soil pollution from the manure chain and support policy makers in translating future European policy goals into workable guidelines. The researchers inventory existing and experimental solutions for manure management across Europe and in different livestock systems. Water and soil pollution are analyzed through 35 case studies, while air emissions are studied using computational models. The data collected are fed into a comprehensive life cycle assessment (LCA), which incorporates variations over time and predicts scenarios. With this LCA, policy recommendations and guidelines can be optimized. NUTRITIVE thus helps reduce the impact of livestock farming on the environment and stimulates sustainable technological innovations in the manure chain.

contact: daria.blajet@ilvo.vlaanderen.be
project: NUTRITIVE

NEW

Towards optimal and profitable grazing

Grazing is getting more and renewed interest among Flemish dairy farmers, in part because it is a PAS measure. In addition, most dairy farms encourage the production of pasture milk through a pasture milk premium or as part of their sustainability premium.
However, grazing requires skill and extra labor. GePASt grazing aims to optimize farm management including grazing. Specifically, grassland persistence is examined and a tool is developed whereby the barn ration can be quickly and accurately adjusted based on the assumed growth and uptake of fresh grass on the pasture. Economic indicators such as feed balance and feed efficiency are also examined, as is the question of how grazing can be made profitable.

contact: leen.vandaele@ilvo.vlaanderen.be
project: GePASt beweiden

RESULT

Ammonia reduction measures for organic ruminants

The PASBIO project investigated ammonia-reducing techniques that meet organic standards and are applicable in practice for Flemish organic dairy, cattle, goat and sheep farmers. Floor types and manure scrapers, litter additives such as zeolites or lava meal, and innovative techniques such as 'turd scrapers' were evaluated through literature review, practical experiences and sounding board groups with livestock farmers. From these, a number of recommendations were distilled for policy and research. Practice-oriented communication such as informative videos supports livestock farmers in implementation. PASBIO's measures are not only suitable for the organic sector but also relevant for small-scale conventional farms without access to expensive solutions. The project strengthens the position of farmers in the transition to sustainable agriculture and offers policy makers valuable insights for ammonia reduction within the PAS regulations.

contact: jonas.vandicke@ilvo.vlaanderen.be
project: PASBIO

RESULT

Lower ammonia emissions in organic livestock production

The RAMBIO project identified ammonia emission reduction measures for organic pig, poultry and goat farms. Common techniques and PAS measures were tested against organic legislation and assessed for practical and economic feasibility. The research evaluated existing techniques, analyzed international studies, and categorized measures based on the emission reduction principle and bio-compatibility. Knowledge gaps, such as the lack of data on ammonia emissions in organic barns, were identified. RAMBIO provides guidance to livestock farmers and policy makers and showed the scarcity of concrete solutions. This resulted in a follow-up project (BOWIE), which focuses on measurement methods for naturally ventilated barns and further investigates the impact of organic farm management. In addition, this project aims to increase the availability of ammonia-reducing measures for organic pigs and poultry.

contact: laura.peeters@ilvo.vlaanderen.be
project: RAMBIO

The findings are compiled in the report (in Dutch): 'Screening van ammoniakemissiereducerende maatregelen op toepasbaarheid in de biologische veehouderij'.

PROJECT NEWS

Curbing ammonia emissions in pigs and poultry

The RAMBO project focuses on Reduction of Ammonia via Source-Oriented and Flanking Solutions. Within this project, existing measures and techniques are being tested, demonstrated and evaluated for their applicability and effectiveness in pig and poultry farms. According to initial findings, 16 measures and techniques show great potential. These include modifications in feed, housing, barn climate or management. In three test and demo sites in Flanders and the Netherlands the operation, effectiveness and feasibility are being evaluated. RAMBO regularly informs farmers about the results via workshops and seminars.

Funding: Interreg Flanders-Netherlands

contact: chari.vandenbussche@ilvo.vlaanderen.be
project: RAMBO

RESULT

Zeolites as ammonia-reducing measure in animal husbandry

Zeolites (volcanic minerals that can absorb ammonia and other gases) have potential to reduce ammonia emissions in livestock production. However, their action is highly dependent on the composition of the specific product and the environmental conditions in which it is used. Large volumes of product are needed to obtain significant ammonia reduction, which drives the price up. This has been shown in research by ILVO, with financial support from Boerenbond, in which commercially available zeolite products were applied as a bedding additive in bedded cattle barns. The applicability in other animal species and manure types was also examined. All results are compiled in a report available online.

contact: jonas.vandicke@ilvo.vlaanderen.be

More info in the communication Zeolites (in Dutch):
Zeolites as an ammonia-reducing measure in animal husbandry

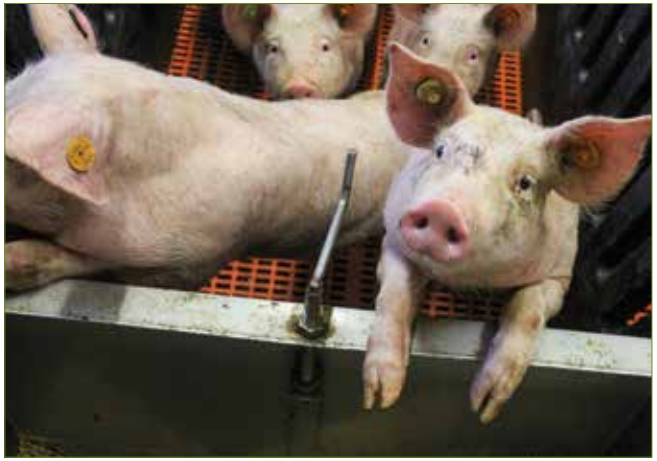
NEW

Conventional and organic dairy goat farmers join in search of zeolite's potential for ammonia reduction

The (organic) goat sector is also subject to stricter nitrogen regulations but it lacks recognized reduction measures. Therefore, new reduction strategies must be validated and given official recognition. In the ZEOGOAT project, the potential of zeolites as a litter and feed additive in (organic) dairy goats is being investigated. After optimization of the measurement setup, measurements are taken right above the littered surface in goat houses on practicing farms.

contact: jonas.vandicke@ilvo.vlaanderen.be
karen.goossens@ilvo.vlaanderen.be
project: ZEOGOAT

NEW



Optimal protein supply in pig feed

In feed-focused nitrogen measures, the amino acid requirements of animals are a major concern. The OPTEVAR project aims to determine the optimal protein and amino acid composition of feed for fattening pigs so that pigs are fed the right amount of protein while producing less nitrogen-rich manure. This takes farm-specific conditions into account. The project will establish practical feeding guidelines for finishing pigs, and identify the effect of protein reduction on nitrogen emissions, ammonia volatilization and carbon footprint of the improved feed.

contact: sam.millet@ilvo.vlaanderen.be
sophie.goethals@ilvo.vlaanderen.be
project: OPTEVAR

RESULT

Reconciling broiler welfare with nitrogen reduction

Society is demanding numerous animal welfare and environmental measures from poultry farmers but, the measures are often mutually contradictory. The demonstration project OPTIWEL-EMIS developed a matrix to get insight into the current knowledge of breeds, feeds, barn equipment and their effect on ammonia emissions and other aspects of farm management. For example, keeping slower-growing broilers - an animal welfare improvement - and feed with reduced levels of energy and protein - a nitrogen measure - do not appear to have adverse effects on performance, welfare and health. In contrast, both a change in stocking rate (30 vs. 42 kg/m2) and breed (slower growing vs. conventional broilers) result in significant increases in ammonia emissions. Finding an optimum that is favorable in each area remains difficult. In any case, the effects matrix now provides a tool for poultry farmers and farm advisors to make integrated and knowledge-based management choices.

contact: evelyne.delezie@ilvo.vlaanderen.be
project: OPTIWEL-EMIS

NEW

Optimization of energy requirement standards in poultry

Standards from the 1980s are still used today to estimate the energy requirements of poultry. Project EWAKUIK examines the extent to which these standards are still adequate. This takes into account new insights into the origins of nitrogen emissions from manure and barns. After all, optimization of the standards should improve both production and the environmental impact of poultry farming.

For laying hens, the necessary knowledge is already available in the scientific literature and research institutions. For broilers, the respiration chambers at KULeuven and the research stables of ILVO will be used to build knowledge. EWAKUIK will also develop a user-friendly, science-based tool to determine the energy requirements standards of poultry at farm level, in close cooperation with the sector. This leads to an economic and environmental win-win for both sector and society.

contact: kobe.buyse@ilvo.vlaanderen.be
project: EWAKUIK

NEW

Working toward more protein- and nitrogen-efficient cows

The KringLoopKoe project focuses on closing nutrient cycles and improving protein efficiency in our cows, which reduces the ecological footprint of milk and meat. The project focuses on valorizing protein sources in feed that are inedible for humans, such as residual streams from the food industry. This reduces the use of soy and grains. Another aim is to increase the nitrogen utilization of the cattle themselves, by investigating the use of additives or feeding strategies in layer protein rations. This aims to reduce ammonia and thus nitrogen emissions in dairy farming.

contact: tine.vandenbossche@ilvo.vlaanderen.be
project: KRINGLOOPKOE

RESULT

The Convenant of Enteric Emissions from Cattle (CEER): practical measures

The METHEEN demonstration project promotes the implementation of CEER- approved methane-reducing feed measures by providing guidance to 10 practicing farms. Dairy farmers are guided in the design and application of feasible rations and learn from researchers and fellow farmers. ILVO has developed a module in the Ration (Rantsoen) tool that helps dairy farmers to check whether they meet the flanking conditions of the CEER measures, and provides accessible sheets for each measure. A meta-analysis to evaluate the effects on dry matter intake, milk production, etc., is forthcoming.

contact: jonas.vandicke@ilvo.vlaanderen.be
project: METHEEN

Cows participate in climate solution

Cows burp a lot. These gaseous emissions contain methane, a potent greenhouse gas. We can make cows produce less methane. Find out how we do it in this video (in Dutch).

PRESS RELEASE

WAVE seeks figures on drinking water consumption by farm animals

A measurement campaign is currently underway in several Flemish farms and research stables to accurately determine the drinking water consumption of farm animals. After all, more accurate drinking water consumption figures are needed for granting groundwater permits, and for calculating the climate impact of animal products. ILVO, Inagro, PVL, Hooibeekhoeve and the Poultry Breeding Company will measure drinking water and other water consumption during one year and prepare advice for optimizing water consumption. Results are expected in 2025.

contact: karen.goossens@ilvo.vlaanderen.be
annatachja.degrande@ilvo.vlaanderen.be
project: WAVE

RESULT

Concepts for circular, future-oriented pig farming

In the IVCVARK project, future-oriented, innovative pig farming systems are developed that maximize efforts to close loops. A reflexive and interactive design process was applied to develop, analyze and evaluate the concepts, in cooperation with pig farmers, stable builders and other stakeholders. These include high-tech concepts with high-level efficiency and more extensive concepts with lower external inputs. All concepts offer added value in terms of environmental and climate impact, animal welfare, farmer welfare and consumer health.

contact: marijke.aluwe@ilvo.vlaanderen.be
project: IVCVARK

Innovative livestock concepts: inspiration for a sustainable future

Concepts such as the "dairy farmer" and "dairy electricity farmer" are casting a different light on the role of dairy farming in the future. They combine economic feasibility with ecological, social and spatial sustainability. And above all, they serve as both inspiration and an object of debate.
At the request of VLM and in collaboration with a project team consisting of dairy farmers, researchers and spatial planners, ILVO has already organized a first debate, on June 7 at the VAC in Ghent. The participants showed quite some optimism.

Flemish dairy farming faces challenges for which the traditional approach may no longer suffice: lower environmental and climate impact, more attention to animal welfare and farmer welfare, and economic viability. Hence the initiative around innovative concepts.
ILVO is also working on innovative farm concepts for pig farming.

contact: anna.verhoeve@ilvo.vlaanderen.be
sil.allaert@ilvo.vlaanderen.be

Report (in Dutch):
Innovative dairy farming concepts

PRESS RELEASE

ILVO builds high-tech feed pilot

Better feed makes a huge difference! ILVO has a long tradition of expertise in testing and evaluating feeds for cattle, pigs, poultry and small animals in terms of efficiency, digestibility, feed value and environmental impact. With the increasing social pressure on livestock farming and the advent of new raw materials for feed, this expertise is becoming even more important. Examples of new raw materials needing extensive research are algae, microbially produced protein and byproducts of the food industry. ILVO, Flanders, Europe, the Province of East Flanders and the Victam Foundation are investing in the construction of a new Feed Pilot for research into these innovative feed raw materials and sustainable animal husbandry. The Feed Pilot will be built on the ILVO site in Merelbeke-Melle. It will also be available for trials of feeds for third parties. In this way ILVO wants to give innovative feeds the best chance to be taken up in practice.

contact: sam.decampeneere@ilvo.vlaanderen.be
annatachja.degrande@ilvo.vlaanderen.be

RESULT

Iron supplements for organic piglets are feasible alternative to injections

Iron supplements for piglets can provide them with sufficient iron. That is the research conclusion of the CCBT project BIGIJZER, which sought alternatives to iron injections. In organic pig farming, injection is difficult because the specifications indicate that animals are only allowed to receive one medical treatment. A trial with piglets from 46 litters, conducted in the farrowing pen of the ILVO Pig Campus, shows that iron supplements administered orally can work just as well as iron injection – if the supplements are in fact ingested. In the best test, the hemoglobin values of the supplemented piglets did not differ significantly from those received an injection. The test with a supplement allowed for organic farming did yield lower hemoglobin values, but no marked difference in the growth or health of the piglets. Supplements thus appear to be a workable alternative to injection. This needs further validation in practice.

contact: sophie.goethals@ilvo.vlaanderen.be
sam.millet@ilvo.vlaanderen.be
project: BIGIJZER

PRESS RELEASE

Reed fescue, ideal for grazing young cattle

Ryegrass is most commonly used for mowing and grazing but is drought sensitive. The grass called reed fescue appears to perform better in drier periods. But cattle farmers are reluctant to use it because of its lower digestibility and absorption by cows.
The VLAIO-LA track KLIMGRAS compared different varieties and found that reed fescue is a good option after all. Grazing pastures for young cattle and beef cattle with reed fescue has no negative impact on animal growth or development. And the grass supply remains higher and more consistent throughout the year.

contact: maarten.cromheeke@ilvo.vlaanderen.be
project: KLIMGRAS

RESULT

Grass(clover) advice for cattle farmers

The GRASADVIES project gives Flemish cattle farmers insight into the usefulness and cultivation of grass-clover so they can increase protein autonomy on their farms. Grass and grass-clover, important protein crops in Europe, are still underutilized on many cattle farms due to the perception that the crop is more complex than maize cultivation. Four advisors were trained to personally guide 60 cattle farmers in the cultivation and use of grass-clover. The most common questions and challenges from that guidance were answered in freely available technical sheets and a comprehensive brochure. Cattle farmers who attended the Dairy Café or the Grassland Seminar at ILVO in 2024 were also presented with the practical results of the ILVO trials with grass and grass-clover.

contact: mathias.cougnon@ilvo.vlaanderen.be
project: GRASADVIES

NEW

Better colostrum management on cattle farms

At birth, a calf has no antibodies and the immune system also does not work adequately during the first few weeks, increasing the risk of digestive or respiratory infections. With good colostrum management, a farmer can improve the resilience and thus health of newborn calves. This helps make the industry more sustainable.

In BiestBoost we identify farm-specific bottlenecks and investigate innovative strategies to improve colostrum management and general animal health on Flemish cattle farms. We test concrete improvement trajectories on-farm and enable data exchange so cattle farmers can show their efforts regarding colostrum management.

contact: sarah.lievens@ilvo.vlaanderen.be
karen.goossens@ilvo.vlaanderen.be
project: BIESTBOOST 2.0

IN THE SPOTLIGHT

How can we help older laying hens to keep laying good eggs?

Did you know that laying hens stay on a laying farm until they are one and a half years old? After that, the egg quality diminishes so the eggs cannot be sold. "But maybe the hens can stay 4 months longer, provided that their health, welfare and egg quality all stay good," says Karolien Langendries, coordinator of the Poultry Information Center at ILVO. They study how to support older laying hens so they can lay good eggs for longer.

contact: karolien.langendries@ilvo.vlaanderen.be

Not every udder infection requires antibiotics

How can clinically detectable but innocuous cases of udder infections in cows on a dairy farm be treated more selectively and accurately? The answer comes via testing milk samples with rapid tests that can reliably distinguish between infections that do or do not require antibiotic treatment. Clinical, innocuous cases of mastitis caused by Gram-positive mastitis pathogens (bacteria) are treated with antibiotics. If the rapid test indicates infection with Gram-negative bacteria or if no bacterial growth is detectable, the cow is treated without antibiotics. The same rapid tests also proved useful in the project to reduce the use of antibiotics during the drying-off period at the end of lactation. Detecting germs in the milk using the rapid tests led to a significant reduction in the number of antibiotic udder tubes used per farm.

Financierder: VLAIO On Practice Culture

contact: matthieu.frijlink@ilvo.vlaanderen.be
project: On Practice Culture

Sustainable worm control in ruminants in Europe

The multi-actor network SPARC aims to achieve wider adoption of sustainable worm control strategies in ruminants in Europe and the United Kingdom. The project focuses on disseminating best practices, tools and solutions, with the aim of improvements in animal health, economic performance and environmental sustainability. The current practice of preventive herd treatments can be addressed more selectively and sustainably, especially in light of the increased resistance to anthelmintics. SPARC unites livestock farmers, veterinarians, farm consultants, universities, technical companies, government agencies and others in an active network. The project promotes targeted and sustainable worm control and introduces digital technologies such as platforms and apps to facilitate sustainable worm management.

contact: fleur.marchand@ilvo.vlaanderen.be
fanny.baudoin@ilvo.vlaanderen.be
leen.lietaer@ilvo.vlaanderen.be
project: SPARC

How can we reduce antibiotic use on farms?

Preventing animals from getting sick is the best way to reduce antibiotic use on farms. This requires changes not only at the farm level, but also at sector level. ILVO researcher Fanny Baudoin spoke with livestock farmers, veterinarians, pharmaceutical and feed company representatives, and other stakeholders to better understand the barriers in the pig and veal calf sectors. Starting from this survey, she will formulate recommendations to help reduce antibiotic use in these sectors even further.

contact: fanny.baudoin@ilvo.vlaanderen.be

NEW

Integrated management of worm infections in organic laying hens

Organic layer farming faces a major challenge in the fight against worm infections. New European regulations have extended the withdrawal period for (chemical) deworming products, which in practice means that they can be used less often. This fits the organic vision, but the sector today lacks knowledge and tools to keep layers without worm infections. The INTEGRIWORM project aims at an integrated approach. The researchers will develop a monitoring system with indicators to track worm infection pressure, production parameters and animal health. It will illustrate the importance of cleaning and disinfecting barn and outdoor runs during depopulation, focusing on methods that reduce worm egg counts or infection rates. It will identify risk factors during rearing, transport and housing, and finally establish a decision tree to help laying hen owners decide whether or not to apply dewormers.

contact: annatachja.degrande@ilvo.vlaanderen.be
project: INTEGRIWORM

NEW

Prevention and control of red bird mite in organic layers in mobile cages

It is estimated that over 90% of Belgian laying hen farms suffer from red bird mites. Control of this harmful parasite traditionally relies on the use of chemical acaricides. However, these products are harmful to the environment and resistance is becoming more prevalent. The Mobio'Mite project searches for natural control methods that are effective and usable in the specific context of small-scale, mobile chicken houses. The knowledge acquired will be disseminated through various channels such as the BaroMijter and SOPs (standard operating procedures).

contact: annatachja.degrande@ilvo.vlaanderen.be
project: MOBIO'MITE

RESULT

How can we improve biosecurity in poultry farming?

The NETPOULSAFE project produced a so-called "farmbook" (handbook) containing 50 fact sheets and experiences on effective biosecurity measures in poultry farming. The study involved more than 3,000 veterinarians, farmers, consultants, researchers and others from seven major poultry producing countries: France, Spain, Italy, Hungary, Belgium, the Netherlands and Poland. The goal was to improve compliance with biosecurity measures in these countries by collecting supportive measures, testing them on field farms and disseminating the experiences to poultry farmers. Besides the fact sheets, the project more than 50 videos and webinars, 25 podcasts, articles and specific e-learning modules for poultry farmers as well as catching teams. Everything can be found in the EU farmbook.

contact: fanny.baudoin@ilvo.vlaanderen.be
project: NETPOULSAFE

RESULT

Towards a heat plan for pig farmers

In a changing climate, heat stress is a growing problem in Belgian pig farming. The COOLPIGS project produced practice-ready recommendations that allow pig farmers to design a sustainable heat stress plan that reduces economic losses and improves animal welfare. The project showed that management strategies such as lower pen stocking densities, modified feed or drinking water, or modified sire genetics create only small differences in heat stress. Climate-technical interventions, such as installing additional axial fans, misting in the pens, or cooling incoming air via misting or heat exchangers, can lead to large effects, however. These climatic interventions had a positive effect on both stall temperature and the degree of heat stress in pigs. Consequently, these interventions also improve welfare and production results.

contact: alice.vandenbroeke@ilvo.vlaanderen.be
marijke.aluwe@ilvo.vlaanderen.be
project: COOLPIGS

NEW

Organically-kept intact boars: management and meat quality

In organic pig farming, chemical castration is not allowed. Keeping and processing intact boars (i.e., not surgically castrated males) is an alternative, but is not easy to do in practice. Industry and researchers are addressing the bottlenecks in the BIOBEER project. On three pig farms, existing solutions or 'best practices' are applied and followed up with different groups of boars. The impact on behavior, odor and meat quality of fresh meat and three processed meat products are also evaluated. In addition, the project is strongly committed to interaction with chain partners to provide answers to questions from the field.

contact: marijke.aluwe@ilvo.vlaanderen.be
project: BIOBEER

RESULT

Improving welfare of pigs and poultry in free range or organic systems

Although organic and free-range systems give animals more space for natural behavior, there are still welfare challenges. The PPILOW project developed innovative solutions and tools to improve welfare in pigs and poultry. In laying hens, it was found that early enrichment with black soldier fly larvae and enrichment with mealworms during their adult life enhanced their visual discrimination. This again emphasizes the importance of enrichment in the different life stages of laying hens. Mandatory confinement worsened their feather condition, while a winter garden improved it. In addition, hens preferred open grassy areas to dense forest. Broilers were exposed to incubation at variable temperatures, but this had few long- term effects. Possible adjustments in exposure time and temperature may further improve their thermal resilience. In addition, the project developed and optimized two apps that allow farmers to monitor animal welfare themselves: the PIGLOW app for pigs and the improved EBENE app for chickens. While these apps did not directly improve welfare, livestock farmers found them useful (especially for newcomers to the industry) and user-friendly..

contact: charlotte.vandenhole@ilvo.vlaanderen.be
project: PPILOW

RESULT

Innovative tools for claw care in dairy cattle

The VLAIO project CLAWCARE has developed an AI-driven image processing algorithm that automatically detects incipient claw and hoof problems in cows on thermal images. This innovation enables early intervention and helps dairy farmers better manage claw health on their farms. In addition to the detection algorithm, the project generated knowledge on preventive claw care and claw bathing agents. All knowledge is permanently available through trainings and tools at partners such as the Cow Sensor Knowledge Center and the Belgian Claw Care Association.

contact: simon.cool@ilvo.vlaanderen.be
project: CLAWCARE

RESULT

Welfare-enhancing monitoring solutions for chickens

A combination of AI, machine learning and sensor technology can improve welfare and productivity standards for broiler chickens. The WISH project developed a modular toolbox that uses the new technology to collect and analyze behavioral information from chickens into insights useful to research as well as commercial poultry farmers. It helps make animal testing more objective, as continuous monitoring provides behavioral information that is more reliable than manual observations. The cost-effective version of the toolbox also helps farmers improve the health and welfare of their chickens at the group level and reduce production losses. In this way, innovation contributes to a more sustainable and ethical poultry industry..

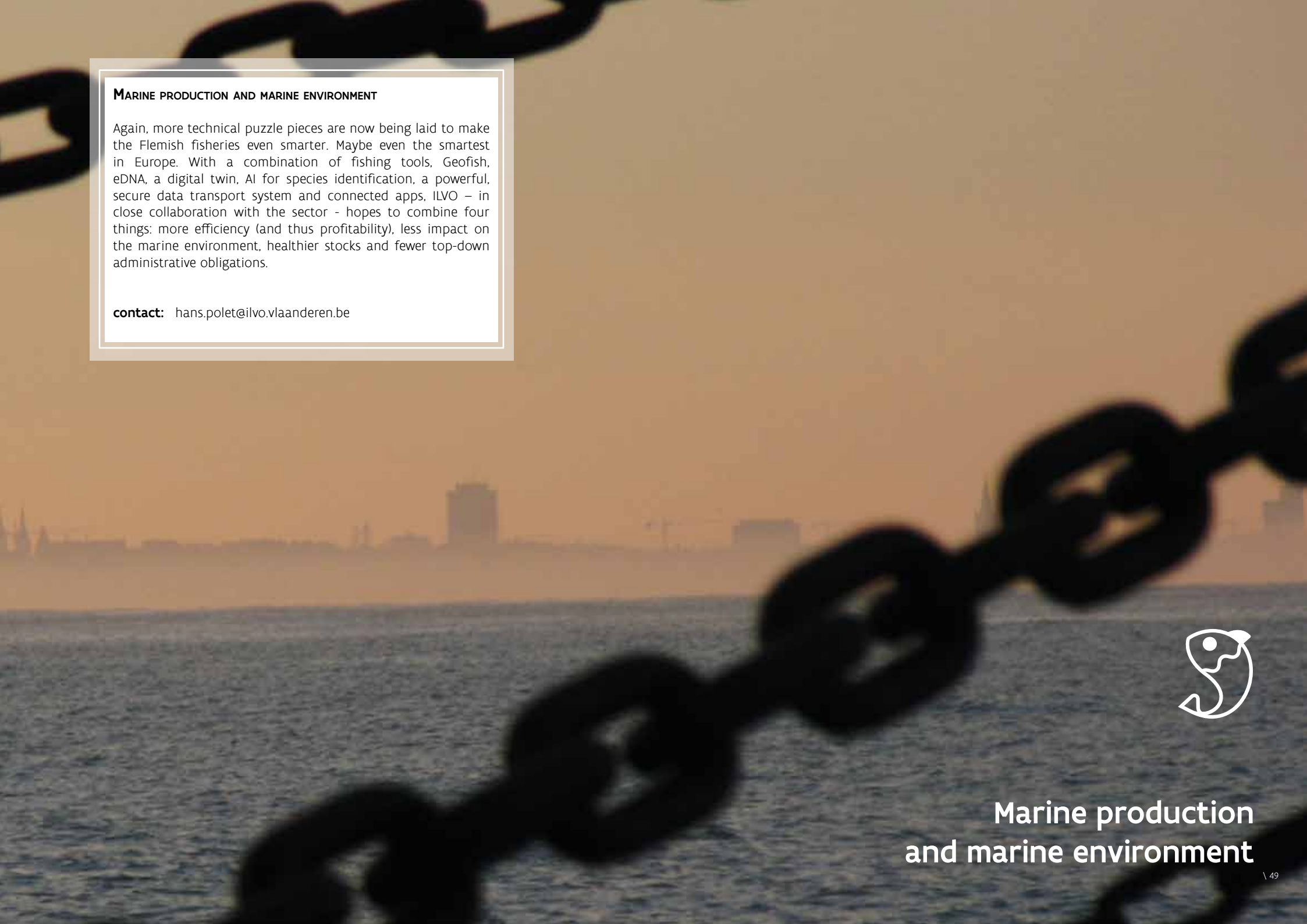
contact: frank.tuyttens@ilvo.vlaanderen.be
project: WISH

PRESS RELEASE

Platform for broilers achieves promising results

Wide platforms in the poultry house for broilers to either sit on or shelter under have a positive effect on some animal welfare indicators without an adverse effect on growth, feed intake, feed conversion or certain aspects of meat quality. This is the conclusion of a study by ILVO and UGent in the framework of the imec-ICON project WISH. At ILVO's Agritechdag in 2024, the tested prototype (developed by project partner Roxell) was demonstrated to a wide audience of livestock farmers.

contact: karolien.langendries@ilvo.vlaanderen.be
frank.tuyttens@ilvo.vlaanderen.be
project: WISH



Marine production and marine environment

Again, more technical puzzle pieces are now being laid to make the Flemish fisheries even smarter. Maybe even the smartest in Europe. With a combination of fishing tools, Geofish, eDNA, a digital twin, AI for species identification, a powerful, secure data transport system and connected apps, ILVO – in close collaboration with the sector - hopes to combine four things: more efficiency (and thus profitability), less impact on the marine environment, healthier stocks and fewer top-down administrative obligations.

contact: hans.polet@ilvo.vlaanderen.be

Marine production and marine environment

RESULT

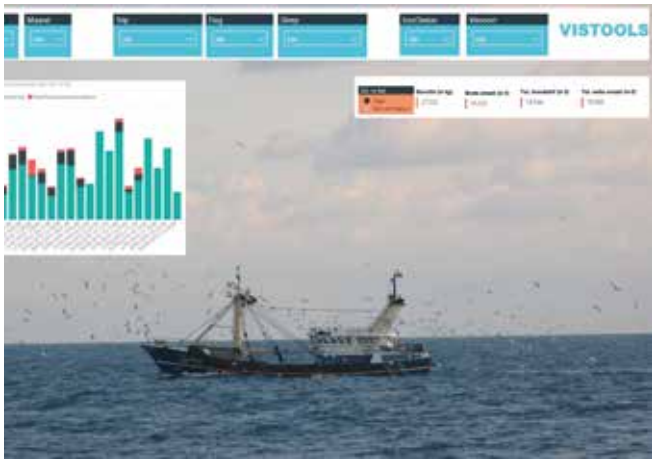
Future prospects for the coastal fleet and a small fleet segment in the post-Brexit era

Several survival scenarios are possible for the shrinking Flemish coastal fishery. That is the inspiring conclusion of the BAR-KUSTVLOOT project. Interviews with all Flemish parties that have something to do with fisheries brought not only innovative trends to light; they also ensured that voices from different sectors (which otherwise get less attention) were heard. This creates a springboard for new collaborations within the sector and opens the door to future opportunities. ILVO calculated a revenue model for three types of vessels and worked out improvement techniques for data collection and management, with a diversity of fishing techniques that focus more on pelagic species. Several concept calculations for renewed forms of fishing within our national zone in the North Sea showed economic potential, under certain conditions. A vision document provides concrete information for investors, fishermen and buyers.

contact: hans.polet@ilvo.vlaanderen.be
project: BAR-KUSTVLOOT

Gefinancierd door de Europese Unie

NEW



Fisheries sector can share data securely and efficiently

The VISTools system automates the collection and processing of data from fishing vessels and visualizes the data. This gives vessel owners better insight into their catches, fuel consumption and profitability. It also has significant added value for research, fisheries management, policy and other relevant parties. The VIStool Connect project is investigating how VISTools data can be optimally shared via DjustConnect. The project is developing a technical plan to integrate the fishing industry. As a test, VISTools environmental data and fuel data will be linked to DjustConnect, laying the foundation for a streamlined and reliable data exchange between vessel owners and third parties. This simplified data exchange should ultimately lead to greater cooperation, innovation and efficiency within the fishing sector.

contact: lancelot.blondeel@ilvo.vlaanderen.be
project: VISTOOLS CONNECT

Medegefinancierd door de Europese Unie

IN THE SPOTLIGHT

The north sea – Channel Z report

Professional fisheries are striving for sustainability. Real-time knowledge of fish stocks is crucial for this. To collect fish stock data quickly and accurately, ILVO's marine scientists are turning to artificial intelligence and camera recognition.

contact: hans.polet@ilvo.vlaanderen.be

North Sea: ILVO collects fisheries data in real time (in Dutch)

04:54

PRESS RELEASE

Crucial step in fisheries energy transition: first vessel gets sensor package for data collection on fuel consumption

At the Gardec dry dock in Zeebrugge on the weekend of May 18, the first Belgian vessel was equipped with a speedometer on the hull and later will also get a torque meter on the propeller. New fuel meters were also installed on the engines. This should provide insight into the precise energy consumption on board so that scientists, ship owners and shipyards can accelerate the shift to more energy-efficient vessels using less or no fossil fuels. The fuel data is the latest extension of the VISTools data system that now allows 37 of Belgium's 64 vessels to track their operations and profitability in real time. This makes the Belgian fleet unique in Europe and takes another important step towards more climate and environmentally friendly fishing.

contact: hans.polet@ilvo.vlaanderen.be

RESULT

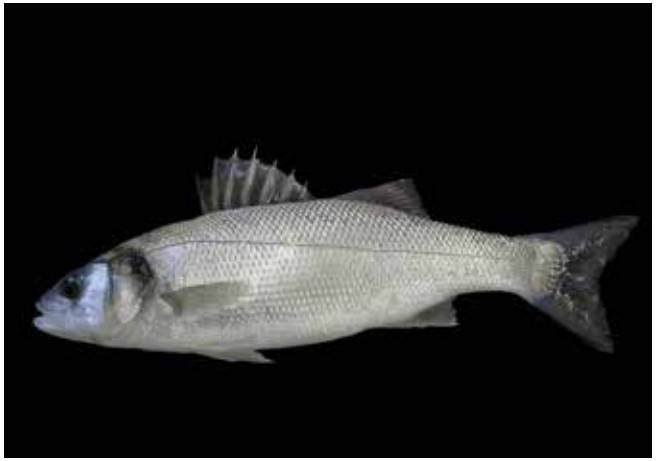
Fuel-ing the future of fisheries

To what extent has the fuel consumption of the Belgian fishing fleet evolved? The BRAND-STOF project is calculating this based on available data to allow a fact-based, sensible debate on further CO2-reduction in this sector. Using historical governmental data on fuel consumption, evolutions across the entire fleet were analyzed. Since 2008, there has been a very limited and fairly constant decrease in consumption. The vessels with an actual engine power between 500 and 750 kW consume relatively (expressed per fish yield or per kW) the least. Economic efficiency, expressed as catch yield/fuel cost, peaked in 2016 and 2020 due to historically low red diesel prices. Real-time fuel data (VISTools) from an old and new vessel from the same shipowner also revealed that the fuel consumption of the new vessel is significantly lower.

contact: femke.aers@ilvo.vlaanderen.be
project: BRAND-STOF

Medegefinancierd door de Europese Unie

NEW



Optimization of digital catch and tools for sustainable fishing practices

OPTIFISH is a pioneering Horizon Europe project driven by ILVO (Flanders). The aim is to achieve sustainable fishing practices by developing, testing and validating operational, cost-effective technologies and monitoring tools. Nineteen partners from 8 countries across European coastal countries commit to share their knowledge and expertise in eDNA analysis, sensors, robotics, computer vision and artificial intelligence to revolutionize fisheries management and facilitate fisheries self-management.

contact: els.torreele@ilvo.vlaanderen.be
project: OPTIFISH

Co-funded by the European Union

NEW

Innovative chain mat

Developing a lighter and more efficient chain mat for beam trawling contributes to a more sustainable and economically viable fishing industry by reducing fuel consumption. The aim is also to reduce the impact on the seabed, improve catch composition and increase the survival rate of bycatch. There are two development paths: first, the Catch Optimization Component (VOC) will be designed and tested to efficiently startle flatfish from the bottom, then the associated chain mat will be optimized. Activities within the project include tow tank trials to test VOC designs, development of a lighter chain mat with more durable materials, and field tests aboard research and commercial fishing vessels to gather data on fuel consumption and catch composition. In addition, the sector will be actively involved through workshops and consultation events to maximize knowledge sharing and implementation.

contact: mattias.vanopstal@ilvo.vlaanderen.be
project: INNOVATIEVE KETTINGMAT

Medegefinancierd door de Europese Unie

NEW

Protection of sharks and rays

The ELASMON project aims to prepare a knowledge guide and sustainable management plan for sharks and rays in the Belgian part of the North Sea as a contribution to the Programme of Measures for Belgian Marine Waters (2022-2027). Sharks and rays are vulnerable species that suffer from fishing pressure, pollution and habitat loss due to their slow growth and reproduction. In recent decades, their populations in the North Sea have declined significantly. The lack of information on their distribution and habitat use complicates effective management and protection. This project aims to fill this knowledge gap by collecting both existing and new data. We use non-invasive methods such as acoustic telemetry and developing a camera technique called Baited Remote Underwater Video.

contact: jolien.buyse@ilvo.vlaanderen.be
project: ELASMON

Medegefinancierd door de Europese Unie

NEW

Simulating complex causal socio-ecological models in the "Digital Twin Ocean"

Within the ECOTWIN project, ILVO is developing innovative models and tools for assessing the impact of policies, environmental factors and human management on coastal and marine ecosystems. This is done within the framework of the European Digital Twin Ocean (DTO), which gives citizens, policy makers and scientists access to integrated ocean data. By simulating complex causal socio-ecological models in the "Digital Twin Ocean," AI and statistical models are used to understand complex interactions between ecological, social and economic factors. The models are being tested in the North Sea, Celtic Sea, Thracian Sea and Waterford Harbour to analyze the relationships between ecosystem services, fisheries, tourism and renewable energy. This helps policy makers make informed decisions for a sustainable and resilient blue economy.

contact: clyde.blanco@ilvo.vlaanderen.be
project: ECOTWIN

EcoTwin

Funded by the European Union

PRESS RELEASE

DNA techniques prove useful for marine ecological monitoring

What is the impact of human activities at sea? New DNA techniques allow scientists to follow this up 44% faster and 26% cheaper than classical, visual analyses. Both techniques are still needed, however, because the results obtained do not completely overlap. This is evident from comparative research on seafloor samples from sand extraction areas. By cleverly combining both methods, governments can react more quickly and accurately to disturbance of crucial ecosystems. This is important because sea is getting increasingly crowded.

contact: sofie.derycke@ilvo.vlaanderen.be
annelies.debacker@ilvo.vlaanderen.be

NEW

Strengthening the scientific basis of the central arctic ocean fisheries agreement

Temperatures in the Arctic are rising three to four times faster than the global average. This is causing a rapid decline in sea ice and extending the ice-free season, making the area, including fishing grounds, increasingly accessible. To enable sustainable ecosystem-based fisheries management, the Central Arctic Ocean Fisheries Agreement first requires mapping of the region's fishery resources. During the expedition PS144 with the RV Polarstern, samples are taken to investigate the ecology of the occurring fish species and their prey. Data collection is done by different partners. ILVO focuses on obtaining genetic information of the most common fish species. The results will be shared with international advisory bodies such as the International Council for the Exploration of the Sea and Long Distance Fleet Advisory Council.

contact: sarah.maes@ilvo.vlaanderen.be
project: SCICAO

NEW

A soil barometer for fishing grounds

The BENTHIS NATIONAL 2 project aims to develop a simple tool to better monitor the state of the seabed and the impact of bottom disturbance by professional trawling. To this end, researchers are optimizing and integrating existing bottom indicators. The results will be shared via the VISTOOLS application so that skippers can account for bottom disturbance in real time. This tool will help sensitize and support fisheries policy as well as fishermen in dealing with the problem of bottom disturbance. ILVO is collaborating with relevant EU, ICES and OSPAR working groups.

contact: gert.vanhoey@ilvo.vlaanderen.be
project: BENTHIS NATIONAAL 2

Medegefinancierd door de Europese Unie

RESULT

Support for fisheries measures in the Belgian part of the North Sea

The Belgian part of the North Sea appears to be a sought-after area of intensive fishing activity. The VISNAT3 project gives a clear answer to the question of which commercial fishing activities took place during the period 2007-2022 and specifies exactly where, when, by whom and with which gear. This data was a requirement in the proposal for bottom protection measures in certain zones that our country was required to send to the EU Commission. This research supported the federal Marine Environment Service during the international negotiations. The proposed measures were included in the proposal of the marine spatial plan 2026-2034 and are under negotiation with the appropriate member states in light of the Common Fisheries Policy.

contact: gert.vanhoey@ilvo.vlaanderen.be
project: VISNAT3

More info in the announcement:
Analyses of fishing activities in the Belgian part of the North Sea, Flemish banks and proposed management areas for seafloor integrity

NEW

Expansion of digital information platform geofish.be

Geofish.be is an online platform that visualizes economic information about Belgian fishing grounds and space restrictions through interactive maps. It gives fishermen and ship owners insight into restrictions and opportunities on fishing grounds and fishing opportunities (fish quotas). Policy makers can use the tool during negotiations on spatial planning and compensation. The information is also accessible to the general public. Within this project we will improve the user-friendliness of the tool, add new info, develop an application to answer spatial questions and explore future possibilities for data integration (fishing tools). This will keep the tool optimally attuned to the needs of the sector and society.

contact: gert.vanhoey@ilvo.vlaanderen.be
project: GEOFISH INNOVATIE

Medegefinancierd door de Europese Unie

NEW

Encouraging the cultivation of European seaweed

In the BLUE BIO BOOST project, with partners in Norway, Sweden and Ireland, ILVO is developing breeding techniques for sugar kelp in those countries. Improving seaweed yield through genetic variation is new for Europe and ILVO, but Asia already shows good results with selective breeding of local species. In addition to economic added value, we are also paying attention to ecology by developing breeding techniques for macroalgae and sterile sporophytes. In addition, we are working with superior genetic mixtures from local populations to avoid adverse effects of genetic mixing with wild populations. To stimulate implementation and social acceptance, we have founded a Stakeholder Engagement Group that is heavily involved in the development of the breeding strategy. The project is funded by BELSPO and the European Union, through the Sustainable Blue Economy Partnership program. NMBU is coordinator.

contact: tom.ruttink@ilvo.vlaanderen.be
project: BLUE BIO BOOST

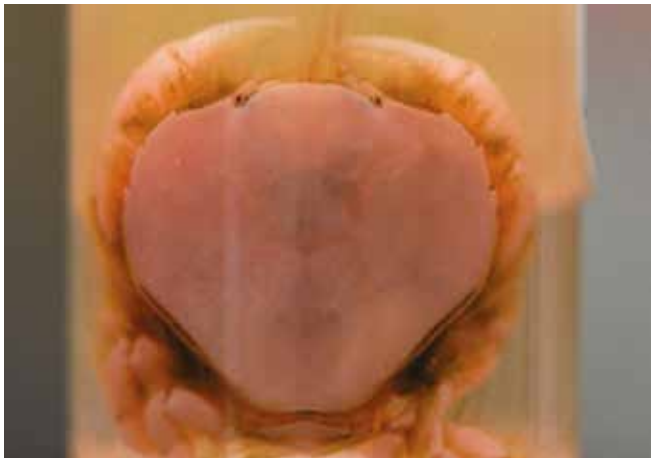
NEW

Sustainable coastal defense with the help of sand mason worms

Increased sand erosion is a noticeable effect of climate change on the coastal ecosystem. In the COASTBUSTERS- LANICE project, researchers are studying the possibility of deploying the sand mason worm Lanice conchilega as a nature-based solution for coastal defense because it stabilizes sediment and increases biodiversity. We are investigating which artificial substrates work best to attract larvae because *L. conchilega* cannot be 'planted' like seagrass. Through several experiments in the lab, in a current channel and in the field (intertidal zone) we evaluate the influence of the substrates and *L. conchilega* populations on water flows and sedimentation/erosion. We determine the effect on sediment balance by integrating all results into a bio-hydro-sedimentological model. *L. conchilega* serves as a test organism to demonstrate the utility of other marine species with a pelagic larval stage in nature-based designs.

contact: gert.vanhoey@ilvo.vlaanderen.be
project: COASTBUSTERS-LANICE

RESULT



Distributed digital infrastructure for scientific collections in Flanders

Within the DISSCo Flanders project, 560,000 animal, plant, microbial and molecular items have been inventoried across all ILVO units. Fish otoliths are the largest group (95%), but there are also more than 21,000 food- and plant-related items within our microbial collections and molecular samples. To make all of our collections FAIR (i.e., easily findable and usable), ILVO developed a web-based Collection Management System (CBS) that can also be easily adopted by other institutions to manage their own collections.
Since 2017, DiSSCo-Europe represents the largest ever agreement between natural history museums, botanical gardens, zoos, universities and other institutions in Europe. It aims to create a world-class research infrastructure for the physical and digital management of all European natural science collections through a unified and overarching management and access policy.

contact: kris.hostens@ilvo.vlaanderen.be
project: DISSCo

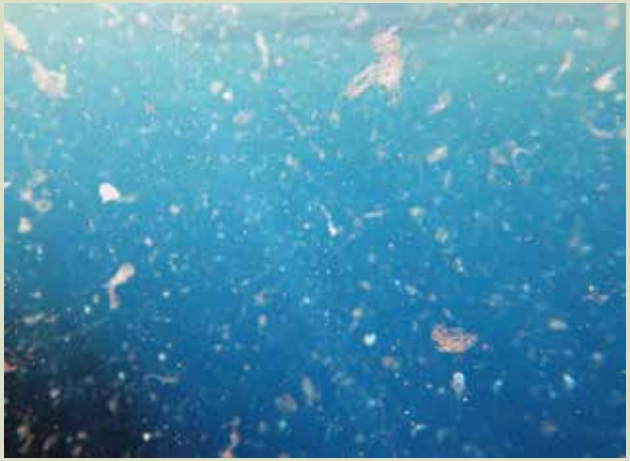
PRESS RELEASE

15 YEARS OF MONITORING ECOLOGICAL EFFECTS OF OFFSHORE WIND FARMS

Fifteen years after the start of the Belgian wind farm monitoring program, this ongoing monitoring of the ecological effects of Belgian offshore wind farms continues to yield new insights. That is an important conclusion from the latest WinMon.BE report, which summarizes findings on benthic invertebrates, fish, porpoises and birds. Only through sustained and adaptive monitoring can we ensure that offshore wind farms are designed and built in the most environmentally friendly way.

contact: annelies.debacker@ilvo.vlaanderen.be

PRESS RELEASE



SAVING TIME AND MONEY: A NEW DETECTION AND IDENTIFICATION METHOD FOR MARINE MICROPLASTICS

The doctoral research of Nelle Meyers (VLIZ, ILVO, UGent) has resulted in a new cost- and time-effective method for the detection and identification of microplastics in the marine environment. The semi-automatic method combines staining of microplastic particles with the fluorescent dye Nile Red and machine-learning algorithms. The method is reliable for most types of polymers, even when the researchers artificially weathered the microplastics. The test was also successful for analyzing microplastics in samples from the marine environment. With a lower limit of 4 m, the new method is also promising for use in exposure studies, which are currently lacking for this size range.

contact: bavo.dewitte@ilvo.vlaanderen.be

IN THE SPOTLIGHT

PROGRESS REPORT ON THE EFFECTS OF DREDGING DISCHARGE

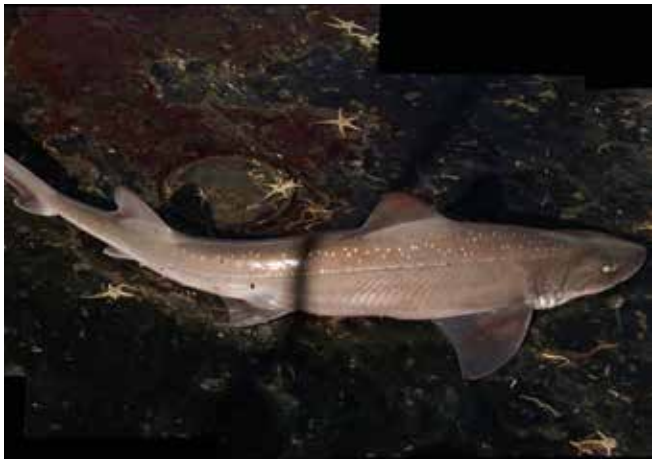
This report describes the status of research on the effects of dredging discharges for the period July 2023 - December 2023. The research was conducted at ILVO Marine's Aquatic Environment and Quality research group. Changes in the marine ecosystem due to dredging in the Belgian part of the North Sea are monitored on the basis of biological population parameters and physical and chemical parameters. These measurements are also part of the MSFD monitoring obligations. For 2022- 2027 additional policy support tasks have been put forward to support the general monitoring and to optimize the impact evaluation.

contact: bavo.dewitte@ilvo.vlaanderen.be

©Hans Hillewaert

More info in the communication (in Dutch): Progress report on effects of dredge discharges

RESULT



Towards a unified approach to marine functional connectivity for better management of marine resources

This COST action with over 100 scientific institutions and companies brings more uniformity to marine functional connectivity (MFC) research. Extensive literature review clarifies the definitions and subcategories of (marine) connectivity and suggests a unified conceptual framework. Within this framework, multidisciplinary research on MFC can be optimally organized and integrated to support better management and policy regarding marine biodiversity and marine ecosystem functioning in all its facets. We propose an MFC definition and identify three key challenges and possible solutions to better understand changes in biodiversity and functional dependence among species, habitats and regions. By placing multidisciplinary MFC research at the of marine environmental science, we can significantly improve the prediction of ecological and socioeconomic change and the sustainable use of marine ecosystems and resources over time.

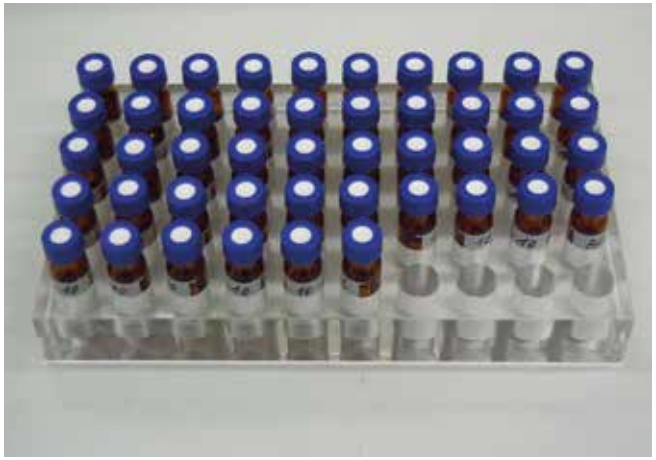
contact: kris.hostens@ilvo.vlaanderen.be
project: SEA-UNICORN

NEW

New contaminants in the marine environment

The Horizon project CONTRAST is looking for new chemical contaminants in the sea and marine environment and assessing how harmful they are. So far, Europe monitors only a limited number of chemicals in the marine environment. For many substances, therefore, information on their exposure and hazards is limited or completely lacking. This complicates action plans for a clean ocean or biodiversity protection. In our new monitoring scheme, we select new and existing biomarkers to detect chemical pollution by so-called new contaminants and apply the scheme in European case studies. This will make it possible to determine the extent to which the marine environment is in a Good Environmental Status and it can be used within European environmental policies.

contact: bavo.dewitte@ilvo.vlaanderen.be
project: CONTRAST



Science as the basis for nutrition and health

Healthy and safe food is the basis for a resilient society. ILVO investigates how food innovations contribute to a sustainable, balanced and transparent food system, with an eye toward nutritional quality, food safety and health effects.

ILVO, as a founding member of the NuHCaS partnership, brings the food and health sectors together to develop new solutions. Thus, the NuHCaS platform promotes demand-driven innovations around food and wellness. It simultaneously works on more efficient processing and regeneration techniques for vegetables, and stimulates short chains between farmers and healthcare institutions. ILVO also supports start-up food companies in scaling up and market introduction of their food innovations.

Research covers the entire food chain: from the detection and regulation of new genetic techniques (NGTs) such as CRISPR-Cas to reducing antibiotic residues in water and foodstuffs. In addition, several projects study the risks of foodborne pathogens and virus transmission and develop new methods to ensure food safety.

ILVO is investigating how protein diversification contributes to a more sustainable diet, with a focus on processing plant protein sources such as soy and legumes, and exploring innovative protein sources such as microbial protein.

At the same time, European partnerships contribute to the transition to sustainable food systems by fostering innovation, collaboration and circular strategies.

contact: marc.deloose@ilvo.vlaanderen.be

Nutrition and Health

NEW

Accelerating food innovations in Flanders and Netherlands

Food Pioneers Accelerator (FPA) focuses on improving scale-up opportunities for promising food innovations in Flanders and the Netherlands. Although the region is known for its creative and innovative food companies, promising ideas often get stranded at the scale-up stage due to a lack of facilities and funding. A previous project, Food from Food, has shown that the lack of clarity about available demo and production facilities in the border region is a major obstacle. FPA details a network of innovative companies and facilities. The project actively supports startups and SMEs and stimulates cooperation between entrepreneurs and facilities in concrete scale- up projects. By improving accessibility, FPA helps companies avoid the "valley of death" and accelerates the market introduction of sustainable food innovations. The project falls within Interreg Flanders-Netherlands program and is supported by the Province of East Flanders.

contact: nathalie.bernaert@ilvo.vlaanderen.be
project: INTERREG VL-NL FPA

Interreg Vlaanderen-Nederland
Gefinancierd door de Europese Unie
provincie Oost-Vlaanderen

NEW

European partnership for a sustainable future of food systems

FutureFoodS is a Horizon Europe initiative driving the transition of food systems in Europe. With 86 partners from 29 countries, including governments, funding and research institutions and companies, FutureFoodS is working on solutions to challenges such as climate change, biodiversity loss and food security. ILVO plays a key role in communication, valorization and dissemination. ILVO also contributes to the establishment of knowledge hubs and living labs, and the interaction between science and policy. The first transnational research call, "Transforming Food Systems," focuses on innovation and sustainable food choices. The project combines breakthrough technologies and circular strategies to minimize the ecological footprint of food production, improve public health and ensure economic sustainability.

contact: hendrik.deruyck@ilvo.vlaanderen.be
karen.verstraete@ilvo.vlaanderen.be
project: FutureFoodS

RESULT

NuHCaS: open research and innovation center at the interface between food and health

NuHCaS (Nutrition Health Care Systems) brings together the food and health sectors with the goal of promoting delicious, balanced and accessible food for all. Responding to each other's needs and opportunities creates demand-driven innovations with impact.
The initiative, led by Flanders' FOOD, VIVES Hogeschool, ILVO, POM West Flanders and TUA West, grew with associated partners Imec, KU Leuven, Odisee and UGent. Together with stakeholders from the food and health sector, NuHCaS has since grown into an active community of 115 members and functions as an open innovation center for food and health.

Seminars, inspirational visits and brainstorming sessions attracted a large number of participants and were characterized by active involvement and valuable exchanges. Projects on data-driven solutions, food losses, meal quality and improvement approaches were initiated.

contact: karen.verstraete@ilvo.vlaanderen.be
project: NUHCAS MB

NEW

New project ZoBio aims to bring organic farming and meals in care facilities closer together

With the ZoBio project, BioForum, ILVO and Flanders' FOOD are joining forces to bring organic agriculture and healthcare institutions closer together. The project aims to set up sustainable collaborations, inspired by the successful partnership between AZ Zeno and organic farm 'het Polderveld' in Knokke-Heist. This approach offers patients a more diverse and healthier menu of locally grown organic vegetables. Five new partnerships are launched in the project, with farmers and healthcare institutions sharing experiences through learning networks. ZoBio provides recommendations to make organic food more accessible in government contracts and inspires other institutions to take similar initiatives.

contact: nathalie.bernaert@ilvo.vlaanderen.be
project: ZOBIO

NEW

Strengthening the link between local farmers and Zorgband Leie en Schelde

This project promotes a sustainable collaboration between local farmers and the *Zorgband Leie en Schelde*, with a focus on the residential care center in Lemberge. For farmers, this means a new sales channel and increased visibility, while the care center can count on quality, local products that improve the meal experience of residents and contribute to their well-being. The project starts with expanding the network of farmers around the Zorgband, followed by consultation and identification of suitable products, processing needs and legal requirements. Next, at least ten linkage cases will be developed and tested, both in large-scale Zorgband catering and occupational therapy programs. Each trajectory will be evaluated for feasibility and cost-effectiveness. With continuity in mind, the project aims to establish ongoing collaborations, thus providing a model for local food provision in the care sector.

More info (in Dutch):
https://ilvo.vlaanderen.be/nl/nieuws/productieve-eerste-kennismaking-tussen-lokale-landbouwers-en-de-zorgband

contact: nathalie.bernaert@ilvo.vlaanderen.be
project: BOZO

RESULT

Optimization of vegetable processing and regeneration

The VeggieChain project has developed new technical knowledge on pre-treatment, preservation and regeneration techniques for vegetables to optimally maintain their quality from harvest to the consumer's or patient's plate. Regeneration, the reheating of pre-prepared and cooled or frozen vegetables, is crucial in healthcare environments where taste, color, aroma, and nutritional value are essential. Through small-scale and semi-industrial experiments, innovative strategies were developed to maximize retention of flavor and nutritional value. These insights are particularly relevant for large-scale kitchens in hospitals and nursing homes, as well as for the growing ready-to-eat meal sector and restaurants. The project strengthens the Flemish vegetable industry, a European market leader, and provides opportunities for caterers, technology suppliers and machinery companies to improve their processes and products.

contact: nathalie.bernaert@ilvo.vlaanderen.be
project: VEGGIECHAIN

RESULT

Infection status of hepatitis E virus in pigs

Hepatitis E virus (HEV) is a zoonotic virus that can be transmitted to humans through raw or inadequately heated pork products, among others. Some 47% of the Belgian pig herd appears to carry antibodies against HEV.
The SUDYHEV project investigated the HEV infection status in Belgian pig farms through cross-sectional and longitudinal serological surveys. An increase in herd size and a closed farm type were identified as significant risk factors for HEV herd positivity. Modeling of HEV infection on farms suggests that the earlier infection occurs, the fewer pigs are HEV-positive at slaughter. There are several factors that influence the dynamics of HEV. There are factors that delay infection, such as maternal immunity; factors that prevent infection or delay the spread of HEV, such as pen hygiene practices and potentially co-infectious agents; factors that increase, facilitate or accelerate the spread of HEV, such as the accumulation of HEV in the environment and boot hygiene; and factors that reduce the likelihood of finding positive pigs at slaughter, such as the age of the pigs. A combination of these factors is likely at play on every farm.

contact: ellen.lambrecht@ilvo.vlaanderen.be
project: SUDYHEV

RESULT

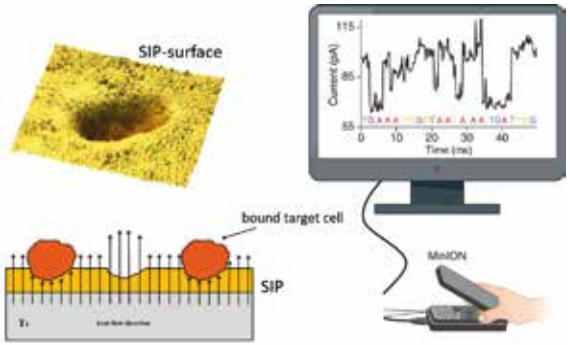
New methods for detection of infectious hepatitis E virus in pork

The DECHAHEV project has developed and optimized new methods that enable the detection of infectious virus in meat products (including long-range RTqPCR, caspide integrity assay and a cell culture model). Through those methods, it was shown that common meat processing techniques such as heating, pH lowering and drying are usually unable eliminate infectious virus particles. A theoretical risk analysis identified raw liver sausage, salami and chorizo as the main risk products for HEV infection. An exposure analysis that took into account Belgian consumption patterns indicated that heated, ready-to-eat meat products including pâté were at high risk. Laboratory analyses of theoretically high-risk products purchased in Belgian supermarkets confirmed the presence of infectious HEV.

The engagement of all stakeholders - pig farmers, slaughterhouses, food producers, general practitioners, policy and consumers - is critical to developing an effective and integrated HEV control plan.

contact: ellen.lambrecht@ilvo.vlaanderen.be
project: DECHAHEV

RESULT



Surface imprinted polymer technology and nanopore sequencing for point of care food microbiology analysis

The SIPORE project has developed "surface imprinted polymers" (SIP) biosensors for the selective detection of *Listeria monocytogenes* and *Salmonella*. The technology was tested in combination with a portable MinION DNA sequencing device for further strain characterization at the subspecies level. Through an in-house developed ILVO analysis pipeline, *Listeria* and *Salmonella* isolates can now be characterized very thoroughly and completely confidentially (independent of international databases). Source detection or the presence of genes involved in virulence, susceptibility to disinfectants and biofilm formation can thus be investigated.

SIPORE lays the foundation for future application-oriented developments of SIP biosensors and portable DNA sequencing devices. This will allow agrifood companies to perform 'on-site' microbial analyses themselves to a level not possible today, and gain insight into sources and pathways of pathogens. Microbial analyses are essential for these companies, and their importance is increasing due to, among other things, stricter food safety regulations in the export requirements and the introduction of whole genome sequencing at control agencies, which will allow better detection of foodborne outbreaks.

contact: ellen.lambrecht@ilvo.vlaanderen.be
project: SIPORE

Antibiotic residues and antibiotic resistance transfer in aquatic environments

The international PARRTAE project investigated the presence of antibiotic residues, resistance genes and resistant bacteria in aquatic environments such as rivers, ports and aquaculture systems. ILVO focused on Flemish hotspots in livestock areas and the ports of Nieuwpoort and Ostend. The results show that antibiotic resistance and residues in the aquatic environment are a potential threat and argue for monitoring programs that integrate residues and sediments into policy instruments such as the European Water Framework Directive. Analyses included water and sediment samples, focusing on resistant bacteria such as *E. coli*, Vibrio and Shewanella. Collaboration with international partners has improved data collection and methodology. These findings provide scientific insights and may lead to policy recommendations, with direct implications for public health, sustainability and environmental management within the EU.

contact: marc.heyndrickx@ilvo.vlaanderen.be
geertrui.rasschaert@ilvo.vlaanderen.be
project: PARRTAE

Aquatic Pollutants

IN THE SPOTLIGHT

How many antibiotics are found in manure, soil, water and vegetables?

How many antibiotics are there in the environment? And which antibiotics are those exactly? ILVO has made a complete inventory of this for the first time. What did the researchers find? "Antibiotics are widespread. We often find them in manure and in the soil, sometimes in fairly high concentrations. In water and vegetables less so," says researcher Geertrui Rasschaert. ILVO is investigating which interventions – where and how – might work to reduce antibiotics in our environment, such as manure treatment or water purification techniques.

contact: geertrui.rasschaert@ilvo.vlaanderen.be

How many antibiotics are in the environment? (in Dutch)

03:02

Detection of NGT products for transparency and innovation

The DETECTIVE project is developing advanced methods to detect, trace and validate products made with New Genomic Techniques (NGTs) such as CRISPR-Cas. NGTs offer precision in genetic modifications, but are subject to strict EU GMO regulations, which makes detection and traceability crucial. In addition to technical solutions, DETECTIVE is exploring non-technical strategies to ensure authenticity. Analytical tools such as PCR- and sequencing-based techniques are complemented by data- based approaches, specifically machine learning tools and data spaces. The project aims at a sustainable food system with transparency for every actor in the agrifood chain, including producers and consumers. This systemic approach supports innovation and provides solutions for resilient agricultural and food production in Europe.

contact: Judith.huygens@ilvo.vlaanderen.be
isabel.taverniers@ilvo.vlaanderen.be
project: DETECTIVE

DETECTIVE

IN THE SPOTLIGHT

FASFC: further investigation into PFAS in North Sea shrimp after sample showed anomaly

The FASFC monitored several fisheries products from the North Sea in 2023 for the presence of PFAS. Because the standard was exceeded in one of the batches, additional monitoring and research is now underway. FASFC is working with ILVO's specialized marine department.

More info:
https://ilvo.vlaanderen.be/en/news/favv-further-research-about-pfas-in-north-sea-shrimp-after-abnormal-sample-results

contact: jade.maes@ilvo.vlaanderen.be

Impact of fermentation on mycotoxins and food safety

The MYCOFERM project investigates the fate of mycotoxins (toxic fungal metabolites) during fermentation processes with starter cultures. Little is currently known about their potential impact on these substances, including whether new, potentially harmful metabolites are created in the process. This doctoral research studies whether microbial cultures metabolize or bind mycotoxins and to what extent this poses food safety risks. To this end, ILVO is conducting in vitro fermentation experiments and analyzing the presence of mycotoxins and their metabolites. The project coordinator ANSES Fougière evaluates the toxicity via cell tests and predicts the toxicology of the metabolites formed. The results will provide crucial insights for future research on the food safety of fermented products and will be shared with authorities, researchers and the general public through scientific publications, popularized texts and a doctoral thesis, among others.

contact: els.vanpamel@ilvo.vlaanderen.be
christof.vanpoucke@ilvo.vlaanderen.be
project: MYCOFERM

Correct labeling of honey: what you need to know

A legal label on honey is essential for traceability and food safety. Yet many honey jars still contain errors, ILVO analysis shows: in 2023, 29% of samples did not comply with the requirements. ILVO therefore lists the labeling rules at the start of the honey analyses of production year 2024. A correct label states at least: 'HONEY', name and address of the producer, net weight, best-before date, lot number and country of origin. With increased moisture content (<20%), specific storage instructions should also be included, such as 'Store in the dark under dry conditions below 15 °C'. Errors often come from unauthorized terms such as "100% pure" or "artisanal." Such indications are misleading and prohibited. Statements about composition and nutritional value are optional, if scientifically substantiated.

contact: katrien.broekaert@ilvo.vlaanderen.be

Why do scientists sometimes refer to microalgae as 'green gold'?

Astronaut food, biofuels and sunscreen: microalgae can do it all. For example, these tiny algae contain substances that protect them from sunlight, which can also come in handy for humans. Unfortunately, their natural production of these substances is insufficient for commercial application.

Elke Vereecke (ILVO - UGent - FWO) is studying how to grow microalgae packed with those sunlight-blocking substances.

contact: elke.vereecke@ilvo.vlaanderen.be

The green gold of the future (in Dutch)

03:06

Towards climate-smart food production

Towards climate-smart food production

Too wet, too dry, too hot, too briny, too unclear or too expensive. Climate change is hot on the heels of agricultural researchers! ILVO has already mobilized several fronts to meet this challenge: soil carbon research, peat-free substrates, methane reduction in ruminants, and more.
Of course, we also have news for you about KLIMREK, the tool that describes the climate impact for several subsectors, farm by farm, and outlines a path for improvement. The ILVO Center of Expertise for Agriculture and Climate (ELK) has renewed its efforts to streamline its communication even more.

contact: sam.decampeneere@ilvo.vlaanderen.be

RESULT

Accelerated high-quality rollout of KLIMREK in dairy farming

This project has accelerated efforts to bring 'KLIMREK for dairy' to an additional 150 dairy farms. A farm's climate-smart trajectory starts with a climate scan and continues with a climate plan. The climate scan calculates the farm's contribution to global warming (the carbon footprint) as measured in kg CO_2-eq per kg of milk. The contribution to other environmental themes such as acidification or eutrophication, among others, is also calculated to avoid problem-shifting when taking climate actions. The climate pathway starts from the individual scan and identifies points of improvement for the farm. KLIMREK then proposes calculated scenarios including a cost-benefit analysis to further reduce the footprint and increase climate resilience. A professional climate consultant guides the dairy farmers along the way.

This rollout was a collaboration with Boerenbond Projects, Hooibeekhoeve and Inagro. It also led to optimizations of the tool itself: the tool has been more user-friendly, the set of benchmarks is strengthened and the practical guide for climate-smart management has been significantly expanded.

contact: veerle.vanlinden@ilvo.vlaanderen.be
project: KLIMREK PLUS

PRESS RELEASE

MilkBE, Boerenbond & ILVO join forces on KLIMREK for dairy farmers

MilkBE, Boerenbond & ILVO have joined to embed the KLIMREK climate trajectory even more broadly within dairy farming. By formalizing this collaboration, the three organizations want to further support dairy farmers in understanding and reducing their climate impact. The VLAIO research project KLIMREK was developed by ILVO, Boerenbond and VITO. The dairy sector was the first sector for which greenhouse gas emissions can be determined per farm and with the required scientific support.

contact: veerle.vanlinden@ilvo.vlaanderen.be
project: KLIMREK

NEW

KLIMREK rolled out for pork production

The KLIMREK module developed specifically for the pig sector is getting more exposure, and gets the chance at getting rolled out in practice. For years, the large VLAIO-LA KLIMREK project in Flanders has developed specialized climate pathways for each different sub-sector of livestock farming. The KLIMREK tool for the pig sector can determine the climate contribution of each individual pig farm, and then indicate the potential for greenhouse gas reductions. This demo project is a collaboration between ILVO, Boerenbond Projects and the extension research centers Inagro and PVL (Bocholt). The goal? To identify and include additional climate measures for the sector and to expand the benchmark set. Individual coaching sessions are planned to either implement feasible climate-smart measures that reduce net greenhouse gas emissions, or to make the farm more climate-resilient.

This guidance and demo project should help pig farmers to master their KLIMREK application faster.

contact: freya.michiels@ilvo.vlaanderen.be
project: DEMO KLIMREK VARKENS

NEW

A platform for developments around methane-reducing feed

ILVO and UGent are launching a research platform, both in vitro and in vivo, to test climate-mitigating feed systems for cattle. Ration compositions, feed components, additives and supplements can all be (further) developed there, in either a private-public collaboration or as a, exclusively public initiative. The platform combines technological equipment and (barn) infrastructure with specialized research expertise.

The aim is to achieve guaranteed reduction rates, and to get the proven recipes recognized faster for more animals (breeds, ages, etc.). UGent provides the in vitro expertise on the KlimVEE platform while ILVO provides in vivo expertise.

In 2024, a number of the international methane-reducing feeding strategies have not yet been tested and recognized in Belgium. Those that have already been studied here show an emphasis on strategies for barn-fed, lactating dairy cattle from conventional dairy farming.

contact: nico.peiren@ilvo.vlaanderen.be
project: KLIMVEE

RESULT

Drought-tolerant reed fescue as feed for dairy cattle

Reed fescue is a more drought-tolerant forage grass that appears to offer a sustainable solution to Flemish dairy farmers wishing to maintain their forage and milk production under changing climatic conditions. Research on experimental fields and practicing farms has shown that reed fescue provides 25-45% more yield than conventional ryegrass in dry and wet years. Grass intake and milk production in high yielding cows decreases slightly (3- 6%), but this loss can be fully compensated by adding 40% clover to the ration. Grazing young cattle on reed fescue results in a more consistent grass supply and better growth during dry periods. The economic and ecological feasibility received a positive evaluation.

contact: nico.peiren@ilvo.vlaanderen.be
project: KLIMGRAS

RESULT

Saline agriculture for climate adaption

Crops such as potato, tomato, quinoa, and New Zealand spinach can theoretically be grown under (more) saline conditions. This project has clarified the specific context and different ways to grow the aforementioned crops in saline conditions, including study of the soil-water-plant interactions in different varieties.

The SALAD project, "Saline AgricuLture for Adaptation" also identified opportunities for scaling up and a wider rollout of saline agriculture, and also worked on financing models. The consortium included partners from four EU countries (Belgium, Germany, Italy and the Netherlands) and two North African countries (Egypt and Morocco). Soil salinization is a major cause of land degradation in the EU and can also be a problem for food production in the coastal region of Flanders during long dry periods.

contact: sarah.garre@ilvo.vlaanderen.be
project: SALAD

RESULT

Unique high-tech phenotyping for creation of 'Future proof' agricultural crops

Improved varieties can make agricultural crops more resilient to drought. These adaptations to climate-related drought and salinization can now be accelerated in Flanders through a specialized and state-of-the-art phenotyping installation for field research under drought- controlled conditions. The installation, called "HYDRAS", is an open-innovation platform. With this installation, ILVO can perform underground phenotyping in addition to above-ground phenotyping. The result of the data collection from HYDRAS is that candidate cultivars (hybrids) are selected more accurately for their tolerance to drought. These can be classic existing crops from the Flemish rotations, or innovative crops (such as chickpea and quinoa). The HYDRAS system is unique in Europe.

contact: isabel.roldan-ruiz@ilvo.vlaanderen.be
peter.lootens@ilvo.vlaanderen.be
project: FUTUREADAPT, EMPHASIS-BELGIUM

Blog

Purified wastewater for irrigation: prevention is better than cure

Flemish growers are increasingly struggling with periods of drought. Farmers even took to hiring tanker trucks a few years ago in search of water at wastewater treatment plants to irrigate their fields due to the lack of allowed or available surface waters and groundwater. Our governments are rightly cautious about allowing this kind of water to irrigate fields on a large scale, but over-regulation is also a danger, because every drop of water counts. The risk is in the accumulation of salts and other harmful substances in the soil. These are not only bad for plants and human health, but in the long run, without proper management, they can damage the soil itself.

contact: sarah.garre@ilvo.vlaanderen.be

RESULT

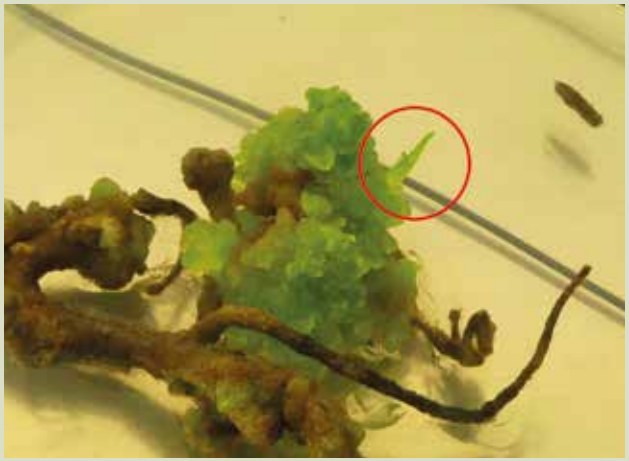
Ri technology also useful for increasing drought tolerance of a plant

The Ri technology used in breeding to give certain plants more compact growth also appears to be capable of creating increased drought tolerance. This has been shown in experiments with apple and with chrysanthemum. Ri technology focuses on the properties of the plant's root system. With the help of rhizogenic bacteria, so-called "hairy roots" are created.

In tests under normal conditions, the physiology of the already more compact-growing Ri chrysanthemums did not differ from the normal plants. But under stress conditions such as drought, they performed significantly better. The researchers hope that Ri breeding technology will eventually help make agricultural and horticultural crops more resilient to drought stress as well. Meanwhile, the market introduction of the first successful Ri ornamental and tree products will come soon, as Flemish breeding companies were an important part of this ROOTSPLUS project.

contact: ellen.dekeyser@ilvo.vlaanderen.be
project: ROOTSPLUS

Blog



Bacterium hacks plant and makes it less susceptible to drought

Researchers fused leaves of chrysanthemum in a test tube with a bacterium and grew a new plant from it. When they grew these chrysanthemums in the greenhouse, they saw nothing at first...until the plants were deprived of water for a week. Then their superpowers suddenly were revealed!

More info (in Dutch):
https://www.eoswetenschap.eu/natuur-milieu/bacterie-hackt-plant-en-maakt-ze-minder-vatbaar-voor-droogte

contact: ellen.dekeyser@ilvo.vlaanderen.be

result

Biochar can replace peat in crop substrates

Biochar made from woody biomass (instead of other types of biomass) is the most suitable for replacing peat in substrates. In manure and biomass processing, biochar also shows potential for good climate gains. In the BASTA project, ILVO and Hasselt University unraveled the economic, ecological and technical feasibility of biochar production and use. BASTA determined the types of biochar, made from certain biomass streams and using certain processes, worked best for specific applications.

Two interesting scenarios emerged from the data analysis: 1) the use of biochar in manure and biomass processing can reduce greenhouse gas and ammonia emissions, while also leading to higher process efficiency and long-term carbon storage. 2) Wood-based biochar scores highly in substrate cultivation as an alternative to peat. This biochar can be used together with green compost, bark compost and wood fiber in a peat-free cultivation substrate that provides the same yield potential as peat-based substrate. Within climate policy, the use of peat should be phased out because very high amounts of CO2 are released when peat is mined.

contact: bart.vandecasteele@ilvo.vlaanderen.be
project: BASTA

press release

First measurements of carbon stocks in Flemish soils

All land uses appear to be helpful for carbon sequestration in soil. The Department of the Environment, together with ILVO and INBO (Institute for Nature and Forest Research), has been able to measure for the first time in 50 years the amount of carbon in the soil up to 1 meter deep, for all forms of land use. The result was surprising: there is no difference in the amount of carbon per hectare sequestered by grasslands, forests, nature and unpaved land occupied by humans. Only croplands store less carbon per hectare. However, croplands do cover the most area, thus in total they harbor the largest carbon stock.

In short, all land uses are useful for carbon sequestration. With thoughtful land use and management, soils can hold much more carbon, thus removing the greenhouse gas CO2 from the atmosphere and improving soil health.

contact: fien.amery@ilvo.vlaanderen.be
project: CMON

RESULT

Climate-adaptive sorghum cultivation in Mali

Climate-adaptive cultivation measures for sorghum were developed in a collaboration between Flanders and Mali, using Flemish modeling and analysis tools. The project, funded by the Flemish International Climate Action Program, applied the crop growth model AquaCrop and the climate change visualization tool CLIMTAG to West African agriculture. Using site- specific climate indicators, promising practices such as adapted varieties and optimal planting dates were identified. The researchers made their findings visually accessible through an interactive online dashboard, which they also shared and used in workshops with Malian farmers and stakeholders. The West African country of Mali is experiencing major challenges related to the changing climate with especially a changing distribution of rainfall. This is putting strong pressure on the food supply, 80% of which is dependent on small-scale agriculture.

contact: tom.deswaef@ilvo.vlaanderen.be
project: STRATADAPT-MALI

NEW

AI-based climate-smart cultivation advice for the Costa Rican coffee sector

This project targets eight biogeographic coffee-growing regions in Costa Rica. The aim? To develop approaches that may improve the resilience of coffee cultivation in the face of climate change. A more efficient two-way communication system is being built between coffee growers and researchers. The system continuously receives locally refined climatic data and then provides specific advice on the corresponding optimal cultivation and variety choices. After 200 years of cultivation, Costa Rica is known for its high-quality coffee. This fruitful match between varieties, local soil, microclimate and specific management and processing practices is now being disrupted by climate change. In the PAN-CAFE project, ILVO, together with partners VITO, UNA and ICAFE, are specifically aiming to expand the existing CRCAFE app and website. The plan is to collect and analyze the cultivation data of the thousands of small coffee farmers, their practical knowledge and climate data in a more streamlined way using artificial intelligence.

In return, the farmers receive climate-smart recommendations, increasing the resilience of their farm and the industry as a whole. The PAN-CAFE project is funded by the Flemish government through the Flemish International Climate Action Program (VIKAP), a grant call coordinated by G-STIC and the Department of the Environment.

contact: tom.ruttink@ilvo.vlaanderen.be
project: PAN-CAFE

Vlaanderen
verbeelding werkt

Center of Expertise for Agriculture & Climate gets a more public presence

ILVO's Center of Expertise for Agriculture and Climate (ILVO-ELK) was created in late 2016 to take on a supportive and advisory role with respect to agricultural policy and the broader agricultural sector. ILVO-ELK gathers all of the diverse climate knowledge at ILVO, identifies gaps and initiates new research where necessary. It closely follows international evolutions in agriculture and climate research and can therefore place the Flemish situation in a European and global perspective.

In addition to its research function, ILVO-ELK also fulfills a communication function. Policy makers, the agri-food sector and society as a whole can turn to ILVO-ELK for science-based insights and independent information on agriculture and climate. A separate quarterly newsletter was started in 2024. In November, ELK organized a well-received ILVO Climate Day.

contact: elk@ilvo.vlaanderen.be

More info:
https://elk.ilvo.vlaanderen.be/en

ILVO and Crelan join for wider communication about agriculture and climate research

Since 2024, ILVO and Crelan bank have joined forces to strengthen climate research at ILVO. Specifically, the bank supports the structural operation of ILVO's Expertise Center for Agriculture & Climate. During the signing of the cooperation agreement, Joris Cnockaert (CCO of Crelan & Axa Bank) and Joris Relaes (Administrator General of ILVO) clarified this strategic partnership:

Joris Cnockaert: "As a cooperative bank, we want to take an active role in the sustainable transition of the sector. Crelan has strong expertise in financial services for farmers and growers. For example, the bank manages more than a billion euros in agricultural and horticultural loans and grants several hundred million euros in new financing to the sector every year. Now we also want to support the leading climate research of ILVO's Expertise Center for Agriculture & Climate. In this way, we underline our belief in the potential and resilience of Flemish farmers and growers, despite the major challenges they face today."

Joris Relaes: "Cooperation is a value that we value highly at ILVO. By joining forces, ILVO's Center of Expertise for Agriculture and Climate can fulfil even better its advisory and informative role for policy, agriculture, horticulture, and society."

ILVO Climate Day: from seed to chicken caesar salad

Bread, lettuce, cheese, chickpea, chicken breast... Each of those ingredients goes a long way before they land in our lunch. What is the climate impact of that production process? How can we reduce it? And conversely, how does climate change affect the production of our food?

On November 7, 2024, we followed the journey our food takes before it reaches our plates. We shared insights from ILVO research into climate mitigation and adaptation in every step of the food chain: from seed to plant, soil, animal, farmer and finally to a tasty meal. A fascinating full-day seminar that motivated all those attending to keep working on solutions!

Videos and presentations from the ILVO Climate Day are available through the ILVO-ELK website (in Dutch):
https://elk.ilvo.vlaanderen.be/nl/agenda/ilvo-klimaatdag

Precision agriculture and data technology

The transition to a more sustainable agriculture and agri-food chain calls for targeted innovations for more efficient use of natural resources and reduced environmental impact while supporting productivity. Precision technologies and data-driven solutions play a key role in this. Using sensors, AI, satellite imagery and robotics, farmers and businesses can better monitor and manage crop growth, soil quality, and climate impact. This is in line with European ambitions in the Farm to Fork strategy and Green Deal which aim to achieve more sustainable food production and reduce emissions and nutrient losses.

In 2024, we focused on developing and implementing technologies that facilitate data sharing and analysis, from cross-border data platforms for potato cultivation to AI-driven crop monitoring and soil sensors for carbon agriculture. New projects explore how precision agriculture can be more widely, including in regions with limited digital infrastructure. We also made progress in applications such as robotics for mechanical weed control and automated pest detection, which help reduce pesticide use.

ILVO remains committed to hands-on research and collaboration to support farmers and the broader agrifood sector in this digital transition. The numbers don't lie: after only two years, ILVO's European Test and Experiment Facility (TEF) has more than 30 ongoing and completed customer collaborations and after four years of DjustConnect, more than 3000 farmers are enrolled in the data-sharing platform.

contact: jurgen.vangeyte@ilvo.vlaanderen.be

Precision agriculture and data technology

RESULT

Data sharing in the agri-food chain

The AgriDataSpace project draws the broad outline for a useful and successful use of data and digital technologies in the agri-food chain. The European Union is ambitious on this front: the European data strategy aims to protect the competitive position of companies in a global market that is driven more by digital platforms. For the Farm To Fork and Green Deal strategy to become a reality, available data must be able to be shared securely and fairly between farmers, businesses and governments. In agriculture, many data sharing initiatives are already active in Europe. Specifically, guidelines and a roadmap are now available to take the next steps toward a more mature European agriculture data space. The AgriDataSpace consortium (10 countries) consisted of several experts with highly developed knowledge regarding data and technology, agriculture and legislation.

contact: eva.maes@ilvo.vlaanderen.be
project: AGRIDATASPACE

NEW

Making digital agriculture accessible and efficient

The OpenAgri project aims to make digital agriculture more accessible with energy-efficient, cost-effective software and open hardware-based agricultural decision support systems. These systems should work well even in remote areas with limited connectivity. Using a multi-actor approach, farmers, system providers, agricultural consultants and scientists are involved in 14 Sustainable Innovation Trials in different European countries. In these pilots, new technology is tested and developed. This leads to reusable software services and a supporting infrastructure that enables cloud, edge and technology solutions. OpenAgri helps farmers, policy makers and advisors choose the most appropriate digital tools tailored to their specific circumstances.

contact: theodoros.chalazas@ilvo.vlaanderen.be
project: OPENAGRI

NEW

Strengthening digital agriculture in southeastern Europe

The Horizon Widera project 'TALLHEDA' aims to promote Digital Agriculture (DA) opportunities in two European emerging countries - Greece and Serbia - through collaboration with Belgium, a leader in this industry. The project focuses on creating a supportive research and innovation ecosystem that integrates agricultural education, research, business, government and local stakeholders. This is done through long-term alliances between agricultural colleges and research centers in the three countries. TALLHEDA promotes knowledge sharing and capacity building through activities such as summer schools, hands-on trainings, mobility programs and data exchange platforms. The focus is on innovative technologies such as AI, blockchain or developing digital twins. The project contributes to the modernization of agricultural practices and strengthens the competitiveness of knowledge institutions in Greece and Serbia. By emphasizing open science, gender equality and social relevance, TALLHEDA creates sustainable impact in the agricultural sector

contact: jurgen.vangeyte@ilvo.vlaanderen.be
charlotte.niyomizero@ilvo.vlaanderen.be
project: TALLHEDA

NEW

Data-driven forecasting for precision agriculture

The 4Growth project examines how digital and data technologies are being used in agriculture and forestry and aims to predict which technologies will have the most impact. By describing the current situation and analyzing which factors play a role, the project provides useful insights for policy and the further adoption of digital technologies. Across Europe, 4Growth is collecting data through local measurement points and investigating what barriers and opportunities are present. The results are shared via the 4Growth Visualization Platform, which provides clear insight using clear charts and maps.

contact: reinout.godaert@ilvo.vlaanderen.be
project: 4GROWTH

More info:
4Growth Visualisation Platform

NEW

Fueling the search for sustainable food systems with data-driven innovations

FoodDataQuest will develop innovative data-driven solutions based on an integrated methodological framework. This will explore new types of private and public data sources, data from "unconventional players," and non-competitive data. Data sharing mechanisms will be used to improve the understanding of stakeholders in the EU food chain and to stimulate the transition to sustainable healthy diets.

The proposed framework should include guidelines and strategies for data collection to drive the transformation of the food system toward inclusive, sustainable, healthy food - within the boundaries of legal and policy frameworks of course. FoodDataQuest will co-create and test advanced data-driven solutions based on AI and ML algorithms, using a multi-actor approach that will serve as a lighthouse. Finally, FoodDataQuest will engage citizens in the industry's data-driven innovations, balancing data openness with protection of private and sensitive data of multiple stakeholders.

contact: siavash.farahbakhsh@ilvo.vlaanderen.be
project: FOODDATAQUEST

RESULT

Cross-border agricultural data sharing in potato farming

Digital data from the potato production chain were successfully shared transnationally for the first time between two operational data sharing platforms, namely between Belgium and Finland. This happened in the cross-border Potato-X project. The project included the technical linking of both platforms, making AVR data visible in Finnish farm management systems, testing automatic contracts and extending existing data sharing rules tailored to potato cultivation. This project represents a first for international data sharing in the agricultural sector. It is set to become a practical example that can be replicated by other data sharing initiatives within the AgriDataSpace.

contact: eva.maes@ilvo.vlaanderen.be
project: POTATO-X

RESULT

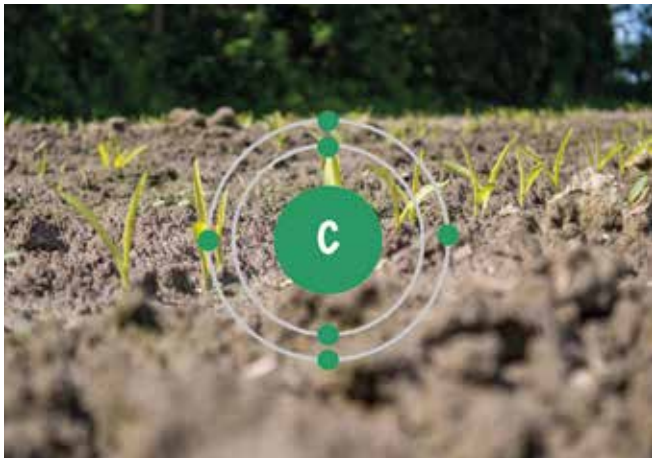
USE OF (SATELLITE) DATA FOR ON-FARM SOIL MONITORING

Continuous monitoring of agricultural management activities on a large scale thanks to the use of satellite imagery is now a step closer through the work of the Horizon2020 project 'ENVISION'. How? Researchers have developed and tested technologies that rely on innovative machine learning technologies and observation of the Earth's surface. Being able to monitor agricultural management automatically and reliably is very important for the realization of the agri-environmental objectives of the Common Agricultural Policy (CAP). ILVO's task in ENVISION encompasses cloud services that enable large-scale monitoring of soil quality through satellite data and AI technology. Because Flanders was a test area, a region-wide map of organic carbon in the topsoil already exists. Through the newly developed ENVISION application, Flemish farmers can view their agricultural plots. Policy authorities also get valuable insights for strategic planning from this map.

contact: panos.ilias@ilvo.vlaanderen.be
project: ENVISION

4Growth Visualisation Platform

NEW



SMART TECHNOLOGY SOLUTIONS FOR CARBON AGRICULTURE IN NORTHWEST EUROPE

Within the Smart Carbon Farming project, technological innovations (e.g., robotics, hyperspectral sensors, drone mapping, modeling) are being used as measurement data from carbon farming in an efficient and affordable manner. After all, large-scale, high-resolution monitoring via classical laboratory analyses is very expensive and time-intensive. This project includes the development of a fully automatic robot that enables stop- and-go sampling in the field for RTK GPS-defined points. At each precise point, the variation and value of organic carbon content is continually measured to a depth of 1m. The innovations will be tested and demonstrated at field level on 15 different farms in 5 different European countries, centering on a participatory approach. Through collaborations with existing Digital Innovation Hubs and policy makers, the techniques can be integrated into regional and national policies.

contact: simon.coll@ilvo.vlaanderen.be
project: SCF

NEW

INTEGRATED SYSTEM FOR HIGH-RESOLUTION MAPPING OF SOIL PARAMETERS

Within the Soil Quality Analysis Tool (SQAT) project, a smart and integrated system for high-resolution mapping of soil parameters is being developed. With that detailed info, task maps can be created for site-specific applications. Precision agriculture uses technology to make highly targeted and thus highly efficient use of external inputs such as crop protection products or fertilizer. In this way, the pressure on the environment is reduced while still maintaining a high net production. This research project combines several technological innovations: the use of satellite data and other data layers for an optimal sampling strategy, proximal sensing data, autonomous robotic platforms for soil sampling, a mobile soil analysis module and different data processing and fusion methods. In seven different use cases in different European countries, field tests will be done for site-specific fertilization, liming, seeding/planting and tillage. The use case in Flanders focuses on optimizing deep soil layers to combat soil compaction and optimize soil quality and biodiversity.

contact: simon.cool@ilvo.vlaanderen.be
project: SQAT

NEW

AI and robotics in Flemish agriculture

The Flemish AI Research Program accelerates the application of artificial intelligence in different sectors. ILVO leads the use case *Robotics in Agrifood* and collects data to improve AI developments in agriculture, in collaboration with Flemish universities (VUB, UGent and UAntwerpen). The focus is initially on the growing wine sector in Flanders, with the intention of later scaling up the techniques developed to other agricultural sectors. This research supports the shift toward precision agriculture, which aims to minimize inputs and maximize yields for more sustainable food production. ILVO's robotic platforms play a key role in data collection, providing practice-oriented datasets used for the development and validation of AI models. These data are also used for simulation environments, making research faster and more efficient. AI thus helps with tasks such as pruning, harvesting and crop protection, and makes sustainable techniques such as mechanical or thermal weed control economically feasible. By investing in AI and robotics, Flanders maintains its position as a pioneer in agricultural innovation and sustainable production.

contact: axel.willekens@ilvo.vlaanderen.be
project: VAIOP

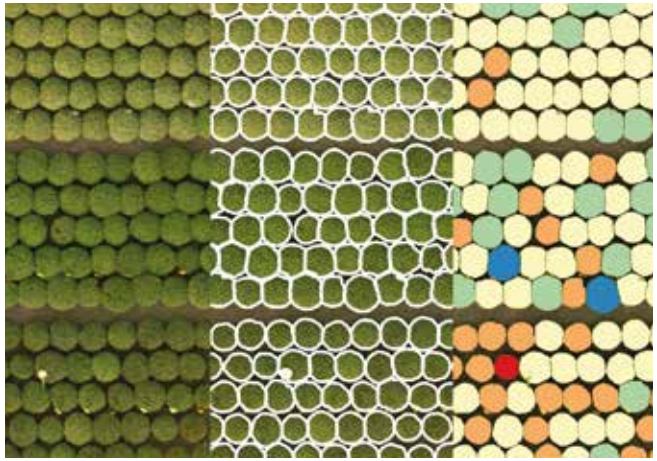
NEW

Smart technology for pest control and crop protection

The STELLA project is developing a holistic digital system (STELLA PSS) for early warning, detection and response to regulated pests. Combining modern sensor technology and artificial intelligence, the system offers an innovative approach to crop protection. For three years, STELLA PSS will be tested in six test setups in fields, orchards and vineyards, as well as in large, hard-to-reach areas such as forests. The project focuses on eight quarantine diseases and regulated non-quarantine pests in different climate conditions, spread across four European countries and New Zealand. In addition to detection and monitoring, STELLA is committed to capacity building. Farmers, agronomists and other stakeholders are trained in the use of the STELLA system and encouraged to adopt environmentally friendly crop protection practices.

contact: reinout.godaert@ilvo.vlaanderen.be
project: STELLA

NEW



New technologies and AI for optimal crop management in floriculture

The VLAIO project "SIERTECH" aims at more automated methods for crop monitoring in the Flemish ornamental plant cultivation sector through the use of suitable cameras, drones or artificial intelligence. Both cultivation under glass and in open air are investigated within this project run in collaboration with Viaverda and UGent. Ornamental growers must constantly make the right management decisions during cultivation: growth and development of the plant, presence of stress, diseases and pests, effectiveness of pest treatments, quality and finally the availability of plants for sale. Visual, multispectral and thermal camera images will be used to support these management decisions.

contact: peter.lootens@ilvo.vlaanderen.be
project: SIERTECH

PRESS RELEASE

Seven Innovation Projects for smart farming and food processing launched in Flanders and the Netherlands

In the Interreg program Smart Farming & Food Processing, Flemish and Dutch knowledge institutions, farmers, food and technology companies work together on innovative solutions around smart farming and food processing. ILVO is a partner in three of the seven tracks on smart weed control using robotics and artificial intelligence, namely Weeding Without Hands, Solar Work Assistant and Robotics for Weed Control. The Interreg program Smart Farming & Food Processing is designed to work out concrete cases and focuses primarily on cooperation with SMEs. Each project is aimed at providing very concrete solutions.

contact: liam.vanlangenhove@ilvo.vlaanderen.be

RESULT

Drone services for precision agriculture made more accessible

The OpsDrone research project has removed some technical and knowledge barriers to the further development of operational drone services in the agri-food sector. This is crucial because precision agriculture often depends on data collection from the air, while there is a shortage of contract field workers offering drone services. In collaboration with VITO and FlandersMake, five major challenges were addressed: image interpretation, affordability, flight execution, implementation and connections within the sector. Applications such as weather damage insurance, seed and product research and quality monitoring served as case studies. Companies also presented supplemental applications to further accelerate adoption.

contact: jonathan.vanbeek@ilvo.vlaanderen.be
project: OPSDRONE

PROJECT NEWS

Seed drone, weeding robot and curious farmers at the 5th agroecology demo day

The only large-scale experimental platform for agroecology in Flanders held its fifth annual demo day in July 2024. Hundreds of farmers and interested parties descended on Hansbeke near Deinze to see demos with the new seed drone, robots, soil-sparing machinery, new crops and different sowing techniques, all presented by ILVO researchers. Interest in this form of nature-inclusive agriculture is growing among farmers.

contact: jonathan.vanbeek@ilvo.vlaanderen.be

PROJECT NEWS

Live demos during the ILVO Agritech day

The second Agritech Day took place on June 18th at ILVO's Animal Sciences Unit in Melle. The public was introduced to ILVO's Agrifood TEF, a comprehensive Test and Experiment Facility to accelerate applications of AI, robotics and data in the agrifood sector. This event showed how livestock farming of the future will combine the smartest sensors with AI, edge-computing and machine learning.

contact: jurgen.vangeyte@ilvo.vlaanderen.be

RESULT

Reducing fossil fuels in livestock production

Can we reduce fossil fuel use in European livestock production by introducing more renewable energy? The RES4LIVE research project proposed and investigated alternative solutions: biofuel, solar panels or heat pumps in four pilot houses (including the Pig Campus at ILVO). The research results show an improvement in energy use, reduced mortality rates, less greenhouse gas emissions and lower fuel costs. According to a simulation, the installation at the ILVO Pig Campus could reduce emissions by 47% and fuel costs by 4%. Further long-term research is needed. Together with UGent, a tool for livestock farmers has also been developed that allows to predict the impact of renewable energy installations.

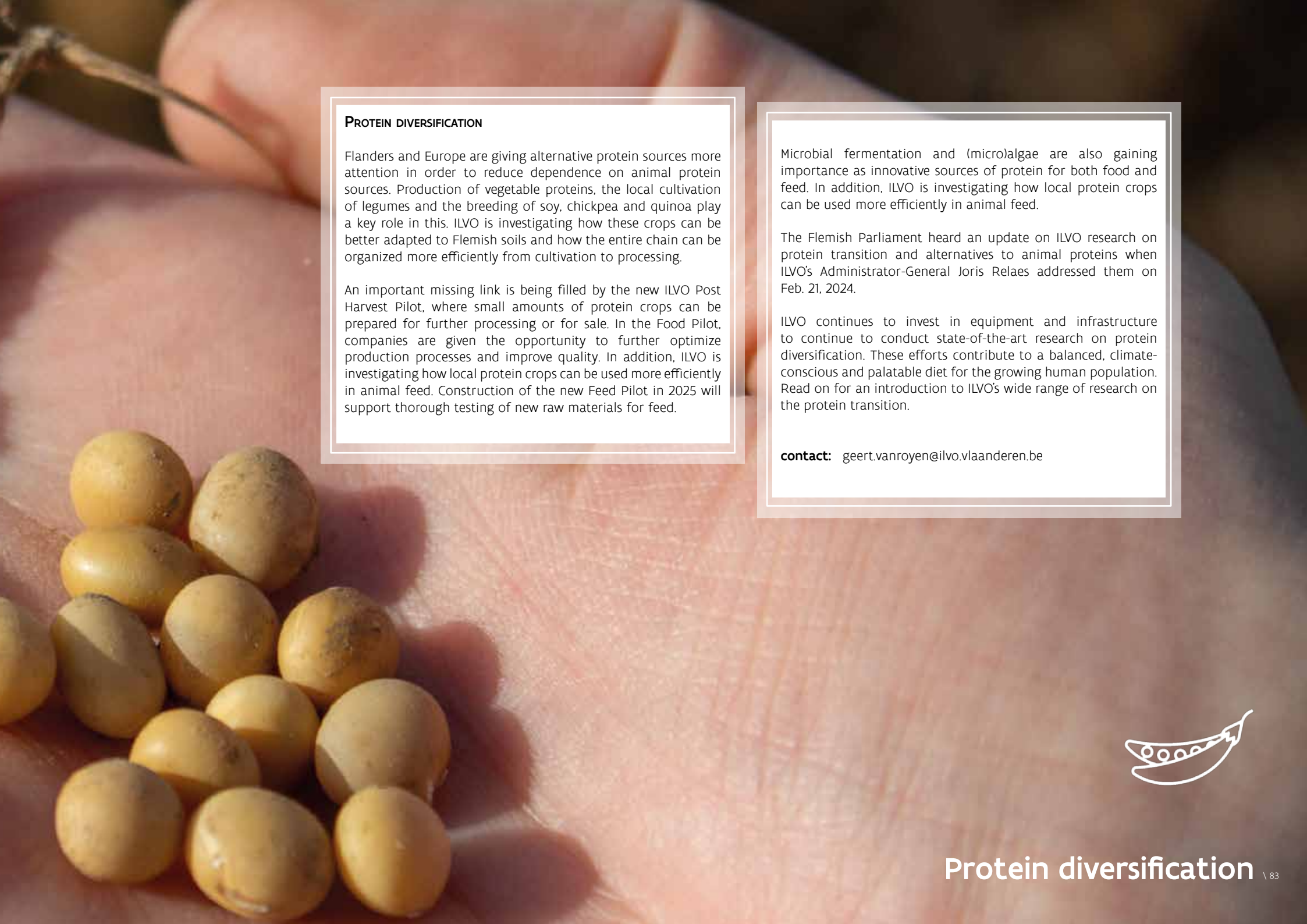
contact: jarissa.maselyne@ilvo.vlaanderen.be
project: RES4LIVE

PROJECT NEWS

Development of rapid screening techniques for food processing and sorting

ILVO supports the development of rapid and non-contact screening techniques. ILVO helps sensor producers to develop or test new sensors, and can help processing industries and integrators develop new or very specific applications. The ILVO Living Lab Agrifood Technology provides guidance regarding these innovations.

contact: simon.cool@ilvo.vlaanderen.be



Protein diversification

Flanders and Europe are giving alternative protein sources more attention in order to reduce dependence on animal protein sources. Production of vegetable proteins, the local cultivation of legumes and the breeding of soy, chickpea and quinoa play a key role in this. ILVO is investigating how these crops can be better adapted to Flemish soils and how the entire chain can be organized more efficiently from cultivation to processing.

An important missing link is being filled by the new ILVO Post Harvest Pilot, where small amounts of protein crops can be prepared for further processing or for sale. In the Food Pilot, companies are given the opportunity to further optimize production processes and improve quality. In addition, ILVO is investigating how local protein crops can be used more efficiently in animal feed. Construction of the new Feed Pilot in 2025 will support thorough testing of new raw materials for feed.

Microbial fermentation and (micro)algae are also gaining importance as innovative sources of protein for both food and feed. In addition, ILVO is investigating how local protein crops can be used more efficiently in animal feed.

The Flemish Parliament heard an update on ILVO research on protein transition and alternatives to animal proteins when ILVO's Administrator-General Joris Relaes addressed them on Feb. 21, 2024.

ILVO continues to invest in equipment and infrastructure to continue to conduct state-of-the-art research on protein diversification. These efforts contribute to a balanced, climate-conscious and palatable diet for the growing human population. Read on for an introduction to ILVO's wide range of research on the protein transition.

contact: geert.vanroyen@ilvo.vlaanderen.be

RESULT

Discovery of native rhizobia for sustainable soybean cultivation

With the help of 1,200 citizens and their gardens, ILVO, together with VIB, UGent and KU Leuven, identified native rhizobia in Flemish soils that can efficiently nodulate soy to fix nitrogen from the air. Since soy is not a native plant in Western Europe, it must first be inoculated with these nitrogen-fixing bacteria. Currently, most of these bacteria come from North or South America. By replacing these exotic bacteria with local strains that are better adapted to Belgian and northwest European environmental conditions, we can optimize soybean cultivation and increase the protein content in our region. In total, several nitrogen-fixing bacteria were found in 34 nodules. The most promising strains of these were tested in growth chambers and later under field conditions. The results show that these native strains perform as well, or even better, than the exotic strains currently being used.

contact: margo.vermeersch@ilvo.vlaanderen.be
joke.pannecoucque@ilvo.vlaanderen.be
project: SOYGARDEN

RESULT

Mobile analysis technology for plant protein crops

The FAST-ANALAB project has introduced mobile analysis technology for field-based monitoring of the quality and sustainability of new plant-based protein crops, such as lupin and field bean. Mobile equipment enables rapid and accurate analyses, from greenhouse gas emissions such as N2O to in-depth protein quality assessments with LC-HRMS. These data form the basis for developing spectrophotometers, which track quality throughout the cultivation and processing chain and reveal potential optimizations. The innovative equipment supports the Flemish protein transition and strengthens the local agri-food chain. Through the ILVO living labs, companies can make co-creative use of this technology, contributing to food safety, taste and sustainability in protein-rich food products.

contact: simon.cool@ilvo.vlaanderen.be
christof.vanpoucke@ilvo.vlaanderen.be
project: FAST-ANALAB

RESULT

The impact of processing steps on the techno-functional and nutritional properties of soy protein

The TEXPROSOY project investigated the impact of soy protein isolates (SPIs) properties on structure and texture formation during high moisture extrusion (HME), a technique to plant-based meat analogues. Analyses show that the physicochemical properties of SPIs play a crucial role in the quality of the extrudates, such as the presence of either fibrous structures or more layered textures. Belgian soybean samples were used to obtain protein isolates under different isolation conditions. The degree of denaturation, solubility and composition of the protein fractions were evaluated. In HME processing, the ratio of 7S and 11S globulins was found to contribute significantly to the desired product texture. This research provides valuable insights for the plant protein industry and supports the transition to sustainable food production by developing high-quality ingredients that can sensorially mimic meat products.

contact: geert.vanroyen@ilvo.vlaanderen.be
project: TEXPROSOY

RESULT

Microbial fermentation for protein diversification in food and feed applications from Flemish companies

The MICROBIAL PROTEIN TRANSITION project shows the potential of single cell protein and microbial fermentation streams as high-quality protein sources for food and feed. Through small-scale showcases and experiments in co-creation with Flemish companies, the project has supported the first innovation steps in this promising sector. Two pilot facilities, the Food Pilot (ILVO and Flanders' FOOD) and the Bio Base Europe Pilot Plant, invested in advanced equipment to test and analyze fermentation processes on a small and semi-industrial scale. Showcases include sustainable applications in food products and animal feed, including a sustainability analysis. This research contributes to protein diversification and may offer new opportunities to Flemish companies for valorization of microbial fermentation and byproducts. The project is in line with the growing global demand for innovative and sustainable protein sources.

contact: geert.vanroyen@ilvo.vlaanderen.be
project: MICROBIAL PROTEIN TRANSITION

PROJECT NEWS

ALEHOOP project shows innovative advances in algae and legume protein research

After four years of dedicated research and development, the ALEHOOP project has reached important milestones in the field of sustainable protein innovation. ALEHOOP (Biorefineries for the valorization of macroalgae residues and legume processing by-products) aims to revolutionize the production of affordable alternative proteins for high-value food and feed applications. This project is essential to respond to market demand for sustainable protein solutions and to reduce Europe's dependence on traditional plant proteins such as soy.

contact: nathalie.bernaert@ilvo.vlaanderen.be
project: ALEHOOP

IN THE SPOTLIGHT

Can we grow protein crops in Belgium?

Fafalel, hummus, veggie burgers... These delicacies are made from chickpeas and yellow peas, among others. Unfortunately, these protein crops are mainly sourced from distant countries such as Russia or Argentina. Can't we grow the same protein crops in Belgium?

"Yes we can!" says ILVO researcher Elien De Rooze. She how farmers can grow protein crops and tells them what exactly to pay attention to. "Who knows, maybe one day we'll be eating a hummus sandwich where all the raw materials were grown in the same field."

contact: elien.derooze@ilvo.vlaanderen.be

Can we grow protein crops in Belgium? (in Dutch)

03:35

PRESS RELEASE

Demand for local pea for human food is rising, but cultivation challenges remain

Yellow peas have potential in Flanders as shown by a rising demand for local peas for human food. However, cultivation of this crop still faces several challenges, as shown in practice and in recent research from the PEAPACT and LEG-O projects. Through field research and collaboration with farmers, both research projects are aiming for optimizations and are even already scaling up local production. On July 31, 2024, ten research and private 'pea' partners shared their experiences and observations, during a public harvest event of 12 ha of yellow pea field in Linter for other arable farmers and press.

contact: inge.speeckaert@ilvo.vlaanderen.be
project: PEAPACT, LEG-O

NEW

Kickstarting Flemish chickpeas by connecting farmers

Chickpea, a legume that has gained popularity from falafel and hummus, shows promising potential on Flemish soil. Yet cultivation is still risky due to some technical challenges. Since 2020, chickpea has been grown on 7 to 15 hectares by organic and conventional farmers, with increasing interest from the food industry, retail and consumers. The VLAIO LA project KikChick, in collaboration with Inagro and Arteveldehogeschool, aims to improve cultivation techniques by studying the time of sowing, suitable inoculum, available varieties, and crop rotation. To improve pest and disease management, detection and warning systems are being developed. Breeding is focusing on the development of varieties that provide simultaneous maturity and higher quality. Matchmaking connects growers with processors and buyers to create a sustainable chain. With knowledge sharing and industrial cooperation, KikChick aims to make cultivation less risky and more profitable, and wants to contribute to the marketing of high-quality chickpeas with the Flemish farmer as the key figure.

contact: hilde.muylle@ilvo.vlaanderen.be
project: KICKCHICK

AGENTSCHAP LANDBOUW & ZEEVISSERIJ

PRESS RELEASE

BELIS project: Europe accelerates public–private development of improved legume varieties

Europe is investing heavily in the development of improved legume varieties such as chickpea, soybean and red clover. A consortium of 34 partners from 18 countries will work together over the next 5 years to improve existing variety development programs by public and private breeders, seed companies and knowledge institutions. ILVO, the only Belgian partner, will work specifically on high-protein soybean and red clover with improved disease resistance. The system of variety registration, trials and information dissemination in the participating countries will also be optimized so that improved varieties and information reach interested farmers and buyers faster.

contact: tim.vleugels@ilvo.vlaanderen.be
project: BELIS

BELIS
Breeding European Legumes

RESULT

Establishing a local and sustainable soy chain

The LoCoSoy project investigated whether a small-scale organic soy chain could be profitable in Flanders. Three farmers, supported by Flanders' FOOD, ILVO, UC Leuven and Inagro, experimented with cultivation techniques, variety choice and price analyses. Drones recorded the damage from wild animals, and minimum rates for soybeans were calculated based on yield. Processing also received attention, with a focus on use of sustainable techniques with low water consumption. Food Pilot and La vie est belle concluded that soy flour is most suitable for small-scale production of pasta and bread. A consumer test performed with Colruyt Group yielded positive results: soy pasta scored high on mouthfeel and more than half of the participants said they would like to buy soy bread. UC Leuven and partners evaluated the economic model to develop a fair and transparent revenue model. LoCoSoy offers valuable insights for a sustainable, local value chain for organic soy in Flanders.

More details about the results can also be read in the 3-part article series available at
https://www.flandersfood.com/en/projecten/locosoy.

contact: bart.vandroogenbroeck@ilvo.vlaanderen.be
project: LOCOSOY

RESULT

Optimal cultivation of protein crops for poultry nutrition

The OPTIPLUIM project investigated the potential of mixed crops with legume crops in terms of cultivation, processing and use. Field experiments showed that the mixed crops with 'field beans x triticale' and 'field beans x wheat' had the highest yields. Ensiling the harvested seeds reduced anti-nutritional factors better than heat treatments such as toasting, expansion or extrusion.

Feeds containing heat-treated mixed crops of "field beans x wheat" as a protein source resulted in animal performance in broilers and laying hens that was at least as good as a soy-based control feed. Last, meat and egg quality showed little or no differences when the mixed crop was used in the ration.

contact: marta.lourenco@ilvo.vlaanderen.be
project: OPTIPLUIM

RESULT

Extraction of protein from alfalfa and clover for chickens and pigs

This research has the potential to reduce the dependency of European (livestock) farmers on imported protein sources for animal feed. The cultivation of alfalfa and clover does very well under our conditions, but sowing of alfalfa was not easy. Establishment was very slow, resulting in high weed pressure, but once established, alfalfa and clover both confirmed their high yield potential (up to 20 DS/ha) under Flemish conditions. A crude protein yield of 3000kg RE/ha seems feasible in practice. With current technology, this means a yield of 600-1800kg of extracted protein per ha. Depending on the growth stage (and stalkiness), the extraction efficiency varied between 10% and 30%. The quality of the protein was good enough to partially replace soy in pig and poultry diets. The fiber-rich fraction remaining after extraction had good feed value for use in dairy farming. The logistical challenges and high energy prices appeared to hinder the commercial rollout of this technique. This project was a collaboration with Inagro, Trotec and Colruyt.

contact: mathias.cougnon@ilvo.vlaanderen.be
project: LUZEX

NEW

Evaluation of on-farm toasting techniques to enable use of local protein sources animal feeds

Heat treatment of legumes has several advantages: improved preservation, breakdown of bitter substances, increased palatability and resistance of protein and starch. This provides significantly higher feed value for cattle. Currently, this heat treatment represents a roadblock to the use of more local protein crops for animals, as there is no suitable machine available in Flanders for use at farm level.

ILVO is working with a group of dairy farmers and constructors within this Inagro-led project. The aim is to develop the most appropriate machine to perform the heat treatment at farm level. Another aim is to determine the right settings and temperatures per protein crop type so the heat treatment can be further refined and protocols can be written up. Finally, a possible partnership between different growers to operate a (mobile) toaster is also being explored.

contact: dorien.vanwesemael@ilvo.vlaanderen.be
project: TOAST KANLOKAAL

NEW

Sustainable protein from locally grown seaweed

Europe is facing a looming protein shortage due to dependence on imported soy. Flanders is betting on locally grown seaweed as a sustainable protein source, in line with the Flemish Protein Strategy (40% animal, 60% vegetable protein). SUPROSEA focuses on developing a local seaweed value chain. The project optimizes culture conditions, refines biorefinery techniques for proteins and utilizes byproducts via fermentation. Extracted compounds are tested in food and feed trials, while process modeling and life-cycle analyses support scenarios for scaling up. Benchmarking of seaweed against existing protein sources within SUPROSEA demonstrated the economic and environmental benefits. By contributing to self-sufficiency, environmental goals and a more sustainable food system, the project provides policymakers and producers with a forward-looking solution to the protein shortage.

contact: geert.vanroyen@ilvo.vlaanderen.be
project: SUPROSEA

RESULT

Short-chain plant proteins

The co-creative project "Een Boon voor Leuven" (a collaboration with Boerenbond, Kortom Leuven, Content) explored the production of local protein-rich crops such as yellow pea, field bean, lupin and oats, with the aim of promoting Flemish protein diversification. Small-scale chains were created through collaboration between farmers, the hospitality industry, packaging-free stores and consumers. Highlights include six new recipes in local restaurants and the market launch of at least one food product. Mixed crops of oats and legumes show potential, although challenges such as simultaneous ripening and pest pressure require further study. The project provides valuable knowledge on biodiversity, crop protection and strengthening regional value chains, with inspiring make-a-thons and matchmaking events as catalysts for innovation.

contact: hilde.muylle@ilvo.vlaanderen.be
project: BOON VOOR LEUVEN

AGENTSCHAP LANDBOUW & ZEEVISSERIJ

inagro Interreg Vlaanderen-Nederland Gefinancierd door de Europese Unie

RESULT

Local cultivation of chickpea un-chain-ed

The KIKET project has demonstrated the feasibility of local cultivation and processing of chickpeas in Flanders with successful products such as Flemish falafel and hummus. Although profitability is still challenging due to high costs and varying yields (from 0 to 5 tons/ha), important steps have been made in variety selection, cultivation techniques and mechanization. By setting up a local chain, including processors and retailers, this project created an inclusive business model with transparent pricing that fosters trust and cooperation. This model can serve as a blueprint for other crops. Further optimization of cultivation and yields is essential to strengthen the Flemish chickpea economically and sustainably in the market. The research continues with the same partners, Inagro and Arteveldehogeschool, within the VLAIO LA trajectory of KikChick.

contact: hilde.muylle@ilvo.vlaanderen.be
project: KIKET

AGENTSCHAP LANDBOUW & ZEEVISSERIJ

PRESS RELEASE

Plant-based proteins from farm to fork? Chain experiments deliver practical, tasty and promising results

Two years of intensive research and participatory experiments using five leguminous and protein crops show the way to the most feasible and further developable local vegetable protein chains. Chickpea, yellow pea and soy – all produced in Flanders - have made it to the supermarket via creatively developed ready-to-eat products, with encouraging results from consumer taste and market assessments.

Jo Brouns, Flemish Minister of Agriculture, Innovation and Economy, heard the achievements of five protein projects during the Easy Peasy event in Ghent on Feb. 6, 2024. In total, these projects (KIKET, LoCoSoy, PeaPact, Oyster mushroom burger full of protein, and KIPEI) have brought together more than 40 knowledge centers, farmers and companies around protein crops. The projects came about with the support of the Flemish government and are part of the Flemish protein strategy.

contact: greet.riebbels@ilvo.vlaanderen.be
project: KIKET, LoCoSoy, PeaPact, Oyster burger full of protein and KIPEI

NEW

Local legumes as an engine for agrobiodiversity

The LEADER project Diversi-Peul stimulates the production and processing of protein crops in the Flemish Ardennes and Dender region. Collaborations between farm butchers and pioneering growers create regional value chains that valorize legumes. Innovative products such as hybrid meat and legumes meet the growing demand for sustainable food. Legumes improve soil quality, are drought-resistant and promote local biodiversity while requiring fewer external inputs. Through workshops, demos and networking, experts support farmers and farm managers in crop selection, price-setting and partnerships. This project combines sustainable agriculture with attractive, affordable food products, and responds to consumer demand for local, healthy and seasonal food. This project is a collaboration with Boerenbond, Province of East Flanders and Zwalmbeekhoeve.

contact: hilde.muylle@ilvo.vlaanderen.be
project: DIVERSI-PEUL

Medegefinancierd door de Europese Unie

provincie Oost-Vlaanderen

Closing loops and circular bioeconomy

The transition to a more sustainable agriculture and bioeconomy requires more efficient closing of loops and innovative valorization of biomass and residual streams. ILVO works on different links in this chain: from bio-based materials and circular fertilization to alternative feeds and sustainable growing media. The research focuses on the agricultural and food sector as well as on applications in industry and the marine environment.

New projects launched in 2024 included continued scaling up of marigold as a niche crop, the development of bio-based materials for fisheries and the integration of circular raw materials into animal feed. At the same time, results were achieved in ongoing research on bio-based fertilizers, alternative growing media and the impact of food marketing standards on waste. In addition, ILVO and its European partners provide technical and regulatory support to companies and organizations wishing to develop bioeconomy projects.

The B2BE Facilitator, as bioeconomy matchmaker, continues to establish contacts between agricultural, horticultural and manufacturing entrepreneurs.

contact: hilde.muylle@ilvo.vlaanderen.be
hannavanrenterghem@b2be-facilitator.be

Circuits and bioeconomy

IN THE SPOTLIGHT

Bio-based construction

The construction industry needs to become more sustainable. And the demand for bio-based building materials is rising! The B2BE Facilitator brings together growers, processors and industry around green innovations in the bioeconomy and demonstrates the potential of locally produced bio-based materials such as hemplime or insulation made from grass.

contact: info@b2be-facilitator.be

Bio-based building - Rural TV (in Dutch)

10:46

NEW

Everyone on board to close the marigold chain: from grower to processor to consumer

After 10 years of pioneering work, marigold cultivation in Flanders is now fully operational. This niche crop is used in various bioeconomy sectors such as food, cosmetics, textiles, pharmaceuticals (flowers) and applications in the green economy (seeds). However, an increase in scale is not yet possible due to a lack of local outlets. The operational group GOGO4IT is therefore building further on previous projects and investigating how to increase sales of marigold seed by connecting chain partners, optimizing varieties and processing steps, arriving at a good (legal) structure for both supplying growers and the chain organization, and looking for more market opportunities for the byproducts. By professionalizing and addressing the missing links, we expect to see more marigold flowers blooming on the fields of Flemish farmers.

contact: jarinda.viaene@ilvo.vlaanderen.be
project: GOGO4IT

NEW

Sustainable bio-based materials for the marine environment

In collaboration with project partners, ILVO is developing bio-based or biodegradable materials within the SEABIOMAT project to reduce pollution from current fossil-based materials. Through loss and wear of nets, buoys and cages, (micro) plastics and additives enter marine organisms and thus also the food chain. This study builds on successes with polylactic acid composites and is developing other polymers and fibers. To see if these materials are suitable as alternatives, they are extensively tested under realistic conditions. ILVO's task is to monitor their degradation in seawater and under UV light. Sustainable materials offer not only ecological benefits, but also opportunities for the materials and fishing industries seeking ways to reduce their environmental impact.

contact: els.vanderperren@ilvo.vlaanderen.be
project: SEABIOMAT

NEW

Preventing food waste caused by marketing standards

The Breadcrumb project (2024 - 2026), coordinated by ILVO, brings together 20 EU research partners and investigates the impact of EU food marketing standards on food waste. The aim is to describe existing EU food marketing standards, their interrelationships and their contribution to food losses and waste, and to make a quantitative and qualitative assessment of waste in the supply chain of five food products: fruits and vegetables, meat, eggs, cereals and fish.

ILVO is responsible for management, data collection, analysis and modeling. Specifically, ILVO collects data from 16 case studies implemented in the 5 food sectors. Modeling techniques are applied to clarify the interaction between marketing standards and the occurrence of food waste. The should develop solutions and recommendations to prevent food loss and waste due to marketing standards.

contact: capwellforbang.echo@ilvo.vlaanderen.be
project: BREADCRUMB

NEW

Implementation of circular raw materials in compound feeds for pigs, poultry and cattle

The CIRCFEED project aims to identify and determine the feed value of circular, alternative raw materials and residue streams that can be mixed into animal feeds to reduce the climate footprint of farm animals. To accelerate the implementation of these circular raw materials and residue streams in feed for pigs, poultry and cattle, the availability and bottlenecks of circular raw materials and residue streams must first be identified. In CIRCFEED we want to evaluate raw materials and create an overview of usable dry and wet circular raw materials and residue streams for the feed industry.

This Coock+ project in collaboration with UGent and BFA fits into the Flemish Protein and Circular Strategy that aims to strengthen the use of local raw materials and residue streams. It contributes to new, stronger local chains and less dependence on imported raw materials.

contact: noemie.vannoten@ilvo.vlaanderen.be
dorien.vanwesemael@ilvo.vlaanderen.be
project: CIRCFEED

NEW

Bio-based pet food

The innovative BIOPET project develops customized and sustainable animal feed and food fats through precision fermentation. It is a smart microbial platform in which chemical and biological sciences such as microbiology, bioinformatics, biobased and chemical refining, synthetic biology, process engineering and food technology work together. The platform focuses on efficiently converting research into applications, with a primary focus on sustainable food for humans and animals.

ILVO plays a key role in characterizing, supplying and processing co- products as fermentation feedstocks, developing extraction protocols for fats and their application in dairy alternatives, and conducting life cycle assessments (LCA). The ProteInn Club, of which ILVO is a founding member, takes the lead on interactions with stakeholders.

contact: geert.vanroyen@ilvo.vlaanderen.be
project: BIOPET

RESULT

Demonstration of circular bio-based fertilization and implementation of optimized fertilization strategies and value chains

The RUSTICA project shows how to close loops in agriculture. Through field research with six waste valorization technologies in four European regions and one South American region, it studied how residue streams from the agricultural sector can be converted into bio-based fertilizers for the main crops in these regions. The project results indicate that these fertilizers can outperform existing organic and conventional fertilizers on the market. However, before they can be accepted in practice, work needs to be done on adequate business models, targeted incentives and legal harmonization.

Implementation of these technologies and their associated value chains and business models should help replace five to ten percent of the current use of mineral fertilizers with circular bio-fertilizers at the regional level by 2040.

contact: jef.vanmeensel@ilvo.vlaanderen.be
project: RUSTICA

RESULT

Bioeconomy and circular agriculture for healthy soils

The BioCASH project investigated how to close nutrient, energy and biomass loops in multifunctional agroecological production systems, with soil health as a sustainability criterion. ILVO evaluated biochar as a renewable fertilizer and soil conditioner, in combination with waste treatment products and investigated the relationship between soil management and the soil microbiome in five Flemish field trials. The use of carbon-rich organic matter such as biochar and green compost can increase agricultural value and sustainability, but can also lead to competition for this biomass.

The results of this project provide valuable insights for circular agriculture and bioeconomy and help the agricultural sector and policy makers in developing more efficient use of organic matter for soil management. The project also makes an important contribution to long-term sustainability goals through its emphasis on soil health.

contact: bart.vandecasteele@ilvo.vlaanderen.be
project: EJP SOIL - BIOCASH

EJP SOIL BioCASH

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

RESULT

Wood fiber as a peat substitute for forward-looking and sustainable horticulture

For greenhouse strawberries, wood fiber substrates based on Norway spruce can be used successfully as an alternative to peat-based substrates. Reusing the wood fiber substrate also gave positive results. These are some the most striking results from SUBTECH. The project developed environmentally friendly, peat-free growing substrates based on renewable resources. Norwegian partners, including NIBIO, developed and tested the peat alternatives, because in the past 100 years about one- third of the peatlands there have been destroyed by peat extraction for horticultural substrates.

The researchers worked on precision fertigation based on models and sensor technology and aimed to reduce environmental impact and water losses, as well as increase yields and improve crop quality. Fertigation and watering have now been optimized for these new substrate mixtures and can be further tested by Norwegian growers. Further steps are being taken in the follow-up project SUBTECH2.0.

contact: bart.vandecasteele@ilvo.vlaanderen.be
project: SUBTECH

NEW

Use of wood fiber and residues in sustainable and circular growing substrates for horticulture

SUBTECH 2.0 focuses on new peat-free cultivation substrates for the professional and hobby market, which incorporate maximum amounts of locally composted residue streams. The interest for growing on substrate is increasing due to more diseases and damaged plants and more unstable production results in outdoor horticulture, among others due to climate change. Sheltered growing systems provide higher and more stable yields. However, greenhouse horticulture is still heavily reliant on growing media based on non-sustainable materials such as peat, mineral wool and perlite.

In SUBTECH 2.0, NIBIO, together with ILVO and other partners, is developing not only peat-free cultivation substrates based on compost, wood fiber and other sustainable materials, but also fully biodegradable cultivation mats based on wood fiber. Testing the cultivation substrates and optimizing fertilization provides a basis for producing good quality plants.

contact: bart.vandecasteele@ilvo.vlaanderen.be
project: SUBTECH 2.0

NEW

Closing loops: from nature management residues to compost

In several countries bordering the North Sea, Territorial Biorefinery Networks are being established to locate and bio-based residue streams, which allows the creation of closed loop chains. The Closecycle project is developing a digital package that improves the management of local bio- based residue streams. ILVO is investigating how residue streams of non- agricultural origin can be useful for farming applications. For example, ILVO aims to valorize residues from nature management and woody borders into compost that can be used on agricultural land. This fits within the transition to a renewable bioeconomy, to better soil health and more concern about resource scarcity.

contact: fien.amery@ilvo.vlaanderen.be
project: CLOSECYCLE

NEW

Strengthening bioeconomy projects through technical, business, regulatory and social support

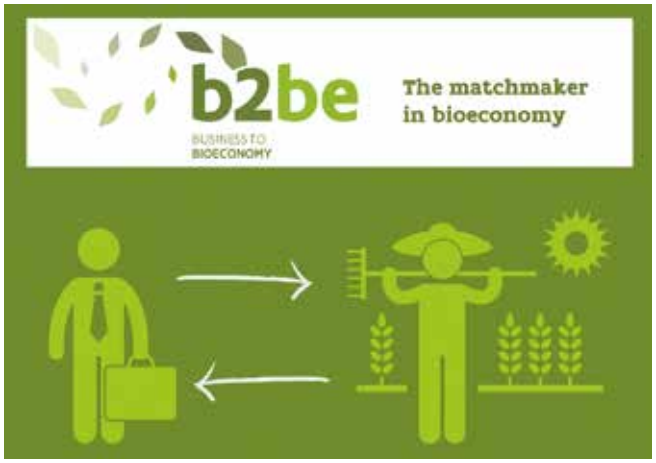
Europe aims to accelerate the transition to a bioeconomy based on renewable materials instead of fossil fuels with the European Partnership ToBeReaL. This initiative provides technical, financial and legal support and promotes social innovations for bioeconomy projects. It focuses on collaboration between public, private and public-private initiatives to valorize local biological resources.

After analyzing the needs and opportunities within the sector, ToBeReaL develops a services portfolio for at least 30 selected projects with tailored support. Through intensive mentoring, the consortium aims for some projects to grow into flagships.

ToBeReaL promotes sustainable value chains, provides access to essential support and strengthens the bioeconomy in Europe, with a focus on less developed regions. This contributes to a structural transition to a bio- based, sustainable economy.

contact: jasmine.versyck@ilvo.vlaanderen.be
project: TOBEREAL

This project has received funding from the Horizon Europe research and innovation programme under the GA No. 101181799.



B2BE Facilitator: matchmaker in the bioeconomy

The B2BE Facilitator is already 4 years old. This matchmaker between the primary sector and manufacturing has already answered nearly 200 questions from stakeholders (e.g. farmers, researchers, industry, spearhead clusters, etc.) from the wider bioeconomy. In addition, the B2BE Facilitator stimulated chain formation and facilitated successful business cases in a wide variety of sectors. Figures from the Flemish bioeconomy show that the bioeconomy is growing 3 times as fast as the conventional economy. but communication about successful business cases and matchmaking between different actors should continue to make business leaders enthusiastic about making their sector more sustainable and to start working with biobased materials.

Towards the Flemish Bioeconomy Monitor 3.0 (in Dutch):
https://ilvo.vlaanderen.be/uploads/images/MONBIO3.0_FINAL.pdf

contact: jasmineversyck@b2be-facilitator.be

Biomass hubs and bio-commodities

In 2024, the B2BE Facilitator worked around the theme "Locally processed: from biomass to biomass hub" because local collection and processing of dry and wet biomass is always challenging. The great enthusiasm of stakeholders from diverse sectors led not only to an interesting workshop with a focus on 'biomass hubs for a sustainable potting soil industry', but also to an afternoon of inspiration across sectors where we heard from a variety of stakeholders. The B2BE Facilitator theme for 2025 starts with 'Innovative bio-commodities: engine of the bioeconomy'.

More info:
https://www.b2be-facilitator.be/en/themes/innovatieve-biogrondstoffen-essenti%C3%ABle-bouwstenen-van-de-bio-economie

contact: jasmineversyck@b2be-facilitator.be

Legislation and biomass hubs – a 360° view

The B2BE Facilitator worked this year around biomass hubs in Flanders. Complicated regulations are one of the biggest challenges in starting a biomass hub. The B2BE Facilitator hired Möbius to create a hands-on roadmap entitled 'Legislation and biomass hubs - a 360° view'. This roadmap provides interested stakeholders with guidance and a better understanding of the rules and challenges involved.

To the study (in Dutch):
https://ilvo.vlaanderen.be/uploads/documents/Bio-economie/Finaal-eindrapport-B2BE_wetgeving-biomassahubs_11feb.pdf

contact: jasmineversyck@b2be-facilitator.be

Overview report of biobased chemistry in Flanders

As part of the theme "Specialty chemicals from local biomass," the B2BE Facilitator commissioned collection center Centexbel to map the available biomass streams in Flanders and link them to the needs of the bio-based chemical sector. The report provides an interesting overview through both a bottom-up approach, looking at the different types of chemical feedstocks from biomass streams, and a top-down approach, addressing the specific questions of the chemical sector. The insights from this report can help to identify opportunities, obstacles and trends and thus contribute to making the chemical industry in Flanders more sustainable within a European context.

To the study (in Dutch):
https://www.b2be-facilitator.be/nl/welke-resultaten/overzichtsstudie-biogebaseerde-chemie

contact: jasmineversyck@b2be-facilitator.be

Bio-based construction

The construction industry also benefits from sustainability. Demand for bio-based building materials is on the rise. The B2BE Facilitator brings together growers, processors and industry around green innovations in the bioeconomy and in this report shows the potential of locally produced bio-based materials such as hemplime or insulation made from grass.

contact: jasmineversyck@b2be-facilitator.be

Agriculture and rural areas in transition

A painstaking cartography of all public lands in Flanders and Brussels with their owners and user(s) resulted in a substantial, even museum-worthy impact. ILVO's Social Sciences Unit also showed its strength in unraveling and helping to optimize all kinds of rural transition processes: sustainability, digitalization, earning models in the chain, and more. Once again, notable policy recommendations were formulated including one on true pricing, and one on the question of whether our fertile lowland delta can or should continue with its intensive food production.

contact: elke.rogge@ilvo.vlaanderen.be

Agriculture and rural areas in transition

Gentse Gronden:
Expo fuels debate
on public land ownership

RESULT

PCSWS and churchwardens own a lot of agricultural land, and are selling it off at an accelerated rate

One of every five farmers farms a significant percentage of publicly owned land - at least 10%. In the past 20 years, it seems that the PCSWs and churchwardens in particular have been selling off this age-old patrimony at a rapid pace, which has major consequences for the tenant farmer. Either farmers go too deeply into debt in order to buy the land, or they lose their right to use the land after it is sold to a third party, and the farm becomes too small to remain viable.

"If governments were to keep their public lands strategically, and deploy them to promote the sustainability the agricultural sector, for example, this could create a positive scale effect, because the sustainable management on the public lands would then also extend to the private lands that are part of the holding," ILVO writes. The report entitled 'Publiek Grondbezit in Vlaanderen en het Brussel Hoofdstedelijk Gewest' was the subject of two ILVO academic seminars and is generating considerable public debate.

contact: hans.vandermaelen@ilvo.vlaanderen.be

Research report:
Public land ownership in Flanders and Brussels Capital Region (in Dutch)
https://ilvo.vlaanderen.be/nl/nieuws/publiek-grondbezit-onderzoeksrapport

RESULT

A church vision

In March, the Christian-inspired weekly magazine Tertio published a comprehensive dossier on "Church and Agriculture."
Since Pope Francis' encyclical Laudato Si in 2015, the Church has been placing more focus on climate change, biodiversity loss and inequality. Tertio also sees this as a motivation to cherish and utilize its own patrimony. The Flemish church network Ecokerk already advises church plants to lease preferentially to farmers working according to agroecological principles, and if they do sell, to include this principle in the terms of sale. This form of agriculture, according to the organization, is more in harmony with natural management and is closest to the vision from Laudato Si. The ILVO report shows that churchwardens in Flanders own nearly 10,000 hectares of farmland. This represents great potential for a thoughtful and targeted policy.

contact: hans.vandermaelen@ilvo.vlaanderen.be

File:
Church and Agriculture (in Dutch)
https://ilvo.vlaanderen.be/uploads/documents/Dossier-Tertio-Kerk-en-landbouw.pdf

Is there a policy vision for public lands?

When local or Flemish governments buy or sell land, they do so from clear policy objectives around water, industry, road building, recreation or nature development. Agricultural objectives are conspicuously absent from that list. Yet there are indications that farming users of public land would be open to more sustainable agricultural ambitions from the government, in exchange for more long-term security. Dairy farmer Steven De Roo from Afsnee confirms during a studio interview at PlattelandsTV: "With the public land we farm, we are certainly willing to take steps in a different direction, and to cooperate with projects from the city if we get support and certainty around our continued existence as a farm." The public lands could thus be a lever for a (municipal) agricultural policy that steers for biodiversity or climate-friendly practices. ILVO discussed this with policymakers, civil society organizations, the agricultural sector and other actors in open space during two seminars in April and September.

Expo Gentse Gronden – City of Ghent exhibition as a large landowner outside city limits

The doctoral thesis of Hans Vandermaelen explores public land ownership in East Flanders through a cartographic analysis among other things. This research prompted the Ghent city museum 'STAM' to create the exhibition 'Gentse Gronden'. The special historical legacy came to life as a result of the visuals presented at the Bijloke site and, thanks to video testimonies from farmers, notaries and OCMW officials, casts a critical eye on the future. The exhibition offered concrete insight into the constantly changing place of agriculture in urbanizing society since the late Middle Ages. Even though the physical expo ended after 6 months at STAM, the story lives on thanks to the digital expo that remains available online.

contact: hans.vandermaelen@ilvo.vlaanderen.be

Expo 'Gentse Gronden' in brief:

- 15.299 visitors
- 71 expert tours
- 50 guided tours

The 'Gentse Gronden' expo can now be visited digitally at https://stamgent.be/en/digi-expos/gentse-gronden

Integrating soil health into spatial planning and design

The SPADES project focuses on advancing soil health in spatial planning and design. Through collaboration between soil experts, policy makers and spatial planners in urban, peri-urban and rural areas, SPADES develops sustainable and soil-inclusive strategies. With 17 pilot projects in 10 European countries, it promotes knowledge exchange and innovative solutions. The project provides practical tools such as a portfolio of best practices, the online SPADES Navigator and a manual for soil-inclusive planning. In Flanders, ILVO and the Vlaamse LandMaatschappij are coordinating two pilot projects focused on sustainable natural grassland management and using public lands to combine agricultural, nature and water objectives. SPADES contributes to nature restoration, climate action and sustainable agriculture, and supports policy makers, spatial planners and farmers in placing soil health at the center of spatial development. The project provides policy recommendations, training programs and tools, and plays a key role in the transition to resilient environments.

contact: jeroen.dewaegemaeker@ilvo.vlaanderen.be
project: SPADES

Policy advice: an active land and property policy for land-based agriculture

Land is and remains one of the most essential factors of production in Flemish farms. Owning the land is less important than having access to land. Above all, the long-term security of that access to land lies at the foundation of land-bound farming. It is the basis for generating income, as well as being a stepping stone to sufficient autonomy, a condition for permits, the measure for livestock numbers, manure sales and support measures, it provides the confidence to dare to and wish to invest, and so much more.

In this policy brief, we bring together 13 key actions to structurally improve access to farmland and farms for professional farmers.

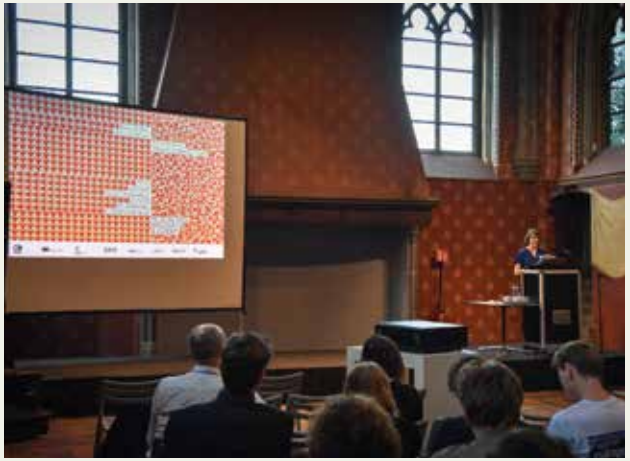
contact: hans.vandermaelen@ilvo.vlaanderen.be
glenn.willems@ilvo.vlaanderen.be

Policy advice (in Dutch):
an active land and property policy for land-based agriculture

ILVO organizes successful AESOP conference on sustainable food planning

From June 19-22 ILVO, together with UGent and Universität Hamburg, welcomed over 120 spatial planners from Europe, America and Asia to Brussels and Ghent for AESOP's 11th Sustainable Food Planning conference. This scientific event focused on the role of planning and design in the transition to a more sustainable food system. Titled "Building movement, achieving transformation," themes discussed included the integration of sustainable food planning into social movements and spatial evolution after urban agriculture. The conference provided a platform for knowledge sharing, innovative planning practices and future-oriented collaboration.

contact: elke.vanempten@ilvo.vlaanderen.be



IN THE SPOTLIGHT

What is going on with European farmers? (Opinion piece Joris Relaes, Administrator general ILVO)

Farmers take risks no one else is willing to take, writes Joris Relaes. They therefore deserve more support. This opinion piece by Joris Relaes, administrator general of ILVO, appeared on 26/01/2024 in De Standaard.

From Germany to France, from Poland to Spain, in the Netherlands and in Flanders: there are protests and demonstrations by farmers everywhere. Sometimes the cause seems trivial, such the reduction of fuel subsidies in Germany. Sometimes it is about more structural issues such as the near-ending of new permits under the nitrogen policy in Flanders and the Netherlands.

What is going on? For that, we need to look at the fundamentals of agriculture and the agricultural economy. Agriculture is an outlier in our economy because it is the only sector that works with living material. In addition to the usual risks, the sector also struggles with the fickleness of weather and climate, and production is regularly plagued by animal and plant diseases. Products often spoil quickly and must be sold quickly.

contact: joris.relaes@ilvo.vlaanderen.be

IN THE SPOTLIGHT

Study "Rebalancing agriculture and environment in the fertile Delta" conducted by Clingendael Institute and ILVO

The European Green Deal does not sufficiently take into account the region-specific challenges as they arise in the fertile agricultural delta in our regions, e.g. in Flanders and the Netherlands. Translating high, long-term ambitions from the top down into enforceable legislation in a policy field with high complexity, many diverse influencing factors and local contexts, creates uncertainty about the outcome of the policy work. More bottom-up local policy within the European framework, and more interregional strategic consultation, are approaches worth exploring. That is a conclusion of the study "Rebalancing agriculture and environment in the Fertile Delta," conducted by the Dutch Clingendael Institute and by ILVO. The study, released July 16, was commissioned by LTO (Nl.) and Boerenbond (Vl.).

contact: erwin.wauters@ilvo.vlaanderen.be

Study "Rebalancing agriculture and environment in the Fertile Delta" conducted by Clingendael and ILVO (in Dutch)

RESULT

The true cost of food production in Flanders

The REFORM research project analyzes the true cost price of products from the Flemish agrifood sector, including hidden environmental and social costs such as pollution, soil erosion and poor working conditions. True Cost Accounting (TCA) is applied to quantify these costs and develop agricultural models that promote sustainability, social equity and economic viability. Researchers start by analyzing existing agribusiness models and evaluating their environmental, social and economic impact. In collaboration with stakeholders, new, more sustainable business models are designed and tested. Choice experiments ensure the practical feasibility of these models. The insights from REFORM help companies adopt sustainable practices and policymakers strengthen sustainable strategies. By scaling up and broad application, these new models can have a significant impact on the economic, social and environmental sustainability of the Flemish agri-food sector.

contact: thibault.cloet@ilvo.vlaanderen.be
project: REFORM

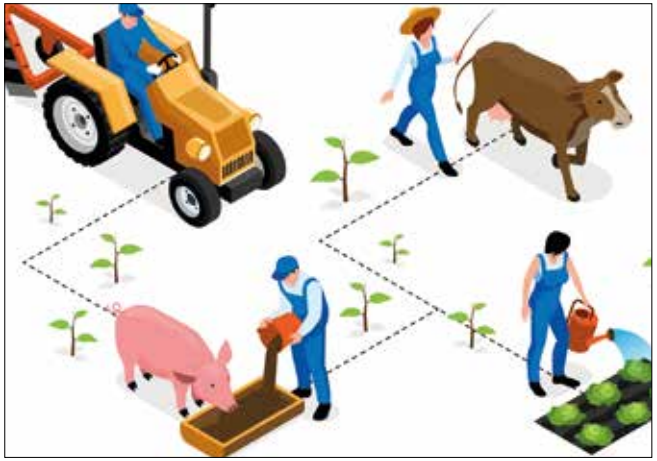
RESULT

Connecting agricultural consumers and producers through ambassadorship

The European multi-actor research project 'COCOREADO' successfully distilled applicable solutions from many innovative food collaborations between farmers and other chain actors. The systemic barriers that prevent farmers from entering into a better production environment were documented, and where possible, were brought to those responsible. COCOREADO's ambition was to work through innovative approaches to redress unequal power relations in today's agrifood chain. The project also focused on restoring the connection between farmers and consumers to make the food system more sustainable. So-called COCOREADO ambassadors were at the heart of the whole approach. Ambassadors included farmers, chefs, food heroes, social entrepreneurs, IT specialists and leaders of local youth groups. They were given existing business models as inspiration to work out their own new business models. Existing innovative and fair chain solutions were documented and serve as inspiration.

contact: lisa.vandenbossche@ilvo.vlaanderen.be
project: COCOREADO

NEW



Promoting green nudging for agriculture and forestry

To what extent is nudging - subtle encouragement of desired behavior - effective in getting sustainable farming and forestry practices adopted? And are these practices also more likely to be implemented through social innovations and clearly defined business models, new or otherwise? These are the research questions in the European PRUDENT project (2024-2028). The goal is to clarify under which conditions and approach a voluntary transition to new practices in agriculture is feasible, in addition to the more obligatory or financial incentives from the authorities. ILVO works mainly on the cattle farming sub-sector. Existing green nudges, social innovations and business models are identified. A selection of green nudges is created or adapted and then tested. The (innovative) business models and social innovations are also developed in a participatory setting.

contact: fanny.baudoin@ilvo.vlaanderen.be
project: PRUDENT

NEW

Support for transition to organic farming

The OH-FINE network supports European farmers and small-scale businesses in the transition to organic farming by identifying knowledge needs and improving the exchange of expertise and knowledge. This transition requires complex choices and adjustments in farm management.
OH-FINE promotes knowledge sharing through networks and case studies in five European countries. It works from a bottom-up approach that focuses on farmers' experiences and their needs. The project focuses on establishing a pan-European learning community that brings together experts, resources and methodologies. By gathering practical knowledge, analyzing the needs of farmers and other knowledge and chain players, and testing innovative techniques, valuable insights will be developed. Insights and practical solutions are shared through regional knowledge centers and an online knowledge platform, exchange programs, field trials and an ICT tool for decision-making. Europe aims to achieve 25% organic agricultural production by 2030. OH-FINE wishes to contribute to that ambition, by providing support for regulatory, technical and economic challenges, and by accelerating the transition to sustainable agriculture.

contact: lieve.decock@ilvo.vlaanderen.be
project: OH-FINE

NEW

Accelerating the agroecological transition in Europe

The European partnership 'AGROECOLOGY' aims to promote a sustainable and resilient agricultural sector by establishing a network of living labs and performing new research. This partnership, supported by Horizon Europe, aims to accelerate the transition from conventional to agroecological agriculture to address challenges such as climate change, reduced biodiversity and increased food self-sufficiency. With 72 partner institutions from 26 countries, AGROECOLOGY aligns national and regional programs. The network facilitates practice-based research. ILVO leads the communication and valorization aspects of the project. The project will conduct long-term experiments and provide concrete solutions that support farmers in implementing agroecological practices. The goal is to better connect research and innovation around agroecology by 2030, providing quality support to farmers and allowing the agricultural sector to evolve in a more ecologically, economically and socially sustainable way.

contact: hendrik.deruyck@ilvo.vlaanderen.be
nikki.declerq@ilvo.vlaanderen.be
project: AGROECOLOGY

NEW

Engaging citizens in more sustainable and healthier food behaviors

How can Flemish citizens become more conscious about food and contribute to more sustainable and healthier choices? This is the core question of Citizen Science Food, which uses citizen science to gain insight into behavior and perceptions around food. Through an application, website and the social platform HOPLR, citizens collect data on food choices, purchase locations and suggest improvement ideas. Game methodologies and feedback systems encourage participation. These data are linked to actions in targeted labs with citizens and local actors, such as cities, short chain partners and retailers, specifically tailored to target group, urban or rural context, and locations such as schools or sports centers. The results feed concrete initiatives and promote more conscious behavior. The application will remain available after the project ends to continue to support changes in the food environment and transitions to sustainable and healthy food.

contact: carla.mingolla@ilvo.vlaanderen.be
project: Citizen Science Food

NEW

Food systems in transition: citizen science for sustainable food

The SPOON project aims to expose food insecurity in Europe by actively involving citizens in scientific research and data collection. This increases the understanding of local food systems and, over time, promotes sustainable consumption. Through participatory Citizen Science Labs (CSLs), citizens grow in their role as mere participants into active, driving forces that can influence changing policies. SPOON strives for a resilient, equitable and sustainable food system while maintaining control over personal data. SPOON's core activities include the development of physical and digital platforms where citizens co-create research projects, development of digital tools to improve the accessibility of data collection and analysis, and cross-sector collaboration.

contact: carla.mingolla@ilvo.vlaanderen.be
project: SPOON

Co-creation 2024

Plant & Soil Living Lab

as a partner for co-creation and knowledge exchange

This Living Lab continues to grow in its co-creative contacts with third parties. Open innovation means that the knowledge and infrastructure available at ILVO is converted via collaborations in a fair way into innovations in the business world, some of which have been truly groundbreaking. The formulas are versatile: sometimes there are (confidential) one-on-one processes, often consortia are formed around a particular application, and occasionally actual research projects are started with the support of the Living Lab.

Contacts with the Plant and Soil Living Lab appear to be crystallizing around three major themes: 1) more sustainable technologies or practices, 2) (more) efficient production systems and 3) lower environmental impact. Questions are most frequently asked by those professionally engaged in the cultivation of agricultural crops, ornamentals, arboriculture and potting soil & substrates, as well as by the suppliers or further processors of these products.

The Experimental Platform for Agroecology in Hansbeke, started in 2019, remains a unique place of cooperation with an exemplary function for farmers and the (short) chain. Another gem within the Living Lab is the Diagnostic Center for Plants (DCP), a laboratory for plant health.

contact: livinglabplantbodem@ilvo.vlaanderen.be

More info:
https://www.livinglabplantbodem.be/en/

Farmers and processors set up local, organic protein chain

The basis of the EIP project TWEESPAN is to anchor and perpetuate the fledgling cooperation between organic arable farmers of Biograno and organic processor La Vie Est Belle. Their mutual starting point was to give proper compensation to each link of the new short chain they are starting. The partners Biograno, La Vie Est Belle and the organic sector organization Bioforum latched onto the research institutions ILVO and Inagro. The project will experiment with the protein crops yellow pea, chickpea and lentils, produced in mixed cultivation. Through several trials, an appropriate combination crop will be sought for each mixed crop. Methods to food safety and quality are also being investigated. The TWEESPAN project is part of the Flemish protein strategy. Its ultimate goal is new food products based on local organic protein crops.

contact: elien.derooze@ilvo.vlaanderen.be
project: TWEESPAN

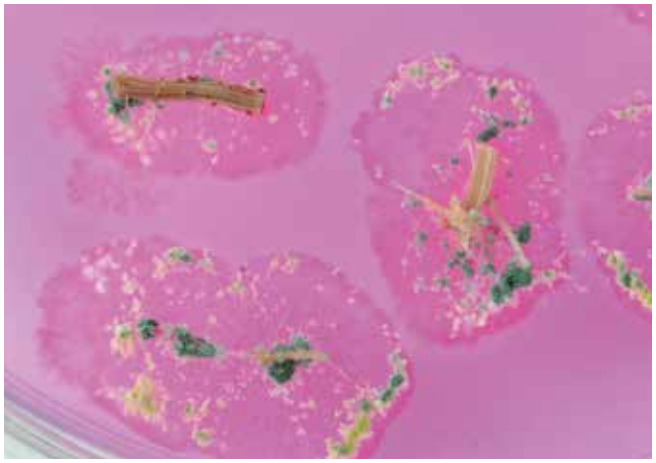
Europees Landbouwfonds voor Plattelandsontwikkeling:
Europa investeert in zijn platteland

Healthier soils using DNA metabarcoding

Eastman produces crop protection products, among other things, while being involved in long-term research worldwide into techniques for more sustainable agriculture and healthier soils. Through the Eastman teamed up with ILVO's Plant and Soil Living Lab, to analyze the microbial soil life in relation to soil health from their experimental and production fields worldwide. In the soil samples received from Eastman, our researchers first analyze the amount of soil life using the phospholipid fatty acid analysis (PLFA) tecnique. Next, metabarcoding techniques are used, where DNA of bacteria and fungi is extracted from the soil and analyzed. This DNA is compared to a database to identify specific species to determine relative differences between soil samples. This method makes it possible to track the effect of agricultural practices on soil microbial life over time.

contact: livinglabplantbodem@ilvo.vlaanderen.be

Healthier soils with the help of DNA meta-barcoding (in Dutch)



Follow-up of biocontrol fungi in substrates

The Kempen company Biobest Group, active worldwide in biological control agents and natural pollination, has established a one-on-one collaboration with the Plant and Soil Living Lab, around the action of a beneficial soil fungus (biocontrol fungi) that could help control root fungi and insects in substrates.

Upon request from Biobest's ILVO helped develop molecular detection tools to accurately monitor specific Trichoderma strains. High-throughput sequencing (GBS) was used to identify strain-specific pieces of DNA and a qPCR assay was developed to measure the amount of these DNA fragments in the substrate. The Trichoderma strain in question can now be better monitored in various crops, and in substrate, soil and plants.
In the world of crop protection, there are increasingly pressing demands for alternatives to conventional agents (e.g., fungicides) that are no longer authorized.

contact: livinglabplantbodem@ilvo.vlaanderen.be

Follow-up of biocontrol fungi in substrates (in Dutch)

Diagnostic Center for Plants (DCP)

Over one-third of DCP analyses are commissioned by FASFC. That is over 4,000 of the total 12,451 analyses. This has to do with the fact that some plant pathogens are quarantined organisms. These are not allowed to enter Belgium (or Europe) through imported food or plant material. The monitoring and enforcement of this protective legislation requires the assistance of a specialized lab, DCP.

Over the years, DCP has positioned itself as a reliable partner for companies and government agencies in need of detailed and accurate analytical methods. The laboratory operates in accordance with ISO 17025 and ISO 14001. The ISO 17025 accreditation ensures the technical competence of the lab and the reliability of the results, the ISO 14001 accreditation ensures that the lab follows environmentally friendly practices.

contact: diagnosecentrum@ilvo.vlaanderen.be

Diagnostic Center for Plants

Animal Husbandry Living Lab

as a partner for co-creation and knowledge exchange

Animal Husbandry Living Lab, expertise tailored to our partner(s)

The Animal Husbandry Living Lab is the hub where farmers and stakeholders from pig, small animal and cattle farming can find knowledge sharing as well as partners for concrete innovations.

Knowledge is shared through the Pig, Cattle and Poultry Information Centers, with as many as 99,000 website consultations this year! Nearly 1,500 professionals also got a tour with technical explanations in the research infrastructure (1,000 in the dairy barn, 400 in the Pig Campus and 100 in or around the poultry houses).

The people that most request facilitation of (sometimes confidential) innovation plans within the livestock sector are livestock suppliers, the livestock farmers themselves and their sector organizations, and education centers. Trump cards for such collaborations appear to be the advanced experimental facilities (laboratories, a production line for animal feed, and experimental stables full of measuring devices), and of course the scientific expertise and network included in the Living Lab.

Simpler, ad hoc requests are often chemical analyses on animal feeds and animal products (16,000 in 2024). Small batches of feeds in as many as 110 different formulations were tailored (volume of 900 tons in total).
The longer-term development paths are located in 7 clusters: 1. feed evaluation, -formulation and -production; 2. emission reduction, environment and climate; 3. animal welfare and animal behavior; 4. co-creation of new husbandry and barn concepts; 5. production efficiency and profitability; 6. digitization and data; and 7. precision livestock farming.

contact: livinglabveehouderij@ilvo.vlaanderen.be
Matthieu Frijlink - info@rundveeloket.be
Sarah De Smet - info@varkensloket.be
Karolien Langendries - info@pluimveeloket.be

More info (in Dutch):
www.ilvolivinglabveehouderij.be

Renewable energy in livestock housing: cool in every sense of the word

Solar panels appear to make it possible to produce a good portion of the energy needed for the average livestock farmer on the own farm. That was the message to farmers and cooling and heating technicians at the June 18 COOL ENERGY EVENT 2024.

Energy in animal housing is primarily required for the heating and cooling system. The researchers presented the successful measures from the Coolpigs, Coolchicks and Res4live projects. In broiler chickens, cooling via nebulizers started in the morning, ventilation and pad cooling were shown to achieve a 4 °C temperature reduction on 30 °C days. In a finishing pig stable, high-pressure water misting can reduce the indoor temperature by an additional 2.5°C.

The Pig Campus at ILVO, the research and teaching stable of ILVO, UGent and HoGent, has a misting system in 6 compartments and a cooling air duct in 2 compartments. Recently a system with PVT panels, dual heat pumps and heat storage was also installed. This is capable of covering most of the stable's energy needs (replacing a gas-fueled boiler). Emissions of greenhouse gases from the Pig Campus were cut in half. During the Cool Energy Event, visitors shared their experiences around smart control, heat pumps and hybrid PV-T panels.

contact: sarah.desmet@ilvo.vlaanderen.be
alice.vandenbroeke@ilvo.vlaanderen.be
evelyne.delezie@ilvo.vlaanderen.be

Evaluation of the ECO Air Care system in broiler breeders

The ECO Air Care project investigated the effectiveness of the Vencomatic ECO Air Care system in a house environment with broiler breeder chickens. During several measurement days spread over a year, concentrations of ammonia, odor, fine dust and methane were measured to evaluate the average removal efficiency of the system and the emission of these pollutants in a house equipped with the ECO Air Care system. All findings were compiled in a measurement report. The project was carried out by Greenfarm Hoogeloon V.O.F., Vencomatic Group and ILVO within the SBV scheme of the *Rijksdienst voor Ondernemend Nederland*.

contact: helder.maertens@ilvo.vlaanderen.be
eva.brusselman@ilvo.vlaanderen.be
project: RVO ECO AIR CARE OUDERDIEREN

Concept hens and senior laying hens require proven feed formulas

Companies making feed and additives for use in the poultry industry have an intense innovation agenda. New trends in both broiler chickens and laying hens call for more precise feeding. For years, ILVO has been working with the broad feed sector on (often confidential) trials to develop more optimally adapted feeds. In 2024, we were involved in feeding trials with so-called 70+ to 110+ laying hens. These are laying hens that continue to lay eggs (much) longer than the classic 70 weeks, an ambition to make the sector more ecologically and economically sustainable. To stay fit longer, the older hens need different nutritional support than younger layers do. Another trend in poultry farming is keeping slower-growing breeds. Feed and additive tests were also for their rations. Finally, there were remarkably many new (potential) feed ingredients in the requested feed trials: algae, insect meal, and legumes, for example. For each new ingredient, the dosage needs to be determined as well as the meat or egg quality is obtained. In addition the positive or less positive effects on health, emissions, animal welfare and profitability must be determined.

contact: info@pluimveeloket.be

Mobile 'Greenfeeds' measure methane emissions from cows on field farms

In terms of infrastructure, the ILVO experimental dairy farm now offers the service of using mobile GreenFeeds installations for estimating enteric methane emissions at practicing farms throughout Flanders. These Greenfeeds can measure on site the influence of grazing, or the effect of (new) feed additives, for example.
ILVO is endowed with excellent equipment for methane research in ruminants. First, there are the six individual gas exchange chambers (GUK), which very precise determination of CH4 and CO2 emissions from individual animals. This 'gold standard' of emission measurements is set up on the ILVO experimental farm and is therefore not mobile. We also have a series of GreenFeeds. These are concentrate feed dispensers equipped with sensors that measure cow emissions both in the barn and in a grazing regime on pasture. Cattle can voluntarily visit these GreenFeeds throughout the day. Determining methane emissions from larger groups of cows, during longer (feeding) periods, under field conditions is possible with them. This is now also possible outside of ILVO.

contact: tim.vandegucht@ilvo.vlaanderen.be

Marine Living Lab

from co-creation

to sustainable blue innovation

The Marine Living Lab stands for ...

... sustainable blue innovation for and together with all actors active on and around the sea, particularly fisheries and aquaculture, including processing, retail and food quality, and (bio-)technology companies interested in the exploitation of known and unknown aquatic molecules (blue biotech), sand extraction, dredgers, wind energy, coastal protection and other actors linked to impact reduction, marine spatial planning and nature conservation. Concrete questions from these sectors are picked up and, together with suitable partners, developed into a solution or project. To make this possible, the Marine Living Lab has expertise, a broad network and specialized labs, new aquaculture facilities and the net room 'Loods 33'.

contact: marienlivinglab@ilvo.vlaanderen.be

More info:
https://www.ilvomarienlivinglab.be/en/

Old fish mine becomes incubator with a watering installation for shellfish, among other things

Through the ERDF project MARIFISH, a promising mariculture infrastructure has been added, which is simultaneously available as a pilot test environment for the ILVO Marine Living Lab, among others. Indeed, the former Ostend Vismijn site has been converted into the large incubator space MARIFISH.

This required substantial (re)construction work: European Food Center (EFC) demolished the old fish auction and created a 6,000m2 operating hall with a practical logistics flow via loading docks and access gates. The hall is divided into 5 areas, all of which are food-grade and are equipped with an access point to salt water.

ILVO was responsible for the construction of the seawater installation for cleaning and storing shellfish and possibly crustaceans. That installation consists of 16 live tanks and a RAS system (fractionation column, UV-C sterilization unit, cooling and pumps). It represents a high added value for the site, as there is an increasing interest in watering of live landed shellfish, as the product quality - and also the market price - are higher for live shellfish.

One application is already allowing shellfish traders to water batches that were initially rejected by the FASFC, but which can still enter the market after dilution. Ordinary storage of harvested batches by shellfish producers is also possible, so that continuity of fresh products can be achieved during periods of heavy storms (when harvesting cannot be done at sea). The incubator is open to start-up and growing companies active in the local Blue Economy.

contact: daan.delbare@ilvo.vlaanderen.be
project: MARIFISH

Medegefinancierd door de Europese Unie

AI for recognizing fish species on commercial vessels?

Four commercial vessels participating in the development phase of the VISIM camera system are showing serious interest in installing the automatic recognition system of freshly caught fish as soon as possible. This is the result of consultations between the ILVO developers and the vessel owners. The new AI-based measurement system for automatic species recognition and length measurements of fish on the vessels integrates image recognition technology, machine learning and robust hardware. It is currently being tested on commercial vessels. In the coming months, real- time data from VISIM III will be connected to metadata via the VISTools platform.

That, fishermen say, will add value: detailed data of species and sizes fished, coupled with the location and time of fishing activity, is valuable data that can be used to increase efficiency. The project (development) will run for another 2 years.

contact: sander.delacauw@ilvo.vlaanderen.be
project: VISIM

Environmental impact monitoring for expanding activity FLUXYS

In the port of Zeebrugge, utility Fluxys LNG NV is expanding its LNG operations. That means more cooling and more cooling water being discharged. The cooling water in this process - an open recirculation facility - is slightly chlorinated. The government imposes limits on discharging as well as monitoring of possible environmental effects. ILVO has now been asked to apply its expertise in terms of monitoring of living organisms on the seabed.

In the MONITFLUXYS project, we compare data from before and after the plant expansion, supplemented by additional monitoring samples. This monitoring task plays an important role for the company in the permit application and environmental impact assessment (EIA).

contact: gert.vanhoey@ilvo.vlaanderen.be
project: MONITFLUXYS

Fuel reduction: a first quick win for fishing industry by VISTOOLS

A collaboration between Shipbuilders Padmos, Damen Maaskant and Bema, the Flemish Shipowners' Association, ILVO, UGent and the Agency for Agriculture and Sea Fisheries has been set up to analyze the fuel consumption of Flemish fishing vessels and then give advice for more efficient consumption to participating shipowners. The data used for this purpose comes from VISTools, which in the meantime monitors 37 vessels. The shipowners receive advice for so-called quick wins - adjustments that contribute to better energy efficiency in the short term - for their specific vessels. In addition, the data is used to investigate the feasibility of various alternative fuels in fisheries. This research falls within the of "reduced dependence on fossil fuels". This is important to ensure a more sustainable long-term financial stability of shipowners and to keep adhering to increasingly stringent climate goals.

contact: femke.aers@ilvo.vlaanderen.be
project: VISSERSVAARTUIG VAN DE TOEKOMST

Medegefinancierd door de Europese Unie

vzw OVIS

Living Lab agroecology and organic farming as partners for co-creation and knowledge exchange

Cooperation in local food chains

"Cooperation in local food chains": this became the central theme for the knowledge exchange activities of the living lab agroecology and organic agriculture in 2023. Together with our partners, we wanted to discover which, local collaborations could strengthen farmers' bargaining power for fair prices. ILVO, Bioforum, CCBT, Voedsel Anders, Steunpunt Korte Keten and Boerenbond, with financial support from the Agency for Agriculture and Marine Fisheries.

contact: llaebio@ilvo.vlaanderen.be

More info:
https://www.llaebio.be/about-us

Inspiring examples of local chain cooperation

After a systems thinking exercise and a first farm visit in 2023, 2024 was the year of action. In January, the partners visited some inspiring examples of local chain cooperation in Wallonia. Cultivaé was one of them; a logistics and processing cooperative for (brewing) grains and legumes. Cultivaé ensures that grain from local farmers is dropped off at local breweries and other processors and helps farmers with agroecological production methods. They monitor and advise their farmers based on specifications, evaluating with the farmer aspects such as soil health, tillage and crop rotation.

A second inspiring initiative was the Ceinture Alimentaire Liègeois (CATL). This organization was founded by a group of committed citizens and, with the help of the Liège city council, grew into a substantially expanded food strategy within the city and province of Liège. Several cooperatives for the processing and distribution of local food emerged from the collaborative platform. In addition, the CATL also established a food council that advises the local government on the development of local food chains, for example terms of training, distribution centers and policy objectives. The city of Liège plans to fully supply its school canteens with organic and local food starting in 2025.

contact: llaebio@ilvo.vlaanderen.be

This in-depth project was carried out by inspiring examples and a roadmap

The findings of the system exercise, field trips and discussions with various experts led to the publication of the booklet entitled "The Power of Collaboration in Fair Food Chains. Using 8 inspiring examples, the benefits and challenges of collaborations in the chain are highlighted. These include farmers who jointly supply local stores, restaurants or even run a store together in the city; a CSA farmer who supplies vegetables to a local hospital; and an initiative of poultry farmers who run a slaughterhouse together. In addition, the brochure offers a roadmap for setting up partnerships and points out possible legal implications. All tips can help farmers and chain players address the challenges of collaboration.
For policy makers at the federal, regional and local levels, the conclusions of the track were summarized in the policy recommendation "Cooperation in the chain as a lever for agroecological production and consumption. This identifies six challenges for cooperation that can be addressed with the help of 15 concrete policy recommendations. Each recommendation is accompanied by an inspiring example from home and abroad that shows how policy can leverage local chain cooperation.

contact: llaebio@ilvo.vlaanderen.be

Brochure (in Dutch):
De kracht van samenwerking in eerlijke voedselketens

European network of Living Labs for healthy soils

Europe aims to establish at least 100 new Soil Health Living Labs and Lighthouses (SHLL/LHs) by 2030 to accelerate the transition to healthy soils. The SOILL-Startup project, led by ENoLL (European Network of Living Labs), supports and promotes this network of Living Labs. ILVO is tasked to monitor and evaluate the functioning and impact of the Living Labs (all SHLL/ LHs across Europe) at regular intervals. In addition, ILVO connects stakeholders in Flanders with the European network and vice versa.

Support for the network is provided through a support platform with a web-based hub for collaboration. In addition, training is provided based on the needs of the Living Labs. Through events, matchmaking and knowledge exchange, the consortium increases the visibility and impact of the SHLL/LHs.

contact: jo.bijttebier@ilvo.vlaanderen.be
project: SOILL

Funded by the European Union

Inspirational guide for collaboration on short-chain biorefineries

The ORSALISK project brought important insights around organizing internal cooperation on organic short-chain farms. In a participatory collaboration with five farms, individual farm coaching and a learning network were set up for sharing of knowledge and experiences. This resulted in an inspiration guide full of concrete tips and examples to organize internal cooperation so that each employee is deployed according to his/her qualities. The guide offers practical tools for internal cooperation on companies with various crops, and emphasizes the importance of a well-considered organization of that cooperation. Thanks to active knowledge sharing from practice, this publication is a valuable resource for other short-chain companies that want to address their internal cooperation.

contact: jo.bijttebier@ilvo.vlaanderen.be
project: ORSALISK

Inspiration Guide (in Dutch):
Fruitful collaboration on your farm

Europees Landbouwfonds voor Plattelandsontwikkeling: Europa investeert in zijn platteland

Demo Day in Hansbeke

For the fifth year in a row, ILVO and the Project Agroecology Hansbeke (PHAE) organized their annual demo day. On July 4, they welcomed 250 participants to the farm of the de Bousies family to visit the field trials, hear the prime news about research results and see demos.

There were speed interviews, information sessions and market, demos and numerous field trials:

- demos: mechanical weed control, mechanical grassland destruction, overseeding of clover and green cover crop in grain
- field trials: mixed cultivation of maize and bean, strip cultivation of legumes-cereals, and the 'Bonfils fukuoka' method in baking cereals
- info sessions on techniques and legislation regarding farm composting recognizing soil health, soil biodiversity and fertilization in agroecology, opportunities for local grain farming and grain chains, logistical collaborations, business models and marketing

contact: dylan.feyaerts@ilvo.vlaanderen.be

Living Lab Agrifood Technology

as a partner for co-creation and knowledge exchange

Including the end user in technological development cycle

The living lab Agrifood Technology focuses on technological innovations that can add value in terms of efficiency and sustainability for the agricultural and agri-food sector. The main objective is to support technology companies through state-of-the-art technical infrastructure and expertise on recent technological innovations (robotics, innovative sensors, classical and machine-learning based processing techniques, etc.). A multi-stakeholder approach and a co-creative, iterative development process with attention to confidentiality stand central here. Several cycles of development, testing and evaluation in relevant field conditions follow one another. The end user (farmers, agri-food companies) is intensively involved in that cycle. This allows us to respond directly to bottlenecks in practice. This also makes adoption and impact more likely.

contact: info@agrifoodtechnology.be

More info:
https://www.agrifoodtechnology.be/en/

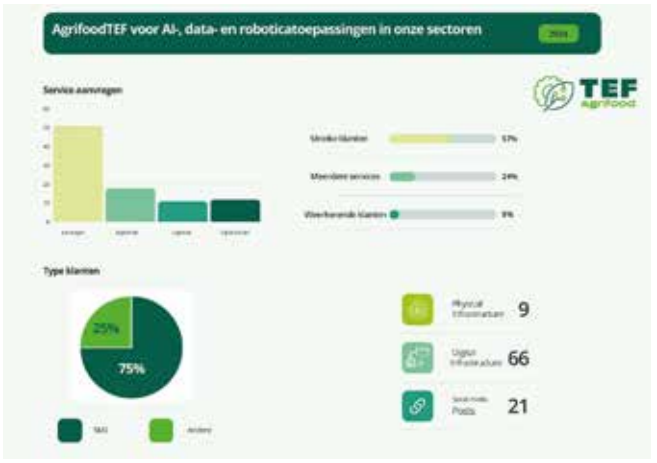
Annual agritech day focuses on livestock innovation in 2024

For the ever-growing network of technological and digital manufacturing companies and agricultural and food companies with digitization and robotization ambitions, an inspiring Agrifoodtech demo day takes place every year at ILVO. This year the direction was in the hands of the Agrifood TEF, in co-production with the ILVO-Living Lab Livestock, as the focus was on technological developments in livestock farming.

Some 250 interested parties took the opportunity to discover customized services and testing infrastructure that will allow them to develop, test and market their data, AI or robotics solutions in a realistic agricultural environment. During a workshop on AI, participants learned how to apply it in their own farms. From big data in the cloud to smart IoT sensors and smartphone applications, there are many possibilities.

In the ILVO Animal Sciences research stables, visitors discovered how modern cutting-edge technology and data processing can have a revolutionary impact on livestock farming. Thanks to the latest high-tech innovations, acceleration and efficiency gains are on the way in terms of reliable emission measurements, animal welfare monitoring, AI-controlled grazing, and even prevention of piglet mortality.

contact: jarissa.maselyne@ilvo.vlaanderen.be



AgrifoodTEF for AI, data and robotics applications in our sectors

The statistics for the first two years of life of the European- and Flemish- funded Test and Experiment Facility (TEF) speak for themselves: 51 service requests from 29 customers have been in Melle- Merelbeke. At the time of printing, these have led to 18 successfully completed services and 11 are ongoing. In the first weeks of 2025, requests for 12 new services have come in. The Flemish TEF experts continue to work on optimizing existing and integrating new services. 75% of the customers are SMEs – that makes sense because the Flemish agri-food sector is SME-driven.

The word "TEF" coined by the EU means a (new) network of testing and experimentation facilities, which - in this case for the agri-food sector - supports technology companies in testing and validating their AI, data-IoT and robotics solutions for that specific sector. Such solutions already need a practical environment in their testing and validation phase. ILVO has been chosen as the Belgian hub of the TEF.
Marijke Hunninck, AgrifoodTEF coordinator: "Our job is to offer technology companies customized services so they can implement innovative, useful and affordable technologies, AI applications and data analytics faster and more efficiently to improve agricultural and food production processes."

contact: jurgen.vangeyte@ilvo.vlaanderen.be

TEF agrifood

TEF menu for tech companies targeting agrifood

The Flemish AgrifoodTEF has defined its customized services and added subsidy rates for each one. Prominent on the list are the words "testing" and "validating": testing and validating AI technology, Internet of Things (IoT) applications, blockchain and robotics applications. In addition to subsidies, the companies receive pure technical expertise in those tests. TEF also provides support for training the companies as needed for a specific domain. Notable use cases in 2024 dealt with 4 fields of knowledge:

- Drone-in-a-box technology for all kinds of field monitoring.
- Automated weeding: precise mechanics with camera assistance and AI algorithms.
- Agricultural voltaic energy, integrated into agricultural practices.
- Generation of datasets for livestock production (production, behavior health…) via IoT sensors.

contact: marijke.hunninck@ilvo.vlaanderen.be

Website:
The Flemish Testing and Experimentation Facility for Agricultural Innovation

Better health advice for poultry and pigs using AI

There is a strong yet complex link between the indoor climate in a poultry or pig house and the health and performance of the animals. If you continuously monitor/measure and connect the two, problems can be detected swiftly and appropriate changes can be suggested. ILVO, through the Agrifood TEF and the SENSOR- PP project, is supporting Flemish SME SYN+ BV with integrating AI and new IoT sensors into an existing measurement and advisory tool make detailed decisions based on real-time data.

contact: pieter-jan.detemmerman@ilvo.vlaanderen.be

Hyperspectral technologies now multi-applicable in FOOD

The multifaceted potential of smart cameras to aid in food production and processing is becoming increasingly apparent. Together with companies in the food industry in 2024, ILVO has been working on several applications with hyperspectral cameras. The technology can be used functionally in quality control, anomaly detection and sorting of (unprocessed) products. By coupling spectral and spatial information with reference data, chemometric models are built that allow product parameters to be estimated in real time.

New in the AgrifoodTEF and the Living Lab Agrifood is that pilot tests are now available. Tech companies can get reliable indications about, for example, the performance of different models, and about which wavelengths are useful for a specific process such as disease detection in crops. It is also possible to use "data resampling" to compare different (cheaper) devices with each other or in different environments (or have them compared).

contact: bert.callens@ilvo.vlaanderen.be

Living Lab
Food Pilot

For companies small and large

At the Food Pilot in Melle you can go for development of new products and upscaling of processes, and more. We accompany companies small and large. Trust and confidentiality are at the heart of this. More than 100 food processing machines, accredited labs and consultants are at your disposal. Food Pilot is an initiative of ILVO and Flanders' FOOD.

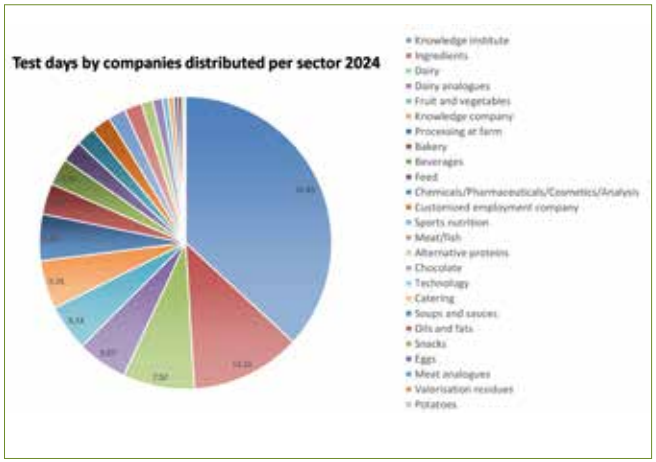
Need advice?

Food Pilot also stands for technological advice, free and without obligation. Would you like advice before a new processing machine? Or advice on ingredients and recipe development, process optimization, or info for the label? Or are you looking for help in getting to the bottom of a quality problem? We bring the appropriate expert to the table. We deliver 250 technological recommendations annually. These are intake interviews during which the question is analyzed, advice is given, analyses may be made to help answer the question, and we look at how to solve the problem.

contact: foodpilot@ilvo.vlaanderen.be

More info:
www.foodpilot.be

FOOD PILOT



Which products are being tested in the pilot plant?

More than 500 pilot tests were conducted in 2024.

A general trend is observed toward more trial work around alternative protein sources. These bring new challenges in the development of tasty, food-safe and sustainable products. The largest share of pilot tests were in the context of alternative proteins (18%), dairy analogs (17%), dairy (16%), meat analogs (12%), and valorization of by-products (10%).

Food Pilot also provides guidance using nuritional analysis

Annually, 20,000 nutritional analyses are performed for about 200 private companies (food companies, farmers, other labs, certification and inspection bodies, consumer organizations, kit producers, pharmaceutical industry, etc.) in the context of product improvement or problem solving. In addition, some 90 different items (ring tests, standards, reference series, control samples,) for quality assurance are created by ILVO for 51 different customers (milk control laboratories, companies, kit producers, scientific institutions, ...).

PRESS RELEASE

World Food Safety Day: 21 European food agencies discover in Belgium how artificial intelligence and robots contribute to food safety

On June 7, not coincidentally World Food Safety Day, the directors of several European food agencies visited ILVO. This group of "Heads of Food Safety Agencies" wants to continuously improve food safety, by about new risks, monitoring innovations and emphasizing the importance of food safety culture at companies. Through various demonstrations including robots and drones and a visit to the Food Pilot's pilot plant and labs, they demonstrated how technology and science can help food companies in a safer production process.

contact: foodpilot@ilvo.vlaanderen.be

PRESS RELEASE

The Food Pilot adds new processing equipment: 12 new machines for pilot tests and advising companies

Increasingly, the Food Pilot is experimenting with highly innovative raw materials or products. One of the new fields of research areas is the extraction of protein from new sources (all kinds of plants, insects, algae), and then the further processing. Often the amount of raw material is small because the alternative (protein) sources themselves are still in the exploratory phase of primary production. The protein extraction from it is then so minimal that the necessary initial processing trials are not always feasible on a true pilot scale. To meet the demands of companies and research groups to also be able to test innovative technologies with small quantities of (protein-rich) raw materials, there is a clear need to invest in a separate room with innovative small-scale commercial equipment (range 0.5 - 5 kg). For this purpose, the Food Pilot has been expanded with a series of trial equipment on a limited scale. The Innolab project in question receives 512,000 euros in funding from ERDF, and is co-financed by Province of East Flanders.

contact: nathalie.bernaert@ilvo.vlaanderen.be

PRESS RELEASE

From fruit to juice for food banks: Technology in local or mobile hubs against food waste

New technology in a convenient or portable format can also stabilize smaller and mixed surplus fruits and vegetables into natural juices and smoothies with a long shelf life. This is evident from tests and analyses by ILVO done in the framework of the EU research project ZeroW. Innovative crushing and pressing technologies appear to be able to convert both hard and soft fruits and vegetables, mixed together, into a tasty juice that, after pasteurization, keeps for months at room temperature. These research results are particularly interesting to organizations like food banks, who want to offer more healthy fresh and processed products in their offer of food.

contact: bart.vandroogenbroeck@ilvo.vlaanderen.be

Management 2024

Research coordination and EU cell

116 new projects

In 2024, ILVO reached another record with 116 new European projects. It is a double new high, because the number of active projects we are working on was also never as high as in 2024: there are no fewer than 429. These projects obviously produce a lot of valuable research results. In 2024 175 peer reviewed papers with ILVO (co)authors were published.

ILVO is a heavyweight in European Soil Mission

The major innovation of the European Horizon Europe Framework Program (2021-27) comes with the introduction of Missions. In these, major societal challenges are addressed through an integrated strategy where different stakeholders, including researchers, policy makers, companies, civil society organizations and even citizens, work together to achieve the set goals by 2023. With no less than 9 projects (2 as lead) under the Soil Mission, ILVO is now a heavyweight. We are also active in the Oceans Mission (2 projects) and the Climate Mission (1).

Active participation in European Partnerships

ILVO's broad knowledge of the entire agriculture, fisheries and food chain is highly valued in Europe. It also translates into a prominent presence in the broad Partnerships EJP SOIL, Agroecology, FutureFoodS, Agdata, PARC and ERA4Health. Partnerships focus on strengthening research collaboration between the European Commission, member states and industry, with the aim of contributing to European priorities.

Flemish innovation policy

In its coalition agreement, the new Flemish government shows ambition in research and innovation and explicitly recognizes ILVO as an important actor. At the same time, the Flemish government asks for more attention for the valorization of the research results and measurement of the impact. We took preparatory steps for this already in 2024.

Science4Policy: from research to policy impact

In an era where scientific developments and technological progress are increasingly intertwined with societal issues, it is important that scientific knowledge is transferred correctly and intentionally to policy makers, other stakeholders and the wider public. ILVO is aware of the potential pitfalls and therefore wants to actively train and guide its researchers, with scientific integrity as a compass. In 2024, the Science4Policy internal training offer will be further rolled out.

Policy recommendations

Since 2024, ILVO has regularly compiled knowledge from research projects working on similar content into compact policy advice. In 2024, we issued policy advice on active land and property policies for land-based agriculture, fair prices for food, opportunities for reducing plant protection products and antibiotics, and no less than two advices on restorative agriculture or agroecology.

ILVO during the Belgian presidency of the European Council

During the Belgian Presidency of the European Council, the first half of 2024, ILVO actively participated in events organized by the Flemish government. At the Open Food Conference in Leuven, we chaired sessions on soil, blue economy, innovation, personalized nutrition and microbial protein. Policy makers, researchers and industry discussed obstacles and opportunities. At the Research to Reality - Digital Solutions to European Challenges event in Brussels, Flemish Minister for Agriculture Jo Brouns was shown during a visit to the robotics workshop and test field at ILVO.

ILVO explains protein diversification in Flemish parliament

In February 2024, ILVO was received by the Agriculture Committee of the Flemish Parliament to explain the challenges and opportunities for Flemish protein diversification. Administrator-General Joris Relaes and expert Geert Van Royen took the floor. ILVO is involved in numerous research projects on new and plant protein sources for food and feed, is investing in expertise and new processing facilities for plant and microbial protein in the Food Pilot, is installing a special processing unit for innovative feed raw materials in the newly built Feed Pilot and is building a Post Harvest Pilot for needed processing capacity of small amounts of new crops.

ILVO is partner in Flanders AI research program (FAIR)

ILVO's expertise and knowledge in the field of AI applications and robotics in agriculture and food production is now at the disposal of the Flemish AI Research Program FAIR. FAIR invests via the Flemish government (department EWI) in fundamental research on AI and stimulates cooperation between universities, knowledge centers and companies. The goal is to give Flanders a leading position in the field of AI in all major Flemish sectors. With ILVO, research into AI applications for agriculture and food is also accelerating.

Agrolink

Ten years ago, Agrolink was established as a consultation and cooperation platform between 17 Flemish knowledge institutions active in primary production, including ILVO. Many activities and consultation moments later, Agrolink's operations are being scaled back due to lack of financial resources. The name and website have been retained, however, because consultation and knowledge exchange remain crucial to fragmentation of research resources.

Memorandum Flemish scientific institutions: Priorities for 2024–2029

The Flemish scientific institutions, including ILVO, publish a joint memorandum with proposals for a better science-based policy. Although the institutions fall under different policy domains and conduct research in different disciplines, there are similar challenges and close cooperation, in the areas of research, infrastructure, Open Science and personnel policy.

ILVO and VITO cement collaboration via MoU

VITO and ILVO are casting their collaboration in a Memorandum of Understanding (MoU). With this, they commit to working even more closely together on themes such as climate adaptation in agriculture, the development of new plant varieties and the creation of circular solutions for agricultural and food by-products. Water management, ecosystem improvement and digital agri-food applications including robotics and AI, are also central to the new MoU.

PRESS RELEASE

Marketing quality of plant propagating material (seeds) as determined by the Seed Lab is now task of ILVO

As of January 1, 2024, the Seed Laboratory has been designated as an official trade quality laboratory. The lab is moving to ILVO, although the physical location remains the same and the impact on their activities (seed analyses, issue of ISTA certificates) is also minimal. This ensures continuity of service.

contact: anja.ritserveldt@ilvo.vlaanderen.be
kristine.rooms@ilvo.vlaanderen.be

PRESS RELEASE

ILVO and DjustConnect start first transnational Data Space

Companies in agrifood are digital and international, and their data flows need to follow. Three existing data sharing platforms from Belgium, Finland and France joined forces to build the first on-ramps to a European Agricultural Data Space: DjustConnect (Flanders), DataSpace Europe (Finland) and Agdatahub (France). On June 18, 2024, during ILVO's Agritechdag in Melle, they signed a Memorandum of Understanding (MoU). The European Agricultural Data Space should unburden farmers, food companies and technology players across national borders in sharing (agri-food) data, by enabling efficient and fairly regulated connections between participants. A first success story is already being written with Belgian potato machinery manufacturer AVR.

contact: stephanie.vanweyenberg@ilvo.vlaanderen.be

ILVO and DjustConnect start first transnational Data Space (in Dutch)

02:12

Operational and human capital

Efficiency

Administratively, ILVO consists of two entities that reinforce each other in a remarkable way: the IVA 'ILVO-VO' (the Internal Independent Agency of the Flemish Government - unincorporated) and "ILVO-EV" (Own Capital fund). These legally-separated entities each have a budget, a staff and governing bodies. Whereas ILVO-VO operates largely through the basic endowment, ILVO-EV acquires resources in a flexible manner through competitive research at home and abroad, through companies and through paid services.

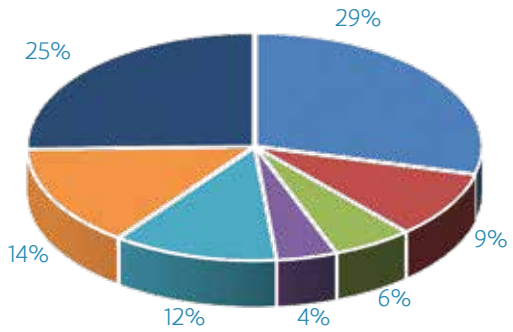
In ILVO's first years, the ratio of VO to EV was about equal. This year, the EV/VO balance is about 2/3 - 1/3. In 2024, the base endowment to ILVO accounts for 29% of ILVO's total operating funds.

contact: katrien.debruyn@ilvo.vlaanderen.be

- Basic funding Agency Agriculture & Marine Fisheries 29%
  - *Structural funding: 29%*

- Endowment - Agency Agriculture & Marine Fisheries 9%
- Flemish Policy Areas 6%
- VLAIO 4%
- Federal governments 12%
- EU 14%
- other (including Private Sector and Business Unit) 25%
  - *Project-based financing: 71% (assignments and competitive research)*

Distribution of ILVO Operating resources 2024



Active recruitment in 2024

In 2024, ILVO again sought and found many people for a record number of new research projects. We did feel the tightness on the labor market, but we were able to attract the right employees. Every year, many projects also ended, which translated into a stable number of staff members.

contact: personeel@ilvo.vlaanderen.be

ILVO staff numbers 2024

	Staff			Full-time Equivalents		
	VO	EV	total	VO	EV	total
dec 2018	239	370	609	211.8	346.6	558.4
dec 2019	231	415	646	207.1	388.0	595.1
dec 2020	223	454	677	201.3	427.5	629.8
dec 2021	212	487	699	194.0	460.0	654.0
dec 2022	214	524	738	195.5	494.1	689.6
dec 2023	209	547	756	192.1	514	706.1
dec 2024	206	550	756	191.6	519.1	710.7

Attention to integrity

In 2024, ILVO launched a round of mandatory Integrity Training for all staff members. The training covers general integrity issues but also the specific integrity expectations we place on scientists. ILVO subscribes to the ALLEA code (The European Code of Conduct for Research Integrity). Participants are given tools to deal with concrete dilemmas with integrity.

contact: personeel@ilvo.vlaanderen.be

Staff survey 2024

ILVO gauges staff satisfaction every two years, using an anonymous survey organized by the Agency for Public Personnel. As with previous surveys, the results are extremely positive. As many as 491 staff members (69%) participated and we scored high on just about every aspect. ILVO is strongly committed to a healthy, values-driven corporate culture in which open feedback and trust are central. The five ILVO values are positivity, being proactive, professionalism, working together and being an example.

contact: personeel@ilvo.vlaanderen.be

Infrastructure

Construction of water basins

In 2024, ILVO made a major investment for efficient water use at the Plant Sciences sites. A water silo and a water basin were constructed that together can collect 5,682,000 liters of rainwater from the roofs. This water is used in greenhouses, for cleaning vehicles and irrigating experimental fields. This will significantly reduce the consumption of well water, while also diverting water from surroundings and public sewers during periods of heavy rainfall. The construction of the water basin is a fine collective effort by ILVO employees. As many as 38 colleagues helped to roll open and tighten the waterproof tarpaulins. The investment is part of the FutureAdapt project.

contact: filip.debrouwer@ilvo.vlaanderen.be

Energy conservation in greenhouses

ILVO is investing in energy savings in its largest research greenhouse. This is not obvious because the greenhouse is divided into about 40 compartments for research. Where there is no table heating, destratifiers have been installed to counteract heat stratification. These fans blow heat downward. In addition, the greenhouse is also equipped with vertical energy screens controlled through the climate computer for optimum efficiency. These energy screens will also retain heat more during the winter and at night.

contact: gerlinde.devogeleer@ilvo.vlaanderen.be

Preparation for construction of climate-neutral poultry house

For several years ILVO has been the design and construction of a climate- neutral, energy-flexible research barn for poultry. The dossier for construction was awarded in 2024 to start effective construction in 2025. In preparation, five old poultry houses were demolished and the surrounding area was desealed. The site is now ready for construction in 2025.

contact: info@pluimveeloket.be

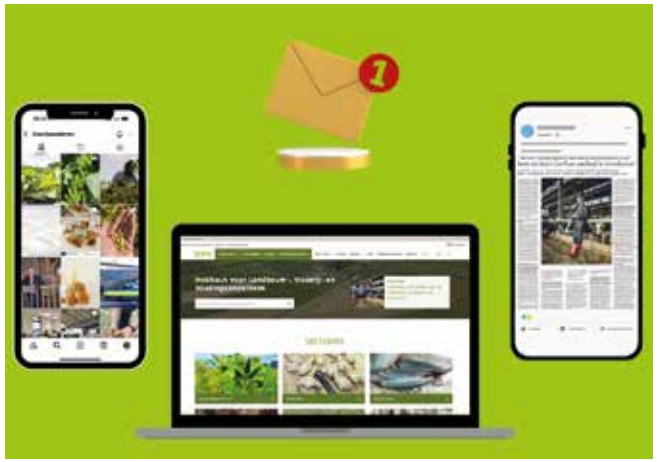
PRESS RELEASE

InnovOcean Campus is first office building in Flanders to receive label for excellent accessibility

For the first time, the Flemish Expertise Center for Accessibility Inter, awards the A++ 'excellent accessibility' label for an office building. The InnovOcean Campus of ILVO and VLIZ (Flemish Institute for the) in Ostend was the first to receive the label. The campus offers great user comfort for visitors, employees, customers ... with and without disabilities. Special features are the audio support for the hearing impaired and the low-stimulation, enclosed workplaces for people with autism.

contact: nele.jacobs@ilvo.vlaanderen.be

Communications



Strong channels and actions

ILVO continues to build the reach of its communications in 2024. The ILVO website received almost 130,000 visitors, that viewed more than 20,000 sheets, reports, presentations and other documents. ILVO distributed 45 press releases, 125 news items and organized more than 100 activities, with and without partners. The monthly ILVO newsletter reaches 2,285 subscribers. The most popular thematic newsletters 'Cattle' 3,503 subscribers and 'Food Pilot' 786 subscribers. ILVO's reach on social media continues to grow. LinkedIn is the strongest channel (16,335 followers, +19%). Instagram is growing the strongest but is the smallest channel for now (831 followers, +35%).

contact: communicatie@ilvo.vlaanderen.be

ILVO looks back on successful participation in FTI 2024 in Ghent and Hasselt

In March 2024, ILVO participated in the Flanders Technology & Innovation (FTI) Festivals in Ghent and Hasselt. During these events, ILVO presented cutting-edge technologies in the agrifood sector, focusing on precision agriculture, circular food production and AI-driven innovations. In Ghent, ILVO hosted interactive sessions on AI and robotics, microbial protein, algae and the environmental sustainability of Flemish agriculture. In Hasselt, ILVO focused on food innovations and circular agriculture, with an expo on algae, plant proteins and smart valorization of food residue streams. In a closed session for the healthcare sector, ILVO showed how data technology can reduce food losses. At fruit auction BelOrta in Borgloon, ILVO showed the press and students several demonstrations of an innovative, mobile juice processor.

PRESS RELEASE

ILVO at Agridagen 2024: Innovation in animal husbandry and administrative simplification

During the Agridagen in Ravels, ILVO presented innovative tools and research projects. Visitors discovered the animal welfare scan and the data-sharing platform DjustConnect that helps farmers ease their administrative burden. Highlights were the Poultry Biosecurity Workshop and the DjustConnect network breakfast. The Biosecurity Workshop, part of the European project Netpoulsafe, provideed practical insights and communication materials for poultry farmers. DjustConnect presented its new features and the Digislim Farmers project was discussed. ILVO's booth highlights research projects such as Klimrek, Netpoulsafe and Optipluim, which all call for collaboration. Thanks to the Living Lab Livestock and Livestock Labs, visitors can gain hands-on experience with innovative tools.

Listening to plants experiencing drought stress: ILVO with VWI's on Science Day

The Flemish government has six special centers for independent, scientific research: ILVO, the Institute for Nature and Forest Research (INBO), Meise Botanical Garden, Agency for Built Heritage, the Royal Museum of Fine Arts Antwerp (KMSKA) and the Hydraulic Laboratory. In 2024, five of them participated together for the first time in Science Day at the new Green Ark of Meise Botanical Garden. ILVO presented drought-resistant crops and showed a scale model of the unique field lab where drones above the ground and a fine network of electrodes below and on the ground monitor drought stress in plants. The VWIs welcomed 1,400 interested visitors that day.

ILVO at Interpom 2024

ILVO was represented at the potato trade fair Interpom in Kortrijk in 2024. As usual, we shared a stand with VLAM and actively participated in the panel discussions organized as part the fair, namely how new technologies such as AI and drones can contribute to sustainable cultivation and how to manage water on a potato farm.

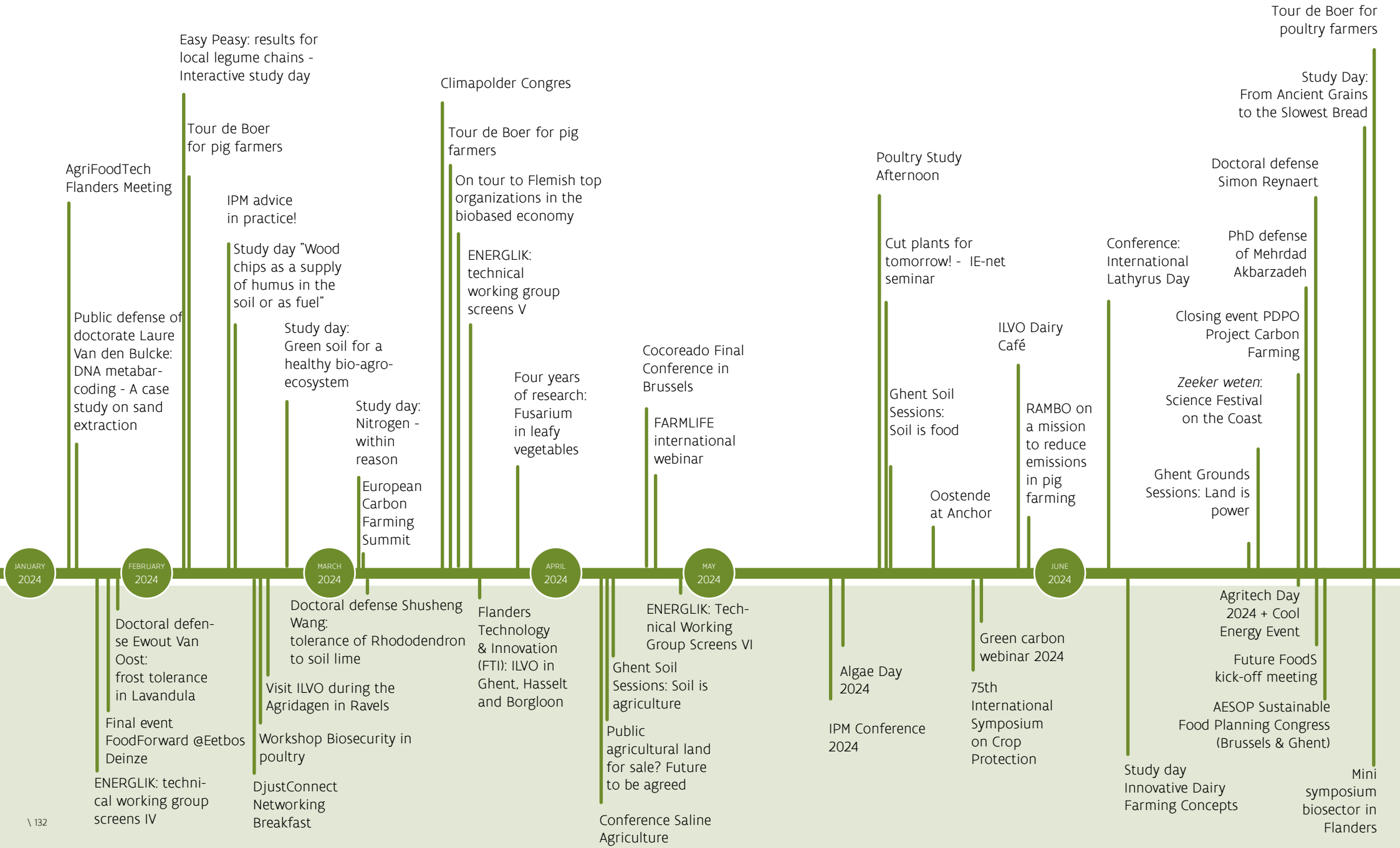
ILVO and SciMingo boost scientists' communication skills

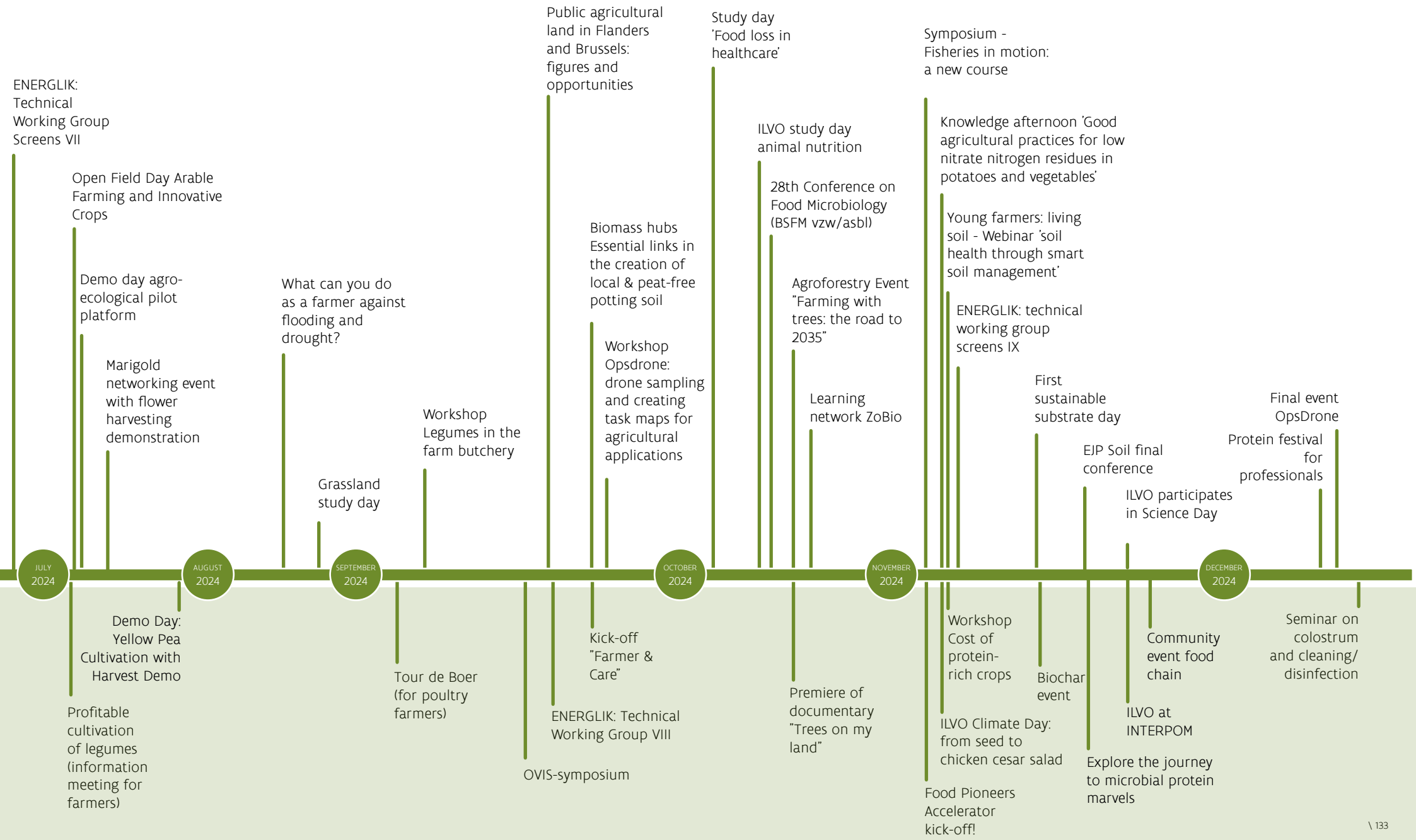
For the third year in a row ILVO entered into an agreement with SciMingo vzw, the organizer of the Flemish PhD Cup and producer of Wetenschap Uitgedokterd. SciMingo coaches scientists in easily communicating about their research, using specific training courses. A total of 24 ILVO researchers received training in video pitching (7) popular scientific writing (5), podcasting (1), infographics (5), social media (1), poster design (2), AI for science communication (2) and presentation techniques (1).

Climate newsletter launched

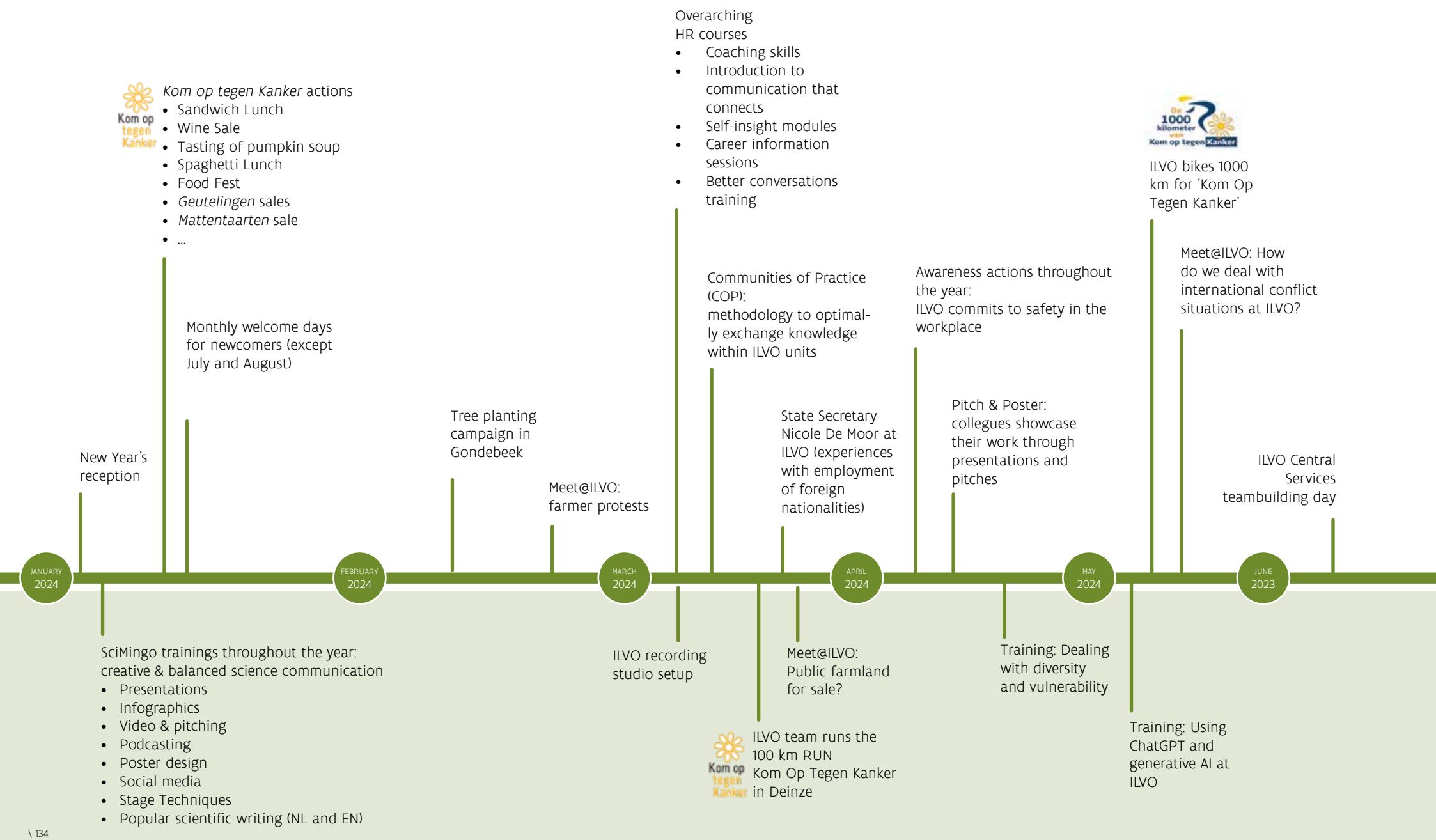
ILVO launched a quarterly climate newsletter for broad-based agriculture and horticulture in 2024. The newsletter compiles the latest results and initiatives from climate research, but also provides interpretation in the complex subject of climate research. The newsletter is an initiative of ILVO's Center of Expertise for Agriculture & Climate with the support of bank Crelan. In early 2024, ILVO and Crelan signed an agreement for structural support of this Center of Expertise. In addition to a climate newsletter, this collaboration has already resulted in the first annual climate seminar on November 7, 2024.

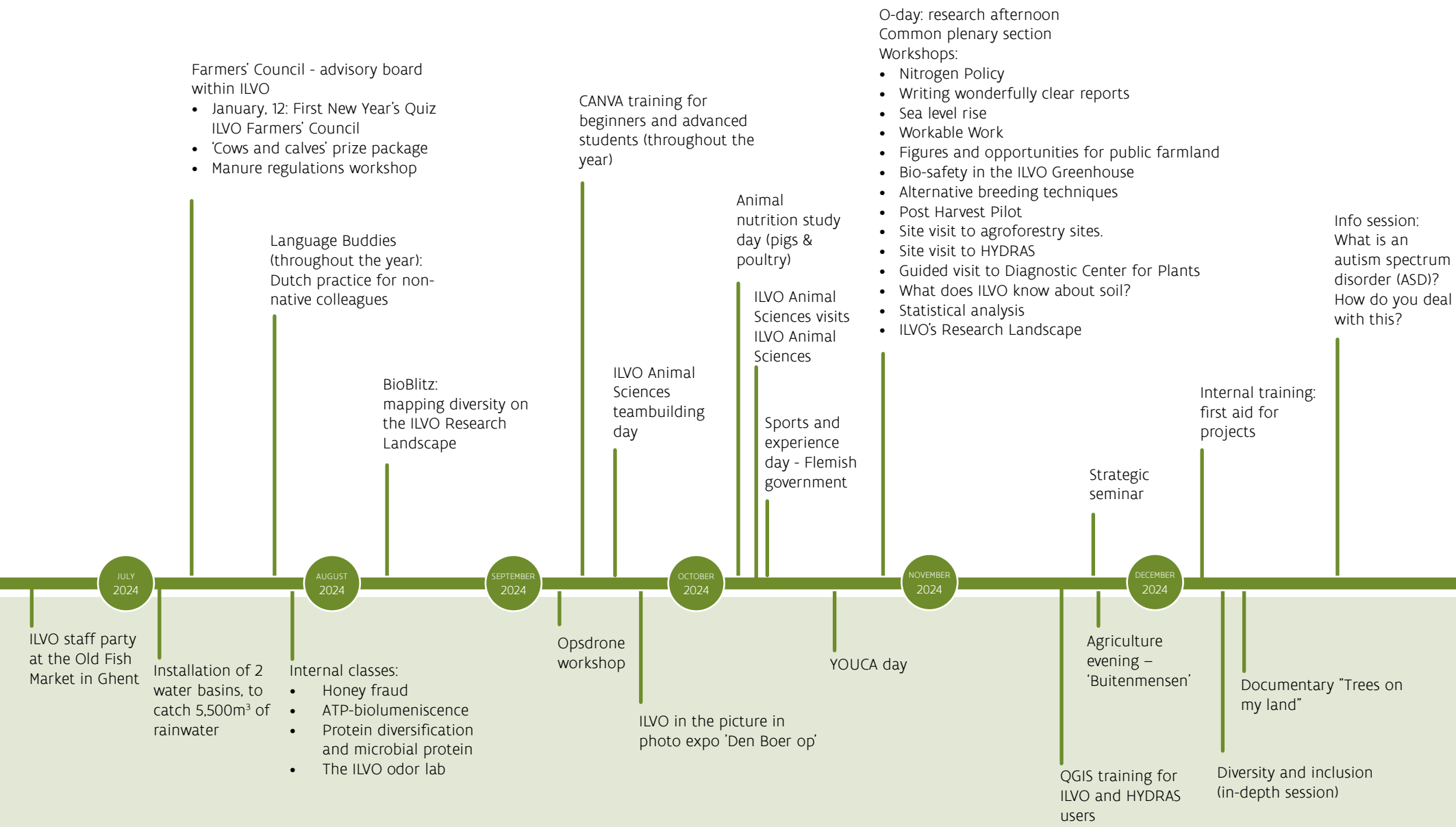
External events




JULY 2024
AUGUST 2024
SEPTEMBER 2024
OCTOBER 2024
NOVEMBER 2024
DECEMBER 2024
ENERGLIK: Technical Working Group Screens VII
Open Field Day Arable Farming and Innovative Crops
Demo day agro-ecological pilot platform
Marigold networking event with flower harvesting demonstration
Profitable cultivation of legumes (information meeting for farmers)
Demo Day: Yellow Pea Cultivation with Harvest Demo
What can you do as a farmer against flooding and drought?
Grassland study day
Workshop Legumes in the farm butchery
Tour de Boer (for poultry farmers)
Public agricultural land in Flanders and Brussels: figures and opportunities
Biomass hubs Essential links in the creation of local & peat-free potting soil
Workshop Opsdrone: drone sampling and creating task maps for agricultural applications
Kick-off "Farmer & Care"
ENERGLIK: Technical Working Group VIII
OVIS-symposium
Study day 'Food loss in healthcare'
ILVO study day animal nutrition
28th Conference on Food Microbiology (BSFM vzw/asbl)
Agroforestry Event "Farming with trees: the road to 2035"
Learning network ZoBio
Premiere of documentary "Trees on my land"
Symposium - Fisheries in motion: a new course
Knowledge afternoon 'Good agricultural practices for low nitrate nitrogen residues in potatoes and vegetables'
Young farmers: living soil - Webinar 'soil health through smart soil management'
ENERGLIK: technical working group screens IX
Workshop Cost of protein-rich crops
ILVO Climate Day: from seed to chicken cesar salad
Food Pioneers Accelerator kick-off!
First sustainable substrate day
Biochar event
EJP Soil final conference
Explore the journey to microbial protein marvels
ILVO participates in Science Day
Community event food chain
ILVO at INTERPOM
Protein festival for professionals
Final event OpsDrone
Seminar on colostrum and cleaning/ disinfection

Internal events




JULY 2024
AUGUST 2024
SEPTEMBER 2024
OCTOBER 2024
NOVEMBER 2024
DECEMBER 2024
ILVO staff party at the Old Fish Market in Ghent
Installation of 2 water basins, to catch 5,500m³ of rainwater
Farmers' Council - advisory board within ILVO
• January, 12: First New Year's Quiz ILVO Farmers' Council
• 'Cows and calves' prize package
• Manure regulations workshop
Internal classes:
• Honey fraud
• ATP-biolumeniscence
• Protein diversification and microbial protein
• The ILVO odor lab
Language Buddies (throughout the year): Dutch practice for non-native colleagues
BioBlitz: mapping diversity on the ILVO Research Landscape
Opsdrone workshop
CANVA training for beginners and advanced students (throughout the year)
ILVO Animal Sciences teambuilding day
ILVO in the picture in photo expo 'Den Boer op'
Animal nutrition study day (pigs & poultry)
ILVO Animal Sciences visits ILVO Animal Sciences
Sports and experience day - Flemish government
YOUCA day
O-day: research afternoon
Common plenary section
Workshops:
• Nitrogen Policy
• Writing wonderfully clear reports
• Sea level rise
• Workable Work
• Figures and opportunities for public farmland
• Bio-safety in the ILVO Greenhouse
• Alternative breeding techniques
• Post Harvest Pilot
• Site visit to agroforestry sites.
• Site visit to HYDRAS
• Guided visit to Diagnostic Center for Plants
• What does ILVO know about soil?
• Statistical analysis
• ILVO's Research Landscape
QGIS training for ILVO and HYDRAS users
Strategic seminar
Agriculture evening – 'Buitenmensen'
Internal training: first aid for projects
Diversity and inclusion (in-depth session)
Documentary "Trees on my land"
Info session: What is an autism spectrum disorder (ASD)? How do you deal with this?


Gentse Gronden
expo
Expo over Gentse landbouwgronden voedt debat over toekomst
Joris Relaes: "Tijdelijk moratorium op verkoop va landbouwgrond in publiek bezit is wenselijk"
Een betere prijs voor boeren, dat lukt niet zomaar
"Ook boeren zijn wat vervreemd van boerenstiel"
Rietzwenkgras: ideaal voor grazend jongvee
Hebben we onterecht de pest aan pesticiden?
Inktvis is meest aangevoerde vis
Gepoker over landbouwgrond dreigt nergens heen te leiden
«Oppassen of het is gedaan met Belgische kustvissers»
Meer geld, graag. En ook meer respect
Raadsels Noordzeetong nog niet doorgrond
Niet alleen de boeren, ook de vissers hebben zorgen
Wanneer ligt de kweekburger eindelijk in onze pan?
Zit er een luchtje aan het Vlaamse geurbeleid?
HOEVEKIP
BEPORK WELFARE
Weidemelk
Hoe dierenvriendelijk leefde het beest op uw bord?
Meerdere potentiële plaaggevoeligheidsgenen tegelijk aanpassen met Crispr-Cas
Artificiële intelligentie moet visvangst vergemakkelijken
Diervriendelijk konijnenvlees blijkt 'een broodje aap' te zijn
"Indicatoren op het vlak van dierenwelzijn zeggen niet alles"
Europa versnelt publieke en private ontwikkeling van betere peulvruchtenrassen
Hoe redden we de landbouw?
Gedrongen droogtetolerante sierplanten veredelen
Er is geen tong meer, er zijn amper nog garnalen. Is de Noordzee leeggevist?
100 euro voor een kilo garnalen, hoe kan dat?
Tuin, voetbalveld of bos: het kan allemaal op... landbouwgrond
'Vergroenen én met de hele wereld concurreren: dat valt niet te combineren'
"We moeten eerlijk zijn: landbouw heeft te lang naar de bodem gekeken als een levenloos substraat."

Op ILVO-stand (2111)

Dienstverlening aan boeren staat centraal

Onderzoek braadkippen

Welke dieren zijn niet geschikt om geladen te worden?

Duidelijke infofiches rond correct uitselecteren opgesteld in KIPVANG-project

Voed mee de discussie op Agridagen

Onderzoek

Monitoring in het slachthuis moet welzijn van leghennen optimaliseren

Start van de monitoring gepland in het najaar van 2024

Koop geen oesters voor valentijn, maar de iconische 'liefdesvis': "Hij is echt fijner van smaak en textuur"

Waarom zo'n verschil met Nederland?

Het meest geschikte ras mais of voederbiet kiezen?

Hoe de geest van de Europese boerenwoede uit de fles ging

Onderzoek

Rechtop vangen geeft enkele verbeteringen in dieren-welzijn maar doet het aantal manuren ook stijgen

Eindresultaten KIPVANG-studie voorgesteld aan sector

...gen essentiële oliën lijkt veelbelovend ...ingsstrategieën zijn belangrijke sleutels in een ...tofefficiënte melkveehouderij

Rietzwenkgras, ideaal voor grazend jongvee

Via precieze voeders ontstaan MINDER stalemissies. Nu nog de BORGINGSTOOL maken voor erkenning als FAS-maatregel

Achtergrondartikel

Project RAMBO

Maatregelen met potentieel voor ammoniakreductie in de varkensstal

SELECTIEPROCES

Voor onze boeren is het zonnetje nu écht cruciaal

Einde aan de grondhonger

Veel meer tong in Noordzee dan gedacht

Makkelijker werken met Routeplanner Melkvee

Op ILVO-proefbedrijf

Selectief droogzetten na kiemdetectie in de melk halveert antibioticagebruik

Onderzoek naar snelle kiemdetectie via dierenarts

'Ik denk dat meer mensen nu voor witte eieren kiezen omdat ze duurzamer zijn'

"Luister maar de stam van de jongeren, ze zijn de fraaiKomst!"

WIL JE MEER AMMONIAKREDUCERENDE TECHNIEKEN ONTDEKKEN

ROUTEPLANNER MELKVEE

OPROEP MELKVEEHOUDERS

Optispray-project

Performantie van driftreducerende spleetdoppen onderzocht

Zowel bij VPF als ILVO-testwerking

Kraamstalindex zorgt effectief voor betere prestaties in de kraamstal

ILVO maakt doorrekening

Een voedselbos kan rendabel zijn voor landbouwers

Geknipte planten voor morgen!

'Als we koeien minder laten boeren, heeft dat meteen impact op het klima

legevens helpen om visbestanden ol nauwkeuriger op te volgen»

GENTSE GRONDEN DIEPE WORTELS

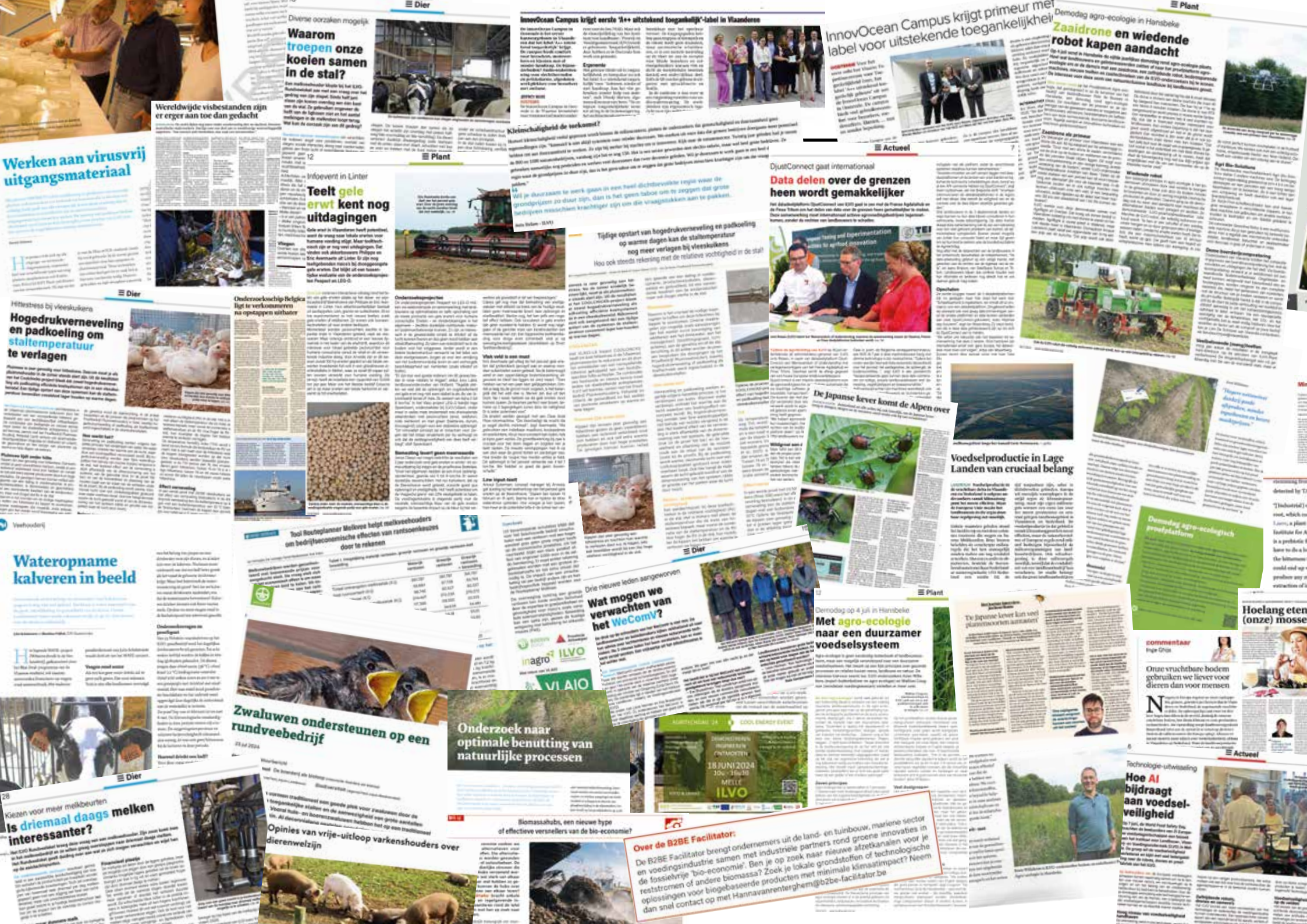
Landbouwgrond staat onder druk

Wie wordt regisseur in het debat over landbouw-gronden in publiek bezit?

TENTOONSTELLING GENTSE GRONDEN OVER GRONDBELEID EN -BEDT

'Voor landbouw ontbreekt een grondbeleid'

'I



Werken aan virusvrij uitgangsmateriaal
Wereldwijde visbestanden zijn er erger aan toe dan gedacht
Diverse oorzaken mogelijk
Waarom troepen onze koeien samen in de stal?
Infoevent in Linter
Teelt gele erwt kent nog uitdagingen
InnovOcean Campus krijgt eerste 'A++ uitstekend toegankelijk'-label in Vlaanderen
Kleinschaligheid de toekomst?
Tijdige opstart van hogedrukverneveling en padkoeling op warme dagen kan de stalltemperatuur nog meer verlagen bij vleeskuikens
Hoe ook steeds rekening met de relatieve vochtigheid in de stal!
InnovOcean Campus krijgt primeur met label voor uitstekende toegankelijkheid
Demodag agro-ecologie in Hamsbeke
Zaaidrone en wiedende robot kapen aandacht
DjustConnect gaat internationaal
Data delen over de grenzen heen wordt gemakkelijker
Hittestress bij vleeskuikens
Hogedrukverneveling en padkoeling om staltemperatuur te verlagen
Onderzoekschip Belgica ligt te verkoumeren na opstapjen uitbater
De Japanse kever komt de Alpen over
Voedselproductie in Lage Landen van cruciaal belang
Demodag agro-ecologisch proefplatform
Tool Routeplanner Melkvee helpt melkveehouders om bedrijfseconomische effecten van rantsoenkeuzes door te rekenen
Wateropname kalveren in beeld
Drie nieuwe leden aangeworven
Wat mogen we verwachten van het WeComV?
Demodag op 4 juli in Hamsbeke
Met agro-ecologie naar een duurzamer voedselsysteem
De Japanse kever kan veel plantensoorten aantasten
commentaar
Onze vruchtbare bodem gebruiken we liever voor dieren dan voor mensen
Hoelang eten (onze) mossen
Zwaluwen ondersteunen op een rundveebedrijf
Onderzoek naar optimale benutting van natuurlijke processen
18 JUNI 2024
MELLE
ILVO
Kiezen voor meer melkbeurten
Is driemaal daags melken interessanter?
Opinies van vrije-uitloop varkenshouders over dierenwelzijn
Biomassahubs, een nieuwe hype of effectieve versnellers van de bio-economie?
Over de B2BE Facilitator:
De B2BE Facilitator brengt ondernemers uit de land- en tuinbouw, mariene sector en voedingsindustrie samen met industriele partners rond groene innovaties in de fossielvrije 'bio-economie'. Ben je op zoek naar nieuwe afzetkanalen voor je reststromen of andere biomassa? Zoek je lokale grondstoffen of technologische oplossingen voor biogebaseerde producten met minimale klimaatimpact? Neem dan snel contact op met Hannavanrenterghem@b2be-facilitator.be
Technologie-uitwisseling
Hoe AI bijdraagt aan voedsel-veiligheid

Verbeterde onderstammen voor appelbomen

Bacterie helpt bij het creëren van de onderstammen van de toekomst

Besproei planten met vaccin en niet met pesticiden

Erfgoed in de landbouwsector herontdekt

Van wal steken met walnoten?

Spoelwater van de melkproductie zuiveren tot loosbaar water

Nieuwe kippenstal en Feed Pilot voor ILVO

Wetenschap sputtert nu de Belgica vastzit in juridisch pakjs

Overheden bezitten 53.000 ha landbouwgrond

MilkBE steunt Klimrek-klimaatscan

Garnalen worden luxekost

VITO en ILVO gaan nauwer samenwerken

Eerste kooldioxidemeting Vlaamse bodem: alle vormen van landgebruik nuttig voor koolstofopslag

Lokaal beleid publieke gronden is cruciaal voor land- en tuinbouw

Hoe de kerk de landbouw kan helpen

Gemeenten bepalen mee waar en hoe je boert

Dossier Bodem is de basis

Stap voor stap naar veenvrije substraten

Weersomstandigheden bepalen grotendeels het opbrengstpotentieel

'De volledig autonome landbouwmachine komt eraan'

Monitoring in slachthuis moet welzijn leghennen optimaliseren

Hoe veenvrij kunnen we al werken?

Planten-veredeling is meer dan NGT's

Overheden en publieke instellingen bezitten kwart van Limburgse gronden

Innovatieve landbouw

Staat er al rietzwenkgras en grasklaver op jouw graslanden?

Veldbonen: zelf gereeld eiwit voor rundvee

Notes

Notes

ILVO – Management

Burg. Van Gansberghelaan 92
9820 Merelbeke-Melle - Belgium
T +32 9 272 25 00

ilvo@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

Technology & Food Science

Brusselsesteenweg 370
9090 Merelbeke-Melle - Belgium
T +32 9 272 30 00

Burg. Van Gansberghelaan 115, bus 1
9820 Merelbeke-Melle - Belgium
T +32 9 272 28 00

tv@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

Animal Sciences

Burg. Van Gansberghelaan 119
9090 Merelbeke-Melle - Belgium
T +32 9 272 26 00

Jacobsenstraat 1
8400 Oostende - Belgium
T +32 59 56 98 75

dier@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

Social Sciences

Burg. Van Gansberghelaan 115, bus 2
9820 Merelbeke-Melle - Belgium
T +32 9 272 23 40

lm@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

Plant Sciences

Caritasstraat 39
9090 Merelbeke-Melle - Belgium
T +32 9 272 29 00

Burg. Van Gansberghelaan 96
9820 Merelbeke-Melle - Belgium
T +32 9 272 24 00

Burg. Van Gansberghelaan 109
9820 Merelbeke-Melle - Belgium
T +32 9 272 27 00

plant@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

ILVO
Flanders Research Institute for Agriculture, Fisheries and Food
Burg. Van Gansberghelaan 92
9820 Merelbeke-Melle - Belgium

T +32 9 272 25 00

ilvo@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be