Flanders
is agriculture and fisheries

Annual report 2017

ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

www.ilvo.vlaanderen.be

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Mission & Vision

ILVO's Mission
ILVO is an independent scientific research institution and service provider of the Government of Flanders. ILVO works collaboratively to promote sustainable agriculture, fisheries and agro-food production in Flanders, Belgium, Europe and the world.

ILVO's Vision
Working in a proactive, objective and ethical way, ILVO researches new and existing trajectories of optimisation and increased sustainability for the actors in agriculture, fisheries and the agro-food chain as well as for the broader rural environment.

In doing so, ILVO engages in dialogue with policymakers, its stakeholders, and society on a regular basis; this commitment is part of ILVO's intention to fulfil an exemplary role.
Read more: www.ilvo.vlaanderen.be
▷About-ILVO ▷Mission and vision

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Dear reader,

In 2017 we included "food" in our name, to do justice to the food research and service provision that has been developed here at ILVO and to underscore how much work we do from "field to fork". We now call ourselves Flanders Research Institute for Agriculture, Fisheries and Food.

This was the year where we looked back as well as forward.

Indeed, on September 7, we celebrated 85 years of agricultural research and plant breeding in a highly personal academic seminar in the presence of the Flemish Minister of Agriculture Joke Schauvliege. The seeds of what later became ILVO were sown in 1932 in Merelbeke/Melle with the start of a governmental crop breeding program.

In 2017 the 'ILVO Vision: to 2020 and beyond' was published after thoughtful internal discussion and consultation with various stakeholders. This vision text describes the spearheads of our future-oriented research. The foundation underlying of our way of working is systems thinking and 'tacit knowledge'. To achieve our vision, we use concrete instruments like technology platforms and living labs. We are also very proud that the Committee on Agriculture and Rural Affairs of the Flemish Parliament has devoted two sessions to the discussion of this vision of the future of agricultural and fisheries research.

ILVO also strives to be a values-driven organization. Through various personnel activities and a whole day dedicated to the ILVO Values, we have given form to the five values that we want to radiate and embody: working together, (striving to) be an example, having a proactive attitude, serious professionalism and realistic positivism. During the biennial "Sustainability Day" we put these values into practice on a large scale.

After the Flemish Climate Summit, the Government of Flanders requested ILVO to bundle all of their knowledge about agriculture and climate in our Knowledge Center for Agriculture and Climate (ELK). By hiring an Energy Coordinator and taking various energy-saving measures, ILVO is actively working on the action plan of the Flemish Government to reduce CO_2 emissions by 40% and reduce primary energy consumption by 27%.

In the marine research sector, the spotlight goes to our reinforced partnership with VLIZ, the Flemish Institute for the Sea. The blueprints for a new, shared building are starting to take shape. Secretary of State Philippe De Backer visited our facilities in Ostend to learn more about our activities regarding fisheries and marine production.

In short, 2017 was a fascinating year, which you will undoubtedly notice when you go through this annual report. I hereby thank all ILVO members who have committed heart and soul to realize these achievements.

Joris Relaes

Research and specialized service provision in 2017

Healthy crops, animals and soils to make healthy food

Socially-supported animal production

Profitable production systems and value creation Bio-economy

Bio-economy

Healthy food

Rural development in urbanized Flanders

Exploitation of maritime production

Climate mitigation and adaptation

Precise and innovative technology

Healthy crops, animals and soils to make healthy food

ILVO's research on plant health is mentioned by the European Commission as an example of relevant research

In 2017, the European Comission published an extensive report, 'Identification and response to new plant health risks'. ILVO's efforts as National Reference Laboratory of Plant Health are being seen and appreciated! ILVO has the task of supporting the sector and the governmental departments responsible for phyto-sanitary policy, with excellent research and diagnostics anchored in European and global networks.

ILVO's scientists are alert to preventing new threats, to the damage that the organisms can cause in our crops and public green, and to taking timely measures to limit the damage. Of course, diseases and pests on plants have an important economic impact. The threats evolve fast due to intensive global trade and an unpredictable climate.

RESEARCH

Zinc and intestinal health in broiler chickens

Zinc is an essential trace element that plays an important role in different biological processes in broiler chickens, such as bone formation, feathering, protein- and DNA synthesis, immunity, cell division and wound healing. It is therefore important to provide sufficient zinc in the feed, by providing enough bio-available zinc supplements.

In a 4-year research project, ILVO and Ghent University are unraveling the impact and the working mechanism of zinc on the intestines of broiler chickens. A first test already shows a positive effect of supplementation with zinc amino acid complexes on intestinal morphology and oxidative stress.

Antibiotics can be detected in pig saliva: easily collected using a rope

ILVO, on assignment from FEBEV (The Federation of Belgian Meat and the representative for slaughterhouses and butcheries), has developed a method to determine whether a pig has antibiotic residues in their saliva. That saliva is easily and quickly collected by hanging a rope made of natural fibers in the pen of mature pigs. The rope is then cut and analyzed. Saliva appears to be a very good indicator of antibiotic residues before slaughter. FEBEV representative Michael Gore: "Belgium is likely to be the first country in the world where a preventive ante-mortem antibiotic test will be used in the pork industry, in addition to the antibiotic monitoring of the FAVV and the slaughterhouse. We will be performing practical tests with a limited number of slaughterhouses to work on the best modus operandi."

Fattening pigs with 60% nitrogen efficiency

During a seminar for local pig farmers, extension workers and farm workers on 12 October, ILVO presented the results of empirical research performed at ILVO's experimental farm. Researchers presented detailed information about the optimal protein and amino acid composition of the pig feed. The goal is to continually improve the nitrogen balance of a pig farm. Insight into feed formulations also empowers the farmer when talking with the feed company.

Even the type of feed (pellets or mash) appears to have a significant influence on growth, performance and nutrient use. Pellets are more efficient, probably because spillage is reduced. The quantity of fine dust in the stable is –surprisingly, higher than with meal feeding. Feed conversion is the key to both the farm's efficiency and environmental impact. ILVO will explore the different influencing factors in the coming years. This seminar was organized together with the Pig Information Center.

Erosion reduction in vegetables and maize: GOMEROS continues to build on the convincing results from the first year of field experiments

How can erosion be prevented in maize and vegetables? How can run-off of water, sediment, nutrients and pesticides be prevented? The GOMEROS project, in collaboration with farmers, investigates which cultivation practices work best to reduce erosion without crop yield losses.

In 2017, ILVO, PCG and Inagro build on the 2016 observations. These field trials showed that breaking the interspace between the ridges of leek and Brussels endives with a tine, or building small ridges in this interspace to buffer run-off water, are effective ways to reduce sediment losses. In maize, non-inversion tillage and strip-till reduced the erosion by more than 80%. By breaking up maize plant lines, e.g., spreading the plants over the whole soil surface, erosion was reduced by 66%.

"With waste from the energy sector and fisheries, we can reduce the use of harmful pesticides."

The bacterial community around plant roots can be controlled to support strong growth and healthier plants

Adding biochar and chitin to the soil can steer the bacterial community around plant roots, according to the doctoral research of ILVO-Ghent University researcher Caroline De Tender. Using genomic techniques, she investigated the ability of these two soil additives to steer the microbial community towards microorganisms that promote growth as well as make the plant and its environment more disease-resistant. The results for biochar and chitin were convincing in the cultivation of strawberries and lettuce, respectively. Chitin appears to even suppress the survival of the Salmonella Enterica bacteria when it occurs on lettuce leaves. An infection with this bacteria can cause severe diarrhea in humans.

Caroline de Tender reached the final of the 'PhD Cup 2017' competition with her research.

HIGHLIGHTED

Jarinda Viaene wins Phytofar prize 2017 The Phytofar doctorate prize

2017 was awarded to the project "Optimal valorization of organic-biological waste flows from the primary sector with focus on composting" of Jarinda Viaene, with promotors Prof. Dr. Stefaan De Neve of Ghent University, and Dr. Bert Reuben and Dr. Bart Vandecasteele from ILVO. In the context of the GeNeSys-project, ILVO researched innovative valorizations of agricultural residual flows, such as vegetable crop residues, farm manure and green cuttings from nature management, via on-farm composting. This doctoral research first used surveys and interviews to investigate what is holding farmers back from composting; later research focused on solutions for these key points. In this way, more technical insight was gained into the processes, environmental impact and agricultural value of farm composting. Socio-economic resources were provided for farmers, policy makers and other stakeholders, with the final aim of stimulating the sustainable farming composting and application of qualitative compost in Flemish agriculture.

Moni-cow on Belgian TV

A new monitoring system for cattle is being tested. In the future, cattle farmers will be able to locate their cows in real time and track the health of their animals down to the smallest details.

http://kanaalz.knack.be/business-communities/z-innovatie-1-04-05-17/video-normal-848741.html

Four topics on organic agriculture and food showcased at BioXpo-Vitasana trade show in Brussels

During the BioXpo-Vitasana trade show in Brussels Expo on 15 and 16 October, ILVO showcased four organic agriculture research topics. Results on adapting cut-and-carry fertilizers as possible contributors to soil organic matter and the N-supplementing capacity of the soil were presented. In animal research, results on ensiling field beans and grains for optimal utilization of nutrients in organic laying hens were presented. Agroforestry was highlighted as a method to efficiently use agriculture parcels through combinations of vegetable crops with poultry. The advisory system KRATOS was highlighted by the Food Pilot (ILVO/Flanders FOOD).

Additionally, ILVO, as coordinator of the Network for Research for Organic Agriculture (NOBL in Dutch), joined CCBT and BBN to set up a knowledge center on organic production. ILVO also welcomed their Walloon colleagues from the CRA-W Gembloux.

NEW

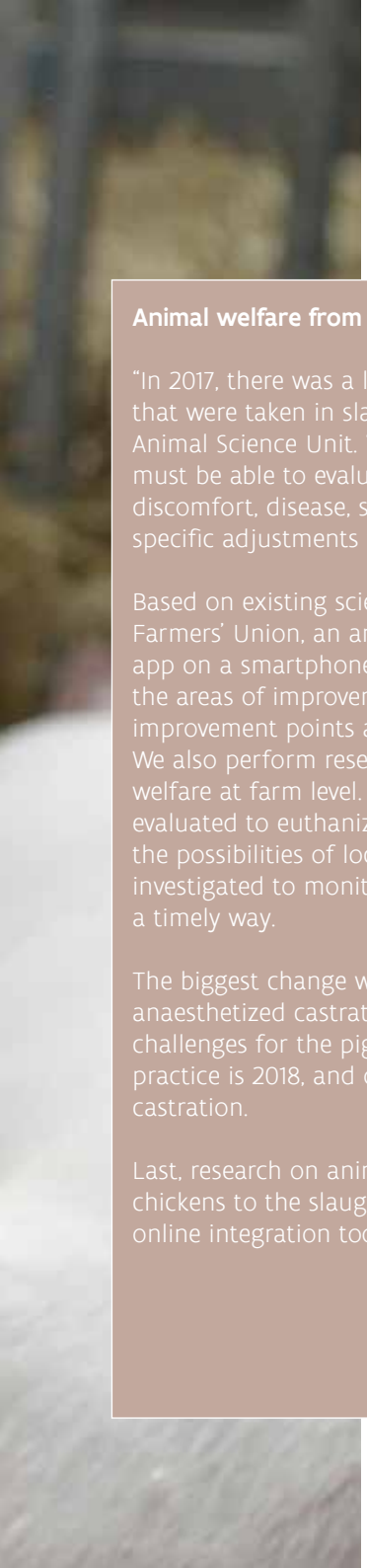
New services at ILVO: eliminating paraTBC in colostrum before giving it to the calf

Dairy cattle farmers can now treat colostrum (or first milk after birth) at ILVO to remove MAP bacteria (*Mycobacterium avium* subsp. *paratuberculosis*). Using a special centrifuging process, the bacteria are eliminated while keeping all of the essential nutrients for the calf. This new ILVO service is based on an extensive study on paratuberculosis. Animal Health Flanders and MCC Flanders work together under tight deadlines to transport the milk to and from the Food Pilot in Melle. MAP causes paratuberculosis in cattle, an incurable intestinal disease that can remain unnoticed for a long time; the calves often get infected via their first mother's milk.

The cost price for the treatment of colostrum at ILVO is € 7 per liter (excl. VAT), transport included by MCC Flanders and Animal Health Care Flanders (DGZ); without transport is 5€ per liter (excl. VAT). Quantity: Minimum 30 L colostrum, maximum 50L. The colostrum is treated within 15 working days and stored frozen in sterile 1L bottles.

Medicines in pig feed

Adding medicine to feed or water is one way to treat a group of pigs against infections or parasites. But is the medicine then distributed homogeneously? Does it stay stable? Does this practice lead to residues? In order to answer these and related questions, ILVO, UGent and GEMAFA started a research project on the homogeneity, stability and carry-over of some frequently used veterinary drugs. The final goal is to formulate concrete recommendations concerning good practices for group treatment of pigs.



Socially-supported animal production

Animal welfare from stable to slaughterhouse

"In 2017, there was a lot of media attention for animal welfare - think of the images that were taken in slaughterhouses and chicken farms", says Bart Sonck, head of the Animal Science Unit. "Abuses are unacceptable, that is clear. To counter them, we must be able to evaluate animal welfare, and we must detect signs of hunger, thirst, discomfort, disease, stress and abnormal behavior as soon as possible. Only then can specific adjustments to the outfitting of the stable, food and medication be applied.

Based on existing scientific knowledge, we are currently developing, together with the Farmers' Union, an animal welfare scan which can be carried out on-farm using an app on a smartphone. This self-scan will reveal the good points on the farm as well as the areas of improvement. Based on the report, several technical recommendations or improvement points are proposed in order to increase animal welfare on the farm. We also perform research into new techniques and technology to improve animal welfare at farm level. For poultry, different fast and painless techniques are being evaluated to euthanize sick or injured animals as required by law. Furthermore, the possibilities of locating systems (a kind of GPS) and accelerometers are being investigated to monitor the (abnormal) behavior of animals and to detect changes in a timely way.

The biggest change with regard to animal welfare is undoubtedly to stop non-anaesthetized castration of pigs. This improvement for the piglets does come with big challenges for the pig farmers and meat processors. The deadline for stopping this practice is 2018, and our researchers have been working intensively on alternatives to castration.

Last, research on animal welfare during the capture and transport of broiler chickens to the slaughterhouse led to a welfare evaluation protocol and an online integration tool to assess welfare in the pre-slaughter phase.

Bart Sonck
Unit Head

RESEARCH

Seminar 'Stopping piglet castration in 2018: how far are we?'

On May 19, 2017, approximately 150 stakeholders attended the seminar on 'Stopping piglet castration in 2018: how far are we?' The state of affairs within Europe and results from research on the detection of boar taint (at the slaughter line), the processing of carcasses with boar taint, the possible reduction strategies, the growth performances and carcass / meat quality of intact boars and immuno-castrates, the preference of the pig farmers, and the economic effects were explained. The summary brochure and handouts of the presentations can be found at

www.varkensloket.be/castratiestudiedag2017

"Misplaced" antibiotics in pig feed. Impact of cross-contamination of feed supplemented with antibiotics on bacterial resistance

The risk of cross-contamination of antibiotics is real. Feed can become contaminated at the feed mill, during transport or on the farm. The CrossContam study, performed by ILVO, Ghent University and CODA upon assignment by the Belgian Service for Public Health, Safety of the Food Chain and the Environment, studied the impact of low doses of antibiotics due to cross-contamiation on the bacterial resistance. During this study, stricter measures have been approved regarding production and administration of medicinal feeds.

Intensive livestock farming and the health of the local residents: analysis of the problems based on a scientific literature study

The province of West Flanders commissioned ILVO to analyze the possible health effects of intensive livestock farming on local residents. Based on a thorough literature study, it could be concluded that a substantial part of the theoretically possible negative effects of intensive livestock farming on the health of local residents are not substantiated by research results. Several topics require further research, as summarized below.

About one so-called 'health risk' related to endotoxins, the report suggests that it is currently scientifically not possible to define and enforce a safety standard. Endotoxins are components of bacteria that are released when the bacteria die. Endotoxins released in the stable can travel via the air into the environment. Particulate matter, both primary and secondary, continues to be the most well-known health risk. ILVO therefore advocates for further study about the possible negative effects on the human health of particulate matter combined with ammonia. The last persistent question relates to the 'slightly higher chance of pneumonia within the circle of 1 km around poultry and goat farms', which was found in the Dutch VGO research. This statistical correlation is described based on 7 years of medical dossiers of Dutch nationals who do or do not live in an intensive livestock farming area. The comparison area, where there were fewer cattle farms, showed other characteristics as well, such as the regional background concentration of fine dust. More studies and comparisons with other areas are needed to research any possible links with farm emissions.

http://www.vemis.info/

RESEARCH

Fast and reliable index for dairy cow welfare could lead to a quality label for animal-friendly milk

This new welfare index could lead to a quality label for animal-friendly milk. The study showed that there is a market for animal-friendly milk: in a survey of more than 750 Flemish consumers, 32% said they would pay more for milk from "animal-friendly" farms. In contrast, 28% said this was not important, suggesting that a graduated quality label (such as a different level of stars for better or worse animal welfare) may be the best approach. Most consumers reported that access to pasture and absence of disease were the most important animal welfare factors.

Comparison of two milk replacers on the health and performances of double-muscled Belgian Blue calves

An ILVO trial with Belgian Blue calves demonstrated that milk replacer based on whey protein concentrate can be a good, and cheaper, alternative for milk replacer containing 50% skimmed milk powder.

Animal performances of SMP and WPC calves were comparable. On the condition that both milk replacers are equal in energy and protein content, milk replacer based on whey protein concentrate can be a cheaper alternative for milk replacer with 50% skimmed milk powder. On the basis of a milk replacer use per calf of approximately 50 kg to weaning, and considering current market prices, a saving of about 10% of milk replacer costs can be realized when using whey protein milk replacer.

Broiler chicken welfare before slaughter: Monitoring protocol and online integration tool now available

ILVO has developed a pre-slaughter welfare monitoring protocol based on research on the welfare of broiler chickens during their last day of life.
Performing the welfare assessment could take about 30-60 minutes per transported flock. Recorded prevalences of welfare problems can be transformed into measure scores and an overall integrated welfare score. Both calculations can be done on the ILVO website using the newly developed tool. This online tool is available in three languages (Dutch, French and English), to foster application in practice.

Thanks to these developments, pre-slaughter broiler chicken welfare can now be efficiently and structurally assessed.

From 360 to 500 eggs per hen?

Layers can keep laying eggs much longer – given the right feed, management and choice of genetics. Split feeding, where older hens get the right combination of fine and coarse limestone at certain times of day, can combat a decline in eggshell quality. "The egg production per hen can be increased by up to 40%, but egg farmers must be able to transition to split feeding," says researcher Anikó Molnár, who dedicated her PhD to this subject. Another important result: white hens do better in a longer production cycle than brown hens.

HIGHLIGHTED

Biosafety on pig farms

Through several short films, ILVO, the Pig Information Center, and Flanders Department of Agriculture and Fisheries present advice on how to minimize the introduction of pathogens into the farm (external biosafety) and to limit the spread of pathogens on farm (internal biosafety).

Learning to handle pigs

The pig handling practices seen on the undercover footage in a slaughterhouse are at odds with the good practices being taught in the Melle Pig Campus, as one reporter from the TV program 'Terzake' learned. The Pig Campus is a collective training and research center of ILVO, Ghent University and University College Ghent. There, researchers demonstrate and film how to move pigs without disrupting the calm in the group. Veterinarian Sarah de Smet, head of the Pig Information Center, explains that enough light and narrow enough corridors help to keep the animals calm. The high slaughter rhythm leads her to emphasize the need for employee training and full knowledge of the facts. Slaughterhouse employees can take a training at the Pig Campus.

http://deredactie.be/cm/vrtnieuws/videozone/programmas/terzake/2.49341

Farm Manager Pig campus

Alternatives to piglet castration

http://www.plattelandstv.be/video/vork-de-steel-alternatieven-voor-biggencastratie

Researcher ILVO

NEW

Meat production and nature management are looking for a win-win situation in the *Kalkense Meersen*

Can farmers remain active in nature areas, without jeopardizing the goals of nature? The operational group AgroMEATsNature is looking for a win-win situation for both nature and agriculture under the form of extensive meat production. The *Kalkense Meersen* were chosen as a case study.

Chickens in the trees? Sustainable combination of woody vegetation and free-range bio poultry areas

The ongoing research on growing short rotation coppice in free-range areas for poultry takes on a new dimension in the LegComBio project. In this project, ILVO and the Province of Flemish Brabant (Proefcentrum Pamel) investigate how the same agricultural field can be used more efficiently and sustainably through well-considered combinations of woody vegetation and free-range areas for (organic) poultry.
Previous doctoral research showed that the combination of broiler chickens and a short free-range wood area is a success story. The plantation, in this case willow, provides better shelter than, for example, wooden shelters, resulting in better use of the entire free-range area. The chickens get more space and movement, which leads to a more yellow, more tender and less fibrous meat.

Moreover, the production of short free-range wood areas can mean an additional source of income for the poultry farmer. To monitor the use of the free-range chickens, an automatic location tracking system was developed for the chickens.

Euthanization of sick and weak poultry: which methods exist, and which is the best?

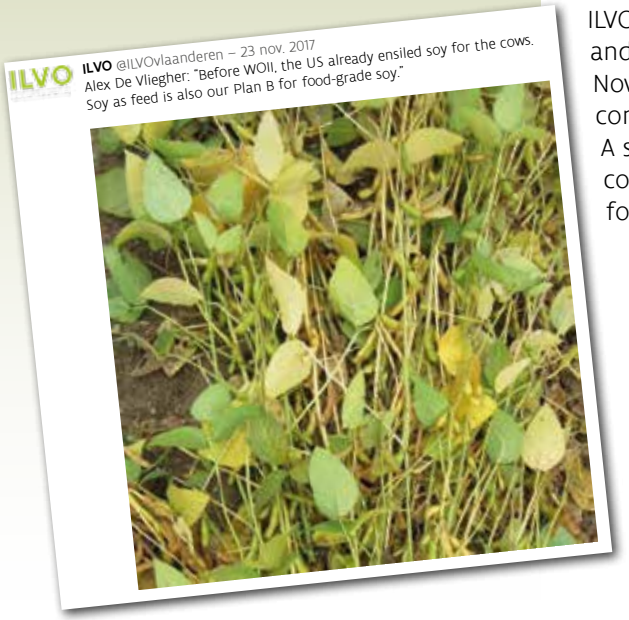
What is the most animal-friendly and most feasible method to eliminate sick and weakened animals from chicken or turkey houses? That is the main question within this ILVO – Ghent University research project. The researchers start with a large scale survey of veterinarians and poultry farmers.

Profitable production systems and value creation

New subsidy for Flemish on-farm food processors seeking technical guidance and advice

Joke Schauvliege, Flemish Minister of Agriculture, launched a new form of subsidy on 16 March 2017, the "KRATOS innovation support for on-farm food processors". Since then, on-farm food processors can enjoy this support worth up to € 1,500 for guidance in the development of a new recipe, improving a processing process or product, processing residual flows, solving a problem, etc. ILVO's Food Pilot was granted the KRATOS public contract and will now deliver the requested guidance and/or advice to the on-farm processors.

RESEARCH

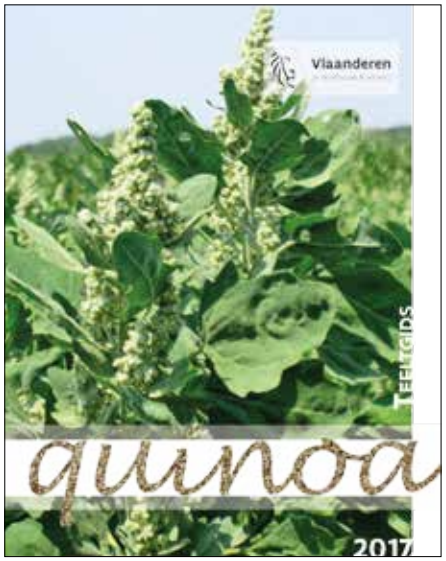


Soy can become the sixth most important arable crop in Flanders

ILVO released new results about technical cultivation and agro-economic research around soy in Flanders in November 2017. In the previous season 30 hectares of commercial soy were already planted and harvested. A satisfying result, say the involved companies. They confirm the acceptability of the planned growth path for soy in Flanders in the coming seasons.

Is soy an economically interesting crop for Flemish farmers?

In the context of VLAIO-LA trajectory 'Introduction of soy cultivation in Flanders', researchers studied whether incorporating soy in the Flemish cultivation plan is economically feasible. The focus laid on the cultivation of soy in function of the valorization of the dry beans for both human and animal food. The results indicate that, with a production of 3 tons per ha and a price of € 500 per ton, soy can be interesting but only for a fairly limited number of farmers. Grain crops will be the first to make room for soy. If soy production per ha can be increased, more farms would see an economic benefit from growing soy.



Quinoa: from plant to plate?

Extraordinary nutritional properties? Happy on Belgian soil? More recipes containing quinoa? On 8 June, ILVO held a much-appreciated seminar on the future of quinoa cultivation and ways to market and process it. A cultivation guide has also been published that bundles technical experiences gained via the "quinoa platform". This platform was founded by ILVO in 2014, together with Inagro (organic cultivation), PCG (screening of herbicides), Experimental Center Herent (demo varieties) and the Department of Agriculture and Fisheries (demo varieties in Paulatem). University College Ghent (screening herbicides, varieties) joined the group in 2016. The partners have already tested quite a few available quinoa varieties in both conventional and organic agriculture.

European study confirms initial Flemish research results: half the antibiotics on pig farms without any financial risk

Antibiotic use in pig farms can be cut in half without sacrificing productivity or economic results, according to a study on French, German, Swedish and Belgium closed pig farms that received targeted coaching. These results are from an economic study where ILVO and Ghent University worked together based on results of the European research project MINAPIG. The details were recently published in the scientific journal *Preventive Veterinary Medicine*. Dr. Erwin Wauters (ILVO): "If you replace antibiotic use with measures such as targeted vaccinations and better biosafety, then you can reduce the use of antibiotics by an average of 47%, while still achieving an additional value of 4,46€ per sow. These results confirm the results from our first study in 50 Flemish pig farms. There, we showed that you could also earn around 2,67€ more per delivered fattened pig with approximately half the antibiotics, based on coaching and a farm-specific intervention package."

Optimal delivery of fattening pigs: aim for the desired weight range of your slaughterhouse

The desired weight range of a pig carcass in the slaughterhouse is best meticulously approached by the pig farmer wanting to reach a higher economic efficiency, according to Frederik Leen's doctoral research on optimal slaughter weight. The buyer of pig carcasses pays a better -maximum- price, within the desired weight range. If practically feasible for the pig farmer, it makes economic sense to bring the faster growing pigs to the slaughterhouse sooner and to leave the lighter pigs. But making a selection more than twice is not recommended because it does not compensate for the extra labor required. It is therefore possibly more profitable to deliver the (last) lightest pigs before they reach the weight range with maximum pay-out, because their slow growth would hold up the next production cycle too long.

HIGHLIGHTED

85 years of plant breeding at ILVO

In September 2017, ILVO celebrated 85 years of plant breeding with a proud retrospective and the announcement of future plans. ILVO's plant breeders have already created 250 new plant varieties, 124 of which are sold by 35 companies across the globe. New research themes include drought resistant crops such as sorghum, resistance against fungal infections in boxwood, multiple plague resistance in potatoes, early ripening soy with a high protein content, and the development of local quinoa cultivation.

Fodder beet demo of harvesting and ensiling

Since the European Common Agricultural Policy introduced a third crop into the cultivation system, the fodder beet cultivation has seen a renewed and steady advance. However, there are still some key points at play, mainly around the mechanization and storage of the beets. The PWO project Feedbeet looked for possibilities to address these keypoints and presented them on 18 october 2017 to the general public. There were questions answered such as "Is it possible to keep beets longer by piling them?" and "Does mechanization exist that can handle a sufficiently large capacity for cleaning and cutting beets for ensiling?" The process of harvesting, cleaning, cutting and ensiling of beets in a mixing pit was demonstrated at two locations.

ILVO named coordinator of the independent testing for boars in Flanders pig farming

At the end of 2017, the pig and pork organizations reached an agreement about independent testing for Belgian boars. The General Farmers Union (ABS), the Farmers Union (BB), the Federation for Belgian Meat (FEBEV) and the Interprofessional Union for Belgian Meat (IVB) all signed an interprofessional agreement where ILVO has been assigned the coordinator role in the testing. The goal of the four partners is that the sow and meat pig farmers can make an objective evaluation of the genetics that are best for their farm, based on the performances of the offspring and the tested boars. The first results will be published starting this spring at http://testwerking.ilvo.be.

NEW

StressChron lab

In the Greenbridge incubator building in Ostend, the research group Stress Physiology (StressChron) of Ghent University and ILVO has bring completely new laboratory facilities into use. The modern laboratories for biochemical, mass spectrometric, morphometric and molecular determinations are fully

based on working in accordance with ISO / IEC 17025 and 5S. Using ultra-high performance liquid chromatography coupled with tandem mass spectrometry (UPLC-MS / MS), stress hormones in fish are quantified by examining their scales. This allows a reconstruction of the severity and the timelines of the stress as the animal has experienced. This innovative and patented model forms the basis for fundamental and applied research within the research group.

Development of rhododendrons for non-acidic soils

Why do rhododendrons like an acidic soil? How can you test plants for a higher pH tolerance? As partner in the RHODOLIME project, ILVO paves the way for a more efficient, faster breeding of rhododendron. The market for rhododendrons could expand considerably if cultivars can be developed for good growth in less acidic soils.

NEW

PROTECOW project joins France and Belgium to provide international feed economic advice for dairy farmers

Inagro, ILVO, the Walloon research center CRA-W, and two French agricultural centers start a 4-year project around cost-benefit efficient feeding of dairy cattle. The profitability of the dairy farms is a big concern in times of fluctuating milk prices. One of the possible ways to guarantee profitability is to improve feed efficiency. Because cattle feed is nearly 70% of a farm's costs, feed provides the most important leverage for reducing costs. With EU funds in the Interreg V program, 5 organizations that all specialize in technical and economic advice or who provide research and development join together in this unique French-Belgian project. The aim of PROTECOW is to help dairy farmers in the border region to improve their technical and economic results. In "protecow" you can see the words "protein", "economic-ecological" and "cow".

NEW

Flemish agroforestry expertise now linked with European Agroforestry Innovation Networks (AFINET)

ILVO and Inagro now participate in the European Thematic Network called AFINET, bringing their expertise on agroforestry to a knowledge cluster of 13 partners from 9 countries or regions (Spain, the UK, Belgium, Portugal, Poland, Hungary, Italy, France and Finland). AFINET is funded by the H2020 program of the European Commission for total of € 2M. Each participating country chooses a research focus of regional importance. In Flanders we have chosen to continue our work on various types of agroforestry with fruit and nut trees. ILVO and Inagro coordinate the Flemish Regional Network (RAIN), taking care of the relationships within the regional network and ensuring knowledge exchange with the other project partners.

Reducing feed conversion ratio in Flemish pigs

The greatest cost of producing finisher pigs is feed, representing an average of 50-70% of the total finishing cost. Pig farmers therefore strive to produce as many units of pork as possible while using the least amount of feed. This ratio becomes even more important when feed prices rise. ILVO and Ghent University have recently launched a research project to try to reduce the feed conversion ratio in finisher pigs, i.e. the number of kilograms of feed required to gain one kilogram of bodyweight.

Better taste and quality of Flemish pork

What is the effect of terminal sire line and time of immunocastration vaccinations on meat quality? Is it possible to develop a fast detection method for objectively measuring meat quality? What are the needs and demands of the stakeholders of the pork industry concerning taste and/or meat quality? In this long-term research project, ILVO and Ghent University will attempt to answer these pertinent questions. The final goal: to increase the tastiness and technological meat quality of pork currently available in Flanders.

Bio-economy

RESEARCH

How can we accelerate the transition from a fossil economy to a bio-economy?

"The bio-economy is to the 21st century what the fossil economy was for the 20th century." That was the message in 2001, but 15 years later the bio-economy is still underdeveloped. "To realize the transition to a bio-economy, we will have to work on it from all possible angles," says ILVO-Gent University researcher Jonas Van Lancker. Policymakers will need to encourage that more sustainable economy even more, research institutes will have to organize themselves differently to maximize the reach of their knowledge and ensure its application, businesses will need to work together across industries, and consumers will need to become more aware of the advantages.

Van Lancker has developed insights and recommendations on how to tackle the transition to a bio-economy and how to accelerate the process. First he developed a BioID model that collects recommendations around innovation management in the bio-economy. In addition, he introduces the new concept "Organizational Innovation System", which can be used as a guidance model for the development and analysis of innovation projects.

A value chain for maize straw in the bio-economy: why Flanders cannot (yet) do what Canada can

In Flanders, 120,000 tons of maize straw can theoretically be taken from the field each year as a raw material for the bio-economy. But who will organize that? And is that possible at all? According to ILVO-UGent doctoral researcher Anouk Mertens, a value chain for Flemish maize straw in the bio-economy is a viable card, despite the unstable offer. But the possible expansion will require focus, flexibility, organization and targeted financing. A value chain around Flemish maize straw can already be inspire with the success of Canadian farmers and processors. They produce sugars from corn and wheat straw.

Cold tolerant miscanthus delivers more biomass

Some miscanthus genotypes can handle cold weather in spring. This delivers a longer growing season and potentially more biomass, according to a study done by ILVO and Ghent University.

Researcher Simon Fonteyne has been testing which genotypes can handle spring cold snaps, with an eye on future breeding efforts for miscanthus that can be sown on the many marginal areas in eastern and northern Europe.

Why and how miscanthus straw contributes to sustainable substrates, explained in a 3-min video

ILVO has investigated the use of plant fibers, biochar, chitin and compost in sustainable substrates. In het MIP-project 'I-Love-T: inoculation of local plant fibers for the production of sustainable substrates', we studied whether peat can partially be replaced by extruded miscanthus straw that is pre-colonized with biocontrol fungi.

The proof-of-concept trial was done in strawberry cultivation. The biocontrol fungi helped make the strawberry fruits less susceptible to diseases, thus reducing the need for chemical control products. Watch the video here.
https://www.youtube.com/watch?v=fCiJ_20c8FQ

HIGHLIGHTED

Alternative crops in the spotlight during a seminar and ILVO's Open Field Day

On March 16, 2017, during the Alternative Cultivation and Energy Field Seminar, five alternative crops for Flanders from ILVO's farm were presented: quinoa, miscanthus, sorghum, energy maize, and short-rotation coppice. In September at ILVO's Open Field Day, demonstrations of alternative crops such as sorghum, marigold, quinoa and the 'rubber dandelion' received a lot of attention.

NEW

"Boosting" the bio-economy: The EU horticultural sector as a core bio-based economic activity

As a partner in the BioBoost project ILVO will investigate how to stimulate the development of a bio-based economy in horticulture. Key questions are: "Which available residues in greenhouse horticulture can be better valorized?", "What is technically possible in light of the newest technologies and scientific insights?" and "Is it also economically feasible to implement newly built food chains on a business scale?"

Interreg 2 Seas Mers Zeeën

Growing a Green Future

Ten Flemish and Dutch partners including ILVO, started the Interreg project 'Growing a Green Future' on 15 June. The aim of the project is to contribute to the transition from an economy that runs on fossil fuels to an economy with biomass as a raw material. The goal is to make fibers, oils, and other components in biomass (agricultural crops) that can be used, among others, for biocides, pharmaceuticals, painting or building materials.

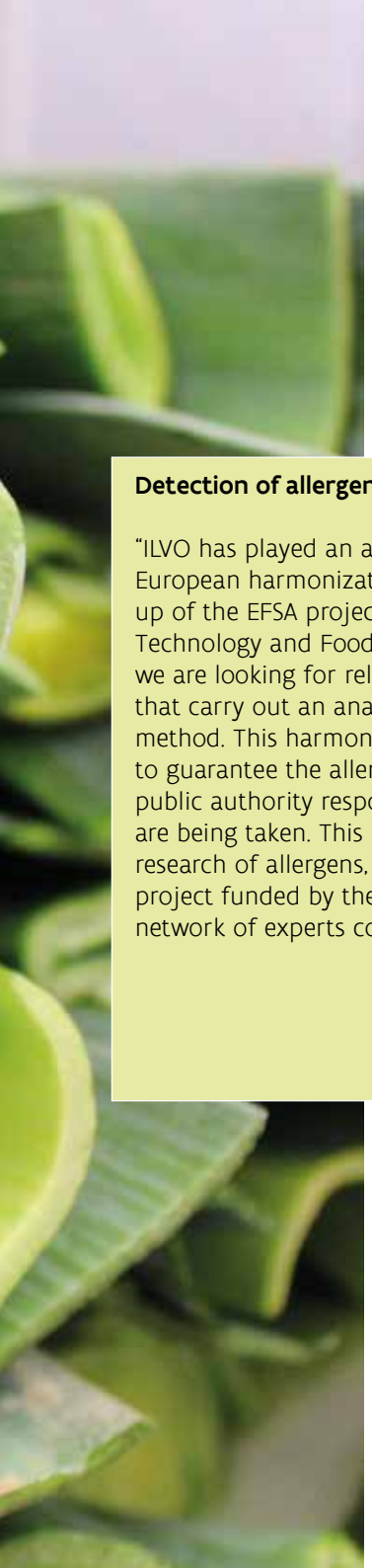
This can lead to less use of fossil-based raw materials. New chain opportunities are inventoried, researched and supported before marketing. ILVO provides field trials and cultivation demonstrations of newer crops such as marigold. ILVO also focuses specifically on the processing problems of aromatic and high-quality oils in food and non-food industry.

New research projects on biomass valorization of Belgian Endive roots and chicory

Bitter compounds or "sesquiterpen lactones" are bio-active compounds that can be used in the food, medical, chemical and pharmaceutical industries for many different applications, according to previous ILVO research. The next step is to identify the compounds and to find the best method to efficiently extract them from vegetable biomass (read: roots of Belgian endive plants). ILVO is planning to work closely with the sector to realize these goals.

Also within the CICHOPT project (ERA-net FACCE SURPLUS) Belgian endive and its close relatives (cichorei, andijvie, radicchio rosso) are the focus of the research. Within this project, emphasis is on the development of a biorefinery towards valorisation of derived fractions in the food and drink sector, bioplastics and cosmetics. To realize this goal the EU consortium will make use of the most advanced 'omic' technologies, biorefinery processes and product development driven by functionality and bio-activity of the fractions.

CichOpt Biorefinery



Healthy food

Detection of allergens: European harmonization

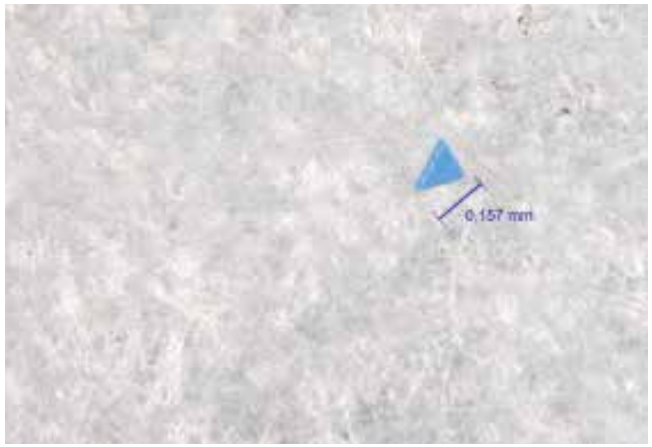
"ILVO has played an active role, in our role as National Reference Laboratory, in European harmonization of allergen detection. One first result of this is the start-up of the EFSA project on allergen detection", says Lieve Herman, Head of the Technology and Food Science Unit. "Harmonization in allergen detection means that we are looking for reliable and repeatable measuring techniques. That way, all labs that carry out an analysis can also report the same result when applying the same method. This harmonization, both in measurement and in interpretation, is essential to guarantee the allergic consumer that the information on the label is correct. The public authority responsible for quality control can be sure that the correct measures are being taken. This also provides legal certainty for the producer." In the context of research of allergens, ILVO and VIB/University of Ghent work together with CER in a project funded by the Belgian Public Health service. ILVO forms part of the European network of experts coordinated by EU-JRC.

Lieve Herman
Technology & Food Science Unit Head

RESEARCH

Components from apple extend meat shelf life

Components from apple (peel) can possibly inhibit meat decay due to protein oxidation according to research of the ILVO-Ghent University scientist Tine Rysman. Processed fresh and cooked meat products last longer and retain their nutritional value and digestibility better when certain antioxidants from apple are added. The lab tests of Rysman with the (apple) polyphenol epicatechine and with the full apple peel extract are very promising but further research is needed. The interactions between the meat proteins and the vegetal antioxidants appear to be quite complex. The research fits into two major food trends: reducing food waste and increasing shelf life, and using natural vegetable resources as functional additive for meat with the desired technical or health promoting effects.



Microplastics in sea salt

Sea salt, particularly artisan gourmet sea salt produced in the Mediterranean Sea, can contain tiny pieces of plastic. A study of the Belgian Agency for Public Health, Safety of the Food Chain and the Environment, together with ILVO, revealed this new information. The presence of microplastics in food is rather new and therefore no guidelines exist for safe amounts of microplastics.

Standard sea salt from the store shelves has few microplastics, as it is thoroughly washed and purified. The more artisanal sea salt such as “fleur de sel” was shown to contain microplastics ranging from hardly any to rather high values. Presumably, the local level of plastic pollution plays a role; the Mediterranean Sea has more plastic waste and the samples with that origin also scored worst for microplastics.

Nicotine in cultivated mushrooms

In the past years, nicotine was occasionally detected in cultivated mushrooms (*Agaricus bisporus*) under certain circumstances, yet it was unclear where this nicotine is coming from. Does it originate from contaminated growth substrate? Or is it possible that the mushrooms can produce nicotine themselves? To answer these questions, ILVO studied this topic in collaboration with INAGRO within the FOD project NICOTIMUS. In addition to investigating and inventorying the possible sources of nicotine contamination during mushroom cultivation by INAGRO, ILVO optimized a novel analytical method for the determination of nicotine (and its precursors) in mushrooms. This method was used to investigate the possible presence of nicotine and its precursors in mushrooms that were cultivated, treated and stored according to common practice. The results indicated that mushrooms were not capable of producing nicotine themselves, which was confirmed by means of an in *silico* analysis of the genome (DNA) of *Agaricus bisporus*. Furthermore, by utilising nicotine-enriched growth substrate it was shown that the substrates are not the cause of nicotine in mushrooms.

In general, the project indicated that, seen that nicotine is present on the hands of smokers, there is a risk of nicotine contamination from smoke residues on harvested fruiting bodies or contamination during analysis in the lab.

Safe, beautiful pink and perfectly cooked shrimp, thanks to an optimized cooking process

"Shrimp should not be boiled, but rather heated to between 80-90 °C. This results in better color, texture and production, while the stability and safety of the product is guaranteed," says Thomas Verhaeghe based on his doctoral research. He took a close look at the parameters of the cooking process and looked for combinations of heating time, heating temperature and salt content that lead to an optimal color, texture and stability of the cooked brown shrimp. His findings can now be applied by shrimp fishermen, processors and equipment manufacturers.

HIGHLIGHTED

ILVO @ bio-techdag 2017

The VIB (Flemish Institute of Biotechnology) bio-tech day, this year in Ghent, was a great success. More than 4000 visitors learned to know the Flemish bio-tech sector through diverse activities, more specifically about bio-tech in relation to food. The public could get acquainted with ILVO research on allergens, the upgrading of residual flows, climate friendly milk, genomics, sustainable cultivation substrates and authenticity provisions of fishery products.

Voor hetzelfde geld - één

Wim Reybroeck is the expert on fraudulent honey.

https://www.een.be/voor-hetzelfde-geld/gesjoemel-met-honing

Scientific Researcher ILVO

Vegetal waste streams – PlattelandsTV

"Waste streams resulting from the processing and production of vegetables and fruit are qualitative raw material, but that still does not get directed into the food chain. In the Food Pilot, we are looking for high-value applications", says Bart Van Droogenbroeck on PlattelandsTv

http://www.plattelandstv.be/video/departement-landbouw-en-visserij-agriflanders

Department Agriculture and Fisheries

Researcher ILVO

NEW

Is the tabletop sticky or not? Influencing the adhesive behavior of stainless steel through chemical and physical surface treatments for the prevention or cure of fouling and biofilms

Surface contamination and the formation of biofilms on stainless steel play an important role in food shelf life and production costs. The aim of the CLEANSURFACE project, where ILVO partners with UGent, KU Leuven, SIRRIS, Flander's FOOD and a consortium of food processors, is to investigate the efficacy of surface treatments, innovative coatings and improved cleaning and disinfection methods.

Hygiene in institutional food service

Hygiene controls in institutional kitchens are important part for preventing food contamination. Classical microbiology is not always sufficient to completely characterize the bacterial flora present. The Belgian Federal Agency for the Safety of the Food Chain (FASFC) has assigned ILVO and the University of Liège (Ulg) the task of conducting research into the added value of metagenomic analysis in hygiene controls.

NEW

For an extraordinary piece of beef on your plate, try 'dry aged meat'

A real delicacy, traditionally prepared. The meat has become more tender and tastier thanks to maturation. Exactly this traditional aspect requires more scientific support, especially when taking into account the increasing popularity of dry-aged beef. In a European project called OPTIDRYBEEF, ILVO, Flanders' FOOD, Ghent University, and KU Leuven Technology Campus Ghent all participate in experiments on drying of meat to eventually draw up guidelines for the producers. The TV show *PlattelandsPret* shows that this is something to watch out for!

http://www.plattelandspret.be/gerijpt-vlees/

Project manager of ILVO's meat research

Residues in meat

The range of detectable veterinary medicines has gotten a boost: more than 150 different compounds can be detected in meat by means of liquid chromatography coupled to mass spectrometry. These concern substances such as antibiotics, anti-inflammatory agents, anthelmintics, growth promoters, etc. This enables ILVO to provide customers with information about the safety of their food products and compliance with European legislation.

NEW

Food for special interest groups in restaurants?

Less sugar, less salt, low-fat, gluten-free, easy to swallow, without any allergens...re-inventing or adjusting recipes and food prep for target groups is an important evolution in the food industry. But how can this be translated to restaurants and hotels, while still respecting culinary tradition? Partners from the INNOCHEF project organize workshops about product innovation, aiming for even higher achievements in the professional kitchen.

From new technology to customized, balanced food

The goal of the new project FOODINNOTECH is to support companies to produce customized, balanced food for specific groups, in an energy-efficient and profitable way. Targeted foods has specific requirements in terms of nutritional value, taste and texture, and therefore technological innovations are needed. Within this project, ILVO will enable knowledge knowledge and the diffusion of innovative technologies to existing companies.

Rural development in urbanized Flanders

Open space: the elephant in the living room

"Open space in the Flemish countryside is still under intense pressure, which has become painfully clear in 2017", says Elke Rogge, scientific director within the Social Sciences Unit. "Flanders is urbanizing at a growing rate. Our research group has been closely monitoring the relationship between agriculture (space) and society for many years.

The annual figure of a reduction in open space of more than 2000 ha per year is high. Mostly, the functions of housing, industry, public utilities, roads and recreation are consuming open space. In our figures, we see that the pressure on agriculture is increasing every year from many perspectives at the same time." In order to convert the creeping changes into conscious area-oriented processes, an extensive toolbox has been developed by ILVO, the 'IMAGO toolbox'. ILVO worked on this toolbox together with VLM, Ghent University, and the provinces of Antwerp and West Flanders. On 19 December 2017, the tool was officially presented to local policy makers, agricultural and nature organizations, and other interested parties. Several project coordinators and provinces will work with this toolbox in their policy projects. More and more actors are realizing that real work has to be done to preserve the remaining open space and to keep production space that is necessary for agriculture.

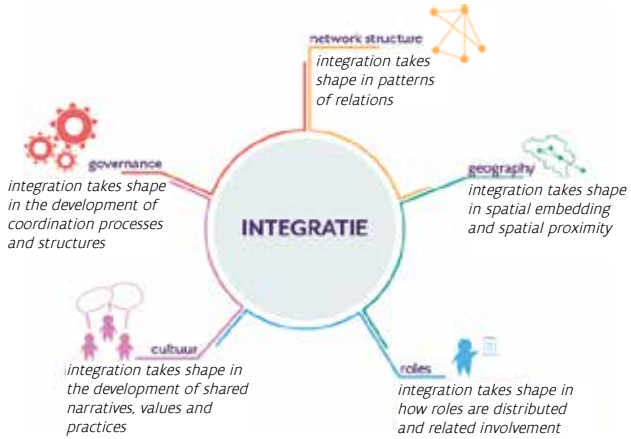
"To realize the ambitions for a socially responsible and supported construction stop in 2040, a regional approach and a smart instrument puzzle are required", says Elke Rogge. "But even in already-urbanized areas, there are still opportunities for agriculture and food production: for example, urban agriculture initiatives and short supply chains. ILVO is involved in projects in Ghent and Ostend."

Elke Rogge, scientific director
Social Sciences Unit

RESEARCH

The picturesque landscape around Voeren is being threatened: can we preserve the quality of a landscape via agriculture?

The landscape in the Voeren area is renowned for its unique beauty. It is therefore no surprise that it attracts thousands of tourists every year. However, those unique features of the Voeren landscape are threatened: trees are being cut down, grassland is being transformed into cropland and small landscape elements are being removed. This can have consequences for tourism due to possible loss of attractiveness of the region. In addition, it could lead to environmental effects such as more erosion and a loss of biodiversity. ILVO, INBO and VITO joined forces with funding by VLM to initiate a research project aiming to clearly diagnose the problem and its drivers and to identify potential pathways to preserve the qualities of the landscape.
The ILVO results show that a very important mechanism behind landscape change is the increase in arable farming in the area, at the expense of (grass-based) dairy farming. Dairy farmers leave farming more rapidly in Voeren then elsewhere in Flanders, and their land is not being taken over by the remaining dairy farmers. Rather it is increasingly being used by farmers, often from outside Voeren, who sow crops. Such a transition can have important consequences for the landscape.
In the second phase of the project, the partners look for integrated pathways to preserve the qualities of the landscape.



Connecting farmers in food networks: a question of structure and culture

Food teams, auctions and farm co-ops are all examples of food networks. They are created to answer to the needs and challenges of modern-day producers, suppliers, distributors, retailers and consumers. How do these food networks actually work, and how can the connections within the food networks be supported? These are the questions that Kirsten Vanderplanken asked at the beginning of her doctoral research. After in-depth interviews and network analyses of three food networks in Flanders, she suggests a number of recommendations to improve the functioning of the networks.

Short chain and wholesale customers, hand in hand?

ILVO, Ghent University and Rikolto carried out the project 'Scaling Up Short Chain', in the context of the development of a local food strategy for the City of Ghent. We looked abroad, drew up potential pilot projects and invested in creating a support base at the hotel and catering, retail and large kitchens. The short chain has so far mainly focused on individual consumers through food packages, farmers' markets, or home sales, so this was no easy task. But how do you reach professional consumers in a B2B context? Together with farmers, restaurateurs, entrepreneurs, catering chefs and policy makers, we worked out three pilot projects, each of which emphasized a different aspect of the B2B short chain: a 'Farmers network for the Ghent city center', a 'cooperative distribution platform' and the 'GeKKoS-Ghent Knowledge Center: Short Chain and City-oriented Agriculture '. The Business Model Canvas was a guideline for this. These pilot projects were audited, with specific attention for logistic flows, life cycle analysis and cost-benefit analysis. We also asked whether and how each pilot project contributes to a transition to a more sustainable food system. Based on the report and the support it has created, the City of Ghent will facilitate the concrete elaboration of one of these pilot projects. At the same time, this study is also relevant for the broader Flemish context, in which numerous initiatives are taken on local food strategy, short supply chain and city-oriented agriculture.

Urbanization in disguise?

Building in the agricultural area is growing year after year. However, the number of farmers has been decreasing for decades. How do you explain this evolution? ILVO took a close look at the Antwerp countryside on behalf of the province of Antwerp. In ten years, the number of farmers has dropped by 40%. Agricultural buildings and land are thus becoming available. The vacant agricultural buildings get almost exclusively a non-agricultural function, such as residential or non-agricultural activities, B & Bs, carpentry, and more. In total, 27% of the agricultural area as found to have non-agricultural land use, including 6.8% occupied by gardens, 9.8% by forest and nature, 3.6% by hobby fields, 1.3% by buildings and 0.9% by non-agricultural enterprises. The open space is therefore being increasingly occupied by non-farmers. This urbanization leads to a pressure on agricultural functioning.

HIGHLIGHTED

In May 2017 VLM celebrated 25 years of land development in the Westhoek

region, together with the province of West Flanders and many other partners. ILVO presented the results of the evaluation study: "25 years land development in Westhoek: what does the past teach us for the future?" West Flanders, Westtoer, Regionale Landschappen, Westhoekoverleg and VLM signed a memorandum on spatial quality in Westhoek in order to invest together in the open space in the region and to generate new and ambitious ideas for the region through dialogue. ILVO organised 4 workhops on challenges for the future of the open space in Westhoek. By using the ILVO method 'Visionary' the participants discussed about the open space in Westhoek. Extreme scenarios regarding possible regional strategies for C-sequestration and adaptive water management guided the discussion in the session "agriculture and climate". Another workshop focused on instruments for open space management, where participants were invited to reflect and debate on practical instruments in order to make the difference. Finally, in a last session, ideas were generated on public private partnerships for the management of the open space.
More than 80 participants discussed and debated intensively about open space and have launched creative ideas which will feed future debate in Westhoek.

Agro-ecology in Flemish cattle farming: challenge or opportunity?

Why have agro-ecological principles been forgotten in the Flemish cattle sector? Are there any possible sustainability paths? To provide an answer to these questions, ILVO combines analyses of company data with a research on "mental landscape" of farmers. This was done using the technique of "Fuzzy Cognitive Maps".

NEW

A 'route-planner' for Flemish dairy farms

Together with Inagro, Hooibeekhoeve and Boerenbond, ILVO is developing a tool to guide strategic decision-making on Flemish dairy farms. The tool is being developed in close collaboration with consultants and dairy farmers and is based on the PAFAMO (Participatory Farm Modelling) concept, developed within the Farm Management research group. Several strategies are being investigated: scaling up, outsourcing of young stock, purchase of roughage and by-products to supplement the ration, alternative fodder crops and organic farming.

Gardens of Stene - Productive Landscape Pilot Project

Together with ILVO and the Flemish Government Architectural Team, the Flemish government is launching a second (out of five) 'Productive Landscape Pilot Project ': the Agricultural Park 'Gardens of Stene' in Ostend. The Gardens of Stene is a piece of historic fertile ground tucked away between retail warehouses, a school complex, the village of Stene, the open space Snaaskerkepolder, rows of buildings, and 20th-century residential areas of Ostend. This area of 35ha is still as good as unknown today, but in the coming years will be developed, as part of the Green Ribbon, into one of the most important new parks in Ostend. 'De Tuinen van Stene' focuses on urban agriculture and the short supply chain – and a nice place to enjoy yourself. In short, an agricultural park to walk, cycle, picnic and relax. An additional asset for Ostend, 'says Elke Vanempten, coordinator of the Productive Landscape Pilot Project.

From farmer to farmer: learning practices on farms in Europe

Are demonstration activities on farms effective catalysts for innovation and sustainable development in agriculture? How can we promote farmer-to-farmer learning across Europe? As part of the European AgriDemo-F2F project, ILVO is looking for "best practices" for demonstration activities.
In 2017, the FarmDemo survey was launched. The results of the survey will be used for a European inventory of initiatives for knowledge exchange between farmers. This inventory will be made available through the FarmDemo Hub, an online and interactive community for end users.

Exploitation of maritime production

ILVO and VLIZ, the Flemish Marine Institute, have updated their partnership agreement for marine research

The new ILVO-VLIZ partnership agreement was signed on January 27, 2017 by Joris Relaes and Jan Mees. “By being proactive and working together, we maximize new opportunities,” says Joris Relaes. ILVO-Fisheries Scientific Director Hans Polet described the future plans to share a building as an adventure, but one in which the resources are optimally used. The new partnership agreement creates a general framework for cooperation in the fields of information and data management, research and mutual support of each other’s activities, in particular through logistical support of the research, policy advice and communication about research to the widest possible audience.

RESEARCH

Hope for recovery. The current status of the soil fauna in the marine soil protection zones of the Flemish Banks

In the future, certain zones of the Belgian Part of the North Sea will be protected against seabed disturbance, with the aim of allowing the local seabed fauna to recover. But what does this seabed look like now? And how is the fauna doing that currently lives there? ILVO and KBIN investigated the future protection zones and see potential for recovery.

The species richness and density in the coastal zone's protection area decreases with increasing pressure on fisheries, which suggests that the fauna will evolve to a better condition if seabed disturbance stops. The ecological condition in the gravel zone is less good: the most fragile kinds of species were not found in the area, and mussels and soft corals ("Alcyonium digitatum" or dead man's fingers) appeared as small, stunted colonies. In this area, there is a clear potential for the recovery of fragile species.

Marine fisheries and seabed disturbance: from black-or-white to complexity and nuance

What are the consequences of ocean seabed disturbance by trawl fishing? In a quest for the answer, 33 partners, including ILVO, carried out 4 years of intense research along the European cost. This shows that the consequences of seabed disruption are strongly dependent on the kinds of trawl fishery, from fishing intensity, and from the kind of habitat. The problem of seabed disturbance is thus not as black-or-white as it may appear; instead, it is full of complexity and nuance. The evaluation framework developed in the BENTHIS project now offers a tool for integrating seabed disturbance in marine management in an objective and quantitative way. This tool has been approved and accepted within ICES (International Council for the Exploration of the Sea), the main advisory organ within the European Commission. The big advantage of this method is that it can be applied for each kind of fishing gear and each kind of habitat.

Pulse fishing for shrimp: good results, refinement continues

The efficiency of the shrimp pulse has been reconfirmed by the results of catch comparisons on the O 82, with 15% more consumption shrimp. A reduction of by-catch appears to be strongly dependent on the number of bobbins on the bobbin rope.

The creation of the plastisphere: bacteria at sea colonize the new world of plastic waste

The microbial colonization of plastic waste at sea can have important consequences for the environment, but can also possibly contribute to a solution for plastic pollution in the ocean. That was the conclusion of ILVO-Ghent University researcher Caroline De Tender at the end of her PhD. Using genomics, she has studied the development and composition of the community of bacteria and fungi that live on plastic: the plastisphere. The biofilm that is formed on plastic can influence the marine environment, especially when considering the great extent of plastic pollution. But there is hope: De Tender found a clue that some bacteria exist that are able to break down plastic-related chemicals.

Zinc and copper increases at the Belgian continental shelf: linked to antifouling?

Monitoring of dredged spoil disposal sites at the Belgian Continental Shelf revealed local increases of copper and zinc concentrations. The increase in 2004-2014 is possibly caused by the use of heavy metals in antifouling paints which are used to counteract the growth of subaquatic organisms on boats, ships and marine constructions. Additional research at the harbors of Nieuwpoort and Ostend revealed major differences between the harbors related to differences in environmental measures taken at boat-and shipyards.

HIGHLIGHTED

Scarce sand

Terzake went into the world of sand extraction and discovered that sand is actually a scarce commodity. ILVO researchers explain: "Sand is not a renewable resource. Under intensive exploitation, troughs can develop in the seabed."

Scientific Researcher ILVO

Scarce sand

The future of the North Sea: ILVO experts contribute to federal vision text

In December 2017, the Secretary of State for North Sea Philip De Backer presented his vision for the North Sea. Working groups of experts were called upon to develop the vision, including ILVO researchers with expertise on the Blue Economy, Multiple Land Use and Naturalness.

Earlier in the year, the Secretary of State got a chance to roll up his sleeves and make personal acquaintance with ILVO's research into marine environment, fisheries and aquaculture and the quality of fishery products.

Coast busters: coastal protection through the construction of biogenic reefs

"Can we protect our beaches against storms using natural reefs?" That is the key question in the Coast busters project. The partners of the project, including ILVO, are studying how they can construct reefs of seaweed, seagrass, shellfish and Sand Mason worm in a sustainable and fast way, and how these reefs affect our coast.

NEW

In the wake of the ray. Towards efficient and correct management of ray populations in the North Sea and the English Channel

Within the European SUMARIS project, ILVO will collect data on numbers, biomass and survival of the most important ray species in the North Sea and the English Channel. This is necessary because in the current management system, no distinction is made between species. The collected data should allow us to manage the stocks more efficiently and to correctly apply the landing obligation.

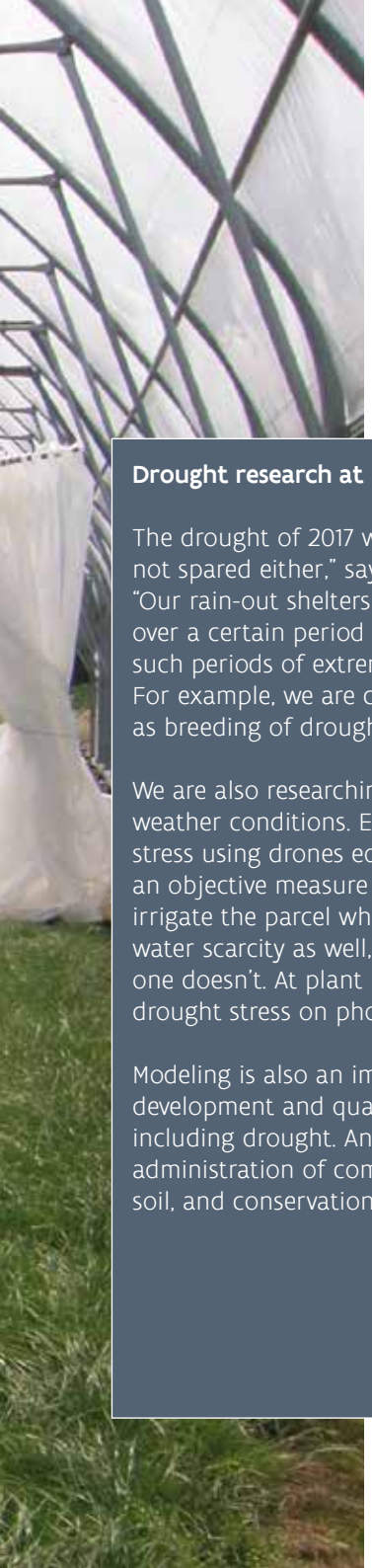
Mussels, seaweed, oysters and scallops from our own North Sea? Flemish sustainable aquaculture gears up with two integrated trial projects

Two consortiums of research institutes and businesses, with Ghent University and ILVO in the lead and 10 partners in total, have joined to create the research project "North Sea Aquaculture". This project tackles three challenges: innovative techniques to grow shellfish (molluscs) and seaweed, efficient spatial planning on the North Sea and the development of a market for new marine regional products.
These ambitious demonstration projects are funded by Flemish, European and own capital. They start this spring on two test locations: off the coast of Newport (oysters, seaweed and scallops – "Value@Sea" project) and in the Belgian wind farms (mussels – "EDULIS" project). Within two years, the team expects to report on the biological and technical feasibility of mollusc and seaweed production in the Belgian Part of the North Sea; the possibilities of co-locations with windmill parks; potential for scaling up and profitability; potential for marketing of the end products and the possible positive influence that extractive aquaculture could have on water quality.

©Sioen Industries

Seashells as potentially useful waste stream. European project "Blueshell" seeks bio-active ingredients in shells of mussels, crabs and shrimp

We only consume 30% of shellfish and crustaceans – the shells just end up in the trash. A shame, because this waste contains useful proteins, fats and other components. These can be used as additive in the food industry or as growth promotors in fruit cultivation.



Climate mitigation and adaptation

Drought research at ILVO

The drought of 2017 will remain in farmers' memories for a long time. "But ILVO was not spared either," says Head of the Plant Sciences Department Kristiaan Van Laecke. "Our rain-out shelters (plastic roofs), which can simulate a drought regime on parcels over a certain period of time, were completely unnecessary this year. But even outside such periods of extreme conditions, drought is an important theme in ILVO research. For example, we are conducting research into adaptation of conventional crops, such as breeding of drought-tolerant varieties of perennial ryegrass.

We are also researching new species that are more adapted to warmer and drier weather conditions. Examples are soy, quinoa and sorghum. We can measure drought stress using drones equipped with thermal cameras. Based on that, we can set up an objective measure (a threshold value) for 'drought' that the plants feels, to can irrigate the parcel when needed. This can be applied in the context of determining water scarcity as well, to determine which parcel urgently needs water and which one doesn't. At plant level, we carry out ecophysiology studies, where the effects of drought stress on photosynthesis and transpiration of the plants are determined.

Modeling is also an important tool: for example, we model crop growth, development and quality in soy and grass in function of environmental conditions, including drought. And last but not least: soil research in function of drought. The administration of compost, for example, increases the water storage capacity of the soil, and conservation tillage generally provides a better water supply.

Kristiaan Van Laecke
Plant Sciences Unit Head

RESEARCH

Agricultural lands are cornerstone for "climate-proof" Flanders

"Spatial policy is geared to nature development to buffer climate impacts, but agricultural land also mitigates extreme weather and it already covers half of Flanders. Climate change is so far-reaching that we also have to tap into this 'agricultural potential', "says ILVO-UAntwerp researcher Jeroen De Waegemaeker. Through his research, he showed that both fields and fields can absorb extreme weather conditions, provided they have an adapted design and management. For example, they can provide cooling during a heat wave, buffer floods, and keep nearby residential and industrial areas dry. By planting grass corridors and smart soil management, they catch rain and slow down drainage. Such contributions from farmers and their agricultural land to climate-proof Flanders are often underappreciated today, according to Jeroen De Waegemaeker. He therefore advises to make maximum efforts to preserve valuable agricultural land and to subsidize the climate services that farmers supply.

ILVO & VIB join to find fundamental answers: why can one plant better withstand heat than others?

A better understanding of the resilience of the plants in stress situations. That is the goal of a collaborative project of ILVO & Flanders Institute of Biotechnology (VIB). In greenhouses and on the field, several crops and plants are monitored in terms of plant growth, in different – sometimes extreme - weather conditions. Both partners use cutting-edge technologies. Peter Lootens (ILVO): "plant growth (phenotyping) is automatically monitored in the greenhouses and in the field. In the greenhouses, this happens with fixed visual, hyperspectral and thermal cameras. In the field, we use special cameras mounted on a drone." Tom De Swaef (ILVO): "From those images, mathematic models integrate and interpret according to the data recorded in the images. Through further development and use of this (semi) automatic image formation and modeling, the researchers characterize the development and the metabolism of plants under more extreme weather conditions in a targeted way. On the long term, this knowledge can contribute to improve harvest security and quality during longer drought periods. This is possible through a targeted breeding or a strongly improved plant husbandry.

NEW

Well water as an alternative water source for pigs

Can well water on pig farms be an alternative and sustainable source of drinking water? ILVO and INAGRO are performing trials with piglets, tracking farms that have switched to well water and evaluating their water treatment methods.

Kick-off of the "Water-Land-Scape"

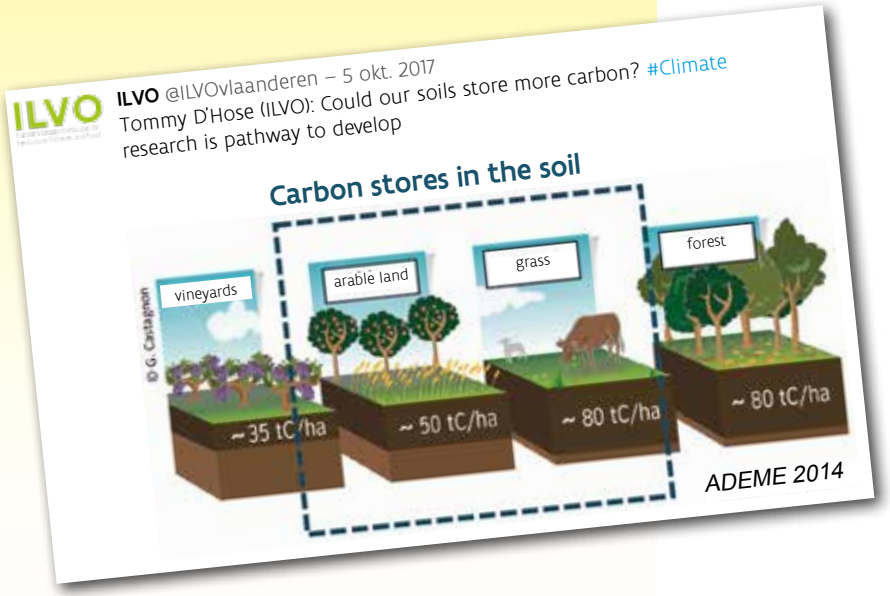
On 23 Oktober 2017, the Flemish Minister for Environment, Nature and Agriculture launched the program "Water-Land-Scape". The program will subsidize local initiatives by farmers, businesses, governments and organizations to tackle challenges such as droughts, floods, good water quality and salination. The minister therefore calls on local leaders to build partnerships and provide initiatives for the Water-Land-Scape program team. For local partnerships, support is provided by experts from ILVO, VLM, VMM, the Flemish Department of the Environment, the Flemish Department of Agriculture and Fisheries, VITO, VLAKWA, ANB and the consultancy bureau Architecture Workroom Brussels. This team pools knowledge about water, agriculture and landscape.

HIGHLIGHTED

Progress in reducing methane emissions from cattle

ILVO researchers have been searching several years for feed that reduces the emission of methane from cows. “We have already been able to test a number of promising feed additives, meaning that we can achieve a reduction of 10 to 15%”, says Dorien Van Wesemael.

ILVO doctoral student

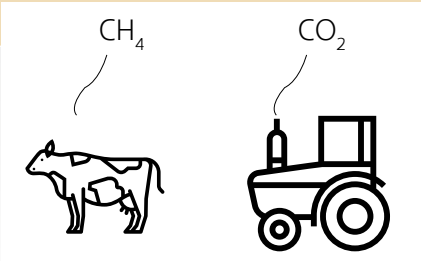


NEW

Center of Expertise for Agriculture and Climate

Climate research is part of the overarching ILVO research strategy for more sustainable agriculture and fisheries. Both the effects of agriculture on the climate (quantifying greenhouse gas emissions from agriculture), as well as the opposite effects of the climate change on agriculture (developing of new diseases and pests, etc.), are being studied. The ILVO Center of Expertise for Agriculture & Climate brings together experts from the diverse ILVO research units.

More info via
www.ilvo.vlaanderen.be/ELK



Drinking water supplies. European project wants to protect better the water supplies in agricultural areas

People's lives depend on a sufficient supply of good quality water. The extreme weather conditions due to climate change mean that this basic need is increasingly being jeopardized. The European research and innovative project WaterProtect aims to help with the development and introduction of new agricultural methods in function of better water quality. These methods are targeted for application in areas where drinking water quality is strongly under pressure due to fertilization and the use of crop protection products.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Precise and innovative technology

RESEARCH

Determination of fertilizer spread patterns now faster and more accurate

Starting in 2018, ILVO will launch a new specialized service regarding the improved, more accurate deposition of artificial fertilizer on grasslands or arable fields. Potential customers are farmers or contract workers wishing to get their spreaders checked and calibrated for correct spreading, the manufacturers of fertilizer spreaders and developers of new (non-)organic fertilizer pellets.

This doctoral work from ILVO-Ghent University has resulted in digital, fast and inexpensive determination of where exactly every fertilizer grain will land after it has been launched from a centrifugal spreader. This is done by placing the spreader in a small, dark room and spreading the fertilizer for a few seconds. Using 3D cameras and software, the actual spreading pattern including possible deviations is calculated with 98% certainty. The new measurement technology can easily compete with the old methods of spreading determination in terms of speed, accuracy, cost and space requirements.

Improved performance of chemical and biological air scrubbers in pig stables after simple interventions

For more than 10 years, low-emission housing systems in Flanders must be installed in all new (conventional) pig and poultry houses. In a Ghent University-ILVO study on the efficiency of ammonia removal at the currently available chemical and biological air scrubbers, especially in pig houses, Caroline Van der Heyden made clear, among other things, to what extent the systems lose their removal efficiency when the flow rates, acid levels or other parameters become sub-optimal . “Air scrubbers are controlled fully automatically via sensitive sensors. Very regular maintenance and recalibration is a must,” says Caroline Van der Heyden.

Natural ventilation in dairy cattle is not easy to model

The development of an accurate, fast and cheap method for measuring the ventilation rate in naturally ventilated stables is a huge challenge, according the doctoral research of Gerlinde De Vogeleer. "We can set up good models for an empty test on stables in combination with a minimum of expensive sensors, but in practice, meaning a "real" stable, they are too many variables and uncertainties", says the ILVO- Ghent University researcher. When curtains are used in the dairy barn, for example, or when wind speeds are too low, the uncertainty on the models becomes too big. In those situations, we need more measurement points, and that costs money".

Nevertheless, there is a big demand for accurate measurements of air rate flow in naturally ventilated stables. These are necessary to determinate the efficiency of the ventilation and to be able to show in black or white that there is enough fresh air inside the stable for the animals, and also that the emission of harmful gases, such as CO_2 and ammonia, can be prevented and/or remains within legal limits. Emission measurements are among the major themes for the European NEC Directive (National Emission Ceilings) and the current Ammonia Reduction Plan (PAS), managed by the European Natura 2000 program.

Potential added value, technical performance and efficiency of automatic detection systems for lameness in cattle have now been mapped

Automatic detection systems for lameness in cows can already deliver an economic added value for the dairy farm; but the technical performance (accurate detection) and the cost-efficiency can be improved. Also the mechanisms around and extent of the losses as consequence of lameness are still insufficiently known. The same goes for welfare problems due to lameness, according to doctoral researcher Tim Van De Gucht. "Detection systems must also be integrated into the total farm management, and must fit within the broad framework of prevention, detection and treatment. A successful rollout of clever lameness detection for cows does not only depend on the finesse of the technique", says De Gucht.

HIGHLIGHTED

Big data in agriculture in Flanders – ILVO on TV

The use of big data in agriculture is still in its infancy, but according to ILVO, it is crucial to be able to feed many more people in the future. How will this work work? What are the bottlenecks?

http://kanaalz.knack.be/expert/big-data-in-de-landbouw-in-vlaanderen-13-04-17/video-normal-840517.html

Flanders Research Institute for Agriculture, Fisheries and Food

NEW

Smart data networks in the agro-food chain: ILVO is partner in new European project "IOF2020"

The project "Internet of Food and Farm 2020" is a new, large-scale European Horizon 2020 project where Europe has committed € 30M to effect drastic improvements in the sustainability and productivity of the agrofood industry. The project starts with the observation that many isolated digital machines and sensors are being used. To create added value, greater networks and data exchanges between these systems (smart networks) are needed. Further, there are technologies available from other sectors that can be adapted to meet the needs of the future farms and food processors.

Jurgen Vangeyte: "By participating in this project, Flanders gets the chance to transform agriculture and food processing to smart networks of connected objects. Specifically, we will take already validated technology and either adjust it or scale it up to take it closer to an actual marketable product for the food and agriculture sector."

Air scrubber services

Caroline Van der Heyden's doctoral work on air scrubbers has resulted in a new calculation model that can isolate the individual factors that determine the final net air scrubbing. From now on, ILVO also has a unique air washing test system in which acidity levels, settings, flow rates, packet thickness, etc. can be varied. This enables complex experiments and measurements.

Drone seeks pilot - pilot seeks drone. Development of a demand-driven market for UAVs

Via demonstration events with drones and surveys, the goal of the ICAReS project is to encourage use of UAV applications in three sectors: agriculture, water and infrastructure, and nature and forest management. This proactive approach should lead over time to partner-matching and innovation in the sector.

Management 2017

Financial/Legal management

Research Coordination

Outreach - The power of personal contacts and social media

Customer visits to the Food Pilot

Human Resources

Sustainability: 40% less CO_2 emitted and 27% less primary energy consumption

Environmental management system to a higher level

Facility management

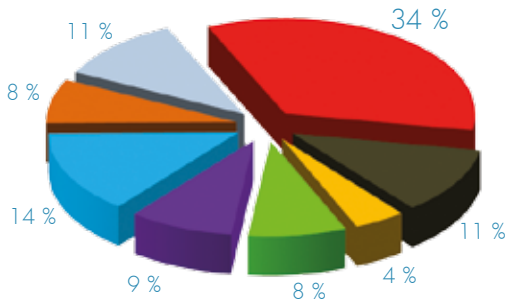
MANAGEMENT

Financial Legal management

Administratively, ILVO is still divided into two entities which reinforce each other in a remarkable way, namely the IVA 'VO ILVO' (an Internal Independent Agency of the Flemish government - without a corporate personality) and 'EV ILVO' (ILVO's Own Capital fund). These legally separate entities each have their own budget, workforce and governing bodies. While VO ILVO works mostly via a basic grant, EV ILVO is funded by flexible means through competitive research at home and abroad, through companies and through paid services.

In the first years of ILVO, the ratio VO (Flemish government) and EV (Own Capital) was approximately 50/50. In recent years, the balance has evolved towards a clearly larger weight for EV ILVO (40% -60% (2014), 38% - 62% (2015), 37% - 63% (2016)). This trend has continued in 2017 as well. ILVO obtained 66% of its resources from the work of the Own Capital (competitive research and ad hoc assignments). The basic grant of the Flemish government represent the remaining 34%.

On 1/1/2017, the VAT status of the ILVO's Own Capital changed from the flat-rate agricultural scheme to a partial taxpayer with a limited right of deduction. This means that EV ILVO must charge VAT on the VAT-taxed activities such as the services and the sale of agricultural products. In addition, the VAT can be recovered 100% for costs that are directly linked to the VAT-taxed activities. On the other costs, the VAT can be partially recovered according to a ratio that can be adjusted annually. In order to enable the implementation of the amended VAT status, investments were made for the accounts in a new AXI-Finance ERP package.



Distribution of operational resources ILVO 2017

Basic funding Policy Area L&V	34 %
→ *Structural financing*	34 %
Grant L&V	11 %
Flemish Government	4 %
VLAIO	8 %
Federal Government	9 %
EU	14 %
Private sector	8 %
Business Unit	11 %
→ *Project-based financing (assignments and competitive research)*	66 %

Research coordination: European collaboration on the rise

Vision

2017 was the year in which ILVO put itself even more firmly on the map as a modern, dynamic research institute. The new research vision is a milestone in that evolution. Large research agendas and complex performance indicators from the past have been replaced by a document that provides direction and, at the same time, allows us to respond flexibly to new societal challenges. ILVO has a large support base for this vision, as evidenced by the participation trajectory with the various political and scientific stakeholders around the text.

Systems thinking and tacit knowledge

For each research line presented in the research vision, the social interest was weighed and demonstrated. It is clear that ILVO will continue to monitor its unique position in the Flemish research landscape, between academic research and applied research center, with a sufficient critical mass while still remaining independent and agile. The cornerstones of the 'ILVO Vision: towards 2020 and beyond' are the systems approach to research and attention to 'tacit knowledge'. To accurately and thoroughly frame technical and scientific issues in a broader social context, the systems approach is a must. ILVO cannot, on its own initiative, change the complex interactions in the agroecosystem or solve the major social challenges as described in the sustainable development objectives of the United Nations. Through a critical and holistic view of our own research, we better estimate the role and impact of our research. The other cornerstone, tacit knowledge, can be translated as practical knowledge or expertise. After all, expert agricultural knowledge, human capital and high tech science are all essential to achieve practical and useful applications.

Living labs

One important instrument to realize the ILVO ambitions in practice is the development of living labs, an ecosystem where primary producers and suppliers, policy, sector organizations, companies and researchers can meet and inspire each other. ILVO wishes to use its extensive knowledge capital, expertise, infrastructure and experimental fields, within the limits of practical feasibility and the regulatory framework, for co-creation of knowledge.

Sending power to the engine

The infrastructure at the foundation of ILVO research also received attention in 2017. ILVO resources were allocated to research projects of strategic importance, for example, a project around microbiome in the soil. A great deal of work has been done on the architecture of several web-based systems, to be launched in 2018, which will make it possible to communicate about our research more quickly and transparently, and to monitor its impact. Legal reinforcement within the management team is also in the pipeline.

European funding share increases from 6 to 14% in operational resources

2017 was the first year that the EU group was operational within ILVO. The aim of this group is to support the researchers who subscribed to EU calls. The process-based approach is reflected in the figures: in 2017, ILVO had already obtained 14% of its operational resources from European projects. The year before this was only 6%. Not only did our European funding rise significantly, but so has our ranking at the Flemish level. Several new projects are currently in the pipeline. The synergies, networks, partnerships and collaborations in which ILVO participates are growing. The same is true for the number of visits by diplomatic and other delegations and by international researchers.

Involving companies in innovation

ILVO has 6 experts in the EIP focus groups of 'EIPagro' and participates in 14 focus groups. In addition, we have become leader of 3 operational groups in 2017. EIP stands for European Innovative Network. This European system had existed for some time in the industrial sectors. Europe has now encouraged the agricultural sector to follow suit. The aim is to gain more relevance and speed in the innovations and developments.
Also in Flanders, mixed scientific business networks have been developed in the agro-food sector. ILVO is clearly the driving force behind the innovative business network on smart farming. The main goal there is to provide guidance and advice about whether or not to collectively seek Flemish or European R&D resources.

MANAGEMENT

ILVO researcher answers almost 100 "ik heb een vraag" (I have a question) queries

The online platform "ik heb een vraag" (I have a question) got 50% more visitors in 2017. This year, ILVO's entomologist Hans Casteels answered nearly 100 questions from the site. He knows and recognizes all phases of development of all kind of insects, so Hans often has to answer what they like and do not like, how they live and how they multiply. Many users of "ik heb een vraag" are interested in 'How I get rid out of them?' In agricultural and horticultural language, this is translated into 'How do I manage their presence?'

Outreach - The power of personal contacts and social media

In 2017, ILVO splashed into the world of online communication, with more than 1000 followers on Twitter, more than 1000 subscriptions to the Pig Information Center's digital newsletter, and 60 short films posted to the ILVO YouTube channel, among others. The videos of the presentations that took place during the ILVO seminars have also been uploaded there. In this way, the stakeholders that could not assist can also benefit from this detailed information. That does not mean that the seminars become superfluous – the possibility of networking keeps on being an absolute added value. The number of seminar participants speaks for itself: full rooms during seminars about soil and nutrient research, for the seminar 'Stop piglet castration by 2018' and for the seminar on soy.

In addition to professional seminars, ILVO also focuses on brand awareness by participating in public events. The toppers in 2017 were: the Bio-tech day in Zwijnaarde, Agribex in Brussel and the Machinery days in Oudenaarde; but also the BioXpo in Brussels, the Science Day in Ostend, the Open Business day in Zeebrugge, where ILVO scientists gave expert explanations to the public.

Research
> 30.000 visitors in 2017

Services
> 30.000 visitors in 2017

www.ilvo.vlaanderen.be
> 70.000 website visitors per year
=30% more than 2016

Research portal PURE
> 103.000 page views
by > 27.000 unique visitors

ILVO @ AGRIBEX

"Whoever wants to shine, must innovate, renew and improve processes. You can count on ILVO to help with these processes. Together with, and mainly thanks to, the fundamental and applied scientific research of ILVO, this Flemish Scientific Institution is developing an even broader range of highly specialized services for our agriculture and horticulture."

Flemish minister president Geert BOURGEOIS referred to ILVO in his opening speech at the Agribex agriculture fair in Brussel.

Customer visits to the Food Pilot

The waiting time for the pilot tests for companies was an average of around three weeks in 2017. That number shows the great importance of the innovation hub for the food sector, which was founded together with Flanders' FOOD six years ago. Both the number of pilot tests and the number of analyses increased by 13% and 12%, respectively, in 2017. More technological recommendations were given to food companies, with an increase in the number of in-depth scientific literature studies. "This year, the most remarkable investment was the total renovation of the top floor of the food factory, a new roof, new floor, windows, and utilities, with the support of EFRO. Moreover, the lab for physics and chemistry has been renovated", explains Food Pilot manager Katleen Coudijzer. Continuity and service are still the basic values with regard to Food Pilot customers.

Food Pilot: at your service

"We were very well received in the Food Pilot, and got very good guidance. We were impressed by the strong process and product knowledge, and the professionalism of the pilot tests. Our goal - valorizing tomato waste streams - builds on ILVO doctoral research," says one of the customers, the company Tomabel.

Food Pilot in a bird's eye view

over **23 500** nutritional analyses for 224 companies

104 recommendations

332 pilot trials in pilot plant for 104 companies, of which 43 new customers

Various sectors such as

- consultancy (21%)
- fruit and vegetables (20%)
- ingredients (13%)
- dairy products (12%)
- meat and fish (11%)
- catering (4%)
- etc.

MANAGEMENT

Human resources

Number of employees

Under pressure from funding cuts, the number of employees of the Flemish government (VO ILVO) continues to fall. After a low point in mid-2017, the number of employees of the Own Capital (EV ILVO) is gradually rising again. This also means that the relative share of EV-ILVO is increasing.

Values as a touchstone

ILVO is driven by five essential values: working together, being an example, adopting a proactive attitude, serious professionalism and a contagious positivity. These values are the automatic touchstone for the decisions made by management. They also play their role in recruitment and evaluation criteria.

On June 22, 2017, ILVO took a day to focus on our culture and values. We went looking for pioneers who wanted to get behind the ILVO culture and values. More than 90 enthusiastic employees signed up to become ambassadors for the ILVO values. A core group continues to provide creative and inspiring communication to spread these values throughout our entire organization. In 2018, every team will start working together on the values. The ILVO values were therefore given a prominent place in the "ILVO Vision: towards 2020 and beyond".

Open culture as prevention against burnout

In 2017, a new "Psychosocial risk prevention plan 2017 - 2019" was established. The plan came about after a number of workshops with a cross-section of the entire ILVO members. In this way, they contributed not only to the plan but also received a lot of information about stress and burnout. The emphasis is mainly on primary prevention: to prevent excess stress and to limit the risk of burnout, we work on the sustainable motivation of our employees by meeting their need for competence, autonomy and solidarity. Being able to talk about work pressure in an open culture plays an important role in this.

ILVO-number of employees in 2017

	Employees			FTE		
	FG	**OC**	**total**	**FG**	**OC**	**total**
31/12/2015	260	347	607	231.6	330.9	562.5
31/12/2016	252	340	592	226.2	322.3	548.5
31/12/2017	249	342	591	221.7	324.1	545.8

ILVO: 40% less CO_2 emissions and 27% less primary energy consumption

During the climate summit in April 2016, the Flemish Government made clear that it supports the global climate ambitions. ILVO has an exemplary function, which made us shoot out of the starting blocks to implement the action plan suggested by the Flemish Government. Specifically, the primary energy consumption in buildings and technical infrastructure must drop by 27% by 2030, and the aim is to cut CO_2 emissions by 40% through lower fuel consumption in service vehicles and reduced energy use in buildings and infrastructure.

The Flemish Government aims to accomplish these climate ambitions through climate action plans, more specifically the Energy Efficiency Action Plan, the Behavior Action Plan and the Mobility Action Plan.

ILVO started to meet their climate commitment in 2017. An energy coordinator was designated to coordinate the action plans and to design a multi-annual planning.

In addition, subsidies were applied for to implement energy saving measures. Two of those requests were approved, namely for the roof isolation of the Animal Sciences office building (68), and for the renovation of the boiler room in the potato shed, by transitioning from fuel oil to a gas condensing boiler (both to be executed in 2018).

In the context of saving energy measures, 5 projects have already been executed:

- Replacing the windows in the Plant Sciences Unit office and lab building (P96)
- Replacing the windows in the Animal Sciences Unit office and lab building (D68)
- Roof insulation in the Food Pilot
- Insulation of the taps + finishing insulation of the pipes of the steam installation (TV370)
- Optimization of the boiler room of the greenhouses at the Plant Sciences Unit (P39)

Sustainability Day 2017

To make the power of individual actions visible, ILVO organized its second sustainability day in June 2017. Employees lent their minds and hands to reflect and work on a more sustainable ILVO. There were workshops for and by employees, including

"Safe biking to and from ILVO"
"Auto in the garage, and then?", and
"ILVO 2030, what does ILVO do in terms of energy?".

In the course of 2018, the focus will continue on the themes of mobility and energy consumption, and ILVO will also participate in the Behavior Action Plan.

MANAGEMENT

ANIMALAB celebrates 10 years of accreditation according to the norm EN ISO/IEC 17025

The first BELAC certificate for research into animal feed and cattle farming was awarded on 6 March 2007. After many years of hard work, the scope has been expanded several times and a robust but demanding quality system has been established. The laboratories for fisheries research also joined the system. Now 17 laboratories are working according to the same procedures, so that the complex lab is clearly structured and coherent. The latest BELAC audits have also been very positive and it has always been demonstrated that the management system is very complete with continuous attention to simplification and striving for more efficiency.

Environmental management system rises to a higher level

ILVO continues to invest in the further implementation of the ISO 14001- environmental management system. This means specifically that the procedures were adapted to ISO 14001 version 2015. The recertification audit took place at the end of June 2017 and led to the renewal of our certificate.

Safety and well-being in the workplace, on the road and at sea

Health risks, safety, and welfare of the employees involved in the execution of work should be avoided or at least controlled. That is why ILVO carries out risk analyses, both in the workplace and when working away from the office or lab (e.g., working aboard a research vessel). In 2017, such analyses were carried out in the workshop of Agricultural Engineering (TV115), Food Pilot and the dairy barn (D68). This is how we aim to limit the number of accidents at work.

In all the work posts, a favorable working posture is promoted, so that non-ergonomic movements are avoided. ILVO invested in a jib crane in 2017, so that heavy loads in the atelier, such as our self-designed equipment, no longer has to be moved manually. The crane is monitored by a certified organization on a 3-monthly basis.

ILVO is responsible for the proper supervision and maintenance of electrical installations. This is necessary not only from a safety point of view, but also for the continuity of scientific research. All electrical installations are checked in function of the risk of accidents and the probability of failure, and when necessary adjusted in function of the A.R.E.I.

The elimination of safety risks is the priority here. We work together with an external partner for this, in which our knowledge of the various sites and their expertise lead to profitable results.

Facility management

In 2017, several construction projects were executed with an eye on structural maintenance and upgrading of the ILVO buildings. The goals of these projects was to improve the welfare of the working conditions for the employees, to reduce energy consumption and to modernize and optimize the research infrastructure.

In the lab of physics/chemistry & lab research at the Technology & Food Science Unit (TV370), the outdated, asbestos-containing cabinets and the ventilation system were replaced. The work included the installation of 4 acid resistant exhaust hoods and the installation of a new balanced ventilation system equipped with a heat exchanger and a humidity control. These allow a constant temperature and a constant humidity level in these rooms. The new exhaust hoods provide a safe working environment in the lab where sometimes dangerous, carcinogenic substances are used. The new balanced ventilation with air conditioning ensures a constant supply of fresh air, and through the integrated ventilation, temperature and humidity levels are kept constant. A heat exchanger takes care of the recovery of the heat from the extracted air which is then used to preheat the external air. The new ventilation systems are therefore energy efficient.

In the context of the environmental care program drawn up for the ISO 14001 environmental standard, the exterior carpentry of the main building on the Plant Unit 96 site was replaced. The new carpentry consists of aluminum with thermal break and improved double glazing with a U value of 1.1 W/m K. In total, 735 m^2 glass was replaced. Sun protection was provided to prevent overheating in the summer. This renovation has not only drastically reduced gas consumption, but has also dramatically improved the employee's comfort. In the Diagnostic Center for Plants, where overpressure has to be constantly maintained, the airtight design of the windows also improves the working conditions.


Reportage
Duikplaats
Noordzee Aquacultuur
ILVO
DEME
SIOEN
Persconferentie in de Bijloke van Gent op maandag 22 mei 2017 om 10.00 uur over 'Aquacultuur@Noordzee'
ONDERZOEK
Berengeur: eerste resultaten TAINTLESS-project
Tekst: FDL naar Evert Heyrman (KULEUVEN/ILVO) – Sarah De Smet (Varkensloket) – Marijke Aluwé (ILVO)
Beeld: ILVO en Twan Wiermans
De gemiddelde prevalentie van berengeur in België bedraagt 3 tot 5 procent. Maar er is een grote variatie in het voorkomen van berengeur tussen de bedrijven, evenals tussen de slachtmomenten binnen eenzelfde bedrijf. Om berengeur te beperken wordt momenteel ingezet op een aantal strategieën, zoals de wachttijd in de losruimte van het slachthuis, het voeder, het geslacht en de slachtleeftijd. Ondanks alles blijft een snelle online-detectiemethode in het slachthuis als vangnet noodzakelijk om te verhinderen dat vlees met berengeur op het bord van de consument terechtkomt.
Berengeur: componenten en voorkomen
Snelle detectie blijft nodig
Praktijkonderzoek
Gezocht: de mens achter de statistiek
Kort opgevist Kort opgevist
Plastic in schaal-en schelpdieren, een tikkende tijdbom
Nieuw onderzoek van de Universiteit Gent toont aan dat piepkleine deeltjes microplastics een potentieel gevaar is voor onze gezondheid kan zijn. Grootste boosdoener zijn de microbolletjes, kleiner dan een millimeter groot die in douchegel, tandpasta en andere verzorgingsproducten zitten, maar ook in waspoeders en zepen.
Op zoek naar a innovatieve toe
Voorzi en Sec bezoek
Tijdens de rondetafel
BOERENBOND
ILVO deelt kennis over sojateelt in Vlaanderen
Omstreeks de verschijningsdatum van deze editie van Varkensbedrijf, organiseert het ILVO in Melle een symposium over sojateelt in Vlaanderen. Tijdens dit evenement zullen de resultaten van het onderzoeksproject ter zake gepresenteerd worden aan kandidaat-sojatelers. Op basis van experimentele veldproeven is er een teeltgids opgesteld met praktische tips om de opbrengst te maximaliseren. Het project kwam tot stand vanuit een samenwerking tussen het ILVO en onder andere de KU Leuven, de Boerenbond en Colruyt group.
Dat het telen van soja in Vlaanderen haalbaar is, werd het afgelopen seizoen aangetoond. Bedrijven die betrokken waren bij het project, plantten en oogstten met succes 30 hectaren soja. Toch staat de teelt van het nieuwe gewas nog voor enkele uitdagingen.
Automatische detectiesystemen voor kreupelheid bij runderen in kaart
Landbouwleven - 28 Nov. 2017
Automatische detectiesystemen voor kreupelheid bij koeien kunnen al een economische meerwaarde opleveren voor het melkveebedrijf, maar de technische performantie (trefzekere detectie) en de kosten-efficiëntie kunnen nog beter.
Ook de mechanismen rond en omvang van de verliezen ten gevolge van kreupelheid zijn nog onvoldoende bekend. Hetzelfde geldt voor welzijnsproblemen door kreupelheid. Dat concludeert Tim Van De Gucht uit zijn doctoraatsonderzoek. "Detectiesystemen moeten ook geïntegreerd worden in het totale bedrijfsmanagement, passend binnen het ruimere kader van preventie, detectie en behandeling. Een succesvolle uitrol van slimme kreupelheidsdetectie voor koeien hangt dus niet alleen af van de finesse van de techniek", zegt Tim Van De Gucht.
25 januari 2017 • 4e jaargang nummer 1
Vertakking (van chrysant) valt te sturen met LED licht en plantenhormonen
ONDERZOEK
KEURING SPUITTOESTELLEN BESTAAT MEER DAN 20 JAAR
Johan Declercq & David Nuyttens, Instituut voor Landbouw en Visserij Onderzoek – Technologie & Voeding - Agrotechniek
Voor 1995 werden er in ons land drie belangrijke acties ondernomen om verantwoord om te gaan met spuitapparatuur, zoals regionale cursussen spuittechniek, inclusief onderhoud en afstelling van spuitmachines.
an landbouw

ILVO maakt biest paratbc-vrij voor gebruik door kalf

Voortaan kunnen rundveehouders bij ILVO de biestmelk van hun pasgekalfde koeien laten centrifugeren om de aanwezige MAP-bacteriën te verwijderen zonder dat de voor het kalf essentiële voedingsstoffen verdwijnen. De nieuwe dienstverlening volgt op een grondig onderzoek rond paratuberculose.

Bij herkauwers veroorzaakt de bacterie

...ica nu detecteerbaar met snelle touwtest

...rmiddag in de marge van Het Salon voor Land-...roblematiek inzake antibiotica aangesneden. Ini... hoopgevend verhaal van. De sess... cteren nog voor de varkens gesla...

...n het ILVO. Dat heeft een methode ...speeksel te bepalen of er antibiotica-...FEBEV, de federatie van het Belgisch ...chthuizen en uitsnijderijen. Terwij... ...erkt aantal slachthuizen praktisch ... opgestart om de beste aanpak ... het eerste land ter wereld zal ... ...bioticatest wordt gebruikt in ...etsoles in het slachthuis'.

...co Vanderjeugd, burgemeest... ...de sector het antibioticaprob... ...en, maar gedegen moet aan... ...antibioticagebruik in de E... ...et verdronken. De politica... ...kenshouders "als bondge... ...ereikt krijgen om zich ... ...gd riep de mengvoede... De antibioticaproblem... ...vanuit economisch o...

...ls land zijn exportpositie te allen tijde... ...gan "small country, save food' heeft ... "Het verdient die titel, zonder enige tw... ...ester van ons land.

Het ILVO nam in 2015 een nieuwe proefstal in gebruik.

Onafhankelijk van elkaar benoemen onderzoekers van VIC Sterksel, Wageningen Livestock Research en ILVO ammoniakreductie, stikstofuitstoot en antibioticareductie als onderzoeksvragen voor de toekomst.

Volgens Geert van der Peet (onderzoeker WLR) is het verschuiven van de ...hereinen niet meer dan een logisch gevolg van de progressie ...maakt. "In andere landen – voor- ...naar ...

ILVO-RASSENLIJST

Hulp bij de keuze van uw kuil- en korrelmaïsrassen

Een toelating tot de Belgische maïsrassenlijst vormt het bewijs dat een ras grondig werd getest onder onze teeltomstandigheden en dat het ras beter scoort dan de huidige (standaard)rassen. Als landbouwer wil je graag mee genie... ten van deze genetische vooruitgang. Daarom neemt u ... aanvang van het nieuwe maïsseizoen best even de tijd ... een goede rassenkeuze te maken. De ILVO-rassenlijst k... hierbij op weg helpen.

Jaarlijks brengt het ILVO een beschrijvende en aanbevelende rassenlijst uit. Dit is in 2017 niet anders. De evolutie is ... markt komen die op ... vlakken beter scoren ... voorgangers. Een ras is ... perkte periode beter d...

...tter Boerenbond ...torvakgroep ...ken Food Pilot

...fruit, ingericht door minister Schauvliege, werd dui- ...toepassingen zijn voor industrieperen. Hier pikte ...diging... ...groep... ...itter ...

...ternatieve, ...epassingen voor (industrie-)fruit

...baar is voor innovatieve ondernemers van elk niveau; van thuisverkoop tot grote fabrikanten. Het pakket omvat allereerst

→ MILIEU

Geurhinder: pilootwasser brengt reductie-effect specifieke geurcomponenten in kaart

Tekst en beeld: Joren Bruneel – Onderzoeksgroep EnVOC | ILVO – Milieutechniek – UGent

Geurhinder vanuit varkensbedrijven is en blijft een heikele kwestie. Een en ander wordt onderzocht in het kader van het IWT-project BlesPigs. Dat is een samenwerking tussen de UGent, ILVO, Inagro en het Innovatiesteunpunt. Doel is om technieken voor emissiereductie te ontwikkelen voor de varkenshouderij op vlak van geur en ammoniak. Een belangrijk onderzoekspoor hierbij betreft het beter begrijpen en verbeteren van luchtbehandelingssystemen die momenteel worden toegepast op grote schaal. In het labo van de UGent werd daartoe een pilootwasser van Trevi toegepast en gekoppeld aan een online-toestel voor geurcomponenten.

De term geur is een algemeen begrip voor een complexe samenstelling van verschillende organische en anorganische moleculen die zich in de lucht bevinden. De weg die deze moleculen afleggen in onze neus en het signaal ...aar onze hersenen, varieert van mens tot mens, maar ook van molecule ...t molecule evenals al naargelang de concentratie waarin deze voor... ...men. Om de impact van geur te begrijpen, moet de weg gevolgd worden ... de verschillende geurmoleculen afleggen van de bron (bv. varken) tot ...mens. Deze weg is een complexe opeenvolging van verschillende inter... ...es tussen water, stof en lucht.

...rcomponenten

...ait de varkenshouderij bestaat voornamelijk uit organische zuren en ...lcomponenten, waterstofsulfide (H_2S) en tientallen andere compo... ...aanwezig in zeer lage concentratie (enkele moleculen op 1 miljard ...oleculen). Sommige geurcomponenten, zoals ammoniak ruiken we ...en er meer dan 1.500 per miljard moleculen in de lucht aanwezig ... H_2S is hier slechts 1 molecule op 5 miljard luchtmoleculen nodig. ...ste bepaalt daarom samen met de organische zuren het grootste ...e varkensgeur.

Geur uit de varkenshouderij bestaat voornamelijk uit ... en zwavelcomponenten, waterstof... componenten aanwezig in zeer lage ...

17.02.2017 Opent index voor melkkoeienwelzijn perspectieven?

Het welzijn van mel... betrouwbare mani... relatief snel uitvo... ILVO-UGent ont... perspectieven, ... welzijnsscore ... meerprijs be... melk. Volge... enquête m... procent z...

...ervriendelijke" bedrijven. Voor de meeste consumenten bl... ...kten voor de koeien belangrij... ...elzijnsproblemen bij melkkoei... ...oals kreupelheid en ziektes, tot ...drinkbakken, tot gedragsproble... mastitis (uierontsteking) worden ... kunnen routinematig verzamel... scheme' op een kosten-efficiënt... Om het welzijn van melkkoeien ... manier worden bepaald. Dat is ... protocollen niet alleen arbeidsin... door experts. Het probleem daa... score te komen. Daarom ontwik... Die index is gebaseerd op enerz... aangetast door de verschillende ... welzijnsprobleem in de kudde. D... het welzijn van melkvee hebben ...

→ ONDERZOEK

Samenstelling: Maarten Ceyssens - ...

Joris Relaes, administrateur-generaal bij het ILVO.

Omstandigheden proefstal ILVO ...

Marijke Aluwé van het ILVO presenteerde onlangs een analyse van de omstandighe... van de praktijk. Er werd daarom nagegaan of de omstandigheden in de proefstal een invloe... verschillen opgenomen in de presentatie waren het toppen, het aantal dieren per hok en het type va...

Ten eerste wordt er in de praktijk vaak 'getopt', lees: dat de zwaardere varkens in het hok eerder geslacht worden. De lichtere dieren blijven nog enkele weken in het hok tot aan de volgende slachtfase. In de proefstal van het ILVO gebeurt dit dan weer niet. In een kleinschalig onderzoek toonde Aluwé aan dat er geen economische verschillen zijn tussen hokken die wel of niet getopt worden. In de getopte hokken waren er ...

Ten tweede werd het effect van hokbezetting ... stal worden er zes dieren geplaatst per hok, terwijl ... meestal tien is. De dieren hebben dan respectievelijk 1,3 m... m² beschikbare ruimte. Bij een lagere hokbezetting ondervond men in proeven dat de dieren een hogere voederopname en een hogere dagelijkse groei hadden. De voederconversie bleef echter gelijk in beide

Evolutie van het Gemeenschappelijk Landbouwbe...

Van prijsondersteuning ... directe inkomensonders...

Het Gemeenschappelijk Landbouwbeleid (GLB) is doorheen de tijd sterk veranderd. Groene Kring keek terug naar de oorsprong. We spraken met Joris Relaes, administrateur-generaal bij het ILVO, over hoe het GLB geëvolueerd is en wat de sterke en zwakke punten zijn van het huidige systeem.

...de wereld... ...pese prijs w... ...prijs werd el... ...nieuwe landb... ...de Europese L... ...Europa nog niet... ...draaide het syste... ...wers kregen een a... ...voor hun producten ... ...begroting werd gesp... ...invoerheffingen aan d... ...Maar al snel werd he... ...slachtoffer van zijn eige... ...productiviteit bleef toene... ...van mechanisering, succe... ...veredeling van planten en ... ...eerdergenoemde prijsgaranti... ...Europa zelfvoorzienend werd ... ...meeste landbouwproducten, ...pees budget werd daardoor ni... ...gespijsd met invoerheffingen. In... ...deel, steeds meer begrotingsmidd... ...moesten ingezet worden om de lan... ...bouwoverschotten met exportsubsi... ...op de wereldmarkt af te zetten. Begin ...pen zoals 'boterbergen', 'melkmeren', 'wijnplassen' en 'runderleesbergen' zijn ...daardoor deel gaan uitmaken van het ...Europese collectief geheugen. Het melk...

Voedingsonderzoek ILVO meer in de kijker

ONDERZOEK
Patrick Dieleman

Op Agriflanders kondigde administrateur-generaal Joris Relaes aan dat 'Instituut voor landbouw-, visserij- en voedingsonderzoek' de nieuwe baseline is van ILVO. "Aan het letterwoord ILVO wijzigt niets", stelde Relaes, "maar de buitenwereld mag zich meer bewust worden van het feit dat we ook sterk bezig zijn met voedingsonderzoek. Bij ons werken dagelijks zo'n tachtig mensen op het thema voeding."

Voedingsonderzoek op ILVO

In feite startte het voedingsonderzoek op ILVO al in 1956, t... voormalige rijkszuivelstatio... opgericht in Melle. Daar ... generaties wetenschappers ... bedrijven bij de ontwikkeling ... nieuwe kazen, melkdranken, ... ghurt en andere zuivelproducten ... gen. In 2011 werd de werking ... breed, door op dezelfde locatie ... starten met de *Food Pilot*. De ken... opdracht bleef dezelfde: innova... tieve ideeën uitwerken, nieuwe producten en/of processen ontwikkelen, opleidingen organiseren en problemen aanpakken. Waar het rijkszuivelstation zich alleen op zuivel richtte, komen sindsdien ook vlees en andere voedingsmiddelen aan bod. Bedrijven uit de voedingsindustrie kunnen er gebruik maken van semi-industriële apparatuur en laboratoriumanaly-ses om een productieproces voor nieuwe producten zo goed mogelijk te verbeteren de kwaliteit ervan te optimaliseren.

Ondersteuning zelfverwerkers

Joris Relaes bracht ook het nieuws dat ILVO vanaf nu een rol kan spelen in de advisering voor land- en tuinbouwers die aan zelfverwerking doen. Landbouwers kunnen niet genieten van ondersteuning via de kmo-portefeuille, tenzij ze alle ... ministratieve ...

Zelfverwerkers kunnen nu bij de Food Pilot van ILVO.

Vilt

06.2017 Telen akkerbouwers binnenkort paardenbloemen?

meldt De Tijd.
Meer dan zeventig jaar ...

Op proefvelden van het Instituut voor La... en Voedingsonderzoek (ILVO) worden ... geteeld die in een niet eens zo verre to... interessant alternatief zouden kunnen ... natuurrubber dat we invoeren uit Zuid... van het onderzoeksproject Drive4EU ... een variëteit van een paardenbloem ... Kazachstan kan veredeld worden zo... rubber produceert. Ondertussen ton... bandenfabrikanten interesse in de ...

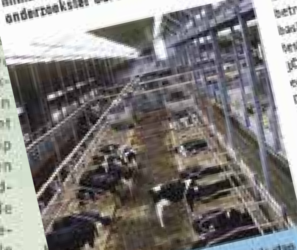
... de Russen tijdens de Tweede Were... ... uit onherbergzame gebieden in ... ook hier in Vlaanderen vindt, ma... grondstof voor het rubber van de... waar zowel onderzoeksinstelling... eschaard hebben.
... nden uit die sappen", is Ingrid ... doel is een Europese rubberi... ... ost-Azië uit bomen wordt geta... tisch rubber. Het zit in alle ba... ... pen in aardbevingsgebieden ... we ons afvragen; wat als d... rijk rubberland, tot een sch...

→ ONDERZOEK

Natuurlijke ventilatie niet makkelijk te modelleren

Het ontwikkelen van een accurate, snelle en goedkope methode voor het meten van het ventilatiedebiet in natuurlijk geventileerde melkveestallen is een enorme uitdaging. "We kunnen goede modellen opstellen voor een lege teststal in combinatie met een minimum aan dure sensoren, maar in de praktijk, een 'echte' stal dus, zijn er te veel variabelen en onzekerheden", zegt ILVO-UGent onderzoekster Gerlinde De Vogeleer. Die verdedigde afgelopen maand haar doctoraat ter zake.

Tekst: FDL naar ILVO
Beeld: FDL



Na het onderzoek in de teststal werd de stap gezet naar de ILVO-melkveestal. Die huisvest 160 koeien.

In 2016 publiceerden ILVO en UGent een betrouwbare meettechniek ontwikkeld op basis van een kleine natuurlijk geventileerde teststal. Deze methode maakt gebruik van een 3D-luchtsnelheidssensor die automatisch over een rechthoekige ventilatieopening beweegt. Dit levert gedetailleerde luchtsnelheidsprofielen op die worden vertaald in luchtdebieten, met een meetfout die ruim onder de vooropgestelde 20 procent blijft.
De techniek vormde de basis van het doctoraatsonderzoek van ILVO-UGent onderzoekster Gerlinde De Vogeleer. Zij stelde zich tot doel om deze meetmethode te vereenvoudigen, in de instantie voor de teststal en later voor de melkveestal. De trade-off tussen ... meetlocaties (praktisch...

Er is grote vraag naar accurate metingen ... luchtdebiet in natuurlijk geventileerde s... Kwestie van de efficiëntie van de venti... bepalen en om zwart op wit te kunnen z... dat er enerzijds genoeg frisse lucht d... nenkomt voor de dieren, maar and... dat de emissie van schadelijke g... CO_2 en ammoniak, binnen de per... voorkomen kan worden. Emissie... onder andere van groot belang w... NEC-richtlijn (National Emissie... actuele Vlaamse Programm... Stikstof (PAS) die wordt aan... Europese Natura 2... Gerlinde De Vogel... is om het ventila... beperkt aantal ... dan het product... oppervlak van ... zijds werd n... statistisch m... metingen ai... om het ven... Een en an... gebruik w... voorbeel... de onde...

Hoe komt het dat een aubergine binnen een minuut bruin wordt als je ze doorsnijdt?

dS De Standaard/DS2 - 13 Mar. 2017
Pagina 9

'Ik ken geen enkele groente- of fruitsoort die zo extreem snel verkleurt als de aubergine', mailt de heer De Bock. 'Bij een avocado gaat het ook redelijk snel, maar het is niets vergeleken met een aubergine.' Hoe komt dat?

De bruine kleur komt door de vorming van melanine. 'Dat lijkt chemisch op het bruine pigm... we zonnebaden', vertelt groente-en-fruitexpert Bart Nicolaï van de KU Leuven en het Vlaa... Tuinbouwproducten.

Polyfenolen en het enzym polyfenoloxidase, twee stoffen die normaal in de auberginecel... zich met elkaar op het moment dat je de groente doormidden snijdt.

'Polyfenolen zijn antioxidanten', vertelt Nicolaï. 'Ze beschermen de plant tegen ziektes e... de mens. Ze komen in duizenden varia... functie niet goed bekend is. De stof zit ... ze oxideren en lange ketens vormen: ...

De reactie vindt plaats in elke bescha... ... zegt Nicolaï. 'Die remt de o... ... een avoca...

Vilt

03.03.2017 "Agro-ecologie kan hefboom zijn voor duurzame landbouw"

Agro-ecologie kan ... meer duurzaam lan... reden moet het bele... ecologie meer ingan... en tuinbouwers en b... Dat kan onder meer ...

Zoektocht naar opvolger voor onderzoeksschip Belgica

dS De Standaard - 01 Apr. 2017
Pagina 9

De Standaard/Oost-Vlaanderen, De Standaard/Antwerpen, De Standaard/Limburg, De Standaard/Vlaams-Brabant/Brussel, De Standaard/West-Vlaanderen

Het onderzoeksschip Belgica wordt vervangen en dat is geen dag te vroeg. De Belgica ligt aan wal met technische problemen, terwijl het schip voor wetenschappers hoogstnoodzakelijk is. Volgens staatssecretaris voor Wetenschapsbeleid Zuhal Demir (N-VA) wordt de Belgica in 2020 vervangen door een gloednieuw exemplaar. Demir kondigde vrijdag aan dat 'het lastenboek voor de bouw van het schip is opgemaakt en de overheidsopdracht gelanceerd wordt'.

Meerdere instellingen deden een beroep op de Belgica. Dat het schip niet meer vaart, is 'een ramp', zegt Sofie Vandendriessche van het Instituut voor Landbouw en Visserijonderzoek. 'We kunnen niet meer al onze opdrachten uitvoeren. We gebruikten het schip voor visserijonderzoek, ramingen van de visbestanden, monitoren van olievlekken en om de kwaliteit van het mariene milieu na te gaan.'

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22 dec 2017

ILVO

Waardeketen voor maïsstro in ... waarom Vlaanderen (nog) niet ... kan

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Thema

Ontwikkeling van Vlaams voorspellingsmodel ritnaalden in laatste fase

Ook in 2016 steeg de druk van ritnaalden in Vlaanderen. Drie types plantschadelijke ritnaalden zijn ondertussen geïdentificeerd. Elke soort heeft een verschillende levenscyclus en die bepaalt of de ritnaald schadelijk is voor het gewas. Daarnaast bepalen ook perceelgebonden factoren het risico op schade. Binnenkort kan je online aan de slag om het risico op jouw perceel te bepalen.

Het landbouwtraject 'Sectorbrede geïntegreerde beheersing van ritnaalden' is halfweg. Het project werd in 2016 uitgebreid met een Europees Eranet C-IPM-project, 'Elatpro'. Het onderzoek omvat drie belangrijke pijlers:
- informatie over de plaag verzamelen;
- risicoanalyse van percelen als basis voor een beslissingsondersteunend instrument;
- risicomanagement door ontwikkelen van beheersingsstrategieën.

In dit artikel gaan we dieper in op de risicoanalyse als opstap naar een beslissingsondersteunend instrument.

Natte zomerstart maskeert plantuitval in 2016

Ritnaalden zijn de larven van kniptorren. Deze larven kunnen grote schade veroorzaken. Ritnaalden boren gaten in de aardappelknollen en maken ze waardeloos voor menselijke con-sumptie. Bij witloof en maïs veroorzaken ritnaalden grote uitval door het doorboren van de jonge plant net onder het bodemoppervlak.

Ook in 2016 steeg de ritnaalddruk in sommige teelten. In de aardappelteelt was er gewasschade op een groot aantal percelen. Door gaatjes in de knollen ging een deel van de opbrengst verloren en soms werd zelfs het volledige perceel afgekeurd. Voor witloof en maïs bleek de natte zomerstart in 2016 de stijgende plaagdruk te maskeren. Voldoende vochtvoorziening beperkte de uitval van doorboorde planten.

Drie types plantschadelijke ritnaalden

Om de verspreiding van de plantschadelijke ritnaalden in Vlaanderen in kaart te brengen, hebben de projectpartners een Vlaams moni-...

... voor de larven ... en voor de adulte kniptorren.

Het is niet voldoende om de aanwezigheid van ritnaalden op je percelen te monitoren via vallen. Om het risico voor je teelt te kunnen inschatten moet je ook weten welke soort actief is en of die wel schadelijk is voor je gewas. Er komen heel wat kniptorsoorten voor in Vlaanderen, maar daarvan zijn er maar enkele schadelijk. In Europa zijn dat vooral soorten van het geslacht Agriotes. De drie schadelijkste soorten van dit geslacht die in Vlaanderen voorkomen zijn A. lineatus, A. obscurus en A. sputator.

Naast het type Agriotes worden nog twee andere types gevangen. Type ... zijn soorten die behoren tot het geslacht Adrastus. Dit type komt het minst voor en over het schadelijk karakter is weinig geweten.

Ritnaalden van type III behoren tot meerde...

ZIJ Z... VAN...

Landbouwers hebb... zeggen dat de ... koeiengassen tot ... deze vijf vrouwe... en Visserijonderz...

Genen zichtbaar gemaakt in hoge resolutie én in multikleur:

Verbeterde techniek toont genen op chromosomen van roos en stengelui

UGent – ILVO onderzoeker Ilia Kirov verdedigde op 9 februari 2017 zijn doctoraat: Physical mapping of genes on plant chromosomes

Veredelingsonderzoek gaat steeds meer de genetische toer op, ook bij planten zoals de roos. Rozen vormen daarbij een grote uitdaging, onder andere door hun kleine en moeilijk van elkaar te onderscheiden chromosomen. Daarom verbeterde ILVO-UGent onderzoeker Ilia Kirov bestaande visualisatietechnieken om chromosomen te herkennen en de precieze locatie van specifieke genen te onthullen. Hij ontwikkelde deze technieken op de stengelui, een modelplant voor chromosoomtechnieken, en paste ze daarna met succes toe op roos. Ilia Kirov slaagde erin om de verschillende chromosomen van zowel stengelui als roos te identificeren. Ook kunnen genen nu 10 tot 20 keer beter gevisualiseerd worden op de chromosomen, én kunnen zelfs verschillende genen tegelijkertijd in beeld gebracht worden op basis van verschillende fluorescente kleuren.

Van FISH in modelplanten....

Roos is een economisch belangrijk siergewas, maar toch gebeurt er zeer weinig onderzoek naar de genoomen chromosoomorganisatie. Eén van de redenen hiervoor is dat het ...

opsporen in modelplanten zoals tarwe en stengelui. Via deze techniek worden specifieke DNA-sequenties gemarkeerd met fluorescente merkers. In een hybridisatiereac... tie binden deze ... sequenties aan ... sequenties op de ... de fluorescentie ... nadien geanalyse... die specifieke DN... bevinden op de ch... techniek bleek suc... te "grof" voor kle... genomen, zoals dat ... zoeker Ilia Kirov st... tot doel om de besta... FISH-techniek te ve... dat aan de hand va... mosomen bij stenge... technieken vervolg... kleine chromosomen...

... naar hoge-resol... roos...

Om genen op een eff... in kaart te brengen, is ... om de chromosomen ... kunnen herkennen. Hie... FISH-gebaseerde chro... kers ontwikkeld voor ... gelui. Alle 7 chromoso... en alle 8 chromosomen ... lui konden op die mani... ficeerd worden. Optim... de Tyramide-FISH-m...

Katleen Coudijzer ... resten van de land... tuinbouw een nieu... bestemming

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Energieteelten en alternatieve teelten, een alternatief voor de Vlaamse akkerbouw ?

Het Departement Landbouw en Visserij van de Vlaamse overheid en het ILVO (Instituut voor Landbouw-, Visserij- en Voedingsonderzoek) houden dit voorjaar een voorlichtingsvergadering in verband met 'Energieteelten en Alternatieve Teelten'.

De voorlichtingsvergadering vindt plaats op donderdag 16 maart 2017 om 13.00 uur in ILVO Plant, groot auditorium, Caritasstraat 39 in Merelbeke.

De studienamiddag verloopt in samenwerking met onder andere Inagro en het Landbouwcentrum voor Granen (LCG vzw).

Het programma ziet er als volgt uit :
1. 'Miscanthus of olifantsgras', door Hilde Muylle (ILVO)
2. 'Energiemaïs en Sorghum', door ...

5. 'Korte omloophout en Agroforestry', door Bert Reubens (ILVO)
6. 'Quinoa', door Alex De Vliegher (ILVO)
7. 'Yacon en Bataat', door A... Tack (PCG)
8. 'Goudsbloem', door ... Vandermersch (Dienst L... Tuinbouw Vlaams-Braban...

Tijdens de pauze wor... consumptie aangeboden.

Het einde van de namidda... voorzien rond 17.00 uur.

22.12.2017 Waarom ...

'Boeren hebben geen alternatief voor Roundup'

De Standaard - 28 Apr. 2017
Pagina 11

De Standaard/Oost-Vlaanderen, De Standaard/West-Vlaanderen, De Standaard/Vlaams-Brabant/Brussel, De Standaard/Antwerpen, De Standaard/

Van onze redactrice Inge Ghijs Brussel/In België wordt het gebruik van pesticiden die glyfosaat bevatten, zoals Roundup, binnenkort verboden. Althans voor particulieren. Landbouwers mogen het product alsnog gebruiken. Al bestaat de kans dat Europa de komende weken anders beslist, want er moet een nieuwe vergunning komen om glyfosaat op de ...

Van onze redactrice Inge Ghijs

Brussel/In België wordt het gebruik van pesticiden die glyfosaat bevatten, zoals Roundup, binnenkort verboden particulieren. Landbouwers mogen het product alsnog gebruiken. Al bestaat de kans dat Europa de komende want er moet een nieuwe vergunning komen om glyfosaat op de markt te brengen. Maar volgens de Boeren weinig of geen alternatieven.

'Kloot niet. Er bestaan wél alternatieven', zegt Greet Rietbeek van het Instituut voor Landbouw en Visserij mogelijkheid snel opnieuw

Het speldaaltje, geen gevaar voor veldsla

Gedurende een jaar volgden we de aantallen aaltjes op in o van verschillende kropsla- en veldslaserres. Bij verschillende ties van het speldaaltje Paratylenchus stelden we duidelijk de aantallen afnemen bij het continu telen van veldsla. In tege ling tot wat vaak wordt aangenomen was er een sterke populati bouw mogelijk in de winterteelt van kropsla. Schade namen w leen waar bij erg hoge aantallen.

Stay-green-kuilmaïs is louter cosmetisch

Bio-ingenieur Jolien Swanc- aert (UGent – ILVO) bestu- deerde in haar doctoraatsonder- zoek het belang en de gevolgen van stay-green bij kuilmais.

om het fotosynthesesproces te verlengen zodat de maïs meer suikers kan aanmaken. Boven- dien halen stay-green planten meer nutriënten uit de grond, vooral meer stikstof. Stikstof is namelijk zeer gevoelig voor uit- en afspoeling. Hoe minder er in de bodem achterblijft, hoe

Paratylenchus veroorzaakt groeiremming

Speldaaltjes, Paratylenchus sp

nen we onderzoeken waarom dit speldaaltje zich in sommige bodems wel tot problemati- sche aantallen kan ontwikkelen en in andere niet. Het onderzoek gebeurt in het kader van het FUNSLA-project.

TOUWTEST SPOORT ANT OP IN VARKENS

ILVO heeft op vraag van Febev, de Federatie van het Belgisch Vlee erijen, een methode uitgewerkt om op basis van varkenssp eksel wordt handig verzameld door een stukje touw van n en dat vervolgens uit te knijpen en het speeksel te analys te zijn om antibioticaresidu's te detecteren vóór de slach

ZONDHEID

Volgens ILVO biedt de

"Hoe beter de bodem, hoe sterker de plant en hoe minder schadelijke middelen"

"Weerbare planten moeten minder behandeld worden en dat is beter voor mens en milieu. Daarom onder- zoek ik hoe je de bodem of het substraat waarin planten groeien gezonder kunt maken. Zo moet die voldoende goedaardig microbieel leven bevatten: bacteriën en schim-

van de toekomst. Chitine zit bijvoor- beeld in garnalenpellen of kreeft- en krabschalen die als restafval van de visverwerkers over blijven. In onze substraatexperimenten met aard- beien boekten we alvast een mooi resultaat. Met onze meer weerbare substraatsamenstellingen konden

Jane Debode wil het pesticidegebruik bij planten verminderen

"Deze vorm van mestverwerking is een win-win voor de boeren en de industrie"

"We zoeken uit of we varkensmest kunnen wegwerken door het te gebruiken als voedsel voor hoog- waardige larven van zwarte wapen- vliegen. Als je de larven kunt 'oog- sten', dan krijgt de chemische sector een bron van eiwitten, vetten en chi- tine, die we in allerlei eindproducten nodig hebben: lijmen, schoonheids- producten, sneeuwolie... Het zou een win-win zijn voor de boer die zijn meststroverschot slim kwijt kan en

waarin de larven automatisch wor- den gekweekt. Intussen proberen we samen met UGent enkele vragen te beantwoorden over hoe de mest er moet uitzien, hoe we deze techniek kunnen gebruiken in combinatie met benzaande methoden en hoe duurzaam deze werkwijze is in verge- lijking met gangbare alternatieven. We hebben al vastgesteld dat de larven makkelijk te kweken zijn maar dat procescontrole erg belangrijk is. Het vraagt dus heel wat inspan-

Veerle Van linden voedt soldatenvliegen met varkensmest

Thema

Geïnoculeerd substraat heeft positief effect op ziekteweerbaar- heid aardbeiplanten

Aardbeiplanten kunnen sterker worden gemaakt door ze te telen in een substraat geïnoculeerd met plantversterkende schimmels. De vruchten worden hierdoor veel minder gevoelig voor vruchtrot veroorzaakt door Botrytis cinerea. De verhoogde weerstand tegen deze na-oogstziekte draagt zo bij aan een betere kwaliteit van de aardbeien en een langere bewaarbaarheid.

EVOLUTIE GEBRUIKTE DOPTYPES EN -MA

In België bestaat sedert 1 septembe licht keuring van in en ondertussen wordt 2017 de achtste drie- jaarlijkse cyclus opgestart

Procentueel aande

90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Andere | Luchtinjectiedop | Spleetdop

Grafiek: Gebruikte doptypes (keuringscyclus 5 - 6 - 7)

85 JAAR VEREDELING BIJ ILVO

Karen Goossens zorgt ervoor dat koeien minder schadelijke gassen de wereld in sturen

Geertrui Rasschaert zoekt naar natuurlijke middelen tegen Campylobacter en Salmonella

Anouk Mertens (ILVO/L waardeketen voor mais in Vlaanderen, of het op

28.04.2017 Natuurlijke ventilatie koeienstal moeilijk te berekenen

Het ontwikkelen van een accurate, snelle én goedkope methode voor het meten van het ventilatiedebiet in natuurlij geventileerde koeienstallen is een enorme uitdaging. Dat blijkt uit het doctoraatsonderzoek van Gerlinde De Vogeleer (UGent/ILVO). "We kunnen goede rekenmodellen opstellen voor een lege teststal in combinatie met een minimum aan dure sensoren, maar in een echte stal zijn er teveel variabelen en onzekerheden", zegt de onderzoekster. In open melkveestallen is het de kunst om de dieren via

tegelijk de emissie van schad In stallen worden gassen als mens en milieu. Een goede zijn bijgevolg cruciaal voor e andere van groot belang vo Programmatische Aanpak Elke stal heeft een efficiën oogpunt het meest interes complex proces." Dat kor van het luchtdebiet is ee ILVO-UGent-onderzoek bepalen met een beper met een statistisch mo Die methode is vorig teststal. Aan de hand de teststal. De stap meetmethode werkt Bij het gebruik van op de modellen te Vogeleer. Dat bots Aanvullend onder dichtbij de emitte

Bron: eigen vers

Beeld: ILVO

Voederconversie van Vlaamse varkens opnieuw late dalen: uitdaging voor ILVO- en UGent onderzoeker en voor vleesvarkenssector

Het voeder heeft een aandeel van 50 tot 70% in de kosten voor het afmesten van vleesvarkens. Voor varkenshouders komt het er dus op aan om met zo weinig mogelijk voeder zo veel moge- lijk kilo's varken te produceren. Dit wordt nog belangrijker in periodes met hoge voederprij- zen. ILVO en UGent zetten met een nieuw onderzoeksproject in op het verder verbeteren van de voederconversie bij vlees- varkens, d.i. het aantal kilo's voeder per aangewonnen kilo lichaamsgewicht.

Bijzonder aan het project is de participatie (met beschermde confidentialiteit) van de vlees- varkenshouders zelf. Het gaat om een 4 jarig VLAIO LA traject, uitgevoerd door ILVO Dier en de Ugent Vakgroep Voortplanting, Verloskunde en Bedrijfsdiergeneeskund

deld aanwezig vleesvarken (GAVV) per jaar, als ze hun voederconversie kunnen doen dalen met 0,1 eenheden.

Precies die doelstelling wordt naar voor geschoven in het nieuwe onderzoeksproject: De onderzoekers beogen tegen het einde van het project een reductie van minstens 0,1 eenheden op de Vlaamse varkensbedrijven.

Sam Millet (ILVO): "De voor- delen liggen voor de hand. Het economisch rendement en de milieuprestaties van de bedrij- ven varen er wel bij. Een lage voederconversie en een efficiënt gebruik van nutriënten in het voeder hebben meteen een posi- tief effect op de milieubelasting. En de boer houdt netto meer

Concreet gaan de onderzoeke van elk deelnemend varkensbe bedrijfsprestaties in de vleesvar- kensafdeling. Dat houdt onder meer in dat de landbouwer een bezoek aan de vleesvarkensstal zou moeten toestaan, en dat hij 2 uur (gesprek) zou moeten inplannen. Daarbij worden dan de data i.v.m. de technische bedrijfsprestaties van (minstens) 2015 en 2016 bekeken, en ook de facturen en gegevens omtrent de hoeveelheid en waarde van de aangekochte voeders, het aantal opgezette biggen, geslachte varkens en hun gewichten.

Uiteraard garanderen de onder- zoekers een volledige

Rusthuisbewoner eet het best uit eigen bord Oorzaken van eetp

Gazet van Antwerpen - 21 Apr. 2017
Pagina 6

Gazet van Antwerpen/Metropool Zuid, Gazet van Antwerpen/Metropool Noord, Gazet van Antwerpen/Mechelen, Gazet v Antwerpen/Waasland, Gazet van Antwerpen/Kempen

In Vlaamse rusthuizen is 20% van de bewoners ondervoed en nog eens 30% heeft een hoog risi ingrepen kunnen senioren hun eetlust terugkrijgen. Zelfs een eigen bord kan al helpen.

Je moet er maar op komen: senioren eten beter na hun verhuizing naar het rusthuis als ze van h eten. Dat blijkt toch uit een proefproject in Nederland. "Het heeft ons ertoe aangezet om dat hier Eeckhout van het Zorgbedrijf Antwerpen.

Op een symposium in Antwerpen van het Zorgbedrijf in samenwerking met de UAntwerpen en heel wat voorstellen gedaan om ondervoeding bij senioren aan te pakken. Hard nodig, want bijn problemen met voeding, en van de thuiswonende senioren die Thuiszorg over de vloer krijgen, veel te weinig aandacht voor die problematiek en het wordt vaak pas laat gedetecteerd. Senior aan griep of andere medische problemen. Ondervoeding zal nooit worden geregistreerd als afweermechanisme mag niet worden onderschat", zegt Bart Geurden van de UAn

Meer dan presentatie

Nu worden nog heel wat maaltijden gemixt als groenbruine brei opgediend. Al bestaat met een schijfje kippenmuis en geur verliezen als het

REPORTAGE

ILVO-Food pilot adviseert nu ook hoeveverwerkers voor innovatie

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