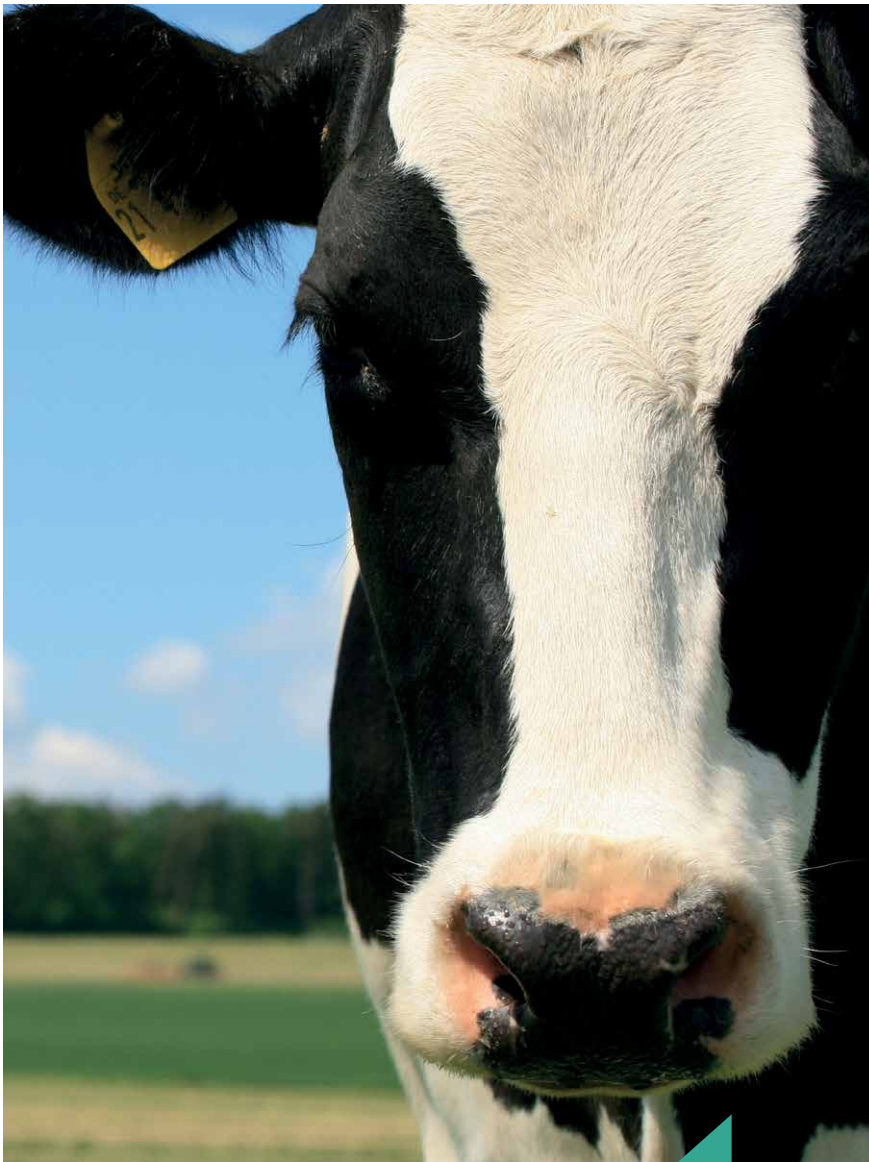




WHAT POSSIBILITIES ARE THERE FOR THE FUTURE OF WALLOON CATTLE FARMING?

THROUGH THE PROBOV PROJECT, THE CRA-W IS CONTINUING ITS FORWARD-LOOKING ACTIVITIES IN CLOSE COLLABORATION WITH THE IWEPS (WALLOON INSTITUTE FOR EVALUATION, PLANNING AND STATISTICS).



PROBOV is exploring the possibilities for the future of Walloon cattle farms with a view to creating contrasting scenarios by 2040. Volatility of prices, changes in eating habits, and rapid changes in societal expectations are all factors that affect our cattle farms. By looking to the future, forecasts suggest that we should adopt a proactive attitude and anticipate changes.

The environment on cattle farms in Wallonia is particularly complex, as its contributing factors are strongly interconnected. The findings of one retrospective study highlighted 15 particularly structuring factors. The validation of these factors has been submitted to around one hundred stakeholders through a questionnaire, providing an assessment of their relevance, their level of importance and uncertainty.

An initial exchange workshop was organised in November 2021, bringing together experts and people involved in the sector, to identify two key factors whose evolution is highly uncertain. This uncertainty has led to the visualisation of two possible, contrasting evolutions for each factor (a prospective method known as the "compass of the future"). These two factors, and their two contrasting evolutions, will form a basis for the establishment of scenarios which incorporate other factors identified as determining factors.

A second workshop is soon to be arranged to prepare the website information architecture. These scenarios will help provide food for thought and clarify the choices of the people involved in the cattle sector, such as farmers and processors, and political decision-makers.

HOW TO FIGHT AGAINST FOOD FRAUD IN OREGANO AND RICE?

Food fraud is an important issue in the food industry and is attracting much attention from authorities around the world.

Recently, a research project entitled 'Food fingerprinting as a tool to control food authenticity', has been successfully ended. This project focused on the detection of various types of food fraud in oregano and rice. Partners in the project were Ciboris (part of Primoris Holding), Ghent University, ML2Grow (company for advanced machine learning) and CRA-W.

Several analytical techniques, such as near infrared and mid-infrared spectroscopy, hyperspectral imaging, gas chromatography coupled to mass spectrometry and proton-transfer reaction time-of-flight mass spectrometry, combined with chemometrics, were examined to evaluate their potential to solve different food fraud and quality control issues.

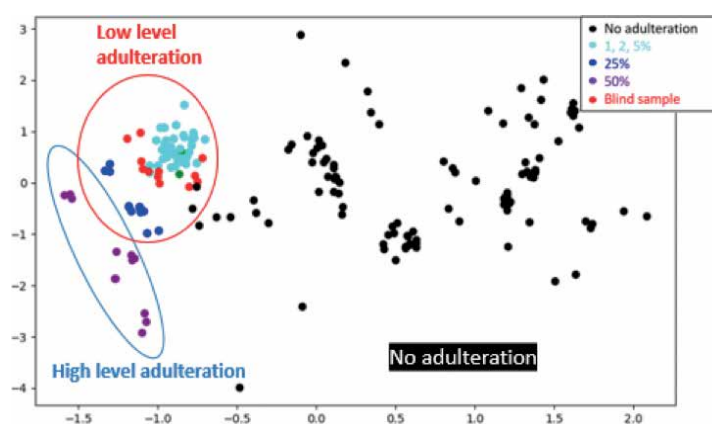
Concerning oregano, successful models were made to determine the country of origin, to identify adulteration and for batch-to-batch control. With the available database of genuine oregano samples and chemometric models, it was possible to differentiate oregano samples from Italy, Turkey, Israel and South-America. It was also shown that batch-to-batch control from incoming raw materials can be achieved. Adulteration with sumac, myrtle, olive tree and cistus leaves was detected starting up from 10% adulteration. The model built was successfully tested on a set of blind samples (in red in the figure).

Concerning rice, it was possible to distinguish genuine rice samples coming from different countries i.e. Thailand, Vietnam, Spain, Italy and Pakistan. Additionally, different varieties as Basmati, White, Glutinous, Loto, Jsendra and Puntal rice could be also differentiated.

Data fusion was also performed to obtain more robust and more accurate classification models. For origin assessment of rice, a combination of NIR and GC-MS data permitted to develop a more performant classification model.

Funding: VLAIO (Vlaamse Agentschap Innoveren en Ondernemen)

More information: www.ciboris.org/1359



Detection of adulteration in oregano with NIR: adulterated Italian oregano samples can be distinguished from non-adulterated Italian samples.

DECISION SUPPORT TOOLS FOR THE PILOTING OF DAIRY CATTLE GRAZING - FOCUS ON THE HERBOMETER

Performing a regular inventory of grasslands using grass height measurement devices helps improve the planning of grazing management.

If carried out appropriately, grazing remains the most effective means of reducing feed costs in livestock farming. Ensuring the optimum balance between the needs of the animals and the supply of grass requires good technical skills.



By regularly measuring the height of grass in the plots, its growth and the available stock can be assessed, thus enabling farmers to plan grazing more effectively. Various tools exist, including the platometer, which measures the height of compressed grass taking into account the density of vegetation cover, and indicates the available biomass.

Several approaches using the herbometer are currently underway at the CRA-W. First of all, calibrations specific to Wallonia are being developed to improve the prediction of available biomass from grass height measurements. These calibrations are based on new references of density measured on several sites in Wallonia. This intervention, carried out as a collaboration with the Fourrages-Mieux non-profit association, will be continued over the next few years.

Additionally, grazing monitored by three dairy producers equipped with a connected platometer has made it possible to gather feedback on this device. For these farmers, the platometer is a precise device, easy to use and highly beneficial in a rotational grazing system. It facilitates the decision relating to a change of plot or mowing.

Finally, the results of an online enquiry (involving 61 dairy farmers) showed that although the platometer is not widely used in Wallonia, it is the most relevant device in their opinion. The adoption of Decision Support Tools (DST) is generally hindered by cost, workload and lack of training or guidance.

To encourage the adoption of these grazing DSTs in Wallonia, Focus Groups will soon be held with dairy producers (3 March) and agricultural advisers (11 March). If you are interested, please do not hesitate to contact us!

Financement :

CRA-W Moerman Fund, EFFORT project.

Pour plus d'informations :

www.cra.wallonie.be/en/effort-2

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HOW CAN WE SUCCESSFULLY IMPROVE THE CHEMICAL STATUS OF THE WATER RESOURCE?

RISKPPP, a step forward in reducing the point source pollution of water resources by phytosanitary products.

In line with the motto: «Prevention is better than cure», the SPGE (Public Water Management Company) and the CRA-W have responded to this simple but highly complex question by proposing the creation of a web platform focusing on water resource protections.

Due to their intensive use, which dates back to the 1950s, plant protection products have greatly contributed to what is commonly called «the green revolution» - a dramatic increase in the yield and productivity of agricultural systems. However, the use of these products has also placed considerable pressure on the environment, the water resources, the soil microbiota, and even human health.

These pressures can be classified into two groups. One therefore distinguishes diffuse pollution, where the pressure is due to the repeated application of a product over a large surface, from point source pollution which, by contrast, happens accidentally and/or is very localised.

The latter generally occurs when a product is mishandled or applied to an area of increased sensitivity, which leads to the product seeping into the waterways or water tables. This is related to the low retention time of these areas which does not allow sufficient degradation of the active ingredient into harmless by-products.

In regards to this problem, the RISKPPP project aims to prevent point source pollution by creating an application with a cartographic interface that identifies and highlight these sensitive areas. These areas are described in Walloon Government decrees and agreement acts by a series of pedological, hydrological and cadastral

parameters. Therefore, in order to prevent the contamination of surface or underground water and protect the environment and the population, these areas must remain untouched from all pesticide applications.

This application, which is intended for farmers and advisers from management organisations, will enable its users to obtain exhaustive reports on the distribution of areas of increased sensitivity on their agricultural plots. Finally, to reduce additional workload related to the monitoring of these areas, the application has an integrated module that enables users to export the areas concerned into tractor consoles.



3D representation of sensitive areas that can affect an agricultural plot.

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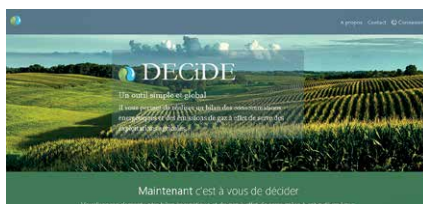


OBJECTIFYING SUSTAINABILITY: A CRITICAL ISSUE IN IDENTIFYING FUTURE COURSES OF ACTION FOR FARMS

How can a farm be developed to make it environmentally efficient while maintaining good economic profitability and social sustainability?

Finding the optimum balance proves to be a real challenge for farmers who must, above all, position their practices with regard to these three dimensions. The DECiDE tool aims to help them in the future.

DECiDE 2.0 was launched in 2020 and is now fully operational. Its purpose is to assess the greenhouse gas and ammonia emissions and the energy use of farms that produce beef, milk, and field crops, shortly to be extended to pig meat, poultry and eggs. This is an initial step that enables farmers, in collaboration with their advisors, to implement strategies to limit their environmental impact. However, the impact of agricultural practices on the environment is not limited to these emissions. The enthusiasm for more agro-ecological practices in the future will reinforce the role of agriculture in regenerating resources, deploying biodiversity, and improving water, soil and air quality



while maintaining its role as a food provider. In order to objectify the diversity of performance of our agriculture and support its most virtuous practices, the CRA-W has been tasked, as part of the Wallonia Recovery Plan, with broadening the development of the DECiDE tool (DECiDE+ project, 2022-2024) by providing new environmental indicators (e.g. Nitrogen balance, ecotoxicity, agricultural network for biodiversity) and technical indicators (e.g. autonomy, production of one animal per day of life). However, good environmental practice is not enough to ensure the sustainability of farms, which must

also be economically viable and socially acceptable. This is why DECiDE is aiming to incorporate economic and social indicators to assess the overall sustainability of farms, together with the compromises to be made in order to optimise sustainability in its three dimensions. This therefore involves developing a global sustainability assessment tool, constructed in conjunction with the industry to meet its specific demands and incremented dynamically according to advances in research. To promote its use, the CRA-W will regularly offer training targeted at agricultural advisors as and when new versions of DECiDE are released, and will set up a unique portal to help users complete their audits.

More information:
www.decide.cra.wallonie.be

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POTATO SMART: COMBATING LATE BLIGHT WITH LESS FUNGICIDE

Anticipating and locating the first outbreaks of potato late blight at the start of the season enables a better assessment of the risk and delays the first applications on potato crops, thereby reducing the amount of fungicide.

The fight against late blight relies on the repeated application of fungicides. The number and the targeting of treatments are based on decision support systems (DSS). These DSSs identify periods in which the weather conditions favour the development of late blight. The first treatments are generally recommended when symptoms of late blight are observed in the environment. However, in some years with low pressure, significant differences can be observed from one region to another.

The aim of the Potato Smart project (CRA-W – UCLouvain – FIWAP collaboration) is to develop tools to better anticipate the development of late blight using two combined approaches:

- Monitoring the flight of airborne spores based on sensor analysis (Burkhard), and flight modelling according to weather conditions

- Feedback from field observations through the development of a smartphone application

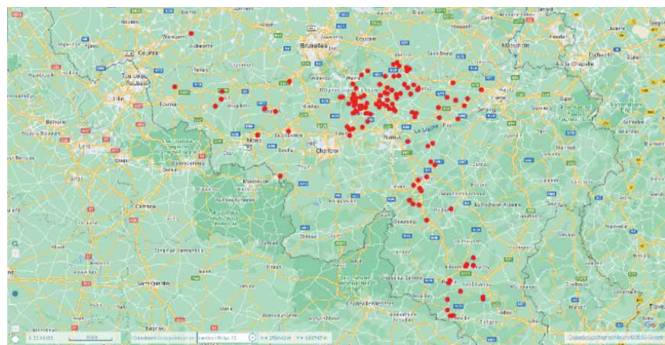
The use of data generated by spore sensors makes it possible to take account of the risk of developing late blight in the field. The results of the survey analyses carried out during the first 3 years of the project show strong correlation between the spore sensor data and the development of symptoms in the field. An initial agronomic trial demonstrated the importance of this device in reducing the number of applications.

Several teams have been scouring Wallonia in search of outbreaks of late blight infection for many years. The observations are encoded manually on a spreadsheet file and shared by email. However, it would be preferable if these valuable observations could be more rapidly, more efficiently shared with the various people involved.

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The photographs of this number are the property of CRA-W.



Map showing the location of late blight outbreaks in 2021.

The CRA-W is currently developing a smartphone application that allows users to fill in a form and add photos. The data is automatically geolocated, then sent and centralised from the first available WiFi or 4G connection. The data will then be quickly processed and analysed, creating a simple, didactic online display: maps showing outbreaks and the intensity of infections, time graphs, etc.

The tool is currently being developed on the pilot centre platform (<https://centrespilotes.be/>). This type of online form is a textbook case that can be applied to other crops, diseases, or types of observations.

Financement : SPW ARNE

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The events organised as part of this anniversary year can be found on the website: www.cra.wallonie.be/en/150years