



## LOCAL AND HIGH-QUALITY WEATHER OBSERVATIONS



**THIS IS THE GOAL OF THE AGROMET II PROJECT. THE KEY? COMBINING THE EXPERTISE OF THE CRA-W REFERENCE NETWORK WITH THE NUMBER OF CONNECTED STATIONS BELONGING TO FARMERS.**



Weather station in the CRA-W expert network

Observing the weather is not just about placing sensors in a field. Rain gauges clog, humidity probes drift and anemometers get blocked. If stations are not maintained and data is not verified, the risk of error is high. More than ever, weather observations are at the heart of agricultural decision-making. The climate is changing. Weather data feeds complex decision-making tools in order to conceive phytosanitary treatments. To make smart decisions, you need local and accurate observations.

Two sources of real-time data exist in Wallonia. On one hand, the CRA-W's Pameseb network, an expert network of thirty stations whose data is integrated into the Agromet.be platform and can be accessed by anyone. On the other hand, private networks of connected weather stations, which are being purchased and installed in fields by farmers in increasing numbers. Each network has its own strengths and weaknesses. In the Agromet II project, the intention is to combine them to make them both stronger. The CRA-W network and its team of experts provide quality control, while the farmers' stations improve coverage.

The first phase of the project involves improving the quality of the expert network even further. To do this, an automatic quality control process is implemented: the computer subjects the data to a series of tests to detect errors. Human monitoring, which is carried out every morning, is also bolstered. Finally, the stations will be equipped with state-of-the-art weighing rain gauges.

The second phase, which is coordinated by the non-profit WalDigiFarm, aims to establish data-sharing agreements between researchers, station manufacturers and farmers. At this level, it is a pilot project: respecting ownership of weather data, some of which is private, is a real issue. The goal is to create a community of farmers who share their observations and benefit from them.

The third phase will put the pieces of the puzzle together. Automatic quality control will be applied to farmers' data in order to improve its quality. This data will then be used to improve the spatial weather data based on a 1 km<sup>2</sup> grid. Two tools can be offered to the farmer at this stage. On one hand, a tool called 'My Quality Control', which will send an alert to the station in the event of a measurement error. On the other hand, a tool called 'My weather report', which will summarise weather observations, for example, with a map of cumulative precipitation over the week.

**More information:** [www.cra.wallonie.be/en/agromet-ii](http://www.cra.wallonie.be/en/agromet-ii)

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## ROBUST POTATOES: A CENTRAL LEVER FOR ORGANIC PRODUCTION

**Thanks to their tolerance to late blight, robust potatoes are ideal allies for organic farming (OF).**

The CRA-W has been collaborating with FIWAP and BioWallonie since 2019 to set up trials for varieties of potatoes in organic farming, in order to ensure high-quality and high-quantity local production.

These trials are part of the 'Robust Potatoes Pledge'. Robust varieties are, in order of importance, highly tolerant (or even resistant) to mildew, more tolerant to abiotic stresses (primarily droughts and heat) and to have less nitrogen fertilization needs. The emphasis is on the robustness of the varieties against the number one enemy of potatoes: late blight.

While dryer years are becoming more common, seasons with a high level of late blight are still present, such as 2021, where producers that still using non-robust varieties have sometimes experiencing farming difficulties. In organic farming, preventative measures are indeed limited, and curative measures are non-existent.

Trials on varieties in organic farming have been in place for four years. The official list of robust varieties in Belgium has grown from 25 (2020) to 35 varieties (2023). Trials on robust potatoes have made it possible to characterise varieties based on four criteria: plant growth (vigour, speed of emergence, senescence, etc.), phytosanitary status (primarily resistance to mildew), the quantitative aspect of harvest (yield, size distribution) and the qualitative aspect of the tubers (dry matter content, presentation and quality of processing). The trial reports are published on [the CRA-W website](https://www.cra-w.be).

Trials on varieties are also an opportunity to conduct demonstration tours. These make it possible to bring stakeholders from the potato sector together, and to discuss the results. A tasting to judge the organoleptic qualities of the potatoes has been organised since 2022, based on the market for which they are intended. Indeed, in the current range, there are potatoes with soft flesh (which are often multi-purpose), firm flesh and a few varieties that are intended to be made into chips. In the future, therefore, several 'chip' varieties should be available to replace the current varieties, which are susceptible to mildew.

However, the interest in robust potatoes is not limited to just organic farming. Indeed, their use in traditional farming will make it possible to reduce the use of inputs, in particular fungicides.

**Meet-up**  
25/08/23 • Robust potato varieties trial tour  
6 & 7/09/23 • 'Potato Europe', for the signing of the new Robust Potatoes Pledge

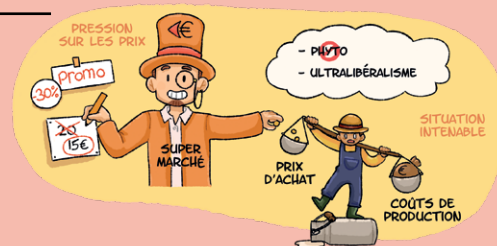
**More information:** [www.cra.wallonie.be/fr/pdt-robustes-bio](http://www.cra.wallonie.be/fr/pdt-robustes-bio)



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## A COMPASS FOR THE FUTURE OF CATTLE FARMS IN WALLONIA

**While cattle farming is demonised, and in competition with other production systems around the world, PROBOV has established scenarios for its future in Wallonia, a land of cattle farmers.**



PROBOV aims to co-conceive potential futures by involving various stakeholders from the agricultural sector and allowing them to look ahead to 2040. Foresight makes it possible to shift from being reactive to being proactive, and to go beyond the framework for a desirable future and achieve a sense of neutrality and representation in discussions.

PROBOV is supported by a partnership with IWEPS, and has mobilised the compass for the future during participatory workshops. Two very important, and very uncertain, factors have been identified for the future of cattle farming, with two contrasting evolutions for each of them. The first factor is the citizen/consumer, who is moving towards a sense of consistency or inconsistency: the consumer buys (or does not buy) products that align with their values as a citizen. The second factor represents the trade strategies of the EU, which are based on equivalent production standards or the law of supply and demand.

These factors and their evolutions are arranged on an orthogonal axis and represent four distinct contexts for evolution, which are each the subject of one scenario.

Some key messages emerge from these scenarios:

- The integration of the citizen/consumer into the design of production is key for a peaceful future in which the farmer retains autonomy over their decisions.
- Many of the difficulties encountered require strong collaboration between farmers. However, an entrenched sense of individualism has often been noted, and is reinforced by the low level of support for collaboration and issues of good governance within producer organisations.
- The future of suckling farm is often called into question, in particular due to an inconsistency on the part of the citizen/consumer, significant pressure to reduce the environmental impact of agricultural production and an improvement in animal welfare. Terminal cross-breeding (generalisation of herds for two purposes by inseminating the dairy herd with a meat breed) is often mentioned, and is even a central element of one scenario.

These results will help to enrich reflection and guide the choices of economic stakeholders, such as breeders and processing professionals, and political decision-makers. The full report of the study is available on the CRA-W website.

**More information:** [www.cra.wallonie.be/fr/probov](http://www.cra.wallonie.be/fr/probov)



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## THE CRA-W'S EXPERTISE IN ASSESSING BIOTIC STRESSES IN CEREALS

The European PHENET project aims to provide innovative phenotyping services based on the joint revolutions in sensors and big data.



These services, which are based on networks of sensors and high-resolution remote detection, will improve the ability to acquire a series of traits of agricultural ecosystems in real time. This information will be used to develop pre-dictive models, within the context of climate change and the agroecological transition. These tools will be primarily intended for re-search bodies, companies involved in breeding and plant protection as well as farmers.

PHENET relies on a series of case studies to demonstrate the applicability of these technological solutions in various sectors: crop health and phenology, soil quality, genotype-environment interactions in field crops and orchards, associated crops and landscape systems. This European project (2023–2027) aims to implement common actions intended to set up low-cost sensors and multi-sensor platforms, to centralise and aggregate data acquired at various levels

(satellites, drones, soil measurements), to develop growth models and to organise training activities.

In particular, the CRA-W will provide expertise in managing trials, assessing varieties and developing analytical methods on site using visible and near infrared optical sensors. It will be involved in coordinating the case study about the crop health. This case study will aim to propose/validate phenotyping tools, in collaboration with GEVES and Agroscope, which were developed within the framework of the Phen-wheat and Invite projects, in order to monitor the development of fusarium head blight on wheat in experimental plots. The CRA-W will also explore the use of various sensors/platforms (sensors on a tractor-mounted ramp, phenoman system), the potential transferability of different approaches for detecting other diseases in cereal crops and the potential for real-time predictions.

As a result, PHENET will serve as a demonstration of all these phenotyping services. It will provide new indicators for assessing varieties. It will also help to remove the existing constraints in Wallonia around the acceptance and use of these new technologies in the agricultural sector.

**More information:**

[www.cra.wallonie.be/fr/phenet](http://www.cra.wallonie.be/fr/phenet)  
[www.phenet.eu/en](http://www.phenet.eu/en)

**Funding:** The European Union's Horizon Europe research and innovation programme (Agreement no. 101094587)

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## PARTICIPATORY RESEARCH TO SUPPORT THE AGROECOLOGICAL TRANSITION

As part of the **TRANSAE** and **DiverIMPACTS** projects, the CRA-W, Greenotec and Walloon farmers engaged in either organic farming (OF) or conservation agriculture (CA) are exploring pathways to transition towards 'agriculture without tillage or pesticides': Organic Conservation Agriculture (OCA).

To do this, the group has turned to **long-term system experiments**, with the goal of collectively designing and testing crop systems that either reduce pesticides in CA or reduce tillage in OF under real-world conditions with farmers.

The system that has been set up is called the Plot Network Experimentation System (PNES), which involves the farmers participating in the group setting up an experiment on a one-hectare parcel of land for several years. The order of crops and the technical itineraries for this plot are **designed collaboratively** by the farmer, Greenotec and the CRA-W. This 'OCA' method is then compared to a **control** parcel of land belonging to the farmer in order to **track the different development of the two systems**. The performances recorded (crop growth, weed populations, biological/physical/chemical fertility of the soil) are discussed with all the farmers in the group.

Noteworthy observations include, among others:

- the formation of a micro-sole on the surface through a series of surface works is effective for getting rid of thistles, but harmful for

the planting of beans;

- better emergence, yield and sugar content, and less soil-tare, for beets sown with strip-till and without glyphosate, despite the poor appearance (fewer leaves, lighter colour);
- irrepressible growth of weedy rye grass in organic field crop systems with no tillage.

The findings that result from the interactions between members of the group certainly have an **agronomic** and **technical** component, but they are also **social** because they give the participants an opportunity to collaborate. They reveal **constraints** and obstacles to experimentation and the mastery and adoption of new agroecological practices (accessibility or absence of suitable machinery, market and sector constraints, short-term crop profitability, etc.).

The goal is to continue with the differentiated management of crop systems in the future, in order to be able to **observe the differences** that emerge in the long term. This continuation is made possible by the new Horizon Europe *Agroecology* TRANSECT project.



**More information:**

[www.cra.wallonie.be/fr/transae](http://www.cra.wallonie.be/fr/transae)  
[www.cra.wallonie.be/fr/diverimpacts](http://www.cra.wallonie.be/fr/diverimpacts)

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## FAST: A FREE DIGITAL APP TO HELP MANAGE NUTRIENTS

The CRA-W is helping to improve the Walloon FaST app, a free digital tool to help farmers optimise fertilisation on a parcel of land.

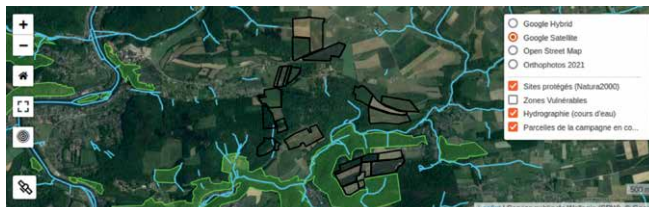
For the beginning of 2024, and within the framework of the Common Agricultural Policy, the European Commission is asking Member States to provide farmers with a digital tool that provides advice on nutrient management (FaST: Farm Sustainability Tool). The Walloon prototype for the FaST app is now deployed and supported by the FPS. It allows users to retrieve data about their parcel of land, after authentication and consent, which is encoded via Pac-on-Web. As a result, the user can benefit from a tool that helps with decision-making around nitrogen fertilisation for their parcels of land (CRA-W - REQUASUD), the display of weather data (CRA-W) and the display of images from satellite data (UCLouvain). They also have the option to transfer their parcels of land to a third-party platform that offers additional services (only BELCAM at present).

The CRA-W is responsible for IT research and development for concrete solutions to feed and improve this FaST app. It is within this context that the REQUAFERTI tool, which has been developed by REQUASUD, was suggested as a tool to help with decisions around fertilisation. The CRA-W is helping with the development of this tool and is working to connect it to the FaST app (via API, or Application Programming Interface). Therefore, REQUAFERTI's field-crop nitrogen module has been updated with the most recent reference data, and the interface developed in the FaST application has been designed to make the tool as simple, comprehensive and easy-to-understand as possible for users. The CRA-W has also contributed to adding a specific nitrogen module for meadows. The methodology used is based on the 'Fertiprairie' tool offered on the

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PROTECT'eau website, and on feedback from experts in this field (Agra-Ost, Fourrages Mieux, PROTECT'eau, Centre de Michamps). The connection of this module to the FaST app is in progress, as is work to update the REQUAFERTI module dedicated to phosphorus.

The CRA-W recently oversaw an initial test of the FaST app by a group of volunteer farmers. Their feedback was very positive, reflecting their genuine interest in a tool like this. These tests also revealed some technical issues,

and some suggestions for improvements to the content of the app. The CRA-W is still looking for volunteer farmers to test this kind of tool.

**More information:**  
[www.cra.wallonie.be/fr/fast](http://www.cra.wallonie.be/fr/fast)

**Funding:** Project subsidized by FPS ARNE, FaST agreement

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## FREE FARROWING SOWS AT A WALLOON BREEDER'S!

Prototypes for farrowing pens that allow the animal to move freely have returned results and meet the objectives

In 2021, the European Commission committed to eliminating the use of cages for animals in the EU by the end of 2023. Germany has announced that the use of permanent cages will be prohibited by 2035, and only partial confinement for five days after farrowing in pens measuring at least 6.5 m<sup>2</sup> will be allowed. The obligation to provide farrowing pens that allow free movement for sows is spreading in many European countries.

In 2019, as part of the 'Mbconfort' project, the CRA-W installed two WelCon Bio (Schauer®) pens that allow complete freedom of movement for the entire duration of the maternity process, from farrowing to lactation, for sows at an organic pig farmer's. The goal of the project was to allow breeders to discover them

on site, to adopt practices being developed in other countries and to test them at the local level. Housing with straw allows sows to nest appropriately in the pen, which is associated with control of stress hormones, which has a positive impact on oxytocin levels and, as a result, on stress before and after farrowing and favourable vitality of the piglets.

The demands of the COVID and African swine flu periods will have compromised the goal of the on-site meetings, but the appreciation of the breeder and the results have been noted. Of the 19 agreed-upon assessment criteria, the criteria that received the worst feedback concern the difficulty of entering the pen, intervening during farrowing and removing waste from the inner area, as the sow is more reactive.

However, the breeder wants to continue keeping their sows in a space with total freedom, even those that are difficult. They are delighted with how the two pens work. The sows adapt very quickly to the housing. In terms of performance, 202 litters were recorded on the farm between June 2019 and January 2023, some of which were recorded on video. The Welcon pens allowed more piglets to be weaned per litter (9.15; n = 34), while the number of live births was slightly lower compared to classic pens, which were located right beside the pens during breeding, with some contention around farrowing (66 ; n = 168). In terms of behaviour within Welcon pens, the construction of the nest lasted 11.5 hours. The sows primarily farrowed in the ideal position, lying along the anti-crushing bar



(32%), and they spend 79% of their time resting. They nurse almost exclusively indoors for the first five days after farrowing. They then use the outdoor space with their piglets.

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