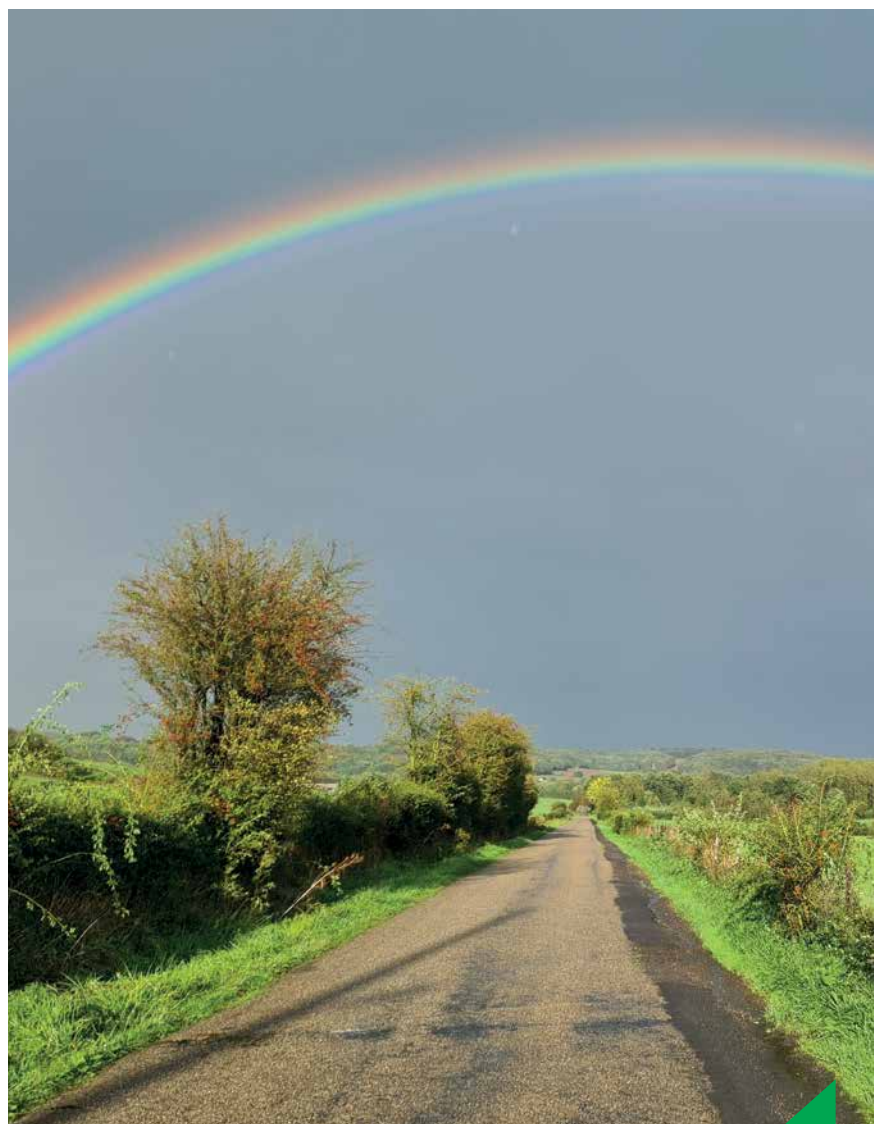




## W@LLHERBE, A DECISION-MAKING TOOL FOR GRAZING MANAGEMENT

**WORKSHOPS WITH FARMERS HAVE ENABLED US TO CO-CONSTRUCT A DECISION-MAKING TOOL BASED ON LAND OBSERVATION AND MODELLING APPROACHES IN ORDER TO MONITOR GRASS GROWTH AND OPTIMISE GRAZING.**



As part of the **Sunshine** project, an approach based on earth observation data (e.g. satellite images) coupled with a grass growth model has been designed. The solution proposed is based on an extensive three-year data collection campaign (grass height, biomass, floristic composition, etc.) in Wallonia. This data will be used to calibrate the methodology to Wallonia's soil and climate conditions. Ultimately, the project aims to include all this information in an online decision support tool (DST) for livestock farmers.

Despite substantial government support for the development of decision support tools in the agricultural sector, in practice they are rarely adopted or used by Walloon livestock farmers. This is why the Sunshine project has adopted a participatory methodology to involve farmers in the design process of the future DST.

Individual semi-structured interviews were first conducted with 11 dairy, suckling and mixed farms. These interviews enabled us to document the contrasting ways in which grazing is managed, to gather the farmers' ideas and to quickly put together an initial prototype.

Three workshops were then organised in Hainaut with the help of the Parc Naturel des Plaines de L'Escaut et du Pays des Collines, in the province of Liège with the help of Eleveo, and in Libramont with CRA-W. Breeders were able to try out and review the prototype; they then took part in a small innovation tournament where they designed/proposed new functionalities for the DST in small groups.

The **W@llHerbe** IT development team is carefully studying the functionalities proposed by breeders, and a second, improved version of the prototype should see the light of day in 2024.

**For further information please see:**  
[www.cra.wallonie.be/fr/sunshine](http://www.cra.wallonie.be/fr/sunshine)

## IS INSECT MEAL THE NEW GOOSE THAT LAYS THE GOLDEN EGGS FOR FRAUDSTERS?

**Focus on the ProteoMicS laboratory, which provides a range of applications for authenticating and assessing the quality of insect-based products.**

Mealworm powder in your burger? Having already conquered the farmed animal feed market, insect meal is now making its way into our diets in the form of bread, cookies, pasta and meat substitutes... This new source of protein is presented as a healthy and nutritious alternative, and the idea that it could be part of a circular economy is very appealing.

But how do you know if this insect powder is what it claims to be? At CRA-W, the **ProteoMicS** laboratory addresses the issue by studying proteins using mass spectrometry. The platform boasts state-of-the-art equipment for protein identification and quantification. As an essential component of foodstuffs, the analysis of protein provides a wealth of information on product quality.



**Authentication** of insect species is crucial to maintain food safety. Currently, the European Union only authorises a closed list of nine species for all uses. Once ground, it is difficult, if not impossible, to know which insect species is present in a product. The proteomic approach identifies the species used based on the detection of species-specific marker peptides. Depending on the needs of the study, these marker peptides can be selected from a large spectral database, created in collaboration with the University of Namur and the MaSUN platform, which currently covers six of the nine insect species.

Proteomics can also be used to **detect undeclared components**. Ranging from 40 to 65%, protein content impacts the commercial value of the ingredient. Therefore, the risk of substitution with less expensive proteins is real. Characterising meal based on its protein composition is one way of combating this type of fraud.

Another risk associated with this new type of breeding could come from the **breeding substrate**. It should meet the requirements of livestock feed in order to guarantee food safety. The substrate can be a source of numerous risks (bacteria, viruses, prions, allergens, heavy metals and mycotoxins). Breeding on kitchen waste and manure, for example, is prohibited. A study carried out as part of the **ENTOFör** project (<https://www.cra.wallonie.be/fr/entofor>) showed that substrate residues could be detected in insect meal. More recently, another study carried out at CRA-W, in which insects were reared on fast-food waste (burgers, pizzas, nuggets), confirmed this observation, as meat residues were detected in the product.

With the rapidly expanding market for edible insects, the proteomic approach is a powerful analytical solution for assessing the quality of these products.

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## WHAT ARE THE KEYS TO EFFECTIVELY COMBATING ILLEGAL AND COUNTERFEIT PESTICIDES?

**Counterfeit pesticides may contain less active substances, or co-formulants that are banned because of the risk to human health and the environment.**



Measurement of a pesticide formulation using a portable Raman device

**Reducing the administrative burden is a first step.**

Our bibliographical review of regulations shows their complexity, the lack of interconnection between administrative databases and the great diversity of the competent international, European and national authorities involved.

**The analysis of numerous illegal and genuine formulations is a major factor for success.**

We analysed 400 samples of authentic formulations, formulations monitored by the FASFC and formulations that we deliberately adulterated. We considered the determination of active substances, relevant impurities, certain co-formulants or the complete profile (fingerprint, screening/profiling) of formulations, and the comparison to authentic, parallel import or counterfeit formulations.

**One of the urgent needs is a rapid, inexpensive screening system that can be used directly in a pesticide warehouse.**

The DEPIPEST project combines rapid screening by vibrational spectroscopy (MIR, Raman) with the chromatographic confirmation (GC-FID, GC-MS, UHPLC-UV/MS, LC-HRMS) of samples deemed suspect during screening. We tested several devices (MIR-ATR, FT-Raman, handheld Raman, Raman microscopy) and sample presentations. Statistical processing using main component analysis provides encouraging results for formulation identification. We plan to develop chemometric and machine-learning techniques to take full advantage of spectroscopic analyses.

**Finally, another essential point is the setting up of a database linking administrative information on pesticides with their spectroscopic and chromatographic analytical data.**

**For further information please see:**

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

**Financed by** SPF Santé publique, sécurité de la chaîne alimentaire et environnement (Public health, food chain safety and the environment)

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## TOOLS TO IMPROVE THE RESILIENCE OF DAIRY SYSTEMS

Funded as part of the European Horizon 2020 programme, the R4D (Resilience For Dairy) project provides tools and achievements for dairy farmers.



Since January 2021, 120 dairy farmers and 18 organisations from 15 different European Union countries have been cooperating under the impetus of the Institut de l'Elevage (IDELE) to contribute to the development of more socially, environmentally and economically sustainable livestock farming.

During study trips, these breeders had the opportunity to exchange ideas and discover the particularities of dairy farming in the different countries they visited. This included automation in Slovenia, very large farms in Hungary (up to 2,000 dairy cows), and the cooperative dairy system in Spain (up to 18 cooperators on a single farm).

International workshops were held on the trips to discuss different aspects of resilience and improvement.

An online questionnaire was used to draw up a list of needs specific to each country's dairy sector. The project's partner breeders then worked together to select the most relevant innovations, with the help of a group of European experts. In the end, around a hundred technical data sheets were produced

for these innovations, accompanied by illustrative videos.

The project also provided a series of webinars on topical issues relating to the dairy sector, as well as training modules in lean management, which aims to streamline production processes.

All these tools are available at <https://resilience4dairy.eu/>

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## WHAT CAN BE DONE TO IMPROVE WELFARE ON PIG FARMS?

PPILOW organised a one-day forum for Belgian breeders on this issue.



On 29 March, CRA-W and BioForum organised a one-day forum for Belgian pig farmers and their advisors, as part of the European PPILOW project. Using a collective, multi-stakeholder approach, the project has been working for five years now to improve the well-being of pigs and poultry on free-range and organic farms.

It is now drawing to a close, and is putting forward strategies and technical levers that can be applied on farms. These strategies were presented to the assembly in the morning, then illustrated by a visit to the Vleterbeek organic farm (POPERINGE) in the afternoon.

In a nutshell, raising uncastrated male pigs is one of the alternatives to surgical castration, but it requires real investment from the entire industry (breeders, abattoirs, processors, consumers) to come up with a relevant strategy that can be implemented throughout Belgium. The nature of meat from uncastrated males remains a sensitive issue for operators in the sector.

Another topic is the reduction of piglet loss rates through actions aimed at improving their robustness, whether through genetics (with less prolific breeds) or animal management. The issue of iron injections in particular was discussed, as it is a challenge that the organic pork industry has to face up to. Promising results were presented by INAGRO, but need to be studied in greater depth and adapted to field conditions before they can be extended to farms.

A visit to the Vleterbeek organic farm provided an opportunity to explore the issue of housing sows after farrowing. Mobile huts - based on the VANGGAARD system - were adapted and improved to suit Belgian production conditions. One of them is currently being tested on the farm. During the visit, the question of on-farm



feed production was also raised, as the farmer had invested in a system for the customised mixing of feed materials (spelt, triticale, peas, CCM, chestnut co-products, soya, etc.).

**For further information please see:** [www.cra.wallonie.be/fr/ppilow](http://www.cra.wallonie.be/fr/ppilow)

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## WHEN OFFER MEETS DEMAND IN ORGANIC AGRICULTURE

**Fredo is a tool designed to help research meet the needs of the organic farming sector.**

### As for the context...

CRA-W has been active in organic farming research for over 30 years now. Since 2014, it has taken part in two Walloon Plans for the Development of Organic Agriculture (OA) and Production (OP) (PSDAB2020 and PlanBio2030). In order to conduct innovative research rooted in the needs of the Walloon organic sector, CRA-W worked to (1) identify the demands/questions of the organic sector in terms of agronomic Research & Development; (2) take stock of 'research offers' from Wallonia and regions with a similar pedoclimatic context.

### What exactly is Fredo?

To compile, classify and structure these requests and publications, CRA-W has developed a referencing tool called Fredo (Fichier Récapitulatif de la Demande et de l'Offre in French). It is aimed at anyone interested in organic farming. Its main advantage is that it is capable of linking the demands/questions in the sector with the research results that can respond to them.

Today, Fredo boasts over 5,600 publications: scientific publications, journal articles, podcasts, webinars...700 are specific to Wallonia and 400 concern research at CRA-W. 350 requests/questions addressed to research are also listed. Questions may be answered directly in the publications filed, or through the written intervention of a competent researcher.

### Why use Fredo?

The tool lets you:

- Encode any Request/Question addressed to research and receive a follow-up (in the form of a response by a scientific expert and/or a list of publications dealing with your question);
- Keep abreast of the demands/issues/needs of the OA/OP sector in Wallonia;
- Consult a wide range of bibliographical resources on OA/OP in Wallonia and neighbouring countries.

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



Your requests/questions consolidate the image that Walloon research has of the needs in organic agriculture research. For the latest call for 'OA research' projects, Fredo was asked by SPW to identify the sector's priorities.

### How does it work?

Do you want to find out more about Fredo? Please visit the following address:  
<https://fredo.cra.wallonie.be/>

**Contact:**  
[celluleagribio@cra.wallonie.be](mailto:celluleagribio@cra.wallonie.be)



## June 19 & 20, 2024 • [www.festival-acs.be](http://www.festival-acs.be)

**CRA-W AT THE FESTIVAL OF AGROECOLOGY AND CONSERVATION AGRICULTURE**

**The festival is an opportunity to present our numerous agroecology research projects.**



The non-profit entity Greenotec and SPW, with the support of numerous partners including CRA-W, are organising the fourth Festival of Agroecology and Conservation Agriculture (FA<sup>2</sup>C) in 2024. This year's festival takes place on **19 and 20 June** at the Freloux farm in Fexhe-le-haut-clocher (Liège), with a new **area specifically devoted to organic farming**.

FA<sup>2</sup>C aims at raising farmers' awareness of the issues involved in agroecology and soil conservation agriculture. The event brings together farmers, agribusiness professionals, researchers, students and citizens interested in the challenges of tomorrow's agriculture.

The research activities presented by the CRA-W are numerous :

- The **AssoBIO** project takes a participatory approach to cereal-protein crop associations, with the aim of co-constructing agronomic itineraries for the production of seed legumes under our own pedoclimatic conditions;
- The **BioCoCrop** project aims at providing a phytotechnical solution for organic and no-till field crop systems, based on the co-cultivation of a permanent legume cover sown in strips with a profitable crop;
- Trials on the assessment of intercropping cover crops and on localised fertilisation for beet sowing, carried out as part of the European **ClieNFarms** project aimed at implementing and co-developing practices in a network of farms to mitigate the impact of agriculture on climate change and increase farm resilience;
- The various trials and actions supported by **Terraé** within its network of 40 farms in agro-ecological transition;



- The testing of Organic Agriculture and Soil Conservation (ABC in French) systems in field crops in Wallonia via collaboration between farmers, advisors (Greenotec), researchers (CRA-W): the ABC Group (financed in particular by the European **agroecology-TRANSECT** project) ;
- The **projet SPoT** project mobilises agroecological practices in polyculture-livestock systems to meet the challenges of circularity, feed/food competition and climate change.

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