



One strawberry season comes to an end ... the next one will soon be here



Stock plant supplied to growers

Darselect, Lambada, Elsanta, ... the arrival of strawberries in the shops means that summer has come! Widely grown in Wallonia, strawberries are looked forward to and enjoyed by consumers undeterred by high prices early in the season.

Strawberry growing requires a lot of precision, knowledge and technical support. Growers have to consider the choice of variety, the type of plants, the substrate used and the crop husbandry practices, as all these factors contribute to the quality of the fruit and that is the main criterion for both the marketing chain and consumers

A variety's productivity and disease and pest resistance are important points for commercial growers to consider.

Testing new cultivars produced by breeders is one of the routine activities carried on by CRA-W through the Pilot Centre for Strawberries and Woody Small Fruits. Growing these new varieties requires some adaptations to regional conditions, in terms of planting dates, types of plant, etc., and our research takes account of such aspects. As part of this work, trials are set up to assess the flavour and productivity of new cultivars grown out of doors, in tunnels and in soilless systems. Among the varieties tested this year, Darselect Bright appears to have potential in terms of both flavour and commercial yield. The only downside is that berry size decreases faster during the season than is the case with the Darselect variety, currently the most widely grown in Wallonia.

Another of the Centre's activities involves developing Wallonia's Elsanta strawberry plantlet industry. Propagating from laboratory-produced in vitro plants requires specific technical expertise which is quite different from fruit production. After a few years of experimentation, some tweaks have been made to the strawberry foundation plant production scheme to produce strawberry plantlets for commercial nurseries or for own production by strawberry growers. Mr and Mrs Depuydt-Obin's farm at Estinnes-au-val is currently the only one to multiply and sell strawberry plantlets under the Walloon strawberry plantlet industry programme.

Our programme of work also includes other trials in areas such as agronomy, pest control and biodegradable plastic behaviour. These are designed in consultation with the Technical Committee of growers and other strawberry industry players.

With the support of the Regional Government of Wallonia. Pilot Centre for Strawberries and Woody Small Fruits agreement no. 2855/4

Contact : Stéphanie Farvacque, farvacque@cra.wallonie.be

CRA-W's image, you said?

Its appointment as Community Reference Laboratory for the Animal Proteins in Feedingstuff (CRL-AP) in 2006 has firmly established CRA-W's reputation in Europe and elsewhere in the world.

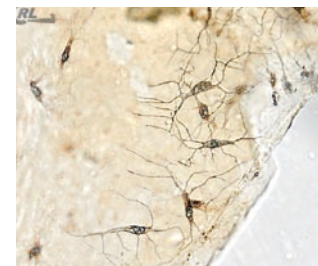
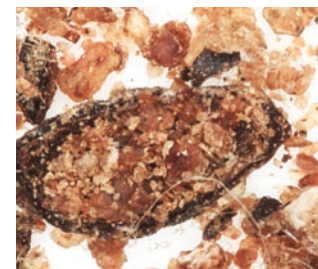
This recognition has come about notably through the tools developed for scientists working in animal feed quality control, and specifically enhancing our image through images. Since 2007 CRA-W has been building up an online micrograph database to assist with identifying suspect particles in animal feed.

More than 700 images, carefully selected from some 2,500 micrographs, are available to the European Union's network of National Reference Laboratories (NRLs) and also to all scientists (in both the public and the private sector) who are members of the IAG (International Association for Feedingstuff Analysis). This collection, compiled to the highest digital micrography quality standards, is accessible via the CRL-AP's intranet platform (password-protected). To facilitate searching, a downloadable index is available which contains all the technical data on the micrographs accessible to researchers. Searching species by their binomial and vernacular names is also possible. Each image contains an embedded CRL-AP logo and a scale bar. Researchers accessing the collection can use these documents for publication subject to a number of conditions, one of which is that the CRL-AP and CRA-W must be named.

Traceability of all image data has been a requirement since the design of this unique micrograph collection. The collection is therefore included in the CRL-AP Sample Management System, a computer program developed in-house for sample management.

The collection is growing all the time to meet the needs of the scientific community. Users are automatically notified about updates by e-mail. Most updates occur in response to current issues: determination and specific identification of rodent hairs in the case of environmental contamination, presence of marine mammals in fishmeal, etc.

To mark the completion of the European SAFEED-PAP project and at the request of RIKILT (Wageningen, Netherlands), micrographs from the collec-



tion will be included in the new online version of the ARIES decision support system. This is an explicit acknowledgment of the usefulness of the tool developed by CRA-W and the Centre's technical imaging expertise.

Contact : [Pascal Veys, p.veys@cra.wallonie.be](mailto:p.veys@cra.wallonie.be)

Sustainable pork production with DURAPORC

In a context of rising energy prices, designing low-energy animal housing is essential. The average consumption of farrowing / fattening piggery is nearly 1,000 kWh per sow per year. In fact, consumption can range from one to three times that figure, and nearly 50% of the energy is used for heating. Moreover, more than one-third of the energy is used at the post-weaning stage and nearly one-quarter in farrowing.

The aim of the CRA-W's study was therefore to test a new type of farrowing and post-weaning stalls designed with both energy saving and animal welfare in mind. This involved trying out an innovative frame of reference. These stalls are designed to provide the piglets with an insulated, heated shelter within a stall where the ambient air is cooler than in conventional systems.

Various temperature settings were tried out in the post-weaning stalls and we showed that an ambient temperature of about 15°C had to be maintained and that heating the shelters to 32°C at the start of post-weaning was sufficient for maintaining production performance. Unfortunately, the hoped-for energy saving did not materialise. The study also showed the importance of planning the stall layout to avoid recurring cleanliness problems, specifically the need to keep the defecation area separate from the shelter area.

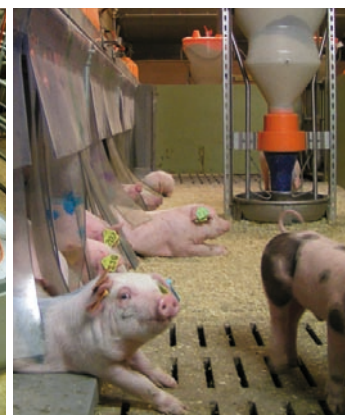
In farrowing we compared the shelters with a traditional system using heat lamps. Using shelters cut the energy consumption. Results for production performance were conflicting, with higher piglet mortality in the shelter system but less loss of weight and back fat among the sows. Sow and piglet behaviour appeared unaffected by the different systems,

although the piglets used the heated shelters more than the areas under the heat lamps.

The stalls with shelters took more time to clean out between groups.

Funded by the Department of Agriculture, Natural Resources and the Environment, Development and Extension Section

Contact : [Virginie Remience, v.remience@cra.wallonie.be](mailto:v.remience@cra.wallonie.be)

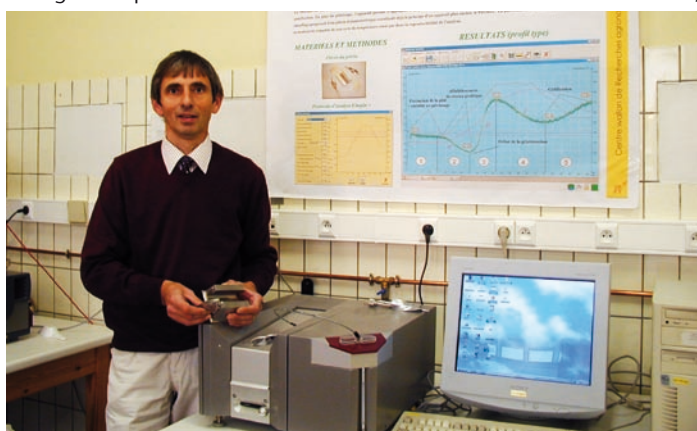


Contribution to developing bread dough texture measuring equipment: the CHOPIN MIXOLAB

The suitability of cereals for milling/baking applications depends to a great extent on the breadmaking methods and these can only be studied indirectly by measuring the rheological properties of bread dough (using a farinograph, extensograph, alveograph and/or consistograph). These methods require large quantities of samples (about one kg) and milling with a test mill. Such tests are frequently used downstream in the industry, but not upstream.

Based on these observations and their own experience, Marc Aelvoet and Luc Willems of Rheotec (Markedal, Belgium) designed and developed the Multigraph between 1990 and 1998. CRA-W was involved in this development from the outset, studying the relationship between the results obtained with the Multigraph and those obtained with other methods. In 2001 Chopin Technologies completed the development of the equipment and marketed it under the Mixolab name.

Designed to perform measurements in both white flour and whole meal,



the Mixolab can be used throughout the industry. When working with whole meal the test can be performed on 100-150 g of seeds, making it attractive to seed producers. The Mixolab can assess the stability of dough during kneading and during heating. It assesses protein network quality, starch quality and the effects of amylolytic enzymes.

Measurements can be made: :

- In white flour without heat treatment to determine water absorption and kneading stability (Simulator protocol)
- In white flour or whole meal with heat treatment to determine water absorption, protein network stability during kneading and heating, starch gelatinisation and gelling properties and the effects of enzymes on these properties (Chopin+ protocol, Mixolab Profiler).
- In white flour or whole meal according to a special protocol.

The quantity of water required to reach a target texture of 1.1 Nm is the water absorption and the dwell time at that texture is the dough stability. The resulting graph is characterised by five texture values, with associated times T and temperatures T°.

With small sample sizes, great flexibility of use and the possibility of working with both white flour and whole meal, the Mixolab is a tool of choice for the entire cereal processing industry.

Contacts : Georges Sinnaeve, sinnaeve@cra.wallonie.be and Sébastien Gofflot, s.gofflot@cra.wallonie.be

Agricultural product authentication at CRA-W



Food authentication and traceability are hot topics for the authorities, food and agricultural industry players and consumers. Authentication is a broad concept which involves checking how closely the product matches the information on the label. For the last ten years Olivier Fumière has used near infrared spectrometry in conjunction with molecular biology to approach food authentication from completely different angles. His doctoral thesis, with the viva

on 11 May 2010, presented the results of his research into authenticating slow-growing broilers used in differentiated quality products governed by specifications, on the one hand, and detecting MBM in cattle feed, on the other.

The work with broilers led to the development of discriminatory models based on the near infrared spectra of chicken meat. In more than 80% of cases these models were able to distinguish chickens from slow-growing strains from those from fast-growing strains. Results of animal experiments showed that near infrared spectrometry could also reveal adulteration of animal feed. Two specific molecular markers for the particular chicken strain were shown up by AFLP (Amplified Fragment Length Polymorphism). Their complete sequence and location in the chicken genome were determined. A rapid, routine PCR-RFLP (Polymerase Chain Reaction – Restriction Fragment Length Polymorphism) test that reproduces the polymorphism observed by AFLP was developed for the molecular marker characteristic of fast-growing chickens.

With regard to detecting MBM in cattle feed, the real-time PCR method developed by CRA-W is the first PCR method to have been successfully used in international inter-laboratory trials proving its sensitivity and specificity. At the development stage the method was used with DNA (deoxyribonucleic acids) extracted from a 100 mg sample. However, one weakness of PCR is its inability to distinguish permitted DNA sources (e.g. milk powder) from prohibited ones (processed MBM). A new strategy linking PCR with near infrared microscopy was therefore developed. This specifically detects MBM particles by near infrared microscopy. They are then sent to a molecular biology laboratory where the DNA of each individual particle can be extracted and analysed by real-time PCR. Specific particle washing and DNA extraction protocols were also developed to ensure that the DNA analysed came from the particle itself and not from surface contamination by foreign DNA from other components of the food.

The usefulness of combining molecular biology techniques with near infrared spectrometry was thus proved in both cases.

Contact : Olivier Fumière, fumiere@cra.wallonie.be

GPS opens up to agriculture !

Car navigation systems are a modern success story. And they have now moved into agriculture, with even more accurate applications. The aim of this new technology is to optimise vehicle operator guidance, either manually or automatically.

The DGPS corrections needed in agriculture are now more stable and accurate, with an ever-faster return on investment.

CRA-W measured the accuracy of a number of systems available on the Belgian market and their cost-effectiveness for a particular farm.

Manual navigation with DGPS accuracy of 30 cm is ideal for operations over wide areas, such as spraying, spreading fertilizer or surveying. Nevertheless, the technology can also be used for many other jobs, from sowing to harvesting, with automated operation.

But that's not all GPS can do. Automated management of spray boom section



opening and closing cuts chemical input by 3 to 5% and helps to protect the environment.

GPS technology is ready for the precision agriculture of the future!

Contacts : Gaëtan Dubois, g.dubois@cra.wallonie.be and Bruno Huyghebaert, huyghebaert@cra.wallonie.be

CRA-W honoured by the WHO

Jean-Pierre Destain, Interim Director General, and Olivier Pigeon, Scientific Coordinator of CRA-W, attended the seventh GCDPP (Global Collaboration for Development of Pesticides for Public Health) meeting in Geneva on 24 and 25 June 2010. The meeting coincided with the 50th anniversary of WHOPES (World Health Organization Pesticides Evaluation Scheme) and to mark the occasion CRA-W was presented with a commemorative plaque in honour of its work as a WHO Collaborating Centre for Pesticide Quality Control.



Jean-Pierre Destain and Olivier Pigeon with the WHO authorities.

WHOPES was set up in 1960 to promote and coordinate testing and evaluation of pesticides used in public health (<http://www.who.int/whopes/en/>).

CRA-W first became involved in WHOPES work in 1987. In 1998 the Centre was appointed a WHO Collaborating centre for Pesticide Quality Control. The appointment was renewed in 2002, 2004 and 2008.

CRA-W's work in this context involves:

- Developing analytical methods and determining the physico-chemical properties of pesticides used in public health for product quality control according to WHO specifications and the analytical methods recommended in those specifications.
- Performing chemical and physico-chemical analysis of mosquito nets treated with insecticides (long-lasting insecticide-treated mosquito nets) and other treated materials.
- Supporting the work of the WHO in developing, finalising and publishing specifications and assessments of pesticides used in public health.

Contact : Olivier Pigeon, pigeon@cra.wallonie.be

CRA-W AGENDA

13 October 2010

10th PIG AND POULTRY PRODUCTS SEMINAR
Our Pork and Poultry Sectors: Towards More Sustainability
Espace Senghor, Gembloux
Contact : Geneviève Minne, minne@cra.wallonie.be

9 February 2011

16th CARREFOUR DES PRODUCTIONS ANIMALES
The Sustainability of the Dairy Sector
Espace Senghor, Gembloux
Contact : Geneviève Minne, minne@cra.wallonie.be

28 February - 4 March 2011

INFRARED SPECTROSCOPY AND CHIMIOMETRY TRAINING
Gembloux
Contact : Juan Antonio Fernandez Pierna, fernandez@cra.wallonie.be