



## DurAgr'ISO14001: towards recognition of farm sustainability

Agriculture operates within a constantly changing framework and environment, in economic terms (CAP, globalisation of trade, constraints imposed by the Food Safety Agency, etc.), environmental terms (Nitrates Directive, greenhouse gas emissions, protection of biodiversity, and so on) and social terms (growing labour shortage, increasing size and decreasing transferability of farms, marginalisation within rural populations, etc.). In such a context, the ability of agricultural systems to adapt to these various constraints becomes a key factor for their continuity and sustainability.

To enable farms to evolve in step with society's many and varied expectations, agricultural advisory and support organisations must adapt their working practices and distribute/implement appropriate, validated decision support tools, and they must do so in consultation across borders for greater consistency. This is the background to the recent launch of the European DurAgr'ISO14001 project, a three-year project funded within the INTERREG IV France-Wallonia-Flanders programme. The project is jointly financed by the European Union (European Regional Development Fund) and the Regional Government of Wallonia (Wallonia's share). It is coordinated by CRA-W and draws on the expertise of Proclam and PIVAL (in Flanders), FUGEA and PNPC (in Wallonia) and ADEME, PeriG and Terr'Avenir Picardie (in France). The aim is to develop a consistent cross-border assessment and advice tool for farmers that will reveal significant efforts to protect the environment and promote sustainable development.

To this end, a comparison of current approaches in France, Belgium and elsewhere ('sustainability star', IDEA method, ISO 14001 certification, etc.) with reference to their added value for the farm, their user-friendliness and the degree of compatibility with the regulations (European and local legislation, EurepGAP, QFL, IFS, etc.) will result in the development of a suitable method for implementing a global sustainable development initiative on farms (choice of tools, indicators, etc. ...).

The relevance of this method will be confirmed on a representative sample of farms before being applied to nearly 120 farms within the

three project regions. To enhance the value of this proactive approach the methodology will lead to recognition based on environmental certification. The initiative will then be rolled out across borders to permit wider extension of the device to other European farms. Interest has already been expressed by some adjacent regions.



*European Union  
the European Regional Development Funds (ERDF)*



*Interreg erases the borders*

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## TYING RIDGES: VERY CONCLUSIVE FIRST RESULTS!

Ridge tying trials (small earth dams) began in late April in three sloping potato fields. These three fields were chosen for their contrasting soil textures: sandy loam at Baisy-Thy (4.2% slope), medium loam at Nodebais (6.6% slope) and clay loam at Saint-Aubin (5.7% slope).

A system was set up to collect water from three interridges over a length of 30 metres. The runoff water was quantified and analysed after each heavy rainfall. Results to date are very conclusive.



*Tied and untied ridges (photo: CRA-W)*

would have been collected from 1 ha of this field! However, the runoff would have been perceptibly less had the ridges been tied over the whole area: only 4,400 litres water/ha would have run down the slope. Tied ridges retain 95% of runoff water. This water permeates the soil during heavy rain and is used by the crop instead of running away.



*227 litres collected from untied ridges on 10 July 09 (photo: CRA-W)*

Site	Collected from tied ridges (3)	Collected from untied ridges (3)
Baisy-Thy	21 litres	> 1260 litres
Nodebais	30 litres	655 litres
Saint-Aubin	475 litres	> 1005 litres

*Runoff water collected from 19 May to 31 July over a length of 30 meters*

Let us look at Nodebais. The total rainfall from 1 May to 31 July amounted to 147 mm. Despite the low rainfall (in terms of both intensity and quantity), 655 litres of runoff water was nevertheless collected from the three untied interridges, over an area of 0.675 ares... so a total of 97,000 litres

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## GEOFAIRTRADE : CERTIFYING THE GEOGRAPHICAL ORIGIN OF FAIRTRADE PRODUCTS

Fairtrade was thought up and put into effect mainly by lay organisations and non-governmental organisations (NGOs). Unfortunately, such bodies do not themselves have the resources to develop concerted research and development strategies. The special feature of the GEOFAIRTRADE project is the way it brings together fairtrade players and research partners.

'Fair trade' has undergone a remarkable development in the last few years. On the one hand, the volume of sales of fairtrade products has risen considerably. This increase goes hand in hand with stricter consumer requirements in terms of product origins. On the other hand, fairtrade is enjoying an ever-higher media profile and tends today to claim to be part of the sustainable development movement. This involves using better social, economic and environmental practices. Consequently, fairtrade players are looking for full and precise information to enable them to answer consumers' questions and to improve certification of practices used as part of sustainable development.

Against this background, twelve partners from six European countries have come together in a research project aimed at setting up an

integrated geotraceability system to establish the sector's credibility and promote sustainable good practice in fairtrade.

In this project, which is led by the Gers CCI (France), the three scientific partners are CRA-W (Belgium), CIRAD (France) and the University of Wageningen (Netherlands), whereas the fairtrade organisations are represented by federations which coordinate and promote the movement (IFAT, PFCE, Max Havelaar, CECJ, PAKKA, EQUISOL). Other project participants include an organic produce certification body (ECOCERT) and a private company specialising in remote sensing data processing (SIRS).

The project aims to develop a geographical information system to show product origins and routes to the consumer. This decision support tool must be able to answer the many questions from users in different organisations.

The geo-traceability indicators used in previous projects (GEOTRACEAGRI, GTIS-CAP) to describe agricultural products will be adapted to take account of the specific socio-economic and environmental realities of fairtrade. Calculation of the indicators should provide a way of measuring the impact of fairtrade on sustainable development.

*This project is funded by the European Commission's 7th Framework Programme.*



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## MECACOST, ON-LINE CALCULATION OF THE COST OF USE OF TRACTORS AND AGRICULTURAL MACHINERY

Even though a new investment is initially weighed up in terms of technical criteria, its cost-effectiveness is an important factor which obviously has to be considered before making a decision. One way of establishing all the costs of using a machine in advance is to work out the estimated cost of use. This should include all the fixed costs: depreciation, interest, tax and insurance, and also the variable costs, such as maintenance and repair expenses and fuel consumption (for self-propelled units and tractors).

The **MECACOST tool** can do all this for you. This decision support tool, developed by the Walloon Agricultural Research Centre CRAW?, can calculate the cost of use of more than 380 tractors and agricultural machines.

The tool is very easy to use. The first step is to select the machines to be included in the calculation (specifications and options). The

parameters required for the calculation are then presented. These can be user-defined, for example, the purchase price of the machine, annual use, efficiency, etc., enabling the calculation to be adapted to specific circumstances. Finally, the result is output in the form of tables and graphs which can be printed out. This tool goes even further and can calculate the cost of use for a combination of machinery (1 tractor with 1 or 2 machines), taking labour into account if required.

MECACOST thus provides the agricultural sector (farmers, agricultural contractors) with a decision support tool that enables the best equipment option to be selected according to the user's requirements. As well as limiting unjustified investment it also allows machines and combinations of machines to be compared, for example for forage harvesting, till and no-till sowing techniques, and so on. The cost of

use will also be relevant when **setting rates** for contract work and, conversely, it can be compared with the rates charged by agricultural contractors.

This tool is available as a four-language version (NL, FR, DE, EN) from <http://mecacost.cra.wallonie.be>

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*Financing: Department of Agriculture, Natural Resources and the Environment and Belgian Agricultural Contractors' Association.*

## MEAT AND BONE MEAL IN CHINA

Over the past ten years CRA-W has developed expertise in detecting, identifying and quantifying meat and bone meal (MBM). This expertise covers the development and validation of analytical tools based on conventional microscopy, molecular biology, infrared microscopy and hyperspectral imaging, along with organising interlaboratory tests at European level. On the basis of this work CRA-W has been and is the coordinator of two European projects, STRATFEED (CRA-W info No. 9) and SAFEED-PAP (CRA-W info No. 15) and has been appointed Community Reference Laboratory for Animal Proteins

(CRA-W info No. 12). Building on this expertise and these projects a European MBM network has been set up and is becoming increasingly international. In 2006 CRA-W began working with Professor Han Lujia (China Agricultural University, Beijing) on the development of spectroscopic methods for detecting MBM. In this context four Chinese researchers spent two



*Official photograph of the participants in the second workshop SAFEED-PAP (Qingdao, 21-23 April 2009, China)*

months with us in late 2008, attending a training course in conventional and infrared microscopy methods. The training was extended this year when four CRA-W researchers (Pierre Dardenne, Juan Antonio Fernández Pierna, Pascal Veys and Vincent Baeten) visited China to provide additional training and to assist in setting up China's first laboratory for detection of MBM by optical and

infrared microscopy.

Also, as part of the European SAFEED-PAP project, an international workshop took place in China. In cooperation with Professor Jiansan Wu (CAHEC, China Animal Health and Epidemiology Center, China), the SAFEED-PAP project partner, the workshop was held in Qingdao with the aim of facilitating an exchange of experiences between European and Chinese research teams. A total of more than 20 oral presentations were given, including three by the CRA-W researchers, covering many aspects of MBM detection and food and feed safety generally (<http://safeedpap.feedsafety.org/ws/beijing/index.php>).

*This project is funded by the European Commission's 6th Framework Programme*

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## TRANSGENIC RAPE FOUND GROWING WILD IN WALLONIA!

An earlier edition (CRA-W info No. 18, Spring 2008) contained a short description of the project funded by the Regional Government to research transgenic rape plants growing wild in Wallonia. Since then, some 2,000 plants have been collected, mainly along paths, in 2007 and 2008. All these plants have been analysed. Some of the results are still confidential at the time of writing this article, but all will be made public fairly soon. What we can say at this stage, though, is that at least one transgenic plant associated with Monsanto trial

GT73 has been found in Western Hainaut. Its precise origin remains a mystery, especially as no experimental fields were listed in the area.

The nearest experimental field is more than 100 km to the east. Without a doubt, what may have happened deserves to be investigated more fully, even though the resulting situation gives no cause for alarm.



Note: in the website version, a link to the edition mentioned may be inserted after the brackets (CRA info No. 18, Spring 2008): [http://www.cra.wallonie.be/img/craw\\_info/CRAW-info-18-2008.pdf](http://www.cra.wallonie.be/img/craw_info/CRAW-info-18-2008.pdf)Contact

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## ANALYSIS OF AUTOMATIC FEEDER USE BY PREGNANT SOWS

When pregnant sows are housed in groups (CE2001/88 and CE2001/93), feed rationing requires the use of feed dispensers that ensure fair distribution of the daily allocation among the animals, irrespective of hierarchical status. The two most commonly used devices either give the sows access to gestation stalls which are closed during feeding or involve the use of electronic feed stations (ESF).

When an ESF is used, the sows feed separately in succession. Whereas this favours expression of the pecking order, dynamic group management may result in higher aggression levels than stable groups.

The aim of this research was to determine the duration of disturbance to ESF use in dynamic management and to collect data as a basis for a recommended maximum group size per feeder.

For nearly two years, two dynamic groups were formed on a rolling basis from sixty-eight pregnant sows, each group being penned on straw with an ESF. Every five weeks 11 or 12 newly served sows were introduced to replace pregnant sows who had been transferred to the farrowing pen. The aim was to maintain a balance of two-thirds 'resident' sows and one-third 'new' animals.

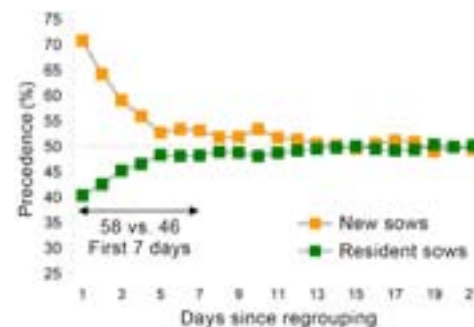
Thirteen successive regroupings were assessed continuously for 21 days.

It was found that time spent at the feeder averaged 23 min/24 h per sow, but the occupancy time for newly introduced nulliparous sows was 34 min/24 h. Residents used the ESF more than newer animals in the first twelve hours of the feeding cycle. The difference was more specifically marked in the first three days following regrouping. The nulliparous sows preferred to use the ESF around the 13th hour, when the sows of greater parity had finished feeding. Sows of parity greater than 5 mainly occupied the ESF for the first two hours.

Average visiting orders differed significantly between new and resident sows during the first seven days. Expressed on a scale of 0 to 100 (precedence) for the first and last sow to visit the ESF respectively, the value was 58 for new animals and 46 for residents (graph). This reveals the new sows' lower pecking order in the early days after introduction. The visiting order was likewise affected by parity.

From these results, the duration of disturbance of ESF use due to dynamic management can be put at one week. The results show how hard it is for nulliparous sows to integrate with the

group. The average feeding time agrees with the scheduled ingestion time and the sows' spontaneous ingestion rate. Taking this value into account and assuming 20 h/24 h occupancy, the maximum number of sows in a group per ESF is thus 52.



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## NEW POSTER WINS AWARD FOR CRA-W

On 19 May this year, Anne Chandelier, Research Assistant, won the scientific poster prize for her poster entitled "Molecular detection of Chalara fraxinea in ash tree (*Fraxinus excelsior* L.) using real time PCR" at the 61st annual International Symposium on Crop Protection organised by the University of Ghent.

For more information visit :

<http://www.cra.wallonie.be/index.php?page=25&id=65>

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## AGENDA

**14 October 2009**

**Ninth Pig and Poultry Products Seminar**

Espace Senghor, Gembloux

Impact of feed on animal health: new developments

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**2 - 3 December 2009**

**Final TRACE Conference: How to trace the origin of food?**

Brussels

Organised by CRA-W, FERA, ICT

For details visit :

<http://www.trace.eu.org/je/belgium/index.php>

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**10 February 2010**

**15th Carrefour des Productions animales**

Livestock farming of the future: between scientific progress and human issues

Espace Senghor, Gembloux

Contact : Geneviève Minne, minne@cra.wallonie.be



**1st to 5th March 2010**

**Training on infrared spectroscopy and chemometrics**  
Gembloux

See leaflet for more information and to register on CRA-W website

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