



Asking potatoes about their nitrogen requirements

Applied research into potato crop nitrogen fertilisation, at European and international level, is directed towards split applications. A limited dose of nitrogen is initially applied at planting and topped up during the growing period according to the requirements of the crop. As this far from reflects current practice among Walloon growers, in 1997 the CRA-W embarked upon research aimed at developing a practical method for effective nitrogen management in potato crops. A strategy was produced, validated in 2001 and 2002 and extended to Walloon growers in 2003, with the co-operation of Filière Wallonne de la Pomme de terre and financial backing from the Walloon Region, Directorate for Agriculture, Department of Development and Extension.

What are the advantages of this strategy as opposed to a single application at planting? Reducing the recommended dose of nitrogen fertilizer at planting makes for flexible, dynamic nitrogen management. Supplementary

nitrogen is fed only if and when the crop can take it up. In this way, nitrogen input is more closely matched to the crop's actual needs, with the aim of achieving high productivity and good tuber quality and avoiding excessive nitrogen residue in the soil after harvesting.

What is different about this method? It's the plants themselves that tell us if they need additional nitrogen. We use a simple, quick, portable tool called a chlorophyll meter to assess their requirements.

An explanatory booklet is available from the CRA-W, along with the report on the research subsidised by the Ministry of Small Enterprises, Traders and Agriculture between 1997 and 2000. A scientific publication describing the frame of reference developed for the chlorophyll meter will be available shortly.

Contact: Marguerite Olivier
olivier@cra.wallonie.be

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EVENTS

16, 17 and 18 June 2004 :

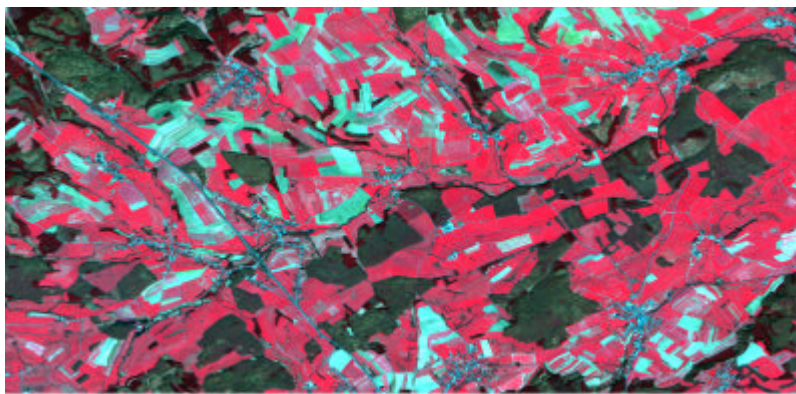
Food and feed safety in the context of prion diseases

WALLOON AGRICULTURAL RESEARCH CENTRE (CRA-W)

Rue de Liroux, 9
B – 5030 Gembloux
Tél : ++32(0) 81/62.65.55
Fax : ++32(0) 81/62.65.59
cra@cra.wallonie.be

Visit our Website : <http://cra.wallonie.be>

MONITORING OF AGRICULTURE IN THE WALLOON REGION BY REMOTE SENSING



spot5 multispectral image (10 m resolution) of the Attert Region (16.04.2003)

The legislative context surrounding agriculture in the Walloon Region is a complex one, with three main components: control, monitoring and verification. The Walloon Rural Development Programme alone contains a set of measures aimed at controlling and supporting agricultural development in the Walloon Region. In concrete terms, the Walloon government's initiatives are aimed at consolidating the sector by promoting attention to the soil, family farming, integrated crop management, organic farming and quality labels (Contract for the Future of the Walloon Region). The fact is, though, that farmers in the Walloon Region face a series of threats or unknowns further aggravating an economic situation marked by repeated crises in the food industry. In the Walloon Region as elsewhere in Europe, decision-makers are thus compelled to take political and economic measures to give the agricultural sector some viability. In this context, an assessment of policy impact on sustainability, based on the development of tools such as indicators, is essential.

In this context, the SAGRIWATEL project, financed under Federal Scientific Policy with the backing of the Walloon Region and bringing together partners from various institutions (Walloon Agricultural Research Centre (CRA-W), Gembloux Agricultural University (FUSAGx), the Walloon Regional government (WR), Louvain-La-Neuve Catholic University (UCL) and the University of Liège (ULG)), attempts to address these problems by proposing a pre-operating system to the Directorate of Agriculture at the Ministry of the Walloon Region. This involves supplying a decision support tool for estimating and forecasting agricultural production and also for describing rural land quality at different scales (from the plot to the whole region).

Three types of tool are required in order to set up an integrated system for monitoring the state of Walloon agriculture: (i) spatial information on annual agricultural land use, using IACS (Integrated Administration and Control System) based on two sub-systems, vector and image, and an

alphanumeric database; (ii) CGMS (Crop Growth Monitoring System) yield forecasting, adapted to Belgian conditions; and (iii) satellite information, with different levels of spatial and temporal resolution (SPOT-VGT, SPOT5, LANDSAT5, IKONOS, etc.).

This collection of tools is used to produce a set of indicators which are both agricultural and agri-environmental (AEI). Agricultural indicators comprise yield and production estimates for various crops, on the one hand, and water stress applying to certain plots of agricultural land, on the other. Agri-environmental indicators, meanwhile, are regarded as promising tools for assessing, quantifying and monitoring the effects of agriculture with the objective of ensuring sustainability and minimising environmental impact. While some agri-environmental measures (AEM) are directly linked to the AEI used, other issues are also addressed. From the huge list of AEI published by the European Commission, attention focuses on those where the accuracy of results has the greatest likelihood of being improved by remote sensing: plot size, crop sequence, farm land cover in winter, direction of soil tillage, use of buffer zones, share of agricultural land subject to environmental control, permanent grass area trend and diversity of plant products. Spatial representation of these AEI is implemented partly from the spatial information provided by IACS and partly from the satellite data mentioned above.

Contact : Béatrice Leteinturier
leteinturier@cra.wallonie.be

INCREASED USE OF WOODY SPECIES TO REAFFOREST AND STABILISE BANKS

The Walloon Regional government, whose remit includes river management, currently uses the method of planting woody trees and shrubs to protect and stabilise banks. The government has concluded an agreement with the CRA-W, through the Directorate of Natural Resources and the Environment (DGRNE)'s Water Division.

The primary object of this agreement is to increase, by planting, the number of forest species that play a role in protecting and consolidating banks. The species chosen are the alder (*Alnus glutinosa*), willow (*Salix sp.*) and ash (*Fraxinus excelsior*).

The secondary aim is to investigate options for conserving plant material so as to supply the Region with saplings at a time when the banks are accessible for planting.

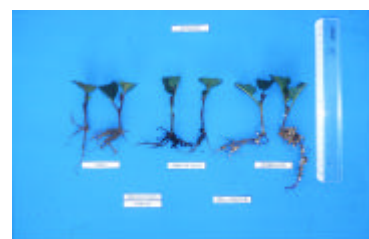
This one-year agreement kicked off on 1st June 2003. During the summer, fifteen alder ecotypes, each comprising ten trees on average, were propagated by cuttings.

Financing: DGRNE

Contact : Robert Gruselle
gruselle@cra.wallonie.be



Rooted ash cuttings



Rooted alder cuttings

THE LUPIN: AN ALTERNATIVE TO SOYA CAKE AS ANIMAL FEED?

Europe produces no more than 25% of its plant protein requirements and is thus heavily dependent on American-grown soya. This situation is detrimental in terms of both economic dependence and traceability of agricultural products.

Among the protein plants that can be grown in our regions which could wholly or partly substitute for soybean meal, the lupin seed contains more proteins (36%) than the pea (24%) or faba bean (29%). It also contains much less starch and provides much of its energy in the form of lipids. This is an advantage in terms of feeding both non-ruminants (diversification of energy input) and ruminants (limiting the risks of ruminal acidosis).

Research carried out by the CRA-W has shown that proteins of lupin origin were equally well utilised by ruminants, such as dairy cattle or the growing Belgian Blue bulls, as soybean meal protein and there was thus no drop in production performance. One point to note, however, is that lupin should be fed in coarsely ground form to avoid excessive protein degradability in the rumen and thus ensures a sufficient digestible dietary protein intake. The upper limit in dairy cow feeding has been set at 6 kg per head per day.

In the case of growing-fattening pigs ,



lupin in flower (*Lupinus albus*)

investigations established that the high a-galactoside levels (raffinose, stachiose, verbascose) in lupin seeds were the reason for the poor valorisation. The application of various technologies ought to enable their undesired effects to be controlled in future, thus allowing full substitution for soybean meal in pig feed.

Lastly, lupin can only replace half of the soybean meal used in chicken feed, but forthcoming trials aimed at lessening the effects of the pectins and any protease inhibitors are expected to improve the substitution rate.

In conclusion, the lupin is emerging as a quality protein source for cattle feed. Its

future looks all the more promising in our part of the world as it offers a suitable diversification in crop rotation and the focus continues to be on genetic selection, with the aim of improving seed composition and creating winter varieties that should soon mean higher, more regular yields for producers.

Project subsidised by the Ministry of the Walloon Region, DGA, Department of Research, agreement no. D31-1059.

Contact : Eric Froidmont
froidmont@cra.wallonie.be

RICE HUSK AS A SUBSTITUTE FOR CONVENTIONAL FUELS IN SENEGAL

Charcoal and firewood continue to be widely used as fuel throughout Africa, mainly for cooking food. In dry areas, consumption considerably outstrips the forests' ability to produce the raw materials. The CRA-W has now developed a pelleting technique that enables various biomass sources to be used, including food processing industry and forestry residues. The biomass is mixed with clay and water in a simple production unit requiring only a modest investment and fuel "balls" are produced. The balls are then dried before being sealed in plastic bags for sale. They burn in a similar way to charcoal and their large-scale use would relieve the pressure on the forests.

A pilot unit went into production at Ross-Béthio in Northern Senegal in January 2004, turning rice husk into fuel balls.

Financed by the Walloon Region Department of International Relations, the unit's main aim is to investigate the production and acceptability of this new fuel. It will also enable data gathering for a technical and economic assessment and for industrial replication of the project with different biomass sources or in other regions with a shortage of conventional fuels. This research is being carried out jointly with four Senegalese institutions, which will run the unit after the CRA-W team leaves in late May 2004.

At this stage in the project, a number of traditional Senegalese dishes have already been cooked by rice husk balls. Batches of fuel have also been distributed to local people for acceptability testing, so that if need be, the fuel can be adapted to Senegalese cooks' expectations..

Contact : Michaël Temmermans
temmermans@cra.wallonie.be

Francis Dubois
dubois@cra.wallonie.be



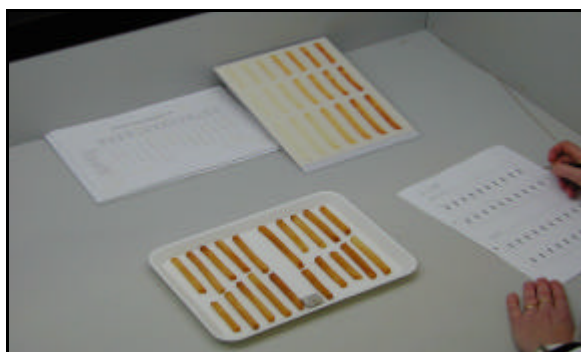
TRADEMARK TERRA NOSTRA: QUALITY ANALYSIS 2003/2004 AND TECHNICAL SUPPORT FOR CROPPING

Terra Nostra is a concept relating to the variable quality of the Walloon potato, initiated in 1998 through the Walloon promotion agency 'ORPAH' (which became 'APAQ-W'). Prior to any marketing under the Terra Nostra trademark, an independent body (Procerviq) ensures the certification of the potato batches on the basis of quality analysis carried out at the Walloon Agricultural Research Centre (CRA-W) and of the application of cropping practice rules determined by a consortium of scientists, including potato experts from CRA-W. These requirements are published in a reference book for the Terra Nostra trademark. The cropping practices a producer must adhere to relate mainly to standard production principles concerning, for example, potato seeds' sanitary quality, levels of fertilization, irrigation, choice of varieties, and pesticide use warnings (late blight control, aphids control, etc). Throughout the cropping season, and in collaboration with other technical partners, potato experts at CRA-W provide advice and technical support for potato producers participating in the Terra Nostra initiative.

The start of the new campaign is approaching, so the Terra Nostra quality analyses for the year 2003–2004 are coming to an end.

From the beginning of August to the end of February, more than 90 samples from about 20 varieties were analysed. This year, 76% of the samples were shown not to conform with the Terra Nostra specifications, the highest percentage since the trademark was launched. The cause still needs to be identified, but it probably lies in the extreme climatic conditions during 2003, particularly at harvest time. The reasons given for rejecting the analysed samples were, in order of importance:

- ✂ non-conformity with culinary standards (estimated on the basis of flesh consistency, cooking behaviour, humidity, and blackening after cooking; or frying colour index),
- ✂ too high a percentage of external defects,
- ✂ too high a percentage of internal defects,
- ✂ poor washability.



Frying colour index determination

Nevertheless, the development of the Terra Nostra concept goes on. Indeed, it has helped improve the image of the Walloon potato and has created a demand for a quality product. Today, the Walloon potato occupies a high grade formerly held by potatoes of foreign origin.

Since the 1999–2000 campaign, six hypermarkets have annually sold Terra Nostra potatoes from the beginning of October to the end of April, and thus have contributed to a continuing increase in:

- ✂ harvested area (from 50 hectares in 1998 to 412 hectares in 2003)
- ✂ number of operators (from 4 to 16)
- ✂ number of registered varieties (from 2 to 33)
- ✂ marketed amounts (from 200 to 3000 tonnes).

The Terra Nostra potato has great potential for future development, particularly in view of the potential recognition by the new 'EQWALIS trademark, recently developed by APAQ-W on a regional scale in Wallonia.

Contact : Alice Soete

soete@cra.wallonie.be

Jean-Pierre Goffart

goffart@cra.wallonie.be

Stratfeed

International symposium on food and feed safety in the context of prion diseases : 16th, 17th and 18th June 2004

In the framework of the European Project "Strategies and methods to detect and quantify mammalian tissues in feedingstuffs" (Stratfeed, G6RD-2000-CT-00414), funded under the 5th EC FP, DG RTD, the CRA-W will organise this symposium in collaboration with EC-DG-JRC-IRMM, AFSCA and Agrobiopôle.

* see <http://stratfeed.cra.wallonie.be> for any further information and registration.

Contact : Pierre Dardenne

dardenne@cra.wallonie.be