



Cannabis trials at CRA-W

Hemp (*Cannabis sativa L.*) belongs to the Cannabinaceae family, comprising the single genus *Cannabis*. A dioecious plant in the wild, but breeding has favoured the monoecious type, which produces more seeds and fibres.

Industrial hemp, used for making sails, ropes, fabric and paper pulp, was an important crop in the agricultural landscape until the 19th century. The advent of steamships, the use of cheaper wood in the papermaking industry and imported plant fibres (cotton) and synthetic fibres (nylon) led to a decline in this crop until, the mid-twentieth century. It had almost ceased to be grown and was used only to make special papers such as cigarette paper and banknotes.

However, hemp has recently started to enjoy a renewal of interest as new outlets have opened up in construction (concrete, hemp coating, insulation,...), plastics processing and animal litter. The resurgence of hemp growing also coincides with the search for a preceding crop for wheat due to the decrease in the area planted with beet or chicory or left fallow.

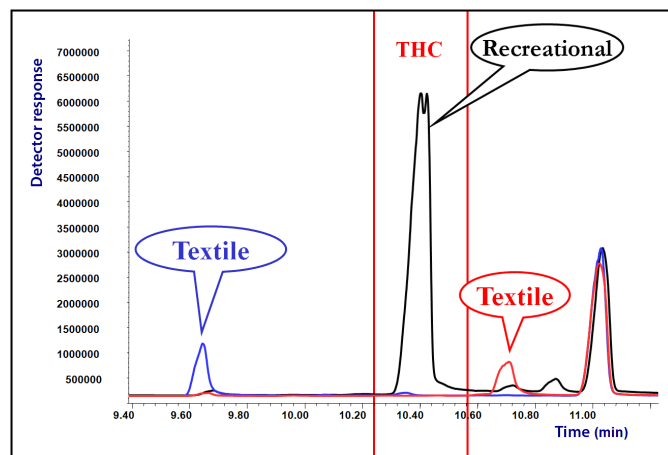
Hemp is also an ideal crop in terms of sustainable agriculture. Hemp traps CO₂ and requires little input. Nitrogen fertilisation requirements are limited (approx. 100 kg N/ha). Thanks to its rapid growth and impressive development (reaching over 3 metres in height) it is well able to compete with weeds and the use of herbicide is not justified. Moreover, it appears impervious to disease and insect attack.

Against this background, CRA-W, in cooperation with the Development and Extension Department at Service Public de Wallonie (SPW), has set up a number of trials to assess the production potential for industrial hemp in Wallonia's pedoclimatic conditions and to research the most suitable cultural practices, notably as regards sowing (sowing date and density), nitrogen fertilisation and variety choice.

Whereas the main trends in terms of the cultural practices to be recommended are currently emerging from the data collected, some points still remain to be clarified concerning the harvesting conditions, where the variety choice will undoubtedly play a part.

Also, before sowing, farmers have to apply for a permit for the crop and notify the competent authorities a few days before flowering to allow checks to be made by means of sampling that the varieties grown are indeed for industrial use.

CRA-W has established a method for quantifying the tetrahydrocannabinol (THC) content at the request of SPW's Department of Agriculture, Natural Resources and the Environment (D4). The method involves hexane extraction and THC analysis by gas chromatography. The retention time and peak area enable the active ingredient to be identified and quantified, respectively, by comparison with a pure THC standard. The method can be used to check that the THC content in dry matter is less than or equal to 0.2% and the variety is therefore a permitted one. "Recreational" hemp, on the other hand, has a THC content of between 1 and 10%.



Tetrahydrocannabinol (THC) determination by gas chromatography. The peak at retention time 10.40 min corresponds to the THC and the area corresponds to the concentration present in the sample.

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LOOKING AT UNAUTHORISED GMOS

The steady increase in the number of transgenic constructs requires new means of detection to be developed all the time. There is also a greater risk of seeing unauthorised or even unknown GMOs appearing in Europe.

CRA-W is providing solutions through the GMODetec project.



This project is the result of cooperation between the three laboratories forming the National Reference Laboratory (NRL) for the GMO's, namely the Biosafety and Biotechnology Unit

of the Scientific Institute of Public Health (ISP), Brussels, the "Technologie en Voeding" unit at Instituut voor Landbouw en Visserijonderzoek (ILVO), Melle and the Quality of Agricultural Products Department at the Walloon Agricultural Research Centre (CRA-W).

The main aim of this project is to be able to issue an identity card for any GMOs occurring, even if not much information is available on that GMO event.

With this in view, CRA-W is taking a two-pronged approach to the problem.

The first aspect involves developing tests for as many new screening elements as possible enabling any presence of GMOs or their derivatives to be flagged up. PCR and real-time PCR detection systems are thus being developed with the aim of revealing new expression promoters and terminators used in the transgenic constructs. The coding regions of commonly introduced genes of interest are also targeted.

The second method aims to try to reveal, by PCR, the "plant/transgenic construct" border regions where the transgenic construct introduction site is unknown.

The difficulty lies in obtaining amplification products with a primer in a known region (a sequence commonly occurring in transgenic constructs) and a primer that must have a high likelihood of pairing in an unknown region. Research is therefore being undertaken to develop a system enabling short selection sequences to pair. Detection of the amplicons thus produced by a fluorescent system also has to be verified.

Initial progress with the GMODetec project was described at the first global conference on GMO analysis, held at Como, Italy, from 24 to 27 June 2008.

The progress on the GMODetec project attracted attention at the conference and CRA-W was later contacted with a view to inclusion in a proposed research project into unauthorised GMO detection with other European laboratories.

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For further information : <http://www.cra.wallonie.be/index.php?page=19&fiche=239>

STUDY OF THE SUSCEPTIBILITY OF POTATO LATE BLIGHT STRAINS TO THE MAIN FUNGICIDES USED ON POTATO IN WALLONIA

Potato late blight, main enemy of our crops, is proving more and more difficult to control.

The fungicide resistances observed in recent years is constantly increasing.

In this context it is essential to study the way Walloon blight strains react to the fungicides commonly used

by farmers in order to make recommendations for an optimum use of the products.

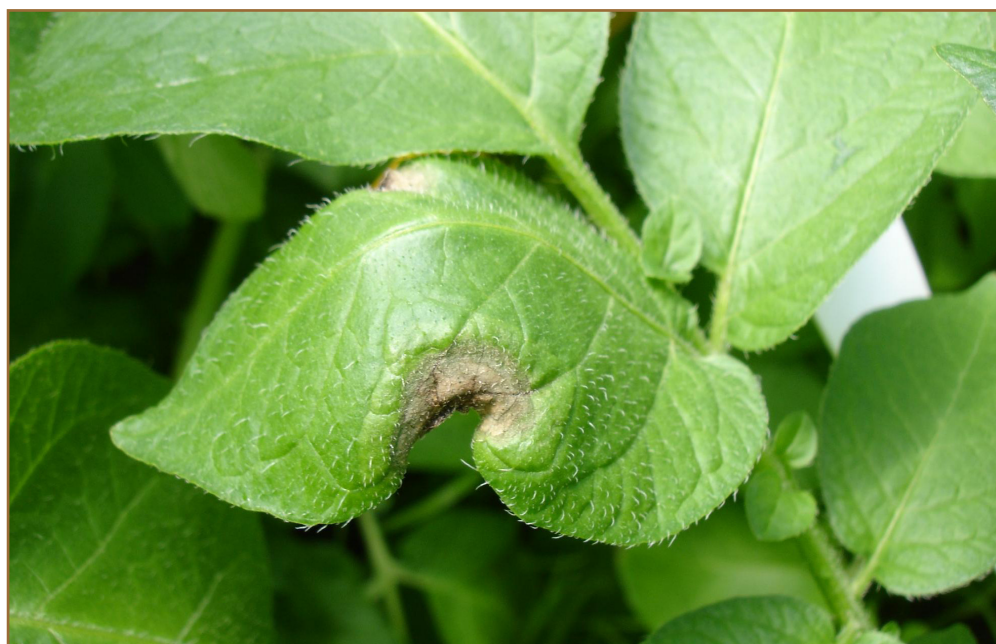
The CRA-W organised a trial to study the susceptibility of 48 strains of potato blight collected in Wallonia during the 2007 season to four active ingredients frequently used at times of risk. Three of these active ingredients, namely bentiavalicarb-isopropyl,

cymoxanil and dimetomorph, are of the penetrating (or translaminar) type, whereas the fourth, metalaxyl-M, is systemic.

Strain characterisation showed type A2 to be mainly predominant in Wallonia in the 2007 season. These strains proved susceptible to bentiavalicarb-isopropyl at a concentration of 0.0138 ppm, to cymoxanil at 0.3712 ppm and to dimetomorph at 0.4493 ppm. No resistance to these products was detected.

In the case of metalaxyl-M, on the other hand, a significant proportion of the strains tested (64.86%) proved resistant, confirming the trend observed in the recent years in Europe where the number of strains resistant to this particular product was increasing. It is important to continue informing farmers about this resistance and advising them on alternative strategies.

All the other products proved effective, but it will be interesting to continue with these tests in future years in order to detect any first signs of resistance appearing.



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900TH MEETING OF THE PESTICIDES REGISTRATION COMMITTEE

The Belgian Pesticides Registration Committee (Authority for Plant Protection Products authorizations) held its 900th meeting on 30 October 2008.

The Committee's role is to make recommendations to the competent Ministers on each agricultural pesticide authorisation application for the Belgian market. Recommendations are based on study of six kinds of data: physicochemistry, toxicology, ecotoxicology, residues, fate and behaviour in the environment and efficacy.

The Committee consists of twelve members, most of them experts in one of the above five fields, drawn from the Animals, Plants and Food Division and the Environment Division of Federal Public Service (SPF) Public Health, the Scientific Institute of Public Health, CERVA, AFSCA, Federal Public Service (SPF) Employment, Labour and Social Dialogue and each of the Regions. These twelve members are assisted by other experts to cover all the necessary topics.

The work of this Committee has a low profile, yet its responsibilities are critical. Each application for authorisation and each change to the conditions of authorisation of a product (use, rate, time to harvest, packaging, labelling, etc.) is examined and a recommendation is made, with reasons.

The Committee also considers applications for test product import and use and applications for approval for official recognition by "Good Experimental Practice (GEP)" bodies. It is involved in drafting bills to implement European Directives which for the past fifteen years have vastly changed pesticide use habits, and also in proposals for Belgian legislation, split authorisations, spraying permits, etc.

The Committee's decisions are guided by both realism and prudence. Out of the spotlight, away from lobbying by any pressure group, steering clear of the simplifying arguments which some media like to put forward, the Committee works for progress in crop protection and for the ever-greater safety of the user, the environment and the consumer.

The Committee meets about 15 times per year. CRA-W is represented on the Committee by Michel De Proft, officially representing the Regional Government of Wallonia, and François Cors and Bernard Weickmans, experts in charge of assessing efficiency and selectivity.

François Cors is the expert for fungicides, insecticides, acaricides and other pest control

products, and Bernard Weickmans is the expert for herbicides and growth regulators. Although, following the regionalisation of agriculture, the Director of the Plant Protection Station at Gembloux Agricultural Research Centre is no longer a member of the Authorisation Committee, as it was the case from 1958 to 2007, CRA-W still plays an important role.

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REQUASUD REPLACES ITS NIR INSTRUMENTS

Back in 1989 the Walloon Agricultural Research Centre set up one of the world's first near infrared spectrometer networks within the framework of the REQUASUD networks (in French: Réseau Qualité Sud; <http://requasud.cra.wallonie.be/>).

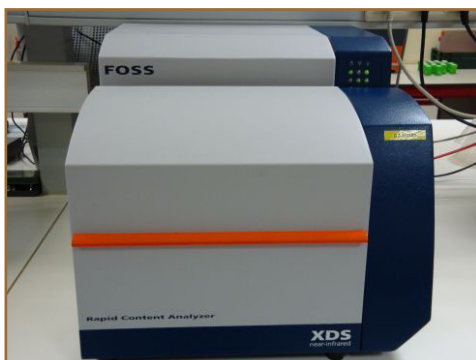
Networking offers the benefits of one of this technology's main advantages, i.e., the pooling of spectra from a number of laboratories.

In this way, robust equations can be developed for rapid determination of a whole series of parameters in a wide range of agricultural and food products.

The first equipment was purchased in 1989. After more than 20 years of good and faithful service, the time had come to replace it. Since the end of December 2008 all the laboratories in the REQUASUD network's NIR chain have been equipped with new near infrared spectrometers.

This brings the benefits of the latest generation of equipment, thus facilitating networking and management of common databases.

The new instruments use the RINA® (Remote Internet NIR Analysis) system, which will enable each client laboratory to send its spectra over



an Internet connection and get back the values estimated by predictive models stored on a dedicated server.

This system will make the network manager's work considerably easier. In the context of this renewal CRA-W took charge of installing the instruments, transferring the existing databases and providing technical support and training for laboratory personnel in the correct use of the new equipment.

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100 YEARS OF PHYTOPATHOLOGY AT CRA W

Phytopathology was one of the first agronomic sciences to be the subject of targeted studies in response to the concerns of both agriculturalists and bodies responsible for enforcing plant protection regulations and the general public, either as keen gardeners or consumers of food, faced with the undesirable effects of plant diseases.

The major pathosystems studied at CRA-W cover fungal, viral and bacterial diseases of tobacco, cereals, apples, beet, legumes, strawberry plants, fruit trees, hops, ornamental plants and forest as well as ornamental trees.

This research work leads to:

- development of detection techniques;
- characterisation of plant material in order to breed resistant varieties;
- certification of basic fruit tree material in wood stock orchards, hop plants and the Libramont potato germplasm;
- development of control methods that wherever possible are preventive or use alternatives to chemical control, by integrating all the environmental factors;
- distribution of information to the different players in the production sectors or land managers (round tables, site visits, meetings);
- warnings published in the press or through professional associations;
- writing of scientific or extension articles and presentation of results at international conferences.

CRA-W's Department of Biological Control and Plant Genetic Resources has joined forces with ILVO's Plant Protection Department to form the National Reference Laboratory (NRL) for plant diseases and, in that capacity, contributes to the plant disease management carried on by AFSCA and FPS Public Health with respect to quarantine organisms.

In this context, CRA-W's image as a public service has been boosted by the award, in April 2008, of the BELAC certificate (342-Test) relating to ISO17025 accreditation of the Mycology and Virology laboratories for analyses to detect various quarantine organisms and screening of a mycotoxin likely to contaminate milled wheat grains.



On 2 December 2008 CRA-W celebrated the award of this certificate, coinciding with a century of phytopathology expertise at Gembloux, in the presence of the representative of the Minister, Mr Lutgen, representatives of the federal, Walloon and municipal authorities and several professional associations.

Mrs F. Petter, Assistant Director of the European and Mediterranean Plant Protection Organization (EPPO), spoke on the day's topic, phytosanitary diagnosis, and willingly took part in the question and answer session that provided a fruitful exchange with the audience.

Following a talk by Mr Cavelier on the history of phytopathology at CRA-W and future prospects, the hundred or so people present took advantage of

the opportunity for discussions with staff from the Mycology, Virology, Bacteriology, Fruit Tree genetic resources and Potato laboratories at CRA-W, who described their various activities in an informative way.

<http://www.canalzoom.be/content/view/1618/166>



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THE AGROBIOPÔLE WALLON, A CENTRE OF EXCELLENCE IN AGRONOMY AND BIOTECHNOLOGIES DEDICATED TO PLANTS

The Agrobiopôle wallon is a centre of excellence founded by CRA-W and others to generate, promote and develop R&D projects in the fields of agronomy and biotechnologies dedicated to plants with a view to sustainable development, in the expectation that the economic effects will benefit the regional industrial fabric.

A further aim of the Agrobiopôle is to create a platform in Wallonia bringing together players in "green" and "white" biotechnologies in order to develop the biorefinery concept and non-food uses for agricultural resources. The interdepartmental "Bioetha2" project is enjoying a particularly high profile in this context.

Bringing together researchers, scientific institutions, enterprises and partners from the business, political and institutional spheres, the Agrobiopôle develops its members' expertise, facilitates their access to large-scale projects and initiates Research-Business partnerships to enable them to develop innovative products and processes.

Plans for 2009 include exchanges of expertise with

the Baltic countries and with INRA at Lusignan.

Through its contacts with many competitiveness clusters, the Agrobiopôle has successfully integrated into networks at both regional and European levels. CRA-W researchers are invited to take advantage of this, notably in connection with meetings with international delegations.

The Agrobiopôle also strives to raise the profile of its members and their regional and international positioning. Researchers are therefore invited to make use of the Website to announce their initiatives. Likewise, we can represent them at various events which they are unable to attend in person.

<http://www.agrobiopole.be>



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