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RED CLOVER, AN USEFUL PLANT IN FOR? THE WINTER RATION...

LEGUMES ARE RICH IN PHYTOESTROGENS WHICH MAY BE BENEFICIAL TO HUMAN HEALTH. METABOLIZED IN THE COW DIGESTIVE TRACT TO EQUOL THAT CAN THUS BE FOUND IN THE MILK. THEIR CONSUMPTION BY THE COW COULD LEAD TO DIFFERENTIATED QUALITY MILK PRODUCTION ASSUMING THAT THEY CAN BE EFFICIENTLY INCORPORATED IN THE WINTER FEED.

Legumes contain active substances that are structurally similar to the mammalians oestrogens. These are thought to have antioxidant properties, reducing the risk of developing some types of cancers or cardiovascular diseases and to decrease menopausal symptoms. When dairy cows feed on mixed grazing containing clover, some of these phytoestrogens are metabolised by micro-organisms in the animal's digestive tract and converted into equol, which has an even higher biological activity. Some of that equol is transferred to the milk which could be therefore enriched as a function of farm feeding system. This has been confirmed by several trials led at the CRA-W as parts of the GrassMilk project (DG03 Research). However, whereas fresh plants are rich in equol precursor, it is important to ensure that the preserved fodders retain a sufficiently high content to conduce to differentiated quality production during all the year.

A trial has therefore been conducted within the framework of the PhytoHealth project (Moerman funding), in partnership with the Grassmilk project, to study the changing phytoestrogens content over six months in a red clover silage (chosen for its high equol precursors content). The plants were conditioned in 'micro-silos', in aluminium bags, either immediately after harvesting or after a three days preliminary wilting. Four active substances were studied: formononetin, biochanin A, daidzein and genistein. The bags contents were analysed at harvesting, after two weeks and then each month since the harvest. The results showed that total phytoestrogens level, initially about 3,500 µg/g DM, fell very rapidly between bagging and the first two weeks of fermentation, stabilising thereafter. However, the decrease was less marked in the pre-wilted samples (-54% as against -65% in the case of direct ensiling). These results indicate the possibility of obtaining phytoestrogens-rich fodder, even during the winter, assuming that a rich raw material is available. This type of trial will be run again on a larger scale, using a combination of grass and red clover more similar to the mixtures used in common farming systems.

Contacts:
Delphine Franckson,
d.franckson@cra.wallonie.be
Frédéric Daems, f.daems@cra.wallonie.be

Sign up for this quarterly free on our website www.cra.wallonie.be
Walloon Agricultural Research Center | Building Léon Lacroix | rue de Liroux, 9 | B-5030 Gembloux
Tél : +32 (0)81 62 65 55 | Fax +32 (0)81 62 65 59 | www.cra.wallonie.be
Wallonie

CRA-W HELPS ENSURE THE INTEGRITY OF OUR FOOD CHAIN

BEING SUPPLIED WITH FOOD WHICH IS SAFE, AUTHENTIC AND PRODUCED ACCORDING TO CLEARLY ESTABLISHED QUALITY STANDARDS IS A PRIME EXPECTATION FOR EUROPEAN CONSUMERS. WHEREAS FOOD SAFETY IS WELL COORDINATED WITHIN EUROPE AND RECOGNISED AS EXCELLENT, THE SAME CANNOT BE SAID OF DETECTING FOOD FRAUD OR APPLYING THE PERTINENT LEGISLATION.

What Europe needs to do now is to bring together the different food chain stakeholders, put in place tools for swapping working practices, and supply rapid methods for testing for and confirming fraud. The studies that have already been carried out should be utilised to provide a consolidated foundation of research in this field in order to identify expert groups and guide future activities within the Horizon 2020 programme.

The FoodIntegrity project, launched on 1 January 2014, aims to meet these needs by equipping Europe with a set of tools and resources for detecting fraud and ensuring the integrity of the food chain. This five-year project is coordinated by the Food and Environment Research Agency (FERA) and brings together 38 participants from industry and research (academia and research institutes).
CRA-W is involved in building a database for detecting food fraud that contains information on analytical methods and access to reference data. The Centre will contribute through its vibrational spectroscopy expertise which has been proven on previous European projects. Specifications and recommendations for building a spectral database will also be drawn up.

CRA-W's know-how in database management and data fusion combined with its knowledge of agricultural product authentication will also enable it to contribute to developing analytical methods on mobile devices and online sensor systems for testing different products.

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For further information visit https://secure.fera.defra.gov.uk/foodintegrity/

Contact: Vincent Baeten,
v.baeten@cra.wallonie.be

CRA-W ENSURES QUALITY SPRAYING

APPLYING PLANT PROTECTION PRODUCTS VIA A SPRAYER IS PART OF LIFE ON MANY BELGIAN FARMS. HOWEVER, PROPER SPRAYER FUNCTIONING IS A CRITICAL FACTOR THAT CAN HAVE CONSEQUENCES NOT ONLY FOR THE ENVIRONMENT AND HEALTH BUT ALSO IN TERMS OF THE AGRICULTURAL AND ECONOMIC EFFICIENCY OF THE TREATMENT APPLIED. REGULAR CHECKS ARE THEREFORE NECESSARY, AND CRA-W RUNS A SPRAYER INSPECTION SERVICE (SIP) FOR THE PURPOSE!

Since 1995 CRA-W has been responsible for carrying out and organising the mandatory inspection of agricultural sprayers in the French-speaking and German-speaking areas of Belgium. This periodical 'technical' inspection (every 3 years) is carried out according to a method and protocol devised in-house by CRA-W. Belgium is in fact regarded as ground-breaking in this field. For the last 20 years the Belgian example has served as a benchmark at European level and for our immediate neighbours, leading to CRA-W participating in various working parties (CEN, ISO, SPISE, Framework Directive on the sustainable use of pesticides, etc.) where its considerable expertise is called into play.

CRA-W's SIP is currently FASFC-appointed to perform this role and has been approved by the Federal Minister for Agriculture as an inspection body. In the interest of inspection quality assurance SIP is an accredited inspection body (ISO 17020), one of only a few in Europe. In addition to creating a positive trend in equipment standards it also uses its technical expertise to raise user awareness.

SIP's profile includes:
- More than 2,000 sprayers inspected every year,
- Methods devised by CRA-W and constantly being elaborated,
- High-precision test equipment developed by CRA-W,
- Qualified, trained staff (secretary and four inspectors) divided into two mobile teams who cover all parts of Wallonia.

SIP's work has resulted in a significant improvement in plant protection product application equipment. Nowadays less than 10% of the sprayers fail their first inspection compared with more than 25% in 1996. After the inspection the user repairs the sprayer following the advice provided by the diagnosis-oriented inspection.

SIP is also a unique source of information via its database containing details of all the sprayers in Wallonia and a record of their inspection results to date. The resulting statistical analyses regularly serve as a starting point when planning research projects at national or European level.

Contact: Guillaume Defays,
g.defays@cra.wallonie.be

WORKING TOWARDS EXEMPLARY MANAGEMENT OF SUSTAINABLE DEVELOPMENT

CRA-W IS A LEADING PLAYER IN THE SUSTAINABLE DEVELOPMENT OF WALLONIA'S FOOD INDUSTRY. MANY OF THE CENTRE'S RESEARCH PROJECTS ARE CONNECTED WITH SUSTAINABLE DEVELOPMENT. TO BACK THAT UP, CRA-W HAS DECIDED TO SET UP AN ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) WHICH WILL SOON BE ISO 14001 CERTIFIED.

That environmental certification will very probably open doors in terms of winning new projects or even continuing current contracts, in particular with FASFC.

In concrete terms the approach involves:
- Identifying, controlling and lessening the adverse environmental impacts of scientific and administrative activities;
- Limiting 'unforeseen incidents', such as leaks, as far as possible;
- Monitoring, controlling and saving on raw materials including energy;
- Avoiding polluting the environment;
- Complying with environmental regulations;
- Constantly striving to do better.

Following the setting up of the EMS and a ministerial order, CRA-W has decided to **implement the sustainability concept in procurement contracts.**

To that end, CRA-W has joined the Sustainable Purchasing working party among Walloon organisations. This pilot scheme has identified procurement contracts that can readily integrate the concept of sustainability and has established measures (short and medium term) towards achieving that goal.

The objective is to **make procurement contracts more sustainable by incorporating environmental, social and ethical clauses, on the one hand, and by taking a more global view of our procurement contracts, on the other** (for instance: considering the environmental impacts of the contract both upstream and downstream of it at the drafting stage).

CRA-W's main aims in integrating sustainable development into its procurement contracts are:
- To reduce the adverse environmental impact of its activities;
- To promote training and integration of job seekers, decent jobs and social inclusion;
- To improve working conditions in the emerging or developing countries that make a whole series of products which we consume;
- And to make long-term savings by lowering the operating cost throughout the life of the product or works.

Contact: Samantha Straet, s.straet@cra.wallonie.be

THE GENETIC DIVERSITY OF WALLONIA'S POULTRY BREEDS

WITHIN THE ANIMAL KINGDOM THERE ARE MANY ENDANGERED BREEDS AND THEY ARE DYING OUT AT A RATE OF TWO PER WEEK ON AVERAGE. OUR LOCAL POULTRY ARE NO EXCEPTION.

95% of domestic fowl breeds in Belgium are endangered. With a view to preserving these breeds a project aimed at conserving and promoting local poultry has been launched in Wallonia. CRA-W has undertaken various activities in the context of this project, but this article focuses on studying the genetic diversity of Wallonia's domestic fowls.

Local breeds have survived thanks to the efforts of fanciers in maintaining breed standards, reviving some endangered breeds, holding poultry shows, etc. It is due to their enthusiasm that breeds have been conserved and, in some cases, revived. However, as consanguine crosses are common practice in this field, the genetic diversity of local breeds is generally low and that jeopardizes their long-term perpetuation. In order to analyse the genetic diversity that effectively exists, 175 local poultry from ten different Walloon breeds, selected to be as unrelated as possible, underwent genetic analysis. This revealed ten genetic clusters. Eight breeds were found to have specific genetics. The Ardennaise breeds, on the other hand, have the same genetics as the Sans Queue des Ardennes. Conversely, in the case of the Famennoise, there are two separate clusters representing the revival of the breed with the aid of two different breeds, the White Ardennaise and the Bresse Gauloise.

Generally speaking, the analysis showed that 93% of birds are correctly classed within their respective breeds. Walloon breeds are more diversified than other local breeds in Europe. However, consanguinity is fairly high and as extensive as elsewhere. This may be accounted for by the small number of Walloon breeds distributed over a limited number of poultry farms run by fanciers. With a view to preserving local breeds while at the same time minimising inbreeding, an initiative has been formalised with the Poule de Herve Breeders Club aimed at setting up a conservation network according to a rotary design. The object is to create a pool for the purpose of safeguarding the breed (in parallel to breeding for showing).

Project subsidised by the Regional Government of Wallonia, agreement D32-108.

Contact: Amélie Turlot, a.turlot@cra.wallonie.be

Photograph: Mergelland Hoen

DESIGNING POULTRY RUNS: ADDED VALUE FOR THE FARM

OFTEN REGARDED AS A CONSTRAINT, AN OUTDOOR RUN FOR POULTRY CAN INDUCE A NUMBER OF BENEFITS, PROVIDED THAT CERTAIN RULES ARE FOLLOWED.

Animal welfare is increasingly high on the list of consumer criteria in choosing food . Mainly because there is a proven link between the food safety o and the welfare of the animal.

In poultry farming, access to an outdoor run is, in the consumer's view, a key component of bird welfare and poultry product quality. Access to an outdoor run is part of a number of specifications, including organic farming.

As shown in recent studies, far from just being a legal requirement, providing access to a run is an attractive option for the farmer. Provided that the rules governing the design of a properly functional outdoor run are strictlyincorporating optimum parasitism and predation managementthe farmer can benefit of added value from the poultry outdoor run (improved production, environmental, economic and ecological performance) along with greater autonomy.

So what does designing an outdoor run involve? What are the benefits and drawbacks for the farm?

In free-range poultry farming a piece of land is attached to the hen house to which the birds have access. The run enables them to express their natural behaviour of searching for food. For this plot to be explored, accomadations should be provided (tree plantings, attractive sward seedings). In order to derive maximum benefit from the run, some conditions have to be fullfil in the design of it. One of the rules is to ensure a tree cover not exceeding 50% of the run area. Distance between trees should not exceed10 m. Vertical landmarks (as directing guids) can also help birds to find their way in the run. If the chicken ake advantages from the run, the opposite is also true.

Hens help to manage parasites and weeds that are detrimental to a tree's productivity and they supply growth-promoting manure. If range management appears as an essential condition for optimizing free range poultry performance, , Wallonia has only few experience of this area (unlike neighbouring countries). So, in response to demand from poultry farmers of a network set up by CRA-W, a training session was held in February 2015 at "La Chambre d'Agriculture du Mans". This involved around fifteen attendees from farming, support, poultry industry and research backgrounds. Following this training course CRA-W has collaborated with AWE and the'Coq des Prés farmer's cooperative in the setting up of dossiers of two regional research and experimental centres. These centres could serve as a showcase for other poultry farmers keen to optimise the use of their runs.

Contact: Marie Moerman, m.moerman@cra.wallonie.be

CALENDAR

25 - 27 NOV. 2015
VII International Scientific Symposium: Farm machinery and process in sustainable agriculture | Gembloux, Belgium
Bruno Huyghebaert, b.huyghebaert@cra.wallonie.be

25 NOV. 2015
15thPork and Poultry Products Seminar | Namur, Belgium
communication@cra.wallonie.be

17 - 20 JAN. 2016
Chimiometry XVII | Namur, Belgium
Juan Antonio Fernandez Pierna, j.fernandez@cra.wallonie.be

29 FEB. - 04 MARCH 2016
Training in vibrational spectroscopy and chemometrics | Gembloux, Belgium
Juan Antonio Fernandez Pierna, j.fernandez@cra.wallonie.be