



Fattening characteristics, conformation and meat quality in Belgian Milk Sheep lambs



The sheep used for dairy farming are mainly Belgian Milk Sheep ('MLB'), an endangered local breed. Due to poor conformation, dairy lambs do not find a ready market in conventional distribution channels.

This study aimed to determine the zootechnical performance, conformation and meat quality of Belgian Milk lambs, using Ile de France (IDF) and Vendéen (VEN) lambs as controls.

The experiment was conducted indoors on 24 weaned male lambs, each breed obtained from two different farms. The subjects were fattened in the same environmental conditions and slaughtered at a satisfactory stage of fattening.

Zootechnical performance was similar for all breeds, no doubt due to the small number of test subjects and their breeding history (varying according to farm of origin).

Their conformation was assessed at the slaughterhouse by classifying the carcasses and making various measurements. The MLB's significantly lower fattening score was corroborated by the breed measurements (compared to the other two breeds): longer back line, narrower shoulders, deeper chest and longer legs.

Water, protein and lipid contents were measured in the psoas major muscle: the MLB meat tended to be leaner and to contain more proteins. Measurements of colour, loss of liquor in cooking and tenderness of the meat, made in the longissimus dorsi, showed no significant differences between breeds. However, the MLB meat was generally found to be more tender.

A three-way sensory test (on the longissimus dorsi) was conducted by six tasters to identify any taste differences between the breeds. This test, in the form of eight tasting sessions, showed MLB meat to have a perceptible taste difference compared with the other two breeds.

The MLB performed creditably in this zootechnical performance assessment. In terms of conformation, however, it is penalised by having a longer carcass with less fat. Meat quality measurements varied little between breeds, but some sensory differences were noted. These initial findings need to be confirmed in a larger-scale trial.

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A new functional typology of Wallonia's farms

Wallonia is divided into ten agricultural regions each with specific characteristics that have shaped farming over the years. A typology based on the technico-economic directions of Wallonia's farms (OTEX) does exist, but it does not faithfully reflect the functional differences between the regions. Since these differences lead to variations in both economic and environmental and social performance, more functional typologies are therefore needed.

In this context the typology developed by the Institut de l'Élevage for cereal, dairy and suckling systems has been adapted to circumstances in Wallonia and Luxembourg. The "MEAT-CROPS" and "MILK" keys of the Lorraine and Champagne-Ardenne regions have been extended with the inclusion of seven new types, taking account of the specific features of Walloon farms characterised by heavier stocking densities and greater intensification.

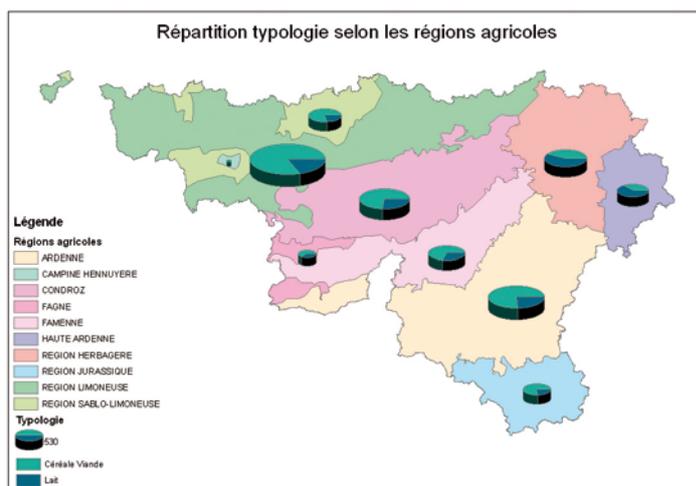
Within the 'OPTENERGES' project this typology will establish the majority types so that the diversity of the practices in use and their impact on both the energy balance and greenhouse gas emissions can be identified for each of them. At a later stage this typology will also enable the results to be extrapolated from farm scale to the entire study territory. On the 'DAIRYMAN' project it was found necessary to develop a typology in order to set up a network of pilot farms representative of the diversity of dairy farms in Wallonia in order, then, to develop a method that could be generalised to steadily improve the farms' economic and environmental performance.

A total of 12,395 farms, nearly 75% of all farms in Wallonia, were classed into 42 types which were then grouped into 18 main types. Livestock farming clearly emerged as Wallonia's main activity, with 74% of farms specialising in that area. Although in the majority, suckling farms account for a smaller utilised agricultural area (UAA) than the other categories in proportion to the total number of farms, covering only 28% of the land area. The fact is that 70% of farms in this category are small-scale enterprises ('PS') with an average size of 15 ha. Dairy farms occupy 36% of the land area, whereas cereal and mixed farms occupy 18% and 20% of the UAA respectively. The commonest type is the 'PS' model, which alone accounts for one-third of the farms characterised in Wallonia despite covering barely 10% of the UAA characterised. Further work on this type is needed in

order to identify the variability and the alternatives put in place by PS farms.

The types' relative significance depends on the agricultural regions concerned, as their soil and weather conditions determine the type of agricultural activity carried on there.

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Developing innovative tools for quality and safety of feeds and food.

The QSAFFE project which kicked off on 1 March 2011 aims to develop innovative tools to ensure the quality and safety of feeds and food. This 42-month European project is financed by the 7th Framework Programme in the amount of nearly 3 million euros. The QSAFFE partners are two universities (QUB, Ireland; CAU, China), seven research institutes (BfR, Germany; CRA W, Belgium; FERA, United Kingdom; JRC-IRMM, Belgium; RIVM, Netherlands; VSCHT, Czech Republic; RIKILT, Netherlands) and two commercial enterprises (Provimi, Netherlands and JOHN THOMPSON & SONS, United Kingdom). The project coordinator is Professor Chris Elliott (QUB). The ultimate aim of the project is to provide Europe with a framework for improving the quality and safety of animal feeds entering at ports from outside the EU as well as products produced within Europe. QSAFFE has four core scientific and technological objectives:

- Developing strategies for early quality and safety assurance in the feed chain. QSAFFE will undertake research aimed at combining existing testing methods and emerging technologies into a comprehensive analytical strategy to determine the best application for feed material quality and safety monitoring at ports, feed mills and laboratories.



- Development and improvement of systems for traceability and authenticity monitoring of the major feed materials used in Europe.
- Identification of the emerging risks (chemical and microbiological) from new sources of animal feed materials.
- Use of pharmaco-kinetic models to study the transfer of contaminants (dioxins, PCBs and melamine) from feed to food.

CRA-W's role within the QSAFFE project is to coordinate work on developing new strategies for ensuring quality and safety in the early stages of feed production. CRA-W is also involved in work on product traceability and authentication, focusing specifically on biofuel by-products.

For more information visit <http://www.qsaffe.eu>

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VEGEPHY, a green project with a European dimension



European policy on the sustainable use of plant protection products requires member states to put in place national plans of action to reduce the risks of their use.

Belgium and France have to act to limit the environmental impact of human activities and to that end they have joined forces on the

VEGEPHY project. The project originates from the Nord-Pas-de-Calais, Upper Normandy, Picardy, Champagne-Ardenne and Ile de France regions, where 65% of the potato plantlets produced in France are grown, representing 235,000 tonnes of seed per year (180 varieties in 9,588 ha).

Potato plantlets have to be sprayed with mineral oils at relatively high rates to effectively control the transmission of non-persistent viruses such as Potato Virus Y. The use of these fossil oils is limited by their high cost and the soil pollution they cause.

Vegetable oils have the advantage of being non-toxic to mammals, readily biodegradable and having a low environmental impact. The aim of the project is to develop a processed vegetable oil with similar plant protection properties to mineral oils for use as a substitute. The project also aims to use the knowledge gained to produce a vegetable-oil based ready-for-use additive to enable plant protection products to be applied at lower rates without compromising their effectiveness.

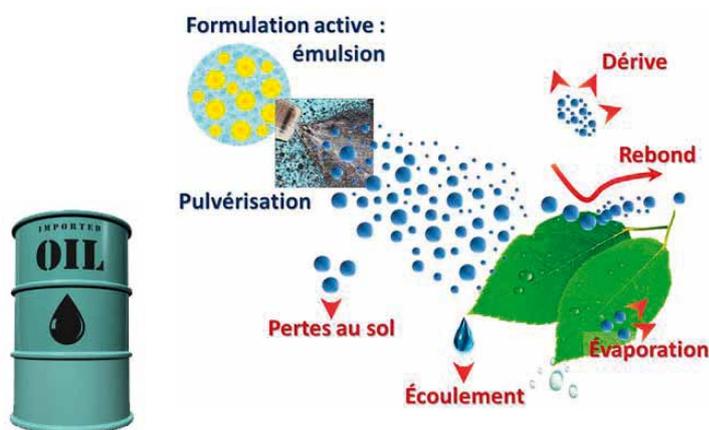
This project pools both countries' private-sector and public-sector expertise: Mosselman SA, Vandeputte Oléochemicals SA, Redebel SA, Comptoir Commercial des Lubrifiants (CCL), Comité Nord (Plant de pomme de terre), Université de Technologie de Compiègne (UTC), Université de Picardie Jules Verne (UPJV), Gembloux Agro Bio Tech (ULg) and CRA-W. On the Walloon side the project is subsidised by SPW (Department of the Economy, Employment and Research) through the European Union (Eureka).

Within the framework of this project CRA-W is specifically investigating pesticide residue aspects, to ensure that the use of these new products will not increase the risk of consumer exposure to pesticide residues.

The VEGEPHY project will be completed in December 2012 with the ultimate aim of marketing a new range of 'greener' plant protection products.



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An innovative European project for the sustainability of dairy farms

CRA-W is taking part in OptiMIR, a new European project which gained support under the INTERREG IVB programme in January 2011. The aim is to develop new and highly innovative management tools based on Milk Recording.

To improve the sustainability and profitability of dairy farms we aim to develop new tools to enable farmers to optimise herd management. Milk Recording will be used in an innovative way: unlike present practice, we will use the whole (MIR) milk analysis spectrum directly as a cow status indicator. This should make it possible to:

1. Cut production costs under the headings of feed, fertility or cow health by means of new spectral indicators (energy balance, stage of gestation, udder health, etc.)
2. Develop new added value for dairy products (e.g., nutritional claims)
3. Measure and reduce the ecological footprint of dairy cattle.

Developing tools of this kind requires international cooperation. Not only is a large volume of spectral data needed in order to build reliable statistical models, but the data should also offer maximum variability so that appropriate indicators can be generated. The different databases held by the various Milk Recording organisations in North-West Europe are thus complementary, and their integration will deliver more global knowledge. The same is true of the areas of expertise, which are spread around the various zootechnical research units working in this field. On completion of the project an Internet application will be available to farmers registered for Milk Recording.

OptiMIR is coordinated by the Walloon Livestock Farming Association (AWE) and is the result of a partnership between eleven Milk Recording organisations, seven research centres and universities, and one laboratory in six different countries of North-West Europe. CRA-W has been developing new agricultural and agro-industrial applications using infrared spectrometry for nearly 30 years now. Recent cooperative links with Agro-Bio Tech (ULg), the Battice Milk Committee and AWE have resulted, on the one hand, in further milk components, such as fatty acids and minerals, being determined and, on the other hand, in the creation of a Walloon Milk Recording spectral database. This innovative approach is the cornerstone of the OptiMIR project.

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INTERREG IVB

The nutritional quality of milk depends on the cows and what they eat...



The study was carried out over a year on 26 farms registered for milk recording where detailed herd data (production, stage of lactation, parity, and so on) are kept. It involved determining quantities of raw materials,

including grass, ingested by dairy cows and taking tank milk samples. The milk fat and protein content, cell count and fatty acid pattern were determined by infrared spectrometry. The results showed milk composition to be affected by both herd management factors and feeding factors.

For instance, there was a negative correlation between the milk fatty acid content and the percentage of primiparous cows. This is probably due to these animals still being at the growing stage and using up less of their body reserves. When the production level rose, the saturated fatty acid and protein contents dropped, probably due to dilution of these substances in the milk. The unsaturated fatty acid content, on the other hand, did not appear to be affected by productivity.

Looking at the feed factors, ingestion of grass correlated positively with the milk polyunsaturated fatty acid content, $\omega 3$ and $\omega 6$ in particular. Eating fresh grass is therefore definitely to be recommended in order to produce nutritious milk. The milk butterfat content increased with grass silage based diets, perhaps due to the cellulolytic orientation of rumen fermentation. The milk protein content, on the other hand, decreased with the proportion of forage in the ration, no doubt because of the lower energy density of the feed. Lastly, ingesting maize silage reduced the milk unsaturated fatty acid content.

The study confirmed that producing milk with a high unsaturated fatty acid content, which is to be recommended from a nutritional point of view, depends on a great many factors, both animal- and feed-related.

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Recognition for CRA-W at the NIR 2011 Conference

The research carried out by CRA-W won recognition at the NIR 2011 Conference. Firstly, Vincent Baeten received the 'Q-Interline Sampling Award' for the best verbal presentation, entitled 'Right sampling strategies make NIRS and NIR imaging techniques the tool for safety control of food and feed products'. Secondly, the poster entitled 'Near-infrared spectroscopy with fiber optic probe for determination of fatty acid profile in raw milk', presented by Hoang Nam Nguyen, Frédéric Dehareng, Mohamed Hammida, and Pierre Dardenne of CRA-W as well as Andreas Niemöller of Bruker Optics, won Second Prize among the best posters.

The NIR 2011 Conference took place from 13 to 20 May in Cape Town (South Africa), chaired by Professor Marena Manley of the Stellenbosch Institute for Advanced Study (STIAS) and held under the auspices of the International Council for Near Infrared Spectroscopy (ICNIRS). The main activities undertaken in the context of the ICNIRS in the last two years, under the control of Pierre Dardenne, Head of the Valorisation of Agricultural Products Department at CRA-W, were the development of a membership network and revamping the website. The new website, developed by the IT team at CRA-W, includes the option of online

registration and payment for new ICNIRS members. ICNIRS membership benefits include supporting the Council in its work, access to the intranet including ICNIRS meetings and minutes, Tomas Hirschfeld Award lectures, ICNIRS presentations and videos, e-learning, datasets and job opportunities.



For more information visit the ICNIRS website (<http://www.icnirs.org>) and the NIR 2011 website (<http://www.nir2011.org>).

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First impact factor for BASE



The scientific journal BASE (Biotechnology, Agronomy, Society and Environment) is published by Presses agronomiques de Gembloux. CRA-W is involved in the workings of the editorial committee and also provides part of the budget for production and publication. One of the aims when the 'Bulletin des Recherches Agronomiques de Gembloux' was relaunched

as BASE was for the journal to have an official impact factor. A major milestone was passed in 2008 when the journal was included in the Web of Science® compilations, which was expected to result in an impact factor being awarded. This aim has now been achieved, with the first impact factor being quoted

in the 2010 issue of Journal Citation Reports®. It is 0.454. That puts BASE in a select group of twenty Belgian scientific journals with an official impact factor. Furthermore, of the 74 titles with an impact factor under the heading of 'Agronomy', BASE comes 55th, making it the second-top ranking journal for anyone wishing to publish in French in this discipline.

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Journal website: <http://www.bib.fsagx.ac.be/base/eng/home/>