Gembloux Agro-Bio Tech
University of Liège

The dual purpose Belgian Blue

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EuReCa
Towards self-sustainable European Regional Cattle breeds

Université de Liège

Breed origins

The geographical situation of Belgium in the middle of Western Europe has always favoured a great intermingling of populations and also of their cattle.

In the 19th century, the local cattle had neither good dairy yield nor good muscular conformation. It was just a beast of burden producing some milk.

Around 1845, Belgian provinces participated together to a project of subventions to best sires breeders. At the same time a lot of Durham (Shorthorn) sires were imported from the government initiative. Dairy yields of the cattle obtained were reduced, but precocity, conformation, weight and fattening aptitude were increased. Rapidly Belgian butchers denigrated the meat of crossed beef because it was less marbled, fat just settled under the skin. In the aim to compensate the loss of dairy yields, Belgian breeders imported, in a concomitant way, some Dutch sires.

Breed history

The selection of blue cattle itself started around 1910 near Tienen (in the Province of Brabant), when the importations of English sires stopped. Public authorities promulgated a charter for cattle breeding and created the first Offical Herd-Book in 1919.

At the end of the First World War, fear of famine forced the government to overhaul the agricultural system of the time. Cattle were bred in racial zone and in pure breed. Dual purpose type was then advocated by Provincial breeding associations. The blue breed was called the Medium and High Belgium cattle.

Since 1960, the economic context (surplus of milk and lack of meat) was favourable to meat production. Moreover, improvement of caesarean technique allowed breeding double muscled calves. These calves cost twice more than ordinary one, and they were particularly adapted to baby-beef technique. The bigger obtained pieces of meat were tender and low-fat, which was very profitable to butcher, and more healthy for consumers. The majority of breeders evolved then to the meat purpose.

In 1970, provincial Herd-Books were merged into a single national Herd-Book. Therefore, there were no longer racial zones. The Medium and High Belgium breed was renamed Belgian Blue Beef in 1973. In 1974, the Herd-Book was divided into 2 branches, extreme meat purpose (BBB) and dual purpose (dpBB). The dpBB branch had its own breeding goal: size, milk, regular and easy calvings. But the dpBB was considered less interesting than the specialized breeds.

Since Eighties, the usual practice became to detain a suckler herd, composed of BBB, and a dairy herd, composed of Holstein. The dual purpose type was maintained in some farms, but very few of them still participated to selection. Many blood lines were lost during this period.

In 1998, agro-environmental measures started to be applied in Wallonia. Holders of dpBB received 120 Euros per cow, under the conditions to register and milk recorded their herd. However, cows were allowed to be without known origins.

Vulnerable breed

In 2004, only 3 000 dual purpose Belgian Blue (dpBB) cows still participated to milk recording. Therefore, a Walloon program to support dpBB was started in order to strengthen the dual purpose branch. It aimed to support performance recording, to improve selection program, to develop breed specific selection indexes, to manage inbreeding and to increase animal registration of dpBB.
Since 2007, the rules for registration of new animals have changed and are more severe in order to guaranty the quality of the breed. Therefore, the number of animals certainly decreased slightly in a first time and then stabilize.
Under the European project called EURECA which aims at the conservation, the development and the use of regional cattle breeds, breeders of endangered European regional cattle breeds were interviewed in each country partner of this project. Twenty-three dpBB breeders (and 18 dual purpose Red and White breeders) were interviewed in Belgium. The Belgian results of this survey were presented in tables 1 and 2.

Cross-border breed

It must be noticed that dual purpose Belgian Blue (dpBB) and the *Bleue du Nord* (in France) breeds are related because of their common ancestors in the former Mid and High Belgium cattle but these two breeds diverged slightly under differentiated selection objectives. In France, the Herd-Book of the *Bleue du Nord* breed was created in 1923. This breed had also a clear dairy purpose. However, after 1945, the breed was neglected in France. Indeed, the North of France turned towards specialized cattle, like the French Black and White Friesian. In 1953, the Herd-Book of the *Bleue du Nord* was officially closed.
In the Seventies, semen from Belgian sires was imported in the aim to improve meat performances, which has reinforced the link between the Belgian et French blue type breeds.
In 1983, the *Bleue du Nord* breed was officially recognized again by French government. And finally, the *Union Bleue du Nord* was created in 1991, which is in charge of promoting the breed and linking all stakeholders.

Table 1:
Characteristics overview of dual purpose Belgian Blue (dpBB) and dual purpose Red and White (dpRW) breeders

Breed	No. of interviewed farmers	No. of ha (ownership)	Average percentage of land reserved for grazing	Contribution to family income	Average age of farmers
dpBB	23	84 ha (41 ha)	61%	82%	49 years
dpRW	18	44 ha (12 ha)	>95%	98%	52 years

Geographical distribution

In 1960, the Medium and High Belgium breed represented, with near 1 000 000 animals, 45 % of the Belgian livestock. It was bred in the Hainaut, in the Brabant (except in Diest-Aerschot), in the South Limbourg, in the Hesbaye, in the Condroz, in Namur and in the Luxembourg (except Vielsalm). The zone covered was characterized by a great variability in the quality of soils and landforms.
In 2009, only 3 400 dual purpose Belgian Blue (dpBB) cows still participated to milk recording. Three quarters of dpBB herd are kept in the Walloon Region (mostly in the Hainaut), the remaining being in the Flanders Region around Brussels.
In 1910, the *Bleue du Nord* herd in France was composed of more than 300 000 animals, distributed in the North department, in the Pas de Calais, in the Aisne and in the French Ardennes. In 1950, there were only 5 000 animals left. In 2009, just under 600 *Bleue du Nord* cows still participated to milk recording and are distributed around Avesnes and around Valenciennes.

Conformation

In 1937, the blue animals were described as parallelepipedial with a large corpulence, a good frame and a strong musculatures. The animals seemed short and squat. The chest was down and the cheek was thick. The cow was between 1m30 and 1m44 high, and weighed between 600 and 800 kg. Furthermore, the influence of Durham was sometimes perceptible. It was a triple purpose cattle: milk, meat and work. The coat was blue, blue and white, white, black, black and white, and even red. The coarse head, the protruding hip, the bad conformation of rump and udder were then considered as major imperfections.
In 1959, the coat of the Medium and High Belgium breed was then restricted to white, white and blue, and white and black. The cattle were of great size but with moderate height. The animal looked overall powerful but short and squat. The cow was between 1m32 and 1m36 high and weighed 650 kg. The bull was between 1m42 and 1m48 high

Table 2 :
Herd characteristics overview of interviewed farmers

	Characteristics			
Breed composition of the herd	dpBB	dpBB + BBB	dpBB + BBB + Holstein	dpBB and other dual purpose breeds
Percentage of visited farms	44%	21%	26%	9%
Average herd size (dpBB percentage of the herd)	61 cows	111 cows (40%)	143 cows (35%)	69 cows (80%)
Contribution of dpBB to income	96%	42%	53%	95%

and weighed around 1 200 kg. The cattle have to have wide chest, wide back and thick cheek. Dairy cow had to have square udder with well separated teats, and a wide pelvis.
Since the end of Eighties, there have been some differences of opinion on the way to select dpBB animals. Indeed, the mutation (*mh* allele) responsible for double muscled animal was detected within the *myostatin* gene. In Belgium, 80 % of the dpBB cattle carry the *mh* allele. Most of time, the dpBB breed is selected for milk in the North of Belgium ; genotype +/+ (absence of *mh* allele) is often associated to milk production. And this is similar to selection of *Bleue du Nord* in France. On the contrary, the South of Belgium attaches more importance to conformation, and select *mh*/*mh* (double muscled) cattle. However, even if the influence of *mh* allele is obvious concerning the conformation, it is not incompatible with dairy yields and calving ease (rate of caesarean section is significantly lower than in BBB breed, the ordre of 30 %). From North to South of Belgium, the stature is of first importance.

Dairy skills

In the Fifties, the Medium and High Belgium cattle was also dual purpose. Cows controlled produced between 4 000 and 4 500 litres of milk per lactation with 3.60 % fat. The meat conformation was favored, but the dairy yield was still of first importance.
In 2004, the dual purpose Belgian Blue (dpBB) breed has kept good milk yields. According to ICAR, dpBB performances in Flanders Region were 5 068 kg of milk in 297 days of lactation with 3.77 % of fat and 3.30 % of protein. While in the Walloon Region, dpBB cows produced 4 023 kg of milk in 280 days with rates of fat and protein of 3.56 % and 3.27 %, respectively.

Farmer's opinion on the breed

The breeders currently still having dual purpose Belgian Blue (dpBB) animals mention several reasons. Besides the traditional look and the link of dpBB to the landscape of the Walloon Region, the dpBB animals are considered having good robustness, being ease to manage in general and having a good calving ease. Due to its dual purpose type, income generated by both milk and meat is more stable and more flexibility in responding to market fluctuations. Compared to the hyperspecialized breed present in Belgium, the dpBB breed is considered less demanding and having better fertility and longevity, however, still less productive.

Conclusions and recommendations

The dual purpose Belgian Blue (dpBB) breed is a vulnerable breed in Belgium. The European project EURECA is focused on endangered or vulnerable European regional cattle including the dpBB breed. The survey of farmers and stakeholders has helped to highlight the qualities of the dpBB and the joint commitment of support, guidance and maintain in the Walloon Region.

Although the herd size of dpBB appears to be stabilizing in Belgium in recent years, joint efforts by the Public Authorities, the universities, the breeding associations and the breeders should continue ; more particularly through research projects (including INTERREG project called BlueSel started in 2008 in the Walloon Region and France), the maintenance of agri-environmental measures), the valorisation of the breed and continuing the current framework.

Colophon

This breed assessment is compiled by Elodie Bay, Frédéric Colinet and Nicolas Gengler. The Walloon Breeding Association (AWE asbl) is acknoledged for the photos. Farmers, stakeholders and AWE asbl are acknowledged for providing the data. More information about the EURECA-project is available on the website: www.regionalcattlebreeds.eu.

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This brochure and the EURECA project are supported by the European Commission (Directorate - General for Agriculture and Rural Development) and the Service Public de Wallonie (Direction Générale Opérationnelle de l'Agriculture, des Ressources Naturelles et de l'Environnement).
(Grant 012 AGRI GEN RES 870/2004)

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