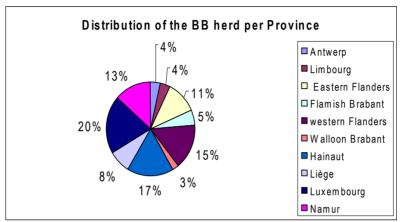# *The Belgian Blue Breed*

EXPANSION OF THE BREED

The Belgian Blue breed represents 50% of the national herd, which is made up of 1.083.408 cows. 61 % of the Belgian Blue livestock is in the Walloon region and 39% in the Flemish part of Belgium. The Belgian Blue herd is spread all over Belgium. However, it is in the Provinces of Luxemburg, Hainaut and Western Flanders that the number of Belgian Blue is the most important.

Distribution of the BB herd per Province

- Antwerp — 4%
- Limbourg — 4%
- Eastern Flanders — 11%
- Flamish Brabant — 5%
- western Flanders — 15%
- Walloon Brabant — 3%
- Hainaut — 17%
- Liège — 8%
- Luxembourg — 20%
- Namur — 13%

Whereas full blood Belgian Blue is used in Northern Europe for meat production, its extraordinary quality in crossbreeding programs has enhanced its expansion in the whole world. That is why we see Belgian Blues in France, in the Netherlands, in Great Britain, in Ireland, in Denmark, in USA, in Canada, in Brazil, in Australia, in New-Zealand, in Mexico...

The Belgian Blue in Denmark

The breed is perfectly suited to a great diversity of soils and climates encountered in its international expansion. Its very calm temperament and its docility are also very much appreciated.

The Belgian Blue in Australia

Due its exceptional qualities in cross and full blood breeding, the request for breeding stock is constantly increasing worldwide.

In order to establish internationally the recognition of the Belgian Blue breed, 16 Herd-Book were created in Europe, America, Asia and in Australia.

Cattle exhibition at the Houston show (USA)

These 16 Herd-Books, members of the BBI, work together in order to:

• harmonize the methods and criteria of identification and registration of BBB in the different Herd-Books;
• keep the registers and registration papers of the animals exchanged or sold;
• exchange information regarding the breeding of Belgian Blue;
• favour the exchange of genetics;
• cooperate in the promotion of the Belgian Blue breed;
• represent internationally the interests of the Belgian Blue.
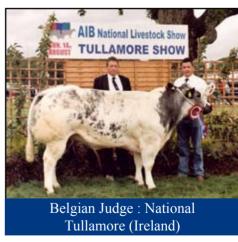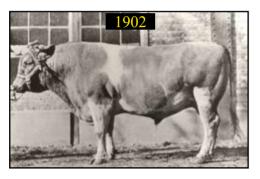

BB Stand, Regina
(Canada)

International meetings, breeding seminars, exchange of judges, carcass competitions...are notably organized within the framework of this collaboration.

Belgian Judge : National
Tullamore (Ireland)

Belgian Judge : National
Iowa (USA)

Thanks to this promotion, the preconceived ideas about the Belgian Blue disappear and the breed experiences an always growing success.
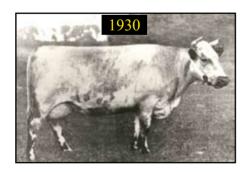
Beginning XX ème century

One has to go back to the beginning of the past century to see the first selection attempts to breed a dual purpose animal from fairly uniform local cattle and the very popular Sorthorns widely used in the second part of the 19th century.
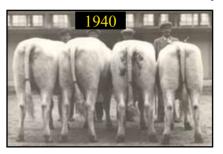

1902

However, everything was called into question when the First World War broke out.
It was only in 1919 that an Agricultural Charter was developed in the form of a Royal Decree which paved the way for further breed development.

1930

The selection work started up again, but with a clear objective: a rectangular «dual purpose» breed of cattle, with a good stature, average muscle structure and good milk production (4.000 litres at 3.5%).

This trend was firmly maintained until 1950.

The years from 1950 to 1960 were a period of transition, during which the early signs of a new orientation became clearly visible.

1940

But the watershed occurred between 1960 and 1970.

1965

First for bulls and later for cows, a clear preference was granted to the muscular development. The response to this selection was remarkable. A new type of breed appeared, combining significant muscle development (shoulders, withers, back, loin, and hind quarters), size, fine but solid bone structure, harmonious contours with round ribs, inclined rump, hidden hips and detached tail.

In 1973, the breed, hitherto called «race de Moyenne et Haute Belgique» was renamed **BELGIAN BLUE BREED** divided into 2 distinct branches: the meaty type and the dual purpose type.

1975

ORIGIN AND EVOLUTION OF THE BREED

Belgian Blue Breed

DUAL PURPOSE type

Certain breeders have continued to select animals for combined milk and meat production. This selection developed parallel to the meaty type's one, by using completely different blood lines. The «Bleue du Nord» type belongs to the same group and is found in the Maubeuge region in France.

With the establishment in 1999 of the agri-environmental measurement plan for the protection of endangered species, the interest for this dual purpose branch has been growing and as of 2005, more or less 150 breeders use the dual purpose Belgian Blue type in Belgium. They are located in the Provinces of Hainaut and Brabant. Within the dual purpose type, 2 variants are identified according to the genotype:

genotype mh/mh*

These animals are genetically identical to the meaty type ones. However their selection is also based on the milk production and the easy-calving. Their milk production varies between 4200 and 4800 litres.

genotype mh/+ or +/+

These animals of dairy type produce on average from 5400 to 6000 litres of milk.

* mh : muscular hypertrophy gene

MEATY type

The selection of double muscled cattle responses to the economic climate and in particular, to the demand of a meat industry very sensitive to the muscle conformation, reflecting the composition of the carcass. The increased profit linked to well muscled cattle pushes the breeders to mate the meatiest animals to each other.

From an originally dual purpose breed, the Belgian Blue has become a specific breed of beef cattle, with the following traits and benefits: extraordinary muscle development, desirable meat quality (tenderness), stature, early maturity, feed efficiency, docility, uniformity and maternal aptitudes.

CHARACTERISTICS OF THE BREED

STATURE

The weight of an adult bull ranges from between 1.100 and 1.250 kg, for a height at the withers of about 1m45 to 1m50. Indeed, it is by no means rare to see animals heavier than 1.300 kg.

The average weight of an adult cow at the beginning of pregnancy is 700 - 750 kg, with a height at withers of 132 to 134 cm. Cows can reach a weight of 850 to 900 kg and can exceed 140 cm.

Weight and height of bulls measured at official events					
Age in months	12	24	36	48	60
Weight (kg)					
1st category	500	770	970	1111	1136
All categories	484	752	966	1111	
Height (cm)					
1st category	120.4	134	142.2	145.8	
All categories	120.2	134.8	141.7	145	

Height of breeding cows					
Age in months	18	24	36	48	60
Height (cm)					
females presented at official events		124.6	130.4	133.1	134.6
breed's average (linear score)	117.9	123.3	127.9	130.4	132.4

COAT

Apart from the «pie» character (recessive vis-à-vis «all colored») present in most colored animals, three color types are typical for the breed: all white, blue (pie-blue) and black (pie-black). These 3 phenotypes correspond to the isolation of a gene pair inherited from the Shorthorns. The blue (equivalent to the roan in Shorthorns) is the intermediate, heterozygote phenotype.
Among these 3 phenotypes, the black one is the least popular in Belgium.

Nevertheless, in Scotland for instance, the black Belgian Blue bulls are popular for crossing on Angus cows.

Parental Combinations	Composition of the descendants		
	White	Blue	Black
White X White	100 %		
White X Blue	50 %	50 %	
White X Black		100 %	
Blue X Blue	25 %	50 %	25 %
Blue X Black		50 %	50 %
Black X Black			100 %

CHARACTERISTICS OF THE BREED

DAILY GAIN
FEED EFFICIENCY

The Average Daily Gain (ADG) of bulls from 7 to 13 months measured at the Bovine Selection Station (bulls calves intended for breeding) reaches 1.6 kg/day.
In fattening, the ADG of bulls rises to 1.2 kg.

The feed conversion rate (kg of feed by kg growth) is systematically better with the Belgian Blue. This cattle consumes less and transforms more efficiently.

The higher rate is mostly due to a protein weight gain and weak fat gain. The feed conversion rate is in the 5 kg range from 7 to 13 months. Given its low propensity to deposit fats, the «meaty» animals can be raised and «fattened» on a diet rich in energy which leads to higher weights without excess fats. The traditional formula is to produce 18 to 19 month old bulls weighing around 650 kg.

KILLING-OUT PERCENTAGE
CARCASS COMPOSITION

The average killing out percentage of the Belgian Blue animals reaches at least 70%. With a carcass yield of 82% or more, these animals provide, for the same liveweight of 600kg for example, 100 kg more meat than animals with a 60% killing-out.
In Belgium, 70% of young cattle fall in the S and E categories (of the European classification system), while in the other E.U. countries, the majority belongs to the U, R and O classes. The Belgian Blue breed produces a lot of meat while causing very little waste.

In the hands of skilled Belgian butchers muscles that typically give 2nd grade cuts are reclassified as 1st grade cuts which increases the yield of consumer-prized fast-cooking pieces by 35%.

The Belgian Blue breed has been selected by the breeders to satisfy the consumer's expectations. Statistics show that in Belgium each person consumes on average 100 kg meat per year, of which 20 kg of bovine meat. The Belgian Blue contributes 75% of the red meat production.

The breed is not only characterized by the quantity of produced meat but also by its quality.

Its high nutritional value is determined by 4 main elements : the meat is rich in high biological quality protein, in vitamins B3 and B12, in iron and zinc, both being on an easily assimilated form.

The Belgian Blue meat is recommended by doctors and dieticians. Indeed, it contains less cholesterol (+/- 45 mg/100g) than skinless chicken meat (+/- 62 mg/100g).

Moreover the BB meat contains on average 5% fat, that is to say 2 to 3 times less than the meat produced by other breeds. Its lipid composition is characterized by a good fatty acids balance; fat of such quality is not unhealthy.

The meat is very tender because of the finer fibres and lower percentage of tough connective tissue.

Belgian Blue meats require about 1/3 less cooking time than standard beef.

Belgian Blues offer consumers exactly what they want: naturally lean, tender and tasty meat, produced with respect for the animal wellbeing and the food safety.

ZOOTECHNICAL QUALITIES

• AGE AT 1ST CALVING:

Female Belgian Blues are precocious and reach puberty earlier than the females of other beef breeds. The average age at 1st calving is 29-30 months. However, in many herds, the heifers calve at 24 months.
They are therefore fed intensively until their first calving.

• GESTATION AND TWIN BIRTHS:

The Belgian Blue Breed belongs to the group of breeds with relatively short gestation periods. For the male fetus, it is 282.6 days and for the female fetus, 281.6 days.

Frequency of twins is 2.3% on average.

• BIRTH WEIGHT:

The birth weight of male calves is on average 47 kg. Female calves weight 44 kg at birth.

• CALVING INTERVAL :

The average interval is 14 months; for 75% of cows, it ranges from between 11 and 15 months.

• A.I NON-RETURN RATE:

In Belgium, approximately 50% of the cows are bred through artificial insemination. The non return rate at 58 days is 69.7%

• CALVING ISSUES :

At birth, the young «meaty» type calf can be worth twice if not three times as much as an ordinary calf. The value of a «meaty» calf is such that the breeder can no longer take any risks and systematically opts for an easy calving by Caesarean Section, which is considered as a technical choice, thereby preventing any traction what limits the perinatal mortality.

Comparative tests carried out in various European countries on Friesians, Hereford, Aberdeen Angus... have shown that the proportion of assisted calving is more or less identical to that observed for other European breeds of beef cattle. (Limousine, Blonde d'Aquitaine...).
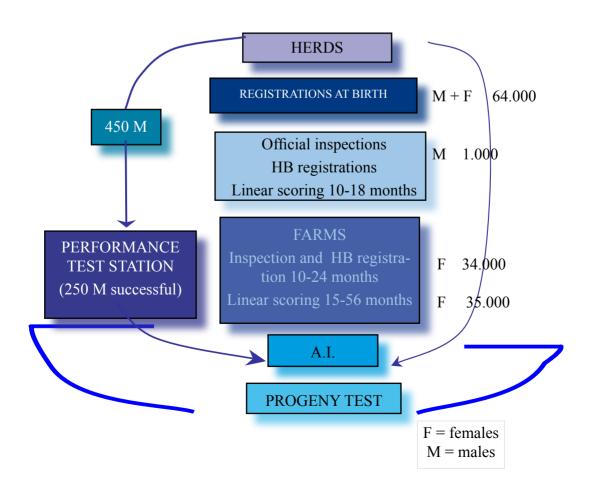
SELECTION AND TESTING PROGRAMS

In Belgium, selection based on the animal's appearance and conformation has been practised for many years and with much success. Our breeders have thus developed the Brabançon and Ardennes working horses, the Pietrain pig, the Belgian Landrace pig, the Beltex sheep and of course the Belgian Blue Beef cattle.

Today, the goal is to keep the superior muscling which allows the Belgian Blue to differentiate it self from other beef cattle, and through selection maintaining rusticity, size, posture, feet and legs...

Belgian Blue breeders created the Belgian Blue Herd-Book, which is entrusted with the selection, the registry of pedigrees and the promotion of the breed.

In Belgium, the number of active Belgian Blue breeders is around 2.000. The number of registered cows is 90.000 and that of registered bulls 2.500. Some 33.500 females and 1.900 males are registered annually in the Herd-Book.

Parallel to the traditional selection methods which consists in choosing the good mating based on their pedigree and the classification at official competitions, a wide-range A.I. bull testing program has been set up.

HERDS

| REGISTRATIONS AT BIRTH | M + F | 64.000 |

450 M

| Official inspections HB registrations Linear scoring 10-18 months | M | 1.000 |

PERFORMANCE TEST STATION (250 M successful)

| FARMS Inspection and HB registration 10-24 months | F | 34.000 |
| Linear scoring 15-56 months | F | 35.000 |

A.I.

PROGENY TEST

F = females
M = males

SELECTION AND TESTING PROGRAMS

PERFORMANCE -TEST

Bulls from the performance-test are the result of preferential matings between A.I. or private bulls labelled as «bull fathers» and specially-chosen cows, most notably through their linear classification, and labelled as «bull mothers».

If these male calves meet the sanitary requirements, they are allowed into the Test-Station where they are raised in identical conditions until the age of 13 months.

The young bulls are subjected to daily gain, feed consumption and spermatogenesis evaluations.

At the age of 13 months, a severe selection takes place since only 50 % of the potential candidates are accepted for public auction where breeders and A.I. stations may bid for the bulls.

Average performances at the Station.

	Weight	Height	Daily Gain	Feed Efficiency	Value (€ /kg)
Auction Categ.	544.55	120.5	1.558	4.966	3.00
Admitted return in farms	525.3	119	1.547	5.115	2.90
Refused	531.7	119	1.562	4.886	3.00

PROGENY -TEST

The Progeny-Test involves the offspring of all A.I. sires.
Results (genetic evaluations) from these farm-based progeny tests are published biannually. At the farm the controls start at calving (1st visit), and the calves are reexamined at 14 months of age (2nd visit). The collected data reflects the following zootechnical and functional traits:

– 1st visit (birth): gestation length, birth weight, conformation, possible legs and mouth defects, vitality, death rate...

– 2nd visit (14 months): weight, height, combined index weight-conformation, possible legs and mouth defects, death rate.
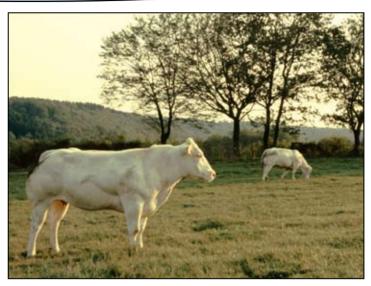
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SELECTION AND TESTING PROGRAMS

LINEAR SCORE

A special system of linear scoring has been developed by the Belgian Blue Herd-Book for the breed. This evaluation is systematic for all the registered cows from 15 to 56 months of age.
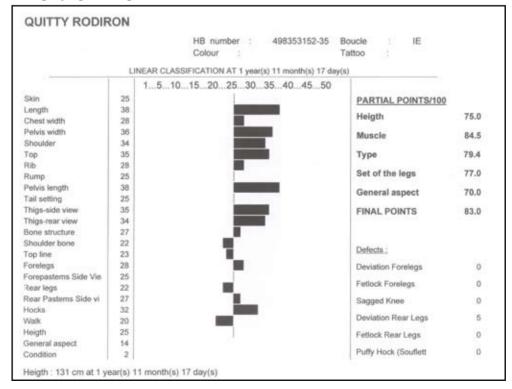
The linear classification involves numerically scoring of each animal as to its morphology based on 22 traits : 4 for the size of the animal, 9 for the muscle development and 9 for the bone structure and posture.

Moreover, possible legs defects are taken in account: deviation rear- or forelegs, fetlock rear- or forelegs, sagged knee, puffy hocks.

The linear score allows for:
- a periodic inventory of the morphological characteristics of the herd, whether this concerns a specific herd or the breed as a whole;
- the choice of bulls-mothers, with the purpose to enter male calves into the Bovine Selection station;
- the selection of future embryo donor cows;
- an highly specific genetic evaluation of the A.I. bulls.

QUITTY RODIRON

HB number : 498353152-35 Boucle : IE
Colour :   Tattoo :

LINEAR CLASSIFICATION AT 1 year(s) 11 month(s) 17 day(s)

1...5...10...15...20...25...30...35...40...45...50

Trait	Value
Skin	25
Length	38
Chest width	28
Pelvis width	36
Shoulder	34
Top	35
Rib	28
Rump	25
Pelvis length	38
Tail setting	25
Thigs-side view	35
Thigs-rear view	34
Bone structure	27
Shoulder bone	22
Top line	23
Forelegs	28
Forepastems Side Vie	25
Rear legs	22
Rear Pastems Side vi	27
Hocks	32
Walk	20
Heigth	25
General aspect	14
Condition	2

PARTIAL POINTS/100

Heigth	75.0
Muscle	84.5
Type	79.4
Set of the legs	77.0
General aspect	70.0
FINAL POINTS	83.0

Defects :

Deviation Forelegs	0
Fetlock Forelegs	0
Sagged Knee	0
Deviation Rear Legs	5
Fetlock Rear Legs	0
Puffy Hock (Souflett	0

Heigth : 131 cm at 1 year(s) 11 month(s) 17 day(s)

THE BELGIAN BLUE IN CROSS BREEDING

The terminal cross breeding (crossbred animals intended for the meat production and not for breeding) is more and more popular in many regions of the world. The introduction of the European classification system «SEUROP» is seen to be at the origin of this enthusiasm.
Given its economical and meat qualities, the BB is often chosen as terminal sire.

In many countries, trials of crossing between the Belgian Blue sire and local breed cows were carried out. As a general rule, they reveal the superiority of the BB crossbred calf resulting in increased growth, feed efficiency and above all muscle conformation.

[BB X Holstein Frisian] in Great Britain

A Belgian Blue cross on a Holstein type dairy cow, offers a marked improvement in killing out (+4 to 5%) and in carcass meat yield (+8%). This benefit is not accompanied by any more calving problem than found with most other beef breeds.

Moreover, the survival rate, the daily gain and the feed efficiency are also better for the Belgian Blue crossbreds. Their great carcass quality justifies a better price on the market
(the average added value per calf reaches 200€).

In addition, the white coloured Belgian Blue bull «marks» its offspring, with these being entirely "blue" on Holstein cows.

[BB X South Devon] in USA

[BB X (X Simmental)] in Czech Republic

In a series of tests performed on crossbreds by the United States Department of Agriculture's Clay Center (MARC) involving the most popular beef breeds (Angus and Hereford), the Belgian Blue crossbred carcass yield surpassed the control subjects [(Angus X Hereford) X (Angus X Hereford)] by 1.7%, percentage of lean by 6.7% and fat content lower by 7.4%. All told, the Belgian Blue crosses yielded 31.2 kg more meat and 25.1 kg less fat, on average, than Angus X Hereford.

[BB X Angus] in Canada

THE BELGIAN BLUE IN CROSS BREEDING

[BB X Jersey] in Great Britain

Taste-testing has shown that for steak there appears to be no racial difference with respect to «juiciness», flavour and tenderness. In roasts, however, the Belgian Blue was more tender than all other breeds.

In Brazil and Argentina, the BBB is used on a large scale to tenderize the Zebu meat.

Breeding a dairy or a beef cow to a Belgian Blue produces a Belgian Blue crossbred significantly better than the maternal breed: better carcass yield, leaner meat, less fat, better feed conversion rate...

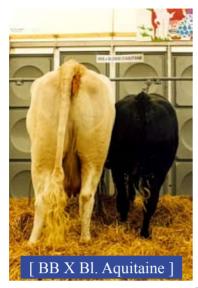The BB is also much appreciated to mellow the nervous character of certain local breeds.

Some results:

[BB X Zebu Nelore] in Brazil

• Denmark : Slaughtering, carcass quality and ADG results of bulls from various crossings: BB X Danish Red (RDM), BB X Holstein and BB X Jersey. Slaughtering carried out between 1999 and 2003.

	BBB X RDM	RDM	Diff	BBB X HOL	HOL	Diff	BBB X JER	JER	Diff
Age, months.	14.4	14.1	0.3	14.4	14.0	0.4	14.3	14.9	-0.6
Carcass, kg.	283	251	32	288	244	44	248	189	59
Score, carcass quality, EUROP	8.2	4.7	3.5	8.4	3.9	4.5	6.8	3.1	3.7
ADG, g/day	594	542	52	608	526	82	524	384	140

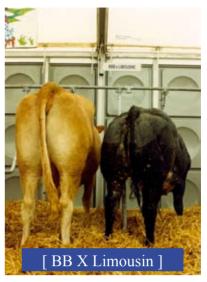• Italia : Fattening results of crossbred male calves, slaughtered at the age of 4 months.

	Holstein X BB	Holstein X Limousin	Holstein X Italian Simmental
Final Weight (kg)	120.80	118.19	119.81
ADG (g/day)	848	774	811
Feed gain ratio (g. D.M. food/g ADG)	1 967	2 121	2 002

[BB X Bl. Aquitaine]

[BB X Limousin]

[BB X Charolais]

[BB X Montbeliard]

[BB X Normand]

[BB X Red Holstein]

STANDARD FEATURES

HEAD

Fine-featured, well proportioned, fairly wide, flat forehead, large muffle. The head is bigger, shorter and more massive in the male.

Short, horizontal horns, at the side in the bull, curved forwards from the forehead in the cow.

Defects: fairly unrefined, long and tapering head.

NECK

Thick and horizontal in the cow; convex and rounded in the bull.

SHOULDER

Well muscled, in proportion to the surrounding areas. The muscle structure of the shoulder, leg, foreleg and the scapula-humeral angle are particularly well-developed in the bull.

Defects: protruding and detached shoulders, insufficient muscle structure.

WITHERS

Wide and musclular withers, in a straight line with the neck and with the back, at least in the cow.

Defects: narrow, insufficiently muscular withers, not properly attached to the back.

BACK AND LUMBAR REGION (KIDNEYS)

Horizontal, wide and muscular, convex ridge in the middle of the back which can continue to the hindquarters (double kidneys).

Defects: saddle-back, insufficient muscle structure, kidney not properly attached, protruding backbone.

CHEST

Rounded ribs, thick muscle cover to the rear of the shoulder, especially in the male. Wide and muscular chest above all in the bull. Thin and pliable skin, fetlock not very developed.

Defects: flat, long rib, narrow chest, thick skin.

FLANK

Short and full, the fold of the groin continues towards the front; resulting in a very thick «extra fold of skin» (corde).

Defects: long, hollow, sagging abdominal wall.

CROUP (RUMP)

Wide with disappearing hips, long, inclined, highly developed muscle structure (double), especially in the male, the median hollow being occupied by the sacrum which in turn is prolonged by the tail, which is prominently set.

Defects: too short, narrow, insufficiently muscular and inclined rump, embedded tail set.

BUTTOCKS AND THIGHS [1]

Rounded and convex with apparent intermuscular fissures; in profile: starting out at the ischial point, the thighs prolong the rump to the rear in a circular arc and overhang the hocks and its tendon; in the male, looked at front on from behind, the contour from the top of the croup and the bottom of the buttocks tends to have an arching line.
Defects: insufficient muscle structure, buttocks too short.

1. Buttocks : region from the ischial point to the tendon which is attached to the hocks.
Thigh : in relation with the femur; is limited to the front by the flank, and to the rear by the buttocks.

TAIL

Development in relation with the bone structure, average length, falls perpendicularly.
Defects: tail too short, embedded tail set.

BONE STRUCTURE AND STANDS

Solid and fairly delicate bone structure, dry and flexible joints, healthy and tough hooves.
Defects: unrefined bone structure, stiff joints which may have thickened and can even be swollen.

FORELEGS:
• In profile, forearm, knee and cannon form a straight column.
Defects: forelegs too far forward, forelegs too far backward, arched knee.
• Front view, forearm and cannon form an open angle with the knee at the top.
Defects: forelegs turned-in feet (open knee), forelegs turned-out feet (knock-knee)

REARLEGS:
• In profile, a lowered perpendicular line from the ischial point to the top of the hock.
Defects: angle of the hocks too open (straight hocks), angle of the hocks too closed (bent hocks).
• Seen from behind, hind legs in parallel with the centre of the body.
Defects: turned-in feet (open), turned-out feet (cow-hocked).

PASTERNS:
Continues up from the hooves, from the crown to the ankle; the pastern is naturally straighter in the hind leg.
Defects: pasterns too short (insufficiently inclined), too long (excessively inclined pasterns).

UDDER

Square, symmetrical, averagely well developed, well placed teats.
Defects: drooping udder, bottle-shaped udder (goat's udder), tits set too closely together.

TESTICLES

Normal size.
Defects: too small, swollen, absent (cryptorchidy).