The Belgian Blue in Crossing

[BB X Zebu Nelore]

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Ing. Pierre MALLIEU
General Secretary
Herd-Book BBB

Caroline JOOS
Stagee
Institut Supérieur d'Agriculture de Beauvais

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THE BELGIAN BLUE IN CROSSING

The Belgian Blue breed is an original type of bovine which has been created by the breeders of our areas in response to the requests of the market. These breed is the window of our agriculture and we are extremely proud of its amazing international destiny.

[BB X South Devon]

15 september 2006

Herd-Book Blanc-Bleu Belge - rue des Champs Elysées 4, B5590 CINEY
☎ 083/ 23.06.12 – 16 ~ Fax : 083/ 21.28.37 ~ SiteInternet : http://www.hbbbb.be ~ E-Mail : pmhbbbb@skynet.be

A. The Belgian Blue in the world landscape.

In a few years, the Belgian Blue, local breed in the beginning, has known a fast and great development.

Now used in pure breed in the North of Europe for the meat production, its extraordinary abilities in crossing have allowed its expansion in the whole world. The emergence of the BB is a major fact in bovine breeding. The BB is with the meat what Holstein is with the milk, the destiny of these both bovine types is of similar nature.

Table 1 : The BB Herd-Books in the world

country	Creation year	President (2005)	Secretary (2005)	Number of breeders (2005)	Number of registred animals	Number of heads in total
Belgium	1973	J-P JASPART	P. MALLIEU	2150	90 000	1 500 000
Denmark	1977	H. BOLVIG-NIELSEN	M. STENDAL	74	356	
Ierland	1980	R. DUFF	C. MARTIN	110		
Great Britain	1983	J. BARBER	J. FLEMING	590	25446	
Canada	1986	M. HODGES				
France (BBB)	1986	E. CAUCHY	B. HAUZAY	120	3 000	120 000
Bleue du Nord						
Spain	1987	J. PONT-COSTA				
U.S.A.	1988	C. BROOKS	G. SIEREN	90		
Netherlands	1989	J. BECKMAN	R. DE BONT	320		
Australia	1989	R. MARLEY	M. REEDY			
New-Zealand	1989	B. WORSNOP				
Portugal	1992	E. DE ALMEIDA				
Brazil	1994	C.S. FERRAZ	M.V.P.FERRAZ			
Hungary	1995	I. MÁTYÁS	K. BÖLCSKEY			
Czech republic	2005	K. MALAT				
Japan		*AKUTSU*				

(P. Mallieu – B.B.I. 2006)

The table 1 shows the difference existing between countries where BB is used in pure breed and those where the crossing predominates.

From the emergence of the actual BB, the amazing performances in pure breed have attracted the attention of dairy and beef breeders searching for a terminal male breed.

Table2 : Comparison between the BB meaty type / Traditional beef breed

	Killing-out	***Life weight***	***Carcass weight***
BB Meaty type	70 %	600 Kg	420 Kg (+ 60 Kg)
Traditional meaty breed	60 %	600 Kg	360 Kg

Hanset

On this bases, we could hope that the BB becomes "*THE WORLD BEST TERMINAL SIRE*", but that had to be shown. This demonstration has been gradually brought in different breeding universes, first in Belgium, then in Europe and finally in the whole world.

B./ The universes of crossing

1. *The beginnings in Belgium*

Initially, from the implementation of the milk quota (1984), the use of beef sires on Holstein cows has interested the producers.
Two phenomena have started this resort to beef breed bulls :

- the holsteinisation, which reduced the net meat production of the farm ;
- the genetic progresses, which allowed the crossing for a part of the herd.

In Belgium, at the beginning of the emergence of the modern BB, men has compared, at the provincial experimental station of Lierneux, the crossbred offsprings (lots of 12 animals) born of the crossing between Holstein cows and sires of different breeds: Holstein, "race de Moyenne et haute Belgique", Charolaise, Limousine.

Table 3 : Comparison of the offspring born of different crossings.

Sire breed	Daily Gain.	Feed efficiency	Killing-out % (fasted during 24h)	Kg Growing cost	Selling price (alive) /Kg	Conformation Score[1]	Fat Score[2]
Holstein	1, 127	4, 915	57, 28	33, 60	40, 35	1, 2	2, 4
Moy. Haute Belgique	1, 160	4, 784	60, 03	32, 88	57,98	6, 9	5, 6
Limousin	1, 042	5, 310	61, 17	36, 01	50, 25	6, 2	2, 7
Charolais	1, 138	5, 045	57, 22	34, 36	45, 33	4, 8	4, 8

[1] 10 = double muscled (Coulée 1973)
[2] 1 = very fat

The Holstein bull has transmitted incorrect conformation and a lot of fat which explains the low selling price.
The crossbred out of the sire of the "Moyenne et haute Belgique" breed had the best kg growing cost, the best feed efficiency, the best conformation and fat scores. That is why the selling price was the highest.
The Limousin sire showed a very good killing-out percentage but weak growing performances, a less good feed efficiency, a higher cost and a propension to deposit fat which reflects the lower selling price.
The Charolais crossbred had a poor killing-out and a weak selling price.

At the beginning of the 80's, the Bovine Selection station of Ciney organized a study on the performances of the crossbred bulls born of BB sires and Holsteinised cows, by comparison with the performances of double purpose and meaty type bulls. These animals were fattened within the framework of the progeny-test 1980-1981 and 1981-1982.
They were slaughtered at the age of one year, without previous fast and the 7th rib has been dissected into its main tissues: the muscular tissue, the subcutaneous intermuscular adipose and connective tissue, and the bony tissue;

Table 4 : Killing-out percentage and composition of the 7th rib. (%)

	Meaty type			Double purpose			crossbred [B.B.B. × Holstein]		
	n	aver.	st. dev.	n	moy.	st. dev.	n	moy.	st. dev.
Killing-Out percentage	68	64, 9	1, 7	31	60, 1	1, 8	41	58, 9	1, 4
Muscular tissue	68	72, 52	2, 8	31	60, 60	4, 2	41	59, 04	3, 5
Fat tissue	68	11, 01	2, 5	31	20, 12	4, 2	41	22, 28	3, 9
Bony tissue	68	16, 47	1, 4	31	19, 27	1, 6	41	18, 60	1, 6

C. MICHAUX - R. HANSET - A. STASSE
Revue de l'Agriculture N° 3 vol. 37 mai-juin 1984

Several other tests were carried out after and the results can be summarized as follows :

Table 5 : Killing-out percentage and meat percentage

	Killing-out percentage	Meat % of the 7th rib
Pure Friesian	**54 %**	**50, 9 %**
crossbred B.B.B.	**59 %**	**59, 4 %**

(Hanset et Al 1989)

Table 6 : Comparison between 5 biological types for the carcass characterization (1987-1988)

	B.B. × B.B.	B.B. × FR	FR × FR	B.B. × MRY	MRY × MRY
Killing out percentage	-	58.95 [a]	55.22[c]	59.60[a]	56.49[b]
	65.14[a]	59.19[b]	53.03[c]	59.13[b]	57.76[b]
% meat 7th rib	-	59.15[a]	50.66[C]	59.85[b]	55.21[b]
	71.62[a]	59.69[b]	51.16[c]	59.40[b]	52.00[c]
% Fat	-	20.58[c]	27.44[a]	19.89[c]	23.14[b]
	11.38[c]	21.32b	25.62[a]	20.99[b]	26.18[a]
% Bone	-	20.25[b]	21.88[a]	20.24[b]	21.64[a]
	16.98[d]	18.98[c]	23.20[a]	19.59[c]	21.80[b]
Meat/bone rate	-	2.98[a]	2.32[b]	2.98[a]	2.57[b]
	4.256[a]	3.158[b]	2.211[c]	3.071[b]	2.391[c]
Meat / fat rate	-	2.99[ab]	1.89[c]	3.22[a]	2.53[b]
	6.115[a]	2.903[bc]	2.301[c]	3.039[b]	20.11[c]

Revue de l'Agriculture – Landbouwtijdschrift, 1989, Vol. 42 N° 2
(HANSET, DETAL, MICHAUX)

Experimentations on crossbred bulls, fed with different diets were organized in the Bovine Selection Station (concentrate diet), at the Veterinary University of Liege (silage of maize) and at the Agronomy University of Gembloux (maize silage) by *Michaux, Detal, Fernandez, Gielen, Lenoir, Thewis, Bienfait et Hanset*. They have shown the interest of the BB bulls like terminal sire in various types of diet (January 1988).

The results are summarized as follows :

Table 7 : Comparison pure breed / BB crossbred.

	FR	B.B.B. × FR	MRY	B.B.B. × MRY
n	12	10	11	10
Killing-out percentage	55	60	57	60
Carcass weight (Kg)	267	319	290	299
Daily gain (Kg)	1, 3	1, 5	1, 4	1, 3
Feed efficiency Kg concentrate/ Kg growing	7, 4	6, 5	6, 9	6, 9
Price kg life weight	64	83	77	94

The analyze of these results has highlighted some characteristics of the crossing :

- The BB sire doesn't produce more calving difficulties than the sires of other breed with large size.
- It is better not to cross females of which the growth is not finished.
- There is not any variability of quality between crossbred calves born of different BB sires.
- The little differences between BB sires concerning the ease of calving are related to the characteristics of these sires in pure breed.

- It is better not to cross with dual purpose BB sires seeing the thickness of their bone structure.

- The crossbred calves are rustics (heterosis).

The commercial interest of the BB sire in crossing was shown by these first studies. Two ways were possible to let know it in the world: either we made the demonstration of the aptitude of the BB in crossing on various breeds in Belgium, or we convinced foreign partners to carry out this kind of program.

The second way, though more difficult to implement, was chosen. Indeed, the BB is so particular that our interlocutors had difficulties to believe us. The early promotional years have been particularly difficult. This second way had although some advantages:

- work in more local conditions
- publications by the local scientists, less suspected of partiality than the Belgian.
- reduced costs

2. *The Piemontese competitor.*

Even if it was more or less easy to convince our breeders to choose the BB breed for crossbreeding, one may not forget that, at this time, we were in competition with the Piemontese breed. This one breed was chosen like official crossing breed by the breeding authorities of the Netherlands.

In this country, the breeding organization is centralized, no dissidence is tolerated. Seeing the geographical and cultural proximity, the Piemontese breed has interested Belgian people in charge of breeding.

The Piemontese and the BB are double muscled breeds of different size.

Table 8 : size differences between the BB and the Piemontese

	Piemontese	Belgian Blue
cows	500 Kg/1, 3 m	700 kg/1, 33 m
bulls	800 Kg/1, 4 m	1. 200 Kg/ 1, 48 m

Moreover, many Piemontese cows are less muscled than the BB ones. Indeed, this breed having been developed between the both world wars, the natural calving is more frequent than in the BB breed. In addition, the pure BB animals, as well as the BB crossbred calves, are very sought after by the fatteners of the Pô plain. The Italian cattle dealers attend the Belgian cattle markets and the Italian artificial insemination stations are regular purchasers of BB sires produced by the Bovine Selection station (Ath-Ciney).

A comparison between both breeds was carried out in 1996 at the University of Turin. It was shown that meat quantity of the hindquarters (half carcass) was of 77.9 kg for the Piemontese and of 83.7 kg for the BB (*Lazzeroni* et *Pagano*).

Both breeds were also compared in crossing on Frisian Holstein cows at the Harpers Adams college in Great Britain. (*Minter* et *Tempest*)

Table 9 : Superiority of the Belgian Blue by comparison with the Piemontese

Sire breed	Daily gain	Feed efficiency	final weight	Carcass weight	Killing-out percentage	Conformation score	Carcass value
Piém . x	1, 29	5, 8	500	296	59, 2	3, 9	616
B.B.B. x	1, 33	5, 5	523	326	62, 3	4, 9	691
Diff.	**+ 0, 04**	**- 0, 03**	**+23**	**+ 30**	**+ 3, 1**	**+ 1, 0**	**+ 75 £**

(Minter – Tempest)

This study was presented during the 6th Belgian Blue International meeting in 1996. It has largely confirmed the superiority of the BB in crossing.
Seeing the difference of profit (75 £ per head), favorable to the BB crossbred, and seeing their better feed efficiency (+5%), the authors conclusion was:

" In our production system of bulls fed with barley,
the use of the Belgian Blue sire is more profitable
than the Piemontese one."

In 1994, in USA, Cundiff *et al* was interested in performances of crossbred [B.B. × Hereford/Angus] et [Piemontese× Hereford/Angus].

Table 10 : Results of crossing with Piemontese and BB sires on Angus/Hereford cows.

Sire breed	Birth weight	Gestation length	Final weight (440 j)	Carcass weight	Killing-out percentage	Tradable Meat	% fat in Longis. dorsi	Weight (heifer of 1 year)
Piém. x	42, 7	290, 2	524,6	322, 1	61, 4	215, 1	3, 5	326, 1
B.B.B. x	42, 9	285, 6	558,2	345, 2	61, 8	227, 8	3, 0	355, 6
Diff.	**+ 0, 2**	**- 4, 6**	**+33, 6**	**+ 23, 13**	**+ 0, 4**	**+ 12, 7**	**- 0, 5**	**+ 29, 5**

(Cundiff et Al)

For practically similar birth weight, we can note that gestation length is longer of 4.6 days for the Piemontese. Moreover the final weight, the carcass weight, the killing-out percentage, the conformation score and the meat quantity are higher for the BB crossbred. In addition, the Piemontese crossbred females had a lot of perineal fat.

3. *The tests in Great Britain,*

" We have the best breed of beef cattle; the Belgians bred it for us ".

Tom Ashton 1990
President British Belgian Blue Herd-Book
President Belgian Blue International.

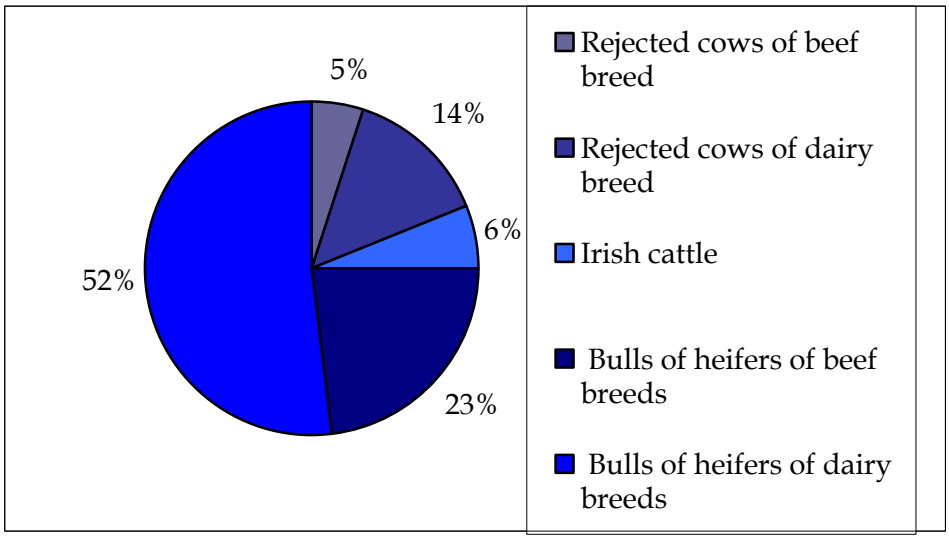
Although separated from the European continent by a maritime strait a few kilometers, the Belgian and British meat production systems are completely different.

The production purposes are similar: to make profit by ensuring a supplying of the consumer with respect to its wishes; that is to say a lean meat, tender and tasty. On the other hand, the economic environment has generated another production method.

At the end of the second world war, the British Ministry of Agriculture has recommended to associate the meat and milk production by using the crossing. Indeed, for the bovine production, Great Britain was already in the habit of dividing the tasks. The idea was to cross, in each natural territory (plain, hill, mountain…), the female breed the most adapted to this territory with the raw breed having better butchery qualities.

Great Britain is a populated country, having a relatively exiguous territory and where people is accustomed to cheap food. Consequently, the costs relating to the meat production coming from a pure breed (maintenance of the cows, work costs, immobilized capital, land value…) made this production not very profitable. If the dairy herd could cover these cost by producing milk, if the replacement of the generations could remain possible while producing a certain percentage of crossbred calves with better butchery qualities, then a considerable profit could result from it. Investigations were carried out and, early, it was shown that the dairy herd could be quantitatively kept and even improved in quality, while mating 35% of the cows with beef breed sires.

Table 11 : Distribution of the British meat production in 1995.



Source: *MLC Yearbooks*

The evolution of AI on dairy cows is also significant on this respect.

Table 12 : Evolution of the AI in Great Britain

	Dairy breeds		Beef breeds	
year	**n A.I.**	**%**	**n A.I.**	**%**
1970	1. 587. 621	62	981. 511	38
1987	1. 133. 015	50	1. 095. 872	49

(n premières × 1. 45) *KN Cook MMB*

Gradually, with the crossing development, the market adapted and the breeding activities specialized. The sale of calves of 10-30 days becomes the standard if they can be identified like coming out a beef sire.
In this context, the Hereford breed, of which the white head of the crossbred calves is so characteristic, has dominated the market for a long time. In addition, the crossbreeding with the traditional British Friesian gave good results.

However, at the beginning of the 70's, a big change happened. The consumers began to chose a leaner meat, the Holstein Frisian becomes less muscled and the fatteners have given greater importance to faster growing rate and heavier carcasses.
These new requirements have resulted in a higher use of continental beef breeds, first the Charolais, then the Limousine and the Simmental and after, at the beginning of the 80's, the Belgian Blue.
In 2005, 250.000 BB straws were sold in UK.

In 2006, the BB breed represents more than 10 % of the beef livestock. It is then the 4-5th most important beef breed (4th ex-aequo with Aberdeen Angus), while the traditional breeds like the Hereford are in regression.
More than 50% of all beef semen used in dairy sector is Belgian Blue. This is linked to the European market which is favorable for BB crossbred and to the growing demand for quality.

The total number of BB (from 50% to 100% of BB blood) is, in 2006, of 1 million.

Table 13 : Crossing breeds in Great Britain

Race	1970*	1975*	1980*	1984*	1985*	1986*	1987*	2000*
Hereford	619, 672	608 , 945	519, 202	439, 360	404, 614	277, 998	225, 584	
A Angus	172, 109	128, 376	96, 055	70, 192	62 , 830	65, 076	60, 579	
Charolais	142, 613	166, 195	182, 116	164, 391	199, 149	170, 970	204, 613	
Simmental	-	60, 439	23, 770	26, 003	36, 499	39, 189	74, 208	
Limousin	-	18, 145	49, 536	154, 596	245, 066	295, 616	404, 419	
Bl. d'Aquitaine	-	6, 358	3, 223	8, 139	11, 053	12, 719	18, 539	
B.B.	-	-	-	2, 468	8, 548	25, 069	78, 944	250. 000

(* n premières × 1, 45) *KN COOK MMB*

The introduction of the BB came relatively late due to the fear of the caesarian. However, according to Dr COOK from the Milk Marketing Board, the BB being the best documented breed of the world, the MMB has dared to invest and the BB progresses have been spectacular. This amazing success would not be reached without the persistence of the first importer, Mr *Tom ASHTON*. That illustrates perfectly the need, to convince a market, to have a reliable local operator who will show, by the example, the interest of a new breed.
In 1988, the MMB presented the calving data and the selling prices of its meaty sires used on Holstein cows.

Table 14 : Calving data

breed	Assisted calving	Slightly assisted calving	mortality	Gestation length (days)
B.B.B.	4, 9 %	29, 6 %	5, 8 %	283, 7 j
Charolais	3, 9 %	25, 1 %	4, 7 %	285, 3 j
Limousin	2, 1 %	18, 2 %	3, 9 %	287, 8 j
Simmental	2, 8 %	24 %	4, 4 %	285, 8 j
Bl. d'Aquitaine	1, 4 %	17, 9 %	3, 6 %	287, 7 j
Hereford	1, 1 %	11, 8 %	2, 9 %	282, 7 j

(MMB)

[BB X (crossbred Hereford)]

Table 15 : prices of calves from 10 to 30 days

	MALES	FEMALES
CHAROLAIS	253 £	180 £
LIMOUSIN	206 £	160 £
B.B.B.	234 £	193 £
HEREFORD	201 £	143 £

(MMB)

According to the Milk Marketing Board, the British breeders can accept a slightly higher rate of assisted calving coming from the use of a BB sire because it is compensated by a better profit, especially in females.

From this moment, the MMB, followed by GENUS and other AI stations became regular purchasers of white BB bulls. Indeed, the crossbred calves, born of a white BB bull and a black Holstein cow, are blue. They are then easy to spot. Today, the great success of the BB in crossing has slightly decreased the interest for white BB bulls. Now, the AI stations and the breeders are more attentive with other selection criteria:

[BBB X (crossbred Hereford)]

- Fertility *(scrotal circumference)*
- Ease of calving
- Character
- Mobility.

In 2006, black BB bulls are in great demand to service commercial herds of « angus » type, in Scotland and Wales.

In this favorable situation and in the same way than the British Milk Marketing Board, other organizations have studied the crossing with BB.
We can summarize the different results as follows:

Table 16 : Breed effect on the weight and the carcass composition

breed	Carcass weight (kg)	Fat (%)	Meat (%)	Bone (%)
Freisian	266	16.3	68.3	14.1
Charolais	+ 40	- 2.1	+ 3.0	- 0.8
B.B.B.	+ 35	- 2.5	+ 3.3	- 0.4
Piemontese	+ 25	- 3.5	+ 3.7	- 0.5
Limousin	+ 10	- 1.0	+ 1.2	- 0.1
Hereford	+ 6	+ 0.8	- 0.8	- 0.5

- *Royal Agricultural Society – Alan SPEDDING*

Table 17 : Effect of the sire breed on the calving with adult Holstein cows

Breed	Assisted calving(%)	Difficult calving (%)	Birth weight (Kg)	gestation length (days)
Friesian	25	2	39	284
Charolais	+18	+12	+5	+5
B.B.B.	+18	+5	+5	+2
Piemontese	+16	+11	+4	+7
Bl. d'Aquitaine	+6	+7	+3	+7
Limousin	+12	+5	+4	+8
Hereford	+4	+3	+2	+2

Table 18 : calf prices by comparison with the [Limousin X Holstein] crossbred calves

	£/ HEAD
Ayrshire	- 105
Friesian/Holstein	- 65
Hereford × Friesian	- 37
Limousin × Friesian	0
B.B.B. × Jersey	+10
Gelbvieh × Friesian	+10
Blonde d'Aquitaine × Friesian	+15
Simmental × Friesian	+20
Charolais × Friesian	+25
B.B.B. × Friesian	+30

The Alan SPEDDING's conclusion was favorable to the BB, highlighted the BB docility. This calm temperament is also a determining factor of the profitability of the herd.

- *Harper Adams College - Mike TEMPEST - Charles MINTER*

These scientists, connoisseurs of the BB breed, have also studied the fattening performances of the BB, by comparison with the Charolais.
This investigation has confirmed the superiority of the BB, particularly for the heifers.

Table 19 : Results of crossing with BB and Charolais

HAAC BELGIUM BLUE TRIAL 1985-1986

Financial results (£/head)

	HEIFERS	
	HAAC CH × FR	**HAAC BB × FR**
Results		
Sales	396	468
Costs	140	164
Balance	**256**	**304**
Variable costs		
Concentrates	208	217
Bedding	15	15
Veterinary and other expenses	0	0
Total variable costs	**223**	**232**
profit/Head	**33**	**72**
PHYSICAL PERFORMANCES		
Initial Weight (Kg)	100	117
Final Weight (Kg)	408	439
Age at the slaughter (days)	246	246
Daily gain (Kg)	1.25	1.31
Mortality (%)	0	0
Carcass weight (Kg)	226	249
Killing-out percentage (%)	55	57
Carcass classification	U-/R4L	U+4L
FEEDING		
Concentrates (Kg)	1. 540	1. 610
Feed Efficiency (Kg food/ Kg growth)	5.0	5.0
PRICE		
Selling price (p/Kg LW)	97	107
Concentrates price (£/ Tonne)	135	135

Parallel to this study, an investigation concerning the calving was carried out on beef and dairy cows which revealed that the use of BB sires did not induce more calving difficulties than other beef breeds of similar size.

Table 20 : Results of different crossing with BBB

1. Gestation length (days)

	n
A. Beef breed	
Hereford × Friesian	282 / 44
Continental Cross	280 / 18
South Devon	284 / 15
South Devon × Friesian	282 / 12
Welsh Black	279 / 4
Lincoln Red	286 / 4
Others	282 / 19
B. Dairy breeds	
Friesian	281 / 225
Jersey	279 / 2
Ayrshire	275 / 2

2. Intervals : calving →insemination *(days)*

		n
beef breed cows	79	81
dairy breed cows	80	141

3. Calving

	% Normal	% Assisted	% Difficult	n
Beef breed	73.2	23.2	3.5	198
Dairy breed	78.1	19.0	2.9	279

4. Vet assistance at birth

Beef breed	2.6 %
Dairy breed	2.5 %

5. Cow state after calving

	% Normal	% Veterinary Assistance	% Mortality	n
Beef breed	96.0	4.0	0	198
Dairy breed	96.8	2.8	0.3	281

- *North of Scotland College of Agriculture - Docteur M. KAY.*

In the North of Scotland and on behalf of the Development of Highlands and Islands Board, the aptitudes in crossing on [Hereford X Friesian] cows with BB and Charolais sires were studied. In this framework, the performances of 20 crossbred calves born of each crossing were assessed.

Table 21 : Comparison of the performances of BB and Charolais crossbred

	Performances calculated for a final weight of 310 kg.		
	Charolais x	**B.B. ×**	**Difference**
£ feeding costs	205	191	**- 14 £**
£ carcass value	694	713	**+ 19 £**

- *Meat and Livestock Commission - Docteur Henry Lewis*
-

The *Meat and Livestock Commission*, cynics about the future of the BB for a long time, has also studied the subject. In 1994, Dr H. LEWIS was in charge to undertake a vast test program. Indeed, in 1994, 190.000 BB inseminations were carried out. That represented 25 % of all the inseminations for crossing. Seeing the results, Dr Lewis has begun his presentation with these words :" I was wrong about the Belgian Blue … ".
His point of view was changed, due to the financial results of the BB.

[BBB X Jersey]

Table 22 : Prices (£) of crossbred calves born of Holstein cows.

	BULLS	***HEIFERS***
B.B.B. ×	212	193
Charolais ×	186	138
Limousin ×	158	117
Simmenthal ×	177	131
Holstein Friesian	100	

[BBB X Holstein Friesian]

4. ***Ireland***

Today, Ireland is the second country of the BB. The BB genetics has put one's mark on the rural landscape. Ireland exports are enormous because its self supplying rate reaches at least 600%. These exportations of BB crossbred carcasses and live animals are very important and largely contribute to our fame. Ireland is then a big importer of BB semen. Moreover, the Irish Ministry of Agriculture recommends that the crossing bulls are tested on their offspring.

The data forwarded by Dr J. VAUGHAN, ex-secretary of the Irish Herd-Book, are very interesting. Indeed, they show the existence of an obvious connection between our indexes in pure breed and the Irish crossing indexes.
The Belgian bulls, tested in pure, which present favorable indexes for the birth weight and the gestation length are, in accordance with our feeling, the best for the crossing in Ireland.
Our Progeny-test is then an effective tool, able to ensure the promotion of our sires in crossing.

[BBB X Charolais]

5. France

"The BB breed is particularly well adapted to produce in first generation, by crossing on dairy or beef breeds, fattened calves", presents Benjamin HAUZAY, technician at the BB Herd-Book in France. "The profit per calf is at least of 155€ and can reach 300€ (see table here below). French breeders import, each year, 150.000 doses of BB sires for crossing.

Due to its size and its muscular development, the BB is the best sire for terminal crossing. Presently, it is the most popular crossing breed and at a national scale, its fame continually increases. With less than 2% of caesarian in crossing, the BB produces slaughter calves of first category. Moreover, the crossbred cows give 50% of meaty type calves in 2nd generation.

In 2006, in the Massif Central, the request for BB sires to service Salers, Aubrac, Limousine and others, is so important that the prices reach records. The common stand, hold by the BB Herd-Book from Belgium and France during the « Sommet de l'Elevage »in Clermont Ferrand, enjoys an amazing success.

Table 23 : Results of crossing between the BB and the most popular breeds of France

Dam breed	Number	Birth weight kg			calving				Calves conformation (*holstein type - ** sold ... 15 days)				Profit in €
		min	average	max	No assisted	Slightly assisted	Difficult calving	caesarian	Very bad	Same as the mother	good type U	Very good type E or S	
Limousin	37	35	40	45	94,6 %	5,4 %	0 %	0 %	5,4 %	8,1 %	45,9 %	40,6 %	230 à 305
Charolais	12	38	49	69	58,4 %	0 %	25 %	16,6 %	0 %	16,6 %	58,4 %	25 %	230 à 305
Maine-Anjou	100	40	48	60	25%	56 %	8 %	21 %	5 %	57 %	18 %	10 %	230 à 305
Salers	71	32	38	43	100 %	0 %	0 %	0 %	0 %	7 %	83 %	10 %	230 à 305
Holstein	4071	30	44,75	60	53%	34,5 %	9,8 %	2,7%	2 % *	15 %	73 %	10 %	160 **

UPRA BBB – France (Web-Agri 14/04/2006)

6. *Germany,*

From 1984, *LANGHOLZ* et *GERARDY* of the University of Göttingen, supported by G. Detal, have studied the aptitudes of beef breeds in crossing with Holstein cows, in the North of Germany.

Table 24 : Financial superiority of the crossbred

	HOLSTEIN	FLECKVIEH (crossbred)	LIMOUSIN (crossbred)	B.B.B. (crossbred)
Final weight (Kg)	**300**	**+ 28**	**+ 31**	**+ 61**
Carcass classification %				
U2				.23
U3			.33	.15
R2	.33	.40	.50	.62
R3		.40	.17	
O2	.56	.20		
O3	.11			
Selling price (DM)	**1731**	**1925**	**1979**	**2173**
Difference of price for the crossbred (DM) :	**-**	**+ 194**	**+ 248**	**+ 442**

This team continues to take interest in our breed and develops this interest to other scientists. The *Prof. ENDER* and the *Dr. PAPSTEIN* of the Research Institute of Dummerstorf in the East of Germany are among them.
Actually, the BB goes on with its growth: 88.360 first AI were carried out in 2005, which corresponds to 46% of the total beef breed inseminations. The crossing with a BB sires becomes widespread in Bavaria, particularly on "brown" cows.

First inseminations of beef breeds in 2005.

Breed	amount of first insemination	Percentage in relation to the total of beef breed inseminations	Evolution by comparison with 2004	Evolution by comparison with 2003
BBB	88 360	46 %	+ 4.6 %	+ 9.4 %
Limousine	50 375	26 %	- 7.2 %	-18 %
Charolaise	19 108	10 %	- 11.3 %	- 22 %
Blonde d'Aquitaine	10 670	6 %	- 14.8 %	- 30 %

Source : Fleischrinderzucht-Statistischer Jahresbericht 2004

In 2005, these test results were published in the LKV yearly report.

Dam breed	Sire breed	carcass conformation (score)	Fat score (points)
Braunvieh	Braunvieh	2.76	2.85
	Fleckvieh	3.21	2.76
	Blonde Aquitaine	3.55	2.53
	BBB	3.73	2.49
Schwazbunte	Schwarzbunte	2.04	2.59
	Fleckvieh	3.07	2.71
	BBB	3.45	2.55

7. <u>Hungary</u>,

From the beginning of the 90's, Hungary has imported genetic material of BB in order to improve its meat production.
In this framework, some tests were carried out on females of the most popular breeds : *Simmental, Lincoln Red, Holstein, Hungarian Grey*. These studies were organized, under the aegis of *Dr K. BOLCSKEY* and *Prof. FESUS,* by the Food and Breeding Research Station HERCEGHALOM.

The first one experimented the crossing between the BB and the « Holstein-Friesian » and the« Lincoln Red » on basis of the final weight, the carcass weight and the carcass composition.

	Difference between [BBB X Holstein-Friesian] By comparison with Pure Holstein-Friesian		Difference between [BBB X Lincoln Red] by comparison with pure Lincoln Red	
	kg	*%*	*kg*	*%*
Final weight	+16		+47.3	+8.7
Carcass weight	+35	+11	+41.7	+14.0
Weight of lean meat	+37.8	+17.7	+49.8	+27
bone		-12.5		-4.5

[BBB X Holstein Friesian]

The second study related to a comparison of crossings between [BB X Hungarian Grey] and [Charolais X Hungarian Grey]. The results are presented here below:

Table 25 : [B.B.B. × HG] et [CH × HG]

	Hungarian Grey	CH × Hungarian Grey	B.B.B. × Hungarian Grey
n	9	10	7
Daily Gain (343 d)	0, 914 Kg	1, 028 Kg	1, 1 Kg
Carcass weight	262 Kg	327 Kg	360 Kg
Killing-out percentage	55 %	60 %	62 %
Abdominal fat	13 Kg	14 Kg	13 Kg

[BBB X Hungarian grey]

A third experimentation was related to the crossing with the Simmental. It appeared that, for a similar live weight, the carcass weight of the crossbred [BBB X Simmental] was by 23.4 kg (+6.6 %) more than the Simmental. The Killing out percentage was respectively for the crossbred and the purebred of 61.4 % and of 57.7%. Slaughter value of the crossbred was markedly and significantly higher than the purebred Simmental.

To summarize, with the 4 most popular breeds present in Hungary, the crossing with BB generates :

- A daily gain increased by 5 - 8 %
- A slaughter value higher by 6.5 - 14%
- A lean meat content increased by 20 to 27 %,

Moreover, the increasing of the final weight is possible without the danger of fatness, fat deposition; the bone rates are decreased in the investigated breeds, and fattening of F1 heifers is economical as well.

Actually, the Hungarian livestock numbers are very small. Indeed, in the years following the political system change, the need for profit has generated massive sales. Anxious to rebuild a livestock of quality, the authorities and private breeders are open-minded to the BB culture.

8. *Denmark*

The BB genetics is largely used on Danish dairy herds. In 2005, 7172 cows were inseminated with BB semen, which represents 19 % of all beef breed inseminations in Denmark.

Belgian Blue is the third most popular breed for crossbreeding in Denmark- next to Limousin and Simmental. Since 2003, the number of BB inseminations has increased by 71 %. The growing interest in BB has started in 2004, thanks to the exhibition of BB crossbred at the National of Herning, organized at the occasion of the 25th anniversary of the Danish Herd-Book.

[BBB X [jersey X Hereford]]

The Danish Bovine Federation has provided the results of the BB in crossing. Those one confirm the superiority of the BB like terminal breed :

Table 26 : Superiority of the BB crossbred by comparison with pure dairy breeds

Dam breeds in crossing with BBB	Daily gain	Carcassa quality
Danish Red	+ 15 %	+ 3.5 units
Holstein	+ 15 %	+ 4.5 units
Jersey	+ 42 %	+ 3.8 units

The [Belgian Blues X dairy breeds] crossbred are highly effective. They present a nice increase of the daily net gain (daily gain of the carcass), 10-13 per cent when dams were Danish Red cows, over 15 per cent when dams were Holstein cows and 27 percent for Jersey crossbreds over 12 months old at slaughter and 42 percent for Jersey crossbreds under 12 months old at slaughter.

The increase of the score of the carcass conformation (EUROP) is impressive for all three combinations:

- 3.5 units for Danish Red crossbreds
- Approx. 4.5 units for Holstein crossbreds
- Approx. 3.8 units for Jersey crossbreds.

The Danish Institute of Agricultural Sciences, conducted from 1988 to 1993, experiments to investigate the economy of producing young bulls for slaughter. Dams of the crossbreds were Holstein and Jersey cows. Sires were Aberdeen Angus, Hereford, Piemontese, Blonde d'Aquitaine, Charolais, Limousine and Belgian Blue. Results see table here below.

Breed / combination	No	Daily Gain(kg)	Feed conversion	Killing-out (%)
Pure Holstein	135	1,307	5.8	52.6
Simmental X Holstein	19	1,441	5.2	54.6
Aberdeen Angus X Holstein	33	1,293	5.6	53.9
Hereford X Holstein	20	1,339	5.6	54.1
Piemontese X Holstein	24	1,252	5.4	57.2
Blonde d'Aquitaine X Holstein	22	1,336	5.2	55.9
Charolais X Holstein	41	1,393	5.3	54.8
Limousine X Holstein	23	1,286	5.4	55.9
BBB X Holstein	**32**	**1,364**	**5.1**	**56.1**
Pure Jersey	58	961	5.6	48.6
Piemontese X Jersey	32	1,150	5.6	55.6
Blonde d'Aquitaine X Jersey	18	1,218	5.0	54.0
Charolais X Jersey	36	1,331	4.5	52.9
BBB X Jersey	**36**	**1,236**	**5.2**	**54.7**

The Danish Institute of Agricultural Sciences concluded that crossbreds were better than purebred dairy bulls as regard the feed conversion, the killing out percentage and the score of the carcass. The experiment also stated that crossbreds sired by Belgian Blues were economical superior to purebred Holstein and Jersey young bulls.

In Denmark, Limousine is the most popular beef breed for the crossing on dairy cows, followed by Simmental and Belgian Blue. Judging from the results from practice Belgian Blue should "wear the yellow jersey"!

9. ITALY

In 2000, Prof. SABBIONI of the University of Parme has studied the genetic type effect on production performances of weaning calves. The effect of crossbreeding Friesian cows to BBB, Limousine and Italian Simmental sires was evaluated on the basis of performance of 54 male calves, reared from 4 to 16 weeks of age and fed with the same diet. Genetic type significantly affected final body weight, average daily gain, feed: gain ratio.

	[Holstein X BBB]	[Holstein X Lim]	[Holstein X Simmentale Ital.]
Final body weight **(kg)**	**120.80**	**118.19**	**119.81**
Daily Gain **(g/jour)**	**848**	**774**	**811**
Feed : gain ratio **(g D.M. aliment / g daily gain)**	**1 967**	**2 121**	**2 002**

Research shows that special advantages result by crossing Italian Friesian cows to BB sires.

10. North America,

a./ U.S.A.

In Great Britain 75% of the slaughtered animals have Holstein blood. However, in North America, you will find a very important herd of suckling cows crossbred on basis of Angus and Hereford. This explains why most of the slaughtered beef cattle, in North America, are crossbred products between those "commercial" cows and European beef sires. Since, on the American continent, several studies on the crossing qualities of different European sire breeds are carried out systematically.

Those studies take place in the real war context against the fat "War on fat" organized by the beef industry.

In this domain, the Meat Animal Research Center (MARC) , located in the center of Nebraska, is the reference in USA. The MARC tests all the useful breeds on Angus/Hereford herds compared to Angus/Hereford pure breed. The tested lots are important, usually around 500 animals. To be registered in such the USDA program was not an easy thing because of the commitment against the BBB.

The very conspicuous speech of Prof. Roger Hanset at the 3d world genetic congress for breeding, held at Lincoln Nebraska in 1986, prepared the minds. The perseverance of the BBB herd-book, and especially its director, at the time, Mr. Phil Meyers, did the rest of the job.

Table 27 : Test results 1997 (*Summary*)

	B.B.B. × (Angus/Hereford)	**(Angus/Hereford) × (Angus/Hereford)**
% of calving without assistance	92.9 %	97.2 %
Birth weight	42.9 Kg	42.7 Kg
Survival rate	94.3 %	93.5 %
Meat weight*	+ 26.2 Kg	
Fat weight*	- 23 Kg	

** Carcasses of 558 Kg (440 days)*

Dr L. Cundiff and his partners responsible of the program also showed the meat sensorial qualities: tenderness, taste, juiciness, was the same for the BBB crossbreds and the Angus/Hereford crossbreds. In 2001, they concluded their experiment maintaining that the BBB crossbred carcasses were offering the best performance /taste relation.

Connie Brooks, chairman of the ABBB (American Belgian Blue Breeders) asserts that, in 2005, the breed is in expansion in the USA, and the demand is growing. In 2005, the Herd-book had a high growing of members and of registered calves.

[BBB X South Devon]

b./ Canada

Canada was very quick to show interest in the BB potential. From 1978, bulls were imported for breeding. The welcome was not very enthusiast. However, the first importer trust, Dr. Stirk, associated to the huge promotion work done by the family Goubeau (Eurogenetik) permitted to overcome the difficulties. From a additional "exotic" type, the BBB became a reference in the breeding world.

[BB X Angus]

Seen from Europe, the bovine breeding in Canada looks like the American model. This is right but however, it has their own characteristics. In Canada, there are the West and the East. The East is a dairy area, Holsteins are milked. In the West ranches, beef is produced from commercial suckling herds. Also, the consumption habits are slightly different from a big city to another. In Montreal and Toronto, the consumers prefer a leaner meat, more tender, more European then the rest of the country. From there, those were quickly questioned by the documents that the American and Canadian herd-books have expanded. One can see that "Certified Belgian Blue" (minimum 50% of BB blood) shows interesting characteristics. The "Certified Belgian-Bleu" is a BB Texan label, placed by Mr. Stanley Jones from Nacagdoches, Texas.

Table 28 : The dietetic composition of the BB meat

Those figures show the interest in the BB for the consumer concerned about his health.
As the meat production is concentrated in the meadows, it is in Alberta that fatteners wanted to verify that the BB crossbred is interesting for the consumer but also that it is profitable.
Mr Brian Nillsson, from Nilsson Bros Inc., was the first to assess the BBB interest in a feedlot in Alberta. The work was done in collaboration with the Canadian, Belgian herd-book and Eurogenetik. The results were presented at the International BBB Herd-Book congress (BBI) at Montebello Quebec in 1997. The collected figures compare crossbreds (BBB X commercial cows) with all the other crossbreds from the Feed Lot.

Table 29 : [B.B.B. × Commercial] and [Others × Commercial]

	Weight at sale	% choice (see table 30)	Killing-out %	Gain of profitability
Steers	1325 Lbs	65 %	64 %	+ 3 Bef/Kg
Heifers	1225 Lbs	65 %	64 %	+ 3 Bef/Kg

Brian Nilsson

Table 30 : Carcass Classification (U.S.A.) Marbling degree

PRIME	*moderately copious/ slightly copious*
CHOICE	*moderated/modest/weak*
SELECT	*light*
STANDARD	*traces/ almost absent*

M. NILSSON comments :

TEMPERAMENT *:* the BBB crossbreds have a ***QUIET TEMPERAMENT***, easy to handle, the black meats are less frequent then at the Blonde and limousine crossbreds.

GROWTH *:* ***THE GROWTH OF THE BBB CROSSBREDS*** is slightly lower then the Charolais crossbreds, higher then the limousines crossbreds and much higher then the Piedmontese crossbreds.

ADULT WEIGHT *:* the BBB crossbreds become adult at the wished carcass weight, located between ***500 AND 700 POUNDS***. The best crossing is probably BBB X Simmenthal.

FINISHING AND MARBLING : All the BBB crossbreds do not reach the category Choice, however their higher killing out percentage makes them more competitive.

CUTTING: the BBB crossbreds allow a certain cutting expansion..

RATE of GAIN : he estimates the advantage of the BBB crossbred at ***16 Canadian Dollars /HEAD***

The experiences of Nilsson bros Inc. allowed us , in a second time, to evaluate the BBB aptitudes by the team of the program Steer a Year- Olds College Alberta Canada- leaded by Dr Trevor Hamilton. Each year , lots of 5 crossbreds, with a maximum of 50 % of blood from breeds present in Canada , are fattened. Lots of figures are collected in order to calculate each breed 's benefit.

Table31 : Olds College – Benefit per breed - summary

BREED	Profit of the Group (CAD)	PROFIT/ HEAD (CAD)
B.B.B.	1486	297
LIMOUSIN	1129	226
CHAROLAIS	1010	201
SOUTH DEVON	972	194
BLONDE d'AQUITAINE	930	186
MAINE ANJOU	867	173
SALERS	810	162
PINZGAUER	775	155
SHORTHORN	616	123
ANGUS	614	123
BRAUNVIEH	474	95
GELBVIEH	467	94
HEREFORD	394	79
GALLOWAY	212	43
WHITE PARK	183	37
REDPOLL	155	31
MURRAY GREY	71	14
DEXTER	- 25	- 5

Actually, the Canadian herd-book states that the demand for BBB bulls is much higher then before. In Canada, as in USA, the BBB breeders produce, first of all, bulls for serving or inseminating. However, all the animals that do not suit are fattened and sold to stores specialized in dietetic nutrition. Even hospitals do recommend BBB to some of their patients. We are not far away from considering the pure BBB as a food preventing some disease.

11. Australia

In Australia, two types of animals produce the meat. In the South (Victoria) the production and the consumption is calf meat (300 – 400 kg live weight). Those calves are coming from commercial suckling herds used with beef breed bulls. They are mainly fed with milk and grass. In the other Australian areas, commercial suckling herds, in crossing with beef bulls, produce animals for fattening in Feed Lots. An important part of this production is exported to Japan and South East Asia.

[BBB X (Angus X Holstein)]

The use of crossing is therefore very current in Australia and several institutions have studied the qualities of the beef bulls available on the market.

The Australian were first interested in the BB for its excellent muscling, its exceptional daily gain, feed efficiency and its quiet temperament.

Actually, specific markets desired a high quality meat with a minimum of fat appearance.
The « Struan Research Center" in South Australia has included BB in its "Southern crossbreeding project" program. This study concerns figures on crossbred calves out of bulls from 7 different breeds and adult Hereford dams, and it compares the fat composition of meats out of different crossings.

Table 32 : Genetic variation of the fattening state and composition in fatty acids of crossbred.

Sire breed	Hot carcass weight (kg)	Fat thickness (mm)	Fat color[1] (score)	Intramuscular fat content (%)	Total of monounsatured fatty acid (%)	Fat point fusion[2] (°C)
Jersey	236	10.7	1.0	4.8	49.0	37.1
Wagyu	244	11.8	0.5	4.5	48.8	37.8
Angus	283	14.3	0.5	4.6	47.4	39.4
Hereford	268	12.0	0.4	3.7	46.6	40.0
South Devon	284	9.8	0.5	3.8	46.7	40.3
Limousine	278	9.9	0.4	3.1	47.0	40.2
BBB	289	8.0	0.6	3.0	47.1	39.3

W.S.Pitchford, M.P.B. Deland, B.D. Siebert, A.E.O. Malau-Aduli et C.D.K.Bottema

[1] The fat color scores are located between 0 (white bright) and 9(orange yellow)

[2] a weak point of fusion means that the fat is more tender but also that the insaturated fatty acid content is high.

Those results are coming from 1215 crossbreds (heifers and steers) born, in 4 years, of Hereford cows. All the recorded animals were fattened in feedlot.
That is how the BBB distinguishes itself from the other breeds in crossing, because it has the lowest fat content as well intramuscular (marbling) as extra muscular (fat thickness). The fat thickness of the crossbred Hereford X BBB is 33 % lower then the pure Hereford.
This interests the domestic Australian market more and more for the desire of "low fat beef".
Besides this property, the most inheritable character is the carcass weight.
Moreover, Australian breeders are interested in the early maturity of the BBB crossbreds, that allows them to reach the expected weight a few months before the other breeds (pure and cross). This fattening period reduction is so much important in a country like Australia, where at the end of the dry season, there is often a lack of food.
Afterwards, the marketing starts earlier and allows to bypass the plethora season.

12. Brazil

The success of the introduction of the BB in Brazil, following the first exportations supported by Mrs Eveline ANDRE from the BB Herd-Book, dates from the 80's. The particular objective of the BB to is tenderize the meat of the Zébu Nelore and to improve the behavior of these particularly nervous type of bovine has also attracted the attention of Prof. P. HUMES of the University of Louisiana. Indeed, Louisiana, Florida and Texas comprise great population of Zebus Brahman.

Table 33 : [Angus × Brahman] et [B.B.B. × Brahman]
Birth data

Breed	Year	Number of weaned calves	% of assisted calving
Angus ×	**1996**	73	1.0
	1997	58	0.0
	Average	***131***	***0.5***
B.B.B. ×	**1996**	32	2.9
	1997	39	0.0
	Average	***67***	***1.4***

(steers) *Humes*

Tableau 34 : (Angus × Brahman] et [B.B.B. × Brahman]
Fed with grass (Daily gain)

breed	n	Final weight after weaning (fed with grass) 19/05/97 (Lb)	Daily gain (permanent meadow) from 10/09/96 to 17/01/97 (Lb)	Daily gain (fed with raygrass) 17/01/97 to 19/05/97 (Lb)	TOTAL DAILY GAIN 10/09/96 to 19/05/97 (Lb)
Angus x	14	904	.26	3.19	1.68
B.B.B. x	15	931	.18	3.25	1.67

(steers)

After this grass period, the young bulls were fattened in a Feed Lot of Oklahoma for 120 days.

Table 35 : [Angus × Brahman] and [B.B.B. × Brahman]
Fattening data (partial)

	Carcass weight (kg)	Quality grade	Fat thickness (cm)	Surface rib eye (cm^2)
Females Angus x	325	SEL -	1, 36	82
Males Angus x	360	SEL +	1, 35	81
Females B.B.B. x	344	STD +	0, 9	94
Males B.B.B. x	377	SEL -	0, 9	90

Brazil is the first world exporter and the second world producer of bovine meat. It is then an important actor of this area. After several evaluations about the BB performances in crossing on Zebu cattle, the BB has shown its economic potential. In Brazil, the BB is mainly used in crossing on this kind of cattle but also, in South on European commercial breeds.
In this framework, a study was carried out in Bahia, under the aegis of Prof. Leroy of the University of Liege. His goal was the comparison between the [BBX Nelore] and the [BB X Braford] crossbred, reared in extensive conditions in Brazil.
* *synthetic breed coming out Brahma and Hereford*

Table 36 : Difference of carcass quality between [Nelore x BBB] and Braford

Breed	Number	Final live weight (kg)	Total carcass weight (kg)	Killing out (%)	Fat (%)	Bone (%)	Meat (%)
Braford	10	5535	2866	51.8	19.11	30.40	50.50
Nelore X BBB	10	5397	2920	54.1	16.56	23.50	59.94
Difference		- 138 kg	+ 54 kg	+ 2.3 %	- 2.54 %	- 6.90 %	+ 9.44 %

The average fat, bone and meat percentages were got after dissection of the 7th rib. For this investigation, all the crossbreds were born without assistance and were reared in very arid conditions.
Seeing a very higher killing-out percentage for the [Nelore X BB] crossbred, by comparison with the Brhford, it goes without saying that the BB joins in the increasing of the meat production in Brazil.

[BB X Nelore]

C./ CARCASSES COMPETITIONS,

In the world arenas where the meat production depends mainly on the use of crossing, competitions for crossbred animals are organized. In general, the taking part Herd-Book constitutes lots of animals with minimum 50 % of blood of their breed. Practically, the live animals are assessed and then, the carcass classification is carried out. In this framework, the BB lots place well and are often the winners.
In addition, it is with pleasure that we notice that the lots formed by the Herd-Book of other breeds contain more and more BB blood. These competitions contribute largely to increase the popularity of our breed.
The adoption of the BB crossbred type by the leaders of the butchery field is a simple and cheap promotion mean.

Table 37 : Results of the BB crossbred during different events.

Event	Year	Results (BBB X)	Details
CALGARY STAMPEDE Alberta (CA)	**1995**	1st, 2nd, 3rd et 4th price	
	1996	1st, 4th, 5th, 9th et 10th price	
	1997	2nd, 4th, 8th, 9th price	
	1998	5th, 6th, 9th, 11th and 14th price	
CANADIAN WESTERN AGRIBITION Saskatchewan (CA)	**1996**	Great Champion of the heifers 5 B.Bcrossbred in the first 8	
	2000	3th price heifers (20 entrants) 5th price steer (34 entrants)	*Sparky Blues SK* *Don Sparks*
	2002	Great champion of the heifers	
	2004	Great champion of the heifers Great champion of the steers	*David Sparks*
	2005	1st price heifers 2nd price heifers 6 BB crossbred in the top 15	*Andy Rock* *Stan Skeels*
MOOSE JAW CARCASS Saskatchewan(CA)	**1997**	best carcasses(heifers and steers) Best tenderness for the BB batch	
DUBBO NATIONAL STEER COMPETITION (NSW – AUS)	**1998**	Champion	*Carol Low*
LANCE FIELD SHOW (VIC – AUS)	**1998**	Champion	*Bobyn Morley*
MIDDLE WEIGHT LANG SHOW (VIC-AUS)	**1998**	Champion	*Guy & Fiona O'Brien*
QUEENSLAND CARCASS SHOW(QLD-AUS)	**1998**	Reserve champion	*Jeff Berric*
PADDOCK TO PALATE Sydney (AUS)	**1999**	5ème price (23 entrants) (alive, carcass and tasting)	*Tasted by the 16th best australian chefs*
ORKNEY MEAT SHOW (UK)	**1999**	Champion steers (369 Kg)	*Stout White Hall Stronsy*
PENRITH SHOW (UK)	**2000**	Reserve champion steers	*Low Building*
INVERURIE CHRISTMAS SHOW (UK)	**2000**	Champion steers (347 Kg)	*Andrew Ingram*
STIRLING CHRISTMAS SHOW (UK)	**2000**	Champion heifers	*J. & I. Wilson*
NATIONAL PRIMESTOCK SHOW (UK)	**2005**	champion et 2th price carcass	*Frank Page*

The double distinction, acquired in 2004 at the CANADIAN WESTERN AGRIBITION, one of the most important agricultural event of the North of America, has allowed to our breed to experience a revival of interest in Canada and everywhere in the world because it has stopped the 28 years domination of the Limousin breed.

BB winner carcass: REGINA 2005

D./ CONCLUSIONS,

The task of the promotion of the BB in the world is not simple. The originality of the BB requires a confident climate between the partners before considering development of the breed. To keep this climate, it is necessary to inform, reassure and encourage people continuously.
Little by little, the BB Herd-Book has established a constructive dialogue with some breeders in order to urge them to adopt our way of working. The BB use abroad is not only the spreading of a product it is also the exportation of a part of our rural culture.
The creation of 15 Herd-Books all over the world, chapters of our Association, shows that the preconceived ideas about the BB disappear in time with crossbreeding. For example, it becomes obvious that the BB is the alternative to the use of hormones.
Our agriculture hasn't any other area with a so universal significance. However, in breeding BB, patent does not exist to protect the breeder's efforts.

This is why our approach must have a crossing dimension. The superiority of the BB crossbreeding results in growth potential, feed efficiency and above all conformation. However, this obvious superiority can express only if the sires have also the following characteristics:

- fertility *(non return rate)*
- birth weight *(easy calving)*
- calf viability
- sometimes, calf color

sires intended for the natural service should have in addition :

- size
- good stands
- good feet
- good mobility
- a good libido

The breeders, AI stations and the Herd-Book must satisfy the requirements of their customers and partners . If we don't do that, other producers of BB genetics will take care of it.

In this research, is described that the BB is able to adapt in many countries with different climates and markets. The figures, in progression, show it. The BB is settled in countries such Brazil, Australia, and USA which are the biggest meat producers of the world.

An other sign of progression is the creation, in 2005, of a new Herd-Book in Czech Republic.
Having analyzed the successes, the BB Herd-Book continues it's efforts to establish the popularity of the breed and to promote the breed in emergent countries such the East of Europe and China.

Website of the BB Herd-Book : www.hbbbb.be
E-mail : pmhbbbb@skynet.be

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