

Producing beef meat under hard livestock conditions by crossing cattle with Belgian Blue-White breed

Preliminary study

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Abstract. Crossing cows with pure meat breed bull as Charolais and Belgian Blue-White is widely used in the world for beef meat production. In Algeria, more than 100 cows from different breeds as Montbeliarde, Fleckvieh and Holstein were inseminated by a single Belgian Blue-White bull in Sétif (Algeria), a semi-arid region where the temperature can reach 45°C in Summer and -4°C in winter. Calves were weighed at birth and at the age of one year. Our preliminary results show that the frequency of pregnancy was very high after the first insemination (78%). Also, the total pregnancy rate was very satisfactory (95%). Most of calves were born easily or with few assistances from the breeders (92%). Cross calves born in Algeria and bred under hard conditions reached around 500 Kg of weight at one year old whose the heaviest calf weighed 570 Kg. However, the cross calves born from the Montbeliarde cows were heavier by 59 Kg than those born from Fleckvieh cows. Such kind of projects can contribute to food security, create employment in rural areas and consequently limit the immigration.

Keywords. Beef cattle - Production - Reproduction - Semiarid zones.

Production de viande bovine dans des conditions d'élevage difficiles par le croisement des vaches avec la race Blanc Bleu Belge

Résumé. Le croisement des vaches avec des race viandes pure comme le Charolais et le Blanc Bleu Belge est largement utilisé dans le monde pour la production de viande bovine. En Algérie, plus de 100 vaches de différentes races comme la Montbeliarde, Fleckvieh et holstein ont été inséminées par un seul taureau de race Blanc Bleu Belge à Sétif, une région semi-aride où la température peut atteindre 45°C en été et -4°C en hiver. Nos résultats préliminaires montrent que la fréquence de gestation après la première insémination est très élevée (78%) ; Aussi, la fréquence totale de gestation est très satisfaisante (95%). La plupart des veaux sont nés facilement ou avec peu d'assistances des éleveurs (92%). Les veaux croisés nés en Algérie et élevés dans des conditions difficiles ont atteint un poids de 500 Kg environ à une année dont le taureau le plus lourd a pesé 570 Kg. Cependant, les taureaux croisés nés des vaches Montbeliardes sont plus lourds par 57 Kg que ceux nés par des vaches Fleckvieh. Ce genre type de projets, peuvent contribuer à la sécurité alimentaire, créer de l'emploi dans les milieux ruraux et par conséquence limiter l'immigration.

Mots-clés. Bovine de boucherie - Production - Reproduction - Zone semi-aride.

I - Introduction

Crossing cows with pure meat breed bull as Charolais and Belgian Blue-White is widely used in the world for beef meat production. In Algeria, cattle were recently crossed with the one Belgian Blue-White bull. The project was achieved with the collaboration of the National Center for Artificial Insemination and Genetic Improvement of Algeria and the young breeders. The current project aims to evaluate the reproduction performance and calf growth under our hard livestock

conditions where animals should reproduce and produce under heat stress and bred for long period of drought.

II - Materials and Methods

More than 100 cows from different breeds as Montbeliarde, Fleckvieh and Holstein were inseminated by a single Belgian Blue-White bull in Sétif (Algeria), a semi-arid region where the temperature can reach 45°C in Summer and -4°C in winter. Cows were raised mostly by young and smallholder farmers (<10 cows/farm).

In the current paper, the preliminary results of the first 94 inseminated cows is presented. Type of calving was measured at birth using 5 scores (1: unassisted; 5: surgical removal of calf). Calves were weighed at birth and at the age of 1 year. For statistical analysis, Student test was carried to compare weight calves between Montbeliarde and Fleckvieh using SPSS version 18; however, weight calves of Holstein breed were not compared with the other breeds due to the little size.

III - Results and discussion

Most cows who were inseminated with Belgian Blue-White bull are Montbeliarde cows (Table 1). Montbeliarde breed is well adapted to the semi-arid region, so it is well preferred by our breeders.

Table 1. Frequency of inseminated cows according to their breeds.

Breeds	Cows number	Frequency
Montbeliarde	63	67.0 %
Fleckvieh	22	23.4 %
Holstein	9	9.6 %
Total	94	100.0 %

A very high pregnancy frequency was observed after the first insemination (78%). Also, the total pregnancy rate is very satisfactory (95%) (Table 2).

Table 2. Pregnant frequency according to the number of inseminations and total pregnancy rate

Insemination number	Cows number	Pregnant frequency
1	69	78 %
2	17	19 %
3	3	3 %
Total	89	100 %
Total pregnancy rate		95 %

In our study, reproduction performance is within the standards values recommended by Vallet (1997). However, the pregnancy rates observed in the current investigation after 1, 2 and 3 artificial insemination are better than those recorded in Montbeliarde cows reared in Ireland (Dillon *et al.*, 2003).

Most of calves were born easily or with few assistances from the breeders (92%) (Table 3).

Table 3. Type of calving.

	Cows number	Frequency	Total frequency
Unassisted calving	34	66.7 %	92.2 %
Calving with few assistances	13	25.5 %	
Difficult calving	4	7.8 %	7.8 %
Total	51	100.0 %	100.0 %

Our preliminary results show that Cross calves born in Algeria and bred under hard conditions can reach around 500 Kg of weight at one year old whose the heaviest calf weighed 570 Kg. However, the cross calves born from the Montbeliarde cows were heavier by 59 Kg than those born from Fleckvieh cows (Table 4).

Table 4. Live weight of cross calves at birth and at one year old.

Calf age	Cow breeds	Cows number	Calf weights (Kg)	Significances
0 Day	Montbeliarde	32	47.20 ± 5.02	p<0.05
	Fleckvieh	11	46.85 ± 3.05	
1 year	Montbeliarde	10	511.50 ± 39.40	p<0.05
	Fleckvieh	6	452.50 ± 38.67	

It seems that these cross calves are more rustic in difficult environnement. Chapaux *et al.* (2013) reported that the growth performance of Ankole and Sahiwal crossbreds born from the crossbreeding of the local breeds with Belgian Blue-White breed is remarkable in Burundi where they were raised in a constraining environment.



Figure 1. Young breeder with his cross-calf Belgium Blue-White (Source: photo taken by Prof. L. Allouche).



Figure 2. Breeder who had 16 cross Belgian Blue-White calves (Source: photo taken by Prof. L. Allouche).

IV - Conclusions

In our study, high pregnancy rate was observed. No caesarean section was performed for calving. Interesting, a heavy cross calves were obtained at one year of age, mainly those born from Montbeliarde cows. Hence, crossing cattle with Belgian Blue-White breed is highly recommended for beef meet production under hard livestock conditions. Such kind of projects can contribute to food security, create employment in rural areas and consequently limit the immigration.

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