

Some initial research results on the performance of F1 crossbreds between Boer bucks and Bachthao does raised in Ninh Thuan province

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Summary

Boer (Bo) bucks were used to mate with Bachthao (Bt) does to produce F1 (Bo x Bt) crossbreds goats. The results showed that F1 (Bo x Bt) crossbreds, males as well as females, had a higher body weight and a better daily weight gain than pure Bt goats. Survival and mortality rate of F1 (Bo x Bt) crossbreds were similar to Bt goats. However, the disease infection of F1 goats was higher than that of pure Bt goats.

Introduction

Ninhthuan is considered to be the place of origin of goats in Vietnam, especially the Bachthao breed (Bt), which is considered to be the best goat breed in Vietnam. However, the genetic variability in the goat population in this area is limited. There is a need to increase the body size of the goats and to improve the capacity for meat production in order to satisfy the increasing requirement for high quality breeds and the meat consumption of society. A higher productivity would also lead to increasing income for poor farmers, especially for the farmers in rural areas and minor ethnic groups and would also contribute to hunger and poverty alleviation in Vietnam. In December 2002, Goat and Rabbit Research Centre of the National Institute of Animal Husbandry in Hanoi transferred Boer (Bo) goats imported from the USA to Ninhthuan province. After a period in isolation at Ninhthuan Crop and Livestock Centre, the Boer bucks were crossed with Bachthao does with the aim of identifying the ability of F1 (Bo x Bt) crossbreds to adapt to the ecological conditions at Ninhthuan.

Materials and methods

Experimental animals

The experimental animals were F1 (Bo x Bt) crossbreds and the control animals pure Bt goats.

Bachthao goats: The Bt goat is a pure local dual purpose goat for meat and milk production. Body weight at 36 months of age is 40 kg and 61 kg for females and males, respectively. The reproduction ability is relatively high. The kidding rate is about 1.6 to 1.7 litters/doe/year and twinning rate is more than 60%. Milk yield is 0.8 to 1.2 kg/doe/day during 150 days of lactation.

Boer goats: The Boer goat is an imported meat breed. Body weight at 36 months of age is 90-100 kg and 100-150 kg for females and males, respectively.

Location and measurements

The study was conducted at some households in Phuocmy Phanrang-Thapcham and at Ninhthuan Crop and Livestock Centre. One ram serviced 30 Bachthao does. The animals were penned in a wooden house, males and females separately. The animals were grazed once daily in the morning (from 07.30h to 10.00h). They were housed during the afternoon and at night and were fed grasses and foliages, supplemented with molasses and rice bran and had fresh water *ad libitum*. The animals were eartagged and production and reproduction parameters of individual animals were recorded. The animals were weighed in the morning before feeding and all data were analyzed by a biological statistical method.

Results and discussion

The results in Table 1 show that F1 (Bo x Bt) crossbreds, both males and females, had a high growth rate from the period of birth to 9 months of age, being higher than that of Bt goats.

Table 1. Body weight changes of F1 crossbreds from birth to 9 months of age^{3/} (kg/head)

Breed	Months of age				Note
	At birth	3	6	9	
Bt ¹ (males)	(n=318) 2.6 ± 0.5	(n=298) 13.2 ± 1.9	(n=258) 21.3 ± 2.6	(n=226) 27.7 ± 3.5	Control treatment
Bt (females)	(n=348) 2.2 ± 0.4	(n=324) 12.2 ± 1.7	(n=304) 18.7 ± 2.2	(n=294) 24.3 ± 2.9	Control treatment
F1(BoxBt) ² (males)	(n=35) 2.8 ± 0.5	(n=30) 16.6 ± 1.6	(n=20) 26.4 ± 2.3	(n=10) 36.2 ± 5.4	
F1(BoxBt) (females)	(n=26) 2.7 ± 0.4	(n=15) 14.0 ± 1.4	(n=15) 22.2 ± 1.5	(n=8) 28.2 ± 2.8	

¹Bt=Bachthao breed; ²Bo=Boer breed; ³Means and standard error of means;

Body weight of F1 males and females was similar at birth. However, at 3, 6 and 9 months of age, the bodyweight of male goats was higher than that of female goats, as a result of the higher growth rate of F1 males than F1 females at the same age.

The daily weight gain of F1 (Bo x Bt) male goats in periods 0-3, 3-6 and 3-9 months of age (Table 2) was higher than that of Bt male goats at the same age. The result was similar for female goats, which means that the heterosis effect in the F1 crossbreds was relatively high.

Table 2. Average daily weight gain of F1 (Bo x Bt) crossbreds (g/head/day)

Breed	Periods, months			Note
	0-3	3 - 6	6 - 9	
Bt ¹ (males)	118	90	71	Control treatment
Bt (females)	111	73	62	Control treatment
F1(Bo ² xB) males)	153	110	109	
F1(BoxBt) females)	126	91	66	

¹Bt=Bachthao breed; ²Bo=Boer breed

The survival rate of F1 (Bo x Bt) crossbreds was the same as for Bt goats (Table 3). F1 crossbred (Bo x Bt) had a high hybrid vigor and a high adaptation ability to the climate and the environmental and ecological conditions at Ninhthuan province.

Table 3. Survival and mortality rate of experimental goat breeds

Breed	From birth to 3 months of age			Note
	n	Survival rate (%)	Mortality rate (%)	
Bt ¹	92	88.3	11.7	Control treatment
F1(Bo ² xBt)	61	88.5	11.5	

¹Bt=Bachthao breed; ²F1 (Bo x Bt) = F₁ (50% Bo x 50% Bt)

The results in Table 4 show that the occurrence of diseases in F1 (Bo x Bt) crossbreds was higher than in pure Bt goats.

Table 4. Disease status of goat breeds used in this study

Breed	Contagious ecthyma		Diarhoea		Ruminal tympani		Infectious keratoconjunctivitis		Note
	n	Rate (%)	N	Rate (%)	n	Rate (%)	n	Rate (%)	
Bt ¹	92	14.1	92	11.9	92	4.3	92	11.9	Control treatment
F1(Bo ² xBt)	61	16.3	61	13.1	61	6.5	61	14.7	

¹Bt=Bachthao breed; ²Bo=Boer breed

Conclusions

F1 (Bo x Bt) crossbreds adapted well to the ecological conditions of Ninhthuan province and had a high growth rate. There is a need to introduce more Boer bucks in this area to produce more F1 (Bo x Bt) crossbreds.

