



# Crossbreeding of Malabari with Boer Goats

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**K**erala's livestock economy has so far been centered on milk production. Moreover Government initiatives laid more emphasis on cattle development for milk production than other sectors. In fact, as the size of land holdings decreases further and resources get more stretched, it should be expected that further growth of this sector would be much slower and difficult. In this context, smaller animals like goats will be more appropriate for the future and intervention on a larger scale in this segment will provide the farmer with

additional income generating opportunities.

Goats are grown by the poorer sections of the society, providing them a source of supplementary income. This has earned the goat the sobriquet "poor man's cow". There have not been many programmes in goat development in the State presumably because goats were perceived as a threat to the environment as they wipe out vegetation leading to environmental degradation.

Of the 102 breeds of goats recognized worldwide, 20 are in India and the country accounts for the largest number of goats (18%) in the world. Due to indiscriminate breeding and intermixing of breeds from contiguous tracts, around three-fourths of the goats in the country are said to be of the non-descript type.

## Goat Production In Kerala

Kerala has a goat population of 18.61 lakh as per 1996 Livestock Census. Even though goats contribute 5.3% of total milk production, goat is mainly considered as a meat animal in the State.

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	1972	1977	1982	1987	1996
Adult females	7.36	8.67	10.38	7.94	8.84
Young females	4.10	4.68	5.52	4.35	4.94
<b>Total females</b>	<b>11.46</b>	<b>13.35</b>	<b>15.90</b>	<b>12.29</b>	<b>13.78</b>
Adult males	1.03	0.89	1.27	1.16	1.82
Young males	2.19	2.59	2.86	2.34	3.01
<b>Total males</b>	<b>3.22</b>	<b>3.48</b>	<b>4.13</b>	<b>3.50</b>	<b>4.83</b>
<b>Total goats</b>	<b>14.68</b>	<b>16.83</b>	<b>20.04</b>	<b>15.81</b>	<b>18.61</b>

There is only one recognized breed of goat native to the State, the Malabari that is considered as a dual-purpose animal with a milk production potential of 0.391 kg. of milk per day and average three kidding in two years. Average body weight of an adult Malabari goat is 34 kg. with attractive rate of weight gain.

Although meat and skin are the major products, milk, skin, manure and other by-products contribute substantially to the agrarian economy. Goat meat though costliest of all meats in the country, is the most preferred and in high demand. Factors like high price of goat meat, low investment and comparative advantage in management are encouraging the farmers to take up goat production during recent years. In spite of all the merits, goat development has not received the required support in the State. Unlike in other parts of the country, goat farming in Kerala is a backyard operation with an average holding size of 2. This





system does not pose any threat to ecosystem also. Considering the high demand of goat meat in the State there is also a need for a meat variety goat.

### **Goat Breeding Centre of Kerala Livestock Development Board**

Studies conducted in the meat sector of the State revealed that breeding of goats takes place without much control and this has led to deterioration in their quality. In fact there has never been a structured breeding programme in the State for goat development. Though goats are kept mainly for milk, the revenue from the sale of kids is equally if not more important for the goat farmer in Kerala, which indicates that goat's utility comes from both milk and meat. Hence improving the productivity of goats by genetic improvement can only lead to an overall improvement in this sector. This calls for research and development in the area and immediate application of the know-how currently available.

It was in this perspective that the Kerala Livestock Development Board took up selective breeding of Malabari goats after setting up a nucleus herd in its Goat Breeding Centre ( GBC) at Dhoni, Palakkad.

#### **The objectives of the project are:**

Genetic improvement of Malabari goats through systematic selection for economic traits like prolificacy and weight gain

Development of a nucleus stock of Malabari breed for the supply of superior breeding stock to farmers

Conduct research and development on freezing of buck semen, goat rearing practices and management of goats under small herd system.

The Board also took up trials on freezing of buck semen and Artificial insemination was successfully done to the goats in the farm using frozen semen. A pilot programme on A I in goats was introduced in selected parts of the State to assess the performance under field conditions and the results of the trial are awaited.

#### **1. Selection and performance in the nucleus herd:**

The breeding programme for the goats in the nucleus herd is aimed to augment profits from goat rearing in the State through sale of goats for meat without reducing the milk production potential of the stock. The policy is selective breeding among the available goats in the farm for prolificacy and weight gain.



### **Malabari Goats at Dhoni Farm**

All the animals are identified with ear tags and individual cards maintained for each of them. Each animal's weight is recorded at birth and at intervals of 15 days up to one year or till the animal goes out from the herd. The kids are weaned at the age of 3 months and the weight at weaning recorded. The top animals among the growing stock, both males and females are



employed in the nucleus farm for replacement. Animals, which are good for breeding and expected improvers of the breed, are sold to farmers directly or through Governmental/other agencies.

Males are sold at the age of 6 - 8 months. Since it is required to keep the females for recording the performance with regard to prolificacy and weight gain of the kids, they are distributed after 3 months of first kidding. Females are selected based on their weight gain up to 6 months, age at first kidding, number of kids in the first kidding and weight gain of the kids by applying suitable 'Selection Indices'. The males will be selected based on the weight gain up to 90 days and dam's selection index.

A definite mating programme is being followed in the nucleus stock by grouping into doe families and allotting specific bucks for specific periods and buck rotation. The performance of Malabari goats at Goat Breeding Centre, Dhoni over the years is given in the table annexed.

#### **2. Boer Goat Production**

##### ***Boer Goats at Dhoni Farm***

Boer goats were developed in South Africa as a breed solely meant for meat production. Because of the intensive selective breeding over the past 50 years or more by the South African Goat Breeders, the Boer goat is considered far superior to any other goat for



meat production. It is known for rapid weight gain and heavy muscling and has high fertility. Boers typically give birth to twins. Because the Boer was selectively improved for its meat production ability and its ability to pass on that trait to its offspring, along



with other traits including pasture hardiness, the addition of Boer bucks to commercial meat goat herd can improve the meat characteristics of the offspring. Studies conducted at the Maharashtra Goat and Sheep Research and Development Institute have revealed that these goats are highly adapted to a wide range of climatic conditions in the country. Crosses of local

goats with Boer bucks have proved to be a suitable genotype for the goat production system.

The claims made as a basis for the selected Boer goat being superior to all other breeds of goats are:

- Adaptability to all types of climate
- High prolificacy with close to 100% twinning
- Early maturity of does and bucks
- fastest growth rate pre and post weaning with an excellent feed conversion ratio
- Quality meat with low bone percentage and low fat
- Milk production average 2 kg. per day containing 7 to 9% fat and 17 to 19% SNF
- High disease resistance
- Produces very good crossbreds having hybrid vigour with local breeds

Considering the above potentials, the KLD Board introduced Boer goats in Kerala. The objectives of the programme are:

- to maintain a nucleus herd of Boer goats at the Dhoni farm of K L D Board
- produce and distribute Boer kids to farmers and other agencies involved in goat development for breeding

**Performance of Boer goats in Dhoni farm ( 2002-03, upto 08/2002)**

	<i>Males</i>	<i>Females</i>	<i>Total</i>
Average adult weight (kg.)	70	50.48	
Average birth weight (kg.)		3.96	3.93
Twins		3.4	3.1
Triplets		2.9	2.0
Kids per kidding			1.63
Twinning			69%
Average weaning weight (kg.)	15	14	
Average 6 months weight (kg.)	28	24	
Weight gain (g.) > 3months	100	115	
3 - 6 months	115	105	
6 - 9 months	120	105	
9 - 12 months	105	95	

- undertake trials for crossbreeding Boer with native breed of goats in the State to assess the performance of the crossbreds
- undertake studies to propagate Boer breeds through artificial insemination

As a first step 50 selected Boer does and 10 selected bucks were imported from Australia and housed at

the Dhoni farm of K L D Board.

### 3. Performance of Boers and their crosses

The Boer goat produces outstanding crossbreds with local goats of almost any breed. The production performance of crosses with Boers is expected to be higher than local breeds based on study results elsewhere in the country and the world.





### Where the Boer fits in

The introduction of Boer has increased the harvesting of millions of feral goats in Australia. Rather than being slaughtered, does are being retained or crossbred with Boer bucks. It is this crossbreeding that has led to the continued success and expansion of Australia's goat meat industry. The Boers can be commercially farmed in a number of ways. They can be crossed with native goats to provide a base with initial herd. By doing so the early crosses will have the advantage of hybrid vigour allowing the desirable qualities and consistency of supply that is sought for. The native bucks must be culled and boer bucks introduced taking care that they are mature and have time to adjust to the environment. The best would be to create a self-replacing flock of does with the percentage of Boer infusion increasing in each generation.

The Boers also offer excellent milk production prospect and as such are being introduced in some dairy goat operations in the world to increase the butterfat content. However, the dairy does have to be selectively bred to produce copious quantities of milk more than the kids require. As a result, damage to udder and mastitis problems can arise when dairy does are used with commercial meat goat operations.

The consistency of carcass quality is characteristic for which any goat meat industry should strive. The second cross animals (75% Boer and 25% native) generally offer increased consistency than the first crosses (60%). While the effects of heterosis are reduced in the second cross, the increase in genetic stability ensures that more of kids produced are Boer like. It is generally accepted that the use of first cross Boer bucks

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or genetic group and *invitro* conservation where the conservation efforts are taking place outside the breeding tract of the animal. Many times the possibility of *invivo* conservation will not be present as most of the endangered animals are not sustainable economically for the farmer. The alternative is *invivo* conservation. It can be done as cryo preservation of sperms and oocytes or cryopreservation of embryos or storage of embryos. The latest methods include the preservation of somatic cells or embryonic stem cell lines.

### Kerala scenario

The efforts for conservation of domestic animal diversity were started in Kerala by Kerala Agricultural



University. The saga of conservation of legendary Vechur cattle is an example for the success story of the combined work of the scientists, students and public.

### Conclusion

KLD Board maintains a nucleus herd of Malabari and Boer goats to produce and supply superior bucks and kids to farmers and other agencies for breeding. Results of the selective breeding of Malabari goats have been encouraging and attempts are on the way to produce crosses with Boer goats and to assess their performance and to propagate the breeds through artificial insemination. Selection and culling will be undertaken to improve the performance of the herd maintained in the centre. Taking into consideration the multiple facets of the Boer goats and the compelling need of the State to develop its meat sector, it is expected that by making available quality Malabari and Boer goats and their crosses for the Kerala farmers, the popularization and dissemination of superior germplasm concomitant with increased returns will be hastened. The days to come will be that of the broiler goats " the Boers " .

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The Centre for Advanced Studies in Animal Genetics and Breeding is taking lot of efforts for this. The conservation and evaluation projects for almost all the native domestic animal groups are in progress. They include the schemes on Vechur cattle, Malabari goats, Attappady black goats, Kuttanad buffaloes, Highrange dwarf cattle, Kasargode cattle and Vatakara cattle.

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