



Bullocks of Jersey X Amratmahal breed cross (50% each) - a match to any Indian draught breed.

To breed or not to breed?

Crossbreeding for a secure future

In ILEIA Newsletter 1989/4, the article "Low-demand animals for low-input systems" extolled the merits of indigenous livestock breeds. We have since received two articles from India which look into the pros and cons of keeping local cattle or venturing into crossbreeding.

Narayan Hegde shows that keeping crossbreeds can bring economic advantages where there are reliable input supplies, support services and markets. A favourable price ratio between milk and feed concentrates is also important. V Santhakumar shows how indigenous breeds are kept to make optimal use of local resources and to serve the local economy, without creating dependency on external inputs and services.

We noted that the authors see women's labour in livestock care as filling in unoccupied time. Their labour is not even considered in calculating the economics of keeping crossbreeds. We would welcome women's viewpoints about the advantages and disadvantages of keeping crossbreeds in terms of labour and other inputs.

Narayan Hegde

India's rural economy is based on agriculture, of which animals are an important component. A large part of these are local cattle which make little contribution to the economy. Most of them graze natural pasture at no direct cost to the farmers, but at a cost to the national economy in terms of environmental degradation.

Realising the potential threat from free-grazing livestock and the need to create employment opportunities for the rural poor, the BAIF Development Research Foundation started promoting cattle crossbreeding in a big way in 1967. Crossbreeding by artificial insemination had already been introduced by the Government of India, but the programme was not popular because of low conception rates, poor extension and inadequate technical follow-up in the field. BAIF therefore developed a strategy of providing door-to-door service, using frozen semen of high-quality Jersey and Holstein breeds, with the aim of producing milch animals.

Technology plus delivery

BAIF identified areas for cattle-breeding centres, each covering a radius of 15 km from a central village and including 10-12 villages and about 2000 breedable cows. A graduate, well trained in artificial insemination,

pregnancy diagnosis, vaccination, feeding and management of livestock, was posted at each centre and provided with a motorcycle and a set of three liquid-nitrogen containers. A 50-litre container is for storing enough liquid nitrogen to preserve semen for 30-40 days. A 16-litre container is for storing enough frozen semen straws to operate the programme for 3-4 months. A 3-litre container is for carrying 25-30 doses of semen to the field on a motorcycle, for inseminating cows.

When establishing a new centre, the technician in charge initially organises meetings in every village. The extension activities include individual contacts, meetings with village youth, women groups and members of the village Panchayat (elected body to manage development activities), film and slide shows, exhibitions and visits to other villages to see the benefits of crossbreeding.

The cost of operating such a centre is Rs 80,000 (USD 3200) per year. Costs per conception of Rs 200 are provided by the Government or private sponsoring agencies. In areas where free services are not available, private vets charge Rs 40-50 per insemination.

With frozen-semen technology, the conception rate in the cattle breeding programme is 65%. At least 400 conceptions are registered per centre annually, after each inseminated cow has been examined. While most of the Indian breeds take 4-5 years for first calving, the crossbreeds start producing milk at 2.5-5 years. The average lactation yield of crossbreeds with 50% exotic blood is about 2500 litres, compared to their mothers' yield of 250-300 litres.

Economic viability

Data on comparative economics of local and crossbred cows, based on a field survey, is presented in Table 1. (Editors' note: Although the data do not correspond exactly with figures in the text, the table does illustrate how BAIF makes the economic comparison.) Keeping local cows is uneconomical if farmers have to buy fodder, as assumed in the table. However, most of the feed requirements of these cows are actually met from free grazing.

A crossbred cow generates a gross annual income of Rs 11,382 (USD 1 = Rs 25) from milk alone. As rural families generally keep 3-4 cattle, replacement of these by 3 crossbred cows can earn a net annual income of Rs 12,000-15,000 (USD 480-600). However, the crossbreeds need good health care, vaccinations and about 1100 kg concentrated feed. Local cows are fed only 280 kg concentrate per lacta-

Parameters	Local cows		Crossbred cows	
	Quantity	Amount	Quantity	Amount
Average milk production per lactation of 305 days excluding milk suckled by calf (Rs 5.42/litre)	200	1084	2100	11382
Dung, farmyard manure (t/year)	2	1000	4	2000
Income (Rs)		2084		13382
Expenses:				
Feed: Concentrate (Rs 3/kg)	250	750	1100	3300
Dry fodder (Rs 1.5/kg)	2100	3150	2000	3000
Green fodder (Rs 0.8/kg)	400	320	1000	800
Vaccinations & vet care		10		250
Total expenses	4230	7350		
Net income (excluding labour costs)		(-2146)	6032	

Source: V J Sidhaye, BAIF

Table 1: Economics of local and crossbred cows under field conditions in Maharashtra State, India

tion. Milk fever and mastitis are the most common problems among crossbreds. These are attended by the vets based at every block of 10-15 villages. The government vet services are available free of charge, but the farmers have to pay for the drugs.

Daily animal care is generally done by the women, providing part-time employment for these underemployed family members.

Many farmers grow fodder crops like sorghum, maize, oats and lucerne, either rotated with food crops or on marginal land. Some of the landless labourers bring back sugarcane tops or grasses weeded while working on other farms. They may then sell some of their cows and invest in farmland, house construction, well digging, irrigation or their children's marriages. Thus, crossbreds are increasing the socioeconomic security of the poor.

Assured market

With the establishment of milk-processing cooperatives, farmers get an assured price for milk based on butterfat and total solids. The dairy cooperatives pay Rs 4.98 per litre of cow milk with 3.5% fat during the winter season. The payment is raised to Rs 5.80/litre when the milk production falls due to hot weather and shortage of green fodder.

Traditionally, buffaloes were popular milch animals in India, because milk yield

(800-1200 litres per lactation) and butterfat content (6-7%) are higher than from local cows. Now the crossbreds have surpassed buffaloes. Moreover, the price offered by the dairy for buffalo milk is not attractive. But many families still keep buffaloes, particularly in humid areas, as they are used to buffalo milk and certain customers buy it at a premium.

Crossbreeding progress

Smallholders and landless people can keep crossbreds under a wide range of climatic conditions, but basic facilities of breeding services, veterinary care and milk marketing are needed. Initially, there were doubts about the ability of cross-

breds to tolerate heat and resist diseases and the ability of the bullocks to work quickly. Field experiences have overruled these doubts. Crossbreds, also for draught, have been very well accepted by the farmers.

BAIF now operates 550 cattle-breeding centres in five states, extending breeding services to cows owned by about half a million rural families. During the last 20 years, about two million artificial inseminations have been carried out with semen of Jersey, Holstein Friesian and their crosses with 50-75% blood levels. In western Maharashtra State alone, where BAIF operates about 45 centres since 15 years, a daily market surplus of 3-3.5 million litres of milk is collected through farmers' cooperatives for distribution in cities.

Essential components of this cattle development programme are regular supply of liquid nitrogen to maintain frozen semen in good condition, timely insemination and vaccinations, skill-oriented training on feeding and management, and well-organised extension.

Improved ecosystem

In areas where crossbreds are born, farmers tend to adopt stall-feeding, mainly to safeguard their valuable animals from disease and injury. Farmers with crossbreds start culling inferior animals by selling them at local weekly markets. Generally, the old cows are sold to other farmers after 3-4 lactations, when the home-born crossbreds start producing milk. Such practices help in regenerating degraded pasture and improving the ecosystem.

The project has shown ways of upgrading low-producing cattle to provide livelihoods for millions of rural people.

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Photo: BAIF

Leucaena hedges supplement the fodder needs of crossbreds