

Scientific selection and breeding method for increasing the milk production

Rajib Deb¹ and T V Raja²

ICAR-Central Institute for Research on Cattle, Grass Farm Road, Meerut Cantt, Uttar Pradesh 250 001

Dairy cattle rearing is the backbone of Indian rural economy as it provides employment opportunity, steady income and nutritional security to the rural farmers mainly consisting of small and marginal and landless labourers. Cattle rearing in India is considered as subsidiary enterprise to agriculture as the cattle are maintained mainly on grazing in the available agricultural/barren land or the agricultural by-products. Cattle provide milk for human consumption, draught power for agricultural operations and dung as manure and fuel. The sustainability and profitability of cattle rearing is mainly based on the scientific methods of selection, breeding, feeding, reproduction and health management of the animal.

Key words: Breeding, Cattle, Milk

SUCCESSFUL dairy farming depends on the scientific management of dairy cattle which includes proper utilization of available animal resources through scientific selection of male and females of different breeds of choice for their breeding. Proper feeding of animals with quality feed and fodder of optimum quantity will help increase the efficiency of milk production. Proper health and reproductive management will also improve the overall economy of dairy farming. This article mainly focuses with the scientific selection and breeding management of dairy cattle for increasing the milk production.

Selection

Selection is the process by which the male and female animals are allowed to breed for producing the next generation offspring. The selection procedure is mainly based on the purpose for which they are to be raised viz., milk production, draught purpose etc.

Selection for milk production

Breeds of choice for milk production: In India, among the 37 registered cattle breeds five are considered as dairy breeds as their milk production is higher and are solely reared for this purpose. Gir, Sahiwal, Red Sindhi, Tharparkar and Rathi are the five defined dairy cattle breeds and the animals can be purchased based on their breed characters, milk production ability and availability. The non-descript animals are poor milk producers even

though they are very good convertors of poor quality feed into milk and are resistant to most of the tropical diseases and hence cannot be used for commercial milk production but can be reared for household consumption. However, they can be upgraded with the exotic or indigenous dairy bulls. The crossbred cows are high producers and suited to the commercial farming, but require high initial investment and maintenance cost and are susceptible to some of the tropical diseases. The crossbred cattle produced in our country viz. Karan Swiss, Karan Fries, Frieswal, Vrindavani and Sunandini can also be purchased and reared for this purpose.

Based on the above facts the farmer can choose his own breed of choice. The animal can be selected at calf, heifer or cow stage of its lifetime. The calves and heifers should be selected based on their breed characters, production and reproduction performance of their parents and ancestors and its own



Sahiwal

health status etc. The cows should be selected based on their milk production. The productive lifetime of a cow is considered as first five lactations as maximum yields are obtained during this period and hence the cow should be selected either during first or second lactations and that too immediately after one month of calving. The peak yield in lactation is noticed during the 45 to 50 days and this higher yield is retained till 90 days after calving and hence the cows should be selected based on this early lactation milk yield. The cows should be milked completely on two consecutive days i.e. first day evening and second day morning which will give better idea about its milk production.

Selection of male animals

Presently bulls are not maintained by the farmers for breeding. The Government and Non-government organizations provide the frozen semen of progeny tested bulls which have the capacity for higher milk production for AI of the females. The commonly used exotic breeds are



Frieswal

Jersey and Holstein-Friesian (HF). Jersey is comparatively smaller in size; better milk producer with higher fat percentage and is suitable for the small and marginal farmers not having agricultural land for fodder production. The HF animals are comparatively high milk producers with lower fat percentage and require large quantity of feed and fodder and hence are most suitable for commercial farmers. Nowadays the semen of indigenous milch cattle breeds is also available and hence they can also be used for producing the progenies.

Breeding management of dairy animals

The heifers or cows need to be inseminated for producing the calves that are suitable for dairy production. The cows should be artificially inseminated at the optimum time during the oestrous period so as to get conceived early. The female calves are more needed in dairy farming as they can be used for replacing the old, diseased

and unfit cows and the rest (male calves and defective calves) can be culled at an early age. Culling the animals at an early stage improves the economy of the farm. The early maturity, conception, and calving, reduced service period, dry period and calving interval are some of the important factors needed for increasing the profitability of a dairy farm. A calf an year should be the motto of the farm so as to produce more number of calves and more cows in milking.

¹Scientist, ICAR-Central Institute for Research on Cattle, Meerut. Corresponding author's e-mail: Rajib.Deb@icar.gov.in

Improvement through selection in indigenous breeds

The programme covers Gir, Kankrej and Sahiwal breeds. Gir (24), Kankrej (26) and Sahiwal bulls (25) in three sets were inducted for progeny testing. The total number of inseminations carried out in Gir, Kankrej and Sahiwal units were 2,793, 2,417 and



1,174 with the conception percentages of 43.54, 46.21 and 44.80, respectively. Since the inception of the project, 5,112 Gir, 1,957 Kankrej and 1,326 Sahiwal daughters were born.

The average age at first calving in Gir, Kankrej and Sahiwal were 1,409.00, 1,195.21 and 1,114.32 days, respectively. The average first lactation 305-day or less milk yield, first lactation length and first peak yield were 2,344.5 kg, 410.9 days and 13.3 kg in Gir; 2,241.14 kg, 303.2 days and 10.6 kg in Kankrej; 1,462.67, 9.74 and 268.97 days in Sahiwal respectively. The first set of six Gir and eight Kankrej bulls were evaluated based on the first lactation 305 days milk yield of their daughters and the expected breeding values were estimated as 2,563.79 and 2,004.31 kg, respectively.