SUSTAINABLE MUTTON PRODUCTION IN SHEEP BREEDS OF INDIA

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INTRODUCTION

Mutton and chevon are accepted by almost all the sections of society in India, while beef and pork have limited consumers due to religious inhibitions in certain communities. Sheep, being the important species of livestock, has a greater role to play in the rural agrarian economy to provide gainful employment and income to a large number of rural poor especially socially backward, marginal farmers and landless labourers. Sheep is capable of converting the available sparse vegetation into valuable products like mutton, wool, skin, milk and manure. Indian sheep breed throughout the year although major breeding takes place immediately after the onset of monsoons in plains and as the animals start returning from alpine pastures in hills. Sheep farmers are now well aware of the importance of body weights and paying more attention towards raising of mutton type sheep. Appropriate breeding strategies can prove as major tools in bringing out enhancement in mutton production and productivity of sheep.

POPULATION DYNAMICS AND MUTTON PRODUCTION

Although vast genetic resources in forms of various breeds of sheep (42 breeds) exist in our country but the economic returns are relatively smaller compared to exotic mutton breeds. Major reasons for low productivity of sheep are poor exploitation of genetic potentiality of native stock, inadequate feed and fodder resources, heat stress, nutritional deficiency, poor health monitoring and improper marketing and credit support to sheep rearing profession. Four distinct sheep raising geographical areas namely North temperate, North western, Eastern and South peninsular have been identified in our country. About 2% of the world’s sheep meat and 0.75% and 1.07% of wool on raw and scoured basis respectively are produced in our country. In India, sheep population had been almost static (around 40 million) from post independence till late 1980’s. It increased to 48.76 million in 1982 followed by a decline to 45.71 million in 1987 and again raised to 50.80 in 1992. India ranks fourth in sheep population and it was 57.9 million in 2000 which accounted for 5% of world population. The national sheep wealth is about Rs. 2400 crores producing an annual income of about Rs. 800 crores in the form of wool, meat, skin, milk and manure. A total of 222 million mutton was produced from 18.5 million sheep heads i.e. 32.8% of total sheep was slaughtered to produce 4.98% of the total meat produced in the country (FAO, 1998). Mutton production increased from 117 million in 1975 to 173 million in 1995 with annual growth rate of 1.9%.

SELECTIVE AND CROSSBREEDING

Meat production traits mainly include age and body weight at slaughter, efficiency of feed conversion, dressed carcass weight and dressing percentage. Optimum weight of about 30 kg at about six month of age is extremely important from international market standard point of view. Further it has direct bearing on meat traits and taste of consumers. Indian sheep breeds possess enough genetic variability with respect to mutton production traits. It can be gainfully
exploited through selection. Body weight at 6 month of age is the simplest criterion for improving mutton production. Although hot carcass weight and dressing percentage have high heritability, these traits can not be measured in live animals. Therefore, maximum weightage should be given to 6- month body weight while selecting the ram lambs for future breeding. Time to time, superior-breeding rams should be introduced to bring more genetic variability among indigenous stock. For profitable mutton production, we need to evolve a breed, which must have fast and efficient growing lambs. The ewes should be prolific and must have good mothering ability. Fast growth and early maturity are the most important characteristics for mutton production. Indigenous breed like Malpura, Muzzafarnagari, Madras red and Mandya sheep exhibited considerable improvement through selective breeding.

Crosses of Mandya, Nellore, Malpura, Sonadi and Muzzafarnagri with Dorset and Suffolk were evaluated for production and reproductive performance. There was a substantial improvement in crossbreds over their contemporary native breeds. Crossbred lambs showed significant improvement at 6-month body weight over native contemporaries but this conspicuous improvement narrow down at yearling stage. This is indicative of fact that crossbreds required high plane of nutrition. In general there was deterioration in reproductive performance of crossbred ewes and such type of programme were stopped for further propagation.

**Superior native germ plasm for mutton production.** Through selective breeding some of the important indigenous sheep breeds like Malpura, Sonadi, Muzzafarnagari, Madras Red, Mandya, Nellore, Deccani have been improved and rams of these breeds are available for enhancing mutton production in farmers flocks.

**Crossbreeding for heavy live weight.** A pilot project on crossbreeding of Awassi rams with native Malpura ewes was started in 1994. Awassi x Malpura half-bred lambs exhibited about 20% and 15% improvement over Malpura lambs at 6 and 12 month of age with 37% more wool at first clip. Wool produced by these crossbred was of carpet quality having lustrous property. Crossbred ewes produced 29% more milk than that of contemporaries Malpura ewes.

**Crossbreeding for multiple birth.** The lambing percentage in indigenous breeds of sheep varied from 60 to 95 % mostly with single born lambs. Crossbreeding of Malpura ewes with Garole (a prolific native breed) was undertaken considering the importance of multiple birth in sheep. Garole crosses were little bit on lower side in body weights at different ages compared to Malpura lambs. This is initiation towards the infusion of genes responsible for prolificacy and fecundity into relatively less prolific breed (Malpura). Garole x Malpura half-bred ewes yielded encouraging results in terms of twin lambing percentage. Of 34 lambings, 44% were twin lambings in mentioned genetic group, where as, Malpura gave birth to single lambs except 1-2% twin lambing. Survivability of Garole x Malpura halfbreds was at par with the Malpura sheep in semi-arid conditions. Results indicated that Garole crosses have the potential for increased lambing rate. Efforts will also be made to evolve a strain, which would have optimum body weight with multiple birth.

**Fat lamb production technology.** Package of practices in respect of fat lamb production having cheaper feed should be popularized among resourceful farmers. This technology has the advantage
of avoiding rearing of meaty lambs up to one year of age and mortality risk. This is a very promising mutton production program that can prove as a boon for meat Industry. The major advantage of this technology is that sheep owner will get the handsome profit after 6 months and this profit would be at par or even more than when the lambs are reared for 12 months under extensive grazing system. By considering all the inputs required for raising the lambs to attain finishing weight, it is estimated that this technology would be helpful to the clientele for reducing the time period from 12 to 6 months in getting almost same profit in addition to avoiding the mortality risk and unnecessary rearing of lambs for whole year.

FUTURE STRATEGIES
There is wide gap in requirement and availability of mutton in our country. Hence there is an urgent need for increasing mutton production by enhancing productivity per animal in the country to meet the ever-increasing internal demand of our huge human population. Besides, there is great scope for export of mutton that can fetch valuable foreign exchange. Therefore, it is necessary to increase the production of meat which is possible only when an integrated approach optimizing nutritional, managerial inputs and health coverage are adopted to exploit genetic merit of the indigenous sheep fully for bringing gainful advantages in body weight and carcass yield.

Feeding input. There has been continuous decline in availability of grazing area for livestock due to increased population, urbanization, industrialization and use of fallow lands for cultivation and such other activities. It is, therefore, important to develop and utilize lands for pasture like left bank area of canal/river where pasture development programs especially tree plantation may be implemented. Identification of new sources of protein or cheaper sources of compound animal feed and fodder is also necessary. Utilization of by-product feeds and non-conventional feed resources and enrichment of low-grade feeds may be desirable.

Health management. Prophylaxis health measures against prevalent diseases and anthelmintic drenchings against internal parasites are the important health practices required to be strengthened in farmers’ flocks. Effective vaccines in adequate quantities for diseases like ET, FMD, Sheep Pox etc. are essential. Effective control measures against emerging disease viz. Blue Tongue and PPR will have be developed. It is important to control development of drug resistance, hence a proper drenching strategy is required to be developed to control this problem.

Marketing. There is no well integrated marketing system for meat and meat products in India. In the market chain that connects the primary producer in the rural areas, a number of middlemen are engaged in between and they play a vital role in enhancing the price of final product. Setting of small viable rural slaughterhouse and transporting packed meat to the urban centers will minimize the involvement of middlemen. Organized market network in meat animals is gaining strength in different states through collection, mobilization, marketing and transportation of meat animals from rural producing centers to ultimate meat production centers.
RECOMMENDATIONS

- Potential mutton type breeds such as Malpura, Sonadi, Muzzaffarnagari, Madras Red, Mandya, Nellore, Deccani, Ganjam etc., may be restricted to selective breeding. Ram rearing centers for indigenous breeds need to be strengthened for production of superior breeding rams.
- Open nucleus breeding system should be followed involving farmers’ flocks. Farmers need to be impressed upon use of superior breeding rams.
- There is an urgent need to increase the lambing rate in indigenous stock by introducing prolific sheep like Garole. Garole halfbreds may be further crossed with heavy weight and milch breeds so that body weight is not affected adversely.
- Emphasis should be given to increase the productivity of sheep through appropriate breeding strategies combined with integrated approach optimizing nutritional inputs with adequate preventive health measures.
- It may be necessary to do the evaluation both under farmers flocks conditions as well as under organized farm condition. For the latter purpose, large sheep breeding farms may be established in the home tracts of important breeds and evaluation of breeds of the region should be carried under similar management conditions.
- Artificial insemination technique would be required to be increasingly adopted and further methods for long-term preservation of semen especially through deep freezing should be developed.
- Suitable field recording systems for performance evaluation of sheep should be developed on priority basis.
- It will be desirable that the crossbreds are evaluated not only in terms of their performance but also in terms of their adaptation especially to the physical environmental conditions in which they are going to perform.
- Aspects of the sheep nutrition in relation to low protein level in their feed and possibility of compensation through urea recycling should be investigated.

REFERENCES