

6. Livestock-Environment Interactions: Issues, Problems and Prospects

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Though livestock in India are characterised by large numbers and low productivity, their contribution to the nation's economy is substantial. The share of livestock in gross domestic product (GDP) has increased during the period 1950–1992 as compared with the share from crop cultivation, which has declined during the same period. At current prices, the share of value of livestock output in GDP¹⁸ constitutes around 10 per cent during 1994–95. In the case of crops, it was around 26 per cent during the same period.

The distribution of livestock holdings in India is much less skewed as compared with land holdings. It has been reported that though the bottom 60 per cent of rural households own only 41 per cent of total milch animals, their share in ownership of bovine is showing an increasing trend. Further, around 2/3 of livestock, particularly cattle, are maintained by small and marginal farmers and landless labour.

The total livestock population of India has increased by about 40 per cent during 1961–1992. Cattle population has increased by 16 per cent, buffaloes by 64 per cent, sheep by 26 per cent and goats by 89 per cent during the same period. Numerically, cattle dominate (43.5 per cent) total livestock in India, followed by goats (24.5 per cent), buffaloes (17.9 per cent) and sheep (10.8 per cent) during 1992. At the all-India level, crossbreed cattle have shown a compound growth rate of around 6 per cent per annum during the period 1982–1992.

Livestock production processes have both positive and negative effects on environment. The positive effects are:

- Managed grazing improves species (flora) wealth.
- Mixed farming (crop cultivation and livestock keeping) enhances water infiltration and recharges groundwater reserves.
- Mixed farming sustains the resource base.
- Mixed farming effects resource enhancement and support resource sparing.

The negative effects are:

- Land degradation.
- Deforestation (loss of bio-diversity).
- Waste production.
- Pollution—land, water and air.

There are many livestock-environment hot spots, which need careful attention for sustainable management, otherwise both environment / ecology and the livestock production systems would collapse. The important livestock - environment hot spots are (i) land degradation particularly of semi-arid region (ii) extensive grazing and large-scale forest degradation, and loss in biodiversity; (iii) animal waste production exceeds the absorption capacity of land and water. Livestock waste emits greenhouse gases such as methane and nitrous oxide, contributing to global warming; (iv) groundwater

contamination, and pollution; (v) involution of mixed farming system; (vi) slaughterhouses.

Livestock production systems emit greenhouse gases into the atmosphere. The most important source of methane emissions in India is enteric fermentation from domestic livestock, which is showing a steady increase over a period of time. During 1980–81 it was 9820 Gg, which has increased to 11,790 Gg during 1997–98. The share of enteric fermentation from livestock was more than 68 per cent of the total methane emissions from the agricultural sector during 1996–97.

Ruminant livestock graze on public uncultivated lands (UCLs), and the benefit from such grazing goes to the individuals. The cost of grazing, which is a social cost to the society in terms of both degradation of UCLs (due to excessive and un-managed grazing) as well as their shrinkage is borne by the society. The attitude of the herders to maximise private benefits at social cost also weakens the complementarities and complementarities between crop cultivation, ruminant livestock keeping and UCLs. Policy interventions and measures are required to protect, maintain and develop the available UCLs and also to maintain optimum number or size of livestock.

For sustainable use and management of uncultivated lands as common property resources appropriate and efficient local institutional arrangements are required. Owing to commercialisation of the village economy, technological changes and the changed social pattern of the rural families, the traditional system of collective management and use of CPRs has broken down. This has adversely affected agriculture as well as animal husbandry, making both these economies less sustainable. New institutional arrangements could be evolved to improve the access of the rural households to public uncultivated lands along with improving their productivity.

Further, if we try to address the sustainability of Indian agriculture, the existing stock of ruminant livestock (cattle) may not be surplus, but in fact becomes deficit. If we try to address the issues related to excessive and overgrazing of CPRs by the existing number of livestock resulting in deforestation and degradation, then the number might look large. The solution would lie in increasing the production and productivity from the existing CPRs, and also improving the quality of livestock.

Policy Interventions

1. Growing imbalances between livestock systems and ecosystems need to be corrected,
2. Good and clear understanding about ecosystems and their links with livestock systems, which would lead to correct decisions,
3. Measures to be taken to correct the institutional weaknesses—inappropriate property rights, misleading land tenure, and rejuvenating traditional communal grazing rights etc.,
4. Incentive policies—equity—benefit sharing through programmes joint forest management (JFM), watershed development, etc.,
5. Creating good infrastructure, particularly in inaccessible areas,
6. Intensification of livestock production systems, wherever possible,

7. A clear understanding about aims of keeping livestock, and combination of output required with available inputs,.
8. Assessment of whether intensification possible, justifiable and beneficial?
9. Efforts to promote stall-feeding, and crossbreeding,
10. A good understanding and information on the consumer side are also required.