

National Dialogue on Land Use for Integrated Livestock Development

Concept Note

Background

Crop and livestock production are integral part of rural economy and complement each other under mixed farming. Livestock sector contributes 31.6 per cent to the national agricultural gross domestic product (GDP). In some states, it even exceeds 40-47 per cent and thus plays a crucial role for national food and nutritional security. Of late, driven by a rapid increase in demand for animal food products, the livestock sector has grown faster at the rate of 4 per cent. There is considerable inter-state variation in livestock growth trends. The eastern and north-eastern states, which had been lagging behind in livestock and agricultural development, have experienced robust growth in recent years. In states like Bihar and Odisha, the livestock sector has become a leading source of agricultural growth. The sustainability of livestock sector depends mainly on sufficient availability of feed and fodder resources at affordable cost. In dairy farming nutrition constitutes about 60 per cent of the total expenditure. Thus, forage crops possessing high nutritive value and better digestibility are quite important for the viability of dairy sector.

The three major sources of forage supply are crop residue, cultivated fodder and forage from common property resources like forests, permanent pastures and grazing lands. At present, the country faces a net deficit of 35 per cent green fodder, 11 per cent dry forages, and 44 per cent concentrates. Owing to limited arable and grasslands, we are faced with a challenge to feed the fast increasing livestock population in the country. Hence, any attempt towards enhancing availability of feed resources and economizing the feed cost would result in enhanced livestock production and increased income of our livestock farmers.

Despite all these, India has achieved 'White Revolution' on account of rich animal diversity, institutional infrastructure and competent human resource, besides policy support for linking smallholder farmers to markets. Today, India is the world's largest milk producer with more than 176 m t production/ annum. However, dairy farmers invariably face the challenge of high cost of feed and fodder and non-remunerative prices for milk and dairy products, lesser incentives for value-addition and exports as well as lack of credit and insurance, besides adverse impact of climate change.

The demand for food from animal source is projected to rise rapidly, thus offering opportunities for enhancing agricultural growth and reduction in rural poverty. The productivity of India's livestock, however, is low mainly due to acute scarcity of feed and fodder. Although, livestock in India currently accounts for a larger share of the value of agricultural output than food grains, new technological, institutional support and policy options are required to harness the untapped potential of livestock sector. Coupled with a high demand for animal food products, driven by sustained economic and income growth along with expanding urban and non vegetarian population, would require faster growth in animal productivity.

Although India has a large population of livestock, the productivity of milk and other livestock product per animal is rather low compared to many other countries. One of the main contributing reasons is malnutrition, under-nutrition or both, beside the low genetic potential of indigenous animals. Also, adequate supply of nutritive fodder and feed is critical factor impacting the productivity and performance of the animals. Fodder deficit can mainly be attributed to our limitations in increasing the area under fodder crops, limited availability of high yielding improved fodder varieties, lack of quality seeds of improved hybrids/

varieties, poor quality of dry fodder like paddy/wheat straw, changing crop pattern in favor of cash crops etc. Besides, low priority accorded to investment in fodder production, lack of post-harvest management for surplus fodder, poor management of grazing/pasture lands and inadequate manpower and financial support research and extension.

Development of feed and fodder has not received required attention. Its share in total livestock expenditure has hardly ever exceeded 1.0 per cent in the last two decades though feed and fodder scarcity has been a chronic problem in India. The increasing demand for animal food products implies an increased demand for feed and fodder and thereby an intense competition for limited land and water resources between food and feed-fodder crops. It is, therefore, imperative to have a greater focus on feed and fodder research, feed management and feed-processing technologies and their dissemination to livestock producers. Enhancing the production and productivity of forage crops thus becomes critical at the present juncture.

The problem of feed and fodder is more acute in arid and semi-arid environments where crop failure is rather frequent. States like Punjab and Haryana have surplus rice and wheat straw. Unfortunately, considerable proportion of this is currently not being used due to mechanical harvesting resulting in considerable amount going as waste. In predominantly rice-growing states, the adoption of technologies such as urea treatment that improves the quality of rice straw will help address fodder scarcity considerably.

The current estimates of cultivation of fodder crops are about 4-5 per cent of the total cultivated area. The states of Punjab, Haryana and Western Uttar Pradesh have a slightly higher share (7-10 %). Moreover, common grazing lands comprise 3 per cent of the geographical area and are an important source of fodder, especially for landless and small landholders. The grazing lands, on the contrary, have been deteriorating continuously both quantitatively as well as qualitatively. Between 1980-81 and 2008-09, the area under pastures and grazing lands has declined by 14 per cent. In terms of the governmental support strategy to enhance the genetic potential of indigenous breeds, the share of cattle, buffalo and small ruminant development in total livestock expenditure declined from 17 per cent in the early 1990s to 12 per cent in the late 2000s.

In India, around 69 m ha of land is under forest cover, a part of which could be effectively used to grow more productive grasses, shrubs and trees to augment fodder availability. For this, a synergistic approach between the forestry and livestock departments needs to be adopted either for controlled grazing or for dry fodder production. Animals under controlled grazing help in further revival of vegetation. Moreover, the forest departments also need seeds of different grasses with high quality biomass yields. The plantation of trees which have fodder value could be considered under different afforestation programs. For this, the staff of forest department needs to be educated and trained. Hence, an appropriate system for livestock management needs to be evolved through inter-departmental cooperation and proper understanding.

There are a number of non-conventional/underutilized feed/fodder resources that can supplement existing green herbage for the ruminants and other animals under varied management situations. Identification of better technologies and materials for use as resources like Azolla (humid and sub-humid conditions), turnip and fodder beets (intensive management system), spineless cactus (semi-arid and arid conditions) and para grass and coix (water logged conditions) are proving important for livestock use. Many non-conventional feed resources considered as waste can also be used effectively to supplement the existing feed resources. Use of hydroponics, fodder cultivation on field bunds and use of agriculture waste as bioresource for feed could be other possible alternatives.

Constraints and Challenges

Unfortunately, the fodder crop production and improvement have not received due importance. The main challenge is the lack of ownership by both agriculture and animal husbandry departments. Dairy farmers need to be educated about innovations which can enable them to produce more with lesser inputs and help them improve their livelihood. Majority of the livestock farmers are smallholders or landless and require both technical and financial support. Though considerable research has been carried out to identify suitable fodder crops, adopt new varieties, develop efficient cultivation and pasture management practices, rehabilitate degraded and wastelands through introduction of suitable grasses/legumes, manage silvi/hortipastures, improve forage utilization and develop efficient techniques for seed production. Although the importance of silvipastoral farming system is very well recognized in the arid regions to support dairying, there has not been any significant change in the status of forage supply in the country because these research findings/technologies have invariably been adopted to a limited extent. Therefore, a strategic road map is urgently required for improved production and utilization of forage crops for enhanced livestock production.

Non-availability of quality seeds of high yielding varieties (HYVs) and hybrids is indeed a serious constraint. There is an urgent need to enhance production of quality seed of high yielding varieties (HYVs) and hybrids and made available to farmers at reasonable price. Fodder seed banks need to be established to provide quality seed of HYVs/hybrids when needed. Also, to ensure production and distribution of quality seeds, the seed certification standards need to be in place and the seed production need to be properly monitored to ensure quality. Also, a proper mechanism need to be in place to provide adequate subsidy to farmers in order to enable them to produce required quantity of good quality seed of HYVs/hybrids of fodder crops. Availability of quality seeds, adequate short-term credit facilities to cover the operational cost along with required technical trainings can go a long way to augment the fodder production. For this, a revolving fund needs to be established.

Grasslands in our country existed as natural ecosystems are in highly denuded condition due to heavy grazing pressure. Rehabilitation of degraded grasslands for livelihood support especially in hill, semi-arid and arid regions, and also utilization of wastelands with emphasis on range grasses and legumes need to be taken up on participatory basis. Concerted efforts need to be made to make best use of grazing resources available with village panchayats and the wastelands along the railway tracks and on road sides by planting better varieties of range grasses and legumes, and managing these areas for livestock grazing. The silvipasture models/multitier systems (horti/silvi/agro-forestry systems), though have relatively high yield potential, have not been exploited under different types of degraded lands and rangelands which needs to be done. This will not only improve significantly the livelihood of a large number of farmers, but will also pay big dividends in terms of environmental protection. However, the major constraint for implementing the revegetation/restoration program is ownership of the land as huge area is mostly under common property resource. Farmers, without having ownership rights are not interested in using such areas. Hence, peoples' participation together with addressing social values for implementation of such programs is the key to success.

Land use is important for livestock, poultry and fishery production. There are special land use categories for different purposes and there is a great concern for non-availability of adequate land to address the feed and fodder problem faced in livestock nutrition. The carrying capacity of our land mass for human and animal population and food/feed resource availability is posing the greatest challenge. Feed and fodder availability is getting acutely critical for our livestock. The animals are good converter of feed and fodder into milk, meat, wool and eggs. In the absence of adequate feed, the performance of animals is affected adversely. The land use needs to be focused to feed humans, livestock; empower

economy, business, pleasure, wild animals and special use purposes. It is also important that proper land use contributes towards national GDP. The current increasing livestock population and the policy framework under which they operate is leading us to a grim situation where, among other things, feed and fodder limitation impacts seriously our nutritional security.

In India, due to pressure on land, we invariably have only about 4-5 per cent of land for pastures/grazing purpose as against the 41 per cent land used in the US for livestock raising. Brazil has shown that Indian breeds of milch cattle do much better for increased milk production provided more land per animal for pasture grazing along with better feed and management is ensured. There is a sharp difference between US and India regarding availability of land for livestock feeding, land per animal for pasture grazing along with better feed management and efficiency in the feeding system. There is a need for a strong legislation on land use and incentives/reward system so as to encourage forage breeders to develop better varieties of fodder crops rich in protein and other nutrients. Fodder production estimates also need to be updated. Also, there is a need for region-wise focus on land use and livestock development. There is a need for establishing a National Grassland Authority to deal with all aspects relating to maintaining and promoting existing grasslands.

There is a huge gap in the demand and supply of green and dry fodder as well as concentrates. Efforts need to be made for qualitative improvement of feed and fodder resources aiming at better nutritive values. Under these circumstances, dual purpose crops grown for grains as well as fodder need priority attention. Special efforts are required to develop fodder atlas of the country to have the correct estimates of fodder production and enabling policies for better land use planning and increased livestock production.

The Department of Animal Husbandry (DOAH) and Department of Agriculture (DOA) under the Ministry of Agriculture and Farmers Welfare and the Indian Council of Agricultural Research (ICAR) are independently dealing with the subject of fodder and livestock production which creates several operational difficulties. In order to deal with subject holistically, there should be greater coordination and convergence among these departments. The initiatives under the Government Departments and ICAR sometimes do not get adequate support for implementation which needs priority attention. There is a problem of insurance of animals which also needs to be addressed to save the farmers from incurring huge losses in case of death of especially milch cattle. Also, there is no long-term policy on fodder and livestock production which needs to be paid due attention. The issue of linking farmers to markets is also not properly addressed which needs to be done.

The National Livestock Mission (NLM) was created by the Central Government in 12th Five Year Plan on the lines of Horticulture Mission, but the required thrust and strategy for land use planning for livestock intensification is not yet in place. It must be strengthened for rapid livestock and dairy development involving holistic approach. The disconnect between livestock experts and the fodder crops seed producing agencies/departments is a long standing concern which must be addressed and resolved. There is thus an urgent need to restructure the total feed and fodder policy both at the central and state levels through effective land use planning, augmenting the carrying capacity of land and through vertical intensive livestock production. There is also a need for use of foresight, big data and innovative approaches to address the problems relating to forage and feed grain production.

Major Issues in Fodder Production and Utilization

The key driving forces for feed and fodder development in the coming years would be on productivity enhancement, shift to semi-intensive/ commercial production systems and convergence of schemes of the government for livestock and rural development. The forces that may restrict the development are non-availability of sufficient quantity of quality fodder

seeds and lack of appropriate extension services. Shortage of quality seeds of HYVs/hybrids of fodder crops is the main reason of low green fodder yield. The estimated availability of certified/truthfully labeled seed of high yielding improved varieties of fodder crops is far below the estimated annual seed requirement. At present seed replacement rate in fodder crops is less than 20 per cent and higher seed replacement rate is directly correlated with higher yield.

In the absence of reliable data on crop-wise area under different fodder crops, it is difficult to estimate crop-wise/ variety-wise seed requirement. Due to lack of priority of fodder development and dedicated trained manpower in the districts animal husbandry/agriculture departments, there is no long-term vision to focus this activity. Fodder seed production is highly unorganized. Large public sector seed companies are focusing on production of seeds of food crops, while organized private sector seed companies are focusing on high value low volume crops like vegetables, hybrids and GM crops. Private sector also needs to be involved in quality seed production of fodder crops.

The production of fodder seed of old varieties also needs to be replaced with newly notified varieties/hybrids. Also, there is need to follow quality assurance norms strictly, enhance production of certified seed, avoid use of truthfully labeled seeds, strengthen marketing linkages, create strong and popular brands, explore possibilities to market fodder seeds beyond cooperatives and promote seed production. National Seeds Corporation, State Seeds Corporations and other certified seed companies need to think some out of the box solutions like establishing producer companies, market linkage with private sector agencies etc. . Involving ICAR institutions, State Agricultural Universities (SAUs), State agencies, private sector along with farmers' participation in a holistic manner could help in addressing this issue in proper perspective.

Though area under natural grasslands/ pastures/ common property resources are on decline, in some of the regions especially under arid ecosystem, these resources are of considerable importance for livestock keepers. Excessive stocking pressure and degeneration of some important pasture grasses and range legumes has led to decline in biomass productivity from these resources. Currently, village *panchayats* are not much involved in fodder and livestock production but they can play a significant role in fodder production, quality seed production and controlled grazing in rejuvenated pastures.

The manufacturing of compounded cattle feed is by and large with the private sector agencies (both organized and unorganized) and dairy federations. The usage of compounded cattle feed has not witnessed the desired level of growth over the years. The shift of focus towards rearing animals with higher production potentials and the mushrooming of commercial dairy farms is likely to enhance production and consumption of nutritionally balanced compounded feed. The ration balancing programs envisaged in the National Dairy Plan (NDP) would certainly facilitate the dairy farmers in providing a nutritionally balanced feed, which is cost effective to their animals by using feed ingredients available with them and also inclusion of compounded cattle feed.

In order to address the above issues, in the Indian context, a dialogue involving key stakeholders is very much needed, especially when we have the largest number of livestock population. While livestock population has almost doubled since 1951 our area under fodder and pastures has remained almost static over the past few decades. In view of this, a "National Dialogue on Land Use for Integrated Livestock Development" has been planned to be organized by the Trust for Advancement of Agricultural Sciences (TAAS) in collaboration with Indian Council of Agricultural Research (ICAR) and International Livestock Research Institute (ILRI) at NASC Complex, Pusa Campus, New Delhi in October-November, 2019.

Co-Organizers

- Trust for Advancement of Agricultural Sciences (TAAS)
- Indian Council of Agricultural Research (ICAR)
- International Livestock Research Institute (ILRI)

Objectives

- To have an assessment of current land use for forage and livestock production
- To have better understanding on gaps in demand and supply of green fodder, dry fodder and concentrates
- To look at best possible options for efficient land use planning for forage production
- To suggest needed policy reforms to meet both forage and feed requirements.
- To develop future strategy and action plan

Expected Outcomes

- Status of land use for fodder and livestock production assessed
- Information on demand - supply scenario gathered.
- Policy reorientation for efficient land use planning for livestock sector suggested.
- A National Program on augmenting livestock feed and fodder resources formulated and a road map developed for effective implementation under the overall Livestock Mission
- Need for effective coordination examined and implementation of action plan worked out

Participants

Around 200 participants from the national agricultural research system (NARS), private sector, Department of Animal Husbandry and Dairying (DAOH), Central Forest Department, like IIFM, civil society organizations (NGOs, FOs), livestock farmers, entrepreneurs, policy makers, are expected to attend.

Venue

A.P. Shinde Symposium Hall, National Agriculture Science Centre (NASC), Dev Prakash Shastri Marg, Pusa Campus, New Delhi 110012

Dates

1-2 November, 2019 (Exact dates for a 2 days dialogue will be decided in consultation with the co-organizers)