Conservation and Utilization of Grassland Resources for Sustainable Livestock Production in Different Agro-Climatic Zones of India

Om Singh
Ministry of Agriculture and Cooperation and Farmers' Welfare, India

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Dr. Om Singh
Ex. Dy. Commissioner (F&F), Govt. of India
Ministry of Agriculture and Cooperation and Farmers' Welfare , Krishi Bhawan, New Delhi
Email : omsingh1964@gmail.com

Abstract : The competent authority has approved the modifications in the Centrally Sponsored Fodder and Feed Development Scheme (CSFFDS), within the budget provision for the year 2012-13. The modifications are (i) Including a new component of 'Establishment of Fodder Banks' under the CSFFDS within the budget provision, for the financial year 2012-13 (i) The Central share for the component of Establishment of Fodder Block Making Units under the SDFFDS has been increased from 50% to 75% for the financial year 2012-13 for Cooperatives or Milk unions or Federations, and for State Government to facilitate harvesting and storage of surplus fodder in areas where rainfall has been good or where fodder has been grown in irrigated land. From the period 2014-18 livestock mission under Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India is catering the need of livestock sector, under this mission submission on Feed and Fodder development is mitigating the gap between demand and supply of feed and fodder resources in the country. Presently 'Kamdhenu Mission' is functioning towards cattle development in India. In case of first Agro-Ecological Climatic zone-Western Himalaya, cold and with shallow skeletal soils-Agrostis species., *Poa alpine*, *Trisetum spicatum* grasses, *Medicago sativa*/subspecies sativa, m. sativa, sub-species falcuta legumes and *Hippophae rhamnoides* as shrubs for grassland improvement have been recommended. In the Second zone-Western plains and Kaccha Peninsula, hot and with desert and saline soils- *Cenchrus ciliaris*, *C.setigerus* (Sandy plain). *Lasiurus scindicus* (Sandy interdunal plains), panicum turgidum (sand dunes) chloris gayana, sporobolus marginatus (salt affected lands) grasses, legumes – *Cassia rotundifolia*, *Acacia nilotca*, *A.tortilis*, *Albizia lebbeck*, *Ailanthus excelsa*,*Dichrostachys cinerea*, *Prosopis cineraria*, *Ziziphus nummularia*, *P.juliflora*, *Salvadora oleoides*. *S. Persia* (saline soil) shrubs and trees are suitable. For Deccan plateau, hot and with red and black soils third important agro-ecological region grasses *Andropogon gayanus*, *Chrysopogon fulvus* (red soil), *Dichanthium annulatum*, *Bothriochloa intermedia* (black soil); legume Clitoria ternatea, *Stylosanthes hamata*, *S.scabra* and shrub/trees *Acacia nilotica*, Albizia amara, *A.lebbeck*, *Desmanthus virgatus*, *Leucaena leucocephala*, *Tamarindus indica* are found productive.

keywords: fodder bank, regional stations, demand, national mission

Introduction: The small marginal farmers own only 44% of the agricultural land while they own over 80% livestock assets. Livestock is perhaps the best and most available asset to enhance farmers income due to higher availability of the livestock as compared to land as an asset for income generation. Besides, over the years, land holdings in India have become smaller and fragmented. According to the 2010-11 Agriculture Census, 47% of land holdings had become less than half a hectare in size. Niti Ayog (2015) emphasized on shift into commodities, have indicated

that an important challenge in the development of animal husbandry concerns fodder availability. Also necessary is greater coordination between agencies responsible for livestock and those for production of crops that produce fodder.

Estimates of demand and supply

The overall productivity of livestock has been low in the past, because of inadequate nutrition from green fodder, along with dry residue and protein concentrate. As per NIANP-ICAR (National Institute of Animal Nutrition and Physiology under ICAR) estimate, there is a shortage of up to 36% of green fodder and protein concentrates besides up to 23% shortage of dry fodder. The green fodder shortage is due to the impact of dwarf high yielding cereals crops apart from encroachment of over 10 million hectares of pasture land with poor replacement by agriculture land.

Regional imbalances in fodder availability

The pattern of deficit varies in different parts of the country. For instance, the green fodder availability in Western Himalayan, Upper Gangetic Plains and Eastern Plateau and Hilly Zones is more than 60% of the actual requirement. In trans Gangetic Plains, the feed availability is between 40 and 60% of the requirement and in the remaining zones, the figure is below 40%.

Ongoing program of DADF (Department of Animal Husbandry, Dairying and Fisheries)

The DADF, Government of India is implementing Centrally Sponsored Schemes for feed and fodder development in the country.

Role of Regional Fodder Stations

Regional Fodder Station has an area of 600 ha of which 29% area is under irrigation. Now, the Regional Stations of DADF are reasonably producing Foundation Seeds of desired variety and supply to States who fulfill their foundation seed needs for its further multiplication and distribution as certified/quality seeds in the form of mini kits. Earlier the Regional Fodder Stations produced seeds which were directly sold/distributed as a mini kit to farmers and to the States. These stations are producing seeds of seasonal crops like oats, maize, sorghum, bajra, cowpea and perennial grasses. The seeds production is around 500-600 tons annually as a Foundation Seed and Truthfully Labeled Seeds. Analysis of the data of fodder Station indicate only a few states have procured the Regional Fodder Station's foundation seeds. The Regional Fodder Stations namely Bangalore and Kalyani have argued distribution of seeds to the States are more suitable in the form of mini kits for its procurement. The grasses which are very precious and farmers procured seeds within a week during the season in small quantities packets/kits for cultivation.

Regional Station for Forage Production And Demonstration, Kalyani

Livestock population is a part and parcel of the rural community. Therefore, livestock improvement through nutritional development is utmost important. In India there is a considerable gap between fodder requirement and availability. The demand for fodder has further increased due to the introduction of a cross breeding programme of cattle in a large scale. There are certain limitations, which are responsible for lack of fodder development work.

1. Lack of awareness about fodder cultivation and their proper utilization.
2. Non utilization of unconventional areas like watershed areas, cultivable waste land, shed of forest land and orchards etc.

3. Non organized training programme on 1st hand latest fodder production technologies for the farmers.

It is directed to convey that in view of the drought situation in many parts of the country, the following modifications in the Centrally Sponsored Fodder and Feed Development Scheme (CSFFDS), and the National Mission for Protein Supplements (NMPS), for the areas notified as drought affected:

(i) Including a new component of 'Establishment of Fodder Banks' under the CSFFDS within the budget provision,

(ii) The Central share for the component of 'Establishment of Fodder Block Making Units' under the CSFFDS has been increased from 50% to 75% for Cooperatives / Milk Unions / Federations, and for State Governments to facilitate harvesting and storage of surplus fodder in areas where rainfall has been good or where fodder has been grown in irrigated land.

(iii) Provision for feed concentrates to the cattle at the rate of 1 Kg per cattle per day, at a subsidized rate to the extent of 25% - 50% of the cost (as would be decided by the State Government) under the National Mission For Protein Supplements (NMPS), within the existing allocation under NMPS for 2012-13 in respect of areas which are notified as drought affected during 2012-13.

(iv) Providing assistance for feed and feed supplements for goats and sheep under NMPS for the current financial year, in the areas notified as drought affected during 2012-13.

New Component of 'Establishment of Fodder Banks'

The Centrally Sponsored Scheme on Fodder and Feed Development does not provide for establishment of fodder banks. Some of the States may establish fodder banks to meet the requirement of livestock in areas notified as drought affected. The fodder banks will facilitate procurement and storage of fodder from surplus areas or areas where rainfall has been satisfactory, and this fodder can be distributed to cattle camps and deficient areas. Therefore, the component of 'establishment of fodder banks' has been included in the Centrally Sponsored Fodder and Feed Development Scheme for the current year to meet the situation on account of drought in the Kharif. The cost of establishment of a fodder bank may vary depending upon the availability of fodder and crop residues, location, capacity of the fodder block making machine and other machinery, etc. However, in order to reduce the cost, low capacity tractor mountable fodder block machines should be used as far as feasible.

The guidelines with respect to the component of 'establishment of fodder banks'

The component of establishment of fodder block making units, which is a part of the Centrally Sponsored Fodder and Feed Development Scheme, provides for 50% Central share, limited to Rs. 42.50 Lakh, which is half of the estimated cost of the Unit of 50 MT per day capacity. To encourage greater use of fodder blocks and establishment of fodder banks, the central share has been enhanced to 75%, for those units which are established by Cooperatives / Milk Unions / Federations or by the State Government directly. Accordingly, for establishing fodder block making units of 50MT capacity, the Cooperatives / Milk Unions / Federations, or the State Government may avail assistance of 75% of the actual cost as Central share. The maximum Central share for 50MT/day capacity fodder block making unit for Cooperatives / Milk Unions, Federations and State Government will be Rs. 63.75 lakh which is 75% of the cost of such a unit. For private individuals

/ entrepreneurs, the central share will remain 50%, with a maximum ceiling of Rs 42.50 lakh for 50MT / day capacity.

Objectives:

(i) Preservation/storage of surplus fodder to meet the nutritional requirement of livestock in deficient areas over the period till June 2013.
(ii) To stabilize the price of fodder and keep the supply intact in problematic areas.

Salient Features

(i) The States/State implementing agencies will arrange for growing/harvesting and procurement of green fodder under a buy back arrangement, procurement of dry fodder, creation of infrastructure for storage of green/dry fodder and machinery for harvesting, bailing, densifying, and transportation of fodder
(ii) The seeds of fodder varieties/dual purpose varieties will be provided to the farmers for sowing in the area wherever it is possible, with a buy-back arrangement of green fodder. The fodder thus produced will be procured by the State/Implementing Agencies at pre-decided remunerative prices as would be decided by the State Government.
(iii) The fodder will be temporarily stored through silage or by making fodder blocks, and supplied to the needy farmers on a cost plus basis. The sale proceeds can be used for continuing procurement of green fodder for sustaining the fodder bank, which should be operated through a separate bank designated account by the implementing agency.
(iv) State Governments / implementing Agency would submit an appropriate project proposal for consideration of the DADF. Cost of land should not be included in the estimate. Cost of temporary platforms and low-cost covers can be included to facilitate storage of fodder for limited periods.

Pattern of financial assistance

(i) One time grant 100% Central Assistance will be provided as per the requirement of the State / Implementing Agency.
(ii) Implementing Agency will assess the fodder seed requirement

Regional Station for Forage Production and Demonstration, Kalyani

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Yields of seed (q/ha) :	Results of Coix [illegible] Practices
Name of the crop	Coix
Botanical name	Coix aquatica
Family	Gramineae

Varieties	Local
Soil	Loam to sa[illegible] logging condi[illegible]
Sowing time	May-August
Field Preparation	3-4 ploughing
Seed Rate (kg/ha)	30-40
Spacing	45cm x 30cm
Fertilizers (N : P : K kg/ha)	100 : 50 : 30
Irrigation	As per required
Top Dressing urea	150 kg/ha
Harvesting of Green Fodder	60-75 days after sowing
Harvesting of Seed	120 days after sowing
Green Fodder Yield (Qtls/ha)	300-400
Yield of seed (Qtls/ha)	6-8

Conclusion : *The country is the largest producer of milk in the world (19% of world's milk production) targeted to produce 300 million ton by 2024. In fact, the contribution of feed and fodder is upto 50% towards livestock productivity and production. The cereals crop residues i.e. wheat, rice and coarse cereals straws/hay contribute about 71% of overall feed resources used for animal feeding green fodder 23% and concentrated feeds accounts 6% only. India has only 2.29% of the total land area of the world and hosts 17% of the human population and 11% of the total livestock population of the world. The area under Fodder production in India is stagnating at 4% of the gross cropped area for the last four decades. New Component of Establishment of Fodder Banks has been included in the Sixth five year plan.*

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