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Fodder Management during El Nino: Preparedness, Conservation and Sustainable Solutions

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Figure: Fodder production Unit at ICAR-RCER, Patna

Ensuring adequate and nutritious fodder for livestock throughout the year is becoming an increasing challenge amid climate change and growing seasonal uncertainties. Climate events such as El Nino can aggravate this situation by altering rainfall patterns and increasing the likelihood of high temperatures, drought and prolonged dry periods. These conditions can reduce green fodder availability, pasture growth and fodder-crop productivity, thereby affecting livestock production. The challenge is particularly important in India, where livestock feeding depends substantially on seasonal green fodder, crop residues and grazing resources. India already faces a significant fodder gap, with recent ICAR–IGFRI assessments indicating about 11% deficit in green fodder and 23% deficit in dry fodder. This gap appears widen during drought and prolonged dry periods as a result of declining fodder production and pasture growth and thereby increase dependence on conserved fodder and crop residues. Therefore, fodder security is not only a question of quantity, but also of timely availability, nutritional quality and accessibility at the farm level. Under El Nino conditions, moisture and heat stress can further reduce biomass production and degrade grazing resources. This calls for a proactive fodder management approach based on advance planning, conservation of surplus fodder, efficient utilization of crop residues, climate-resilient fodder production and balanced feeding to sustain livestock productivity and strengthen the resilience of farming systems.

Key Fodder Management Strategies during El Nino

1. Conservation of Surplus Fodder: Excess green fodder during favourable periods should be conserved as silage and hay. Maize, sorghum and suitable forage grasses can be used for silage, while grasses and legumes can be dried and stored as hay. Proper harvesting, drying and storage help retain feed quality. Maintaining conserved fodder reserves can ensure feed availability during dry periods, reduce pressure on grazing resources and lower dependence on costly purchased concentrate feed.

2. Efficient Utilization of Crop Residues: Rice and wheat straw, maize stover and pulse residues become important feed resources during fodder scarcity. Instead of burning or wasting these

materials, they should be collected, stored and efficiently utilized. Chopping reduces wastage and improves intake, while suitable urea treatment and supplementation can improve the digestibility and feeding value of poor-quality straw. Better crop-residue utilization also strengthens crop-livestock integration and nutrient recycling.

3. Climate-Resilient Fodder Production: Drought- and heat-tolerant fodder crops and varieties with lower water requirements should be promoted. Diversification reduces the risk of complete fodder failure, while cereal-legume combinations such as maize + cowpea can provide higher biomass with improved nutritional quality. Short-duration fodder crops can be fitted into available cropping windows, while fodder can also be grown on field boundaries, bunds, homesteads and other suitable areas. Timely sowing, moisture conservation, mulching and efficient irrigation can further improve fodder production under El Nino conditions.

4. Fodder Trees and Alternative Feed Resources: Fodder trees and shrubs such as Subabul, Gliricidia, Sesbania, Acacia and Moringa can provide a reliable source of green biomass and protein, particularly during dry and fodder-scarce periods when seasonal fodder crops and pastures become less productive. These perennial species can be integrated along farm boundaries, field bunds, homesteads and in silvopastoral systems, providing additional fodder without substantially reducing the area available for food crops. Their deep root systems enable them to utilize moisture from deeper soil layers, helping maintain fodder availability for longer periods under drought and El Nino conditions, when shallow-rooted seasonal fodder crops may experience greater moisture stress. Strategic integration of fodder trees with grasses and legumes can therefore provide a more continuous and diversified source of fodder throughout the year, while reducing dependence on seasonal fodder production.

5. Fodder Banks and Advance Preparedness: Village-level and community fodder banks can provide an effective buffer against El Nino-related shortages. Hay, straw and silage can be collected and stored during periods of abundance for use during critical periods. Farmers should estimate feed requirements, maintain minimum fodder reserves, identify alternative feed resources and use seasonal weather forecasts for planning. Fodder preparedness should also form part of district-level drought contingency plans, particularly in vulnerable areas.

Conclusion: The long-term approach should be to shift from reactive fodder relief to proactive fodder security. Greater emphasis is required on drought-resilient fodder crops, cereal-legume mixtures, fodder trees, residue enrichment, silage and hay conservation, balanced feeding, efficient water use and community fodder banks. Fodder quality and nutritional balance should receive equal attention along with quantity. El Nino may intensify fodder shortages, but its impact can be substantially reduced through timely preparedness and efficient use of locally available resources. An integrated climate-smart approach combining production, conservation, diversification, efficient utilization, recycling and advance planning is essential for resilient and sustainable livestock-based farming systems.