

Transforming Livestock Feed and Nutrition Sub-sector in Tigray Region, Ethiopia

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1. BACKGROUND AND RATIONALE

Tigray region is endowed with huge livestock population, diverse animal genetic resources and diverse agro-ecologies suitable for different livestock production systems. In line with this, the regional government has set a target for livestock sector in terms of increasing production and productivity and thereby contributing to poverty reduction, attainment of food and nutrition security, income growth and foreign exchange earnings. However, the potential of the sector has not been fully exploited and the contributions achieved so far have been much below the potential. The low productivity level of livestock is the result of several factors. Among which shortage of feed supply, low quality of available feed and poor feeding system play a major role.

Livestock feed and nutrition sub-sector is central for all livestock commodities and is a key pillar of livestock growth and transformation from various perspectives. From production point of view, animal production is essentially a conversion of feed into animal product. From economic point of view, about 70 percent of the cost of animal production is feed cost suggesting economic feasibility of animal agriculture is mainly a function of quantity of feed, quality of feed and the science of feeding. Additionally, animal feed is a point of convergence and critical commodity which all livestock production competes for and it is a major pillar towards ensuring economic, social and environmental goals of livestock production at a macro level (Makkar, 2016).

Thus, the development of feed resources and their efficient utilization demands a clear strategy that guides the proper way of feed production, management and utilization to make the feed sub-sector a marketable commodity which could have a positive impact in attaining growth and transformation of the livestock sector.

2. APPROACHES USED

The present document is the outcome of draft regional livestock feed and nutrition road map prepared jointly by Tigray Agricultural Research Institute and Mekelle University through the initiative of Global Society of Tigrean Scholars (GSTS). The document undertook comprehensive situation analysis, identified strategic objectives and intervention areas for action. Information were obtained through reviewing various relevant literature, key informant (expert opinions) and GSTS conference inputs.

3. MAJOR CHALLENGES OF THE LIVESTOCK FEED SUB-SECTOR

The regional feed resources development over the years have been faced with a number of challenges. The existing challenges can be broadly categorized into two main challenges as: production constraints and lack of enabling environment.

Based on the situation analysis undertaken, the major identified production challenges which need action are: shortage of feed supply, low quality of available feed resources and poor utilization and feeding systems and poor feeding practices. Recent study by Makkar (2018) indicated that based on potential availability (feed availability and animal requirement), the annual percent feed balance as dry matter (DM), crude protein (CP) and metabolizable energy (ME) for Tigray region is found to be deficient by 17.4 % of dry matter while the ME and CP deficiencies are 50.9 and 48.6 %, respectively, suggesting lack of good quantity and quality feeds in the region. Moreover, various studies (Teferi et al, 2013; Gebremeskel et al, 2013, Yayneshet, et al, 2016) indicated that from the potential feed available in the region significant

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amount of feed is wasted due to various reasons. Surplus feed availability in some areas such as the Western and North-western zones resulted in paramount feed wastages. Furthermore, significant amount of feed is wasted due to poor management and utilization during collection, storage, feeding etc. As a result, the annual regional feed deficit could exceed much more than the values pointed by Makkar (2018).

Enabling environment refers to interventions related to marketing issues (i.e., market information, marketing infrastructure and marketing linkages, etc), service delivery system (inputs, credit, insurance, knowledge, transport, research and extension services, etc), physical and human resource as well as strategies, policies, regulations, inter-organizational linkages and institutional arrangements relevant to livestock feed and nutrition. The major challenges pertain to weak institutional capacity and investment; weak and/or absence of tailor made extension and market information systems; weak vertical and horizontal value-chain integration for livestock feed marketing; low availability of inputs and small scale machineries; lack of sustainable feed supply systems in the drought prone areas and lack of well-articulated enabling policy and regulatory frameworks. Moreover, the existing livestock feed research and extension service delivery system has been mainly focused at production level with limited attention given to constraints across the feed value-chain such as input supply, storage, processing, marketing etc; as well as limited attention to organizational, institutional and policy issues having implication on livestock feed development sub-sector.

4. STRATEGIC OBJECTIVES AND ACTIONS

Following the situation analysis, three strategic objectives have been developed. These strategic objectives and actions areas developed to address the objectives presented below:

Strategic Objective I. Enhancing the supply, quality and safety of livestock feed

- Manage temporal & spatial variability in feed supply by identifying and using appropriate feed management, conservation and processing measures.
- The conversion of free grazing areas into enclosures and/or exclosures or zero-grazing areas that will lead to better management of grazing lands which in turn is crucial for better quality feed production.

- Promote improved feed management practices to enhance the supply and feeding value of grazing resources which includes: over sowing with legumes and local grass species; use of urea, lime and sometimes DAP fertilizer; clearing bush and weeding in such pasturelands; practice supplementary irrigation of pastureland from the existing water sources.
- Using appropriate techniques to mitigate wastage of feed during harvesting, collection, transportation, storage, and preservation as well as minimizing trampling & contamination effects during feeding.
- Exploiting underutilized feed resources, such as forage resources in area closures/exclosures and open grazing areas; forage in communal rehabilitated gullies; surplus grasses/legumes and crop residues particularly western & north-western zones of Tigray region; and the available cactus resource.
- Promoting physical, chemical and biological treatment of feeds to enhance the feeding value and utilization of roughage feeds.
- Introduce different forage development strategies considering the different contextual settings in the ground, such as: crop forage integration (both under rain fed and irrigation system); inclusion of proper forage species in the irrigation schemes like planting forage materials along the irrigation canals; integrating forage development activities along the natural resource management and watershed schemes; planting fodder trees and tree legumes along the farmstead; and backyard forage development practices.
- Introduce nutritious forage grasses, herbaceous legumes and trees adaptable to all agro-ecologies and farming systems/niches as well as capacitate farmers' knowledge about management and utilization of introduced forage crops including proper time of harvesting.
- Creating awareness on handling of feed ingredients and compound feeds through using appropriate storage methods, which can help to extend the feeding value of agro-industrial by-products for long time without losing quality and/or deterioration?
- Awareness creation of livestock producers to use compound feeds for livestock through different techniques such as demonstration.
- Develop strategies to efficiently utilize agro-industry by-products e.g. use of: a) dryers for increasing shelf-life of brewer grains, and b) molasses tanks for storing molasses for use as animal feed, among others.

- Capacity building of compound feed producers on ration formulation and good manufacturing practices. Mixing different proportion of different agro-industrial by-products to fit with animal performance demands for a particular purpose might induce better benefit.

Strategic Objective II. Commercializing feed business:

- Commercializing feed business is new avenue and opportunity for job creation. This requires actions that encourage the private sector to be involved in commercial feed business (multi-nutrient block production, premix production, bone & meat meal manufacturing etc). Actions and policies that encourage & promote investment in agricultural mechanization and promotion of fodder production as a cash crop is crucial.

Strategic Objective III. Creating enabling environment:

- Formulating enabling policy frameworks which includes institutional capacity and investment frame work; policy that encourage value addition of exportable grains and oil seeds; and public private partnership frame work to encourage feed industry; “binding” legislation and regulatory frameworks for coordination and monitoring of regional feed and nutrition interventions; enforcing feed quality & safety regulation & inspection guideline; land use regulation that protect grazing lands; institutionalizing forage seed system, input supply system, regional feed inventory system; enhancing institutional capacity and investment such as establishment of regional feed quality control laboratory, establishment of regional feed and nutrition laboratory, and forage germplasm centers.

5. CONCLUSION

Results of the present study indicated that there is short supply of feed both in terms of quantity and quality in the region. Therefore, the development of feed resources and their efficient utilization demands a clear strategy that guides the proper way of feed production, management and utilization to make the feed sub-sector a marketable commodity that could have a positive impact on livestock production. Better chance of success in transforming livestock feed development in Tigray could be realized through understanding of the context of livestock production system across various agro-ecological zones, production systems, social groups, across commodities, along the whole value chain as well as institutions and policies. Deep understanding of the

contextual factors that facilitate or hinder technology uptake will help to identify appropriate technological, organizational, institutional and policy options to facilitate market-driven and knowledge based livestock development in the region.

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