

Producing nutritionally rich fodder

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Nutritionally rich fodder is important for the development of livestock. To ensure efficiency in fodder production and thus obtaining maximum profit of livestock, following points of fodder need to be considered essentially: (i) forage dry matter yield, (ii) forage quality, (iii) seasonal distribution of forage production, (iv) forage utilization, (v) stability or resistance of pasture, and (vi) economics of production. Therefore, Animal Nutrition Division of ICAR-Barapani has been carrying out productivity improvement of different livestock and poultry species through nutritional evaluation of indigenous fodder for the past many decades in North East Region. The 'pasture grasses' and 'cultivated fodder' must be palatable. Yield high dry matter (DM) and nutrient value such as crude protein (CP), high digestibility, high resilience that can withstand bad climatic conditions like drought and rain or flood etc, should also be taken into consideration.

Speed Read

- Nutritionally rich fodder is important component of livestock development.
- Most of the land in NEH region is acidic i.e., with a low pH. The acidic pH is not suitable for growing grass especially the legumes.
- Non-leguminous fodder- job's tear, bajra, jowar, maize, and oats are being grown in the climatic conditions of Meghalaya.
- Leguminous crops- Soybean, ricebean, cowpea, stylo, berseem and lucerne could provide best quality fodder.

Important plant species of fodder/pasture are: Guinea grass (*Panicum maximum*), Napier grass (*Pennisetum purpureum*), Para grass (*Brachiaria mutica*), Congosignal grass (*Brachiaria sp.*), Setaria grass (*Setaria phacelata*), Star grass (*Cynodon plectostachyus*), Broom grass, Centro (*Centrosema pubescens*), Stylo (*Stylosanthes guyanensis*), Kudzu (*Pueraria phaseoloides*), Subabul/Ipil-ipil (*Leucaena leucocephala*), Parrari, Job's tear, Hybrid

napier, Maize, Jowar, Bajra, Teosinte, Oats, Lucerne, Berseem, Soybean, Cowpea and, Ricebean etc.

Fodder Production

On the onset of dry season, land preparation is done by clearing all, timber, tree stumps, roots. If the area is waterlogged, trenches should be dug to drain off the excess water, while, if the area consists of small mounds and hills, it should be levelled and terraced. Land

preparation can be done mechanically for large areas, but for small areas, manual labour may be used. It can be done by ploughing, dicing /loosening and harrowing. Ploughing is aimed at breaking down the earth, turning over the soil completely to expose the roots of plants and weeds to the sunlight.

The time period required between the two stages of ploughing is approximately 2- 4 weeks depending on the weather and land to ensure complete exposure of the soil containing pests and roots to the sun and to provide ample time to soften and loosen the soil to get a good texture. Breaking the soil is aimed to break large pieces to smaller pieces; usually done with a disc harrow at least 2-3 weeks after



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alternate ploughing. Since most of the land across the NEH region is acidic, lime is applied to get rid of soil acidity. The quantity of lime application depends on the soil pH and it should be used as per the recommendation. About 1 tonne per acre of lime is required for an expected rise in pH of 0.5. Liming is done immediately after land preparation, or could be done concurrently during soil rotation i.e., 2 weeks before the sowing/planting. Liming could be done using a spinner broadcaster or by hand. Workers should wear nose and mouth masks/towels to escape from respiratory problems.

Fig 1-4 Cultivation of sweet potato under terraced hilly slopes, Perennial groundnut (Arachispintoi) fodder under the tree shed, Improved perennial grasses, bajra (pearl millet), and cowpea as fodder in terraced at ICAR Farm Barapani.

“The pasture grasses and cultivated fodders must yield all time high dry matter (DM) and nutrient value especially crude protein (CP) contents, high digestibility, high resilience that could withstand bad climatic conditions like drought and rain or flood,” said Dr. Pramod Singh, Senior Scientist at Animal Nutrition division of ICAR-Barapani.

Planting/sowing

Planting of grass is done during early rainy season when optimum moisture level-essential for effective germination and growth of fodder- is high. For waterlogged area, draining off excess water is required. Proper seed rates or plant distance must carefully be taken into consideration as these factors determine good growth and density and prevent weed growth. If the percentage of germination is good, the quantity used may be reduced and vice versa. In a mixed pasture, generally the proportion of grass to legumes should not exceed 40%.

Harvesting pasture & fodder

Depending upon the factors like fodder species and soil fertility, the time of first cutting or grazing may be determined. A too early cutting/grazing would affect the growth of grasses due to the weakening of the root system. Generally, it could be done a few days before flowering appears. Nonetheless, flowering stage is a good sign to determine the time for cutting as fodder nutrient status reaches its optimum. Subsequent cuttings may be taken at appropriate stages when grasses reach a much higher optimum level compared to freshly grown grass. In some cases, early first cutting of fodder allows rapid growth with higher number of shoots to ensure higher forage production.

Application of fertilisers

Fertiliser may be organic or chemical types and fertilisation may be used as initial and/or maintenance. The basic aim of application of fertilizers is to increase/replenish the availability of nutrients like NPK. Fertilisers- needed to replenish nutrients like NPK- are needed for continuous higher yield of quality fodder. Initial fertiliser use is aimed at encouraging root establishment, healthy and strong growth during the planting. The chemical fertilisers like urea, DAP, MOP and triple super phosphate provide much required soil nutrients like nitrogen, phosphorus and potash.

The recommended dose of fertiliser for pure grass (not mixed with legumes) depends upon the soil conditions and generally it is- N: P: K= 60:30:30 i.e., nitrogen-60kg, phosphorus-30kg and potash-30kg/ha. For mixed pastures of grasses and legumes, it is emphasised that liming is necessary and must be used to correct the soil pH. Fertilisers may be applied once, or several times at a certain rate however fertilization after each cutting or grazing is recommended. The use of farm yard manure or recycling of animal wastes and sludge may greatly be encouraged as it seems economically viable.

Moreover, ICAR-Barapani is also growing Broom grass (*Thysanolaena maxima*) and Parari (*Schefflera wallichiana*) and Exbucklandia (*Symingtonia populnea*) plants for fodder purposes in the winter season, when fodder scarcity is rampant across NEH region.

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