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Session 115: Important pasture and forage legume crops in India, seed requirement and production

Introduction

Grassland is all grassy vegetation (pasture, savanna, extensive grazing lands, open woodland, rangeland); it is the main source of forage, the chief herbaceous feed for domestic and wild herbivores

UNESCO (1979) defined grassland as land covered with herbaceous plants with less than 40 percent tree cover

Natural grassland or Rangeland is grazing land consisting of native or unimproved species, whose management is restricted to grazing, mowing, burning and woody weed control

Savanna is wooded grassland with up to 40 percent tree cover

Sown pasture is forage sown for grazing, usually for a duration of several years. It is important in commercial, arable farming systems and must be economically competitive with other crops, at the farm system level. It often forms part of an arable rotation in mixed farming systems

Fodder crops are grown on arable land and harvested as a whole crop for livestock feed. Many are also field crops, cereals and pulses, others are specialised fodders. Fodders are only grown where they are economically competitive with field crops

Forage crops and Pastures defined as the edible parts of plants, other than separated grain, that provide feed for grazing animals or that can be harvested for feeding (Allen et al. 2011)

Importance of pasture and forage legume crops

Forage crops and pastures provide the bedrock to sustainable agriculture

Forage crops and pastures provide feed for grazing animals

Forages play an important role in Nebraska's beef cattle industry, while also enhancing crop diversity, wildlife habitat, and soil ecosystem services

Carbon sequestration is a leading issue in agriculture right now--and pasture is a natural carbon storage facility that can maximize carbon storage due to the stability of the cropping system-mostly grasses

Pasture and grasses in general improving soil properties such as soil structure, infiltration rate, organic matter, and the soil environment

Legumes are important for the high quality of their forage and their ability to fix atmospheric N, through symbiotic bacteria in their root nodules

Seed requirement

Propagation of improved fodder production technologies specially the improved varieties has not reached to the farmers mainly because of the non-availability of good-quality seeds

The availability of good-quality seeds is estimated to be around 15-25% only for cultivated fodders

The productivity and availability of seed are vital because the fodder crops have been bred for enhanced vegetative potential and as such they are shy seeders with very low seed productivity

Presently, the seed demand of cultivated forages, range grasses and legumes are increasing tremendously

Recent estimates put the current demand for seeds of cultivated fodders at 355,000 tonnes/annum based on the area under cultivation (8.3 million ha) and a target replacement rate of 10%

The seed demand of *Chrysopogon fulvus*, *Pennisetum pedicellatum*, *cowpea*, *berseem*, sorghum, and oat is increasing

Berseem, cowpea, sorghum, oat and *Panicum maximum produce higher seed in central tropical areas*

Therefore, concerted efforts required in this direction so that available technology could be passed on to the forage and seed producing agencies and also to farmers for their eventual use in augmenting forage resources

Need for seed production

With the development of improved and high-yielding varieties in forage crops, it has been realized that truthful labelled (TFL) and certified seed should be supplied to the farmers

Shortage of improved technologies in the field of seed production of forage crops will have to be overcome by launching a participatory seed production programme

Sorghum, maize, cowpea, *guar (clusterbean), pearl millet, berseem, oat and lucerne are the* important cultivated fodder crops and *Cenchrus, Panicum, Pennisetum, Brachiaria, Chrysopogon, stylo, etc. are the important rangeland species covering the large acreage* under forage cultivation, hence the demand of quality seed of these crops is increasing day by day

Reasons for low production of seed in forage crops

(i) Low priority of crops leading to poor allocation of resources and area,

(ii) Non-availability of quality/ certified seeds,

(iii) Indeterminate growth habit coupled with non-synchronous maturity resulting in higher cost in collection of seeds,

(iv) Low seed productivity due to crops being basically bred for herbage and the crop being harvested at vegetative stage and not allowing to reach to seed stage,

(v) Low seed production due to seed dormancy, seed shattering, blank/empty seeds,

(vi) Low multiplication ratio in most of the fodder crops which is often not remunerative to the producing agency,

(vii) Lack of organized seed outlets for marketing and uncertainty of seed demand,

(viii) Poor extension machinery responsible for inadequate popularization of improved varieties, and

(ix) Lack of policy support

Advantages of forage crops in agriculture

Forage crops having grass root systems which can improve the organic matter content of the soil

Forage crops contain rich in vitamins, fiber and proteins that enhance metabolic activity of the animals

Forage crops are rich in minerals which helps poultry for bone, eggshell formation, fluid balance and in hormone production

Enhance seasonal distribution of forage production throughout the year to complement warm-season perennial grasses

Forage crops reduce weed development

It reduces soil erosion

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