

## Forage Crops: Bedrock to Sustainable Agriculture

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### **Abstract**

Forage is the connection of both Agriculturist as well as veterinary field. The fodder development in the country is the necessity to feed the animals properly. There is need for accelerating production and effective utilization of fodder through promotion of comprehensive fodder production, conservation and utilization programme for enhancing the availability of fodder throughout the year. Establishing backward and forward linkages with different stakeholders. Focused R&D in prioritized areas of concern in fodder variety, technologies, seed production and feed management. Promotion of opportunities in commercial venture of fodder production and utilization, entrepreneurship development in fodder, silage, densified bales, feed pellets, feed block, fodder seed pelleting, etc

Forage crops provide the bedrock to sustainable agriculture. Defined as the edible parts of plants, other than separated grain, that provide feed for grazing animals or that can be harvested for feeding forages play an important role in beef cattle industry while also enhancing crop diversity, wildlife habitat, and soil ecosystem services.

### **Introduction**

Forage crops can be an important tool for producers, provided the right crop is selected careful management is required to ensure that the crop is fully utilized in its most productive and nutritious phases of growth. Pests and diseases must also be managed to minimize their impact on productivity. A well-considered grazing strategy is important in maximizing the productive potential of a fodder crop. Forage crops can either be grown exclusively for hay or silage production or grazed before being set aside for fodder conservation. The timing of both grazing events and the cutting for hay or silage are critical to ensuring that the quality and quantity of conserved fodder are optimized.

### **Different types of forage crops:**

**Forage crops can be divided into**



- **Annual forage crops:** In annual forage crop, establishment of seed is easier due to germination, growing and maturation in one growing season.
- **Biennial forage crops:** biennial forage crops requires two growing seasons, in first season vegetative growth will occur and in second growing season flowering will occur.
- **Perennial forage crops:** perennial forage crops can sustain for more year and can go dormant for short time and then initiate germination from crowns, rhizomes etc.

#### **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.

#### **Forage crops are used as different products**

- Delight forage
- Nitri feed forage
- Jumbo forage
- Jumbo gold forage
- Makkhan grass forage
- Sugargraze forage

#### **Forage and fodder crops**

Forage and fodder crops include forage sorghum, pennisetum, millet, lablab, cowpeas, soybeans, grain sorghum and maize. Sowing time is vary of different crops factors such as soil type, drainage, weeds and disease may also need to be considered. The agronomy and management used can have a greater influence on the crop productivity than the variety chosen.



Pasture and grain legumes can be sown to produce high yielding forage crops which are later conserved in spring as either silage or hay. The species selected and the timing of the cut will have a large influence on both the yield and quality of the conserved fodder. This Prime fact describes the change in yield and quality of a large range of legume species, oats and ryegrass cut at three different stages of maturity. Values are provided for both pure swards and mixtures of legumes and oats and ryegrass.

### **Forage breeding**

The objective of plant breeding is to improve the plant species. For forages, breeding objectives include higher yield, higher quality, greater vigor and persistence, resistance to pests, and greater tolerance of climatic and soil conditions. These traits are specific and can be measured. Within a few growing seasons, success can be determined. Improvements in yield can most easily be demonstrated. Breeding for higher quality is more difficult to measure. It requires laboratory analysis or animal feeding trials. Pest resistance testing is also difficult, since it requires exposure of the new cultivar to the pest in field or greenhouse studies. Tolerance of varied climate and soil conditions is evaluated by multiple location experiments.

Forage producers are interested in reducing costs. Increased yields, improved persistence, and higher quality will increase profitability. Tolerance of climatic and soil factors and pest resistance are more helpful in certain locations and circumstances. Water use efficiency and drought resistance is important in many parts of the world. Irrigation systems are expensive and competing demands for water are now common between urban and agricultural needs. Forage managers must carefully look at their operations and determine which plant characteristics will have the most impact on reducing costs while yielding maximum benefits.

### **Major fodder crops grown in India**

**Kharif** - Bajra, Jowar, Maize, Cowpea, Gwar etc.

**Rabi**- Berseem and Oat

**Zaid** -Sudan,Chari, Maize, Cowpea etc.)

### **Varieties**

**Bajra**- NDFB-2/ Narendra Chara Bajra-2, NDFB-3/Narendra Chara Bajra-3, NDFB 5/Narendra Chara Bajra-5, NDFB 11/Narendra Chara Bajra 11,



**Oat-** NDO-1/Narendra Jayee-1, NDO-2/Narendra Jayee-2, NDO 10/Narendra Jayee 10, NDO 711 /Narendra Jayee 711, NDO 1101 /Narendra Jayee 1101.

### **Conclusion**

One of the greatest challenges for the next generation of forage crops will be the development of cultivars that can either resist the negative impacts of climate change or adapt to changing environments. Diverse populations of many forage species are available and capable of responding with natural selective shifts in response to soil acidity, heavy metals, air pollutants, salinity, extreme temperatures, drought, and several other stress factors. For many forage crops, in which livestock producers depend on stands being viable they should grow varieties of different forage crop and benefited and also the animals get more healthier and quality fodder.

