

# Cultivation of Pearl Millet

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# **Learning outcome**

- 1. The students will understand the Cultivation of Pearl Millet.**
- 2. Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Pearl Millet.**

## **PEARL MILLET (*BAJRA*) (*fodder*)**

**Botanical name:** *Pennisetum glaucum*

**Family:** Poaceae (Gramineae)

Pearl millet is an important forage crop of arid and semi-arid regions of the country besides its utility as food crop. The green or dry fodder (*karvi*) is fed to the cattle.

### **Origin and History**

The exact place of its origin is yet to be known. However, looking to its cultivation pattern, it is believed that the pearl millet originated either in India or Africa. Pearl millet hybridizes spontaneously with elephant grass (*Pennisetum purpureum Schum.*), which is of African origin, and the 2 species had a common ancestor.

## Climatic Requirements

It is highly drought tolerant and rapidly growing warm-weather crop in areas of 25-75 cm of rainfall. During the vegetative growth of the crop, moist weather is congenial. The crop performs best under conditions of light showers followed by bright sunshine. Pearl millet is grown as a *kharif crop in northern India, but with assured irrigation it can be grown as a summer crop in Tamil Nadu, Karnataka and Punjab*. The optimum temperature for the growth of pearl millet is between 20 and 28<sub>o</sub>C. It can not tolerate frost.

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# School of Agriculture

Course Code : AGRI2001

Course Name: CROP PRODUCTION TECHNOLOGY - I (KHARIF CROPS

FBC16: Multicut, resistant to major diseases, high voluntary dry matter intake and low concentration of oxalates. Its yield potential is 70-80 tonnes green forage/ha. It is recommended for growing in plains of Punjab.

Giant Bajra: Evolved through a cross between Australian and local *bajra*. Released in 1984 in Maharashtra. Plants leafy, palatable, profuse tillering with 9-10% protein at boot stage. Fodder is good for heylage and silage making too. Moderately resistant to downy mildew and ergot, and yields 50-75 t/ha green fodder.

Raj bajra chari 2: Released in 1990 for all *bajra growing tracts with 30-45 t/ha yield*. Resistant to downy mildew and insect pests.

Fodder numbu-8 (TNSC-1): Released in 1993 for all *bajra growing tracts with 27-40 t/ha yield*. Resistant to foliar diseases and insect pests.

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Program Name: B.Sc. (Hons.) Agriculture

Semester: 3<sup>rd</sup>

## Field preparation

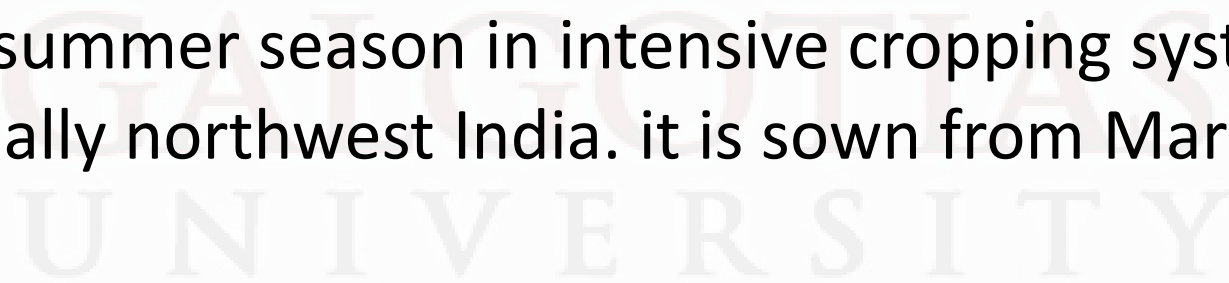
The crop does not require fine seed bed. The seed bed is prepared by one ploughing.

## Seed rate

A seed rate of 8-10 kg/ha is sufficient for fodder production of pearl millet sown by drilling in 30 cm rows. The crop is sown by broadcast with 10-15 kg seed/ha.

## Time of sowing

Pearl millet is generally sown in June-July. In recent times, pearl millet is increasingly grown in summer season in intensive cropping systems of Indo-Gangetic plains especially northwest India. it is sown from March-end of April.



## Method of sowing

Pearl millet is generally sown behind the plough or by broadcast method. These methods are, however quite unsatisfactory and generally lead to poor germination and consequently poor yield. Sowing *bajra with seed drill is the best method. It not only ensures best germination* but uniform plant population as well. Seed should be sown in rows at 30-40 cm apart.

## Manures and Fertilizers

The fertilizer requirement of local varieties of pearl millet can easily be met by application of 10-15 tonnes/ha of compost or FYM. The nutrient supply for the high-yielding varieties and hybrids should be supplemented with inorganic fertilizers. To get good fodder crop 40-60 kg N/ha and 20-30 kg P<sub>2</sub>O<sub>5</sub>/ha may also be applied at the time of sowing. In soils deficient in K, 30-40 kg K<sub>2</sub>O/ha should be applied.

## Water management

As a rainfed *kharif* crop, it requires no irrigation. However, at times of drought, irrigation at 35 days after sowing is advantageous. During summer season, the crop requires 4-6 irrigations at 7-10 days interval depending on the soil and climate.

## Hoeing and weeding

The crop has rapid early growth habit and competes with late emerging weeds. The weeds emerging with the crop at early stages (2-4 weeks after sowing) pose threat to higher production. Therefore, timely control of weeds is quite essential to get higher yields. An interculture 3-5 weeks after sowing may take care of the weeds. A wheel hoe, triphali or hand-hoe can be used for interculture. Spray of atrazine @ 0.5 kg/ha in 800 litres of water on the same day of crop sowing controls most of the weeds.



## ***Diseases***

### **Downy mildew (*Sclerospora graminicola*)**

Infected seedlings turn pale yellow that are narrow covered on both sides by soft white downy fungus growth. The affected plants remain stunted and dry prematurely. *The preventive measures include growing of resistant hybrids (NBH 5, PGB 10 PHB 14) and seed treatment with fungicide like agrosan GN, thiram (2.5 g fungicide/kg of seed), while prophylactic measures involves rouging of disease-infected plants at the seedlings stage (40 days after sowing) The uprooted plants should be destroyed and buried into soil. Foliar spray of dithane Z 78 @ 0.2% or copper oxychloride @ 0.35% at boot-leaf stage is effective in its control.*

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## **Ergot (*Claviceps microcephala*)**

The disease first appears on the ears in the form of honey like pinkish liquid which is full of fungus spores, causing spread of the disease. The liquid turns brown and sticky. In the later stages, fungus sclerotia (ergots) appear as brown to black and elongate structures. They possess toxic alkaloids harmful to human and cattle health. These sclerotia fall down in the field and remain in soil, causing infection in subsequent crops. It is important in fodder *bajra* seed production.

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## Harvesting

The crop is ready for harvest in 60-70 days after sowing. Harvesting at 50% flowering stage is ideal. In multicut varieties, first cut is taken 50-55 days after sowing (a little earlier to 50% flowering) and subsequent cuts at 35-40 days interval.

## Yield

The green fodder yield varies from 35-40 t/ha. The fodder contains 7-11% crude protein and 25-35% crude fibre. It is rich in P (0.5-0.7%) and calcium (0.2-0.4%). The high oxalic acid content at early stages needs to be taken care by avoiding early cuts. It yields 6-7 t/ha of dry fodder, which is least preferred by animals due to low amount of nutrients.

## References

1. Prasad, R. (2006). Text book of field crops production. ICAR, New Delhi.
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3. Hunsigi, G.; and Krishna, K.R. (2007). Scientific field crop production. Oxford & IBHPublishing Co.Pvt.LTD.