

NETAJI SUBHAS UNIVERSITY, JAMSHEDPUR



Crop Production Technology-I (Kharif Crops)

Energy

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A close-up photograph of a Finger Millet plant, showing its characteristic green, elongated leaves and a dense, dark, textured seed head. The background is blurred, emphasizing the plant's details.

Finger Millet

Eleusine coracana

MODULE
02

Introduction

- † Finger millet is an annual plant widely grown as a cereal
- " Originally native to the Ethiopian highlands
 - Cultivate in more than 25 countries in;
 - Africa (eastern and southern)
 - Asia (from Near East to Far East)
 - As a staple food grain
 - The major producers are Uganda, India, Nepal, and China

Local Names of Finger Millet & State wise Varieties of Finger millet

Local Names of Finger Millet

Language	Local Names
Hindi	Ragi, Mandika
Bengali	Marwa
Punjabi	Mandhuka, Mandhal
Telugu	Ragi Chodi
Oriya	Mandia
Kannada	Ragi
Gujarati	Nagli, Bavto
Tamil	Keppagi, Ragi, Kelvaragu
Marathi	Nagli, Nachni

State wise Varieties of Finger millet

Karnataka	GPU 28, GPU-45, GPU-48, PR 202, MR 1, MR 6, Indaf 7, ML365, GPU 67, GPU 66, KMR 204, KMR 301, KMR 340
Tamil Nadu	GPU 28, CO 13, TNAU 946 (CO 14), CO 9, CO 12, CO 15
Andhra Pradesh	VR 847, PR 202, VR 708, VR 762, VR 900, VR 936
Jharkhand	A 404, BM 2, VL 379
Orissa	OEB 10, OUAT 2, BM 9-1, OEB 526, OEB-532
Uttarakhand	PRM-2, VL 315, VL 324, VL-352, VL 149, VL 146, VL-348, VL-376, PES 400, VL 379
Chhattisgarh	Chhattisgarh-2, BR-7, GPU 28, PR 202, VR 708 and VL 149, VL 315, VL 324, VL 352, VL 376
Maharashtra	Dapoli 1, Phule Nachani, KOPN 235, KoPLM 83, Dapoli-2
Gujarat	GN 4, GN 5, GNN 6, GNN 7
Bihar	RAU 8, VL 379, OEB 526, OEB 532

Nutrient Composition of Finger Millet

Moisture	-	13.24 %
Protein		7.60 %
Carbohydrate	-	74.36 %
Fiber	-	1.52 %
Minerals	-	2.35 %
Fat	-	1.35 %
Energy	-	341.6 cal/100 g

Scientific classification

Kingdom :
Plantae
OrdR :
r Poales
Family : Poaceae

Subfamil :
y Chloridoideae

Genus : Eleusine
Species : *E. coracana*

Botanical name: *Eleusine
coracana*

Irrigation: Depending on soil type, weather condition and duration of variety, 8-14 irrigations are necessary.

Diseases: Finger millet is affected by a variety of diseases of which blast caused by *Pyricularia grisea* is the major problem.

Symptom: The symptoms appear as circular lesions that are pointed towards either ends. The centre of the spots appears grayish and the borders become brownish. In susceptible genotypes, several of such spindle shaped spots coalesce together, leading to drying of the entire leaf. When the fungus infects the neck region, a few inches of neck just below the finger turns brownish black ultimately leading to breakage of the peduncle

SOIL & CLIMATE REQUIREMENT

Climate: Finger millet is a short day plant and grows best in an environment with day temperatures of 30 to 34°C and 22 to 25°C night temperatures along with good sunshine. It thrives best in the areas where annual rainfall is about 1000 mm.

Soils: Finger millet is cultivated on a variety of soils ranging from rich loam to poor shallow upland soils. It prefers porous and well drained loam to light red loam and sandy loam soils of good fertility and water holding capacity. The soil should be rich in organic matter. It withstands and thrives well on slightly alkaline soils too.

Time of Sowing: Kharif - June- July with the onset of monsoon Rabi- September to October Spacing: 225-30 cm (row to row), 8 – 10 cm (plant to plant). The seed should be planted 2-3 cm in depth. Seed rate: 8-10 kg/ha for direct sowing 5 kg/ha for Transplanting (Seedling of 20-25 days old are ideal for transplanting. 150 m²

Transplanted Crop: Seed should be sown in well prepared nursery beds during the month of May-July about 4 Kg of seed will give enough seedlings to transplant 1 ha of land. 3 to 4 week old seedlings should be transplanted two seedlings per hill at a distance of 25X8 cm or transplanted 2-3cm deep.

Field preparation

Field preparation: The first ploughing should be done deep with a soil turning plough at the onset of monsoon. Fine tilth is imperative for proper germination and crop establishment.

Varieties: VL-124, VL-149, mostly developed for the hill states of the country.

Spacing : 20-25cm row-to-row, 8-10cm plant- to- plant

Seed Rate: 6-8 kg/ha.

Seed Treatment: The seed should be treated with Agrosan G.N. or Thiram @ 2.5g/Kg of seed.

Method of Sowing: Line sowing at 3-4cm deep

Cropping System

Cropping System: In hilly areas it is grown mixed with Soybean.

Cropping Sequence:

1. Finger millet-Potato-Maize,
2. Finger millet-Potato-Finger millet,
3. Finger millet-Rice

Varieties:

VL-124, VL-149, mostly developed for the hill states of the country.

Manuring and fertilization:

Manuring and fertilization: Apply Compost or farmyard manure @ 7-10 tonnes/ha about a month before sowing. Generally fertilizer recommended to get a good crop in rainfed condition is 40:20:20 kg NPK / ha, and for irrigated is 60:30:30 kg NPK / ha. Soil test based fertilizers application is recommended. Apply entire quantity of P₂O₅ and half of Nitrogen at the time of sowing and remaining half of Nitrogen at first irrigation.

Manuring and fertilization: Two inter cultivations and one hand weeding in line sown crop is recommended. Intercultural operation using a tyne-harrow when crop is 30 days old is also recommended. In broadcast crop 1st weeding after 15–20 days after emergence of seedling and 2nd weeding 15-20 days after 1st weeding is recommended. In assured rainfall and irrigated areas: Preemergence spray: Isoproturon @ 0.5 kg a.i./ ha. (Rainfed areas), Oxyfluorfen @ 0.1 lta.i /ha (Irrigated areas) Post-emergent spray: 2, 4-D sodium salt @ 0.75 kg Extension Folder- 6 a.i./ha Spraying around 20-25 days after sowing effectively control weeds.

IRRIGATION & DISEASE MANAGEMNT

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Insect Pest: Stem Borer/ Hairy Caterpillar/Grass hopper/Caterpillar.

Control: Diazinen(5%) or Thiaden(4%) granules @ 20Kg/ha, to control Borer Hairy caterpillar & Grass hopper spray Carbaryl dust @ 20Kg/ha may be used.

INSECTS & DISEASE

Leaf aphid :It occurs throughout the crop growing period. The nymphs and adults suck the sap from tender leaves and stem. They can cause serious damage in the seedling stage up to 30 days.

Control: Spray Dimethioate (0.05%) or quinolfos (0.05%).

Stem borers: The larva bores into the stem, resulting in dead heart.

Control :Spray the crop with Dimethioate (0.05%) or Phosphamidon (0.05%) or Monocrotophos (0.04%)

Ear caterpillars: Ear caterpillars appear at dough stage on ears and persist till harvest. The caterpillars bite the maturing seeds and make a fine web out of their casting and half eaten grains. This further attracts saprophytic fungi.

Control

Control : Dust Malathion 5% @ 24 kg/ha or Quinolfos 1.5% @ 24 kg/ha or Endosulfan 4% @ 24 kg/ha or Phosalone 4% @ 24 kg/ha.