

# **Cultivation of Maize** **(*Zea mays* L.)**



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**M**aize is an important food, feed and industrial crop of the world having wider adaptability under varied agro-climatic conditions. Maize is called 'queen of cereals' because of its high genetic yield potential.

## HYBRIDS/COMPOSITES

**QPM Hybrids:** Vivek QPM 1, HQPM-1,

**Normal Hybrids:** Vivek Maize Hybrid 25, Vivek Maize Hybrid 39, Vivek Maize Hybrid 43, Ganga hybrid-1, Ganga hybrid-101, Ganga safed-2, Deccan hybrid

**Composites:** Vijay composite, Vivek Sankiul Makka 35, RCM-75, RCM-76

**Baby Corn:** VL Babycorn 1(composite), HM 4 (Hybrid)

**Fodder purpose:** African Tall, J-1006, Jawahar, Sona

## CLIMATIC REQUIREMENTS

Maize is generally a warm climatic condition requiring crop. It grows from sea level to 3000 m altitudes in many parts of the country throughout the year i.e., *Kharif*, *Rabi* and *Zaid* or spring. Optimum temperature for germination is 21° C and for growth is 32° C. Well distributed 50 to 75 cm of rainfall is conducive for its normal growth.

## SOIL REQUIREMENTS

Maize can be grown successfully in variety of soils ranging from loamy sand to clay loam. Deep fertile, rich in organic matter and well drained soils are the most preferred ones. Being a sensitive crop to excessive moisture conditions and salinity stress the favourable pH range is 5.5 to 7.5.



## FIELD PREPARATION

The first ploughing should be done with soil inverting plough so that 20-25 cm deep soil may become loose. It should be followed by two to four harrowing with shallow furrows or three to four intercrossing with local plough.

## SEED AND SOWING

**1. Seed rate and Spacing:** Seed rate and spacing depends upon growing season, variety, size and weight of the seeds, plant type and sowing method. Generally it should be sown in lines except under rain fed condition or for fodder purpose.

(i) **Spacing:** 60 - 75 cm X 18 - 20 cm

(ii) **Seed rate:** Hybrids/Composites – 18-22 kg/ha  
Fodder –40-50 kg/ha

### 2. Time of sowing

(i) **Kharif sowing:** Crop should be sown the crop before the onset of monsoon i.e., first week of March so that the seedlings are well established before they get torrential rains.

(ii) **Rabi crop:** The optimum date of sowing is end of October to mid of November where the crop is raised under assured irrigation.

(iii) **Spring sowing:** Last week of January to end of February with assured irrigation.

## NUTRIENT MANAGEMENT

Maize is responsive to applied nutrients either through organic or inorganic sources and requires regulated and assured supply of nutrients particularly nitrogen throughout the growing period.

Nitrogen: 120 – 150 kg N/ha (in three splits)

Phosphorus: 40-60 kg P<sub>2</sub>O<sub>5</sub> / ha

Potash: 30-40 kg K<sub>2</sub>O / ha

All these inorganic fertilizers should be applied in combination with organic manures such as well rotten compost or F.Y.M @ 8-10 tones per hectares about 20 days before sowing of crop. Green manuring or application of oil cakes @ 6-7 q/ha, has also been recommended.

## WATER MANAGEMENT

The water requirement of the crop depends on growing season. Irrigation should be applied as per the need of the crop depending upon the rains and moisture holding capacity of the soil. However the critical stages of irrigation are seeding emergence, knee height, flowering and grain filling stages. Maize is very susceptible to both excess water and moisture stress but can tolerate heavy rains, provided water does not stand in the field for long periods.

## WEED MANAGEMENT

Weeds are serious problem in maize particularly during *kharif* season they compete with crop for nutrients and cause drastic yield loss. Therefore timely weed management is needed to achieve higher yield.

**Manual weeding:** One/two hoeing is recommended for aeration and uprooting the weeds before the knee-high stage.

**Pre-Plant incorporation (PPI):** Metolachlor (Dual) @ 1.5–2.0 kg a.i. ha<sup>-1</sup> and Pendimethalin (Stomp @ 1-1.5 kg a.i.ha<sup>-1</sup>.

**Pre-emergence** spray of Simazine or atrazine (Atratraf 50%WP) @ 1-1.25 kg/ha in 600 liter of water should be done.

**Post-emergence** spray of 2, 4-D or Banvel – D (Dicamba) should be done @ 1.5 to 2.0 kg a.i. /ha

## PLANT PROTECTION

Most of the hybrids/composites are resistant/ tolerant to prevalent diseases/ pests of the region, however in case of occurrence, timely steps will help to reduce the economic losses to the cultivator.

### 1. Diseases

(i) **Seedling blight:** The young seedlings get infected by various fungi and they start dying. It can be controlled by seed treatment with Captan/Thiram @ 3g/kg of seed before sowing.



(ii) **Soft rot:** It is a bacterial infection caused by *Erwinia chrysanthemi*, which can infect the plant at any node from soil surface up to the whole plant. Water soaked slimy lesions on the leaf sheath and stalk appears when plant suddenly falls over and scattered in the field. The disease can be controlled by avoiding water logging and use of bleaching powder containing 33% Chloroin @ 10 g/liter water as soil drench.



(iii) **Common rust:** It is common in NE region. Spraying with Zineb solution @ 2-2.25 g/ liter of water at first appearance of disease, at an interval of 10 days soon after appearance of rust on the leaves.

(iv) **Smut:** Affected plants bear ears and tassels which are partially transformed into galls. Applying lower doses of nitrogen, uprooting of smut affected plants and adopting long duration crop rotation.



## 2. Insect pests

- (i) **Stem borer:** Borers attack the crop right from seedling stage to older plants resulting in dead hearts.

**Control:** Spray Monochrotophos or Endosulfan 35 EC @ 3 ml/ l of water at 20 DAS or apply Trichocards @ 7 cards/ ha at 15 days interval for 2-3 times.

- (ii) **Shoot fly and Aphids:**

Application of 10% Phorate (Thimet) granules in furrows before sowing @ 15kg / ha. Spraying with 0.01% Metasystox (1ml in a lt. of water) @ 560 lt./ha after one week of germination.

- (iii) **Cut worm:** The larvae cut the seedlings at the ground level. Caterpillars are grey in colour and lives in soil during day and feed at night. Dusting of 10% Folidol or 3% Heptachlor dust at the base @ 20-25 kg / ha controls the insect.



## HARVESTING AND GRAIN SHELLING

The grain crop of maize is harvested when cob- sheath turns brownish, grains become hard and they do not contain more than 20% moisture in them and silks dry up completely. Normally incase of local vars. of low fertility a yield of 1 to 2 t/ha. Hybrids/ composite varieties yield nearly 4 - 6 t/ha.





## **STORAGE**

Maize seeds can be stored safely by drying them to 7% moisture content and packing in 700 gauge polythene bags.

## **COMPILED BY**

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**Published by :**

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