

# RABI JOWAR

**Botanical Name** : *Sorghum bicolor*  
**Family** : Gramineae  
**Origin** : Africa, Ethiopia, Sudan.

## Economic Importance:

1. Sorghum is one of the important **cereal food crop** of the dry land agriculture in Semi tropics.
2. Jowar is also called as **great millet** because of large size of grains amongst all millets crops.
3. It is staple food for humans used for making **Bhakari**.
4. Sorghum is also eaten in the form of **Hurda** and fast food.
5. The **straw** is used for making good forage, hay and Silage.
6. Now a days Sorghum grains is used for preparation of alcoholic beverages.
7. Sorghum grain contains 70% Carbohydrates, 10-12% Protein and 3% Fat.
8. Sorghum is act as a good quality fodder but early stage because it contains **Hydrocyanic Acid (HCN)** hence unfit for consumption in early stages.
9. It is drought resistant crop that's why it is known as **camel of desert**.

## Geographical Distribution:

Sorghum is the fourth in importance among the world's leading cereals. Among the Sorghum growing countries India ranks first in acreage but second in production, USA being the largest producer in the world. The other important Sorghum growing countries are China, Nigeria, Sudan and Argentina. In regards to average yield Argentina rank first followed by USA.

Maharashtra, A.P., Karnataka, Gujarat, Tamil Nadu, Rajasthan and Uttar Pradesh are the important sorghum growing states of India. Maharashtra rank first in terms of both area and production.

## Ecology:

### Climatic requirements:

Sorghum requires warm climate but can be grown under a wide range of climatic conditions. It needs about 26-30°C temperature for optimum growth. The minimum temp for germination is 7-10°C. Rabi sorghum is grown in the areas receiving rainfall of 600-1000 mm. Many Sorghum varieties can tolerate minimum temperature of 16°C and maximum 40°C.

### Soil requirement:

Sorghum is grown on wide range of soils but medium to deep soils such as clay loam or loam soils having good water retention capacity are best suited for growing Sorghum. **pH** requirement should be neutral i.e. **6.5 to 7.5**, Waterlogged soils are not suitable for sorghum cultivation.

### Field Preparation:

Sorghum seeds should be drilled in a well prepared seed bed which is free from weeds and stubbles. The ploughing should be done with soil turning plough so that 20-25 cm deep

soil may become loose. It should be followed two to three harrowing. Thereafter planking should be done to break the clods and to level the field.

### **Seed and Sowing:**

1. **Sowing Time:** Mid Sept to Mid of Oct.
2. **Seedrate:** Hybrid : 8-10 Kg/ha, Varieties : 10-12 Kg/ha
3. **Spacing** : 45x20cm.
4. **Sowing Depth:** 4-5 cm.
5. **Sowing method:** Line sowing by seed drill / Putting seeds behind country plough.
6. **Seed treatment:**
  - a. To overcome the root rot and wilt disease of Jowar seeds should be treated with 2.5 gm. Thiram + 1 gm. Carbendanzim.
  - b. 30 % Brine solution treatment for controlling ergot disease of Jowar.
  - c. Azotobacter and PSB @ 250 gm./10 kg of seeds.

### **Manures and fertilizers:**

Well decomposed **farm yard manure or Compost @ 10-15 t ha<sup>-1</sup>** should be applied at the time of land preparation generally 15 days before sowing.

The quantity of fertilizers to be applied varies according to the fertility status of the soil. However, when soil test data is not available, apply 100-120 kg Nitrogen 60 Kg P<sub>2</sub>O<sub>5</sub> and 60 Kg K<sub>2</sub>O per ha.

Half of the nitrogen and total amount of phosphorus and potassium should be applied at the time of sowing. The remaining half quantity of nitrogen should be top dressed at the time of first irrigation.

### **Irrigation and Water Management:**

Sorghum is generally grown as **rainfed crop** because it has low water requirement. When irrigation water is available apply four irrigations at critical growth stages.

1<sup>st</sup> irrigation Vegetative Stage (20-30 DAS)

2<sup>nd</sup> irrigation at Booting stage (50-55 DAS)

3<sup>rd</sup> irrigation at flowering stage (75-80 DAS)

4<sup>th</sup> irrigation at grain filling stage (90-95 DAS)

### **Weed control:**

Generally weed problem is more under irrigated condition. Crop weed competition is up to 40 DAS. One harrowing and one weeding after first irrigation at 30-35 DAS gives effective control. If availability of herbicides spray Atrazine @ 0.5 to 1.0 Kg a.i. per ha as a pre emergence dose.

### **Striga (Partial root parasite of Jowar)**

- a. It is also called as tarphula or talap
- b. It is a partial root parasite found in Jowar.
- c. The penetrating organ known as haustoria makes connection with root xylem of Jowar plant and nutrients from Jowar plant.
- d. The affected plant becomes too weak and cause severe reduction in yield.
- e. The attack of striga is more severe in light soil.

### **Control Measures:**

- a. It is not effectively control by cultural method.
- b. It can be controlled by spraying of 2,4-D @ 1 Kg a.i. ha.
- c. It is also controlled by spraying of MCPA.
- d. Spraying should be done before flowering of striga.

### **Cropping systems:**

Best Sorghum based cropping systems are, Kharif Sorghum-Wheat, Sorghum- Cotton, Sorghum-Tobacco, Sorghum-Gram, Rabi Groundnut-Sorghum, Rice-Sorghum, Soybean-Sorghum.

**Mixed cropping:** Sorghum hybrid CSH-6 has been found to be more suitable for mixed cropping. Sorghum + Safflower, Sorghum + Sunflower.

### **Insect pests and Diseases:**

Sorghum shoot fly, Stem borer, Pink borer, Sorghum midge, Leaf roller, Sorghum Ear Head Bug, Hairy Caterpillar are the common insect pests which attack on sorghum crop.

Diseases like Seed decay, and Seedling blight, Downey Mildew, Leaf rust, Anthracnose, Leaf blight, Grain Smut, Loose Smut, Ear Molds.

### **Harvesting and Threshing:**

Most of the high yielding sorghum hybrids and varieties take about 100-115days to mature. The crop should be harvested immediately after it is mature. The right stage of harvest is when grains have become hard having less than 25 per cent moisture. Harvesting is done by cutting the entire plant or removing ear heads first and cutting down the plants later on.

Threshing is done with the help of threshers or by beating the ear-heads with sticks or by trampling bullocks. The threshed grains should be dried in sun for about a week to bring the moisture content down to 13-15 per cent for safe.

### **Yield:**

By adopting scientific methods and high yielding improved varieties obtain 25-30 quintals of grain and 65-70 quintals of straw per hectare. While from hybrids 40-45 qtl/ha grains and 80 qtls/ha straw.

### **Varieties:**

**Hybrids:** CSH-13 R, CSPH-5051 R, CSH-19 R, CSH-15 R, CSH-7R, CSH-8R.

**Improved varieties:** Maldandi (M-35-1), SPV-839, Phule yashoda, Phule Mauli, Phule Chitra, Phule Vasudha, Phule anuradha, SPV-504 (Swati), R-16.

