

RAPESEED AND MUSTARD

Botanical Name : *Brassica spp.*

Family : Cruciferae

Origin : a. Rai (Mustard)- China, b. Rape seed: Eastern Afghanistan and Adjoining part of India Pakistan.

Economic Importance:

- Rapeseed and Mustard are the major rabi Oilseed crops of India.
- They occupy second place in both area and production among oilseeds crop in India next to Groundnut.
- Oil content is varies from 37-49 per cent depending upon variety and species.
- Both seeds and oil used a condiment in the preparation of pickles and for flavorings curries and vegetables.
- Oil is used for human consumption in cooking and frying purpose particular in North India.
- Also, Oil is used in the preparation of hair oil, medicines, Soap making factories and manufacturing of greases.
- The oil cake is used as a cattle feed and manure, oil cake contain 25-30 per cent crude protein, 5 percent Nitrogen, 1.8-2 per cent P_2O_5 , and 1.0-1.2 per cent K_2O .
- The leaves of young plant used as a vegetable as they supply enough sulphur and minerals in diet.
- The seed and oil of brassica spp. have a peculiar pungency. This pungency is due to presence of glucoside 'Sinigrin'

Geographical Distribution:

The major rapeseed and mustard producing countries are India, Canada, china, Pakistan, Poland, Bangladesh and Sweden. India ranks 1st in respect to area and 2nd in production next to Canada.

In India it is mainly grown in Uttar Pradesh, Rajasthan, Madhya-Pradesh, Haryana, Punjab, Assam, Bihar, Gujarat and West Bengal. Uttar Pradesh occupies rank 1st in both area and production.

Ecology:

Climatic requirements:

Rapeseed and mustard grown in tropical as well as temperate zone and require cool and dry weather for satisfactory growth. Cool temperature, clear dry weather with plentiful of bright sunshine with adequate soil moisture

increases yield. Optimum temperature required 18-25⁰C for good growth and development. Crop grow well in areas having receives 30-40 cm rainfall.

Soil requirement:

Rapeseed and mustard are capable of growing under a wide range of soil condition from sandy loam to clay loam but they thrive best on light loam soils. They neither tolerate waterlogging condition nor do well on heavy soils. Soil having neutral pH is ideal for good growth.

Field Preparation:

A clean and well pulverized seedbed of good tilth is needed for better germination. One deep ploughing followed by two cross harrowing's and planking is necessary to prepare well pulverized and leveled seedbed. Care should be taken that weeds and stubbles are removed from field.

Seed and Sowing:

1. **Seed treatment:** Thiram or captan @ 2.5 gm. per kg of seeds.
2. **Sowing Time** : Sowing either too early or too late has been reported to be harmful for getting good yield timely sowing is very important.
 - a. Toria: Mid to last week of September. If delay danger of attack of aphids.
 - b. Sarson and Toria: 1st fortnight of October.
3. **Spacing** : Toria- 30 cm RxR and Rai and Sarson- 45 cm RxR. Thinning should carry out three weeks of sowing and maintain 10 cm distance plant to plant.
4. **Seed-rate:** When crop is grown as a pure crop 5to 6 kg of seeds required while, grown as a mixed crop 1.5 to 2 kg.
5. **Sowing Depth: 2.5-3 cm.**
6. **Sowing method:** Drilling (line sowing) or Broadcasting.

Manures and fertilizers:

Rapeseed and Mustard respond well both to organic and Inorganic manures and fertilizers. Apply well decomposed **farm yard manure or Compost @ 15-20 t ha⁻¹** should be applied at the time of land preparation. In case of fertilizer apply 60-90 kg of Nitrogen, 60 kg P₂O₅ and 40 kg K₂O per ha. Split application of Nitrogen is very useful apply half quantity of N and full dose of P and K at the time of sowing as a basal dose and remaining quantity of N at time of first irrigation. Rapeseed and Mustard required some amount of sulpher so apply N through Ammonium sulphate.

Irrigation and Water Management:

Rapeseed and mustard are usually raised under both rainfed as well as irrigated condition. It shows good response to irrigation water. Apply two irrigations at pre-bloom and pod filling stages which are beneficial for its growth and yield.

Weed control:

Weeds in rapeseed and mustard cause approximately 20-30 per cent reduction in yield. Care should be taken to remove all weeds in early stages of crop growth, to avoid competition. Generally, one weeding at 20-25 DAS gives effective control.

In case of chemical control apply Nitrofen @ 1.0 to 1.5 Kg a.i. /ha. or Isoproturon @ 1.0 Kg a.i. /ha in 800-1000 liters of water as a pre-emergence spray.

Insect pest and Diseases:

Alternaria blight, Downy Mildew are the common observed diseases and Mustard Saw fly, Mustard aphid, Painted bug, cabbage butterfly, Bihar hairy caterpillar are the important insect pests observed on Rapeseed and Mustard.

Harvesting and Threshing:

The important sign of maturity is pod turns yellowish brown, shattering is an important problem hence harvested just before the pods open in order to avoid losses. Crop is harvested with help of sickles close to ground level. The harvested crop should be staked in threshing floor for five to six days. Threshing is very easy with help of beating with sticks. Cleaned seeds must be dried in sun for four to five days till moisture content comes down to 8 per cent.

Yield: Rapeseed: 14-20 qtls/ha

Mustard : 20-25 qtls/ha.

Varieties:

Rapeseed: a) Toria: Bhawani, Type-9, sangam, Panchali.

b) Sarson: Brown: BSH-1, Pusa Kalyani. Yellow sarson: Type-42, K-88, Vinoy, PS-66

Mustard: (Rai/Raya) Sita, Bhagirathi, Varuna, Shekhar, Kranti, Narendra rai, Vardan, Rohini, Pusa jay kisan.