

# Rapeseed and Mustard

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## Introduction

Rapeseed and mustard belong to the family Brassicaceae (or Cruciferae) are important oil crops and currently ranked as the world's third important oil crop in terms of production and area. Among the species, *Brassica napus* and *Brassica campestris* are regarded as 'rapeseed' while *Brassica juncea* is regarded as 'mustard'.

## Area and production

Worldwide the total annual production of rapeseed and mustard is 63.04 million tons of seed from an area of 34.33 million hectares (FAO, 2013). In Bangladesh, rapeseed and mustard are the most important among all oilseed crops. Total cultivated area under rapeseed and mustard cultivation is 0.234 million hectares which produces 0.203 million tonnes of oil per year (BARI, 2011).

## Uses of rapeseed and mustard

- It is a good source of oil. The oil content in rapeseed and mustard is 40-44%.
- Oilcake is good food for cattle. Oilcake of rapeseed and mustard contains 40% protein.
- Oilcake is used as manure.

## Varieties of rapeseed and mustard

### ***Brassica campestris:***

1. Tori-7
2. Sonil sarisha (SS-75)
3. Kallaynia (TS-72)
4. Sampad
5. Agrani
6. BARI Sharisha-6
7. BARI Sarisha-9
8. BARI Sharisha-12
9. BARI Sharisha-14
10. BARI Sarisha-15
11. SAU Sarisha-1
12. SAU Sarisha-2

### ***Brassica napus:***

1. BARI Sarisha-7
2. BARI Sarisha-8
3. BARI Sarisha-13
4. BINA Sarisha-3
5. BINA Sharisha-4



### **Brassica juncea:**

1. Rai-5
2. Daulat
3. Sambal
4. BARI sarisha-10
5. BARI Sarisha-11
6. BARI Sharisha-16

### **Climate**

Rapeseed/mustard requires cool temperature during growing season. In Bangladesh, sowing starts from middle of October, but in some parts of the country sowing is delayed for the delayed harvest of previous crop. Moreover, in some areas land remain occupied by T. aman rice. The winter of Bangladesh is not very long; temperature starts rising from the month of February. So, rapeseed/mustard should be completed by middle of February; otherwise the crop faces high temperature and yield become low. The best growth of rapeseed/mustard occurs at 12°C and below 25°C. The optimum temperature for maximum growth and development has been estimated at just over 20°C and minimum temperature is 5°C. So, Bangladesh weather allow very short sowing period for rapeseed/mustard.

### **Soil**

Rapeseed/mustard can be raised on variable soil types with good drainage, but is best adapted to fertile, well-drained, loamy or sandy-loam soils. This crop does not tolerate waterlogged soils since growth will be stunted. Medium and medium high land is suitable for rapeseed/mustard.

### **Production technology**

#### **Land preparation**

Land should be well-prepared by 4-6 ploughing followed by laddering. Land should be well pulverized and free from clods and weeds.

#### **Fertilizers**

Depending on variety, soil and soil moisture following fertilizers should be applied:

Name of fertilizer	Fertilizer dose (kg ha <sup>-1</sup> )	
	Sonali sarisha (SS-75), BARI sarisha-6, 7, 8, 9, 11, 12, 13, 14, 14, 15, 16	Tori-7, Kalyania (TS-72), Rai-5, Daulat
Urea	250-300	200-250
Triple superphosphate (TSP)	170-180	150-170
Muriate of potash (MP)	85-100	70-85
Gypsum	150-180	120-150
Zinc sulphate	5-7	4-5
Boric acid	10-15	10-15
Decomposed cow dung	8000-10000	8000-10000



## **Methods of fertilizer application**

Half of urea and full amount of other fertilizers should be broadcasted during final ploughing. Rest half of urea should be top-dressed at 20–25 days after emergence of seedlings i.e. before flowering.

## **Date of sowing**

For better yield rapeseed/mustard should be sown between mid October to early November. In the northern part of the country where winter comes early, rapeseed/mustard seeds can be sown earlier than the other areas.

## **Seed rate**

Depending on varieties the seed rate of rapeseed/mustard varies from 7.5 kg to 9.0 kg per hectare.

## **Sowing method**

Seeding can be done both in line sowing and broadcasting methods. In case of line sowing, row to row distance is 30 cm and in rows seeds should be sown continuously. In line sown crop, weeding and other field operations become easier. Seeds should be placed 2 cm depth then rows should be covered with loose soil properly. For broadcasting method, seeding should be done after final ploughing and then by laddering the field should be leveled. In case of very small seeds some quantity of loose soil or ash can be mixed with seeds. This will help uniform spreading of seeds.

## **Irrigation**

In rapeseed/mustard field, adequate moisture should be present. If soil moisture is inadequate, irrigation should be applied. Sometimes lack of moisture is found during planting, in that condition seeds will not germinate properly. Before flowering, i.e. 20–25 days after emergence, during siliqua formation i.e. 50–55 days after emergence and during siliqua development i.e. 65–70 days after emergence soil moisture is needed. So during these stages, if soil moisture is low irrigation should be applied. Except initial stage light flood irrigation should be applied. In early stage, sprinkler or hose pipe irrigation may be applied. Excess irrigation water should be drained out immediately. Rapeseed/mustard cannot tolerate standing water in the field.

## **Thinning**

Presence of excess seedling in the rapeseed/mustard field is not desirable. Plant population should be 50–60 per square meters. So, thinning should be done to maintain the population at 15-20 days after emergence.

## **Weeding**

Weeds compete with crops for nutrient, moisture and light. So, weeds should be controlled. Weeding should be done once at 20–25 days after emergence and another at 30–35 days after emergence



## Mulching

After irrigation when optimum moisture condition will come in the field, the soil should be loosened by using khurpi or nirani. This operation helps keeping soil moisture for longer period.

## Pest management

In Bangladesh the most important pest of rapeseed/mustard is aphid which feed on young leaves, shoots and inflorescence. Caterpillar is another harmful insect for rapeseed/mustard. These can be controlled by applying Malathion 57EC, Marshal 20 EC, Maladan 57 EC at proper rate.

Leaf blight and downy mildew are two important diseases for rapeseed/mustard. These can be done applying Ridomil MZ-72, Dithane M-45 etc.

## Harvesting and post harvest operation

When 70–75% siliquae of rapeseed and mustard become straw color then the plants are ready for harvesting. Plants should be harvested in the morning and should be brought in the threshing floor immediately. After that it should be kept in heaps for 4–5 days and then plants should be sun-dried for 2–3 days. Finally threshing should be done by bullocks or by beating with a piece of wood or bamboo stick. After cleaning, seeds should be dried for 2–3 days in the sun. when moisture content of the seeds come at 8-9% the seeds can be stored in the bags or a tin container in a cool and dry place.

## Yield

On an average the seed yield of rapeseed/mustard is 837 kg per hectare. However, yield of rapeseed/mustard depends on varieties and management practices. The yield of some popular varieties under proper management practices are as follows:

Variety	Yield (kg ha <sup>-1</sup> )
Tori-7	900–1000
Sonali Sarisha (SS-75)	1800–2000
Daulat	1100–1300
BARI Sharisha-10	1250–1450
BARI Sharisha-13	2200–2800
BARI Sharisha-16	2000–2500

## Constraints of rapeseed/mustard cultivation

- Low yield
- Non-availability of HYV seed and good quality seeds
- Lack of pest resistant varieties
- Narrow seeding time and growing period
- Extreme land competition in winter season
- Problem in oil extraction and processing

