# WATER MELON

**Designed by:**

**Crop Manager Team**

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## Varieties

There are about four types of watermelons, seedless, picnic, icebox, and yellow/fleshed.

## Soil requirement

Watermelon is known to be sensitive to manganese toxicity a problem in low pH soils. Seedling watermelons react to manganese toxicity with stunted growth, yellowish and crinkled leaves. In rainy seasons at higher pH levels when soil is saturated this may still occur with older plants exhibiting brown spots on older leaves. Conduct a soil test and apply lime if necessary, for maximum yields a pH of 6.0 should be maintained

## Climatic condition.

Watermelon is a warm season crop grown mainly in sub-tropical and hot-arid regions. The crop requires dry weather with abundant sunshine for quality fruit production. Temperature range of 24-27degrees C is considered as optimum for the growth of water melons. Cool nights and warm days are ideal for accumulation of sugars in the fruits. The seed germinates best when temperatures are higher than 200 C. High humidity at the time of vegetative growth renders the crop susceptible to various fungal diseases.

## Land Preparation

Fields should be prepared thoroughly by ploughing or harrowing and removing different plant debris. It should be pulverised and levelled; furrows are made 2m apart

## Planting

Before sowing seeds are soaked in Luke warm water for 12 hours. The water is drained out and the seeds are kept overnight in a wet gunny bag. This treatment increases the germination percentage. Normally 1.5-2.0 kg of seeds are required for planting one-hectare area. Various system of sowing has been adopted depending on the season and system of cultivation

## Fertilizer application

The fertilizer doses to be applied depend on variety, fertility of soil, climate and season of planting. Generally, well decomposed FYM (15-20 t/ha) is mixed with the

soil during ploughing. The recommended dose of fertilizer to be applied per hectare is 100 kg N, 50 kg P O and 50 kg K O. Half the 2 5 2 N and entire P & K should be applied before planting. The balance N is given 30-35 days after planting. The fertilizer is applied in a ring at 6-7 cm from the base of the stem. It is better to complete all the fertilizer applications just before the fruit set. For increasing the percentage of female flowers, NAA (100 ppm) is sprayed once at two-leaf stage and the same is repeated after 6-7 days.

## Weed control

Depending upon the season about 2-3 weeding operations is required. The first weeding should be done 20-25 days after sowing while subsequent weeding are done at an interval of one month. When the vines start spreading, weeding in between the rows, or ridges, becomes unnecessary since vine growth can smother the weeds.

## Disease management

### Insect pest

Gummy Stem Blight .

**Symptoms**

- Infected stems first appear water-soaked and then become dry, coarse and tan.
- Older stems reveal small black fruiting bodies within the affected tissues.
- Plants wilt in the heat of the day.
- Stems exude a red-brown substance.

**Management**

- Use of disease-free seed and transplants is essential to prevent serious crop losses.
- Periodic applications of fungicide like Mancozeb @ 0.2% can help limit secondary infections, especially on fruits.
- Rotations with other crops can significantly reduce the amount of inoculum in infested fields.

## Bacteria Wilt

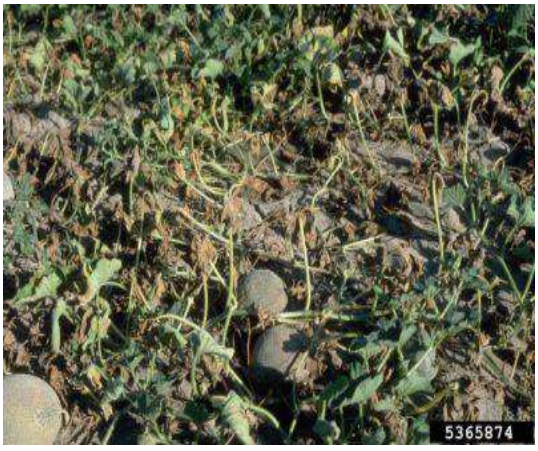
**Symptoms**

- Affected leaves turn a dull green.
- Wilting may occur on some leaves.
- Leaves adjacent to the wilting leaves will also wilt, and eventually the entire plant is affected.

**Management**

- Apply insecticides at weekly intervals.
- Carbaryl, Malathion, or rotenone insecticides or combination products are registered to treat beetles that cause bacteria wilt.

## Fusarium wilt




**Symptoms**

- Damping-off of seedlings, especially in young plants.
- Affected plants produce no fruits.
- Wilted plants produce fewer and lower quality fruits
- Wilting and yellowing of older leaves. The wilt is most evident during the heat of the day.
- Red-brown substance occurs when cracks.
- Vascular browning that is visible in stem cross-sections.

**Management**

- Planting resistant cultivars is the only reliable way to keep infested fields in production.
- Extended rotations with crops other than cucurbits and fall plowing of severely infested fields.

## Anthracnose


**Symptoms**

- Sunken, elongated stem cankers are most prominent on muskmelon, though leaf and fruit lesions also occur.
- Wilting of vines.
- Watermelon foliage appears scorched; sunken fruit lesions are easy to recognize.

**Management**

- Seed treatment with Carbendazim 2g/kg of seed.
- Spray Mancozeb 2g or Carbendazim 0.5g/lit.

## Sudden Wilt

**Symptoms**

- Sudden wilt generally occurs late in the season and is closely associated with a heavy fruit load on the plant.
- Initial symptoms are a slight flagging of the plants in midday even when abundant moisture is present.
- Wilting on third or fourth day.
- After five to six days, all of the vines have melted down and only the immature fruits are left in the fields.
- Affected plants appear to lack feeder roots; other roots become slightly misshapen and thick.

**Management**

- Good soil drainage and thin plant density reduces the incidence of disease.
- Destroy diseased plant debris.
- Soil application of *T.viride*@ 2.5 kg/ha with 50 kg FYM.
- Spray Mancozeb/ Copper Oxychloride at 2.5 g /lit or Carbendazim/ Thiophanate-methyl at 1 g /lit.

## Powdery mildew

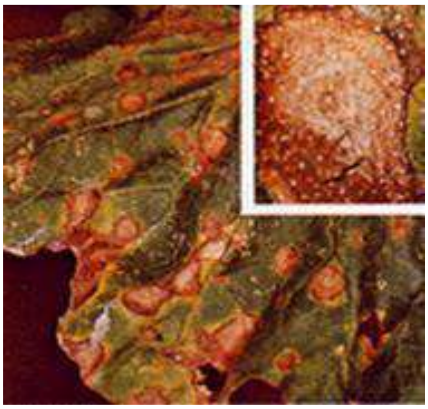
### Symptoms

- It is evident as a superficial, powdery, grayish-white growth on upper leaf surfaces, petioles, and even main stems of infected plants.
- Affected areas turn yellow then brown and die.
- In dry seasons, powdery mildew can cause premature leaf drop and premature fruit ripening.

### Management

- . Powdery mildew can be controlled by application of Wettablesulphur @ 0.2%.

## Alternaria Blight



### Symptoms

- It usually occurs on foliage during the middle of the growing season.
- The disease starts as small, yellow spots which enlarge to form concentric rings on the upper leaf surfaces.
- Fruit injury may occur.

### Management

- Plant disease-free seed in fertile, well-drained soil, practice crop rotation with unrelated crops, destroy cucurbit weeds.
- Spray the crop with Mancozeb @ 2 g /lit.

## Downey Mildew

**Symptoms**

- Small, yellowish areas occur on the upper leaf surface. Later a more brilliant yellow color develops with the center of the lesion turning brown.
- Usually spots are angular because they are restricted by leaf veins. When leaves are wet, a downy, white-gray-light blue fungus growth can be seen on the underside of individual lesions.
- On watermelons, yellow leaf spots may be angular to non-angular and turn brown to black.

**Management**

- Spraying with Metalaxyl 500 g or Metalaxyl + Mancozeb 1 kg/ha or Mancozeb 1 kg/ha.

## Angular leaf spot

**Symptoms**

- Small, angular, water-soaked lesions on the leaves.
- When moisture is present, bacteria ooze from the spot in tear like droplets that dry and form a white residue on the leaf surface.
- Water-soaked areas turn gray or tan, die, and may tear away leaving irregular holes. Water-soaked spots may also appear on the fruit and are frequently followed by soft rot bacteria.

**Management**

- Angular leaf spot may be controlled by planting disease-free seed
- Rotating with unrelated crops, keeping workers out of fields when foliage is wet and Spray 400ppm Streptomycin sulphate.

## Root rot of watermelon


### Symptoms

- The roots of the affected plants appear water soaked with sunken darkened lesions. The crown of the plants is girdled and entire plant is collapsed.
- Fruits become rotted by the fungus.

### Management

- Use disease free seeds.
- Avoid excess irrigation.
- Crop rotation with non-host plant species
- Spray with available fungicides say Agrolaxyl, Ridomil.

### Management

As like wilt the management practice should be followed.

## **Verti**cillium wilt

### Symptoms

- . The leaves of the plant become yellow from base of the plant upwards and the whole plant wilts. If the stem is cut open, brown discoloration can be seen.

## Cercospora leaf spot


**Symptoms**

- Small block circular spots with grey center appear on leaves. Severely infected leaves fall off. The fruit size is reduced.

**Management**

- Collection and burning of infected leaf.
- Crop rotation.

## Alternaria Leaf Blight

**Symptoms**

- Initially the skin of the fruit shows soft.
- Dark green water soaked lesions which gradually develop into a watery soft rot.
- Cottony mycelium develops on the affected portions.

**Management**

- Keep fruits not in touch with soil

## Harvesting

The crop is ready for harvest in about 75-100 days after sowing depending upon cultivar and season. For local market harvesting should be done at full maturity while for transporting to distant markets, it is done slightly earlier. Maturity in watermelon can be judged from withering of tendril, change in belly colour or ground spot to yellow and thumping test. The mature fruits on thumping give dull sound as against metallic sound of unripe fruits. The fruit should be separated from the vines with the help of a knife.

**Yield**: The yield of watermelon varies according to the system of cultivation, variety, season and several other factors. The average fruit yield varies from 20 to 25 t/ha of fruits in 120 days can be obtained.