

GARLIC

SOILS AND CLIMATE

Garlic can be grown at elevation of 1200–2000m from the mean sea level. It requires short days, cool(12–18°C) moist period during vegetative growth. A well-drained friable soil rich in organic matter with a pH range of 6–7 is ideal. Extreme acidic soils as well as heavy soils are not suited for this crop.

Season

In hilly areas it is grown in two seasons.

- 1st season: June – July
- 2nd season: October – November
- Plain areas September 15th to end of October

SEED

Varieties - Ooty 1, Singapore red, Rajali, Tabiti, Cerole, Madrasii, G41, Agri found white, Yamuna Safedha

Seed Rate– 200 to 240 kgs/acre

Seed Treatment

- Before planting treat the cloves with *Trichoderma viridi* – 10 gm/ kg seed
- Make sure water is not used during seed treatment

LAND PREPARATION

Plough the land till good tilth is obtained

After getting suitable and required tilth of soil land should be perfectly levelled by using bullock drawn or tractor drawn levellers. Levelling helps in irrigating the fields with high water use efficiency. Also helps in draining excess water without stagnation and heavy rainy days or immediately after giving irrigation.

During last plough add 2.5 Tons of NADEP compost and 5 tons of FYM

Also add 250kg of neem cake to control soil borne diseases

For main field, form ridges and furrows at 25 cm spacing

To facilitate easy irrigation we must prepare small plots

CROP ESTABLISHMENT

Sowing

Sow the cloves at 25X10 cm spacing and immediately irrigate the field

Mixed cropping

Plant Chillies or onion or coriander on border and bunds

Maize can be raised as Border crop @ 3 to 4 rows

SOIL FERTILITY MANAGEMENT

During last plough add 2.5 Tons of NADEP compost and 5 tons of FYM Also add 250 kg of neem cake to control soil borne diseases

Add 250 kg ghanajeevamrutham at the time of planting

Apply dhrajeevamrutham 200 liters per acre along with irrigation at 15 days interval

WEED MANAGEMENT

After planting, weeding and earthing should be done on 30th and 45th day

WATER MANAGEMENT

Irrigate before and after planting; life irrigation is given on third day of planting and at weekly intervals of time.

PEST AND DISEASE MANAGEMENT

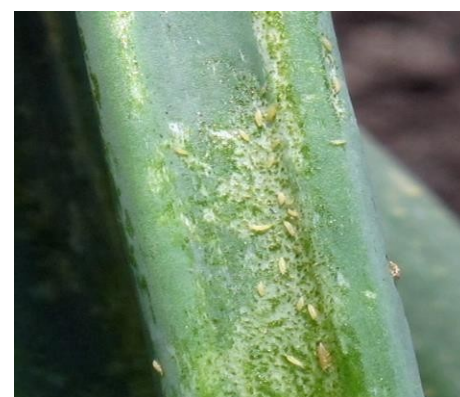
ONION THRIPS: *THRIPS TABACI* LINDEMAN (THYSANOPTERA: THRIPIDAE)

Both adult and larval thrips feed within the mesophyll layer using a punch-and suck motion. The beak and mandible is thrust forward to puncture the leaf epidermis and sap released from injured plant cells is sucked up.

Removal of chlorophyll causes the feeding area to appear white to silvery in color. Areas of leaf injury can occur as patches and streaks.

When feeding injury is severe, leaves take on a silvery cast and can wither.

Tiny black “tar” spots of thrips excrement are evident on leaves with heavy feeding injury.



Control Measures:

- Use resistant/ tolerant varieties.
- Practice field sanitation.
- Avoid successive planting of onion or other preferred/alternate host such as cabbage, cotton, tomato, cucumber, melons, pumpkins, strawberries etc.
 - Plant the new crop in upwind direction of already planted crop which help in escaping infestation from old planting to some extent in the initial stages.
- Adjust the transplanting dates
- Use of reflective plastic silver colour and aluminium painted black mulches repel the thrips (seed crop)
- Use of sprinkler irrigation reduces thrips population considerably compared to drip and surface irrigation Plant two rows of maize or inner row of wheat and outer row of maize surrounding the garlic plots as barrier crop (National Horticultural Mission 2012)
- neemastram,nirgundi leaf extract

ONION MAGGOT: *DELIA ANTIQUA* MEIGEN (DIPTERA: ANTHOMYIIDAE)

The larvae of the onion fly, also called onion maggot is a major pest of onions. The maggot is small (about 8 mm in size when fully grown), white-cream coloured. It eats the [lateral roots](#), then tunnels into the taproot and sometimes bores into the base of the stem. Attacked leaves wilt and the leaves turn bluish. The plants become shrivelled or eventually die. The maggots feed just above the base of seedlings killing them. A maggot can attack several seedlings in succession. This causes poor plant establishment resulting in many gaps in the field.

The maggots are also found inside developing onion bulbs. Their feeding exposes the plant to infection by diseases such as bacterial soft rot. Pupae are light to dark-brown in colour, and about 7mm in length. Pupae are found in the soil near the base of the plant. The adult is a brownish grey fly, some what smaller than house flies. When at rest, they keep their wings folded one over the other. Adult flies do not cause damage. They lay eggs in the soil surface near the germinating plants.

Onion maggots are adapted to cool, wet weather, so usually they are less of a problem during hot dry periods. They prefer soils heavy in inorganic matter. The onion maggot attacks plants related to onion such as leeks, shallots and garlic.



Onion Maggot



Damage



Control Measures:

Avoid close spacing while planting. Follow crop rotation.

Field sanitation.

Conserve predators such as ground beetle, rove beetles, spiders etc. by providing grassy refuge strips

Brahmastram

BULB MITE: *RHIZOGLYPHUS ROBINI* CLAPARÉDÈ (SARCOPTIFORMES: ACARIDAE)

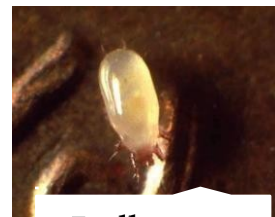
Bulb mites damage bulbs by penetrating the outer layer of tissue and allowing rotting organisms to gain entry. This pest is most damaging when plant growth is slowed by cool, wet weather. Bulb mites can reduce plant stands, stunt plant growth, and promote rot of bulbs in storage. On seeded onions, they can cut off the radicle before the plant becomes established.

Control Measures:

Avoid planting garlic after cole crops, as decaying cole crops, especially cauliflower, may harbour very high bulb mite populations in the field.

Avoid planting successive onion or garlic crops.

Flood irrigation reduces mite levels in the soil. In garlic, sow clean seed cloves. dung urine hing extract Dung+urine +hing extract



Bulb mite

RED SPIDER MITE: *TETRANYCHUS CINNABARINUS* (BOISDUVAL) (TROMBIDIFORMES: TETRANYCHIDAE)

Symptoms/Damage

- Affected leaves become reddish brown and bronzy
- Severe infestation larvae silken webbing on the leaves, wither and dry
- Flower and fruit formation affected

Control Measures

- dung urine and hing extract
- A thorough water spray washes off the mites from the plant



DAMPING OFF : *PYTHIUM* SPP., *RHIZOCTONIA SOLANI* (KÜHN), *FUSARIUM OXYSPORUM*

Symptoms/Damage

Two types of symptoms are observed-
Pre- emergence damping-off: This results in seed and seedling rot before they emerge out of the soil.



Post-emergence damping-off : The pathogen attacks the collar region of seedlings on the surface of soil. The collar portion rots and ultimately the seedlings collapse and die.

Control Measures:

- Soil solarization of nursery beds with transparent polyethylene sheet for 30 days before sowing provides good control.
- Continuous raising of nursery in the same plot should be avoided.
- Avoid excessive soil moisture.
- Follow crop rotation.
- Maintain proper drainage by leveling the land, and installing drains.
- Sow clean and healthy seed on raised beds.
- Overcrowding of plants or dense sowing of onion seeds should be avoided.
- Well decomposed farmyard manure should be used in nursery
- *Trichoderma viridi*

Reference:

Manual Prepared by Rythu Sadhikara Samstha (RySS), Andhra Pradesh