

GARLIC

The Garlic is one of the important bulb crops grown in India. It is also important foreign exchange earner. It is used as a spice or condiment. It is rich in proteins, phosphorus, potassium, calcium, magnesium and carbohydrates. The pungency in garlic is due to volatile oil (diallyl-disulfide). USA is said to be the world's largest import market of fresh garlic, followed by Indonesia, France, Germany, Australia and Brazil. Garlic is used as herbal medicine for many conditions related to the blood and heart. It also has antifungal and antibacterial properties. Garlic is a common flavoring used in cooking. It serves as a food additive which prevents food poisoning. Garlic is used as raw material in pharmaceutical industries. It is used to produce supplements which have enteric coatings.

Climate and Soil

Climate

Garlic is a cool season vegetable and grows well under mild climate without extreme heat or cold or excessive rainfall. It does not thrive when the average rainfall exceeds 75-100 cm during monsoon period. The ideal temperature for vegetative growth is 12.8-23°C. For bulb formation it requires long days and still high temperature (20-25°C). Dry atmosphere is favourable for maturing the bulbs.

Soil

Garlic can be grown in all types of soil. Deep friable loam and alluvial soil are best for its successful production. Good drainage, free from weeds and presence of organic matter favour production of good crop. It is sensitive to high acidity and alkalinity and the ideal pH is 5.8 to 6.5

Field preparation for Garlic

The field is ploughed to fine tilth by giving four to five ploughing with a sufficient interval between two ploughing. The ploughing should be shallow as most of the onion roots penetrate to a depth of 4.5 cm. Planting should be done for proper leveling. The field is then divided in to bed and channels accordingly their requirement.

Spacing

A spacing of 10cm (row to row) x 7.5 cm (plant to plant) is suitable for small clove variety. 15 cm (row to row) x 10 cm (plant to plant) spacing is desirable for varieties with bigger cloves.

Method of transplanting

Dibbing

Cloves are dibbed 5.0-7.5 cm deep keeping their growing ends upward by hand.

Furrow planting

Furrows are prepared with hand hoe and cloves are dropped into furrow by hand.

They are then lightly covered with loose soil.

Broadcasting

Cloves are broadcasted in a well prepared leveled and covered by harrowing.

Season of planting

The appropriate sowing time is October to November

Weed control

First weeding is done one month after planting and second one month after first weeding. Hoeing just before the formation of bulb, loosens the soil and helps in setting of bigger neck filled bulbs. The crop should not be weeded out or hoed at later stage because this may damage the cloves. Application of Basalin or pendimethalin @ 3.5 litres / ha should be used 2 days before planting and one hand weeding 45 days after planting.

Irrigation

First irrigation is given just after planting. Repeat irrigation 3 days after for ensuring germination. There after irrigate once in a week during vegetative phase and 10-15 days during bulb development. Avoid irrigation during bulb maturity. Irrigate 2-3 days before harvest to facilitate easy uprooting.

Nutrient Management

FYM @ 10-15 kg / ha should be incorporated to soil at the time of initial ploughing. Apply 100 kg of N, 50 kg of P and 50 kg of K per hectare through 200kg urea, 300 kg Single super phosphate and 100kg of Muriate of potash. Entire P and K along with half of N should be applied as basal dose. The use of Sulphur @ 30 – 50 Kg / ha and zinc sulphate @20 kg/ ha are recommended for enhancement in yield and quality. The use of speciality fertilizers (water soluble fertilizers) as NPK 19: 19: 19 @ 1% at 30-45 and 60 DAP followed by NPK-13: 0: 45 @ 1% at 75, 90 and 105 DAP increase the yield and enhance the storability substantially. The fertigation in 10 splits are recommended for higher bulb yield.

For garlic grown on arid system, the integrated nutrient management is recommended with saving of 50% chemical fertilizers NPK @ 50: 25: 25 kg/ha + zinc @ 10kg/ha + Azospirillum or Azotobacter @10 kg/ha + Phosphate solubilizing bacteria @ 10 kg/ha) to 70% chemical fertilizers (NPK @ 30: 15: 15 kg/ha + Sulphur @ 15 kg/ha + zinc @ 6 kg/ha + foliar spray of

poly feed @ 1 % at 15, 30 and 45 DAP followed by Multi –K @ 1% at 60,75 and 90 DAP) without any significant reduction in yield with improvement in soil health and environmental soundness in comparison to standard check (NPK @ 100: 50: 50) kg/ha + Zn @ 20 kg/ha)

The farm application of GA3 @25ppm at 45 & 60 DAP have been recommended to enhance the yield of garlic and improves the quality under Nashik condition of Maharashtra and Karnal condition of Haryana.

Use of Pendimethalin @ 3.5 l/ha + one hand weeding or Oxyfluofen @ 0.25 kg a.i/ha + one hand weeding are recommended for effective control of weeds in Garlic.

Plant Protection

Foliar diseases

Foliar spray of mancozeb (Dithane M-45) @ 0.25% or Ziram (Dithane Z-78) @0.3% with sticker Triton @ 0.06% at fortnightly intervals after appearance of disease recommended to control the purple blotch (*Alternaria porri*) and stemphylium blight (*Stemphylium vesicarium*) of garlic.

Management of Thrips

Sprays of deltamethrin 2.8% EC @ 0.095% at 15 days interval or fipronil 5% SC @0.1% at 10 days interval or profenofos 50% EC @ 0.1% or spinosad 45% SC @0.1% is recommended for reducing thrips population and increasing yield.

Post harvest Technology

Harvesting of Garlic at 75-100%neck fall stage, window curing till complete drying of tops and neck cutting leaving 2.5 cm neck above bulb and storage in nylon netted bags are recommended to reduce post harvest losses in garlic.

The cloves treated with Potassium orthophosphate solution @ 1% for 15 mins before planting are recommended to minimize the storage loss in garlic.