

care, however, not to destroy the roots of the crop. Chemically one can use registered herbicides.

Pest and disease control

Frequent pests affecting tomato include: nematodes, rust mites, red spider mite, American bollworm, American leafminer, aphids (the green peach aphid), cutworms, thrips and erinose mite. Frequent diseases include early blight, late blight, grey mould, leaf mould, powdery mildew, fruit rot, soft rot, bacterial canker, bacterial spot, bacterial speck, bacterial wilt, fusarium wilt, anthracnose, septorial leaf spot, mosaic, and spotted wilt. For control of both pests and diseases it is advisable always to plant resistant cultivars. Proper sanitation is essential as well. Practise crop rotation. Integrated pest and disease management is crucial and advisable. Bury or burn off infected crops.

Acknowledgement

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Tomatoes



agriculture,
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Department:
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REPUBLIC OF SOUTH AFRICA

Background

Origin and distribution

Tomato is indigenous to the Peru and Ecuador region in South America and it probably evolved from *Lycopersicon esculentum* var. *cerasiforme*, the cherry form. However, it was domesticated and first cultivated in Central America by the early Indian civilisations of Mexico. The Spanish explorers introduced tomato into Spain and it was later taken to Morocco, Turkey and Italy.

Climatic and soil requirements

Tomato is a warm-season crop that is sensitive to frost. An average daily mean of 20 °C to 24 °C is optimum for growth, yield and fruit quality. Fruit set and quality are poor at temperatures below 12 ° and 35 °C. Hot, dry winds cause excessive flower drop while continuous moist, rainy weather conditions result in the occurrence and spread of foliar diseases. It is, therefore, recommended that tomato be grown in dry areas under irrigation.

Tomato has given good results when grown in well-managed sandy loams and heavy clay loams free of hardpan. However, best results are obtained in deep, well-drained loams. The soil should be rich in organic matter and plant nutrients, with a pH value of 6 to 7.

Uses

Tomatoes are used in a variety of ways. Ripe tomatoes are consumed fresh or processed into purée, paste, powder, ketchup (tomato sauce), sauce and soup or canned as whole fruit. The unripe ones are pickled or used for preserves.

Tomato extract has been used to treat various diseases with traditional medicines in Japan, Greece,

Peru and Guatemala. Hot-water extract of dried fruit has been used to treat ulcers, wounds, haemorrhoids and burns while tomato poultice has been used to treat oedema during pregnancy. Fresh fruit apparently aids in digestion and in treating kidney and liver problems.

Cultural practices

Soil preparation

The soil should be well-prepared, loose and in good tilth.

Planting

Seedlings are raised in seedbeds and transplanted to the field. Transplanting is preferable if hybrid seed is used for early plantings and when producing for the fresh market. Direct seeding is usually done if the crop is going to be harvested mechanically or processed. The seeds are broadcast on the beds and covered lightly with soil. Seedlings are usually ready for transplanting 3 to 4 weeks after sowing and they should be transplanted on moist soil. The seedbeds should be irrigated after sowing and it should be done regularly until the seedlings reach a height of 5 to 7 cm. Seedlings should be planted 40–50 cm within rows and 120–180 cm between rows at a planting depth of 1 cm.

Fertilisation

The plants have a moderately high nitrogen requirement. Nitrogen promotes better growth and better flower and fruit set. A minimum application of 250 kg/ha is recommended in high-rainfall areas or for high production. Approximately a quarter of the nitrogen is applied at planting while the remainder is applied in the first 6 to 8 weeks of growth at 2 to 3-week inter-

vals. Further light dressings are applied over the next 6 or more weeks.

Tomato also has a high potassium requirement. Adequate levels of potassium result in improved colour, taste, firmness, and sufficient sugars, acids and solids of the fruit. Plant cells are also strengthened by adequate potassium levels. A minimum of 100 kg/ha potassium should be applied.

Phosphorus promotes root development, early flowering and fruit set and ensures more vigorous growth. A total of 40 to 60 kg/ha phosphorus is suggested in soils with a build-up of the nutrient. It is recommended that phosphorus be band-placed in acid soils.

Tomatoes also require micronutrients for growth and development. Deficiencies of magnesium, calcium, and molybdenum frequently occur in acid soils. Boron and copper deficiencies are not often found in tomatoes. However, boron deficiency, if it occurs, results in fruit cracking, pitted and corky areas, deformed shape/malformation and uneven fruit ripening. Iron has been found to be deficient on calcareous, alkaline soils or after heavy applications of lime. Manganese deficiencies are mainly found in calcareous soils.

Irrigation

Irrigation is critical in tomato production. Excess irrigation after a long dry spell without prior light irrigation results in fruit cracking. Plants that are irrigated late in the season produce watery fruit of poor quality. In most commercial plantings, sprinkler irrigation is used frequently. Drip and flood irrigations are not popular.

Weed control

It is always advisable to keep your field free of weeds that can serve as hosts for pests and diseases. Weeds can be controlled by hand-hoeing, taking