

free seed and crop rotation also help to control pests and diseases.

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Potatoes

Solanum tuberosum



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Background

Potatoes were first cultivated on the Titicaca Plateau in the Andes mountains of Peru and Bolivia where they formed the basis of both the Inca and Aymara Indian diet. Today potatoes are produced globally. In South Africa potatoes are produced successfully and in some regions you can produce two crops a year. Potatoes are produced from 16 production regions, which are spread throughout South Africa. The main producing regions are situated in the Free State, Western Cape, Limpopo, Mpumalanga, KwaZulu-Natal and Eastern Cape. The Free State is the leading producer of potatoes with 36% of the total national production. Western Cape comes second with 18% and Limpopo Province comes third with 16%. Potatoes are planted at different times because of climatic differences in the production areas. This has resulted in fresh potatoes being available throughout the year. The cultivars BP1, Up-to-Date, Buffelspoort and Vanderplank are commonly grown in South Africa, and seed potatoes of these cultivars are available readily. Selection of these potato cultivars depends on the specific production area and purpose.

Climatic and soil requirements

Potato is a temperate climate crop. However, it grows under a diverse range of weather conditions. The vegetative growth of the plant is best at a temperature of 24 °C, while tuber development is favoured at 20 °C. Loamy and sandy loam soils, rich in organic matter with good drainage and aeration are most suitable for the cultivation of the potato crop. Soil with a pH range of 5,2–6,4 is considered to be ideal.

Uses

Potatoes are marketed as fresh vegetables; tubers are mostly boiled, baked, or processed for manufacturing of dry, frozen and fresh chips.

Cultural practices

• PLANTING

Planting dates depend on the climate of the area. Where frost occurs, it is best to plant potatoes from August to January. In frost-free areas they can be planted from February to early June. Tubers can be planted 30 cm apart in furrows 90 cm apart and about 20 cm deep. Cover the tubers with enough soil to form a small ridge on top of the row, about 20–25 cm high.

• FERTILISATION

Pre-plant soil testing is necessary to determine the fertility status of the soil. Potatoes require a high level of soil fertility, from organic to inorganic nutrients. Organic manure is considered essential to obtain economic and high yields. Note that potatoes have a poor root system, so fertilisers should be applied at the same level as that of seed tubers in the furrow during planting. Fertiliser application (kg/ha) 2:3:4 (30) at planting time and limestone ammonium nitrate (LAN) at 6–8 weeks after planting.

• IRRIGATION

Irrigation along the furrows without wetting the leaves is best. Overhead irrigation systems like centre pivots are used in large-scale production. Ir-

rigate twice weekly from planting until the shoots appear. Stop watering when the plant starts to die.

• WEED CONTROL

Weeds can reduce yields by competing with potatoes for water, nutrients and light. The most critical period for weed competition is during early growth, from emergence until the plants are approximately 30 cm tall. Control common annual weeds such as redroot pigweed, lambsquarters and nightshade by hoeing or pulling during the ridging operation. Registered chemicals can also be used to control weeds. Crop rotation or cover cropping are other forms of controlling weeds.

• PEST AND DISEASE CONTROL

Late blight (*Phytophthora infestans*) is a disease which assumes serious proportions, particularly in winter. It can usually be expected after a few consecutive days of cool and moist weather. On the other hand, early blight (*Alternaria solani*) occurs from late summer and intensifies with the dew fall. Black scurf (*Rhizoctonia solani*) is a major tuber disease causing cankers and resulting in a poor stand. Common scab (*Streptomyces scabies*) is also the most common disease which affects the tubers. Varieties, BP1, Up-to-Date and Vanderplank are susceptible to common scab. Potatoes are very susceptible to nematode infestation. Root-knot nematodes occur in many South African soils and are very active, particularly in summer. Potato moths can also cause severe damage, particularly in dry seasons. Cutworms can damage newly emerged plants, resulting in a very poor stand of the crop. There are registered chemicals used to control pests and diseases. The use of disease-