



Weeds are controlled manually (hand hoeing) and mechanically.

Pest and disease control

AMERICAN BOLLWORM (*HELICOVERPA ARMIGERA*)

The adult moth has two distinct forms; one has grey front wings while the other is yellowish brown. The dark spots on the front wings often form a V-shaped mark.

The larvae feed on developing buds, squares, flowers and cotton bolls. Damage caused, result in shedding of bolls and consequently yield reduction. The beetles feed on the tender parts of the foliage until the squares or embryo flowers are formed as soon as cotton plants emerge in the spring after planting. Application of registered pesticides is recommended for the control of bollworms.

RED BOLLWORM (*DIPAROPSIS CASTANEA*)

The red bollworm moth is a dark, creamy pink moth with a reddish-brown band on the middle and edges of the forewing. The larvae are a creamy pink colour, with a dark head capsule. Larvae feed on squares and flowers causing severe damage, which affects yield. Populations of this pest can effectively be reduced by winter soil preparation as well as implementation of a cotton-free period (crop rotation). Application of a registered pesticide is recommended.

CUTWORMS (*AGROTIS* spp.)

Cutworm larvae generally do the most damage to emerging seedlings by attacking them at soil level or damaging subterranean stems of older seedlings by eating a hole in these. Cutworms feed on the cotton plant, consuming the leaves and cutting down plants. Keeping fields free of weeds and plant materials for at least 6 weeks prior to planting reduces the chance of serious cutworm damage.



Application of a registered insecticide during seedling emergence is recommended for the control of cutworms.

RED SPIDER MITES

The spider mites suck juice from the underside of the leaves. Spraying the undersides of the leaves with a solution of potassium sulphide is an effective control method. Lime-sulphur or fish-oil soap sprays are also effective.

VERTICILLIUM WILT DISEASE

Verticillium wilt of cotton is caused by *Verticillium dahliae*, a soil-borne fungus that enters the roots and grows into the vascular system of the plant. Symptoms of infection appear as necrotic areas on leaves, wilting, and usually discoloration of the vascular tissue. *Verticillium dahliae* survives in the soil for long periods of time as microsclerotia, tiny structures produced in the plant tissue. Rotation with alfalfa and grains may reduce the number of microsclerotia in the soil.

Further information can be obtained from:

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Cotton

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Background

Cotton belongs to the Malvaceae or mallow family and to the genus *Gossypium*. Cultivated cotton is annual or biennial in growth. The plants have tap-roots with many branches and its species are distributed mostly in the tropics and warm regions of the world.

Origin and distribution

The word "cotton" originates from the Arabic word "qutun". Pieces of cotton bolls and cotton cloth more than 7 000 years old have been found in pre-historic caves in Mexico. Three thousand years before the birth of Christ, the Egyptians in the Nile



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valley were already manufacturing and wearing cotton clothes. Cotton is cultivated in Mpumalanga, Limpopo Province on the Springbok Flats from Bela-Bela to Mokopane, Northern Cape in the lower Orange River, Vaalharts, Douglas and Prieska districts, KwaZulu-Natal on the Makhathini flats and North West Province covering the areas of Taung, Stella, Delareyville and Mareetsane. It constitutes 74 % of natural fibre and 42 % of all fibre processed in South Africa.

Climatic and soil requirements

Cotton is a warm season crop and develops best when the mean summer temperature is above 25 °C. Average temperatures during the growing season should be at least 28 °C with the minimum night temperature of at least 15 °C. Seed cotton requires a long growing season (180–240 days) with average daylight of at least 11 hours/day. A frost-free period of about 200 days is required. Cotton is particularly sensitive to hail and therefore areas subject to hailstorms should be avoided.

Cotton grows well in areas with a rainfall of about 750 mm per annum. Well-drained sandy loam soils with a good moisture-holding capacity are suitable for cotton production. It also grows well on a soil pH range between 6,0 to 8,5.

Uses

The main products of cotton lint are weaving yarns (used for toweling, denim, sheets, etc.) and knitting yarns (used in knitted fabrics for T-shirts, underwear, etc.). Major products made from cotton seeds are meal (feed); oil (used in margarine, soaps, etc.); hulls (used for feed, fertilisers, synthetic rubber,

etc.), linters (used in pulp, medical appliances, yarns and felts) and planting seed.

Cultural practices

Planting

The seed should be planted at a depth of 3 cm with a spacing of 1 m apart between the rows and 20 to 30 cm in rows for irrigated land and 30 to 40 cm for dryland (possible to control weeds by mechanical means) for the development of strong, healthy seedlings. A seeding rate of 25 kg/ha is sufficient. The seed is lightly pressed into a firm seedbed and covered with loose soil and light irrigation of 15 to 20 mm after planting will promote a good stand. Under optimal conditions of soil moisture, the seedlings will emerge within 7 days. Irrigated cotton planting normally takes place from mid-October to mid-November. Dryland cotton planting normally takes place from 01 October to 30 November, depending on suitable rainfall and right soil temperature.

Propagation

Cotton is propagated through the seed. Cotton seed obtained directly from the ginning process is not suitable for planting purposes because it is covered with cotton fuzz or lint. Mechanically-delinted seed is fairly suitable if planting is very dense or planting is done manually.

Fertilisation

Phosphorus fertiliser is broadcasted and worked into the soil during primary cultivation. Nitrogen is applied through broadcasting directly into the soil and as topdressing during the growth period. Direct contact between seed and fertilisers should be avoided.

General fertiliser guidelines for nitrogen, phosphorus and potassium as per target yield.

Seed cotton yield			
(kg/ha)	N	P	K
1 000	90	15	60
1 500	140	18	65
2 000	180	20	70
2 500	215	28	85
3 000	230	30	90
3 500	240	30	15
4 000	245	30	130
4 500	250	30	140

Source: ARC-IIC cotton division

Irrigation

Cotton is an excellent candidate for irrigated land, particularly in areas that frequently experience drought periods. Irrigation intervals for most of the season will be 3 to 4 days for coarsely textured sand, 4 to 6 days for more productive loamy sand and sandy loam, and 5 to 8 days for finely textured sandy loam. A 4 to 6-day interval will fit a large majority of the situations.

Weed control

Weeds affect the cotton crop through competition for fertiliser, moisture, light and space. Weeds are a host to some insects, impede mechanical operations, affect the quality of cotton and reduce yields.

