



Vol: Ind SC 1



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



Background

Sugar cane is the common name of a species of herb belonging to the grass family. The botanical classification of sugar cane is *Saccharum officinarum*, and it belongs to the family Gramineae. It is a perennial plant which can grow up to 4,25 m.

Origin and distribution

The names sugar and sugar cane have been derived from the Sanskrit word, Sharkara. Sugar cane is indigenous to India. In South Africa the crop is grown in 14 cane-producing areas extending from Northern Pondoland in the Eastern Cape Province through the coastal belt and KwaZulu-Natal midlands to the Mpumalanga Lowveld.

Climatic and soil requirements

Sugar cane is a tropical crop requiring a hot climate. However, it also grows well in a subtropical climate. It has wider adaptability and grows well where the temperature ranges between 20 and 35 °C. It responds well to a long period of sunlight (12 to 14 hours). High humidity (80–85%) favours rapid cane elongation during the main growth period. It requires a rainfall of between 1 100 and 1 500 mm, abundant in the months of vegetative growth followed by a dry period for ripening.

Humic soils from 100 to 150 cm depth with good drainage are most suitable. It grows well in deep, well-drained soils of medium fertility of sandy loam soil textures with a pH range between 6,0 to 7,7.

Uses

Sucrose is used as a sweetening agent for foods and in the manufacture of cakes, candies, preservatives, soft drinks, alcohol, and numerous other foods. The primary use for sugar cane is to process sugar, which can then be used in producing an infinite number of products. The type of sugar produced by sugar cane is called sucrose.





Cultural practices

Planting

The setts are planted at a 45 degree angle or laid horizontally in a furrow and thereafter are covered lightly with soil until they sprout, then the sides of the furrow are turned inward. The ideal time for planting under irrigated conditions is from February to April, and April to May under rain-fed conditions. Furrows for planting should be approximately 100 mm deep.

Row and plant spacing for manual planting is 1,0 to 1,3 m x 0,5 m. For normal mechanical operations, the best row spacing is between 1,4 and 1,6 m.

Propagation

Sugar cane propagation is by means of stem cuttings of immature canes 8 to 12 months old. These are called setts, seed, seed-cane or seed-pieces.

Fertilisation

Sugar cane being a giant crop producing a huge quantity of biomass, generally demands higher volumes of nutrient elements. 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					
Region	Crop	Nutrients (kg/ha)			Remarks
		N	P	K	
Inland	Plant cane	100–120	40	100	N and K for plant cane in 2 split applications
Coastal lowland	Ratoon	140	20	150	
Natal midlands	Plant cane	80	60	125	
Lowveld	Ratoon	120	40	175	
	Plant cane	120	30	125	
Source: www.sugarcane-crop.com/agronomic_practices					





It is recommended to perform soil analysis for the correct quantity of fertilisers for sugar cane.

Irrigation

The frequency of irrigation depends on the stage of development of the sugar cane. Light, frequent irrigations are preferred when the seed is germinating and the young seedlings are getting established

Weed control

Weeds can be removed from the field manually by hand hoe. Weeds can reduce sugar-cane yields by competing for moisture, nutrients, and light during the growing season.

Pest and disease control

ELDANA BORER (*ELDANA SACCHARINA*)

Eldana borer is the caterpillar of the moth *Eldana saccharina*, an insect that is indigenous to Africa. It is a very active, tough, brown, rather leathery borer that wriggles vigorously when disturbed, and may elude capture by descending from its host plant on the silken thread which it readily spins. *Eldana* larvae feed as scavengers extensively inside the cane stalks, causing severe loss in cane quality. Control by using registered insecticides is recommended.

SESAMIA BORER 'TOP GRUB' (*SESAMIA CALAMISTIS*)

This borer is the larval stage of an inconspicuous moth. The damage caused by *Sesamia* borer is similar to that caused by *Eldana*, but younger tissue is attacked (often young plant or ratoon cane) and is noticeable in very young sugar cane where, as 'top grub', it causes 'dead hearts'. Natural control by parasites prevents serious outbreaks of *Sesamia*.

NITIDULID BEETLES (*CARPOPHILUS HUMERALIS*, F. *CARPOPHILUS* SPP.)

Nitidulid beetles are shiny black or dark brown in colour. They are 3 to 4 mm long with distinctly clubbed antennae. Both larvae and adults are frequently found in cane sets which have failed to germinate. Control by preplant dipping of sets in an insecticide, as for *Eldana* borer.





TERMITES (WHITE ANTS)

Mainly *Macrotermes natalensis* (Hav). Termites are small, soft-bodied, creamy insects which inhabit nests and which resemble ants. They may attack cane at soil level, sometimes causing the stalks to collapse. A suitable contact insecticide applied to the base of the cane row will serve as a deterrent. Control by using registered insecticides is recommended.

TRASH CATERpillARS OR RATOON WORMS (*MYTHIMNA PHAEA* HAMPS.)

Adult moths are the colour of cane trash but the caterpillars are striped in alternate light and dark shades of a brownish-grey colour. The larvae attack the leaves of young ratoon between April and November and are capable of completely defoliating the crop. A wide variety of parasitic insects and pathogens attack trash caterpillars in the field and are important as natural control agents. Insecticides are also effective in killing the worms. Control by using registered insecticides is recommended.

LEAFHOPPER (*PERKINSIELLA SACCHARICIDA* KIRK)

These leafhoppers are found throughout the cane belt. Adults are about 7 mm long, slender with discontinuous brown to black wing markings. They are usually inserted in the upper surface of leaf midribs near the junction between the leaf and the sheath, causing conspicuous red blotches. Natural control by predators and parasites is usually adequate.

RATOON STUNTING DISEASE

It is an important disease, caused by the bacterium *Clavibacter xyli* subsp. *xyli*. Ratoon stunting disease is an insidious problem in that it can spread rapidly and has no easily recognised symptoms. Infection can be identified with certainty only by submitting samples to the Experiment Station for diagnosis. Diseased plants become stunted, often giving affected fields an uneven appearance, particularly in ratoon crops. Reddish-brown dots or streaks at the base of the nodes may be seen when mature stalks are sliced lengthwise. This disease can be controlled by planting only healthy seedcane and sterilising cane knives and harvester blades. This is particularly important when cutting seedcane fields or nurseries.





MOSAIC DISEASE

Mosaic is the most important virus disease of sugar cane in South Africa. Mosaic is capable of causing severe yield losses in several important varieties. Infected plants tend to have a yellowish-green appearance on the young internodes of the stalk and may be severely stunted. Planting of resistant varieties, healthy seedcane and avoiding proximity to maize are some of the control methods.

LEAF SCALD

Leaf scald is an important disease in South Africa, caused by the bacterium (*Xanthomonas albilineans*). It is potentially a very serious disease, and can cause unpredictable and severe damage to susceptible varieties. The visual symptoms of this disease are blotchy leaf chlorosis; narrow, sharply defined white lines on the leaves; leaves wither and curl inwards and red streaks appear at the nodes within affected stalks. This can be controlled by planting resistant varieties, using healthy seedcane and sterilising cane knives, especially during seedcane preparation.

SMUT DISEASE

Smut is the most important fungal disease of sugar cane caused by a fungus (*Ustilago scitaminea*) in South Africa. It is most severe in the irrigated northern areas and in northern part of KwaZulu-Natal. Dark brown, whip-like structures usually develop from the tops of infected shoots and stalks. The control measures are planting resistant varieties, planting disease-free seedcane and ploughing out fields with severe smut. Eradicate volunteer plants before replanting.



Further information can be obtained from:

Directorate Plant Production
Private Bag X250
PRETORIA 0001

Tel +27 12 319 6072
Fax +27 12 319 6372
Email Thabo.Ramashala@daff.gov.za

2007

2012 (revised)

Printed and published by:
Department of Agriculture

Obtainable from:
Resource Centre
Directorate Agricultural Information Services
Private Bag X144
PRETORIA
0001