Irrigation

Sorghum is intolerant of sustained flooding, but will survive temporary waterlogging. Maximum yield requires up to 500 to 600 mm of moisture.

Weed control

Weed control during the first 6 to 8 weeks after planting is crucial, as weeds compete vigorously with the crop for nutrients and water during this period. They can be controlled mechanically using hand labour or implements, culturally that is ploughing during winter or early spring and chemically using chemicals formulated as liquids or granules to kill germinating or growing weeds.

Pest control

Grain crops are susceptible to various insect pests that affect growth and yield of crops. Chilo borer and maize stalk borer have an economic threshold of 10 % infested plants in a sorghum field. Aphids control is important but spraying at first indication of an infestation is not necessary. With bollworm when an average of two larvae occur per panicle then spraying should take place.

Disease control

Sorghum is susceptible to a number of viral and bacterial diseases that may result in low yield and poor quality; however they can be controlled using disease free seeds or certified seeds, scheduled irrigation and use of resistant cultivars.

Harvesting

Sorghum should be harvested when seeds are in milk to dough stage. The crop is cut by hand or mower, heads are dried in heaps on the ground or threshing floor for 10 to 14 days. Seeds are stored at 12 to13 % moisture or less.

Uses

Human uses: It has been used in food products and various food items; porridge, unleavened bread, cookies, cakes, couscous, and malted beverages. The whole grain is milled into flour.

Livestock uses: Used as animal feed and might be milled, crushed and steamed to enhance the grain feeding for dairy cattle, laying hens, poultry and pigs. Sorghum serves as an important summer fodder and, most important for silage, or for hay when grown under irrigation in dry areas.

Industrial uses: Used in making wallboard and biodegradable packaging materials and can also be used interchangeably with maize for the production of ethanol.

Acknowledgements

ARC—Grain Crops Institute, Potchefstroom

Further information can be obtained from:

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Sorghum

Scientific name: *Sorghum bicolor*

Common name: Grain sorghum, Mabele thoro, Amazinba, Amabele

agriculture, forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Background

Sorghum is considered to have originated in Ethiopia and its main centre of distribution is in Africa. Cultivated sorghums were possibly developed independently in India and China. The cultivation of sorghum has spread to other parts of Africa, India, Southern Asia, Australia and the United States. Sorghums are now widely distributed throughout the tropics, subtropics and warm temperate areas of the world.

Production areas

Free State	Xhariep, Motheo, Lejweleputswa
Mpumalanga	Gert Sibande, Nkangala, Ehlanzeni
North West	Ngaka Modiri Malema, Dr Ruth Segomotsi Mompati, Dr Kenneth Kaunda
Limpopo	Waterberg, Vhembe
Gauteng	Metsweding

Agronomic requirements

Climatic requirements

Its seeds germinate best at temperatures of between 20 and 35 °C. Higher or lower temperatures will cause poorer germination. Temperature also affects flowering and flowering occurs best at 22 to 26 °C rather than at 17 to 20 °C. Sorghum is very sensitive to frost. It requires full harnessing of incoming radiation for high yields of grain and does not grow well in shade.

Rainfall

Sorghum is mostly grown in an annual rainfall range of 300 to 750 mm. Early drought stops growth before floral initiation and the plant remains vegetative. Late drought stops leaf development but not floral initiation. The crop has a relatively deep rooting that can extract water from low sources.

Soil requirements

It grows on a wide range of soils, from the deep sandy loam, loamy to the heavy, black, cracking clays. It requires well-drained soils with a pH of 5 to 8,5. Dry soils need to be compacted so that the seed comes into contact with the soil to receive the available moisture, and this ensures that the temperature around it does not drop dramatically.

Cultural practices

Propagation

Sorghum is propagated through seeds and can be rooted for a second crop, especially for animal feed. It can also produce tillers that bear seeds and when mowed, it is able to regenerate after planting.

Soil preparation

Sorghum is grown on a well prepared seedbed. The seedbed should begin promptly after the previous crop is harvested to allow ample time for weed control, decay of crop residue, infiltration and storage of soil moisture, fertiliser application and soil firming.

Fertilisation

Fertiliser application is determined by soil type and rainfall. A basic dressing of NPK may be required, and the crop usually responds well to additional dressing of nitrogen during growth. Leguminous crop rotation may give low-cost fertility build-up. Generally fertiliser with P and K is used. Sorghums respond well to N fertilisers and are sensitive to low P and K. Low-grain protein results when nitrogen deficiency occurs between anthesis and maturity.

Planting

Planting can be done manually or mechanically. Seed is often planted by hand hoe and covered; the spacing depends on the expected rainfall. Planting can be done from mid-October to mid-December with soil temperatures above 18,5 °C. Small hand drills are available as a first step in mechanisation; complicated grain and fertiliser drills for precision placement are used in advanced agriculture.

Seeds are sown in a spacing of 75 to 100 cm between rows and 30 cm in the row at a plant density of 28 600 to 75 000 per ha under dryland conditions and at a higher seeding rate in relatively high-rainfall areas. In good rainfall or under irrigation, seed should be close drilled or broadcast at rate of 20 to 35 kg/ha to a depth of 1,5 to 5 cm.