

SORGHUM GROWERS GUIDE

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Introduction

This falls under small grain cereals which are drought tolerant and should be included in rotations on small-scale farms. Not only may the grain be used for human food, but they are also useful for livestock feeding and silage. A break of two or three years between sorghum crops is recommended because sorghum is susceptible to nematodes. Rotate with broadleaf crops, like soyabean or groundnuts.

Soils and climate

These crops grow best in warm areas. They are grown on a wide range of soils. Sorghum is sensitive to nematodes, especially on sandy soils, and therefore sorghum must not be grown continuously on its own nor in a close rotation with maize.

Fertilisation

Sorghum does not do well on sandy soils. Generally, little fertiliser is required or applied to small grain crops. However, they will respond to manure applications, and where the rainfall is favourable, sorghum, in particular, will respond well to a low application of basal fertilizer (100 to 300 kg of 7.14.7 per ha) followed with a top dressing of 100 to 200 kg per ha of 28 - 34% N fertilizer. Sorghum also favours a soil pH of 5.5 to 6.8 on a Calcium Chloride Scale.

Varietal choice

The two preferred varieties in Zimbabwe are:

SC SILA

- ❖ Used for human consumption and livestock feed.
- ❖ Medium maturing variety with a good yield potential of up to 6 T/Ha.
- ❖ Short statured and does not lodge easily.
- ❖ Tolerant to most sorghum diseases.

SC SMILE

- ❖ Brown seeded OPV with good brewing qualities.

- ❖ Early maturing variety.
- ❖ Stiff straw that averts lodging.
- ❖ High yield potential of up to 6 T/Ha under good management.

Characteristics of Seed Co Sorghum varieties

	MACIA	SC SILA	SC SMILE
Plant height cms	150	150	80-100
Days to maturity:			
Lowveld (below 800 m)	110	110	105
Middleveld (800 – 1,200 m)	120	120	113
Highveld (over 1,200m)	130	130	120
Leaf Blight Score	2.4	2.2	4.1
Sooty Stripe Score	4.6	4.5	1.4
Mass/1,000 seed (g)	20	20	20
Grain Colour	White	White	Brown
Principle use	Meal	Meal	Brew

Production practices

- ❖ It is not advisable to continuously plant a sorghum crop due to pest build-up.
- ❖ Spacing: 75 X 5 cm, 5 – 7 kg seed/ha for small seed and up to 10 kg for large seed. Final stand for SC Smile SC Sila and Macia should be 200 000 and 250 000 plants/ha, respectively.
- ❖ Planting Time: From end of November through to end of December in Zimbabwe.
- ❖ Keep fields weed free by making use of herbicides or hoe weeding
- ❖ Scout for aphids and bollworm during head emergence and grain filling periods.
- ❖ Harvest early to avoid bird damage and should engage bird scares when growing susceptible varieties.

Nutrients required per tonne of grain

Nutrient	Total uptake (Kg)	Nutrients removed In grain (Kg)
Nitrogen (N)	30	18.0
Phosphate (P2 O5)	10	7.2
Potash (K2O)	30	5.4

Planting

- ❖ Small grain crops may be planted after maize in early December. They can be sown in 50 to 100 cm rows. A seeding rate of 5 to 15 kg is recommended depending on variety and use.
- ❖ Basal fertilizer is broadcast and incorporated by discing before planting can commence. The common practice of planting is broadcasting seed on a well ploughed land (with fine tilth) and covering lightly using a light harrow, roller, bush drag by cattle over the lands and covered to a depth of 2-3 cm.
- ❖ Mechanical planting using seed drill can also be done but this will require high seed rates and will require more labour for thinning.

Thinning

- ❖ Thinning should be done to establish an in- row spacing of 15-20 cm and this should be done before tilling begins and is normally done 4 weeks after emergence.
- ❖ At this stage it is also recommended to fill in for the seeds that that did not germinate or seedlings that were affected by diseases.

Recommended seed spacings, seed rate and populations for sorghum

		Average Annual Rainfall			
		Below 500	500 - 650	650 - 800	Irrigated
Row Width		Recommended plant population			
		60000	90000	110000	250000
		Within row seed spacing (mm)			
	90cm	155	85	60	30
	75cm	140	100	75	40
	Seed Rate	5kg/ha	8kg/ha	12kg/ha	15kg/ha

Pests

- ❖ Aphids: These usually appear during head emergence and flowering. If necessary, spray with Dimethoate (Rogor) or Mercaptothion (Malathion).

- ❖ Heliothis bollworm: These caterpillars may attack the heads after flowering. Control with Thiodan before 1st February or with synthetic pyrethroids from February onwards.
- ❖ Stalk borer: This is the same pest as in maize. If necessary, use trichlorfon (Dipterex) or Endosulfan (Thiodan) granules applied in the funnels at 3 to 6 weeks after planting. Alternatively, spray into the funnels with Carbaryl. Extensive damage by stalk borers may result in the introduction of Fusarium stalk rot, stem lodging and considerable loss of grain yield.
- ❖ Shoot fly: Feeding larvae cause drying up of central leaf and dead heart symptoms on 1-4 week old seedlings. Timely planting, thionex and carbaryl are the chemical control remedies.
- ❖ Spider mites: Suck sap from the leaves to cause stunting especially rife during hot dry spells. Acaricides will be a good chemical control measure.
- ❖ Birds: These become a problem as the crop approaches maturity. Bird scaring is the only effective way of minimising bird damage, but community co-operation in planting dates may also help to spread the risk. Red/Brown sorghum is bird resistant.

Diseases

- ❖ Leaf Blight: This is common in southern Africa, and is favoured by moderate air temperatures and wet conditions or heavy dews. Dry weather retards the disease. Rotation with non-susceptible crops (non-grasses) aids in destruction of infected residue thereby reducing the level of primary infection.
- ❖ Downey mildew: Infested seedling leaves are chlorotic, stunted and pre-mature death may result. Use of Seed Co resistant varieties is the smartest control method
- ❖ Smut: Ear head becomes swollen and turn grey. Use of Seed Co resistant varieties is the smartest control method

Other management tips:

- ❖ Sorghum is very sensitive to weed competition especially during the early stages of growth and establishment. Normally 2-3 hoe-weeding regimes are done even though the use of pre-emergence herbicides like atrazine can be recommended in soils with greater than 25% clay content. Control weeds throughout, but especially in the early stages of crop growth.

- ❖ Employ rain harvesting techniques (pot-holing or tied-ridging).
- ❖ Harvest early to minimise bird damage.
- ❖ If red sorghum destined for brewing is to be artificially dried, low air temperatures (35 to 38 degrees celcius) must be used in order to preserve grain quality and germination ability.

Harvesting/drying /storage

Harvesting is normally done when plants reach physiological maturity. Leaves will be turning yellowish and beginning to dry up naturally.

Marketing

Grain sorghum is marketed through the grain marketing board that presets the prices and also other private buyers such as milling companies, beer malting companies etc. Private companies like Delta can buy brewing sorghum from farmers mostly those under their growers' contracts.