

## Forage Sorghum

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### INTRODUCTION

Forage sorghums are a group of *Sorghum* species and hybrids which have been bred for forage production and are commonly used as annual forage or hay crops. They are tall (to 3.8 m), leafy, erect, tussock grasses. The stems can grow to 1.5 cm thick in some varieties. The leaves are large, up to 4 cm wide and up to 1 m long. The size and shape of the seed head varies with the variety, as does the colour, shape and size of the seed.

Traditional forage sorghums were not well suited to Northern Territory conditions, but with the release of a number of late-flowering types in recent years, forage yields of up to 20 tonnes dry matter per hectare are possible under good moisture and nutrient conditions.

### TYPES OF FORAGE SORGHUM

The main types of forage sorghum available are discussed below.

#### a) Sudan grass hybrids

- fine stems, therefore good for haymaking;
- a range of varieties with different flowering times; Superdan and Betta Dan are late-flowering varieties.

#### b) Grain sorghum x Sudan hybrids

- medium stems;
- traditional (intermediate flowering, e.g. Sudax, Speedfeed) and ultra late (short-day) flowering varieties (Jumbo and Cowpow). Ultra late-flowering varieties are capable of very high forage yields in the Top End when well fertilised.

#### c) Sweet sorghum hybrids

- thick stems with high sugar content;
- less regrowth than other types;
- late flowering.

#### d) Open-pollinated sweet sorghum

- only one variety, Sugardrip;
- low yield in the Top End;
- thick stems;
- intermediate flowering.

**e) Dual purpose grain sorghum hybrids (e.g. Graze-N-Sile)**

- grow to 1-2 m high;
- can be grown for grazing, grain production, or silage.

**f) Perennial sorghum**

- Silk sorghum is a short-lived perennial more suitable as a pioneer or in a short-term pasture rotation. Management of silk sorghum is covered in a separate Agnote (see Agnote E67 "Silk Sorghum").

## **CLIMATE AND SOILS**

In the Top End of the Northern Territory, forage sorghums are suited to deep, well-drained soils in areas receiving between 900 and 1300 mm annual rainfall. Forage sorghums are quite drought resistant, but less so than Bulrush millet. Waterlogging is detrimental to establishment and growth.

## **SOWING**

Forage sorghum may be sown by no-till, minimum till or conventional till, depending on available machinery and paddock condition. Sowing no-till or minimum till requires a reasonable quantity of surface mulch which provides better access, better moisture retention, less erosion risk and lower soil surface temperature.

Conventional tillage requires a well-prepared seed bed for optimum establishment. Seed should be sown in 35 cm spaced rows at a rate of 15 kg/ha for sorghum hybrids and 10 kg/ha for Sudan types. Higher sowing rates can be used for irrigated crops. If sowing in combination with a legume, the sowing rate of forage sorghum can be halved.

The use of a combine, air-seeder or row crop planter to sow at 2.5–5 cm depth is preferred (use press-wheels if available). Broadcasting and harrowing seed may give unreliable results.

## **FERTILISER**

Forage sorghums have similar nutrient requirements to maize. The past history of the paddock will influence total fertiliser requirement. Soil nutrient analysis will assist in determining fertiliser type and rate. In general, the crop will require at least 20 kg/ha phosphorus and sulphur and 100 kg/ha nitrogen. Potassium, molybdenum or zinc may be required on some soils. Consult your local extension officer if you require more information.

## **WEED CONTROL**

If sown into a weed-free seedbed, the rapid growth rate of forage sorghum usually overcomes any weed problem.

If weed control is required, atrazine at 1.25 – 3 kg/ha active ingredient, depending on weed type, can be applied post-planting pre-emergent. For broadleaf weeds, 2, 4-D can be used with care at the seedling stage – 1.1 L/ha of 50% 2, 4-D Amine when the crop is 7-15 cm high and secondary roots have developed. Fluoxypyr (Starane 200® at 0.75 L/ha) to control broadleaf weeds may be used post-emergent when secondary roots have developed. These herbicides should **not** be used if a companion legume is sown.

**High rates of herbicide should be avoided on sandy soils.**

## UTILISATION/MANAGEMENT

### a) Grazing

Short rotational grazing - the ideal grazing height is 1 - 1.5 m, with stock removed once the crop is grazed down to 15 cm if regrowth is required.

Extensive grazing - maximum quality forage will be available if grazing commences when the crop is 1-1.5 m high, but grazing of the late-flowering varieties can be delayed if necessary. Sweet sorghums are favoured for late grazing, as the high sugar content improves feed quality and palatability.

A forage legume such as cowpeas or lablab can be sown with forage sorghum if a higher quality forage mixture is required. Sowing rates should be adjusted if under-sowing with a legume.

### Precautions when grazing forage sorghum:

All sorghums contain prussic acid, which in high doses can cause poisoning. Prussic acid content is highest in new or stressed growth and problems are most likely when hungry animals gain access to such crops.

- Feed hungry stock before putting them onto forage sorghum and introduce only a few animals at first.
- Wait until the crop is 80 cm high before grazing.
- Adequate phosphorus nutrition of the crop lowers the risk
- Provide animals with a sulphur supplement. Sulphur is used in detoxification of prussic acid by the animal. Forage sorghums tend to have low sulphur content and animals grazing sorghum as a sole fodder may become sulphur-deficient.

The treatment for prussic acid poisoning is to drench cattle with 55 g photographic hypo (sodium thiosulfate) in 600 mL water. The sodium thiosulfate can also be given intravenously or by intra-ruminal injection.

**An alternative is to grow other forage crops such as bulrush millet, cowpeas or lablab.**

### b) Hay

Palatable hay can be made from forage sorghums. The fine stemmed Sudan grass types make good hay. If sorghum x Sudan hybrids or sweet sorghums are cut for hay, a mower conditioner is essential because of the thicker stems. The optimum cutting time is early flowering, striking a balance between forage quality and the likelihood of rain damage. Up to 20 tonnes/ha dry matter can be harvested from good stands of the later maturing varieties.

### c) Forage harvesting

High quality green chop can be obtained from a well fertilised forage sorghum crop. Maximum feed quality and regrowth will be obtained by harvesting the crop when 1 - 1.5 m in height. A variety capable of rapid regrowth should be chosen.

### d) Silage

While all forage sorghums can be cut for silage, sweet sorghums with their high sugar content are best. There are also "dual purpose" sorghums available, such as Graze-N-Sile and Feed n Grain. Forage sorghum for silage should be cut at the early dough stage – i.e. 30-40% moisture.

## POTENTIAL VARIETIES FOR THE TOP END

This table should be used as a guide only, as new varieties are released regularly.

Intended use	Type of forage sorghum	Varieties
Extensive grazing	Ultra late flowering	Jumbo, Cowpow
Intensive grazing	Good regrowth potential	Jumbo, Superdan, Speedfeed
Hay	Fine stems, late flowering	Betta Dan, Superdan, Sugargraze
Silage	High sugar content	Sugargraze, Graze-N-Sile, Feed n Grain
Green chop	Very rapid regrowth	Speedfeed, Jumbo

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