

## Yield

Variety	Duration to maturity (days)	Height (m)	Grain yield (t/ha)	Dry matter yield (t/ha)
E6518	230	3.0	3	26
E1291	160	1.7	6	18
Ikinyaruka	160	1.7	7	18
BJ28	110	1.0	3	14
BM30	210	2.5	6	22

All but E6518 are dual purpose varieties

## Livestock feed

You can feed sorghum to livestock as wilted green chop, silage and grain. It is primarily a source of energy, with an estimated 65% total digestible nutrients (TDN); it also contains about 13% TDN of protein. When fed to ruminants as either silage or wilted green chop, it can provide up to 67% of required roughage and up to 20% of the total diet as a ground grain supplement.

When fed to lactating dairy cows, brown-seeded sorghum must be supplemented with adequate levels of minerals and vitamins to minimize deficiencies associated with it.



Sorghum variety BM30; note the brown midrib

Sorghum grain is used as an energy source in formulating livestock rations. Sorghum contains hydrogen cyanide (prussic acid), high levels of which may poison ruminants. Although acid levels are low in the varieties developed in KARI Lanet, it is prudent to wilt the herbage for at least 12 hours before feeding it. When wilted, sorghum can be fed ad lib, although the animal will require other protein and mineral supplements.

## Advantages of sorghum as livestock feed

- Sorghum is both cold tolerant and drought resistant as compared with other fodder crops such as maize and Napier grass.
- It can replace maize one-to-one as green chop, silage and grain for feeding to both ruminants (cows and goats) and non-ruminants (pigs and poultry).
- Sorghum grain has an energy level comparable with that of other common cereals, such as maize.
- It can survive dry-spell conditions then resume growth once moisture becomes available because of its morphology and physiology.

## Disadvantages

- Some varieties, especially those with brown seeds, contain high levels of tannins, which are anti-nutrients.
- Some sorghum varieties are high in hydrogen cyanide (prussic acid), which can poison ruminants; hence the need to wilt the fodder before feeding it as green chop.
- Sorghum grain should be ground for optimal digestibility.
- At its early stage, sorghum does not compete well with weeds so a weed-free field is necessary.
- Bird damage can lead to serious, even total loss of grain; thus scaring birds is necessary from milky stage to grain maturity.

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East Africa Dairy Development  
in partnership with  
ILRI  
TechnoServe  
RBS  
World Agroforestry Centre



**Highland forage and dual-purpose sorghum for livestock feed and human food**



Ratoon crop of E6518

Sorghum is a coarse perennial grass, but it is usually treated as an annual, adapting widely to geography and climate. It requires relatively little water and fertilizer and its yield potential in the semi-arid tropics is high. KARI has developed a number of sorghum varieties. Dual-purpose sorghum is used both as human food and livestock feed, forage sorghum for livestock feed only.

To be considered a forage sorghum, about 20% of the total dry matter must come from the grain and about 80% from stover; in dual-purpose sorghum about 40% of the total dry matter is from grain and about 60% from stover.

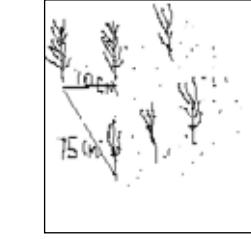
A good forage sorghum variety is **E6518**. It takes 230 days to mature and can grow to 3 m at optimal harvesting stage. A good dual-purpose variety is **E1291**. It matures in 160 days and can grow to 170–200 cm. Both E1291 and E6518 do well in cold dry highlands, at an altitude of 1500–2000 metres and with 650 mm annual rainfall. Both varieties are brown seeded with white midribs. The Kenya Agricultural Research Institute in Lanet has also developed other sorghum varieties, all brown seeded. Ikinyaruka, BJ28 and BM30 are dual purpose. BM30, the only one of these varieties with brown midribs, is 10% more digestible than the other varieties, which are white ribbed.

Unlike other fodder, such as Napier grass, sorghum is easy to ensile because it is not necessary to add sugar to facilitate fermentation.

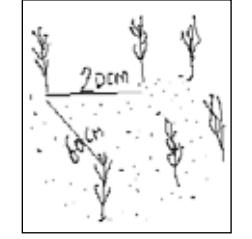


**E1291 dual-purpose sorghum**

**forage sorghum**



**dual-purpose sorghum**



**Interrow spacing**



**E1291 dual-purpose sorghum on left, E6518 forage sorghum on right**

### Land preparation

For both forage and dual-purpose varieties, start preparing the land at the end of the rains following a crop season. Ensure fine tilth or alternatively practise zero tillage using herbicides.

### Seed rate and spacing

The seed rate is 6–8 kg/ha. Seed forage sorghum at 75 x 10 cm, dual-purpose sorghum at 60 x 20 cm. This spacing for dual-purpose sorghum allows for a high grain-to-herbage ratio.



### Sowing

Sow at onset of the long rains. Drill seeds along the furrows. Sow 3 cm deep if dry planted so that seeds don't germinate in false rains at the beginning of the season; sow 2 cm deep if ground is wet.

### Fertilizing

Apply 25 kg DAP per acre at sowing. Topdress using 80 kg CAN per acre at knee height.

### Thinning

Thin when crop is 30 cm high or 30 days old, whichever comes first, to achieve spacing within rows of 10 cm for forage or 20 cm for dual-purpose.

### Weeding

Hand weed at least twice, depending on weed growth, or apply herbicides either pre- or post-emergence, or practise zero tillage. However you control weeds, it is important to keep the field weed free, because sorghum does not compete well at early stages of growth.



**Well-weeded and thinned sorghum crop**

### Tillering

Forage sorghum has a high ability to tiller, especially if the mother plant is damaged or ample space is provided.



**Forage sorghum, E6518 variety, with high tillering ability**

### Pests and diseases

Control cutworms, aphids, shoot fly and stalk borer when necessary. Bird damage is a major problem; therefore start scaring birds when sorghum is at milky stage. Where sorghum is grown large scale, scaring is not necessary. Birds prefer white-seeded sorghum and will eat it before eating brown-seeded varieties. Sorghum is disease tolerant but control diseases when necessary.

### Harvesting

For grain production, start harvesting at physiological maturity. To feed fresh by the cut-and-carry method, wilt the green chop. To make silage, start harvesting at soft dough stage.

To harvest dual-purpose sorghum, cut the head with a knife or with a combine harvester; harvest forage variety by cutting the stalk with a machete or a forage harvester. Feed the forage as green chop or ensile it for future use. All fresh sorghum herbage must be wilted for at least 12 hours.