Chapter 4

1- Forage Sorghum
(*Sorghum vulgare* Pers.)

Prepared
By

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INTRODUCTION:

Sorghum (Sorghum vulgare **Pers.*****) is original to Africa, and many of today's varieties originated on that continent*****.** **Sorghum was also grown in India before recorded history and in Assyria as early as 700 BC. Forage sorghum is characterized by quick growth, high biomass accumulation, and dry matter content and wide adaptability beside drought withstanding ability.**

There are five major types of sorghum grown:

Grain sorghum with dwarf varieties that grow 25 to 70 cm tall for easier combining.

1-Forage sorghum which grows 35 to 75 cm tall, produces more dry matter tonnage than grain sorghum, and is coarse stemmed and used for silage.

2-Sudan grass, a fine stemmed, short season sorghum grown to furnish pasture or green feed during mid-summer when perennial grasses are dormant.

3-Sorghum-sudan grass hybrids are a cross between the two forage types that have intermediate yield potential and can be used for pasture, hay or silage.

4-Sorghum-almum, also called Columbus grass, sorghum grass, sorgo negro or sudan negro.

Uses:

Forage sorghums are used primarily as silage for livestock. Sorghum harvested at the soft dough stage of development and stored as silage contains 52 to 65% dry matter digestibility, 8 to 12% crude protein, 60 to 75% neutral detergent fiber, and 34 to 40% acid detergent fiber. Sorghum plants, particularly young plants, contain an alkaloid which releases hydrocyanic (HCN), or prussic acid, when hydrolized. This can be toxic to livestock. When the crop is cut and field-cured, or is ensiled, and the hydrocyanic acid degrades (2 to 3 weeks after ensiling), and the danger is greatly reduced.

Environment Requirements:

Sorghums are fast-growing, warm weather annuals that will provide plenty of feed in mid-summer when many other types of forage slow down. ***The plant becomes dormant in the absence of adequate water, but it does not wilt readily and growth resumes when moisture conditions improve.***

Where moisture is limited, sorghums and sorghum- sudan grass hybrids generally produce more silage than corn. Forage sorghums, which are generally later in maturity than sudan grass.

Field preparation and sowing:

Normally 2-3 harrowing are required before taking up planting as rain fed crop and sown with the onset of monsoon. Seed rate of 12-15 kg/ha for single cut and 20-25 kg/ha for multi cut sorghum is required. Optimum spacing is 45 cm between rows for multi cut sorghum and 30 cm for single cut sorghum. As regards fertilizer application 100 kg N and 60 kg P_2O_5/ha for multi cut sorghum and 80 kg N and 40 kg P_2O_5 /ha for single cut sorghum is recommended.

Seeding Date:

Sorghums are generally sown between May 20 and June 5. The soil should be warm (25 to 28 C°) at 10 cm.

Method and Rate of Seeding:

Sow sudan grass or sorghum-sudan grass hybrids grown for pasture or green chop at 10 to 15 kg/fed with a grain drill or a broadcast seeder. If a broadcast seeder is used, cover the seed with about 2-3 cm of medium or heavy soil or 3-4 cm of sandy soil. For silage production, the usual procedure is to plant forage sorghum in rows at a seeding rate of 10-15 kg/fed. Plants grown in 60 to 75 cm rows usually yield as much as those grown in solid stands and the lower leaves are retained on the plant longer.

Fertilization:

Nitrogen fertilizer will be added, under dryland conditions, at rate of 30 to 60 kg N/fed is recommended, with soils higher in organic matter requiring the smaller amounts. On sandy soils apply half the nitrogen before planting and the remainder within 30 days after emergence. Where the sorghum is planted in rows, the nitrogen may be side dressed when the crop is 20 to 40 cm tall.

Variety Selection:

Types of sorghum include sudan grass, sorghum-sudan grass hybrids, forage sorghums and *Sorghum almum*. *Sorghum almum*. Prussic acid content ranges from 4 to 10 times higher in *Sorghum almum* than in Piper sudan grass.

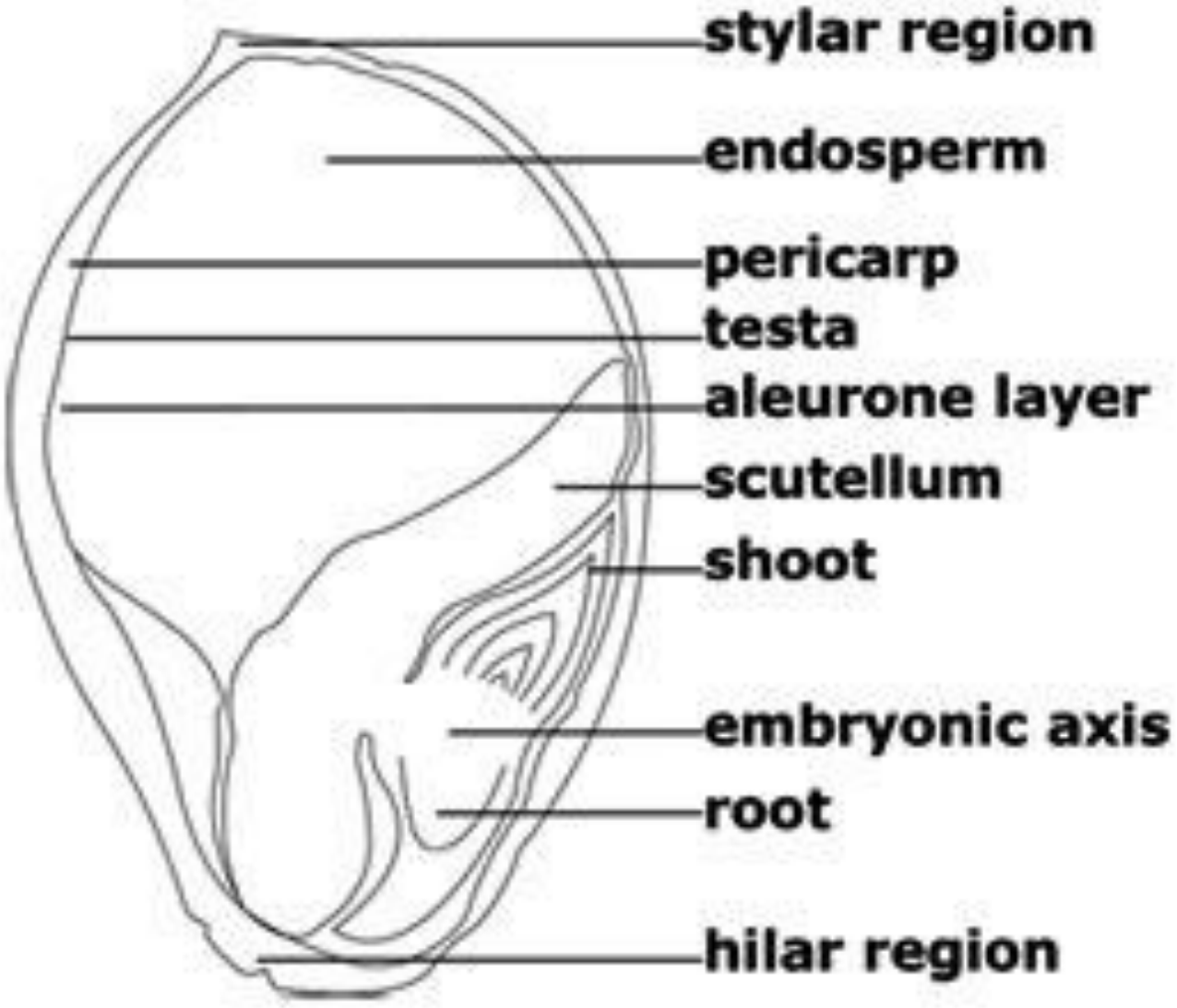
***-Sudan grass can be harvested as pasture, green chop or silage, but is superior in forage yields to other sorghums only when used for pasture*.**

***-Sorghum-sudan grass hybrids are taller, have larger stems and can be higher yielding than sudan grass*.**

Harvesting:

1. **For pasture:** Sudan grass and sorghum-sudan grass hybrids are usually ready for grazing 5 to 6 weeks after planting. Since prussic acid is highest in the immature plant parts, new shoots may be dangerous until they reach a height of at least 45 cm.
2. **For hay:** Harvesting sudan grass and sorghum-sudan grass hybrids when the seed is in the soft to dough stage gives highest yields, but curing is difficult at this stage. A more practical plan is to harvest when the forage is about 75 cm high.

3. **For silage:** Harvest sudan grass, sorghum-sudan grass hybrids and forage sorghums in the medium dough stage when total plant moisture is 65 to 70%.
4. **For green chop:** Sudan grass and sorghum-sudan grass hybrids can be used for green chop to bolster summer feed supplies. To be sure of a second crop, harvest the first cut by the heading stage, leaving 15-20 cm of stubble.


stylar region
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Hybrid Sorghum

Sudan Grass

Sorghum Sudan Grass

What are types of sorghum grown?

Put sign True or False before the following sentences:

1-( ) Sorghum (*Sorghum vulgare* Pers.) is original to Africa, and many of today's varieties originated on that continent.

2-( ) Young plants, branches in the leaf axils of injured plants and new shoots from the crown at the soil surface contain more than twice as much hydrocyanic acid as the mature leaves of normal plants.

3-( ) Sudan grass contains less than half as much hydrocyanic acid as most sorghums.

4-( ) During periods of drought or other plant stress, sorghums tend to accumulate nitrates, which can poison livestock.

5-( ) Sorghum plant becomes dormant in the absence of adequate water, but it does not wilt readily and growth resumes when moisture conditions improve.

6-( ) Sudan grass can be harvested as pasture, green chop or silage, but is superior in forage yields to other sorghums only when used for pasture.

1. Sorghum type has highest hydrocyanic (HCN) content is

a) Sorghum-sudangrass. b)Sorghum-almum.

c)Forage sorghum d) Sudan grass.

2. Sorghum cutting at heading stage leaving height of stubble about

a) 7-10 cm. b) 10-12 cm. c) 12-15 Cm. d) 15-20 cm.

3.Optimum seeding rate of forage sorghum in Egypt is

a)8-12 Kg /fed. B)12-15 Kg /fed. C)15-20 Kg /fed. D)15-20Kg /fed.

4. The optimum rate of nitrogen (N) application in forage sorghum is

a) 20-25 kg /fed. b) 25-30 kg /fed. c) 30-60 kg /fed. d) 60-80 kg /fed.

5.The optimum seeding date of forage sorghum is.

a) First May b) mid-May c) end-may to first June d) end-June