

Sugargraze

Significance in Quality Fodder Production

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Sugargraze has the potentiality to provide quality green fodder throughout the year. Silage or hay from sugargraze can sustain the livestock in lean period, when no fresh forage is available in the farm. High Biomass, suitability for silage, high sugar content of sugargraze, helps to improve milk yield. Green fodder instead of mineral mixture in the livestock ration significantly drop the production cost of milk. Hence, this article may advise to all types farmers that they should include sugargraze in their year-round cropping cycle for building profitable dairy farm.

Keywords: Dairy farm, Green fodder, Sugargraze

SUGARGRAZE is one of the interspecies hybrids of forage sorghum (*Sorghum* × *Sorgho* × Sudan grass), belongs to the sweet sorghum hybrid group. This interspecies hybrid was developed by one of the private company with emphasizing on forage palatability and high biomass production. In market, it is popular as a 'Sugargraze' variety from Advanta or in other way 'Advanta company' is the pioneer of sugargraze. Advanta's sweet sorghum hybrid 'Sugargraze' is a leading hybrid in Australia, Argentina, US, India, South Africa and Zambia. It has significantly higher total biomass with good productivity and excellent sugar level which improves the palatability and minimizes the feed wastage. It can be grown in summer or autumn or early winter as it has the capability to tolerate drought as well as adequate moisture with the ability to produce superior yields but its biomass production is reduced drastically in extreme winter. Sugargraze is grazed when it reaches to a height of 1.5m and it can be utilized in stall feeding as a fresh cut green fodder, even after flowering without declining its palatability. As compared to other cereal fodder, it is taller due to its high internode length

along with higher number of foliage. Excess green fodder in on season can be utilized by conservation and supply in the lean period of fodder production. The conservation of fodder crops (silage and hay) have significant effect on the quality improvement and reduction of the anti-nutritional factor and in other hand, it provides feed during lean period of fodder production. In this aspect, Sugargraze has produced good to premium quality of silage which is superior than corn silage, and it is equally unsuitable in hay making. Hence, this improved fodder variety can make availability of green fodder as well as conserved fodder throughout the year for dairy farmers.

Importance as fodder crop

High performance of dairy animals depends on the availability of adequate amounts of quality fodder or in other way inadequacy of quality forage is the critical limitation to profitable dairy production. Therefore, to get rid of the green fodder crisis, sugargraze is one of the most important fodder crop.

- Sugargraze produces high green biomass as a result of maximum growth attributes like maximum

leafy portion, thick stem and tallest in nature.

- As it has the capacity to regrow so farmers can take number of cut (4-5 cut) in a single planting. This multicut fodder crops can give 11-14 t/ha of dry fodder in first initial cut and 4-5 t/ha in their subsequent cut. For facilitating the regrowth, it is advisable to cut the crop above 15 cm from the ground.
- It can be grown in any condition such as in drought, rainy and somehow it can tolerate winter also.
- Sugargraze is a C₄ plant, so it uses the water very efficiently per kg of biomass production.
- Sugargraze fodder is one of the quality fodder in terms of crude protein (8-9 %) and crude fiber (28-30 %) content.
- Sugargraze is used to produce good quality silage with high percentage of dry matter (30 %) and crude protein (9-10 %). For silage preparation, Sugargraze should be harvested at 65% to 70% moisture, so that it can conserve the optimum moisture throughout the process.
- This fodder is very much preferable to the livestock due to



Sugargrass at harvesting stage



Sugargrass at 30 days after sowing

its palatability and sweetness that contain 16-18% brix value.

Keeping in mind of all benefits and potentialities found in sugargrass, it can conclude that this fodder crop is better among different cultivated cereal fodder.

Package and practices

Sugargrass has the capability to produce green biomass in any condition except extreme winter and acidic soil, which is unfavourable for its growth and development.

Method of sowing

- Ridge and furrow method or block method is most popular for fodder cultivation. Although broadcasting method of seed sowing is common for fodder cultivation, but if farmers go for line sowing maintaining proper row spacing then different intercultural operations, top dressing of fertilizer application, irrigation management and finally harvesting would be easier.
- Seed rate of sugargrass- 30 kg/ha for single cut, 15 kg/ha for multicut
- 30 cm row to row spacing should be maintained for line sowing.

Nutrient management

- At first, it is essential to apply 10 ton/ha of farm yard manure in the field before few days of sowing.
- After that, 80 kg Nitrogen, 60 kg phosphorus and 40 kg potash with 25 kg $ZnSO_4$ per ha through inorganic fertilizer (on initial

fertility basis) are recommended for its optimum growth and development. Half of nitrogen should be applied as a basal and remaining half should be applied after 1st irrigation at 30 days after sowing. Finally, 60 kg nitrogen has to be applied after each cutting in case of ratoon crop.

Irrigation management

- Pre-sowing irrigation is required for facilitating the field preparation and sowing. After that one-two irrigation is required during its growing period except rainy period.

Weed management

- Firstly, pre-emergence (Atrazine @0.75 kg a.i. /ha) herbicide to be applied after 3-4 days of sowing.
- One more hand weeding is necessary at initial stage of growing to avoid the suppression of fodder crop.

Insect management

- Sugargrass can be infected by Stem borer and Shoot borer. Seeds should be treated with high quality insecticides to protect from soil and seed born pests.

Cutting management

Sugargrass is a multicut fodder (4-5 cut) hence, it can regrow after each cut.

- It is advisable to leave minimum 15 cm of stalk so that regrowing crop can get sufficient food from that portion.

- For sugargrass, initial cut should be taken at 55 days after sowing and subsequent cuts after 45 days of previous cut.
- For silage purpose, sugargrass can be harvested at 70-90 days after sowing.
- For regrowth of sugargrass, one irrigation and then 60 kg nitrogen should be applied after each cut.

Intercropping potentialities

Intercropping can be done with sugargrass for getting more total green biomass yield from the system. Different intercrops such as *kharif* legume cowpea, cluster bean, summer moong bean and also sugargrass can be grown with maintaining high row spacing throughout the year. For livestock, carbohydrate and protein in their diet is essential in synchronize way, therefore, it is recommended to grow legume as an intercrop with sugargrass.

Silage production

Silage is the conserved fermented product from fodder which is improved in quality. The most essential principle component of silage production is soluble sugar which is available in sugargrass fodder. Therefore, sugargrass is popular for 'smart silage' production

Prussic acid management

Sorghum type's plant and their hybrids also have the potential to accumulate prussic acid at their initial stage. However, the active molecule

is the cyanide complex which causes the poisoning by preventing hemoglobin from transferring oxygen to individual cells as a result animal dies. In most animal species the acute lethal dose of HCN ranges between 2 and 2.5 mg/kg body weight. The following conditions promote accumulation of HCN in leaves.

- Occurrence of drought and frost during the growth periods of sugargraze influences the accumulation of cyanide concentration.
- Any stress conditions affect the plant growth which may increase cyanide content.
- Prussic acid concentrations are

higher in fresh forage than the conserved forage in a form of silage and hay.

- It was also found that when plant leaves are physically damaged by cutting, wilting and trampling than HCN is released.
- When fodder grow in imbalanced soil fertility like high nitrogen content but low available phosphorus and potash influence the HCN accumulation.

CONCLUSION

Hence, some of the guidelines should be followed for managing the high concentration of HCN in forage:

- Do not allow the livestock for grazing on forages having high concentration of HCN.
- Making of silage and hay of sugargraze fodder which contain HCN because hydrogen cyanide is volatile compound, dissipated during fermentation or sun drying.
- Always harvest the fodder at least after 45 days of sowing.

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