Biomass Sorghum Production Guide

These guidelines are being established to ensure that the grower has the appropriate management information to achieve maximum yields. They are based on the best information currently available but are subject to periodic updates and revisions as new information becomes known over time.

Site Preparation

Preparation of the field for planting will significantly enhance growth through a reduction in weed pressure. If the field being planted is an existing grass field, at least one glyphosate burndown of the field should be applied prior to planting.

Fertilization

Soil tests should be conducted annually for analysis under a biomass sorghum protocol or similar corn/sorghum silage protocol. On average, fields should have available or receive the following nutrient levels:

1. 120 lbs. Nitrogen per acre
2. 65 lbs. per acre Phosphorus as P2O5
3. 120 lbs. per acre Potassium as K2O.

If soil tests indicate Phosphorous and Potassium at “High” levels, reduce these units by 50%.

Split applications or single applications are acceptable. Fertilizer requirements may be filled in part with animal manures when those are available, and application can occur during the above specified time. Nutrient load of manure to be applied must be analyzed by an approved laboratory to understand the amount of nutrient need being applied. Application of manures should be conducted per best management practices to prevent the contamination of surface and ground water. The remainder of crop nutrient requirements not met by manures should be filled using commercial fertilizers.

Planting

Genera requires the use of the NX 4264 variety of sorghum produced by Richardson Seeds. This is the only variety approved for use at this time. This seed will be available at AgCentral Coop locations.

When planting biomass sorghum, soil temperatures should at least range from 60°F to 65°F to encourage germination. Avoid planting biomass sorghum before the last spring frost as sorghums are very frost sensitive.

In medium or heavy soils, planting depth should range from 1.0 inches to 1.5 inches. In sandy soil, planting depth may be as deep as 2 inches.

Seeding rates will be specified annually based upon the selected biomass sorghum variety, but generally range from 70,000 to 85,000 plants per acre. This is impacted by soil type and fertility of the land to be planted.

Weed Control

The biomass sorghum seed required for use has been safened and it is highly recommended you use a preplant or preemergence application of either:

- Bicep II Magnum per label recommendations, or equivalent mixture of *S*-metolachlor (Dual) and atrazine, **OR**
- Guardsman MAX per label recommendations, or equivalent mixture of Dimethenamid-P (Outlook) and atrazine

Fields should be monitored throughout the growing season for weeds and appropriate control methods applied prior to biomass sorghum biomass height preventing these operations.

Insect Control

Grower should monitor fields for insect infestations at least weekly throughout the growing season. Any identified insect issues should be promptly reported to Genera and treated upon mutual agreement between Genera and the Grower.

A primary insect issue in biomass sorghum can be sugarcane aphid. It is small and white to yellow in color. Populations can build rapidly and may kill leaves or entire plants in some circumstances. Infestations are often initially concentrated on field edges. Current recommendations are to treat when aphids are present on 30 percent or more of plants and occasional leaves have 100 or more aphids present. Treatment should also be considered if honeydew is present in multiple spots throughout a field and aphid populations are increasing. Growers should intensify scouting efforts when sugarcane aphids are detected because populations can build rapidly. Current treatment recommendations for sugarcane aphid from UT Extension are to use flupyradifurone (Sivanto Prime) at a rate of 4 to 7 ounces per acre. Additional chemicals may become available but Sivanto is currently the only one labeled for use in Tennessee.

Sugarcane aphid has not presented significant problems in biomass sorghum in Eastern Tennessee as it appears late in the growing season and does not seem to impact growth or yield. However, each year is different and fields should be monitored to prevent problems.

Harvest

The typical harvest window will extend from late July to late September, depending on planting date. Optimal yield will occur at approximately 100 days or more after planting. Conditions for drying mowed material are likely to be better early in the harvest window. Genera requires that any crop received by our contracted growers must be in 4'x5' or 5'x6' round bale package and net wrapped at least twice as specified in the production agreement.

The thick stalk of the sorghum plant must be broken open and exposed to air to facilitate dry down. Genera recommends mowing sorghum with a disc mower-conditioner that has conditioners (urethane or steel) to crack open the sorghum stem. Sorghum must be field dried to below 25% moisture content to maintain bale quality in storage.

Similar to most hay crops, mowing and baling operations should be planned around weather with warm and dry conditions forecasted. Regular raking with a rotary rake is also likely to be necessary due to the large size of the windrowed biomass and the need to turn the pile and to get airflow to the bottom of the windrow. With careful planning, dry conditions, and raking, biomass sorghum can be sufficiently dried to below 25% moisture content in around 5 days.