(continued from front)

Soil and Site Adaptation

Giant Miscanthus is adapted to many soil conditions, including marginal land, but is most productive on soils well suited for corn production.

Giant Miscanthus is adapted to a broad growing range. Europe has shown successful stands from southern Italy (37° N latitude) to Denmark (56° N latitude). In the U.S. it has been successful from the Gulf of Mexico to central Canada.

Establishment

Giant Miscanthus produces no seed, so it must be established vegetatively by planting divided rhizome pieces or live plants. This process results in high up-front establishment costs relative to crops established from seed, but comparitively reduced costs over the lifetime of the stand. The planting rate is about 4,000 plants per acre.

Weed control at establishment is very important. Labeled herbicide choices are limited making a clean field at planting critical. Planting an herbicide tolerant crop in the previous year and using a cover crop prior to Miscanthus establishment can reduce weed pressure.

Giant Miscanthus rhizome. *Photo courtesy of Ceres, Inc.*

As with other vegetatively propagated crops, adequate soil moisture at planting greatly favors establishment success. Establishment success may be limited by death of plants in the first winter after planting.

Fertility and Weed Management

The plant's efficient use of nitrogen implies that, once established, the crop will require relatively low annual application rates.

Nitrogen fertilizer is not needed in the first two years and is counter productive by encouraging greater weed growth during establishment. Soils should have phosphorus and potassium levels adequate for corn planting.

Nutrient application should be adjusted to replace the amounts exported in harvested biomass, though optimal rates are still being tested.

Annual estimated nutrient removal:

- Phosphorus - 1.5 lbs. per ton of biomass
- Potassium - 8 lbs. per ton of biomass
- Nitrogen - 8 to 10 lbs. per ton of biomass

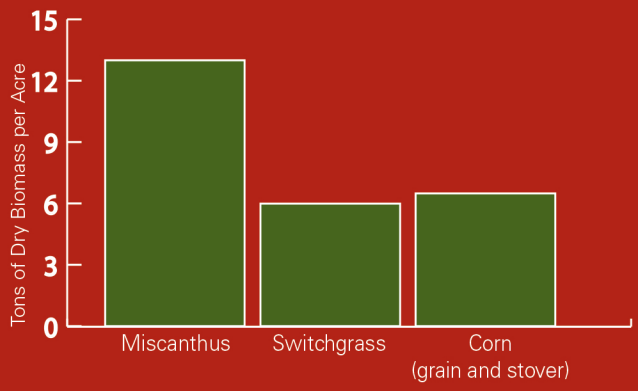
Harvest

Harvests can be taken between maturity in the fall and regrowth the following spring. Mowing or harvesting while the crop is still green harms plant growth and regeneration and reduces fuel quality.

There is a tradeoff between yield and fuel quality with harvest timing — late winter and spring harvests reduce yields by 30–50 percent due to leaf drop, but the harvested biomass is a higher quality product because of the dry down time in the field. Recommended harvest time in Iowa is late November to early December.

Comparison of Dry Matter Yields

The potential for Giant Miscanthus lies in its biomass yield. Established plants can yield 10 to 15 tons of dry matter per acre. The same area yields between six and seven tons of dry matter for both corn and switchgrass.



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Agronomy faculty are available to answer questions about Giant Miscanthus or other biomass crops.

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