

SWITCHGRASS: FORAGE OR FUEL?

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Recently, switchgrass has attracted a lot of attention. Of course, most of the press that switchgrass has gotten has been focused on its potential as a bioenergy crop. Current research has shown that switchgrass does have promise as a high-yielding bioenergy crop. But, does it have a role as a forage crop? Could it be a reasonable alternative to some of our other forage species in this era of high fertilizer costs?

To address this topic, let me first tell you a little about this plant. Switchgrass is a warm season perennial grass that can be grown throughout Georgia. In fact, it is native to North America and, in centuries past, was once fairly common in Georgia. With the arrival of the colonists, forage species from Africa and Europe were introduced that largely replaced switchgrass and most other native forage species. There were many practical reasons for replacing switchgrass and the other native plants, as the introduced species (bermudagrass, bahiagrass, tall fescue, etc.) are more easily managed for high yields and forage quality. In the past several years, switchgrass production in North America has undergone a bit of a resurgence. However, its use in Georgia is still primarily as a wildlife and conservation crop.

Switchgrass has several advantages that make it appealing. Of course, like everything else, switchgrass also has several disadvantages. These pros and cons are detailed in Table 1. Because many of its traits are quite valuable, switchgrass has the potential to fit into the forage system of some cattle operations in Georgia. However, switchgrass has many disadvantages relative to the other forage species that we have available for use in Georgia. Thus, on balance, switchgrass tends to be merely a niche forage crop for us.

Table 1. The primary advantages and disadvantages of switchgrass as a forage crop.

Advantages	Disadvantages
High yielding	Usually takes 2 years to become established
More tolerant of poor soil fertility	Forage quality of switchgrass hay is fair – poor (RFQ: 75-90; CP: 6-9%; TDN: 50-54%)
Mature stands have very few problems with weeds	Limited herbicide options, especially during establishment
Moderate tolerance to poorly-drained soils	Must not be cut or grazed shorter than 6"
Good disease/insect resistance	Stubble heights shorter than 8" can puncture or damage tires

Certainly, one of switchgrass' more notable traits is its ability to produce high yields with relatively low levels of fertilizer. This characteristic makes it very appealing as a forage crop. This trait is even more important in the context of producing a biomass-for-biofuel crop (i.e., converting cellulosic fiber into ethanol), since this will allow large volumes of biomass to be produced with very little energy input. Crop scientists, engineers, and economists from around the US have studied the potential of producing biofuel from switchgrass, and their results have shown it to be promising.

Though the technology and infrastructure to support the production, transportation, and conversion of switchgrass biomass into a biofuel is still on the horizon, some pilot projects are underway. For example,

the University of Tennessee, Genera Energy, and DuPont-Danisco have partnered on new switchgrass-to-ethanol pilot facility in Vonore, TN. They broke ground on this plant in October 2008. Several farmers within a 50-mile radius of this eastern Tennessee plant have been contracted to produce switchgrass for this project. The initiative's plans are to have as many as 6,500 acres of switchgrass in that area by the end of 2010 (see www.UTbioenergy.org for more details on this initiative).

Yet, one of the most important aspects of producing a biofuel crop is to have a plan B. When the energy market takes an inevitable dip (such as in recent months), having an alternative market for the biofuel crop is very critical. The ethanol-from-corn industry provides an excellent example. The biofuel-from-switchgrass industry has a potential alternative use for switchgrass fields: the beef cow-calf enterprise.

The bottomline is that, as solely a forage crop, Georgia's cattlemen have forage species available to them that are more profitable and sustainable than switchgrass. After all, there is a reason it was supplanted by introduced forage species (even before the introduction of commercial fertilizer). However, we may see it in Georgia more and more, as the biomass-for-bioenergy industry gains steam. When that occurs (and I expect it will), the occasional use of switchgrass as a forage crop will become more common and justifiable.

In an attempt to stay ahead of the "switchgrass game," I recently put together a website (<http://www.caes.uga.edu/commodities/fieldcrops/switchgrass/index.html>) with more information on switchgrass production in Georgia. This website gives a basic description of the species, its uses, and covers (with some depth) the management of this grass for wildlife habitat, when grown as a bioenergy crop, and its niche use as a forage crop. If you have bookmarked our forage management page (www.georgiaforages.com), a link to the new switchgrass website is provided there. Of course, if you have questions about this or any other forage management subject, check out our websites or contact your local University of Georgia Cooperative Extension office at 1-800-ASK-UGA1.