A New Animal Feed and Forage Crop

As an animal feed or grazing crop, tropical maize holds strong potential if managed properly. In our 2011 forage studies, over 85% of tropical maize was grazed, demonstrating that the high sugar content and impressive biomass make it a suitable forage crop. Unlike sweet sorghum, tropical maize does not accumulate dangerously high levels of prussic acid. In a trial conducted at two locations in 2011 (a hot, dry growing season), no-till drilled, double-cropped (planted after wheat harvest) tropical maize produced baled biomass of 5.5 ton/ha; for comparison, state hay yields were less than 4 ton/ha.

When ensiled, tropical maize yielded crude protein levels of greater than 8% and total digestible nutrients around 60%, making tropical maize forage quality comparable to corn silage. We are currently conducting animal feeding trials to confirm that ensiled tropical maize can provide complete ruminant nutrition for most animal classes.

References and further information:

Peer Reviewed or Edited Publications

Online Resources
These articles and more information about tropical maize are available at the University of Illinois Extension website: http://web.extension.illinois.edu/dsi/
Who Needs Grain?

Tropical Maize offers Feed, Fuel...And Flexibility

It is only reasonable that a “green energy” renewable fuel crop be produced with proven sustainability practices and a commitment to reduced environmental impacts. In the area of sustainability, tropical maize is a particular standout among bioenergy crops. Because it produces little grain, tropical maize requires less than 50% of the nitrogen fertilizer requirement of field corn, thus substantially reducing the risk of N fertilizer movement into ground and surface waters.

Tropical maize is also compatible with cover crops. A major deterrent preventing widespread use of cover crops is establishment of the cover crop following corn or soybean harvest before frost. Because tropical maize is harvested earlier than most other crops, there is enough time following harvest for a winter cover crop to become established prior to frost. Cover crops protect soil from erosion, build soil structure, and reduce nutrient losses, thus protecting water quality.

A major practical advantage of tropical maize relative to other energy crops is that it is planted and managed with the same equipment as commercial grain corn and it fits into the most common crop rotations in the U.S. Midwest. Near-term production potential of tropical maize is possible because, being derived from corn and managed like corn, it is familiar to U.S. growers.

In terms of crop production, the biggest difference between commercial feed corn and tropical maize is that tropical maize requires about half the amount of fertilizer nitrogen (N). Since N is one of the most costly inputs associated with corn production, there is potential to lower costs, while at the same time limiting environmental concerns associated with N fertilizer use.

Most of the well-established marketing, distribution, supply, and transportation infrastructures supporting corn grain production can be directly transferred to tropical maize and, similarly, most aspects of the grain ethanol business model can be technologically transferred to tropical maize.

ACKNOWLEDGING THE DUDLEY SMITH INITIATIVE

100% of the research conducted for this tropical maize project was funded by the Dudley Smith Initiative. The Dudley Smith Initiative is a family-based granting agency supporting innovative research and outreach to support agriculture in Illinois. As a landowner with family ties to Christian County, IL, Dudley Smith, Jr. donated 228 acres of land in memory of his father, Colonel Dudley C. Smith (1833-1920). With the endowment of this land, The Smith family supports cropping research that supports long-term, sustainable stewardship in crop production. The University of Illinois gratefully acknowledges the resources and funding made available by this institution.

“Tropical Maize presents great potential as a leading biofuel feedstock and also offers value, flexibility, low risk to the producer, and environmental Sustainability.”

Finally, because tropical maize is produced for biomass, not fuel, it is largely excluded from the “Food vs. fuel” debate.