



Northern NY Agricultural Development Program 2004 Project Report

BMR Sorghum Sudangrass vs. Late Planted Corn

Project Leader(s):

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Background:

Most years prove challenging for corn growers in Northern New York. Cool, wet conditions often have prevented dairy farmers from planting their silage corn in a timely fashion. These tough conditions have resulted in corn being planted as late as July 15th, contributing to large financial losses for some and proved too risky for most dairy farmers.

When corn planting is pushed into mid to late June, dairy farmers will try to choose the best option for their situation. Some decide to not plant corn after mid-June and look to purchase any supplemental forage supplies from off the farm. Planting full season hybrids instead of shorter season hybrids late in the season is another choice. It is unknown how Brown Midrib (BMR) corn would respond to late planting dates. A summer annual such as BMR sorghum sudangrass has been a popular corn silage alternative after June 15th.

BMR varieties (in both SXS and corn) have a low lignin content with significantly higher digestibility. Although BMR corn is higher in forage quality, the sensitivity to stress and the yield decline associated with the BMR trait, along with higher seed prices, makes BMR corn a debatable practice. BMR SXS does not appear to have the sensitivity to stress that BMR corn exhibits.

A direct comparison of late planted corn with BMR sorghum sudangrass has not been made in northern NY. For this comparison to be meaningful, a number of sites must be utilized to evaluate the effect of local environment on the results.

Methods:

Field studies were established in Jefferson, St. Lawrence, Clinton and Essex counties in 2004. The Jefferson County site was on a heavy clay soil on a farm located in the northern part of the county. Bird damage to seedlings in Jefferson County wiped out the trials there. Peter Barney, Field Crops Extension Educator in St. Lawrence County, managed a St. Lawrence County site on a sandy loam soil at a higher elevation in Canton. Mike Davis managed a site in Chazy at W.H. Miner Institute and a site at the Cornell Baker Research Farm at Willsboro in Essex County.

Between June 1 and June 8, 2004, a full season corn hybrid (approx. 105-110 day RM), a short season corn hybrid (approx. 80-85 day RM), a full season BMR corn hybrid (105-110 day RM) and a BMR sorghum sudangrass variety were planted in the same field and approximately every 10 days after the initial planting (depending on weather). The Chazy site was too wet for planting the on the first date. Plots were replicated three times in the field at Canton, with four replicates at Chazy and Willsboro.

Standard recommended agronomic practices were followed for this project. The BMR Sorghum Sudangrass was harvested each time it reached a height of approximately 36-40 inches. Corn hybrids were harvested in the fall just prior to first frost. We collected forage samples and yields from each of the corn hybrids for every planting and each time the BMR Sorghum Sudangrass was harvested a forage sample and yield were taken. Forage samples were analyzed for: Crude Protein, Ash, Fat, Starch, NDF, IVTD and dNDF. The forage test results were entered into the Wisconsin Milk 2000 spreadsheet. The corn worksheet was used for corn and the alfalfa-grass worksheet was used for sorghum sudangrass. This gives us a comparison of the Milk/Acre and Milk/Ton for each of these crops over the entire growing season.

Results:

Sites were planted between June 1-8, June 16-17, June 28-30, and July 10-12 for the four planting dates. Moisture was abundant during the growing season.

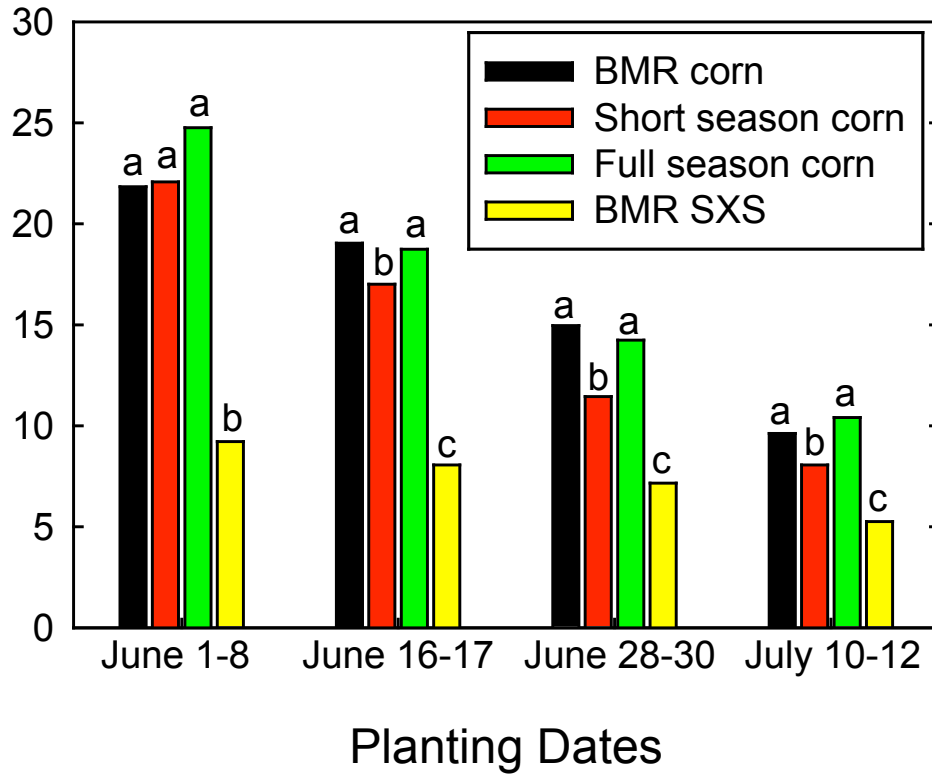


Figure 1. Silage Yields averaged over locations. Similar letters above the column within each planting date means they are not significantly different. Yield declined linearly with delayed planting date. There are only two locations for the first planting date.

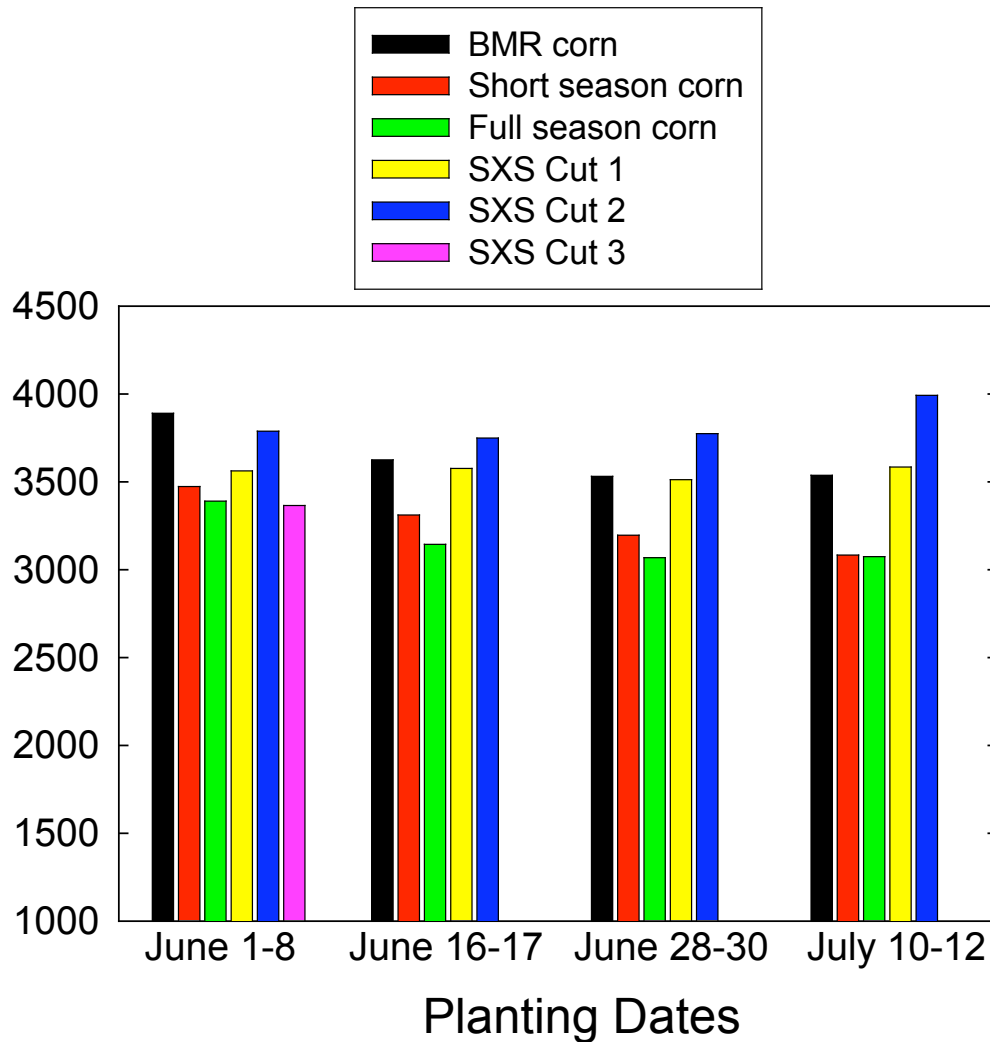


Figure 2. Milk yield per ton of dry forage from Milk2000, averaged over locations.

Milk yield per ton of forage declined slightly with delayed planting date in corn. The quality of first cut sorghum sudangrass was similar across planting dates, with a slight increase in quality of the 2nd cutting as planting date was delayed. There are only two locations for the first planting date, and only the first planting date at Canton had a third harvest of sorghum sudangrass. Sorghum sudangrass with 1-3 cuts per season is not statistically comparable to corn with a single harvest, when comparing individual harvests.

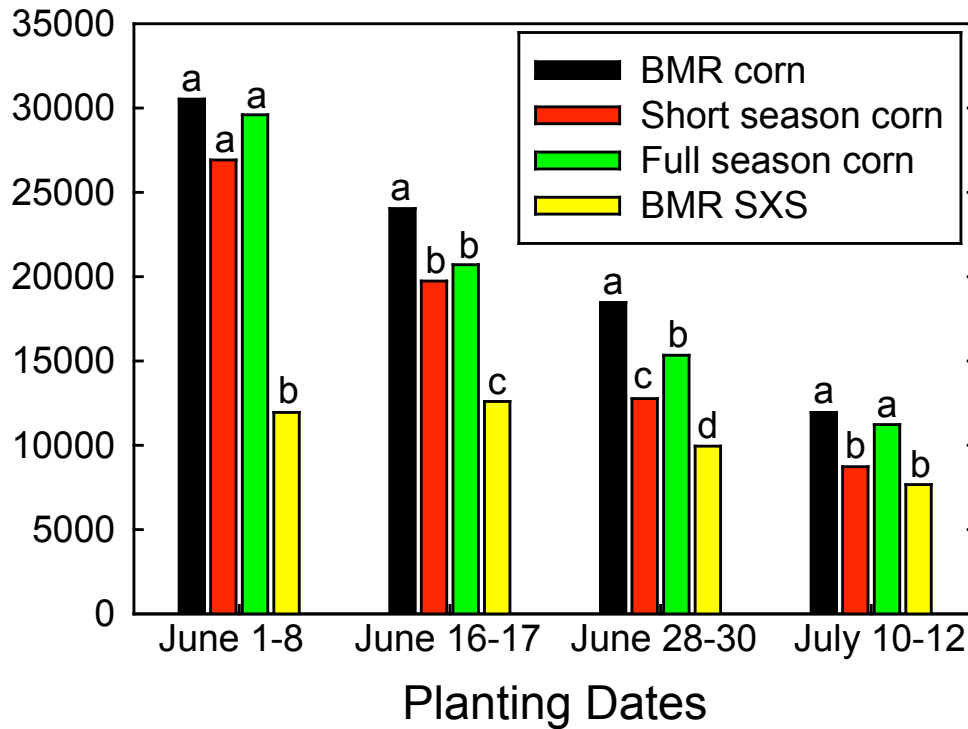


Figure 3. Milk Yields from Milk2000 averaged over locations. Similar letters above the column within each planting date means they are not significantly different. Milk yield declined linearly with delayed planting date. There are only two locations for the first planting date.

At Canton, sorghum sudangrass had 3 cuts for planting date 1, two cuts for planting dates 2 and 3, and one cut for planting date 4. At Willsboro and Chazy, sorghum sudangrass had 2 cuts for all four planting dates. Moisture content of corn at harvest averaged 70%, 77%, 79% and 82% for the four planting dates.

Silage yield and Milk yield per acre are very similar, although the higher quality of BMR corn and sorghum do have some impact on Milk yield. Milk per ton of forage is clearly higher for BMR corn compared to either short season or full season corn. For the first planting date BMR corn is higher quality than all others except possibly 2nd cut sorghum sudangrass. First cut sorghum sudangrass is similar in quality to bmr corn for the last three planting dates, while second cut sorghum sudangrass improves in quality with later planting date. This is due to harvest of more immature forage from the later planting dates.

Conclusions/Impacts:

The abnormally moist conditions throughout the summer of 2004 resulted in no stress being applied to BMR corn. Normal moisture conditions would create stress on plants at some point during the summer and would likely have a negative impact on bmr corn. Such conditions would make BMR sorghum sudangrass more competitive with late-planted corn, compared to 2004 results. With adequate moisture throughout the summer, however, late-planted corn will likely outperform BMR sorghum sudangrass. There is a similar concern with the comparison of short and full season corn hybrids in 2004. It is not clear if full season corn would compare as well to short season corn in a short or stressful growing season.

One major concern with late-planted corn is that the moisture content is too high for ensiling, with the possible exception of the early June planting date. Harvest of late-planted corn would need to occur after a frost. Sorghum sudangrass can be wilted to proper ensiling moisture. Even with plenty of summer precipitation, a mid-July planting of either corn or sorghum sudangrass is risky due to low yields. A less risky option at that point might be to plant a small grain such as oats for fall forage.

Next steps:

This study was not funded for 2005. A year of normal summer precipitation would likely generate different results. Results for 2004 will be presented at county and regional CCE meetings across northern NY, and an article will be prepared for the “What’s Cropping Up?” newsletter.

Acknowledgments:

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Northern New York Agricultural Development Program:

The Northern New York Agricultural Development Program provided funding for this crop production research project. The Northern New York Agricultural Development Program is a farmer-driven research and education program specific to New York state’s six northernmost counties: Jefferson, Lewis, St. Lawrence, Franklin, Clinton and Essex.

Thirty-three farmers serve on the Program board led by Co-Chairs Jon Greenwood of Canton (315-386-3231) and Joe Giroux of Plattsburgh (518) 563-7523. For more information, contact Jon, Joe or R. David Smith at 607-255-7286 or visit www.nnyagdev.org # # #