

On-Farm Research Partnership

Comparison of BMR Forage Sorghum with Corn Silage for Yield and Quality

Trial Layout and Measurements

-----2017 Trials-----

Double cropping with winter cereals for forage in NY has shown to be beneficial in increasing full season yield through providing, on average, 1.6 tons DM/acre for cereal rye and 2.2 tons/acre of triticale. However, harvesting winter cereals in time for planting corn silage can be challenging, especially in extreme weather scenarios. An alternative summer annual that has a short growing season and high yields, such as brown midrib (BMR) sorghum, could be a better fit for double cropping rotations, however there are questions about whether forage sorghum is a viable alternative to corn silage. The goal of this project is to assess the performance of both forage sorghum and a short-season corn variety grown side-by-side to compare both yield and quality. One pilot study was completed in 2016 and three trials are planned for 2017.

Goal:

- Compare the yield and quality of a brachytic dwarf BMR forage sorghum with a short-season corn silage variety.

Approach:

- Identify homogeneous looking areas of 60 by 160 feet in fields where sorghum and corn can be planted side-by-side.
- Let us know once a site is confirmed. We will distribute trial supplies.
- Document the field history (seeding rate, method and date, previous manure and/or fertilizer use on the field, soil type, past soil tests, etc.)
- For each selected field, implement corn vs sorghum comparison studies in 4 reps using the map on page 4 of this document. Plots are 20 ft by 60 ft with a 10 ft buffer between plots and the surrounding field. Each rep will contain one strip of corn and one strip of sorghum.

Measurements

- **Before planting (late May/early June)**
 1. Mark out the trial using the design on page 4 of this document. The final implementation should have 8 plots (4 reps with 2 plots per rep).
 2. Pre-emergence herbicides are recommended.
- **At planting (late May/early June)**
 1. For each REP, take soil samples (0-8 inch depth; *prior to fertilizer application*): 16 cores per rep (8 cores per plot, combined). We will analyze the soil samples for standard fertility (Cornell Morgan) and nitrate.

2. Apply 200 lbs N/acre of fertilizer on all plots (Agrotain-treated urea)
 3. Clearly mark the full 80 by 180 ft area to indicate that no additional fertilizer or manure should be spread on the trial area. Use poles and rope to mark the outside boundaries of the whole location. Ensure the farmer knows where the trial area is and understands that no fertilizer or manure should be applied to this area.
 4. Avoid using metal flags... plastic works just as well and is less risky with field equipment.
 5. For post-emergence herbicides, use best judgement to determine if needed.
- **Harvesting in Fall 2017**
 1. Take pictures so we have a visual record of the plots.
 2. Plot harvest will occur when the corn silage is around 30-35% DM. Please monitor your plots around harvest time.
 3. The sample area for harvest will be 20 ft by 4 rows for the sorghum, and 40 ft by 2 rows for the corn. For sorghum, use a measuring tape in the plot to determine the harvest area length. Use a 4 inch tall frame to determine the height at which to harvest. Use clippers (and gloves) to hand –harvest the sorghum in this 20 ft x 4 row (at 4 inch height) harvest area. For the corn, use a measuring tape that is at least 40 ft long to determine the harvest area. Harvest 2 rows of the corn (using clippers or a machete) at a 40 ft harvest area length and 4 inch harvest height.
 4. Bring all stalks to a scale in the field to record the total weight of the harvested area.
 5. Using a chipper shredder, grind 5 randomly selected stalks from each plot into a collection bag. After mixing, randomly take a few handfuls of the chopped sorghum and place into a labeled ziplock bag (you should have one bag for each plot). Place the sample in a cooler with ice packs.
 6. Bagged samples and data sheets go to NMSP at Cornell for processing and analysis: Sarah Lyons (318 Morrison Hall, Department of Animal Science, Cornell University, Ithaca, NY 14853).
 7. After the last harvest, remove all flags and poles.

If you have a farm and field identified, please let us know so we can get your fertilizer, flags, poles, and sampling containers/bags for the soil sampling rounds and the forage quality samples.

No samples can be processed without a completed field history form.

Each farm/collaborator will receive an individual report for his/her/their site, as well as a summary report for all trials to be conducted in 2017.

Quirine Ketterings at gmk2@cornell.edu or 607 255 3061 (office) or 607 229 0120 (cell)

Sarah Lyons at sel248@cornell.edu or 828 290 3584 (cell)

BY BEING AN ON-FARM RESEARCH PARTNER, YOUR FARM DATA BECOME PART OF A STATEWIDE DATASET THAT BENEFITS THE AGRICULTURAL INDUSTRY. SUCH A DATASET IS ESSENTIAL FOR FINE TUNING OF OUR LAND GRANT UNIVERSITY GUIDELINES.

New York On-Farm Research Partnership

<http://nmsp.cals.cornell.edu/NYOnFarmResearchPartnership>

There is great power from research information when field data are generated through well designed, repeated and widely implemented trials, with proper data collection and statistically valid analyses.

Consider being an on-farm research partner!

[Relevant Questions and Sound Science for Agricultural Profitability and Protection of the Environment](http://nmsp.cals.cornell.edu/NYOnFarmResearchPartnership)

For further information or questions:

On-Farm Research Partnership

c/o Quirine M. Ketterings

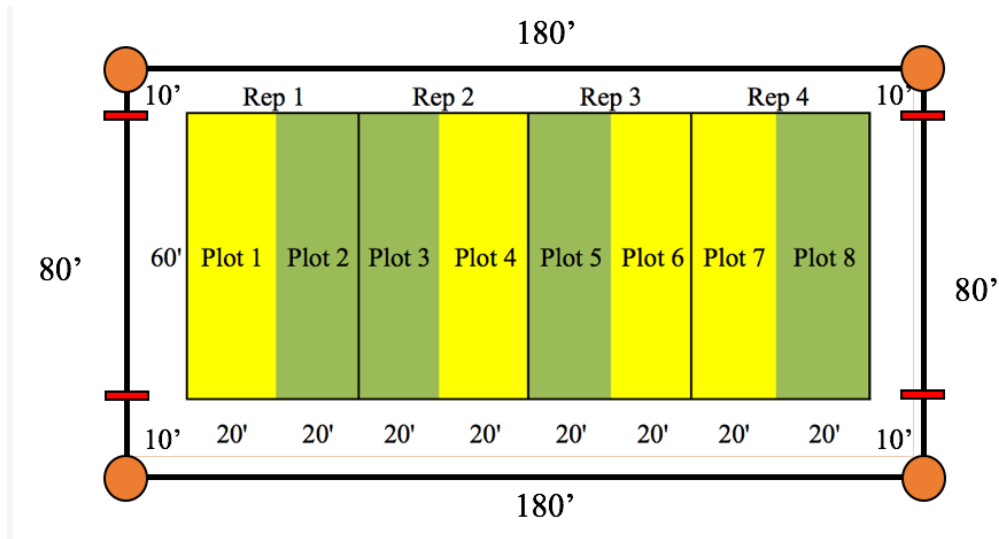
323 Morrison Hall, Cornell University, Ithaca, NY 14853

<http://nmsp.cals.cornell.edu/NYOnFarmResearchPartnership>

Email: qmk2@cornell.edu

Comparison of BMR Forage Sorghum with Corn Silage for Yield and Quality 2017

Side-by-side corn and sorghum plots in four replications: Each plot is 20 ft x 60 ft —32 yellow and green flags per field, plus 4 poles (orange circles) and 4 red flags (red rectangles). Yellow plots are corn silage, green plots are forage sorghum.



Mark the 4 corners of the entire trial with poles (orange circles). Place red flags 10 ft in from each orange pole on the right and left sides of the plot area, as shown. Stretch the tape between red flags on opposite ends and place colored flags on all the corners of each 20'x60' plot as shown on the diagram above. This will be at 10, 30, 50, 70, 90, 110, 130, 150, and 170 feet on the tape measure.

Nutrient Management Spear Program
Comparison of BMR Forage Sorghum and Corn Silage for
Yield and Quality
General Information Page
2017

Collaborator: _____ Name _____
Address _____
Home Phone () _____
Cell Phone () _____
Email _____

Producer: _____ Name _____
Company _____
Address _____
Phone () _____
Email _____

