

2017 BMR Sorghum vs Corn Silage for Yield and Quality Set-up Protocol

Contact: Sarah Lyons (Phone: 828-290-3584)

Nutrient Management Spear Program

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

Overview

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. 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. In homogenous looking areas of the selected fields, sites that are 60 by 160 ft will be set up. These sites have 4 replications of strips of corn silage and forage sorghum planted side-by-side (see attached field map). Soil samples will be taken prior to fertilizer application to determine the initial fertility (one sample of 16 cores per replication). Harvest will occur when the corn silage reaches 30-35% dry matter.

2017 Initial site set-up

Supplies

- Plot map
- 300 ft measuring tape (x 3)
- 4 striped anchoring pins
- 4 orange driveway markers
- 36 flags
 - 4 red
 - 16 green (sorghum)
 - 16 yellow (corn)
- Soil probe, scraper, and bucket (1-quart container)
- 4 soil sample labels
- 8 soil bags (4 composites, double bagged)
- Drop spreader for applying fertilizer
- Cooler or shipping container with ice packs
- Camera (if available)
- GPS (if available)

Prior to set-up

1. Complete the field history information for the field being used.

Site set-up

1. Place one orange driveway marker on the front corner of the field area of choice.

2. Anchor one end of the measuring tape on that front right corner of the field and stretch 180 ft to the front left corner, place another orange driveway marker here.
3. Leaving the same end of the measuring tape anchored in place on the front right corner, stretch the measuring tape 80 ft to the back right corner. Leave the tape here for now.
4. Anchor the second measuring tape at the post inserted on the front left corner, and stretch it 80 ft to the back left corner.
5. Now, anchor the third measuring tape at one of the back corners and stretch it 180 ft to the other back corner. Adjust the tapes so that you have a perfect rectangle. Place posts at the two back corners.
6. Next, place red flags along the measuring tapes on the right and left sides of the trial area, 10 ft away from the orange posts on the corners (see map). Collect the three measuring tapes.
7. Now anchor one measuring tape at a red flag near the front right of the plot, and stretch the tape to the opposing red flag near the front left. Place green and yellow flags on the corners of the plots as shown in map. These should be placed at the 10, 30, 50, 70, 90, 110, 130, 150, and 170 ft marks on the tape. Remember to account for the 10 ft buffer!
8. Repeat step 7 on the back two red flags to mark the other end of the plots.
9. Plant the entire trial area (160' x 60') with sorghum and corn at recommending seeding rate (should be close to 15 lbs/acre for sorghum). Corn should be planted at about a 30" row spacing, and sorghum should be planted at about a 15" row spacing. Buffers can be planted with the same crop as the nearest plot.

Soil sampling

For each replication:

Use a soil probe to take 16, 0-8 inch-deep cores for one composite soil sample per replication (8 per plot) following the steps below.

1. Place the first soil bag in the bucket and place the soil label inside, face down, at the bottom. Then place the second bag inside the first (to avoid the label getting wet).
2. Using the soil probe, take a total of 16, 0-8 inch deep soil cores around the inside perimeter of each replication. Scrape the cores into the plastic bags in the bucket. Make sure you randomly select 8 spots to sample in each plot.
3. After all cores have been taken for a replication, twist the inner bag and knot the outer one in order to allow for easy unpacking.
4. Place the soil sample bags in a cooler/shipping container with ice packs for transport to the NMSP lab as soon as possible for processing and analysis.

Fertilizer application

- 1. Ensure that all soil samples have been taken prior to fertilizer application!**
2. Be careful to apply the correct rate of fertilizer (200 lbs N/acre) in all plots using the drop spreader.

Finishing set-up

1. Please note on the plot map the orientation of the site within the field for reference (locate any landmarks, which direction is north, etc.)
2. If possible, please include the GPS coordinates of the location and the closest address.
3. Take pictures of the site once set up.
4. **If you haven't done so already, please provide a copy of the field history with the samples when you send them to NMSP.**
5. Fill out field activity sheet and send back with samples to NMSP.
6. Send or transport samples back to NMSP: **Sarah Lyons, 318 Morrison Hall, Dept. of Animal Science, Cornell University, Ithaca, NY 14853.**

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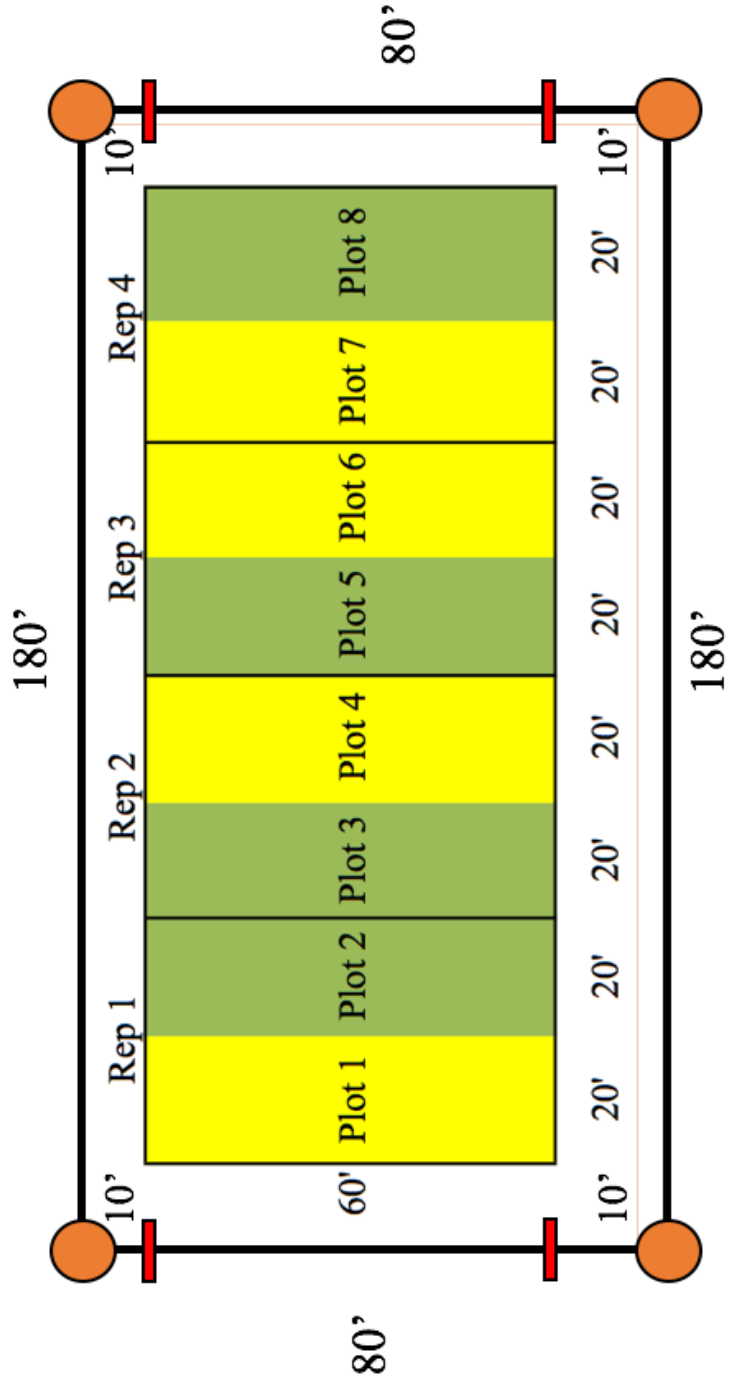


Figure 1: Plot set-up. Plot numbers are noted inside the plots and color coded for flagging (green = sorghum, yellow = corn). Orange circles represent driveway posts, and red rectangles represent red flags.

2017 Corn Silage vs Forage Sorghum for Yield and Quality Study – Site Map

Date: _____ Collaborator: _____

Farm Name: _____

Field ID: _____

Location: _____

GPS Location (center of each rep)

Rep	Latitude	Longitude
1		
2		
3		
4		

Map with key reference points and distances between points: