

# Nutrient Management Spear Program

## Starter N Project

-----2011 trials-----

### Goal:

- Determine if starter N is needed for manured fields (i.e. if manure can replace need for starter N fertilizer so corn can be planted without any fertilizer).

### Approach:

- Identify 2<sup>nd</sup> or higher year corn fields **with sufficient P and K** (i.e. no additional P and K needed).
- Document the field history (manure use in the last three years, manure use this year, fertilizer use this year (includes sidedressing amounts if sidedressing is done), soil type, rotation, past soil test, etc.) on the form provided.
- Per field, implement starter N rate studies in four reps (0 and 30 lbs N/acre; NO P OR K) using the map on the back of this project outline. Plots should be twice the planter/chopper width wide (harvesting the inner rows for yield estimates is the easiest way to go) and long enough to hold silage for a harvest truck (shoot for 75% full)...in the past this length has ranged from 350 to about 1000 feet, depending on field size and harvest equipment.
- Measurements (2 treatments x 4 reps = 8 plots)
  - **At planting**
    - Setup the trial using the design on page 2 of this document.
    - Clearly mark corners of the plots in the field, both the beginning and the end of the plots, and note down distances to the road and roadside markers so it is easy to trace back the plot at PSNT and at harvest time.
    - Avoid metal flags...plastic works as well and those are less risky with field equipment.
  - **June (PSNT time):**
    - Sample soils for EACH PLOT at two depths: 0-8 inches and 0-12 inches (take cores next to each other as you go along); each sample should be a composite of 15 cores taken between rows and in the area that will be harvested (so inner 6 rows of a 12 row plot or inner 4 rows of an 8 row plot, etc.).
    - Mail soil samples to Quirine Ketterings (323 Morrison Hall, Department of Animal Science, Cornell University, Ithaca NY 14853).
      - We will analyze the samples for standard fertility (Cornell Morgan) and ISNT (0-8 inch samples) and PSNT (0-12 inch samples).
    - On the same day you take soil samples, also determine stand density (set out 40 feet of tape and count corn plants on the left and the right of the tape (will result in 2 readings per plot). Record data on form provided.
    - Estimate corn height to the whorl for each plot and record on form.
    - Take pictures of each of the 8 plots (center shot looking between the two middle rows) –so we have a record of visual differences or the lack thereof.
    - Email copies of data forms and photos to Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu).

- **At harvest time:**

- Direct the chopper to harvest the inner rows of individual plots and determine total weight and the plot size for each plot individually (see slide set for additional instructions; we should have one weight per plot).
- Determine plot size by walking the field with a measuring wheel once the chopper has gone through the plot and noting down the plot length. Also note down the harvested width (chopper width...i.e. 8 row chopper) so we can determine the total area harvested.
- Subsample the silage for moisture and forage quality analysis (1 gallon bag per plot). This can be done at the bunk or in the field, depending on what is easiest to do. Make sure the sample is representative of the plot (so if samples are taken at the bunk, walk around the pile and take handfuls from different portions in the pile).
- Take corn stalk nitrate test samples at harvest (precisely sample stalks between 6 and 14 inches off the ground (so 8 inch stalk length). Take 15 stalks per plot; split samples into quarters (lengthwise) and mail in 15 quarter-stalks per plot). Sampling is most easily done by having the chopper harvest the inner rows first and then taking CSNT samples from the adjacent rows in the plot that did not get harvested but still got the same treatment. See the starter N slide set for further instructions.
- Mail stalk samples to Quirine Ketterings (323 Morrison Hall, Department of Animal Science, Cornell University, Ithaca NY 14853).
  - We will analyze the stalks for CSNT.

Per plot: width equals chopper width times 2; harvest inner rows (1 chopper pass through center of plot); length equals 350-1000 feet depending on field size, truck weights, and expected yield

Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8
No starter	30 lbs N	30 lbs N	No starter	30 lbs N	No starter	No starter	30 lbs N
Replicate 1		Replicate 2		Replicate 3		Replicate 4	

**If your planter width is not a multiple of the harvest width, call us to discuss plot setup.**

If you have a site identified, please let us know so we provide you with pre-labeled sampling containers/bags for the soil sampling rounds (8 samples for 0-8 inch depth and 8 samples for 0-12 inch depth), and the forage quality samples (8 samples) and CSNTs (8 samples).

Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu) or 607 255 3061 (office) or 607 229 0120 (cell) Greg Godwin at [gsg6@cornell.edu](mailto:gsg6@cornell.edu) or 607-279-4627 (cell)