

On Farm Research Project-2009

Team Grains – Agronomy Production Group

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Soybean Seeding Rate/Population Study

Objective: To determine the appropriate seeding rate required to achieve the highest economic return for soybean.

Rationale: Current UWEX soybean information recommends seeding rates higher than what may be economically optimal for producers. New data from Iowa State suggests that a base population of 100,000 plants per acre is all that is required to achieve 100% yield potential. Through this protocol we hope to determine 1) the base population required in Wisconsin to achieve 100% yield potential, 2) the seeding rate required in Wisconsin to consistently achieve this base population.

Experimental Design: Each trial should consist of three seeding rate treatments (120,000, 160,000, and 200,000) and each treatment should be replicated two or three (preferred) times. Seeding rate treatments can be applied to any row spacing. Treatments should be randomized within the replication/block. Plots can run the length of the field to facilitate application and harvest. Plot widths do not need to be standardized across different farms and can vary according to drill or planter size and anticipated combine harvest head size. It would probably be easiest at harvest for the combine to go down and back and then dump at the weigh location for each of the treatments. **Please note if any of the harvest passes included wheel track damage caused by sprayers.*

Variety and Maturity Group: Use the variety and maturity group of the grower's choice. Make sure that the same variety is planted through out the entire plot area.

Fertilizer and Herbicide Applications: Fertilizer and herbicide applications should be made according to the farmers' regular schedule. Ideally weeds will be controlled before the 6" economic loss threshold that Chris Boerboom has identified and fertilizer applications ideally will correspond to UWEX soil test recommendations. Dates and quantities of products applied should be recorded.

Data Requirements

1. Completed Field History Form
2. Completed Harvest Data Form

Field History Form-2009

Background Information

UWEX Agent/ Staff name _____

Producer name _____ County _____

What crop was planted in this field the previous year? (Circle one)

Corn Soybean Alfalfa Wheat Other _____

% residue present at planting time _____%

Type of primary tillage: (circle one) Mold Board Chisel No-till

Soybean variety and maturity group: _____ (please include seed tag if possible)

% Germ _____

Is this Round-Up Ready variety? Yes No Inoculant _____ Rate _____

Were seed treatments applied? _____

Fungicides: (please list) _____

Soil Test Information – Results of Most Recent Soil Test

Date of Test _____ pH= _____ P= _____ ppm. K= _____ ppm. O.M.= _____ %

Fertilizer Application Information:

Application Date: _____

Fertilizer Product Applied _____ Rate _____ lbs. per acre

Herbicide Application Information:

Application Date: _____ Crop Stage: _____

Herbicide name/rate applied: _____ GPA _____

Additional Field Notes:

Soybean Plot Harvest Data – 2009

UWEX Agent/ Staff name _____ Producer name _____

County _____

Date of Harvest _____

Diseases present: _____

| Treatment | REP | Average Final Plant Population | Length of Area Harvest (ft.) | Width of Area Harvest (ft.) | Harvest Moisture % | Harvest Net Weight in lbs. | Final Yield Adjusted for Moisture |
|-----------|-----|--------------------------------|------------------------------|-----------------------------|--------------------|----------------------------|-----------------------------------|
| 120,000 | 1 | | | | | | |
| 160,000 | 1 | | | | | | |
| 200,000 | 1 | | | | | | |
| 120,000 | 2 | | | | | | |
| 160,000 | 2 | | | | | | |
| 200,000 | 2 | | | | | | |
| 120,000 | 3 | | | | | | |
| 160,000 | 3 | | | | | | |
| 200,000 | 3 | | | | | | |

Formulas for determining final yield adjusted for moisture:

Acres Harvested (Length in feet x width in feet) = _____ acres.
43,560

Pounds of grain corrected to bushels @ 13% moisture:

$$\left(\frac{\text{pounds of grain} \times (1 - \text{measured seed moisture})}{0.87} \right) / 60$$

Bushels per Acre: Corrected Bushels Harvested per area = _____ bushels per acre
Acres Harvested