PROJET 58. DÉVELOPPER UN COMPLEXE D'OLIGO-ÉLÉMENTS POUR LA CULTURE DE SOYA

Trialing the use of Agro-100 foliar N and S fertilizer in soybean in Michigan

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Location: Rogers City, MI   GPS Coordinates: 45.363412, -83.787930

Project Goal: Determine if the Agro-100 foliar fertilizer product, SoyAgro, will increase growth, yield and profitability of soybean under field conditions likely to cause N and S deficiency.

Methods: A treatment of SoyAgro will be applied at the manufacturer's recommended rates and timings to soybean plots in a cooperating farmer's commercial field. Standard P and K fertilizer and necessary lime will be applied preplant as determined by soil analysis. The treatment of SoyAgro will be applied at a rate of 0.4 gallons/acre at both the 6 trifoliate (V6) stage and at 60-80% pod set. Another treatment will be a standard control, in which only standard fertilizer is applied preplant. Each treatment will be replicated four times in randomized complete block design, for a total of 8 plots in the trial. Each plot will have a width of 60 feet, corresponding to the cooperating grower's spray boom width, and a length of 300 feet, determined by field length.
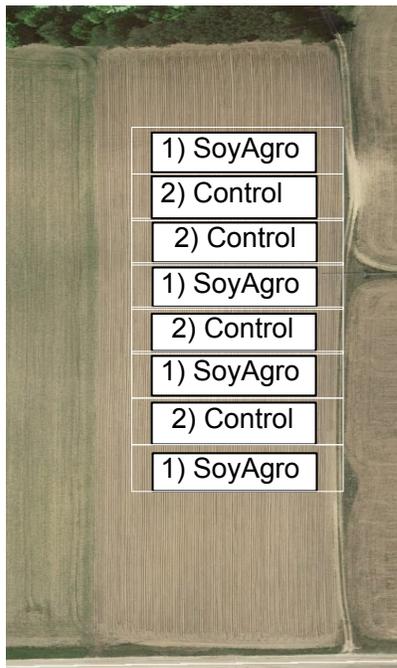

Figure 1. Experiment design in 7.1 acres of soybean.

To locate a potentially responsive trial site, soil samples from candidate fields will be sent to the Cornell University Soil Health Lab for organic matter, carbon mineralization and potentially mineralizable nitrogen analyses. The field testing lowest on these parameters will be selected as the trial location. To measure beginning nutrient levels in the plot, an aggregate soil sample will be taken in the spring at planting, after dry fertilizer has been applied. Samples will be sent to the A and L Great Lakes soil analysis lab for S1 and S3 tests (Organic Matter, Available Phosphorus, Exchangeable Potassium, Magnesium, Calcium, Soil pH, Buffer pH, Cation Exchange Capacity, Percent Base Saturation of Cation Elements, Sulfur, Zinc, Manganese, Iron, Copper, Boron).   Soybean tissue nutrient status will also be evaluated immediately before the first foliar fertilizer application in the SoyAgro and control treatments, across all plots before the first foliar application, and 1 week after both the first and second rounds of foliar fertilizer application across all plots. The newest fully developed trifoliate will be taken from 40 plants per plot for one aggregate tissue sample per plot per sampling period. Soybean tissue samples will be air dried and submitted to A and L Great Lakes plant analysis lab for the PT2 analysis package (Nitrogen, Phosphorus, Potassium, Magnesium, Calcium, Sulfur, Sodium, Iron, Aluminum, Manganese, Boron, Copper and Zinc). Soybean yield will be measured by harvesting samples of equal area from each plot with the cooperating grower's combine, weighing with a weigh wagon, and adjusting for grain moisture.

MSU Extension staff will be responsible for planting the trial plots and applying treatments in collaboration with the grower hosting the project, collecting and submitting soil and plant samples, analyzing and reporting the data.   Data will be analyzed using appropriate statistical methodology, and results will be presented back to Agro-100, with MSU Extension retaining the right to publish any and all data as appropriate. Agro-100 will provide the necessary amounts of SoyAgro needed for the study, plus $1,000 ($1,000 per non-control treatment) as an unrestricted gift to MSU extension Presque Isle County to cover labor, supplies, analysis fees, etc.