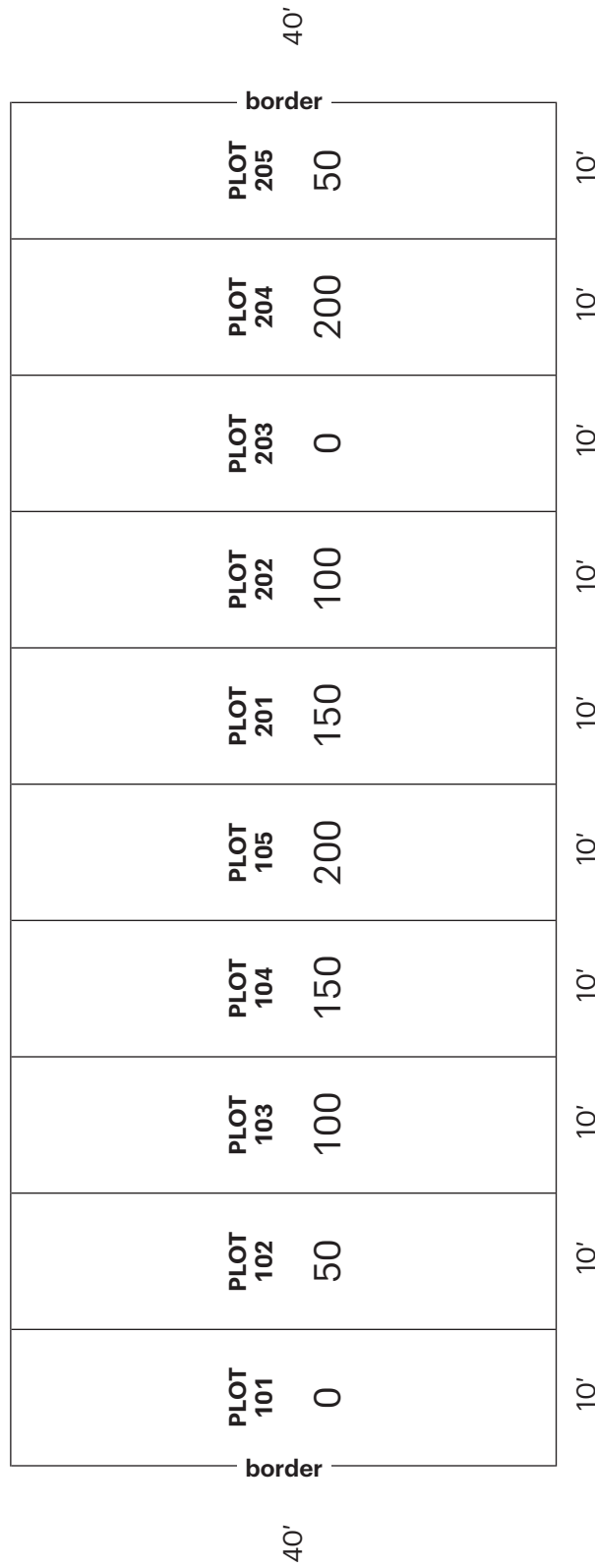


Corn Nitrogen Rate Map, 2018



Planted May 25
 N applied pre-planting on May 25

Light Interception in Plant Canopies

How does planting date make a difference?

Ohio Learning Standards Emphasized: Biology – Cells (cellular processes); Physics – Waves (wave processes); Environmental Science – Earth’s Resources (soil and land), Global Environmental Problems and Issues (sustainability, food production and availability).

Background

Soybean agronomic practices vary across the state. (See <https://agcrops.osu.edu/newsletter/corn-newsletter/2017-09/soybean-planting-date-row-width-and-seeding-rate-recommendations> for information about how planting date, row width and seeding rates affect growth and yield in Ohio soybeans.)

The growth stages of soybeans follow a similar pattern to that of corn in that there are vegetative and reproductive stages that can be influenced positively or negatively by environmental factors.

Emergence (VE) is the first vegetative stage, followed by VC or unifoliate stage when leaves begin to expand. The first trifoliate stage (V1) is marked by the appearance of a compound leaf with three leaflets. The second trifoliate (V2) is when an additional trifoliate develops, followed by continued Vn stages while the plant develops. The reproductive stages are as follows: R1: Beginning bloom, R2: Full bloom, R3: Beginning pod development, R4: Full pod, R5: Beginning seed, R6: Full seed, R7: Beginning maturity, R8: Full Maturity

The maturity group of varieties and planting dates will influence plant growth, development and yield. Maturity groups relate to when the plants start to flower, with lower maturity groups flowering sooner than later groups. This may also relate to a change in the day these varieties mature in the fall and are ready for harvest. Planting date can impact how much growth soybeans can have before they start to flower, and can also affect how long it takes for the soybean plants to reach physiological maturity.

I. Measure canopy cover and soybean growth

Measure the canopy closure of each different maturity soybean varieties (ex: 2.4 vs 3.8) at two planting dates (late May and mid June).

1. Complete a visual estimation of canopy closure and record the data in the table provided.
2. Download the Canopeo App to your Smart Phone or another handheld device.
-Create a new account if you have not used this app before.
3. Choose the camera. Extend your arm out to your side, camera parallel to the ground, two feet above the canopy. Take a photo.
4. Proceed through the steps using the Canopeo app, and record the percentage reported on the screen for each image. Record the data in the table provided.
5. Measure plant height from soil level to highest point.
6. Use Normalized Difference Vegetation Index (NDVI) by using a Greenseeker.
7. Record your data.

Record your readings:

Measurement	Plots 101 and 201 (Early Maturity, Early Planting)	Plots 102 and 202 (Late Maturity, Early Planting)	Plots 103 and 203 (Early Maturity, Late Planting)	Plots 104 and 204 (Late Maturity, Late Planting)
Visual Estimate of Canopy Closure (%)				
Canopeo App Measurement (%)				
Average Plant Height (cm)				
NDVI Reading				

II. Measure yield potential (only for hoops with this diameter – other hoop sizes use a different calculation)

1. Compare pod set and seeds per pod.
2. Place the hoop in the center of the plot, and count all the plants within the hoop. Repeat in a different location of the plot until you have three measurements.
3. Take the average number of plants in one hoop and multiply by 10,371. This is a correction factor to make your plants/hoop into plants/acre.

Reflection:

1. What is the importance of canopy cover in soybean fields?

2. Of the technologies used to measure canopy cover, which was the easiest to do? Which was the hardest? Did the technology enable you to detect differences?

3. Which management practice is more impactful on canopy closure, planting date or variety selection? Why?