What is the optimal time to harvest grain?
Not until its physiologically mature...
When is corn and soybeans ready to harvest and how can yield estimates be calculated?
As the investigator...

- Corn & Soybean Maturity
- Factors that affect yield
- Parts of an Ear of Corn
- Calculate yield estimates

*Investigative Assignment: Create a display outlining how yield is determined and describe factors that affect why a yield could be outstanding or poor.
High Yielding Crops...

- Are fertilized according to soil tests for the production level desired.

- Selected for the best hybrid suited to the farming operation.

- Planting at appropriate time, correct population and spacing.
High Yielding Crops...

- Have no or limited competition from weeds, diseases, and insects.

- Are managed with cultural practices to maximize the rate and length of time of dry matter accumulation in the grain.
Estimating Yields for Corn

It can be helpful when making crop management decisions such as:

- when to harvest a field or
- in making grain marketing decisions.
- It is not always accurate though, so should be used with caution.
Parts of a Corn Ear

Do you know what is what?

- Ear Node
- Husks
- Stem
- Kernels
- Ear leaf
- Silks

Image: NCGA
Parts of a Corn Ear

- Silks
- Ear leaf
- Kernels
- Stem
- Husks
- Ear Node

Image: NCGA
Parts of a Kernel

Do you know what is what?

Tip Cap
The germ
The pericarp
The endosperm
Parts of a Kernel

A kernel of corn contains:

- 61.0% Starch
- 19.2% Feed
- 3.8% Oil
- 16.0% Water
Count the kernels on a cob

1. Count the number of rows (kernels around the cob)
   Answer _____

2. Count the number of kernels/row
   Answer _____

3. Total number of kernels on the cob (rows x kernels/row)
   = ________
Estimating Corn Yields

- Simplest & Least Accurate Method
- Adjusting for Population and Seed Size
- Using Ear Counts to Estimate Ears per Acre
- Improving Estimate of Ears per Acre
Estimating Corn Yields

- Simplest & Least Accurate Method

Example 1:

You count 12 rows per ear and 50 kernels per row to equal 600 kernels per ear.

600 x 0.300 = 180 bushels/acre

Using: Table 1. Multipliers based on ears per acre and kernel size to calculate expected yield. Determine the number of kernels per ear and multiply that number by the correct multiplier to make a yield estimate.
Estimating Corn Yields

- Adjusting for Population and Seed Size

Example 2:

600 kernels per ear

If you assume 25,000 ears per acre, then:

- In an average year, 600 x 0.278 = 167 bushels/acre.
- In a highly stressful year, kernel size will be smaller and 600 x 0.227 = 136 bushels/acre.
- In a highly productive year, kernel size will be larger and 600 x 0.357 = 214 bushels/acre.
Estimating Corn Yields

- **Using Ear Counts to Estimate Ears per Acre**

Example 3:

You count 12 rows per ear and 50 kernels per row to equal 600 kernels per ear. You count 26 ears in 1/1,000th acre to equal 26,000 ears per acre.

- In an average year (medium kernel size), 600 x 0.289 = 173 bushels/acre.
Estimating Corn Yields

- **Improving Estimate of Ears per Acre**

Example 4:

*600 kernels per ear. You count 145 ears in 100 feet of row, which equals 25,265 ears per acre.*

Option 1: Round 25,265 to 25,000 ears per acre and use the multiplier in Table 1

- In an average year, 600 x 0.278 = 167 bushels/acre.
Let’s see how these methods compare!

- Simplest & Least Accurate Method

- Using Ear Counts to Estimate Ears per Acre
  30 inch rows = 17.5 inches
  (count how many ears are in 17’ 5”)

- Improving Estimate of Ears per Acre
  (count how many ears are in 100 feet of row)
How did the methods compare?
Yield estimates are only as accurate as the field area and data that was sampled!
As the investigator we looked at:

- Corn & Soybean Maturity
- Factors that affect yield
- Parts of an Ear of Corn
- Calculate yield estimates

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What is the optimal time to harvest grain?

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