



Lesson Plan:

Field Corn Stand Counts

Courses: Plant Science / Agronomy / Introduction to Agriculture

Grade Level: 9-12

Lesson Length: 50-60 minutes, plus optional field activity

Topic: Determining and evaluating field corn stand counts

Essential Question

Why is determining an accurate stand count important for making management decisions in field corn production?

National AFNR Standards Alignment

Applicable AFNR Standards

- Plant Systems PS.01.01. Determine the influence of environmental factors on plant growth.
- Plant Systems PS.02.02. Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.
- Plant Systems PS.03.02. Develop and implement a management plan for plant production.

Learning Intention

We are learning to assess a corn field to determine plant population and anticipated yields.

Success Criteria- I can:

- Observe and record field conditions
- Assess the health of a corn crop and record observations regarding growth and health.
- Calculate estimated corn plants per acre

Materials Needed

- Measuring tape
- Calculator
- Corn stand count worksheet
- Flags or markers
- Clipboard and pencil
- Field corn plot or sample data set
- Corn population reference chart

Preparation recommendation: Pre-cut a piece of rope 17 feet 5 inches long and attach spikes or anchors to each end prior to field work.



Vocabulary

Stand Count	Plant Population	Emergence	Yield Potential
Uniformity	Replant Decision	Row Spacing	Agronomy

Lesson Sequence at a Glance

Time	Lesson Component	Purpose / Teacher Focus
5 min	Bell Ringer	Connect emergence differences to potential production problems.
15 min	Direct Instruction	Explain stand counts, emergence factors, and the 1/1000-acre method.
10 min	Guided Practice	Calculate average stand count and estimated plants per acre from sample data.
20 min	Field Activity / Laboratory	Measure, count, observe, calculate, and evaluate field condition in teams.
5 min	Closure / Exit Ticket	Revisit the essential question and connect results to management decisions.

Bell Ringer (5 Minutes)

Display the question:

“A farmer planted 34,000 seeds per acre but only 28,000 plants emerged. What problems might this cause?”

Students write a brief response and discuss it with a partner.

Direct Instruction (15 Minutes)

What Is a Stand Count?

The 1/1000-Acre Method

For 30-inch row spacing: Measure 17 feet 5 inches of row, count all living corn plants within that distance, and multiply the count by 1,000.

Example Input	Estimated Population
32 plants counted	$32 \times 1,000 = 32,000$ plants per acre



Guided Practice (10 Minutes)

Provide the sample data below. Students calculate the average number of plants counted and the estimated population per acre.

Row Sample	Plants Counted
1	31
2	33
3	30
4	35

Answer: Average = 32.25 plants. Estimated population = 32,250 plants per acre.

Discuss whether this population is adequate for maximum yield.

Field Activity / Laboratory (20 Minutes)

Stand Count Investigation

Students work in teams to complete the investigation.

1. Measure the correct 1/1000-acre row length.
2. Count living plants in four locations.
3. Record the plant stage, missing plants, uneven emergence, insect damage, and disease symptoms.
4. Calculate the average stand count and estimated plants per acre.
5. Classify field condition as excellent, acceptable, needs monitoring, or a potential replant concern.

Accuracy reminder: Measure multiple stands for accurate results.

Discussion Questions

- Was population consistent across the field?
- What factors may have affected emergence?
- Would you recommend replanting? Why or why not?

Assessment

- Teacher observation during calculations
- Class discussion participation
- Completion of the stand count worksheet

Exit Ticket

Students answer:

- What is the purpose of a corn stand count?
- How do you calculate plants per acre using the 1/1000-acre method?
- How can stand count information influence management decisions?

Support

- Provide calculation formulas and reference charts.



- Pair students for guided calculations.

Enrichment

- Compare yield estimates at varying populations.
- Analyze real university extension stand count data and make management recommendations.

Closure (5 Minutes)

Revisit the essential question:

Why is determining an accurate stand count important for making management decisions in field corn production?

Students share one management decision that could be improved through accurate stand count data, such as replanting, nitrogen management, yield forecasting, or scouting priorities.

References & Supporting Resources

- **Iowa State University Extension and Outreach.** *Stand Assessments – Corn*. Provides guidance for evaluating corn stands, including the 1/1,000-acre method. For 30-inch rows, the resource specifies measuring 17 feet, 5 inches, counting live plants, repeating counts across the field, averaging the results, and multiplying by 1,000 to estimate plants per acre. [Iowa State University – Stand Assessments: Corn]
- **Penn State Extension.** *Assessing Corn and Soybean Populations and Replanting Decisions*. Describes the 17-foot, 5-inch stand-count method for corn planted in 30-inch rows and connects corn population assessments with evaluation of potential replant decisions. Penn State Extension – Assessing Corn and Soybean Populations [extension.psu.edu]

This GROWMARK lesson incorporates established agronomic methods for assessing corn stands and estimating plant population. The instructional sequence, student activities, questions, calculations, and classroom/field application have been developed for the GROWMARK lesson plan library.