UNIVERSITY OF MISSOURI EXTENSION

Corn Emergence Demonstration

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A corn emergence demonstration was established at the University of Missouri Graves Chapple Extension and Education Center. The objective was to show how emergence if delayed decreased corn yield. Corn emergence was marked using different color stakes and then individual corn plants were followed through the growing season. Plants were evaluated for stunting, lodging, death, barren stalks and individual ears kernel weights measured. Corn plants started emergence 10 days after planting. More than 70% of the corn plants emerged the first day and anther 25% emerged the second day. The last plants emerged 12 days later. Stunted plants occurred throughout the emergence dates, not just the late emergers. Kernel ear weight was measured for each of the emergence dates and emergence dates with lodged plants caused by a straight wind. Lodged plants had reduced kernel ear weight compared to standing plants within emergence dates.

INTRODUCTION

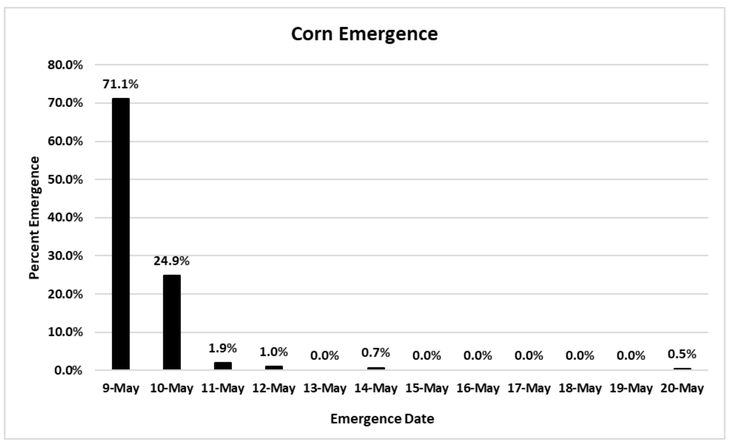
Growers focus on getting a uniform, even emergence of corn plants to maximize yield. Uneven emergence can be due to differences in soil temperature, soil moisture, residue distribution and seeding depth (Nielsen, 2007). Planting into cool soils also increases emergence variation. This may result in different development stages of plants in fields, and which can cause plant to plant competition (Carter, 2002).

MATERIALS AND METHODS

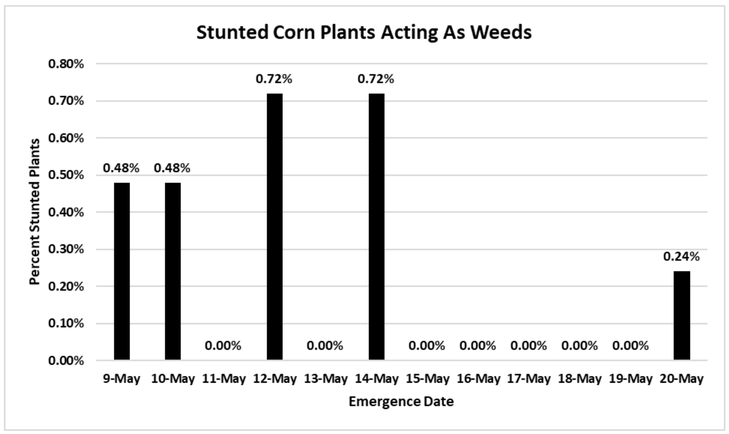
The trials were planted at University of Missouri Graves Chapple Extension and Education Center on a Dockery silt loam located at Fairfax, Missouri. Three replications of plots were established measuring 40-feet by 10 feet. The plots were four 30-inch rows and center 2-rows were marked as corn plants emerged with different colored stakes representing each day. The individual plants with different color of stakes were followed throughout the growing season. Plants were evaluated for stunting, lodging, death, barren stalks and individual ears kernel weights measured. The corn hybrid was P1359 no-till planted at 32,500 seeds per acre. Corn was planted April 28th.

RESULTS AND DISCUSSION

The chart below indicates the date of corn emergence and the percentage of plants emerged. Corn plants started emergence 10 days after planting. More than 70% of the corn plants emerged the first day and anther 25 % emerged the second day. The last plants emerged 12 days later. There were 6 days with no emergence.

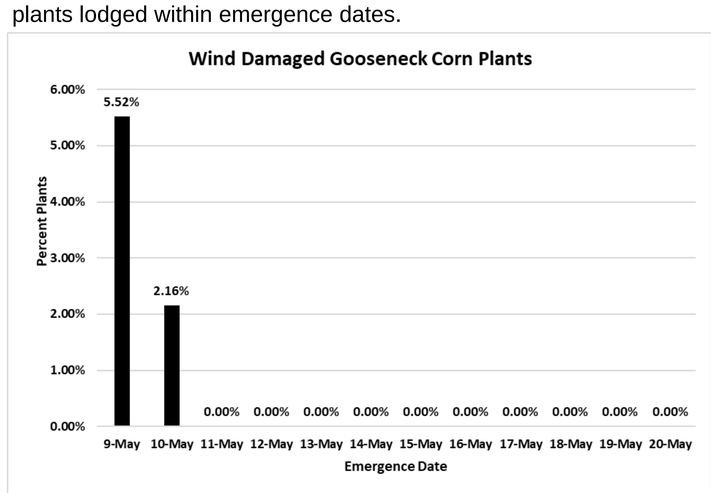


The next chart indicates the percentage of plants acting as weeds, meaning no ear and corn plants were vegetatively stunted.



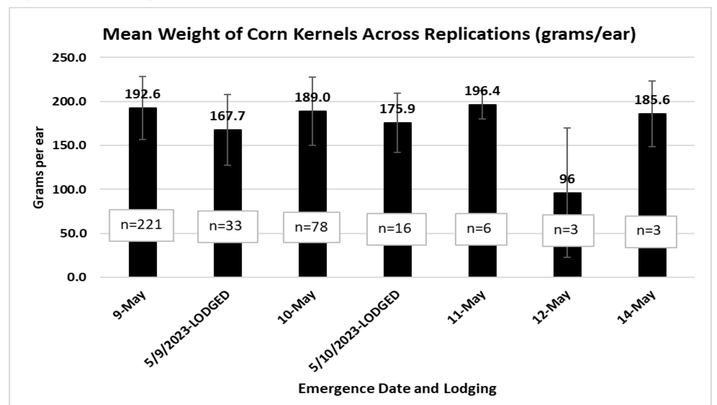
Above, orange stakes track first day of corn emergence.

A strong straight-line wind occurred on June 29th and caused corn to lodge in area fields. Below is a chart showing the percent of plants lodged within emergence dates.

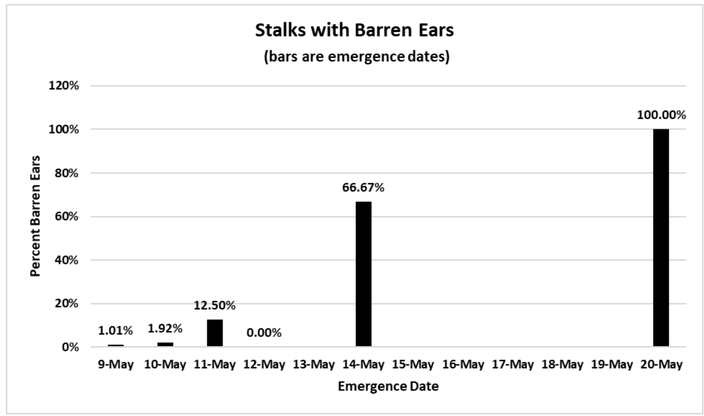


The kernel weight of ears is found in the following graph. Kernel ear weight was measured for each of the emergence dates and emergence dates with lodged plants. The boxes with the number inside on the graph bars indicate the number of plants observed. Late emergence dates had wide range of weights along with barren plants so that data was not graphed.

The chart shows clearly that lodged plants had reduced kernel ear weight compared to standing plants within emergence dates. The May 12 emergence date had only 3 ears to weight along with May 14. This shows wide variation in ear weights and may be explained by later emergence.



Following, stalks with barren ears were calculated from the mean number of plants within an emergence date and how many plants were barren within emergence date. All plants were barren at the last emergence date.



Below left, corn stalk marked with orange stake is stunted even though emerged first day; right, green stake, corn emerged six days later and stunted.

SUMMARY

Producers should strive to for uniform corn emergence, so plants can grow at same rate. This avoids plants from competing other and should result in maximizing yield.

- 96% of corn plants emerged in 2 days
- Timely, emerged plants resulted in barren ears compared to the late emergers, so other factors during the growth of the corn plant caused stunted plants.
- Lodged corn resulted on lower ear weight.

REFERENCES

Carter, Paul, Emerson Nafziger, and Joe Lauer. Uneven Emergence in Corn. North Central Regional Extension Pub. No. 344. [On-Line]. Available at https://learningstore.extension.wisc.edu/products/uneven-emergence-in-corn-p172. (URL verified 3/7/2024).

Nielsen, R.L. (Bob). 2007. Requirements for Uniform Germination and Emergence of Corn. Corny News Network, Purdue Univ. [On-Line]. Available at http://www.kingcorn.org/news/timeless/GermEmergReq.html. (URL verified 3/7/2024).