

# Corn emergence inconsistencies and increased planting populations decreases grain weight, kernels per row, and total kernels per ear

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## Introduction

Corn (*Zea mays*) is the largest crop grown in the United States, and over 390,000 acres of corn are grown in Georgia. Corn typically requires anywhere from 100 to 120 GDU to emerge. Hybrids chosen for Georgia typically range from 112-118 day relative maturity. Under favorable soil conditions seedlings can emerge as early as four days after planting. Non-uniformity of corn seedling emergence can lead to inconsistent grain yield and ear characteristics.

Pioneer Hi-Bred International did a multi-state project in Illinois and Wisconsin and found that uneven seedling emergence decreased yield. Little data for the effects of seedling emergence uniformity exists for the deep south. It would benefit producers to understand how the timing of seedling emergence affects crop development and grain weight. Having consistent stands can improve water and fertilizer efficiency, as well as pest management which would increase yield.



## Research Objectives

- Determine how timing of seedling emergence affects corn growth and corn ear characteristics
- Compare kernels per row, total kernels per ear, and grain weight of different seedling emergence
- Determine how increasing planting populations affects seedling emergence

## Materials and Methods

- One year study on J.G Woodroof Farm at Abraham Baldwin Agricultural College used a 119-day CRM corn hybrid
- Four target populations ranging from 24,000, 32,000, 40,000, and 48,000 plants per acre across three planting dates
- Seedlings were marked for emergence in four groups of 12-hour intervals with popsicle sticks
- At harvest plants were measured, pulled, and separated based on emergence and planting date
- Porometer and Ceptometer were used to calculate stomatal conductance, TAU, and Leaf Area Index

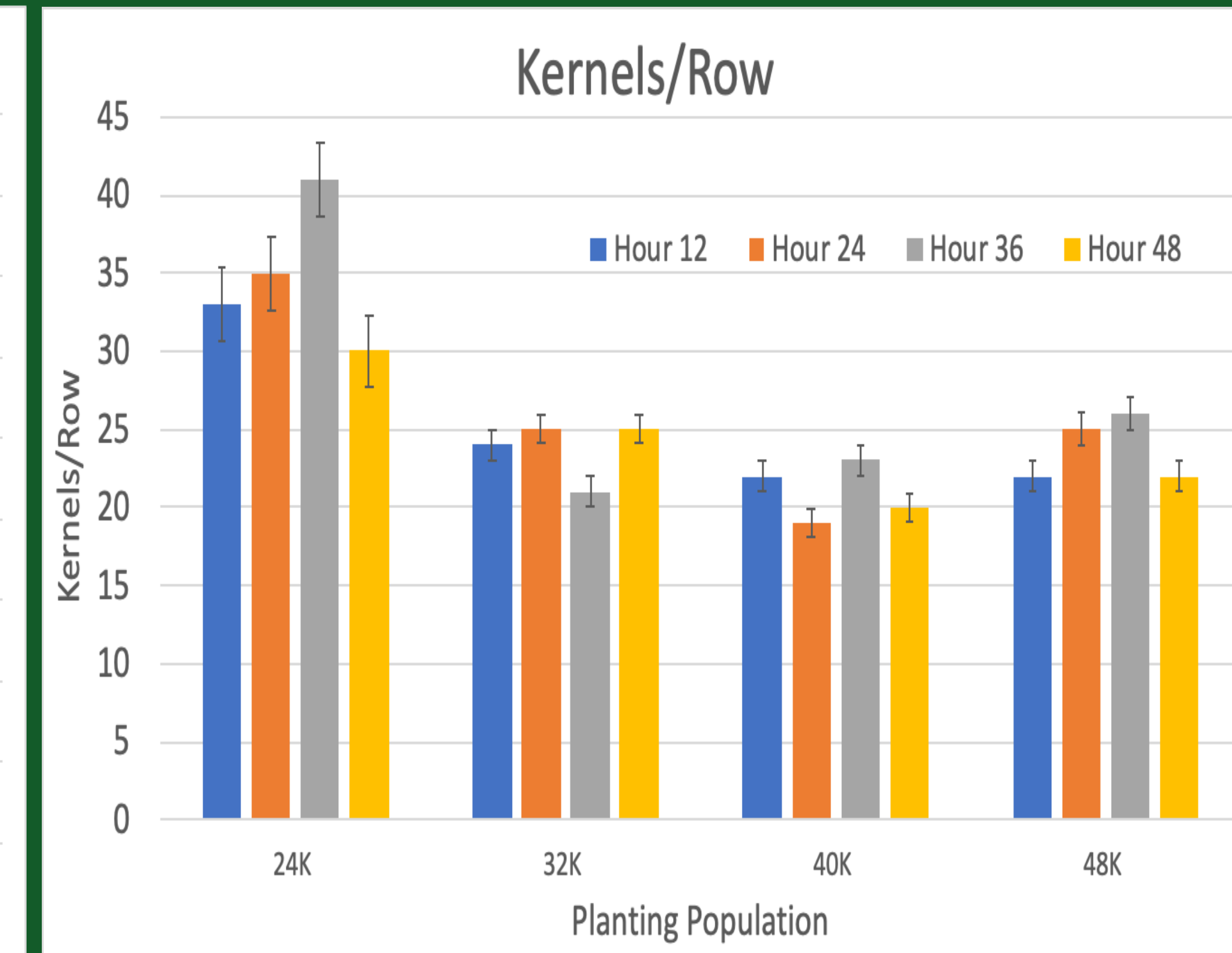
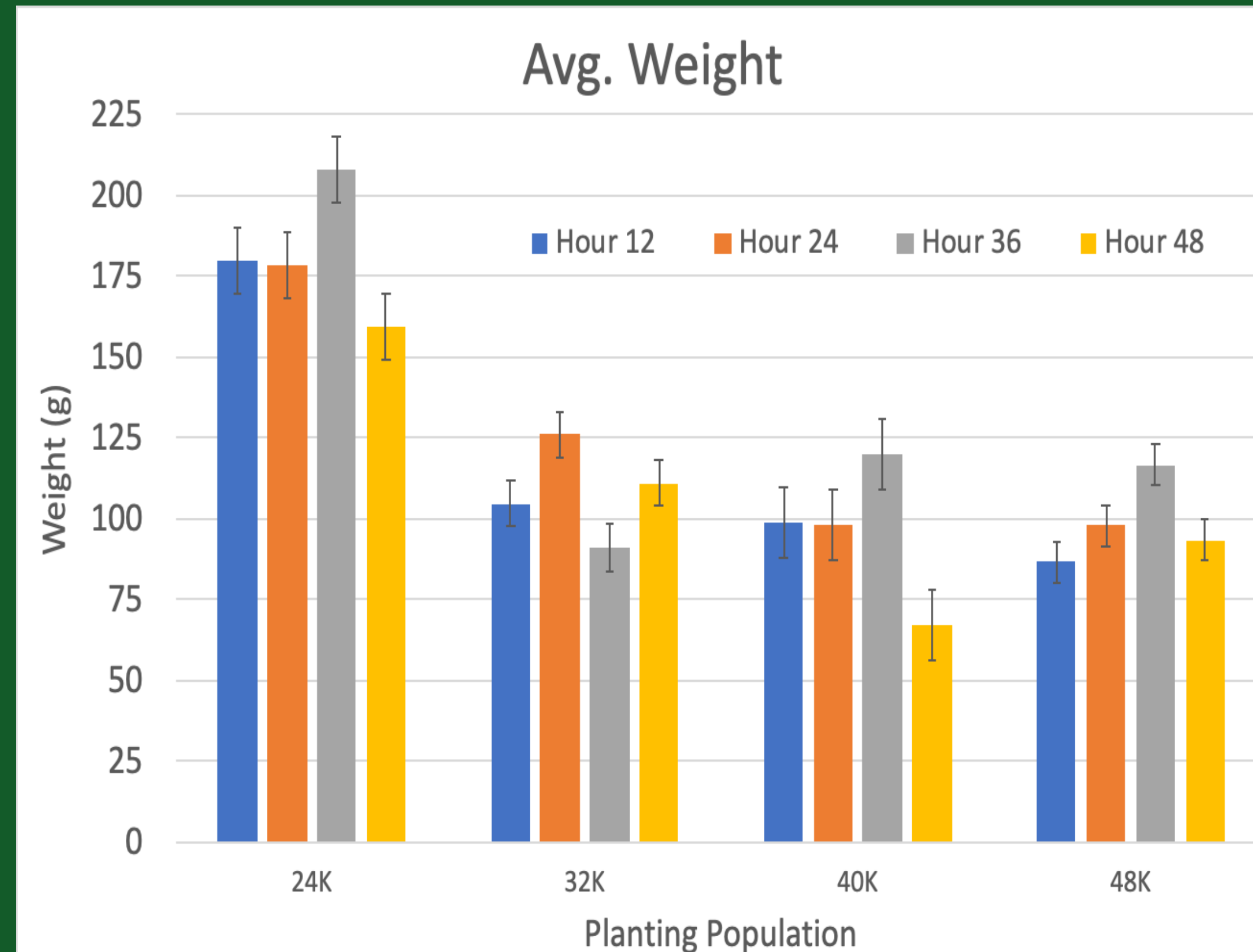
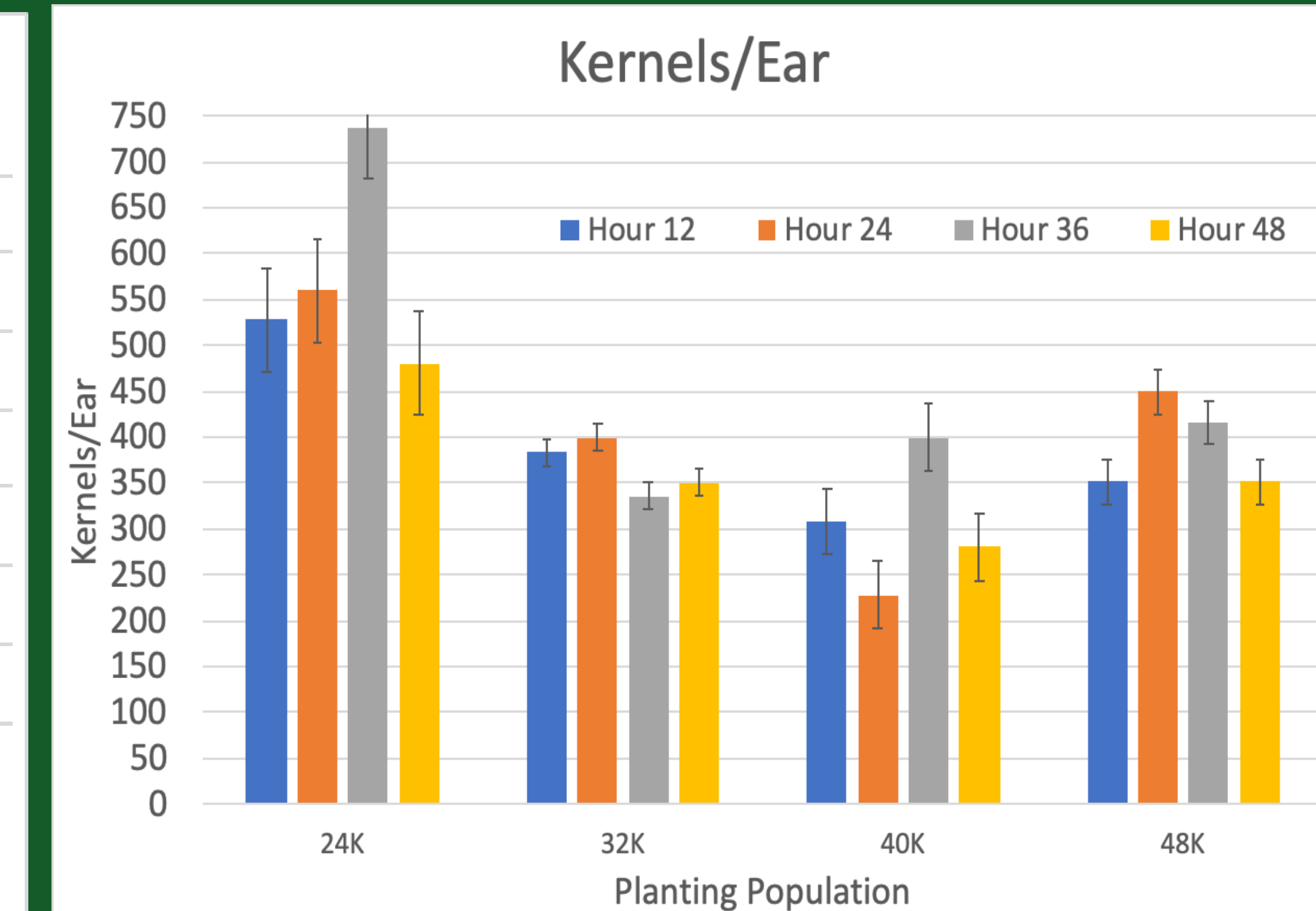
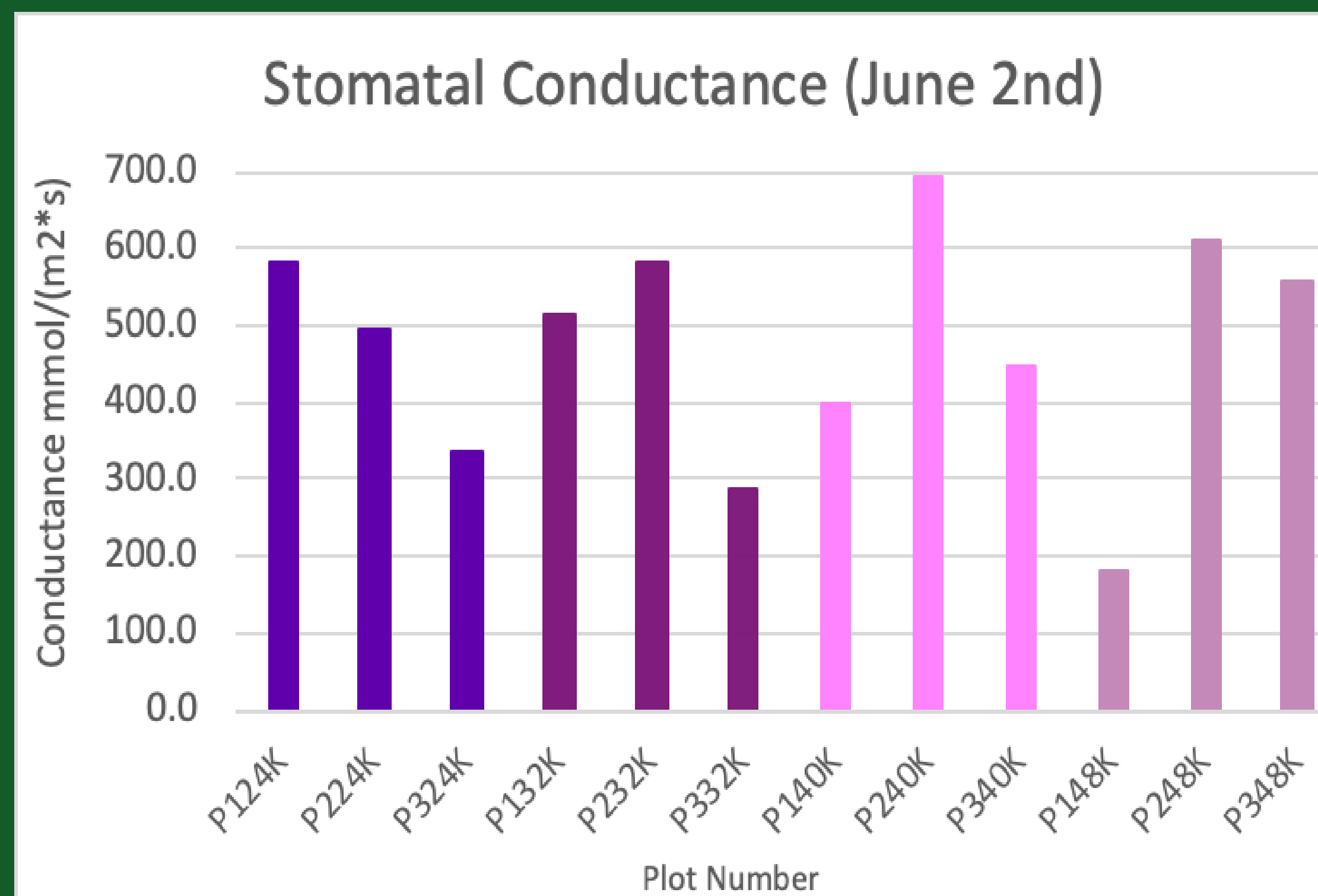
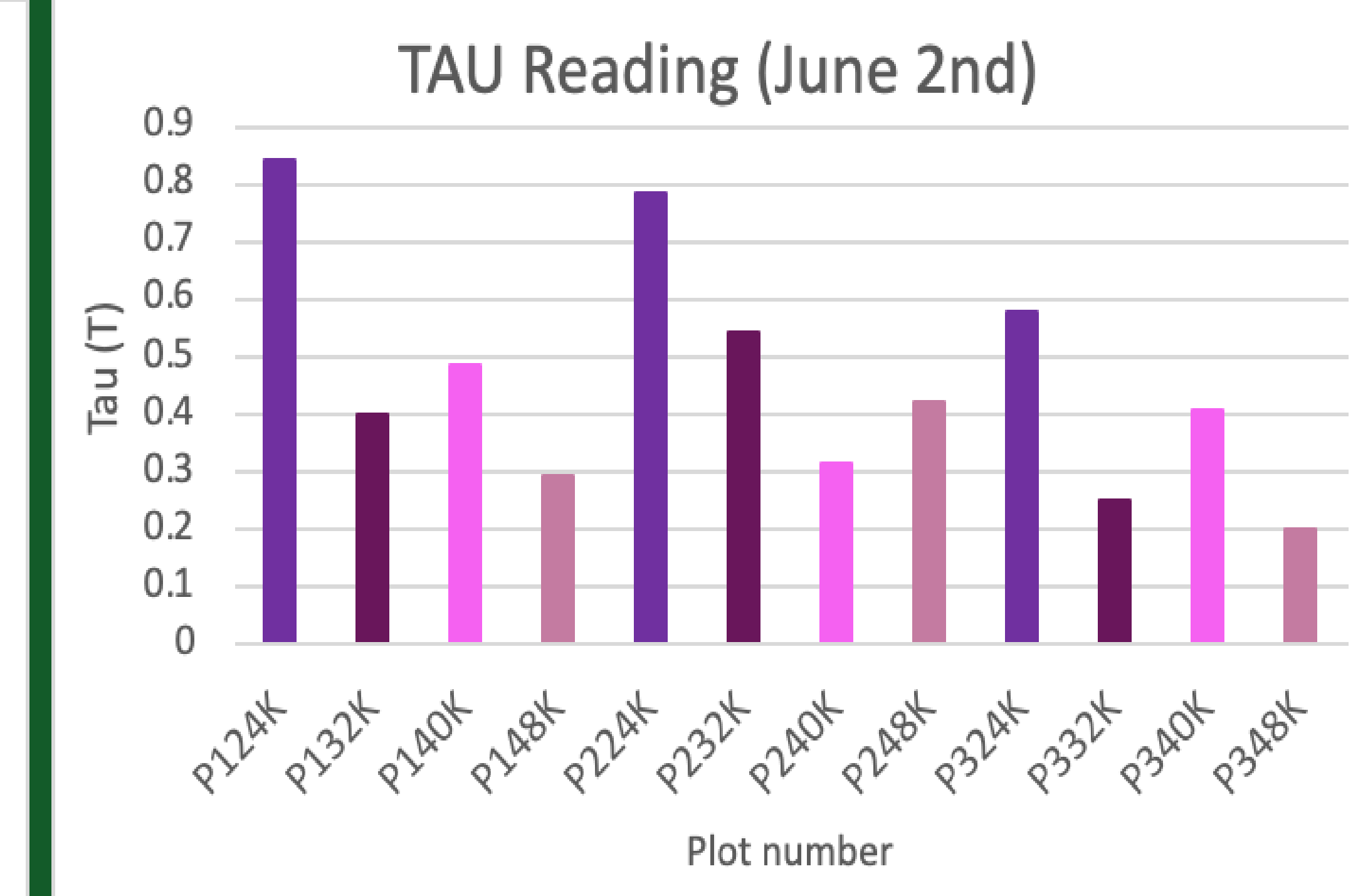
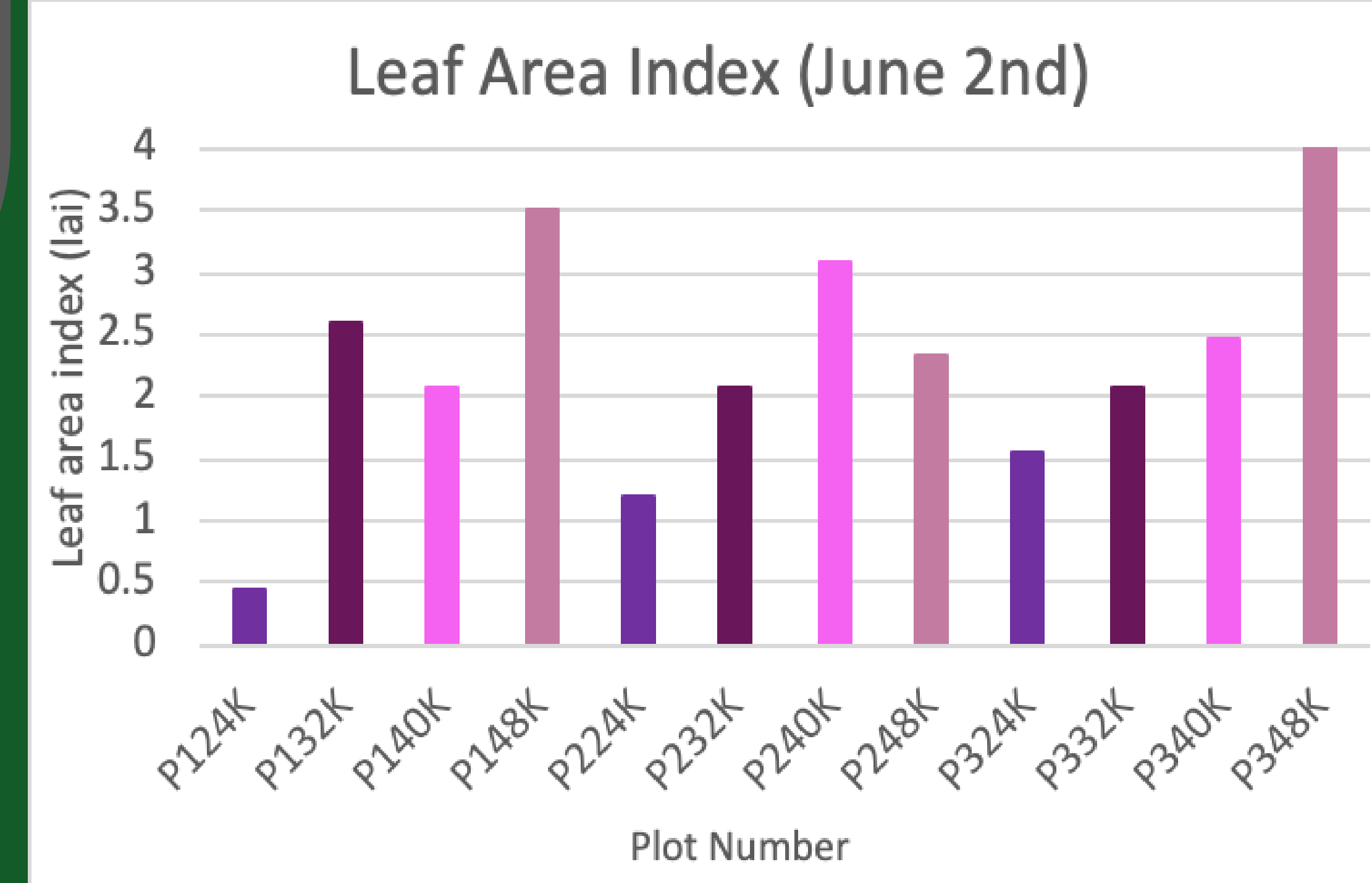
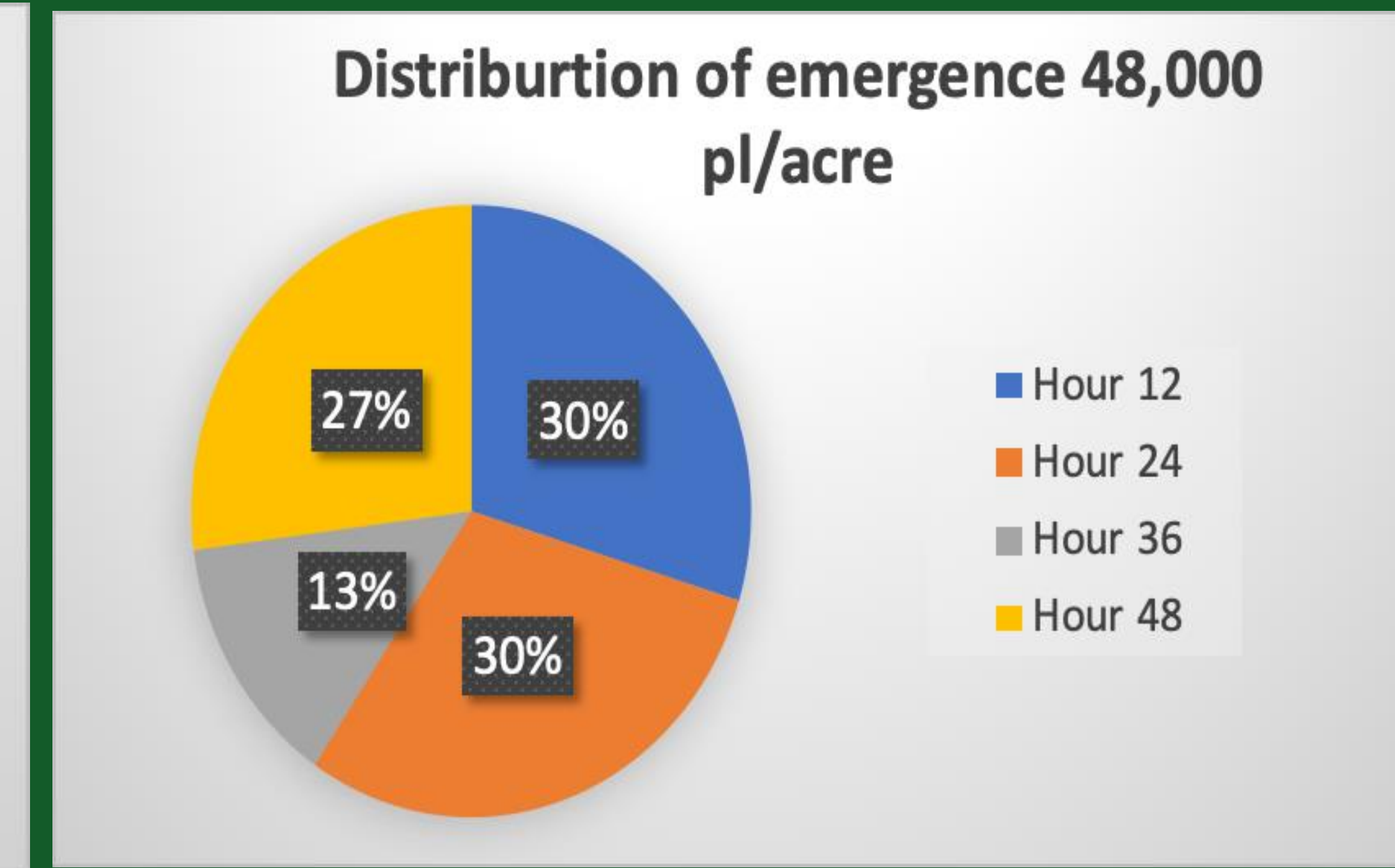
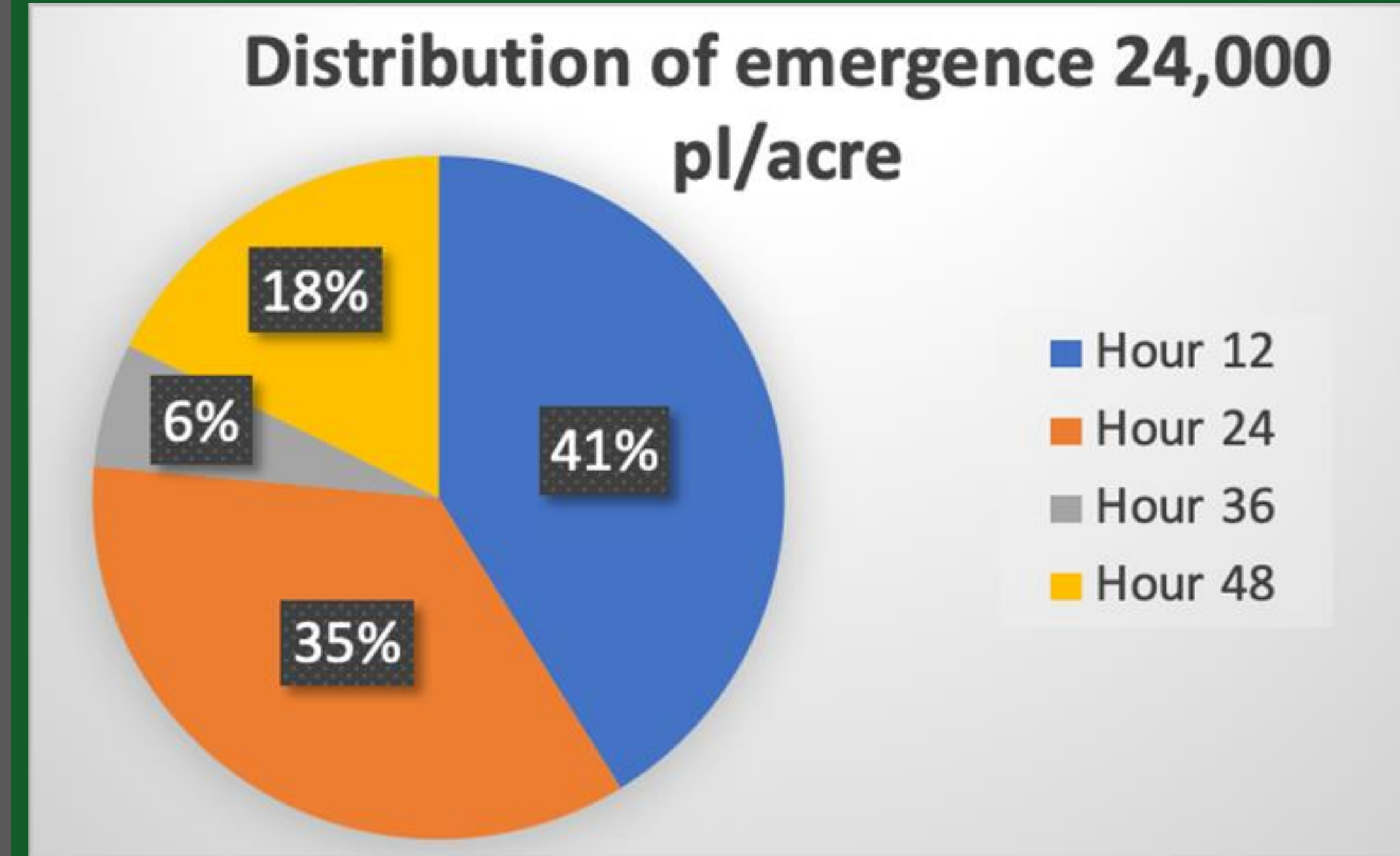


Ceptometer

Porometer



## Results



## Conclusions

- Pushing for more consistent emergence before the 36<sup>th</sup> hour would increase grain weight, kernels per row, and total kernels per ear
- Planting at populations of 24,000 creates a more consistent stand and increases overall grain weight