

Evaluating and Updating Planting Dates for KY Corn and Soybean Production

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INTRODUCTION

More than 10 years ago was the last time planting date recommendations were researched and extended to the public in this region; however, since then agronomic management, corn hybrids, and weather patterns have changed. For updated and accurate information, five different corn and soybean planting dates were planted in 40 different plots to determine the best time to plant each grain crop. Some offer the opinion that soybeans should be prior to corn. This research was conducted to provide answers to either go against or support these opinions. In order to provide accurate and tested data, specific growth stages, incidence and severity of diseases, infestation of insect pests, and final yield will ultimately be evaluated.

OBJECTIVES

To determine the time to specific growth stages and stand establishment for five planting dates.

MATERIALS AND METHODS

Five planting dates were used to plant corn and soybeans from March to June:

- Planting Date 1 - March 28th
- Planting Date 2 - April 11th
- Planting Date 3 - April 29th
- Planting Date 4 - May 28th
- Planting Date 5 - June 5th

Each plot was 20 feet long

- Corn: 4 row plots, 30 inch rows, Pioneer P1197AM
- Soybean: 7 row plots, 15 inch rows, Pioneer P35T58R

Plots were managed using University of Kentucky's recommendations.

Stand counts were collected at V2

Growth Stage was measured once per week

Stand Establishment was calculated as:

$$(V2 \text{ plant population} / \text{Seeding Rate}) * 100\%$$

Plots were arranged in a randomized complete block design with four replications.

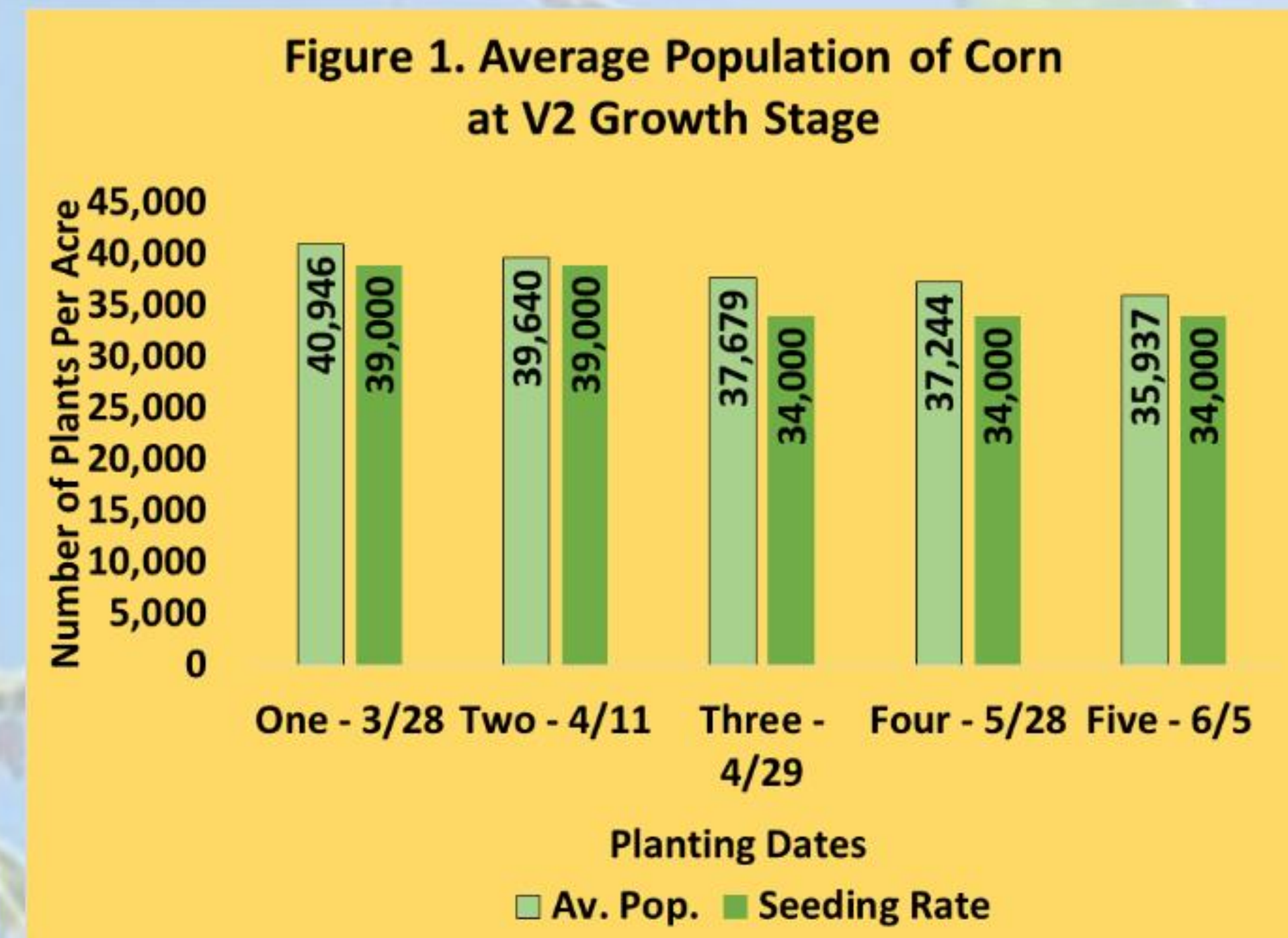
ACKNOWLEDGEMENTS

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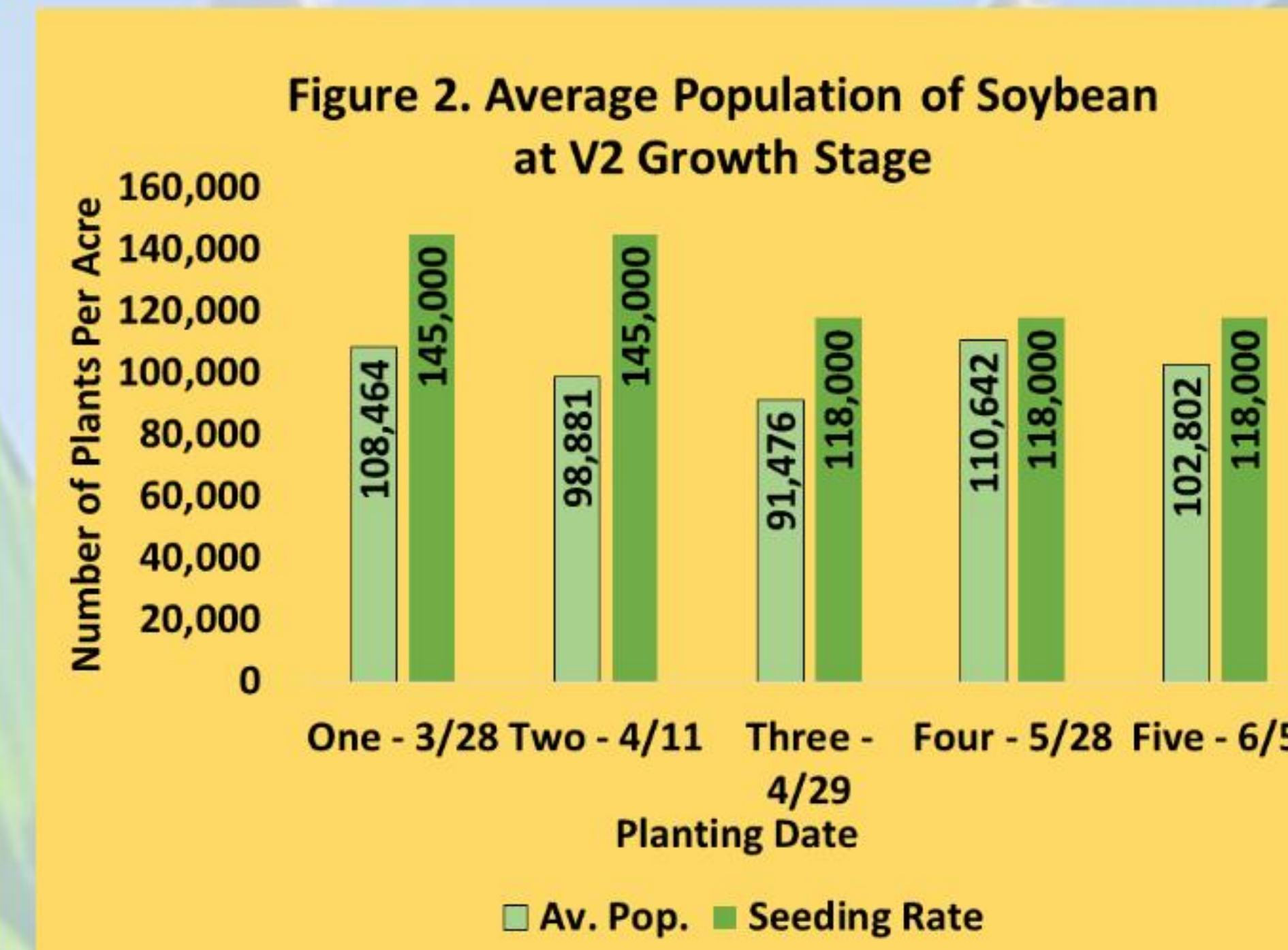
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RESULTS

Population of Corn and Soybeans



Plant populations at V2 indicates successful germination and stand establishment, with plant populations exceeding seeding rates at all planting dates (Figure 1).



All soybean planting dates indicate the average population is less than the seeding rate used (Figure 2).

Growth Stages at July 1

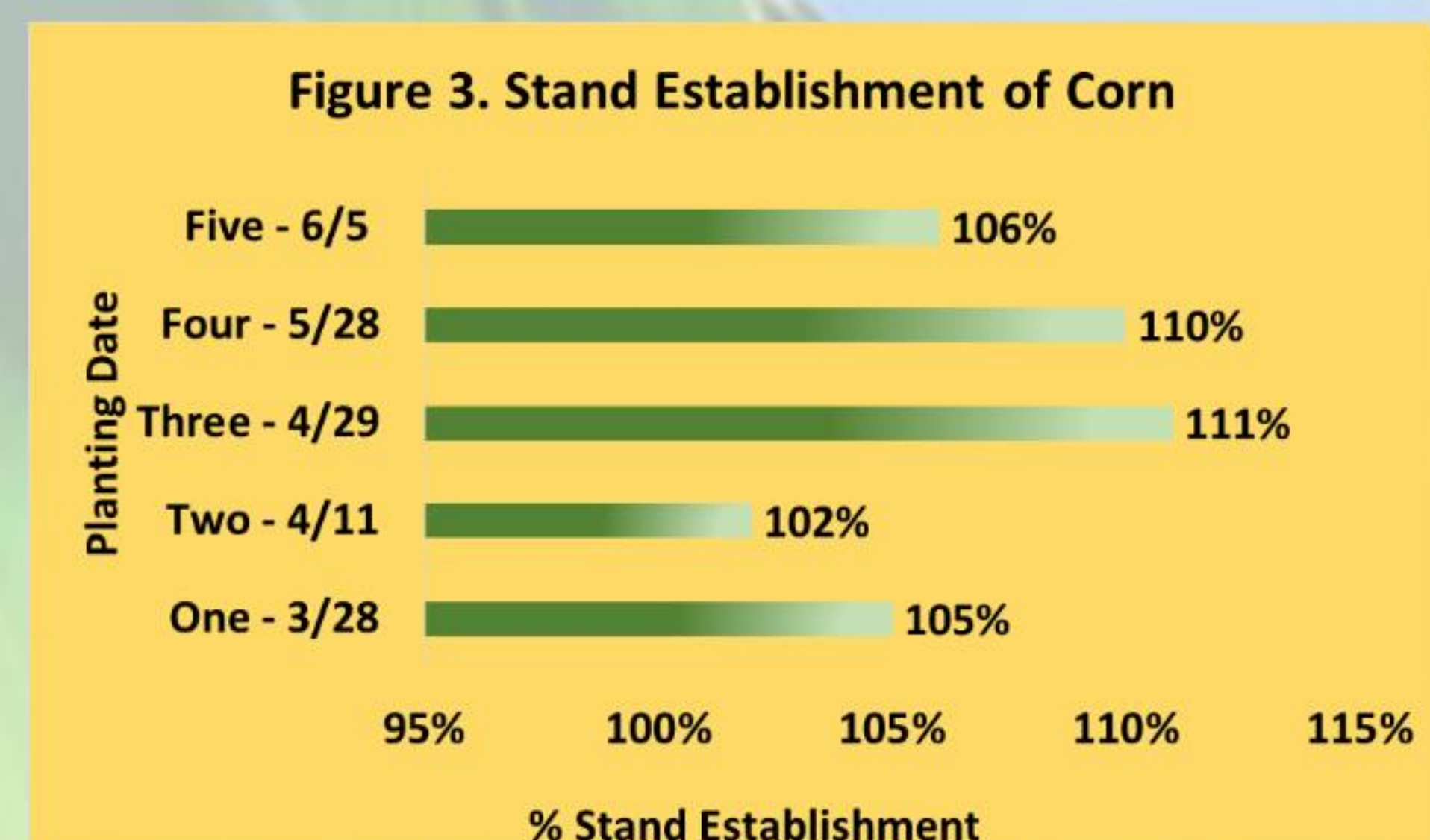
Table 1. Growth Stages of Soybeans

Planting Date	V2	V6	R1	R3
1 (3/28)	June 4th (GDD 1047)	June 7 th (GDD 1124)	June 9th (GDD 1173)	June 28th (GDD 1537)
2 (4/11)	June 6th (GDD 972)	June 9th (GDD 1044)	June 9 th (GDD 1044)	July 8th (GDD 1731)
3 (4/29)	June 6th (GDD 757)	June 18th (GDD 1010)	June 17th (GDD 982)	
4 (5/28)	June 25th (GDD 654)	July 8th (GDD 1033)	June 3rd (GDD 158)	
5 (6/5)	June 28th (GDD 564)	July 8th (GDD 857)	July 8th (GDD 857)	

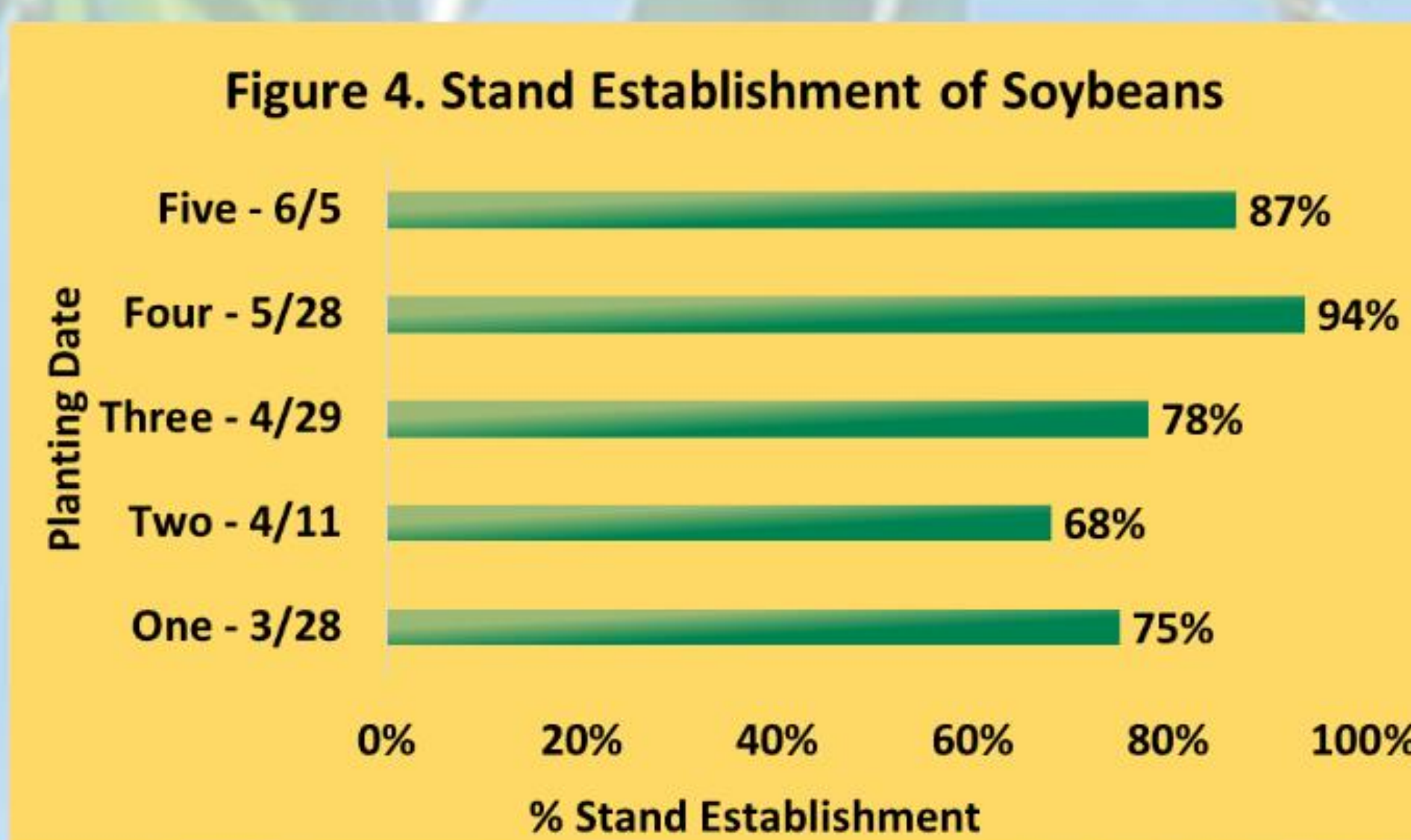
Table 2. Growth Stages of Corn

Planting Date	V4	V6	V12	VT/R1	R3
1 (3/28)	June 6th (GDD 1101)	June 9th (GDD 1173)	June 19th (GDD 1381)	June 25th (GDD 1527)	July 9th (GDD 1860)
2 (4/11)	June 2nd (GDD 882)	June 10th (GDD 1060)	June 28th (GDD 1438)	June 28th (GDD 1438)	July 9th (GDD 1761)
3 (4/29)	June 1st (GDD 644)	June 3 rd (GDD 685)	June 28th (GDD 1263)	July 8th (GDD 1556)	
4 (5/28)	June 17th (GDD 457)	June 11 th (GDD 335)	June 12th (GDD 350)	July 8th (GDD 1033)	
5 (6/5)	July 1st (GDD 651)	July 8th (GDD 857)			

Stand Establishment



All the corn planting dates exceeded the targeted seeding rate at V2 growth stage (Figure 3).



Soybean stand establishments success rates were lower for the earlier planting timings compared to the later planting timings (Figure 4).

SUMMARY

In this study we hope to update recommendations to farmers across Kentucky for the optimal time to plant corn and soybeans.

- In 2019, the average population of both corn and soybeans tells us that we need to carefully recalibrate the planter.
- The stand establishment indicates that all corn planting dates exceeded UK Recommendations for plant populations and two of the five soybean planting dates were below UK Recommendations.
- The later planting dates of soybeans had better stand establishment than the early planting dates.
- All corn planting dates have similar stand establishment.

FUTURE WORK

This work will be repeated in 2020 with planter units that have been calibrated to ensure better plant populations.

Repeating this work in more years will allow better recommendations for Kentucky farmers.