# Soybean Herbicide, Row Spacing, and Cultivar Selection Trial

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Mark Licht, assistant professor
Fernando Marcos, research scientist
Department of Agronomy

## Introduction

Crop management of soybean has been extensively researched for the past decade. Farmers and researchers always are looking into strategies to improve yield by finetuning plant population, pest management, and cultivar selection. It is known that row spacing can greatly affect weed suppression and improve yield or tentatively decrease costs with herbicides. Seed companies seek to develop alternatives in growth traits and environmental stability, which can contribute to weed management. Farmers have more flexibility to balance investment and yield by managing their unique production system. Aiming to better understand and learn the interactions between the herbicide program, as well as row spacing and cultivar selection, a trial was conducted in Lewis, Iowa, where the weed pressure is very challenging.

## Materials and Methods

This trial had a split-split-plot field design and was sown in early May at 140,000 seeds/acre. Herbicide management (whole plot) treatments were given pre only or pre and postemergence application. Row spacing (30 and 15 in.) was the subplot. Soybean cultivars were the sub subplot. Cultivars were spread into different genetics, relative maturity groups, and growth traits, which provide different canopy closure and between-row space for weed development. They were CZ2760GTLL (2.7 RM, upright), CZ2830GTLL (2.8 RM, bushy), CZ2910GTLL (2.9 RM, upright), and CZ3099GTLL (3.0 RM, bushy). Preemergence herbicide application was given late April and included Zidua Pro (6 oz/acre), 2,4-D (1 pt/acre), Buccaneer Plus (32 oz/acre), MSO (1 pt/acre) and AMS (13 lb/acre). Post application included Liberty (32 oz/acre), Buccaneer Plus (32 oz/acre), Outlook (10 oz/acre), and AMS (3 lb/acre).

## Results and Discussion

For herbicide program management, the difference between pre only and pre and post treatment was significant for yield. Surprisingly, the pre only had a 4.4 bushel/acre yield advantage ($P = 0.0391$). For row spacing, there was no yield difference ($P = 0.5787$) between 15- and 30-in. row spacing; however, the 30-in. row spacing had 41,000 fewer plants/acre at maturity.The upright vs. bushy growth traits did not result in yield or stand count differences.

There was no yield or plant population interaction between herbicide program, row spacing, and cultivar type. This allows for greater reliance on the main treatment effects (data not shown).

## Acknowledgements

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**Table 1. Soybean yield, early (V1), and late stand counts (at harvest) for the main effects of herbicide program, row spacing, and cultivar type at Lewis, Iowa, in 2020.[1]**

| | Yield | Early stand count | Final stand count |
|---|---|---|---|
| | Bushels/acre | 1,000 plants/acre | |
| Pre only | 68.5 | 132.1 | 98.4 |
| Pre and post | 64.1 | 130.3 | 103.6 |
| | P = 0.0391 | P = 0.1760 | P = 0.1713 |
| 15-in. | 65.7 | 129.6 | 121.5 |
| 30-in. | 66.9 | 132.9 | 80.5 |
| | P = 0.5787 | P = 0.0173 | P < 0.0001 |
| Bushy | 66.4 | 132.9 | 99.2 |
| Upright | 66.1 | 129.5 | 102.7 |
| | P = 0.9117 | P = 0.0130 | P = 0.3419 |

[1]P values within boxes are used to compare yield of the main treatment effects within each box.