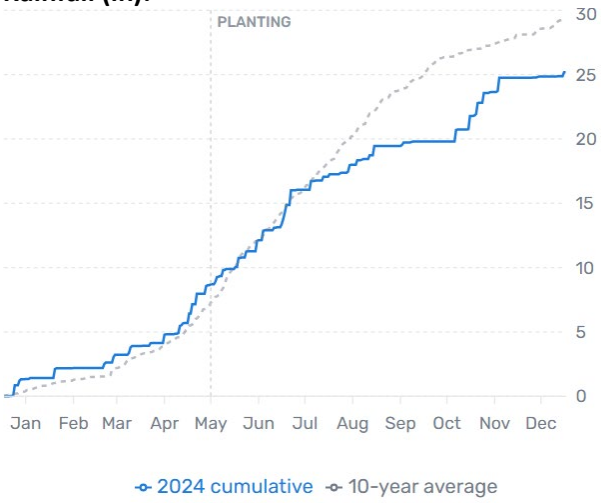
Planting Downforce Rates in Soybean

Study ID: 1546059202401
County: Fillmore
Soil Type: Crete silt loam 0-1% slope
Planting Date: 5/15/24
Harvest Date: 10/17/24
Population: 130,000
Row Spacing (in): 30”
Variety: Stine® 29EF02
Reps: 4
Previous Crop: Corn
Tillage: No-till
Herbicides: ***Pre:*** Roundup PowerMAX® 3 + Lovol® #6 + Tricor® 4F applied 4/19/24. ***Post:*** Enlist One® + Warrant® + Surmise® applied 6/7/24. RoundUp PowerMAX® + Enlist One® + Fusilade® + Warrant® + Liberty® (respray) applied 6/26/24.
Seed Treatment: None
Foliar Insecticides & Fungicides: None

Fertilizer: 100-150 lb/ac 11-52-0 variable rate applied in March.
Irrigation: Pivot, Total: 8”
Rainfall (in):



Introduction: This grower had purchased Ag Leader’s hydraulic downforce system across the planter in hopes of reducing the wear and tear on his planter and better adjust for varying planting conditions. For this study, the grower used a low (40 lb pressure/row unit), medium (95 lb pressure/row unit), and high (200 lb pressure/row unit) downforce pressure during planting. The study design was a randomized complete block with 4 replications.

The goal was to take emergence counts each day to account for any differences observed in emergence for the different pressures. The high downforce had better emergence the first two days; however, by Day 5 of emergence, the soybeans in all downforce treatments showed similar stand counts.

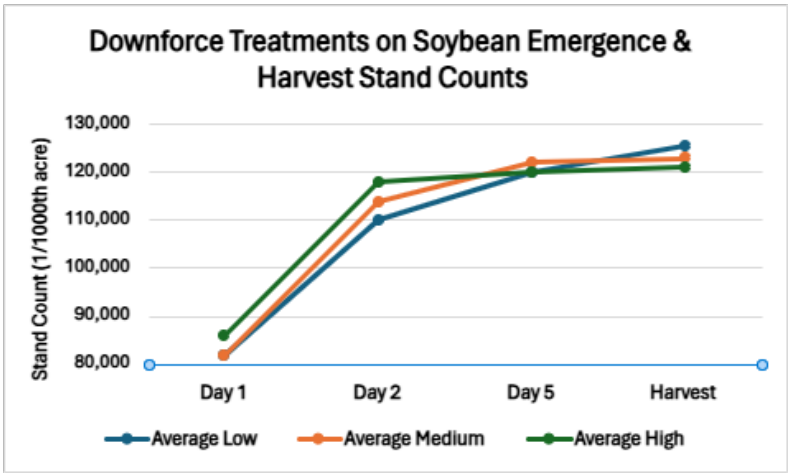


Figure 1: Downforce Treatment of Soybean Emergence by Day

Results:

	Stand Counts (plants/ac)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
40 lbs/ row unit	125,500 A*	8.9 A	78 A	862 A
95 lbs/ row unit	123,000 A	8.9 A	77 A	846 A
200 lbs/ row unit	121,000 A	9.1 A	77 A	848 A
P-Value:	0.92	0.28	0.35	0.35

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 13% moisture.
‡Marginal net return based on $11/bu soybeans. Cost of hydraulic downforce was not factored in.

Summary:

- There were no significant differences in stand counts, moisture, yield, or marginal net return among the treatments evaluated.
- The amount of downforce required may depend on tillage and spring conditions. Further testing should be conducted in various scenarios.