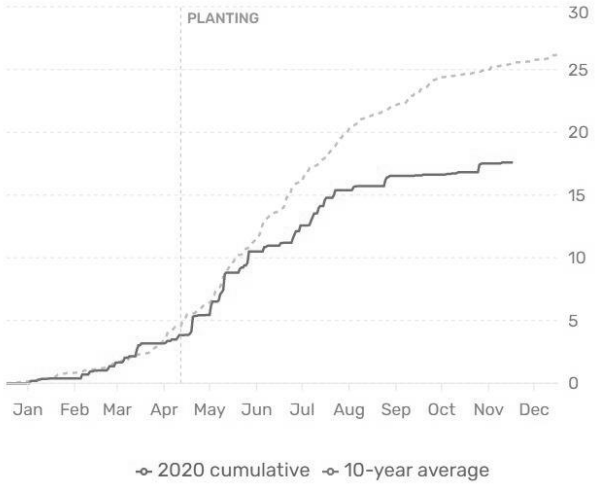
Ag Leader® SureForce™ Systems at Different Pressures (Manual vs Medium vs Heavy)

Study ID: 0709047202003
County: Dawson
Soil Type: Cozad silt loam; Hord silt loam
Planting Date: 4/26/20
Harvest Date: 10/24/20
Population: 34,000
Row Spacing (in): 30
Hybrid: Pioneer® P1353Q
Reps: 6
Previous Crop: Corn
Tillage: Strip-Till
Herbicides: ***Pre:*** 2 oz/ac Sharpen®, 24 oz/ac Durango® DMA®, 1 pt/ac atrazine 4L on 4/30/20
Post: 24 oz/ac Durango® DMA® on 6/03/20
Seed Treatment: None
Foliar Insecticides: 5 oz/av bifenthrin 2 EC, 2 oz/ac lambda-cyhalothrin 1 EC on 7/20/20
Foliar Fungicides: 10.5 oz-ac Quilt Xcel® on 7/20/20

Fertilizer: 19 gal/ac 32-0-0, 10 gal/ac 10-34-0, 5 gal/ac 12-0-0-26s on 4/11/20 with strip-till; 1 gal/ac Altura™, 1 gal/ac ReaX™ K, 0.5 gal/ac ReaX™ Mn, 0.125 gal/ac ReaX™ Zn on 4/27/20 in-furrow; 10 gal/ac 32-0-0 on 4/30/20 in burndown; 8 gal/ac 32-0-0, 2 gal/ac 12-0-0-26S on 6/13/20 by chemigation.

Irrigation: SDI, Total: 5.2"
Rainfall (in):



Soil Tests (Dec. 2019):

Soil pH 1:1	Soluble Salts 1:1 mmho/cm	Organic Matter LOI %	KCl Nitrate – N ppm N	Nitrate lb N/A	Mehlich P-III ppm P	$CaPO_4$ SO_4-S ppm	Ammonium Acetate (ppm) K	Ca	Mg	Na	Sum of Cations me/100g	DPTA (ppm) Zn	Fe	Mn	Cu
6.4	0.4	3.0	13	31	72	5	488	2867	332	38	19	2.1	24.2	14.8	0.7
6.7	0.4	2.8	11	26	53	4	580	2800	358	37	19	1.8	20.1	9.9	0.7
6.7	0.4	2.8	6	14	62	2	600	3287	432	37	19	1.1	19.9	9.0	0.8
6.8	0.4	2.3	9	22	17	2	389	2467	261	31	19	1.0	17.9	10.1	0.6

Introduction: An uneven distribution of downforce across a planter can lead to uneven planting depth and emergence. Hydraulic active down pressure systems are of interest to reduce sidewall compaction and achieve consistent planting depth across various soil types and conditions. This study evaluated the Ag Leader® SureForce™ system. The three treatments were:

1) manual pressure set at a consistent down pressure of 100 lb force (check)

2) active down pressure set at medium, resulting in a net of 100 lb of downforce at the gauge wheel

3) active down pressure set at heavy, resulting in a net of 150 lb of downforce at the gauge wheel.

The field planted at about 6 mph. Emergence counts were taken for each replication on a near-daily basis as the crop emerged to determine if the active down pressure resulted in a more uniform emergence (Figure 1). Early season (V4—V6) and harvest stand counts, moisture, yield, and net return were also evaluated.

Results:

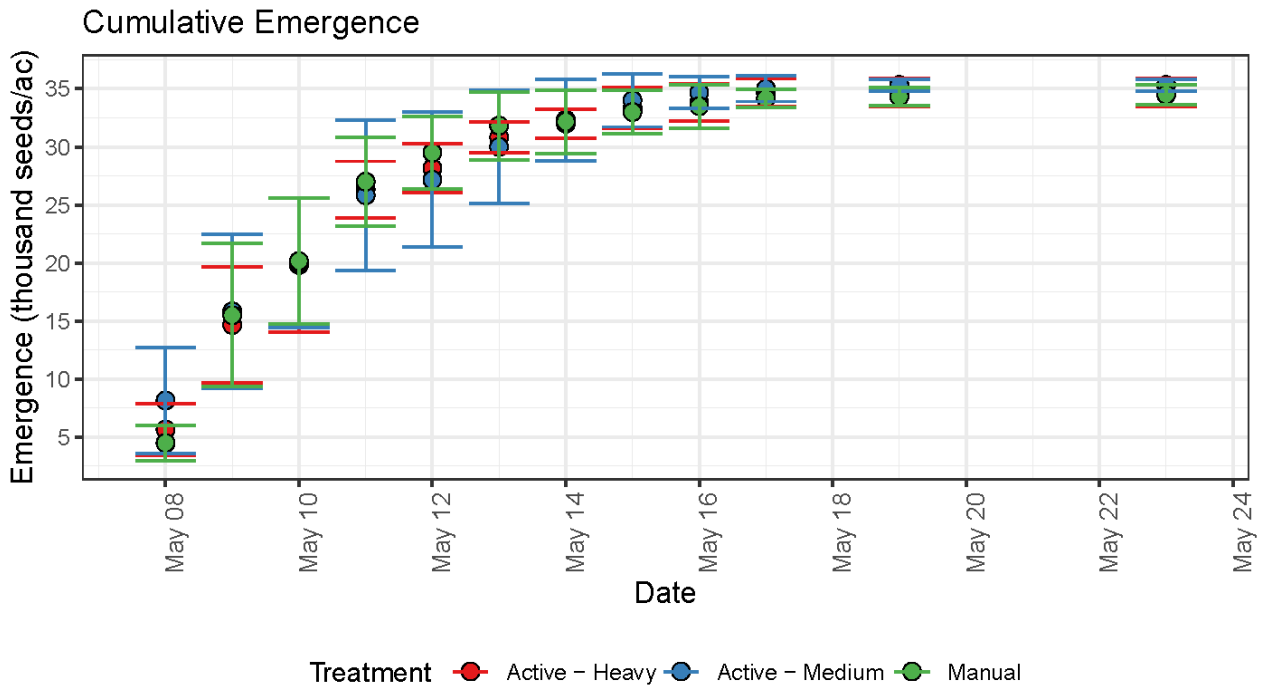


Figure 1. Cumulative emergence by date for manual downforce, active downforce at medium pressure, and active downforce at heavy pressure.

	Early Season Stand Count (plants/ac)	Harvest Stand Count (plants/ac)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
Manual Downforce (100 lb added)	34,167 A*	32,722 A	17.7 B	224 A	785.16 A
Active Downforce - Medium pressure (Net 100 lb at gauge wheel)	34,667 A	32,389 A	17.7 AB	234 A	820.01 A
Active Downforce - Heavy pressure (Net 150 lb at gauge wheel)	34,278 A	32,056 A	17.7 A	222 A	778.75 A
P-Value	0.364	0.427	0.078	0.270	0.282

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.51/bu corn and $1.90/ac for active downforce ($20,000 cost for active downforce system spread over 1500 acres and prorated over 7 years).

Summary:

- There were no statistically significant differences in emergence at each date between the three down pressure approaches evaluated.
- There was no difference in stand counts, yield, or net return between the three down pressure systems evaluated.

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