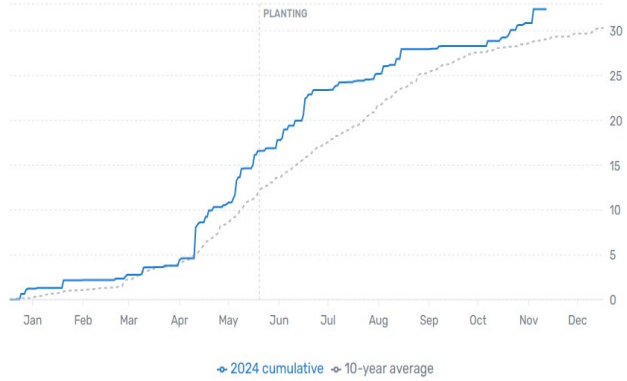
Overseeding Cover Crops in Standing Popcorn

Study ID: 1522081202401
County: Hamilton
Soil Type: Hastings silt loam
Planting Date: 6/3/23
Harvest Date: 10/21/23
Population: 36,000
Row Spacing (in): 30”
Hybrid: Zangger® ZX62
Reps: 4
Previous Crop: Soybeans
Tillage: Spring disk, rotary hoe at preemergence, emergence and V1; cultivate at V3, cultivate at V5
Herbicides: ***Pre:*** None ***Post:*** None
Seed Treatment: None
Foliar Insecticides: None
Foliar Fungicides: None

Fertilizer:200 lb/ac Nature State® 13-0-0 applied 6/3/23 (at planting) 2" x 4" from row; 300lbs Chicken Cluck 4-3-2 at V2-V3 on 6/26/23 side dress 2" depth x 4" from row.
Irrigation: Pivot
Rainfall (in):



Introduction: This study compared different methods of improving interseeded cover crop establishment. The cover crop was interseeded into popcorn September 1 and included 60% Elbon Cereal Rye, 20% Austrian Winter Pea, 20% Hairy Vetch seeded at 23 lb/ac. The seed was dropped uniformly between all rows with treatment consisting of 1) a wheel running before of the seed was drop, 2) a wheel running after the seed drop, 3) a single 19 inch coulter angled 2 inches off center penetrating the soil about 1 inch, and 4) no soil or residue disturbance.

Figure 1: Photo of Cover Crop Interseeder

The applicator was a modified 3-wheel detasseling personal carrier equipped with John Deere insecticide boxes for each row to meter the seed, a 5’ by 3” in Lilliston cultivator pipe to attach the coulter (only on even number rows) with seed drop tubes with “Y” drops over the disk. On the odd number rows, the seed free fell from the boxes except in the wheel track rows which had a seed drop tube. The travel speed was about 3.5 mph. The weather was very dry after planting and thus the pivot applied 0.5” of water on September 7, 9, 12, 14, and 19, with rain on September 10 (0.30”) and 22 (1”), and October 3 (0.70”).

Stand counts were taken in each treatment in 10 ft row-length measurements (four 30’ X 30” areas approximitely 30 feet apart and added together). The stand counts were done by counting the number of each species within the 10 ft row-length. Statistical analysis was conducted by analyzing each species seperately with respect to the equipment method, and then once again by adding total stand count with respect to each equipment method.

Results:

	Rye (plants/10ft)	Vetch (plants/10ft)	Winter Pea (plants/10ft)	Mix (total plants/10ft)
Front Wheel	3.4 AB*	3.2 A	0.7 A	7.2 A
Back Wheel	3.9 A	2.2 A	0.4 AB	7.2 A
Coulter disk	3.1 AB	2.2 A	0.4 AB	5.6 AB
No disk, no wheel	1.7 B	1.5 A	0.08 B	3.8 B
P-Value	0.1	0.32	0.07	0.08

*Values with the same letter are not significantly different at a 90% confidence level.

Summary:

- Significant differences were found in rye stand count when using either a front wheel (3.4 plants/ 10ft), back wheel (3.9 plants/ 10ft), or a coulter disk (3.1 plants/ 10ft) when compared against no disk, no wheel (1.7 plants/ 10ft).
- In vetch, all equipment methods had similar stand counts (1.5-3.2 plants/ 10ft).
- Significant differences were also found in winter pea, as using no disk, no wheel (0.08 plants/ 10ft) resulted in lower than other equipment methods.
- When combining total stand count, using either a front or back wheel (7.2 plants/ 10ft) or coulter disk (5.6 plants/ 10ft) was significantly higher than no disk no wheel (3.8 plants/ 10ft).
- Further research should be conducted in this category. With an increasing focus on cover crops, germination in response to equipment methods and seed should be a focus moving forward.