



MICHIGAN STATE UNIVERSITY | Extension

2018 Michigan Wheat Field Day
Saginaw Valley Research and Education Center

Precision Planting in Wheat

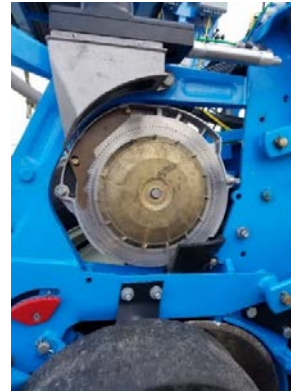
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- **Problem:** Conventional seed drill currently used to plant wheat can result in non-uniform seeding depth as well as within-row seed spacing causing poor germination, crown root development, tillering, and **reduced yield potential**.
- **Hypothesis:** Uniform spatial distribution of plants resulting from precise placement (i.e. improved singulation and uniform seeding depth) of seed can lead to increased resources use efficiency, reduced plant-to-plant competition, and improved plant health; resulting in low input cost and increased yield.
- **Objective:** Design a crop canopy structure that can maximize light interception early in the season and lead to higher yield.
- **Methods:** In 2017, research plots were planted at MSU campus, SVREC, and 3 on-farm locations using a precision planter (Monosem 4NG) with 4 row spacings (5", 7.5", 10", and 15") and seed drill at 7.5" spacing using 4 seeding rates (0.75m, 1.3m, 1.85m, and 2.4m seeds/acre).



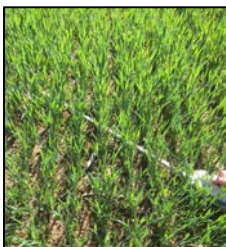
Conventional drill with rotating gear that "spills" seed into the drop tube



Precision planter with vacuum that picks up individual seeds and drops one seed at a time down the drop tube

Preliminary Results

- Precision planter ensured more uniform seeding depth compared to seed drill, leading to uniform plant development and phenology.
- Seed-to-seed spacing was more consistent in plots planted with precision planter resulting in uniform tiller development compared to high variability found in drilled plots.
- Canopy closure was achieved faster in 5" row spacing and was similar to 7.5" row spacing, but delayed in 10" and 15" row spacing across all seeding rates.
- Seeding rate of 1.3m seeds/acre closed canopy at similar rate to 1.85 and 2.4m seeds/acre but faster than 0.75 m seeds/acre across all row spacings.
- Wheat varieties differing in leaf angles might respond differently to variation in row spacing and seed rate.



5" spacing

7.5" spacing

10" spacing

15" spacing

Narrow & wide leaf angle