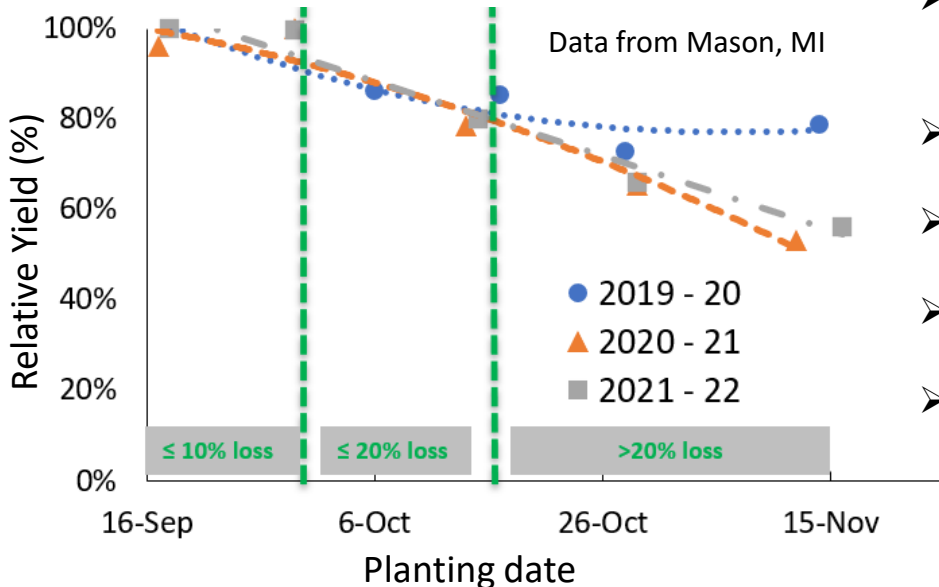




# Wheat Agronomy- Setting up a high yield potential

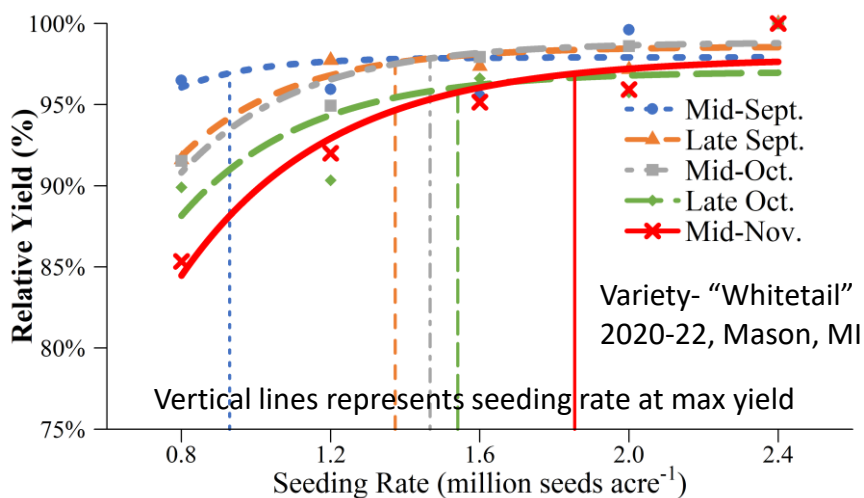
Manni Singh, P. Copeland, D. Pennington, P. Arias



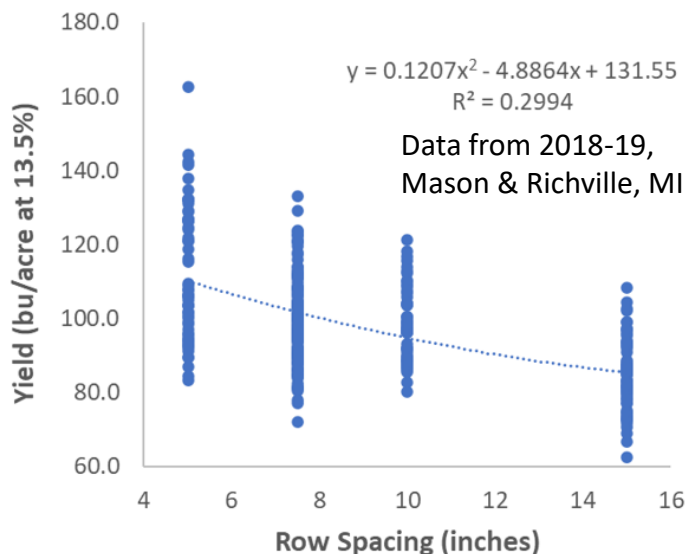
- **Overall goal:** design a canopy that maximizes light interception, use efficiency, and conversion to grain.
- Optimal **planting time** is critical in setting up a high yield potential.
- When to start? Soon after hessian fly free date (as a rule of thumb).
- Magnitude of yield penalty with late planting depends on weather.
- Change other management based on planting time (systems approach).

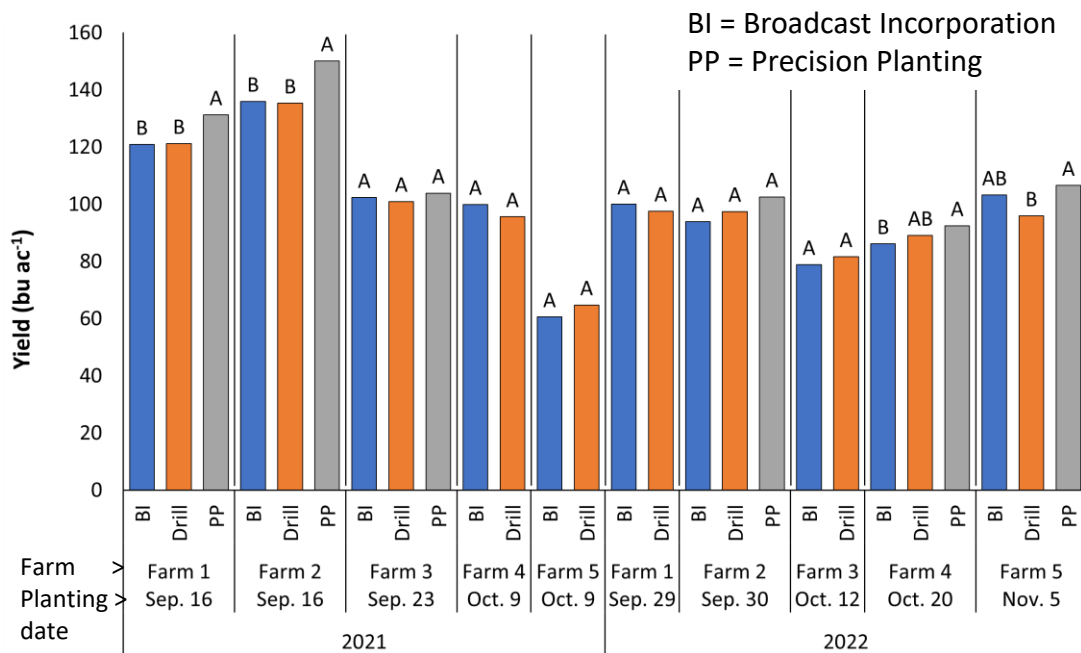
- **Optimal seeding rate** was lowest for timely planting and increased as planting was delayed.

Planting window	Seed Rate (million/acre)
Sept.	<1.0
Early-mid Oct.	1.2 – 1.4
After mid-Oct.	>1.6



- Number of days for field work (Sept-Oct) are declining over time in Michigan.
- High-speed **planting methods**, such as broadcast incorporation, may offer a viable solution for achieving timely planting.
- On the other hand, our work from small plot research found yield benefit from use of precision planter and narrow row spacing.
- Recent on-farm trials showed higher seeding depth variability in broadcast versus drill. Precision planting had lowest depth variability at all sites.
- However, our recent research showed <2% impact of **seeding depth** on yield.





- 8 - 11% yield increase with precision planter (5" rows) versus drill at 3 of 6 site-years.
- No yield difference between broadcast and drill at all 10 site-years.
- Highest tillers in precision planting and broadcast, lowest in drill.
- Increase in seeding rate in broadcast did not impact yield.

- **Winter wheat varieties** have genetic differences in **canopy architecture**. We are evaluating if this trait should be part of grower's variety selection and management decisions.
- E.g.- use erect varieties under late planting but droopy types under early planting, higher seeding rate for erect types but lower rates for droopy ones, erect varieties in narrow rows but droopy in wider rows. Erect varieties have also responded better to intensive management.



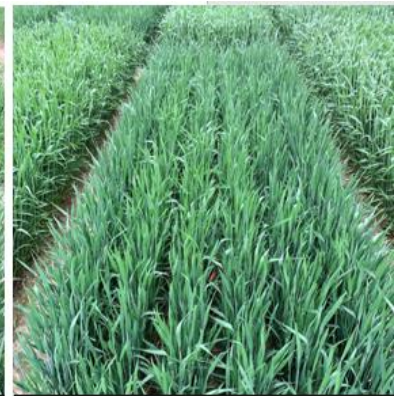
Canopy score: 1 (**Droopy**)  
AgriMAXX 513, Dyna-Gro 9070



Canopy score: 2 (**Droopy**)  
Hilliard, DF 121R



Canopy score: 4 (**Erect**)  
Branson, ISF 12203



Canopy score: 5 (**Erect**)  
MCIA Wharf, KWS 405

**Key messages:** (visit [agronomy.msu.edu](http://agronomy.msu.edu) for more info)

- Optimal planting strategies critical in setting up high yield potential.
- **Timely planting** is crucial in achieving high yields and profits, **faster planting technologies** can help plant early.
- Potential for **reduction in seeding rate** without limiting yield. Test using replicated strips in your field (20-30% lower than your seed rate).
- **Narrow row spacing** and **improved seed placement** can lead to increased crop uniformity, grain yield, and quality.
- Match **canopy type** of wheat variety to your production system.
- Varieties with "erect canopy type" might be more beneficial under high yield environments (e.g., early planting, narrow rows) and intensive management.