

Perfectly Placed Precision Planters on the Placid Precious Prairies
Dr. Gurbir Singh Dhillon, Ken Coles, Lewis Baarda (Lethbridge, AB, Can)

Recognitions



- Developing Canola Agronomy with Precision Planters (Farming Smarter - CARP) 2016-2019
 - Seed rate x planter
 - Liquid Phos
- Perfectly Placed: adapting row-crop planters for enhanced crop production in Alberta (Farming Smarter) 2019-2022

- PP Field Scale
- PP Canola
- PP Durum
- PP Hemp
- PP Pulses (pea, lentil, chickpea, soy, faba)



@RDARAlberta

- Effect of Strip Tillage and precision planting on canola emergence, seed yield and quality (Farming Smarter, Lethbridge College) 2020-23
 - Irrigated
 - dryland





Perfectly
Placed Durum

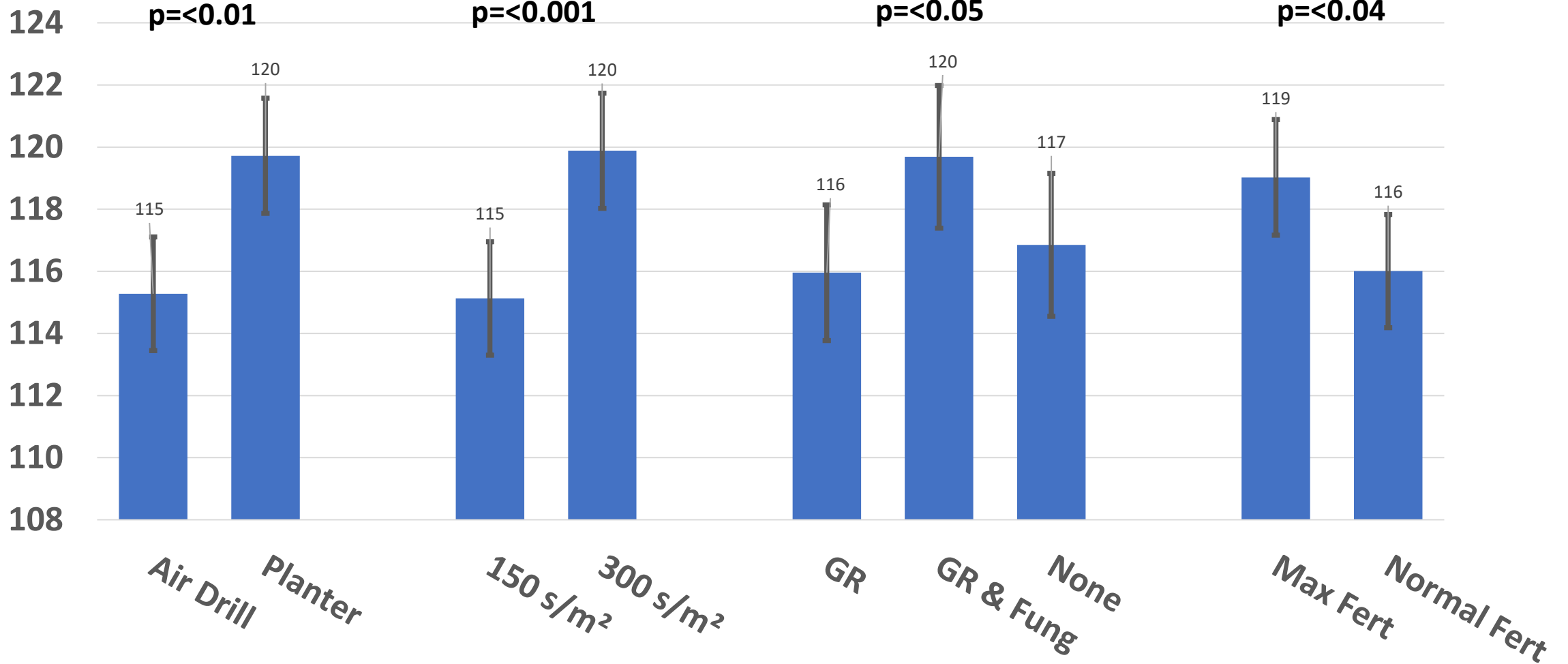


4-year study at 3 locations
across southern Alberta

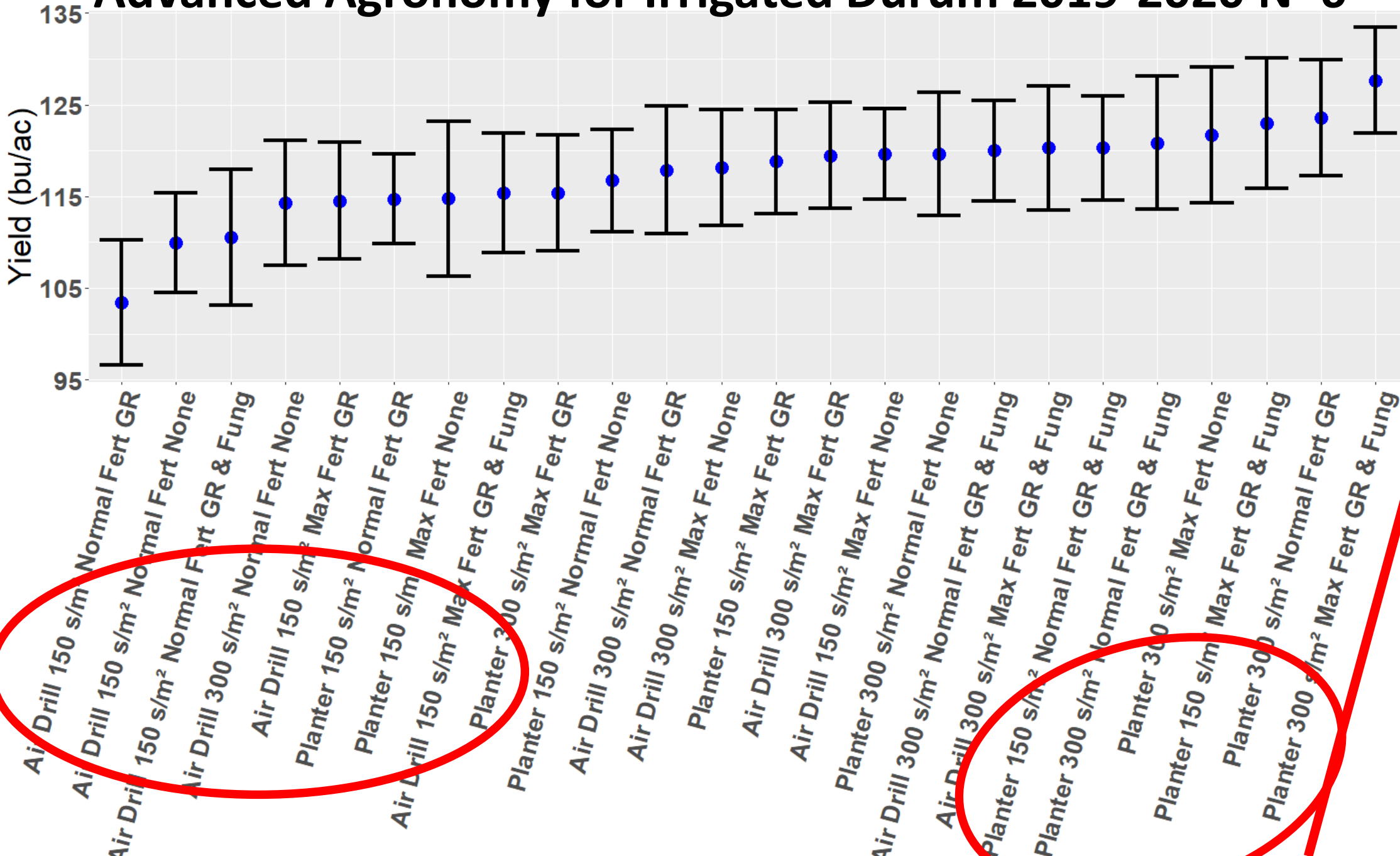
Factors –

1. Seeder type – Precision planter, air drill
2. Seeding rate – 150 and 300 seeds m^{-2}
3. Fertilization – Normal (100%) and Max (150%) fertilizer application rate
4. Plant growth regulator and fungicide application

Irrigated Durum Advanced Agronomy – Southern Alberta 2019-2020 n=6
Yield (Bu/ac)



Advanced Agronomy for Irrigated Durum 2019-2020 N=6





Perfectly
Placed Pulses



Crops – Chickpeas,
lentils, faba beans,
field peas, and soy
beans

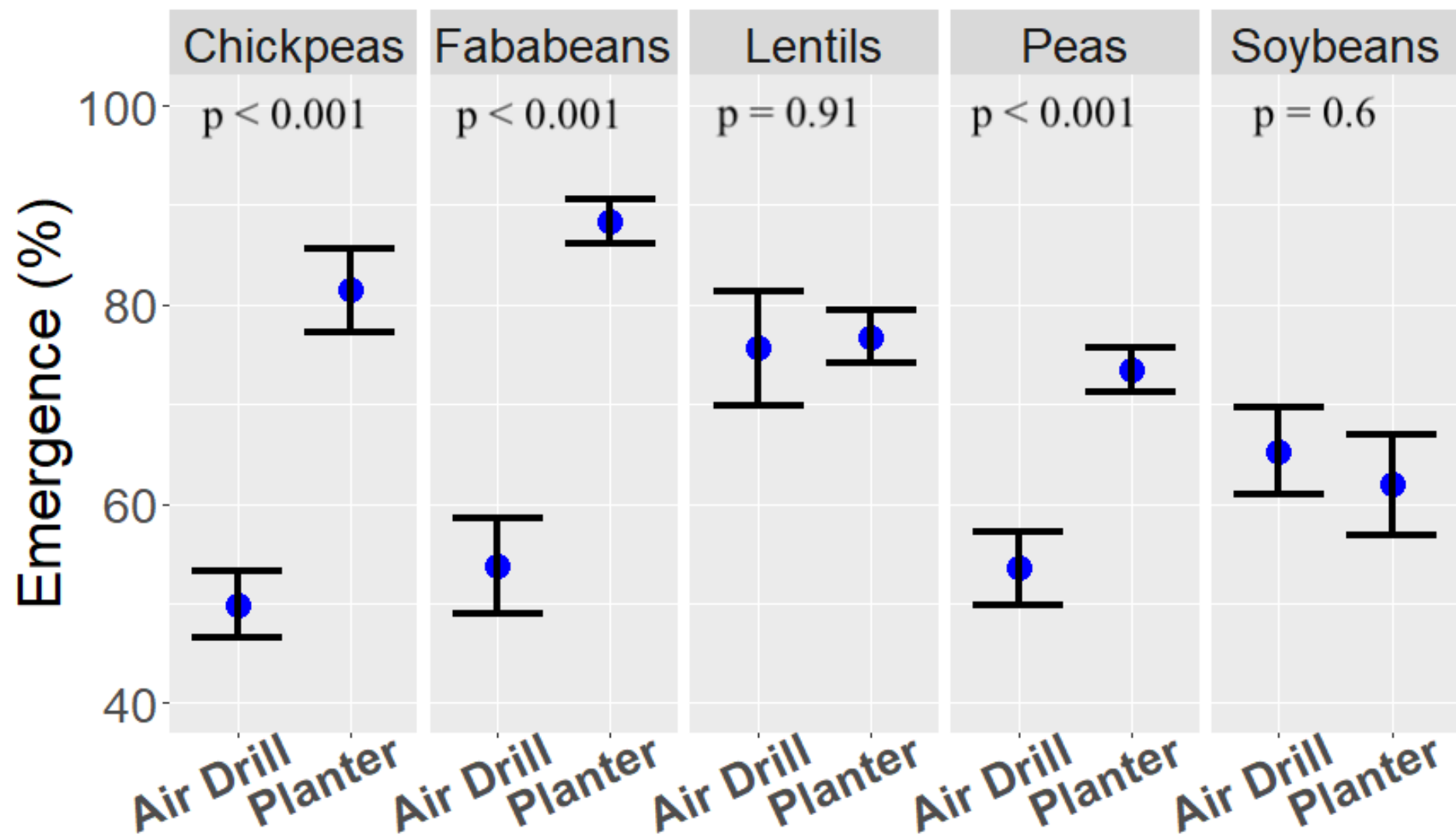
4-year study (2019-
2022) at 3 locations
across southern
Alberta (Lethbridge,
Medicine Hat, Taber)
for a total of 12 site-
years for each crop
separately



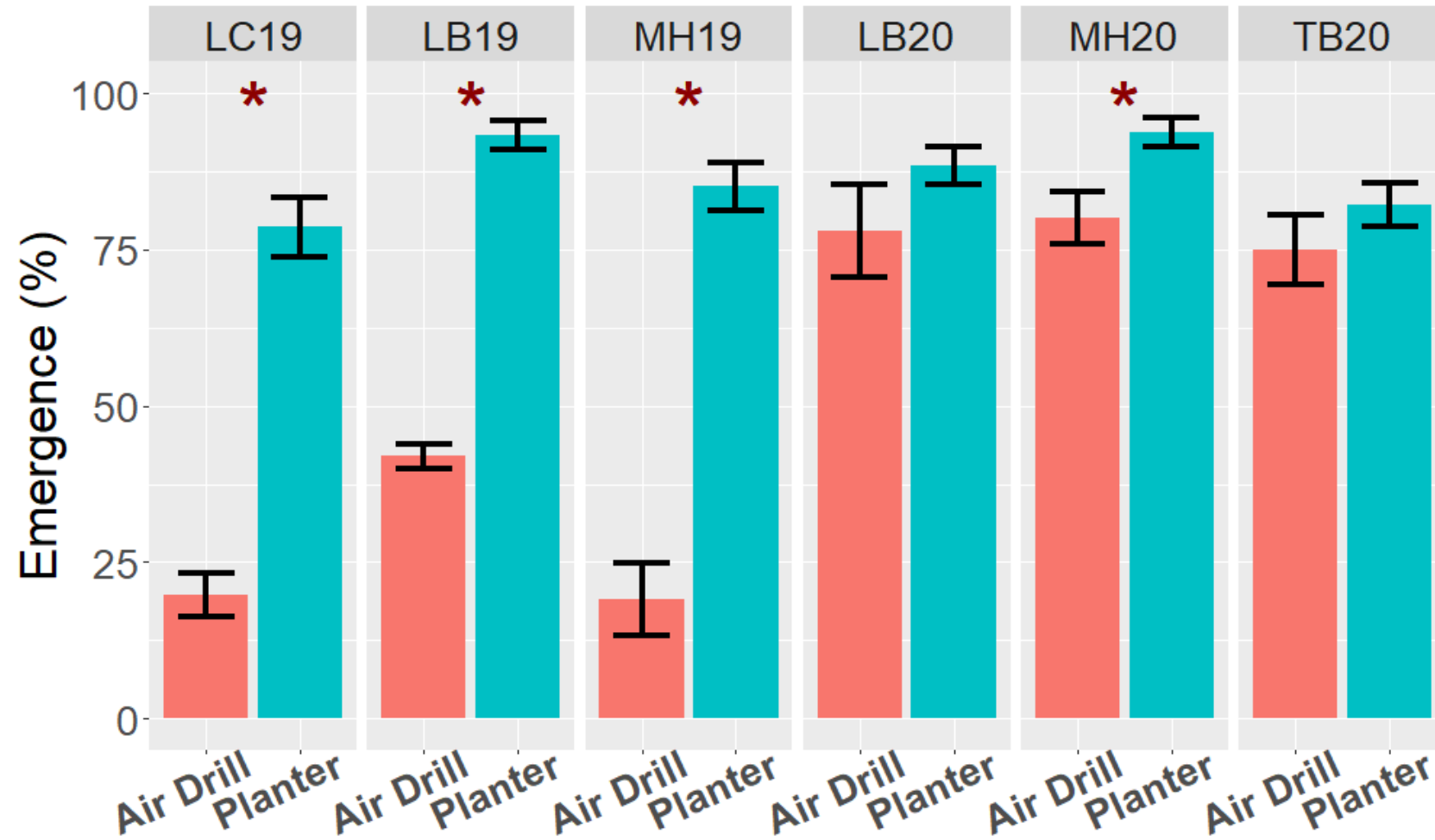
1. PP vs AD
2. Seeding rates/m²

pea and lentil
100 normal
50 low

Faba, soy, chickpea
50 normal
25 low



Fababeans





Fababeans – Air Drill (Normal SR)



Fababeans – Precision planter (Normal SR)



Lentils – Air Drill (Low SR)



Lentils – Precision planter (Low SR)



Planter high



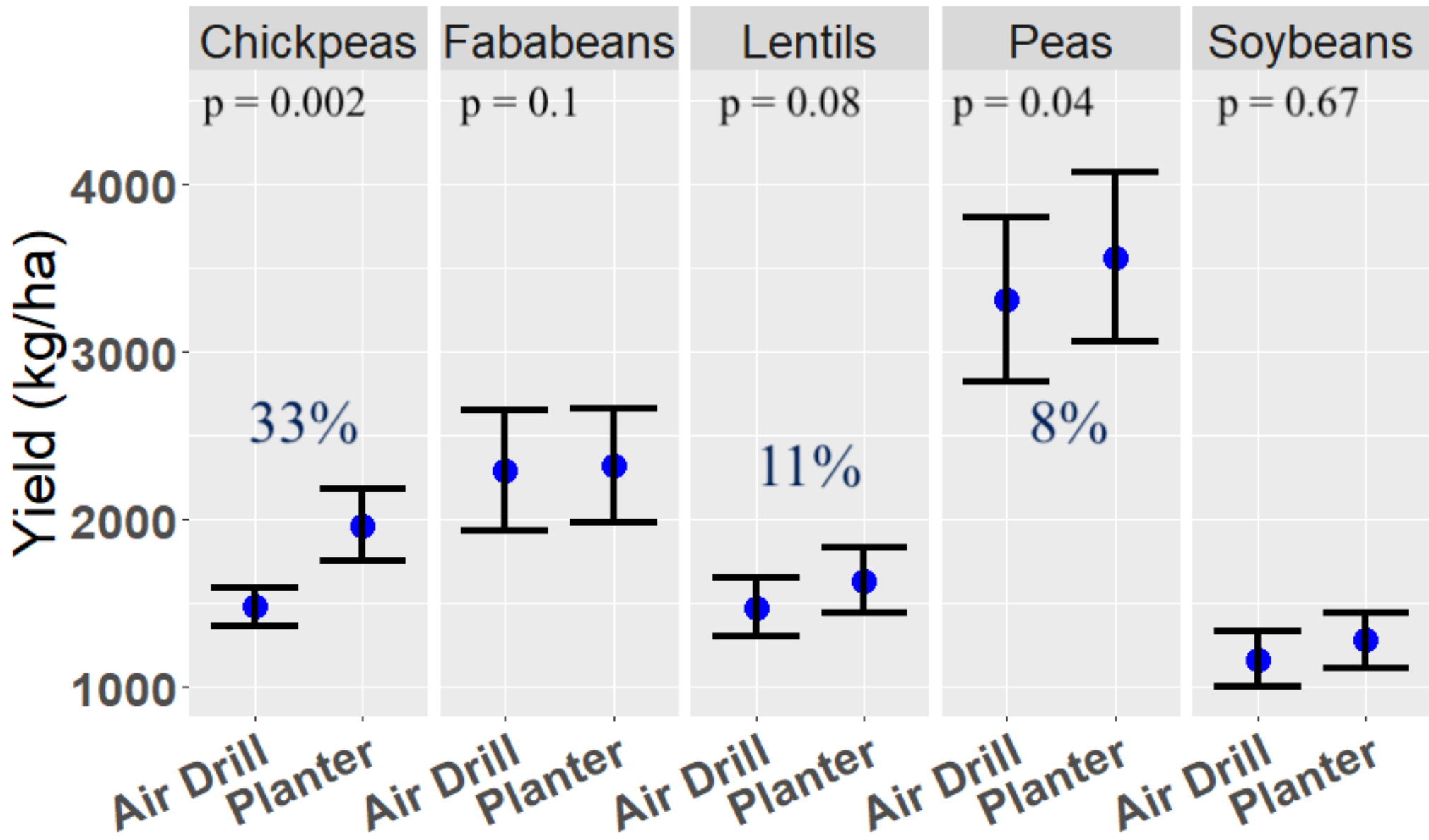
Air high

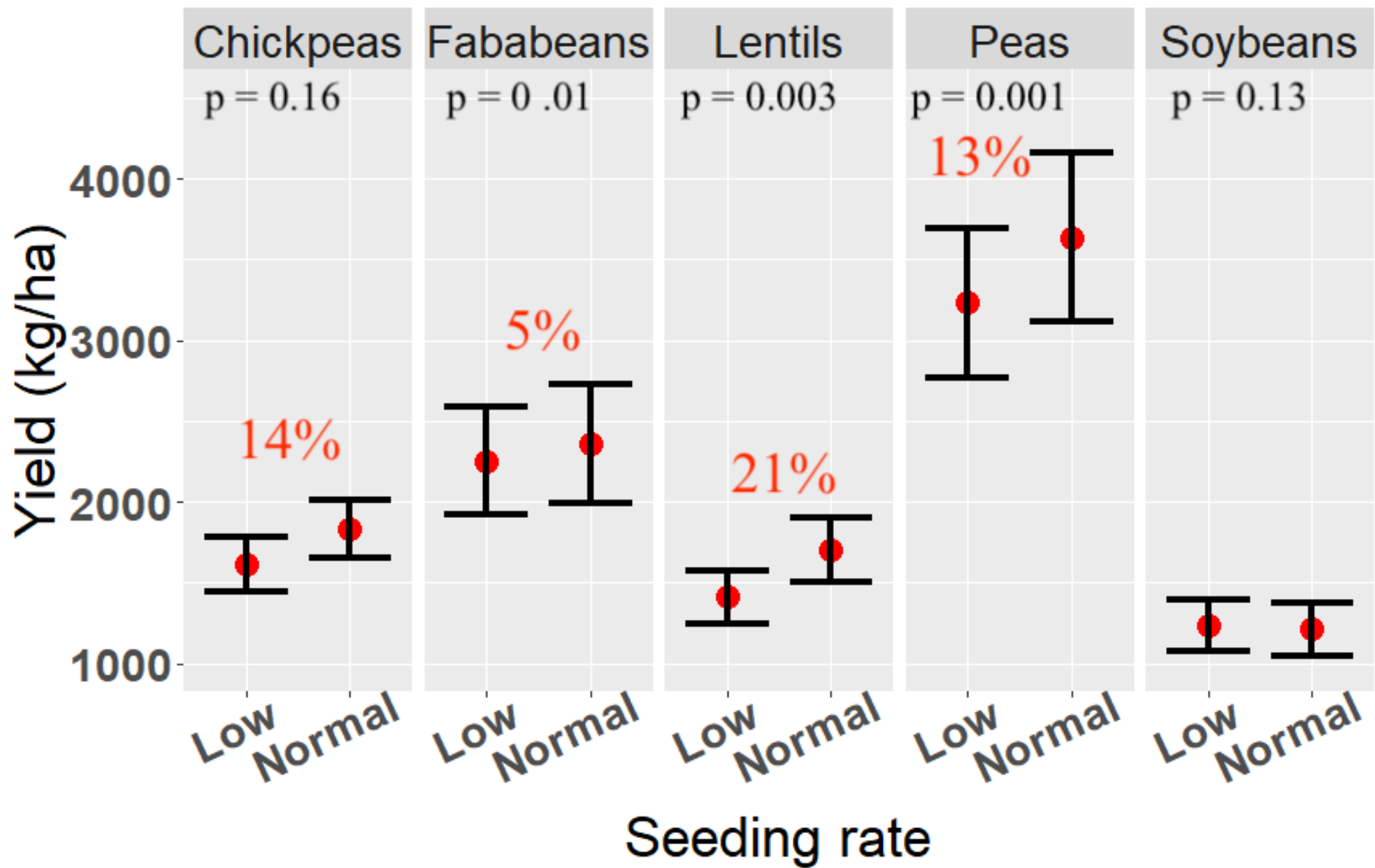


Planter low



Air low







Precision planters improved the proportion and uniformity of seedling emergence in pulse crops especially chickpeas, faba beans, and peas

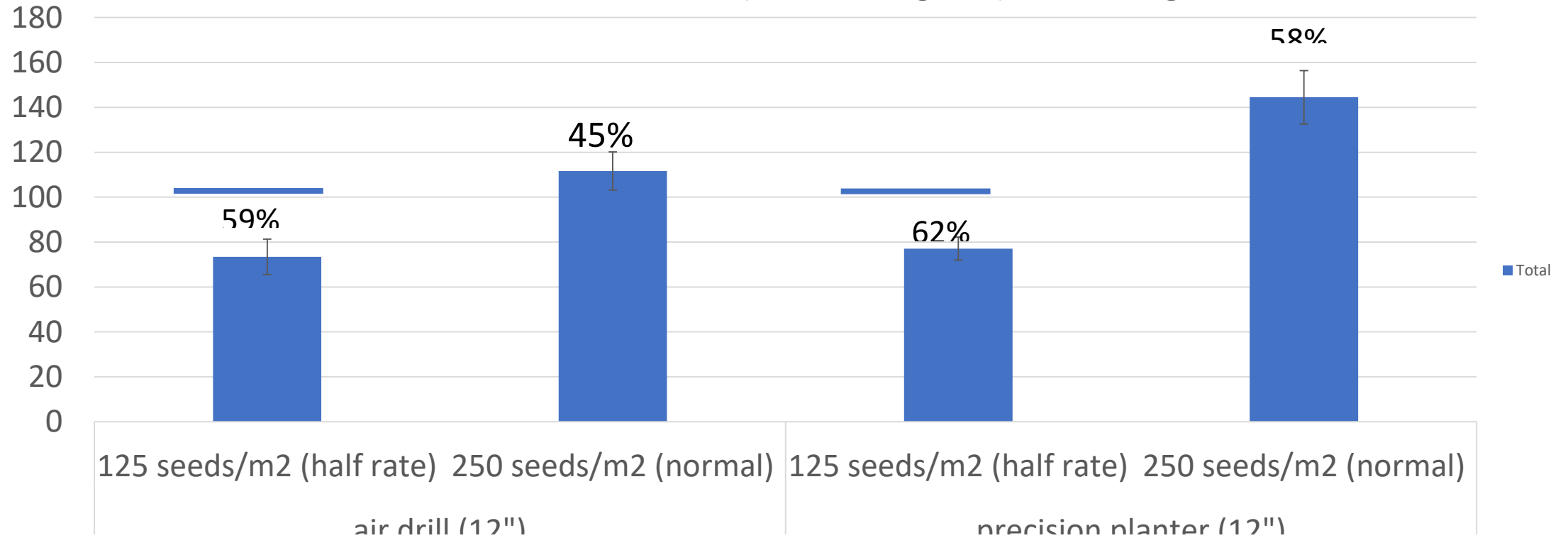
Yield for precision planters was similar or higher than air seeders for pulse crops

Precision planting did not reduce the optimum seeding rates required to obtain maximum yields for pulse crops

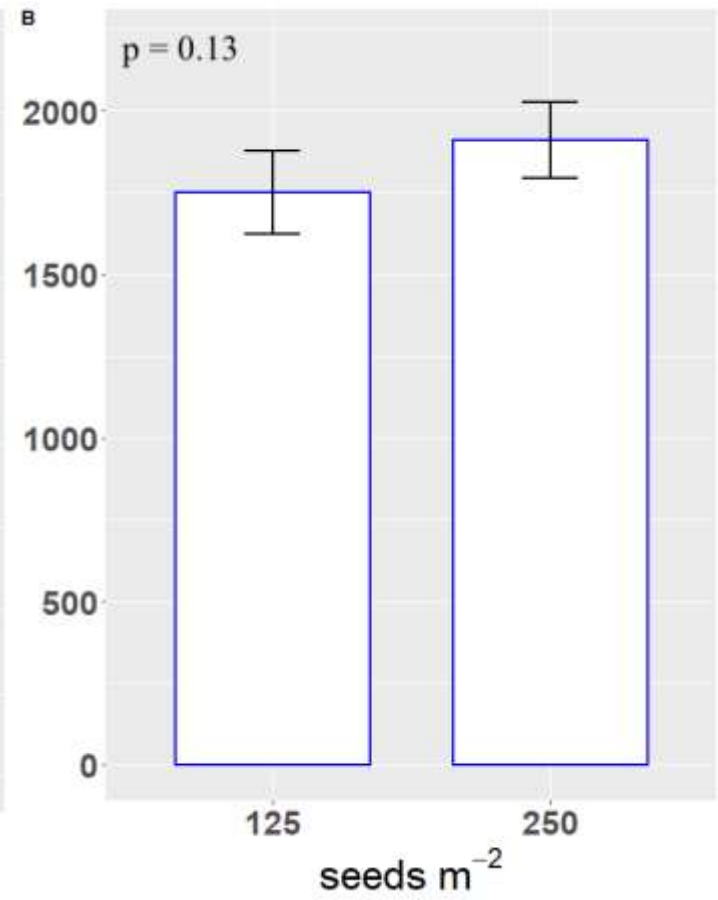
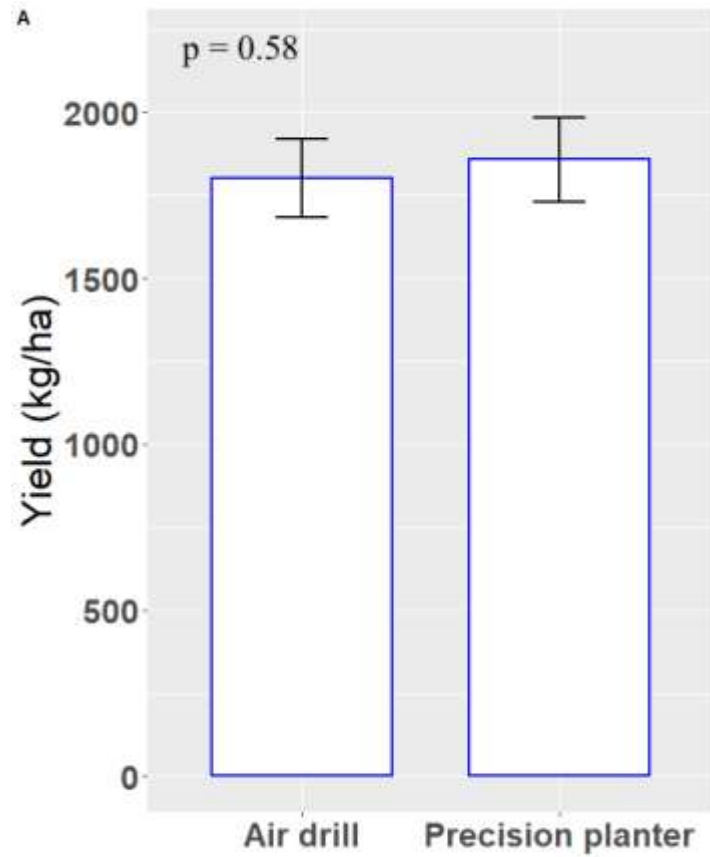
PP Hemp
with a
planter?
Left or
right?



2019, 2020, 2021 Plant stand (and % emergence) in Lethbridge AB



PP hemp –
uniform
plots
throughout



PP hemp –
uniform
plots
throughout





Effect of Strip Tillage and precision planting on canola emergence, seed yield and quality (Farming Smarter, Lethbridge College) 2020-23

- Carlo Van Herk

Irrigated and Dryland

Tillage

- cultivated, strip tillage, direct seeded

Planter

- Planter 15" vs air drill pillar laser, barton hoe with narrow knife and spreader tips 12"







Factors –

1. Tillage system – strip till, no till
2. Seeding date – Early (Mid April), Normal (Start of May), Late (End of May)
3. Hybrid – Low CHU, High CHU



Guide wheel

disc

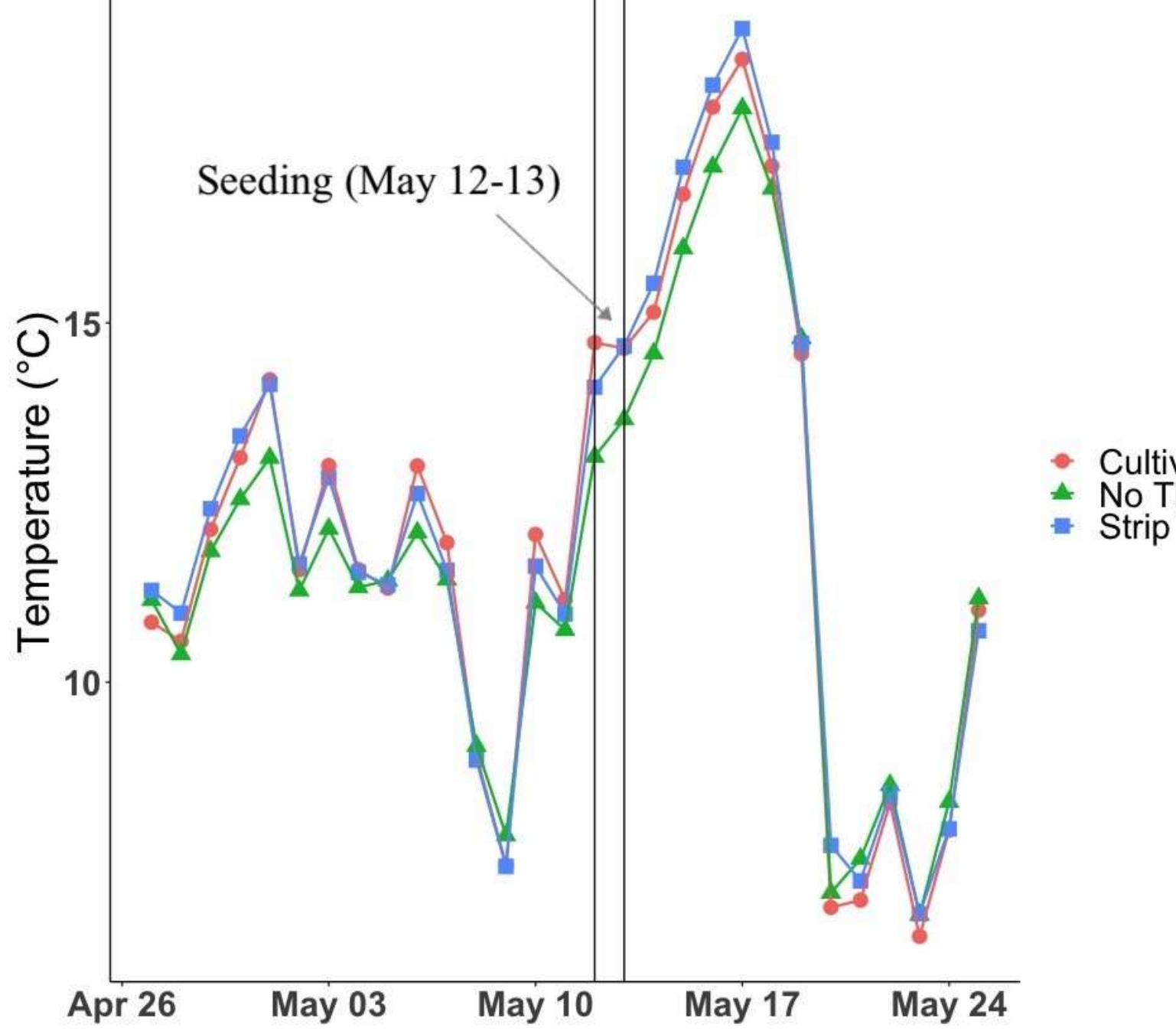
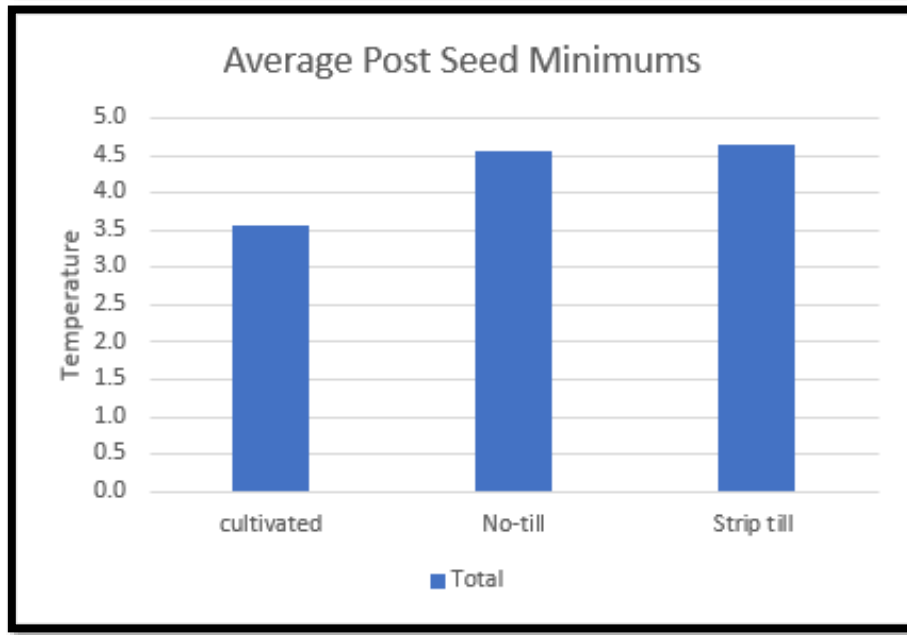
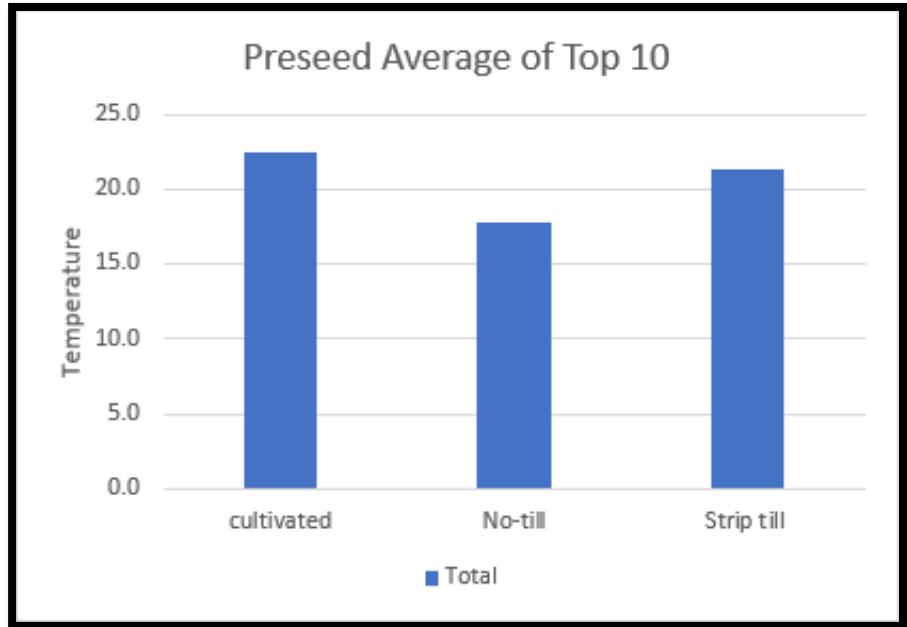
Residue manager

Hoe shank

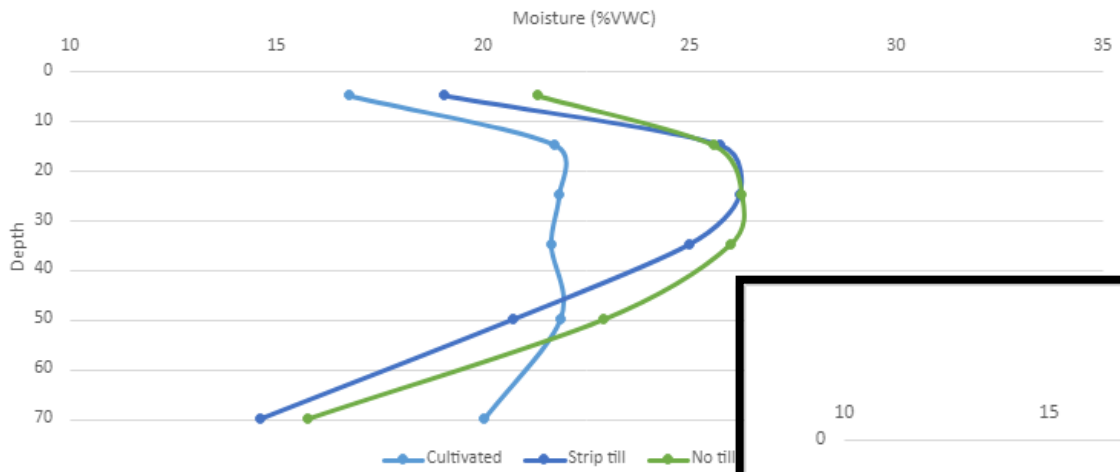
ditchers

Packer wheel

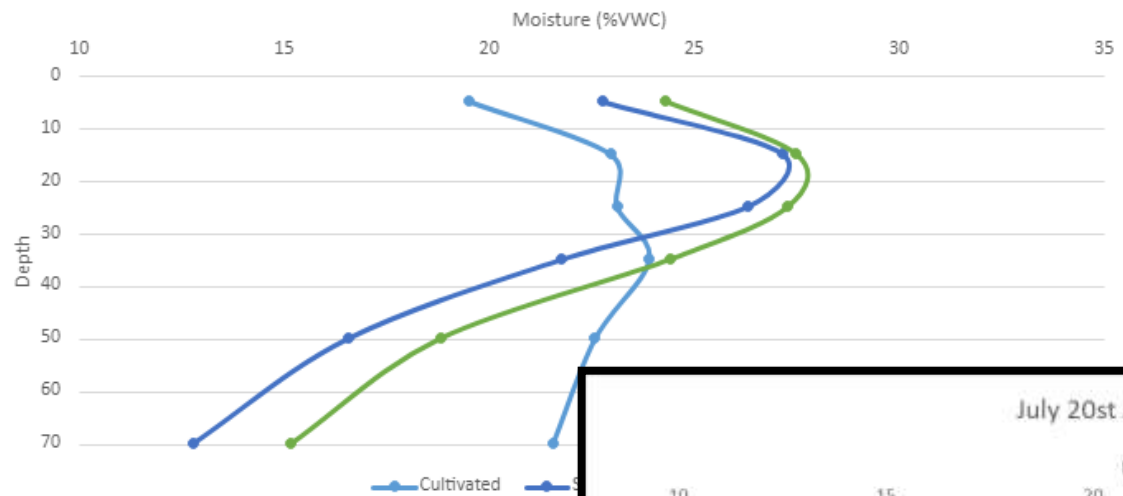




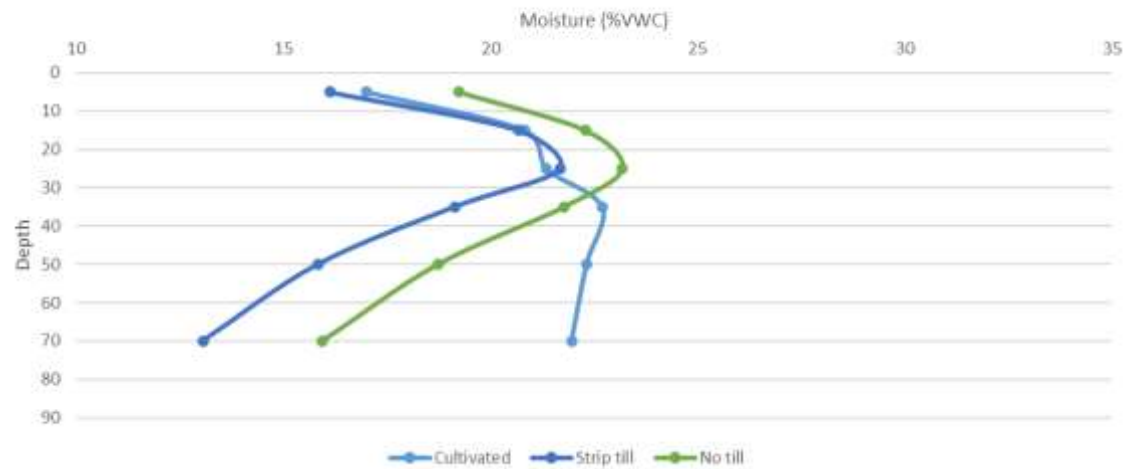
May 18 Average Dryland

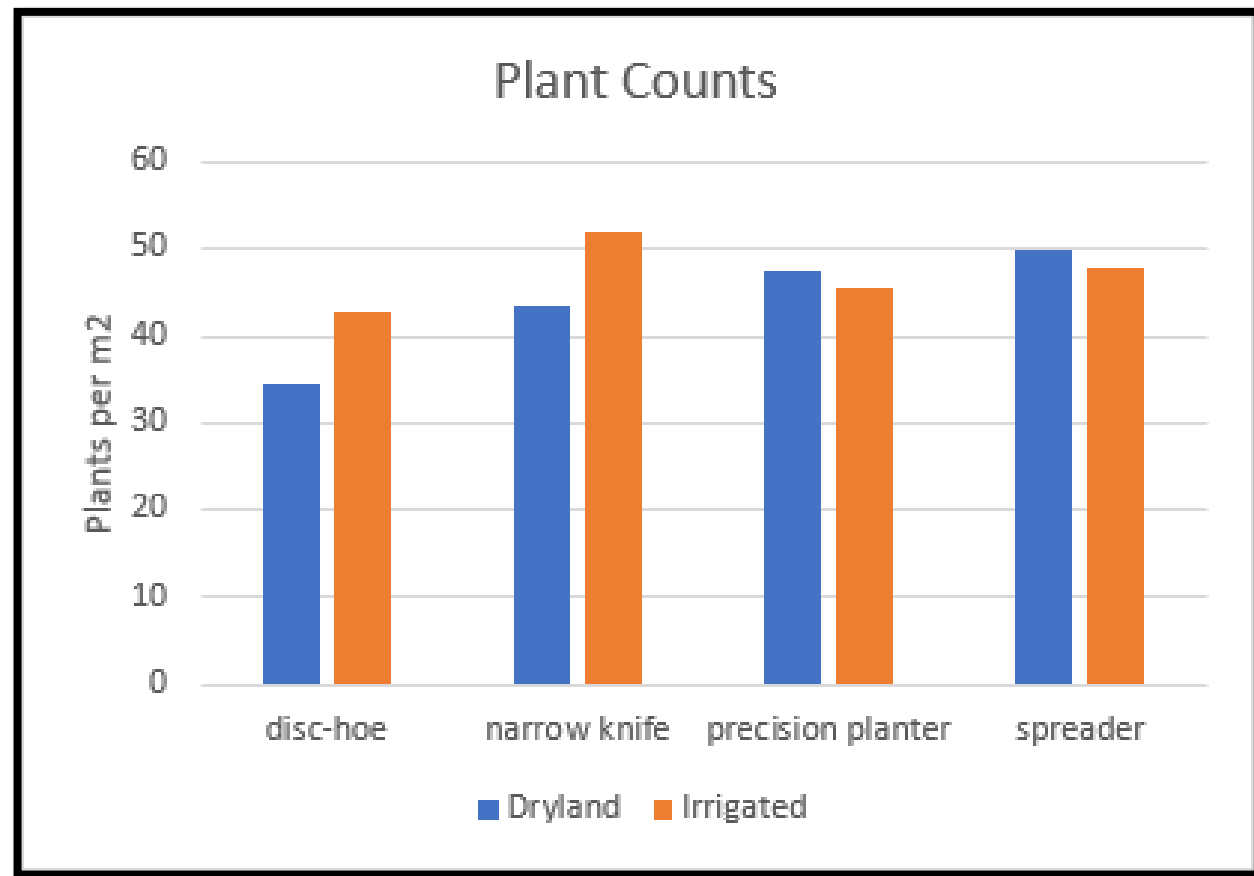
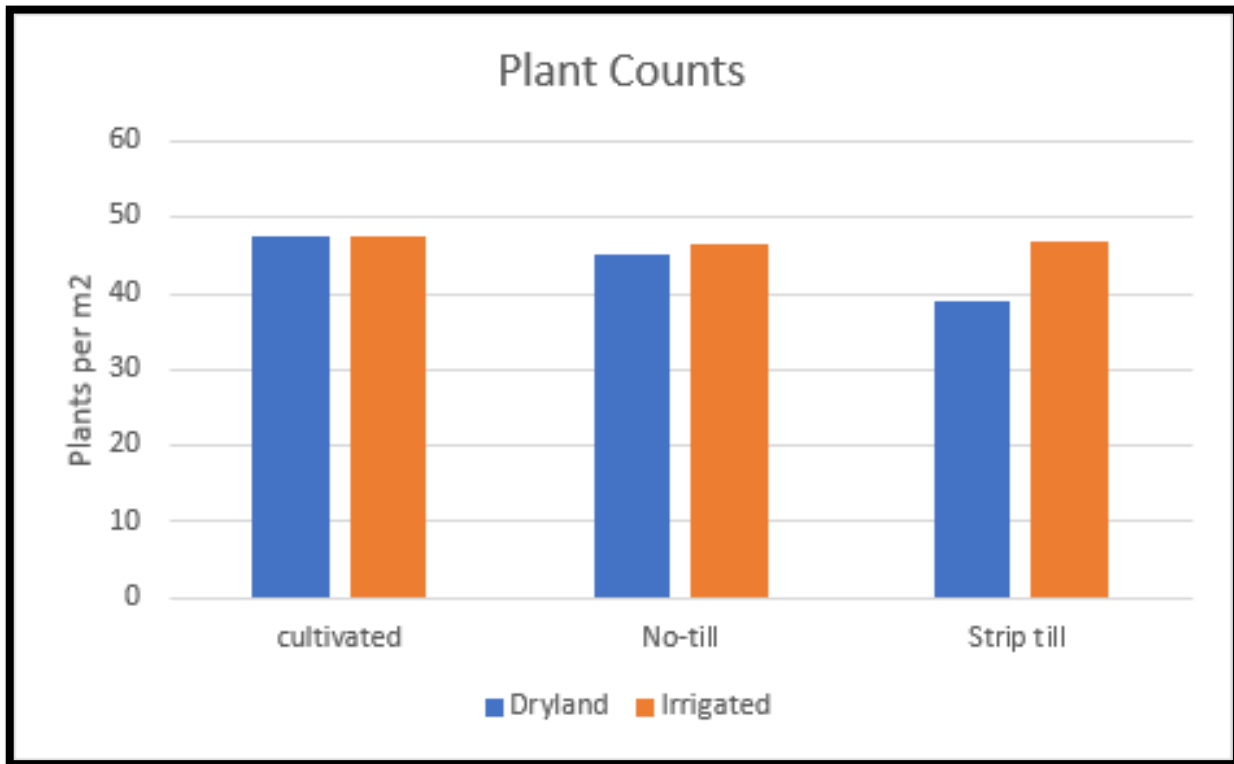


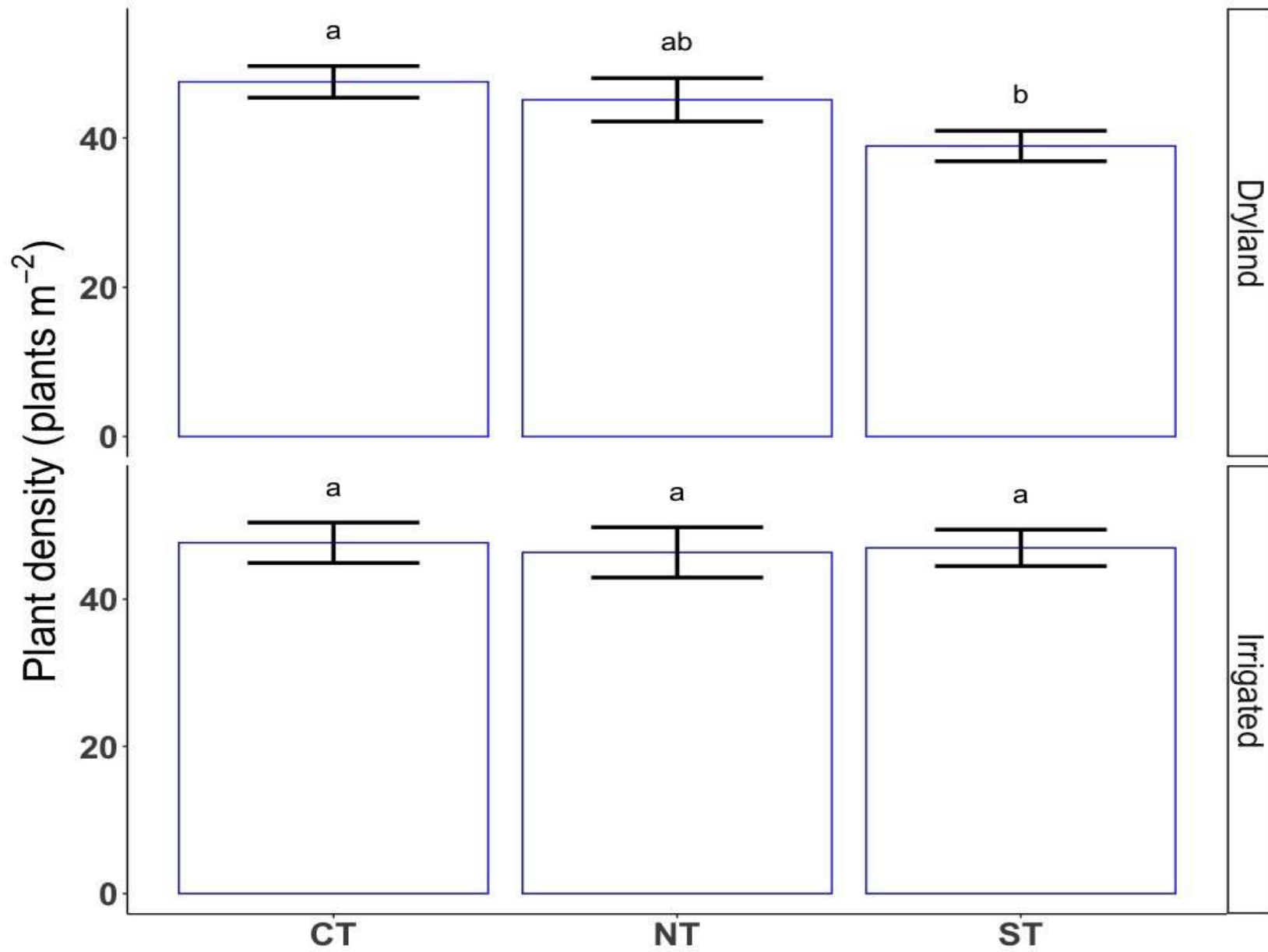
June 21st Average Dryland



July 20st Average Dryland







Plant density for different tillage systems (CT - conventional tillage, NT - No-tillage, ST - Strip tillage) under dryland and irrigated conditions

Irrigated



June 11

June 18

June 25

July 2

July 9

Cultivated Narrow Knife



Dryland

Irrigated

Strip-Till Narrow Knife



June 11

June 18

June 25

July 2

July 9

Dryland



Irrigated



June 11

June 18

June 25

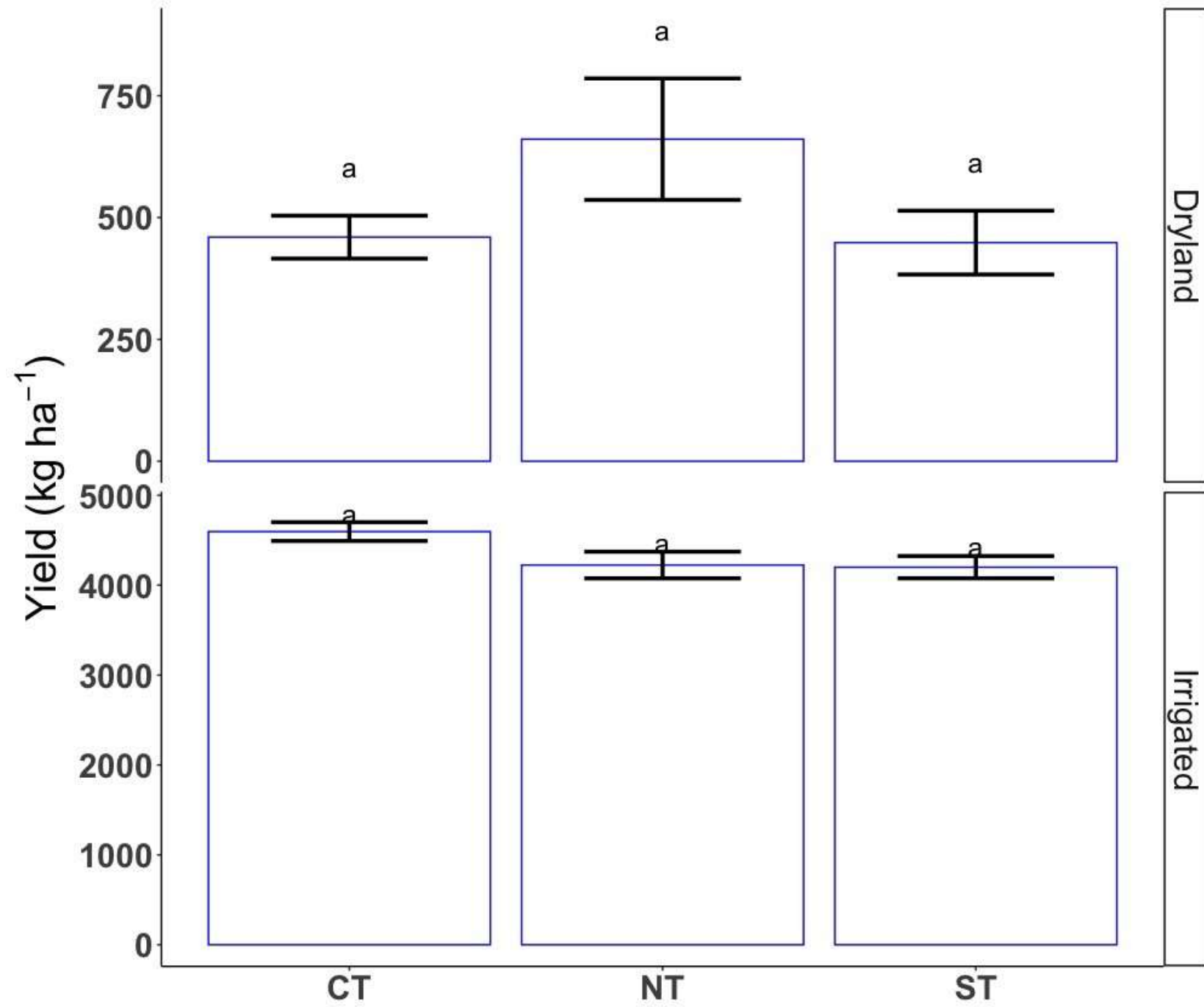
July 2

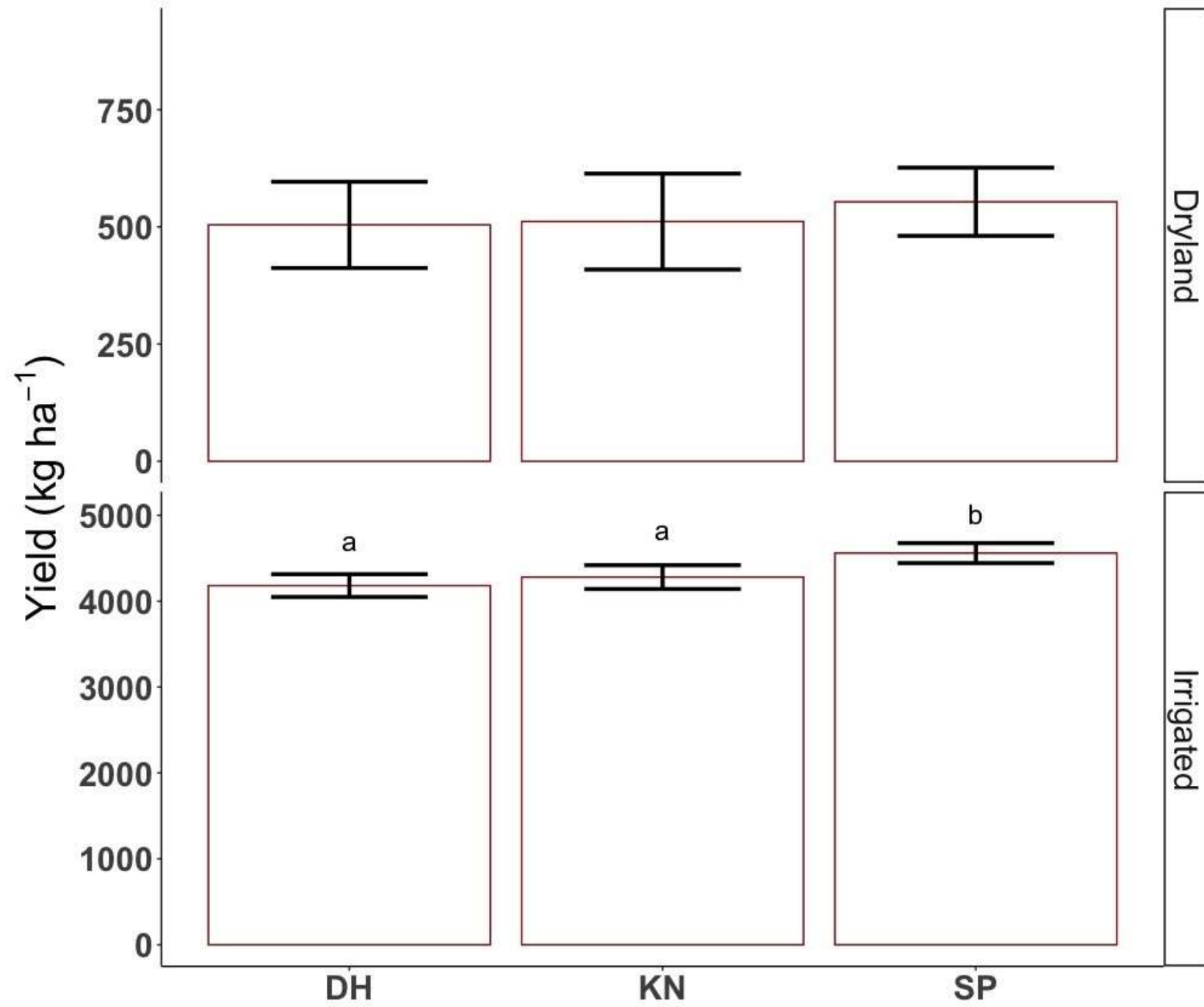
July 9

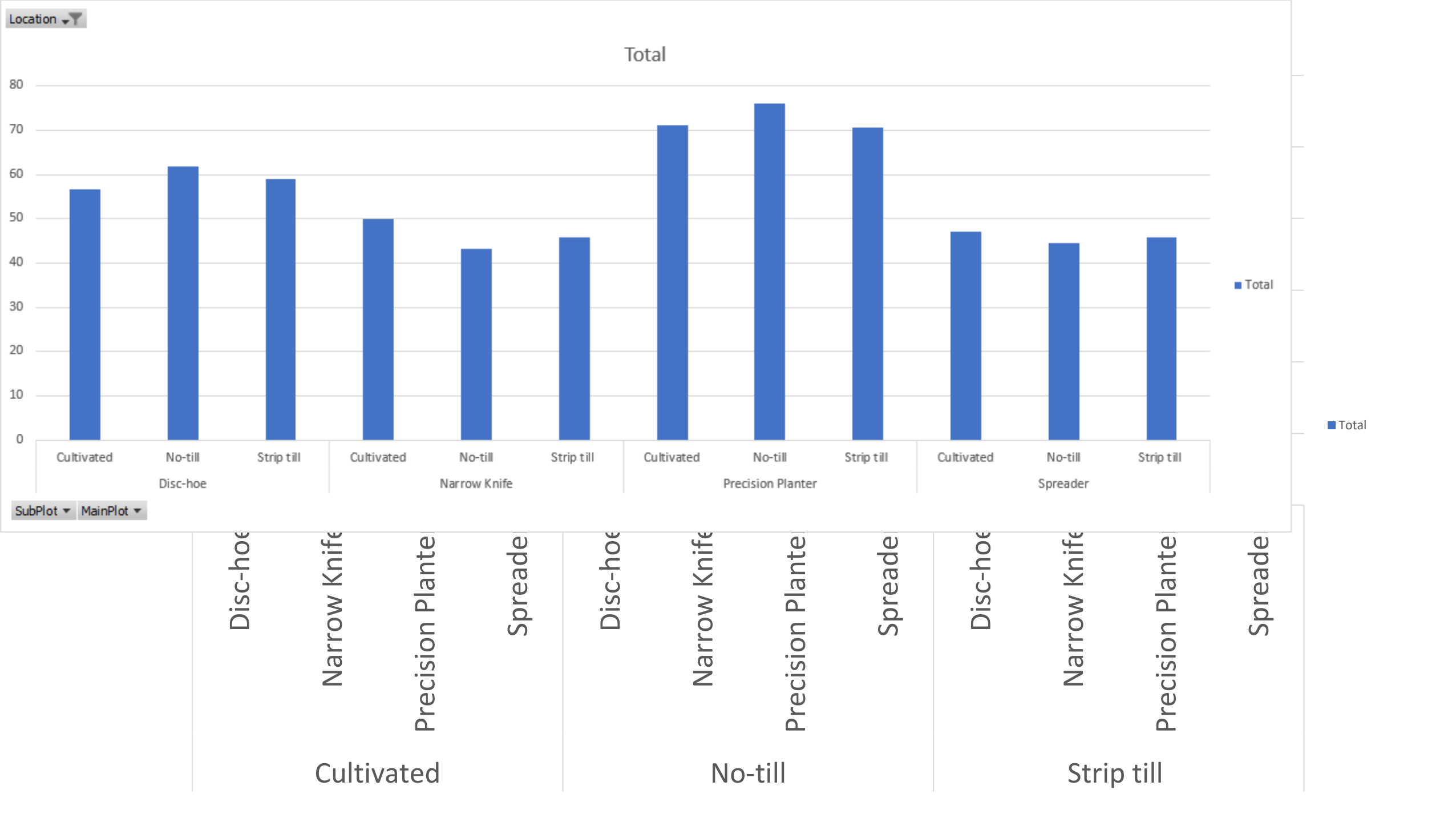
No-Till Narrow Knife

Dryland











(Dis)Advantages and Economics

- Can only speak for the agronomy, not economics
 - Logistics > Agronomy
 - Repair
 - Maintenance
 - Depreciation
 - Fuel
 - Overtime, downtime etc
- 
- A background image showing three people kneeling in a field, examining the ground. The field appears to be a mix of soil and dry vegetation. The people are wearing casual work clothes and caps. The image is slightly faded to allow the text to be read clearly.



Mike Gretzinger BSc, CCA
mike@farmingsmarter.com
@mikegretz
403-382-7923

