

# Intensive Agronomy, Intercropping, and Everything in Between to Maximize Profits with Oats

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# Improved Integrated Disease Management for Oats in Saskatchewan

- To understand the effectiveness of fungicide application and generic resistance for foliar disease control in various oat varieties.
- Impact of increased plant population and their effect on reduced tillering, growth staging, and optimal fungicide timing
- How integrated disease management strategies may vary between soil and climatic zones in Saskatchewan.

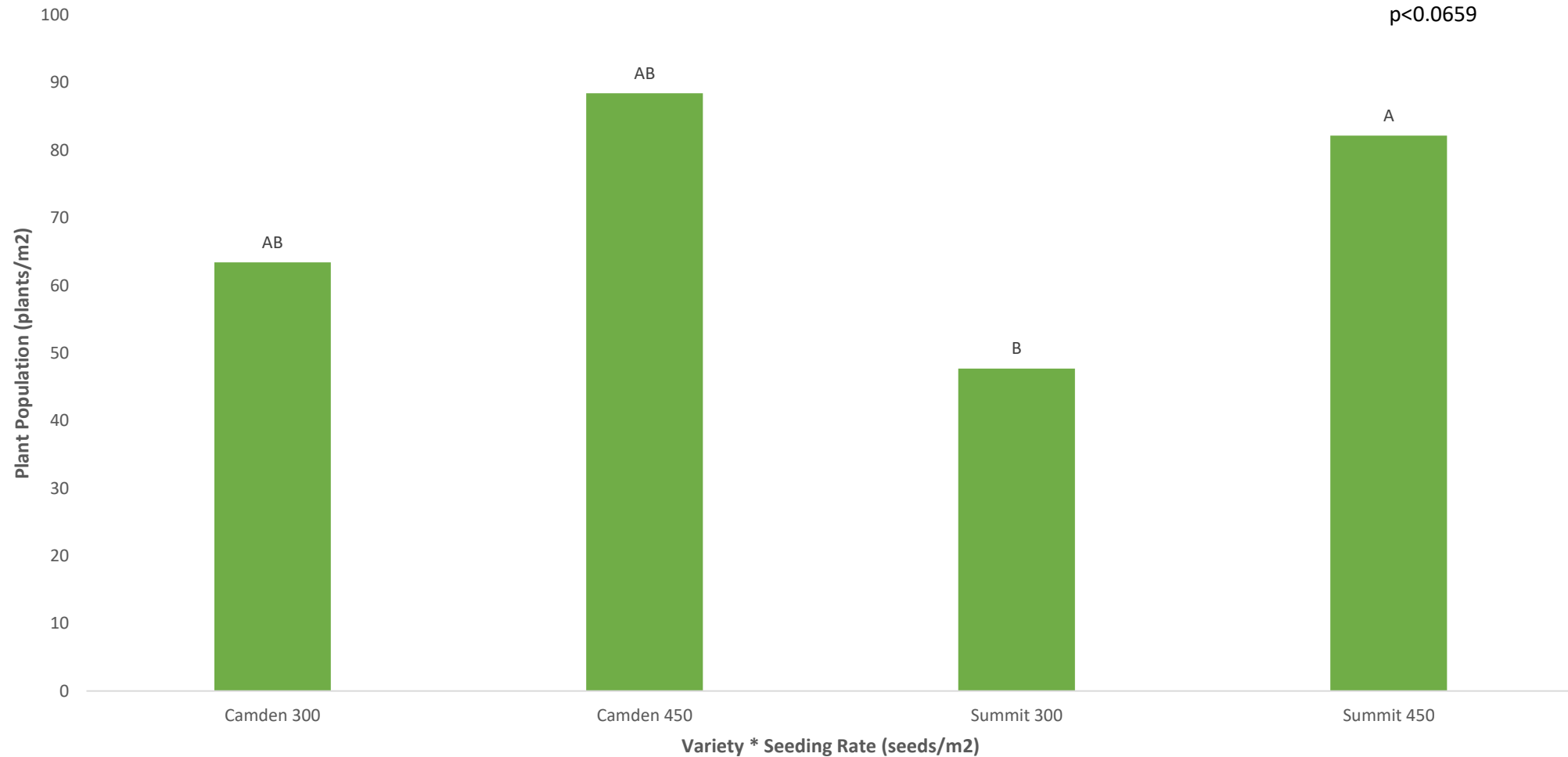


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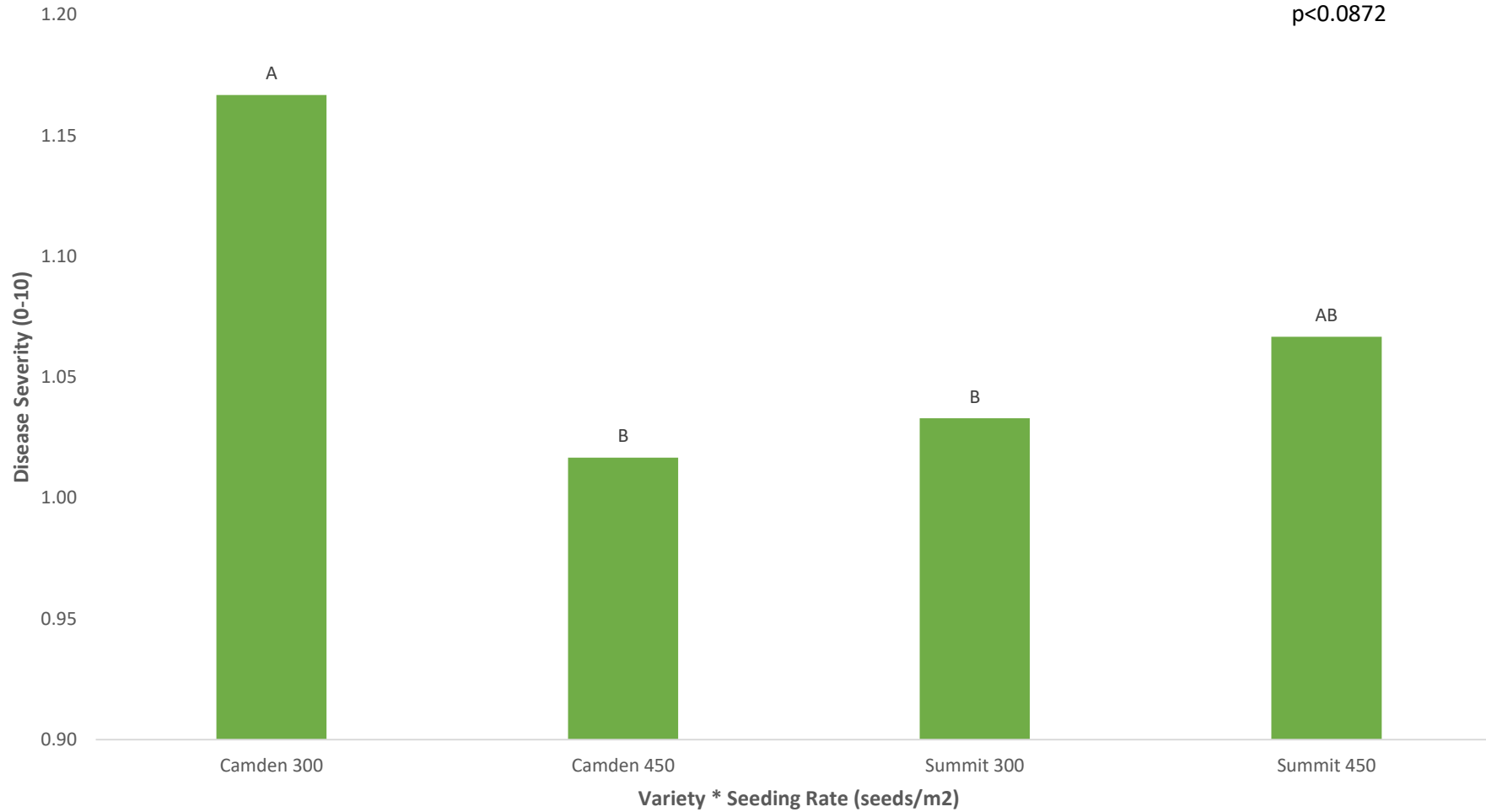
Treatment #	Fungicide Timing (Main Plot)	Variety & Rate (Subplot)
1	Untreated	CS Camden – 300 seeds/m <sup>2</sup>
2		CS Camden – 450 seeds/m <sup>2</sup>
3		Summit – 300 seeds/m <sup>2</sup>
4		Summit – 450 seeds/m <sup>2</sup>
5	Flag leaf (Zadoks 39)	CS Camden – 300 seeds/m <sup>2</sup>
6		CS Camden – 450 seeds/m <sup>2</sup>
7		Summit – 300 seeds/m <sup>2</sup>
8		Summit – 450 seeds/m <sup>2</sup>
9	Heading	CS Camden – 300 seeds/m <sup>2</sup>
10		CS Camden – 450 seeds/m <sup>2</sup>
11		Summit – 300 seeds/m <sup>2</sup>
12		Summit – 450 seeds/m <sup>2</sup>



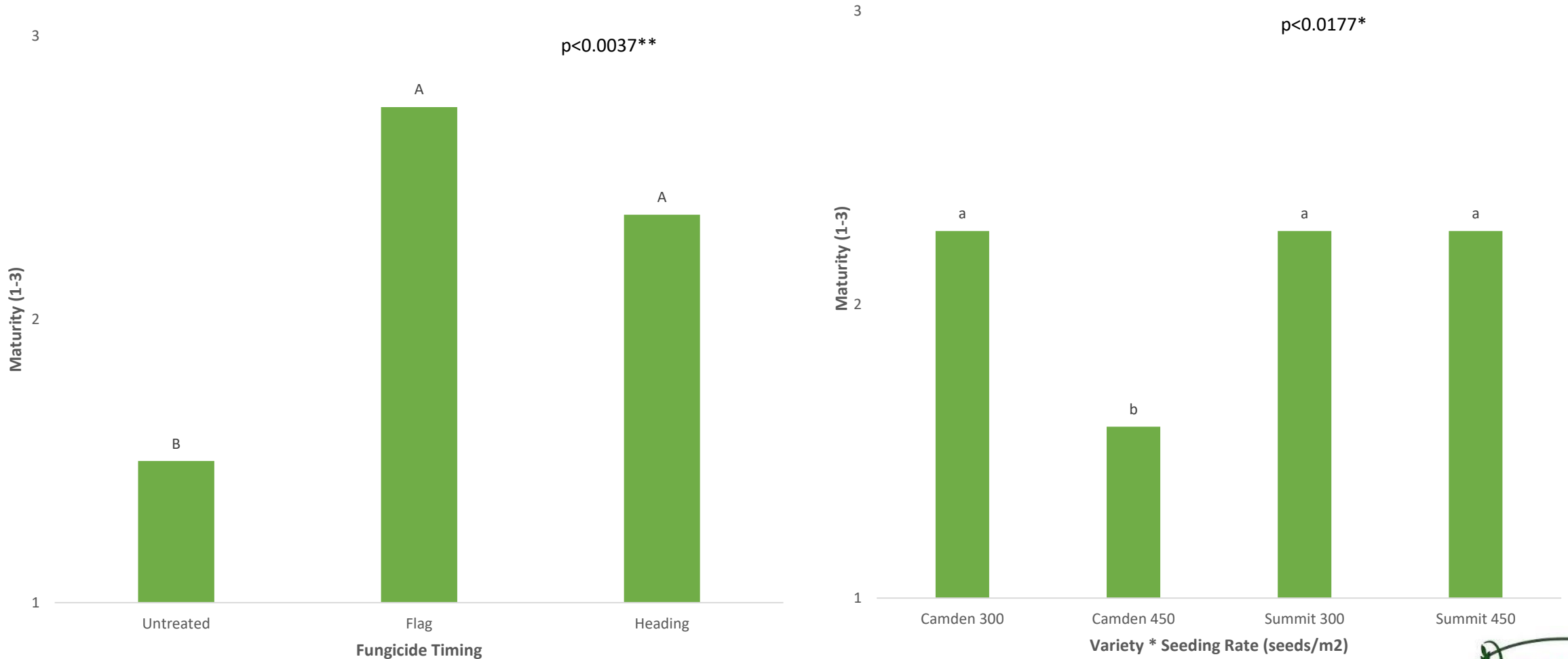
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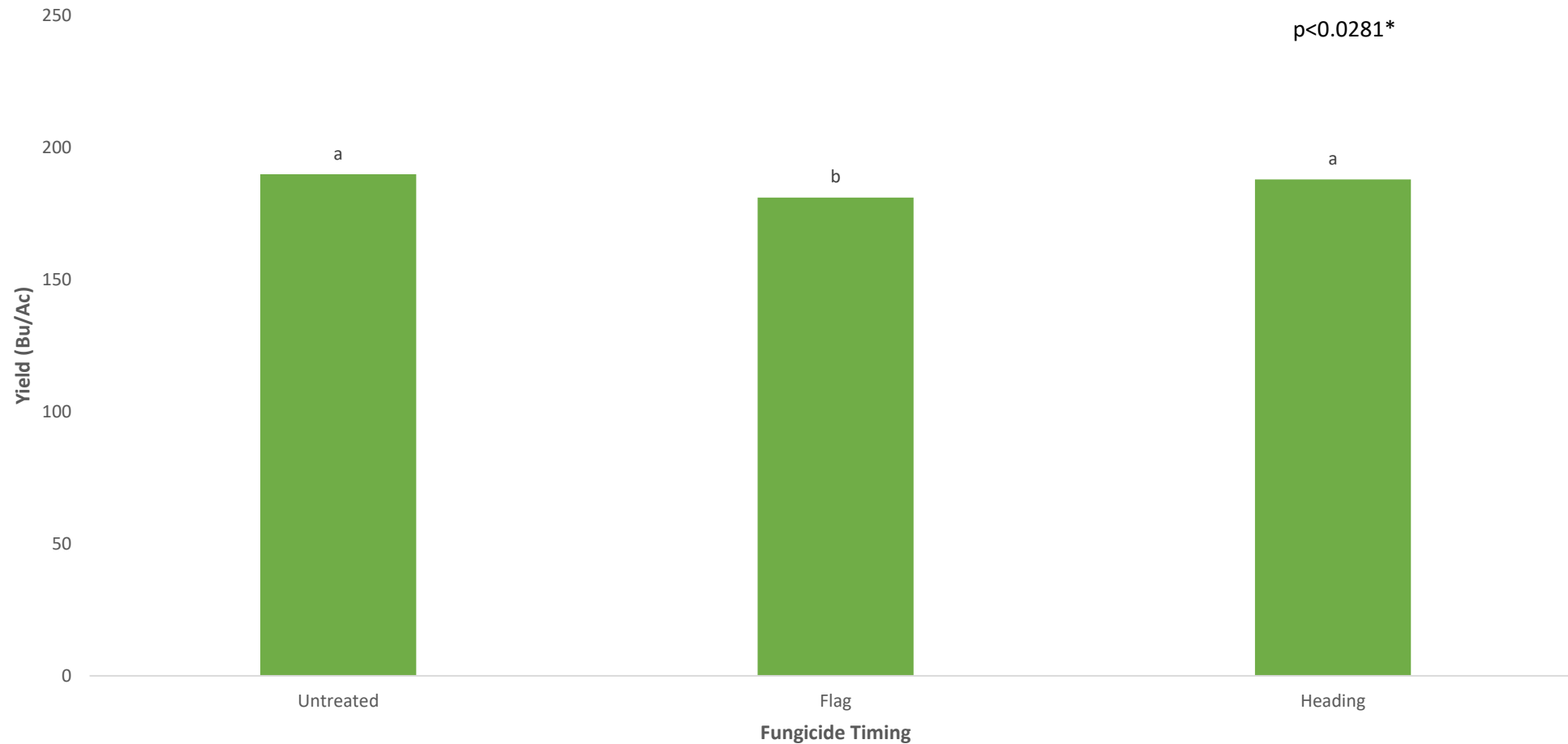
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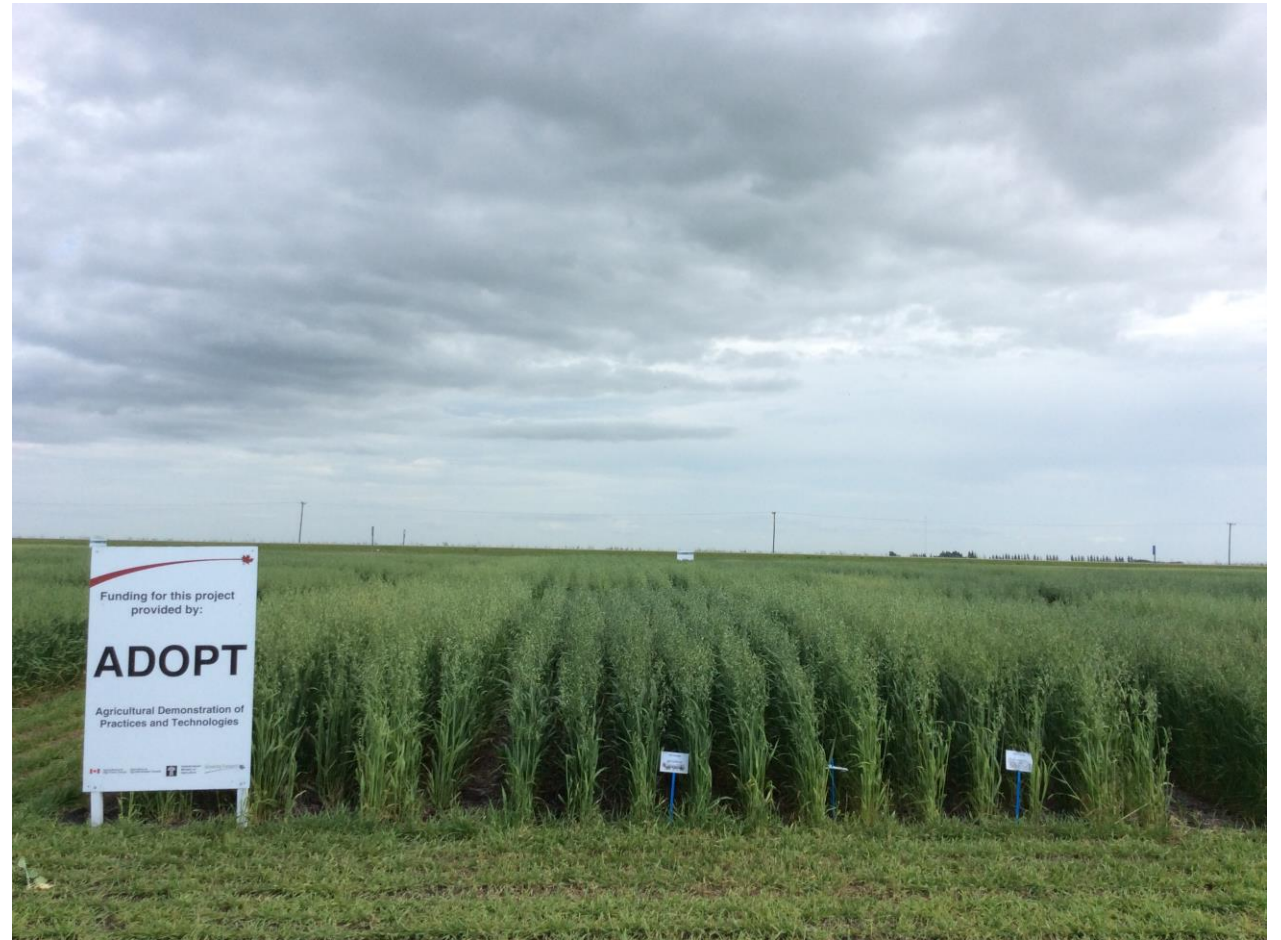
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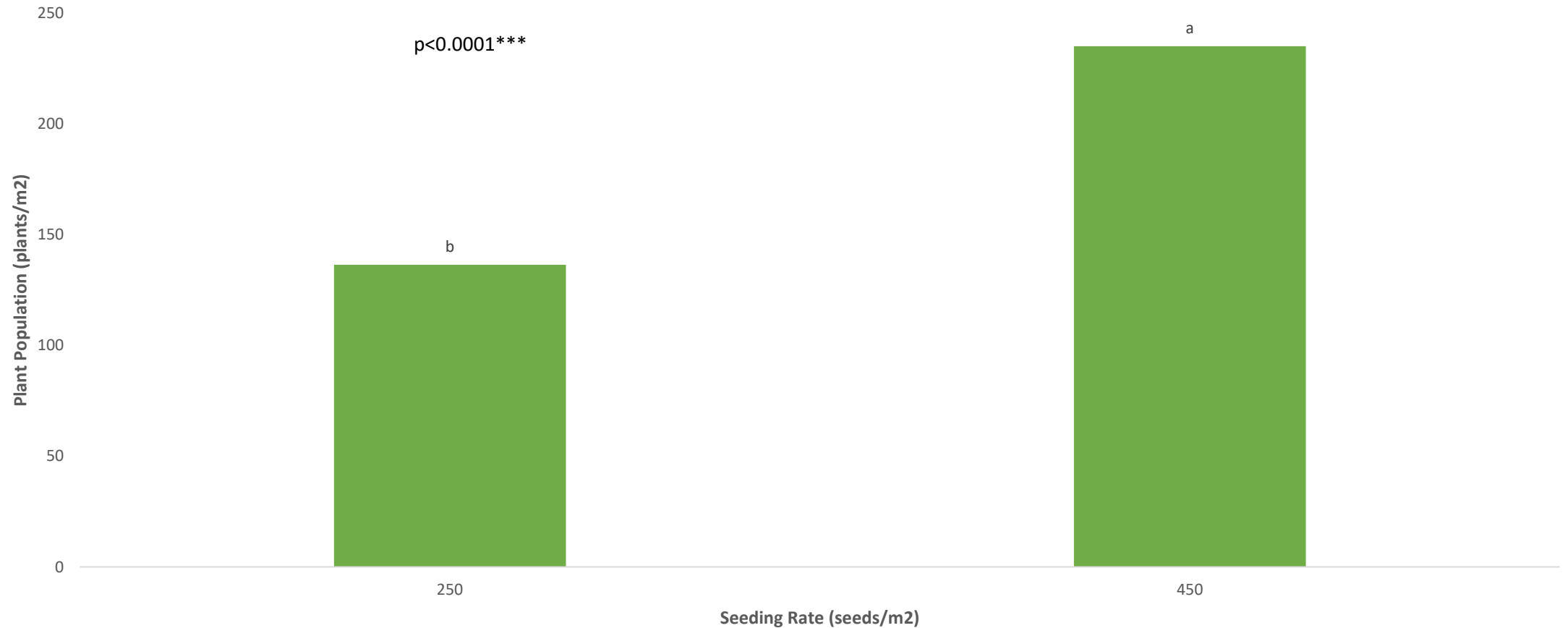
# Oat Varietal Response to Seeding Rate & Nitrogen Rate to Hasten Maturity without Lodging

- 2 X 2 X 4 factorial – 16 treatments
  - Variety: CS Camden, CDC Dancer
  - Seeding Rate: 250 or 450 seeds/m<sup>2</sup>
  - Nitrogen Rate/Product: 60 or 120 lb N/ac or either Urea or 50:50 split SuperU

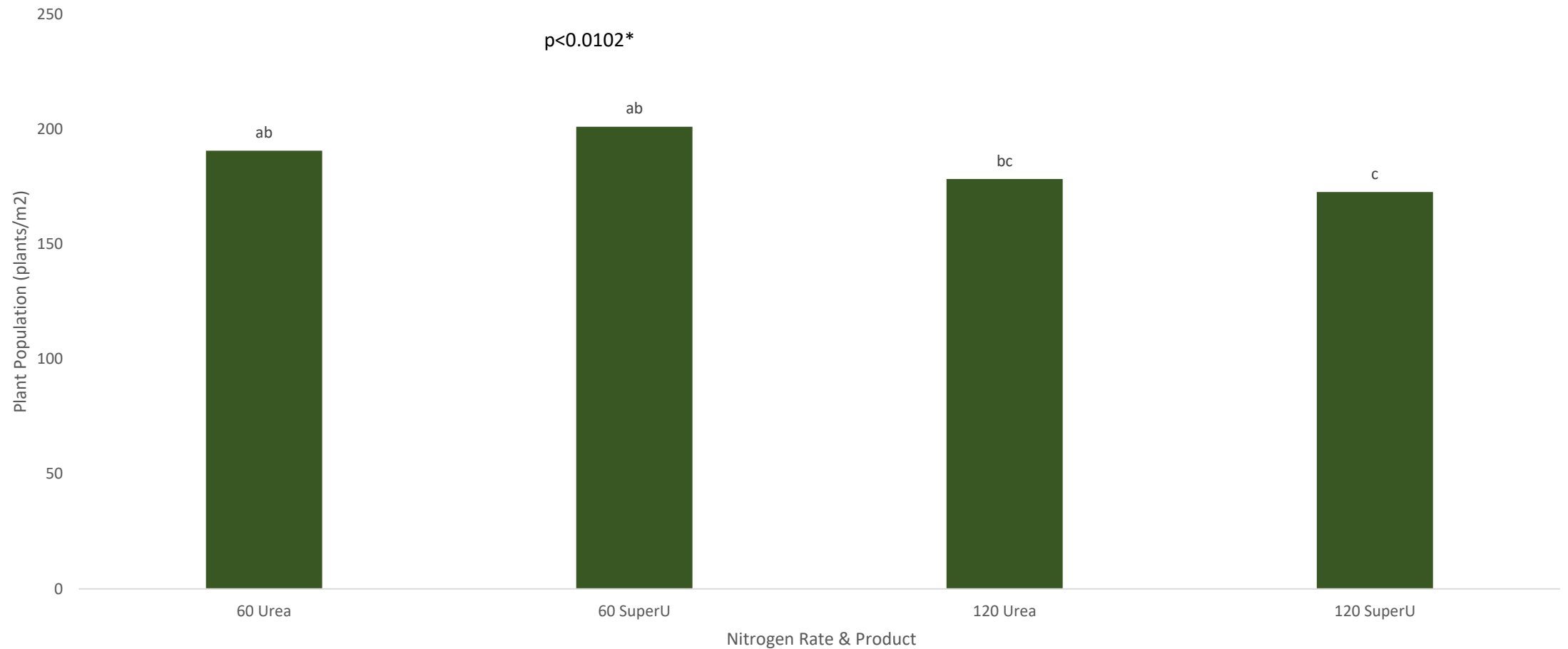




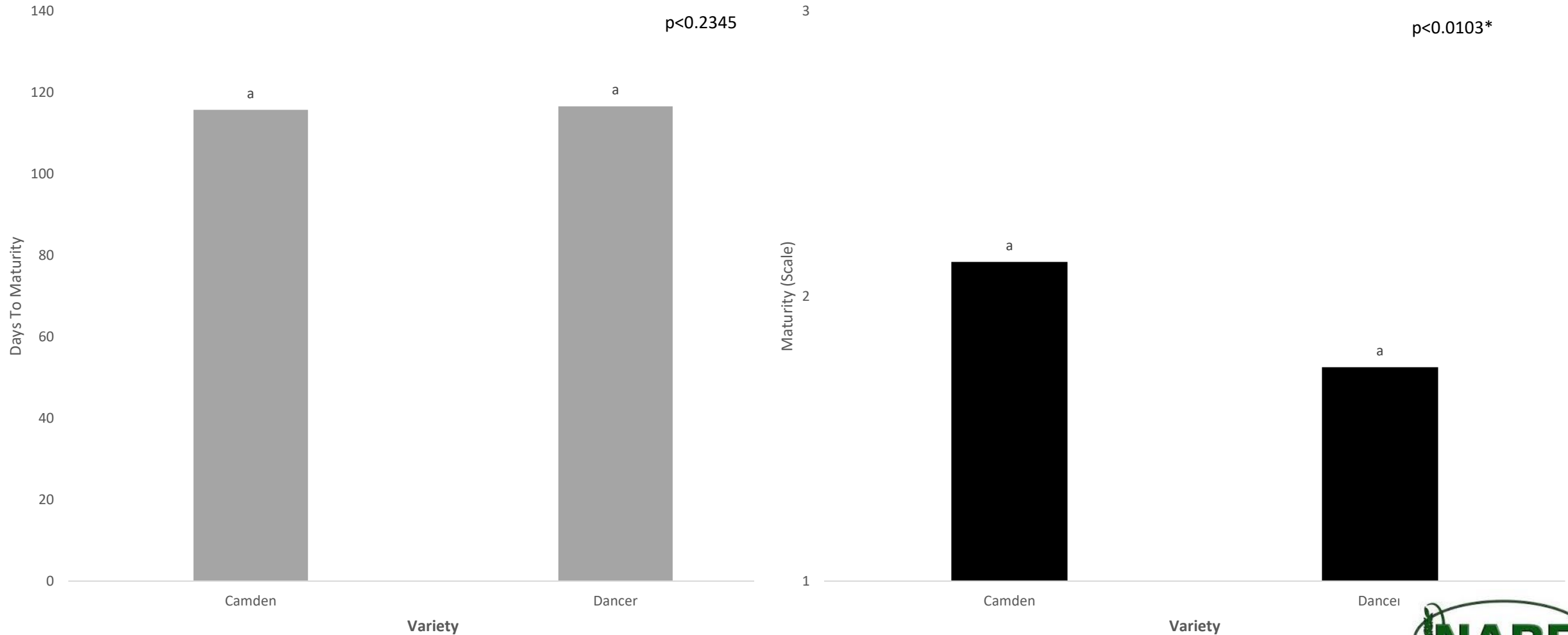
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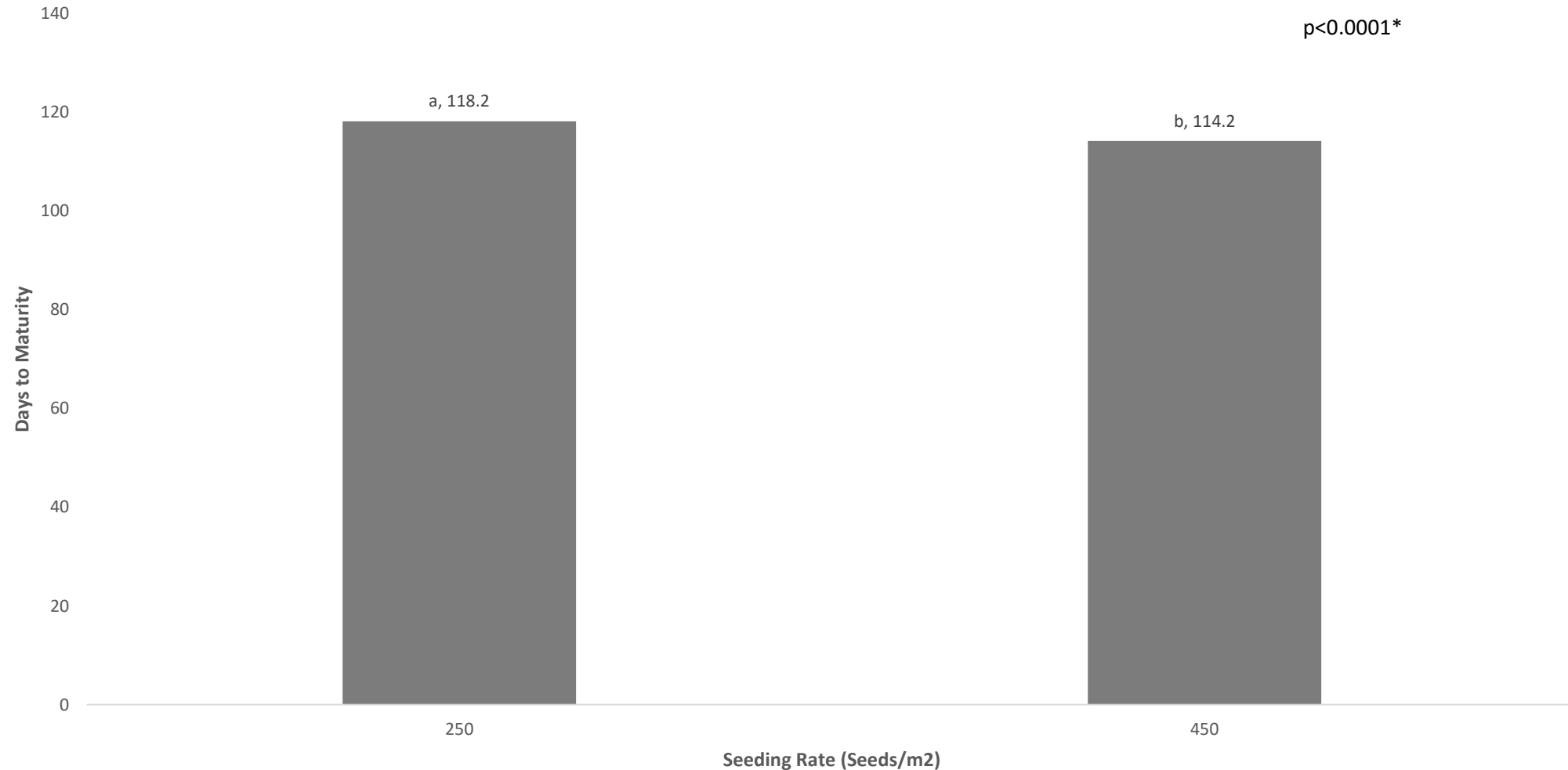
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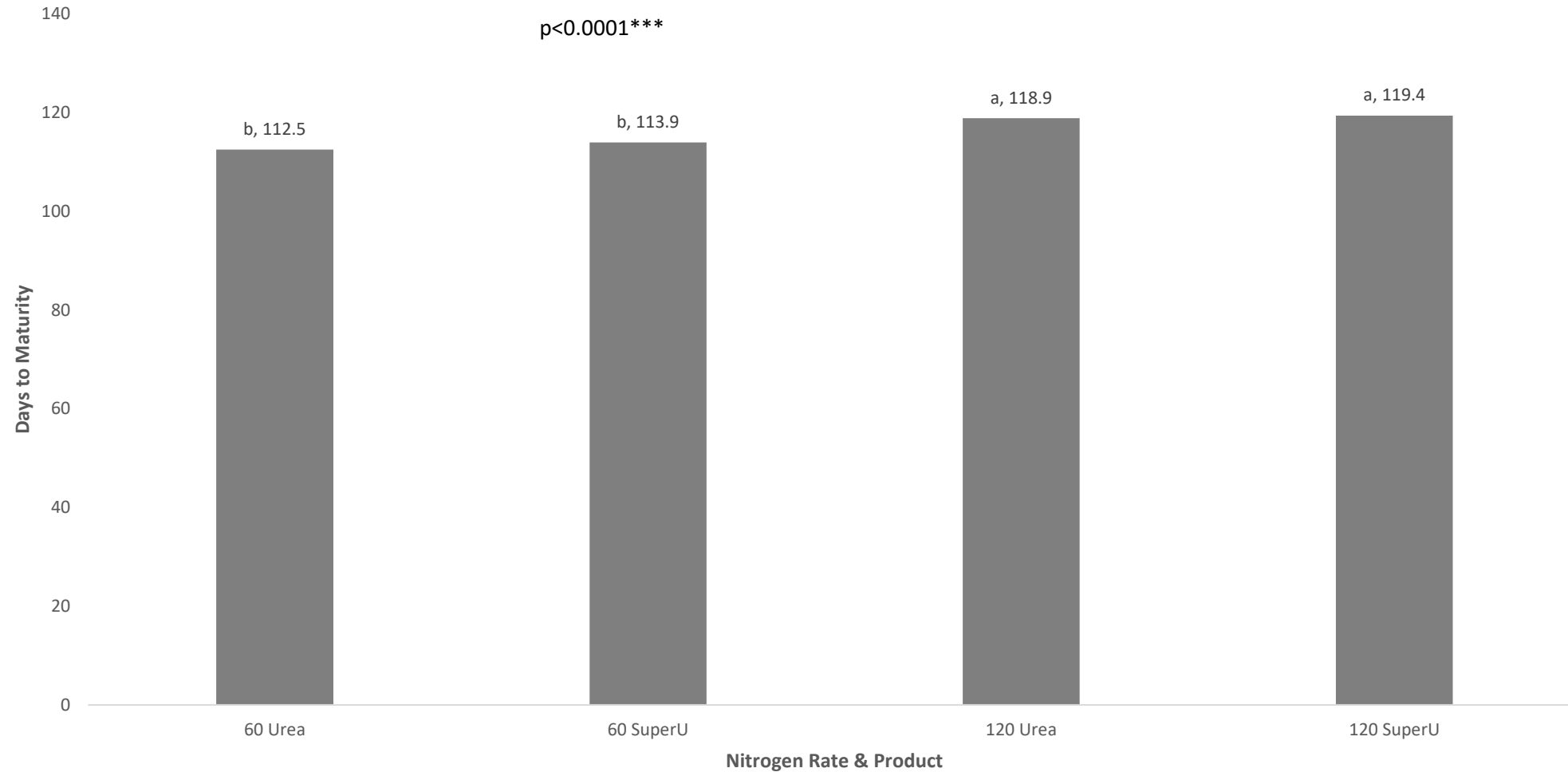
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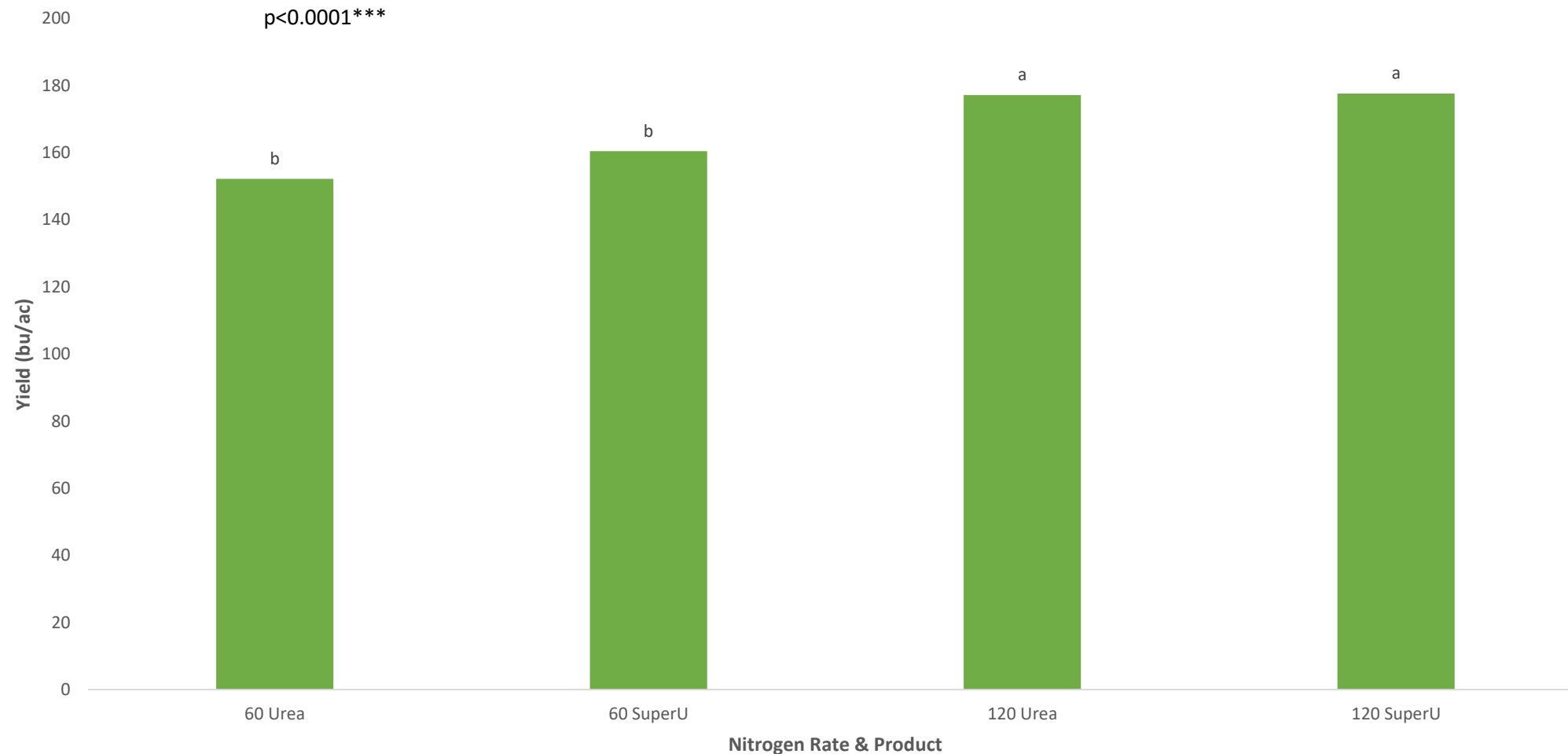
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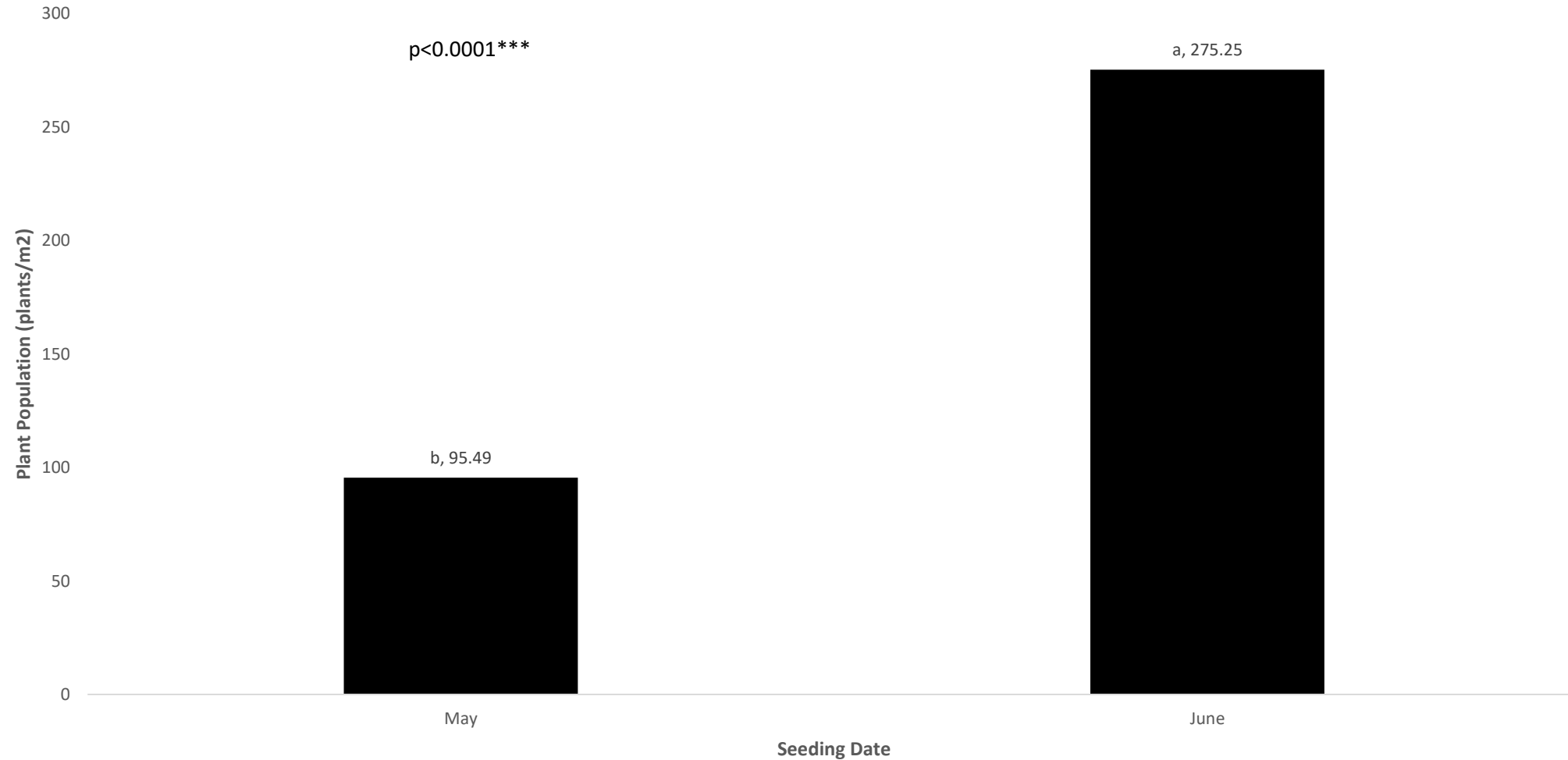


# Maintaining Acceptable Test weights for Milling Oats

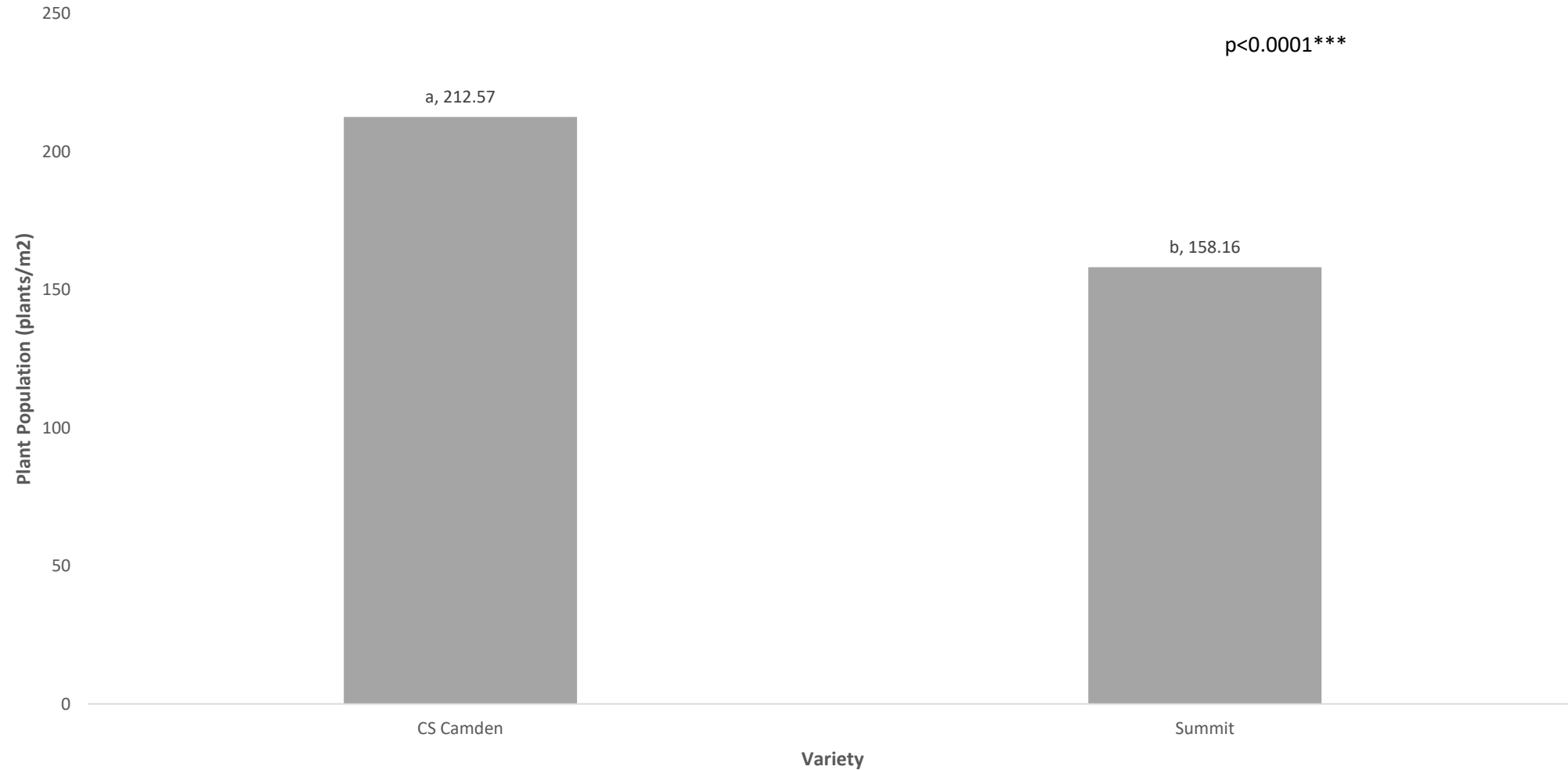
- Demonstrate that test weights and quality for milling oats tend to worsen with delayed seeding and increased nitrogen rates
  - Test weight can vary between varieties, so seeding early and managing nitrogen is critical for low-test weight varieties.
- 2 X 2 X 3 Factorial = 12 treatments
  - Seeding date: Early May & Early June
  - Variety: CS Camden & Summit
  - Nitrogen Rate: 40, 80, 120 kg N/ha



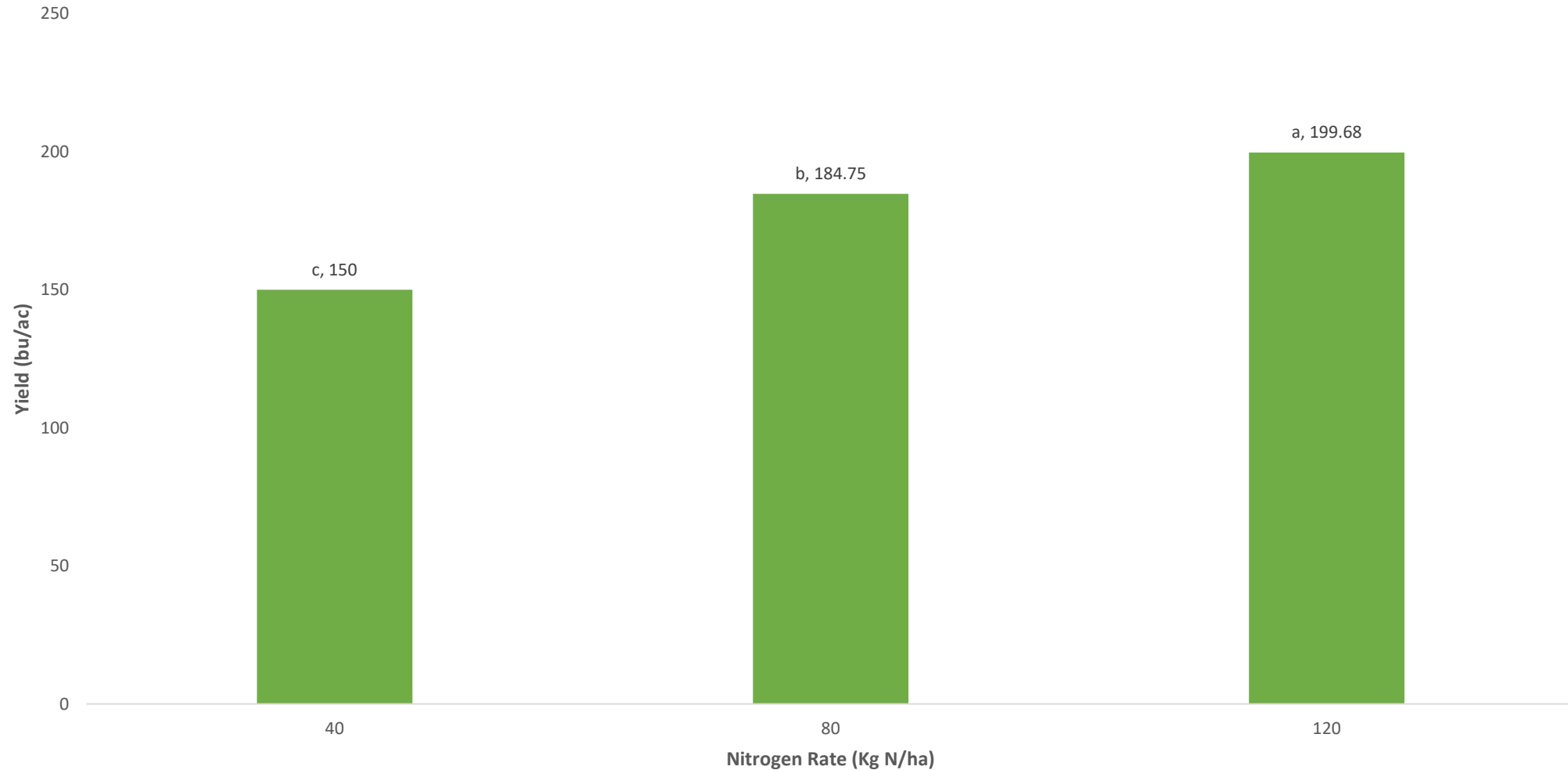
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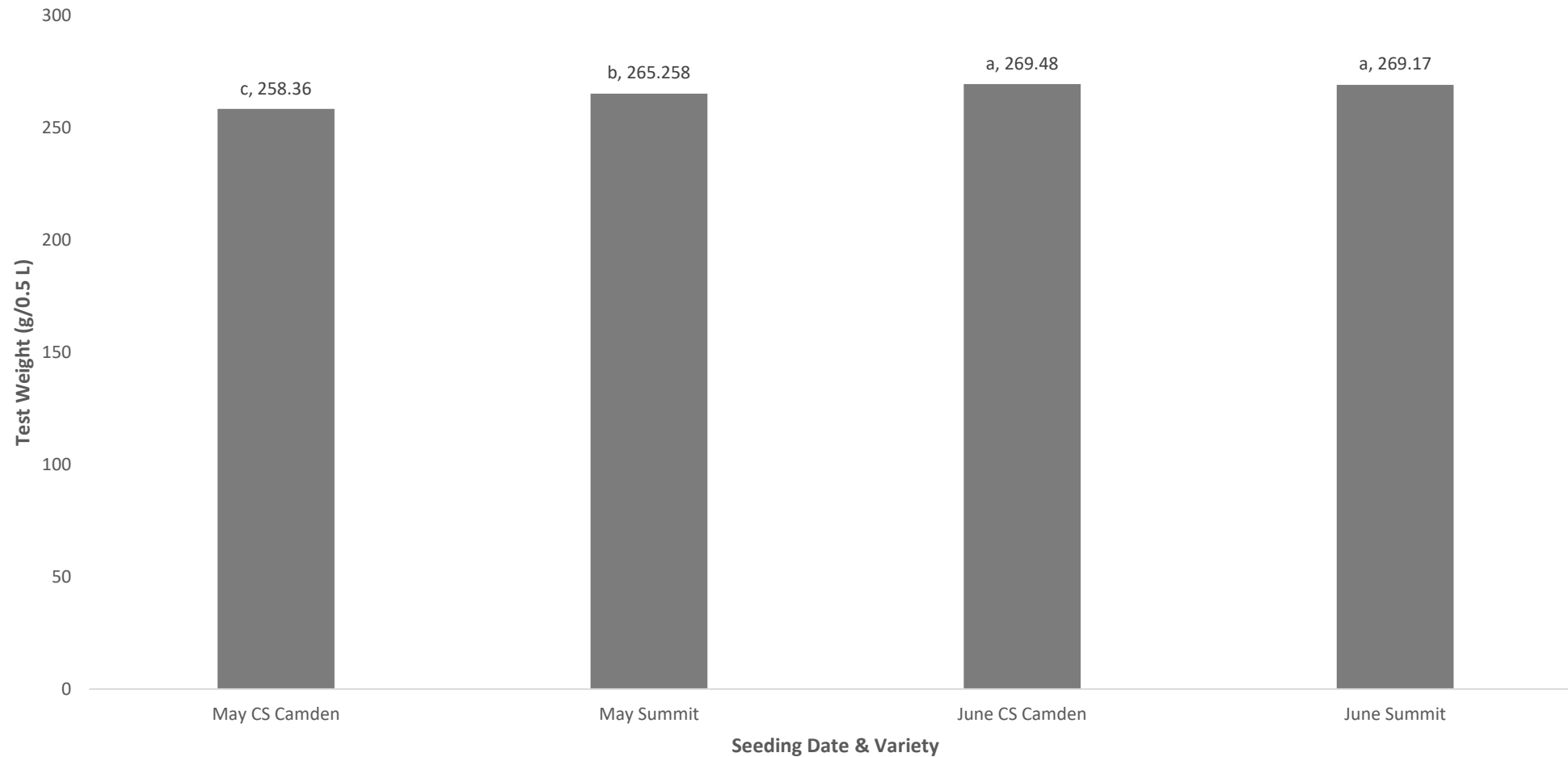


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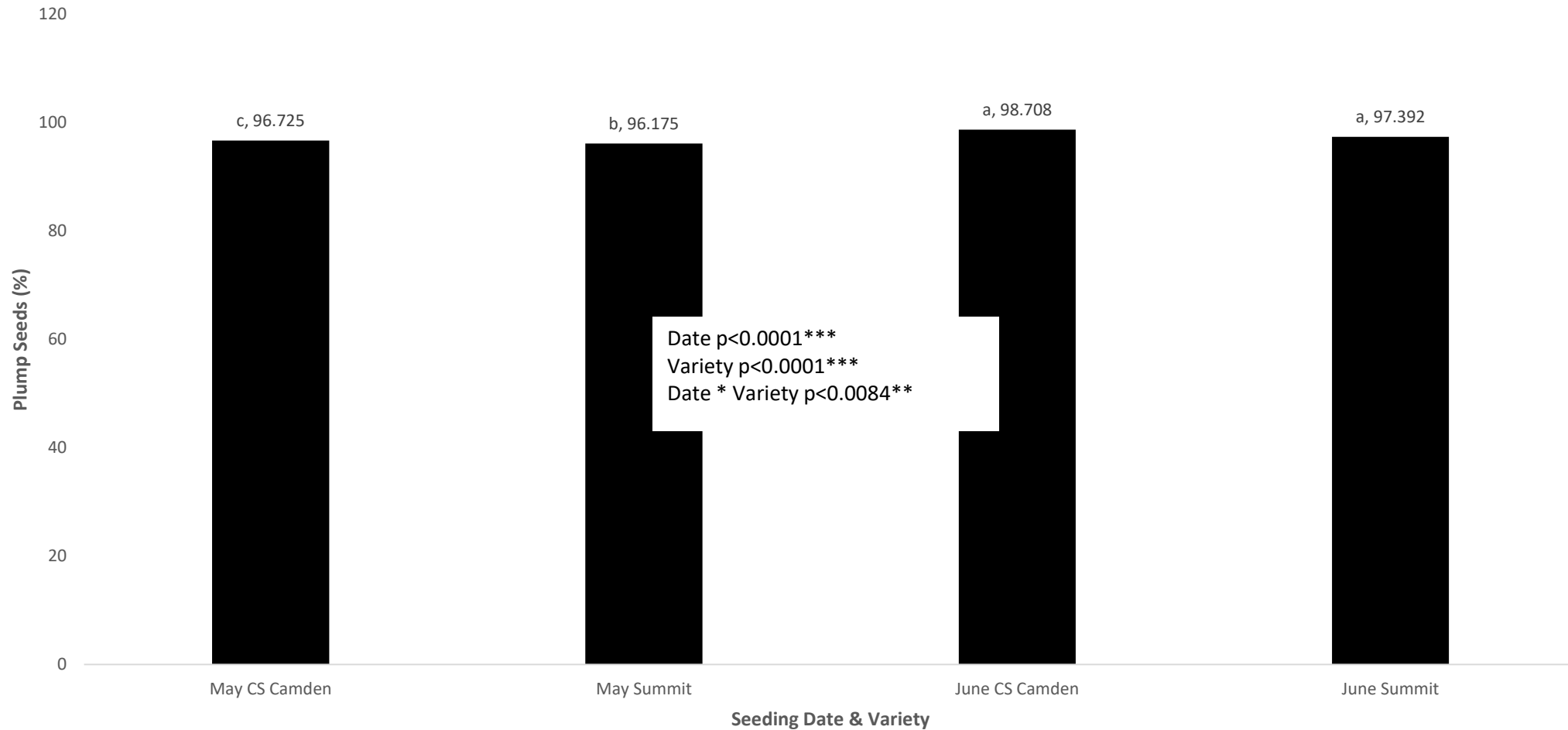


# Maintaining Acceptable Test weights for Milling Oats

Date  $p < 0.0001^{***}$   
Variety  $p < 0.0007^{**}$   
Date \* Variety  $p < 0.0485^*$



# Maintaining Acceptable Test weights for Milling Oats



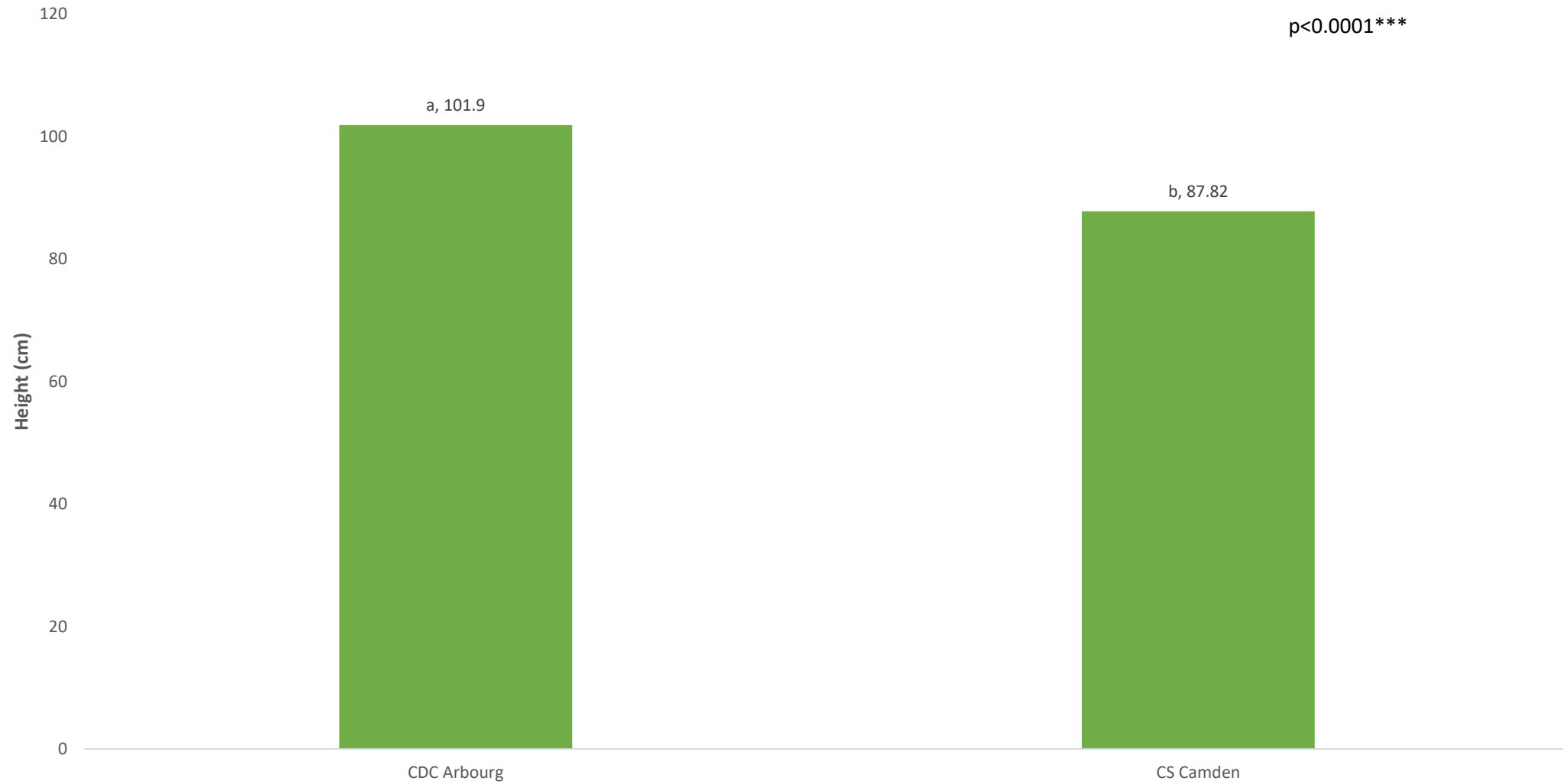


# PGR Application in Oats

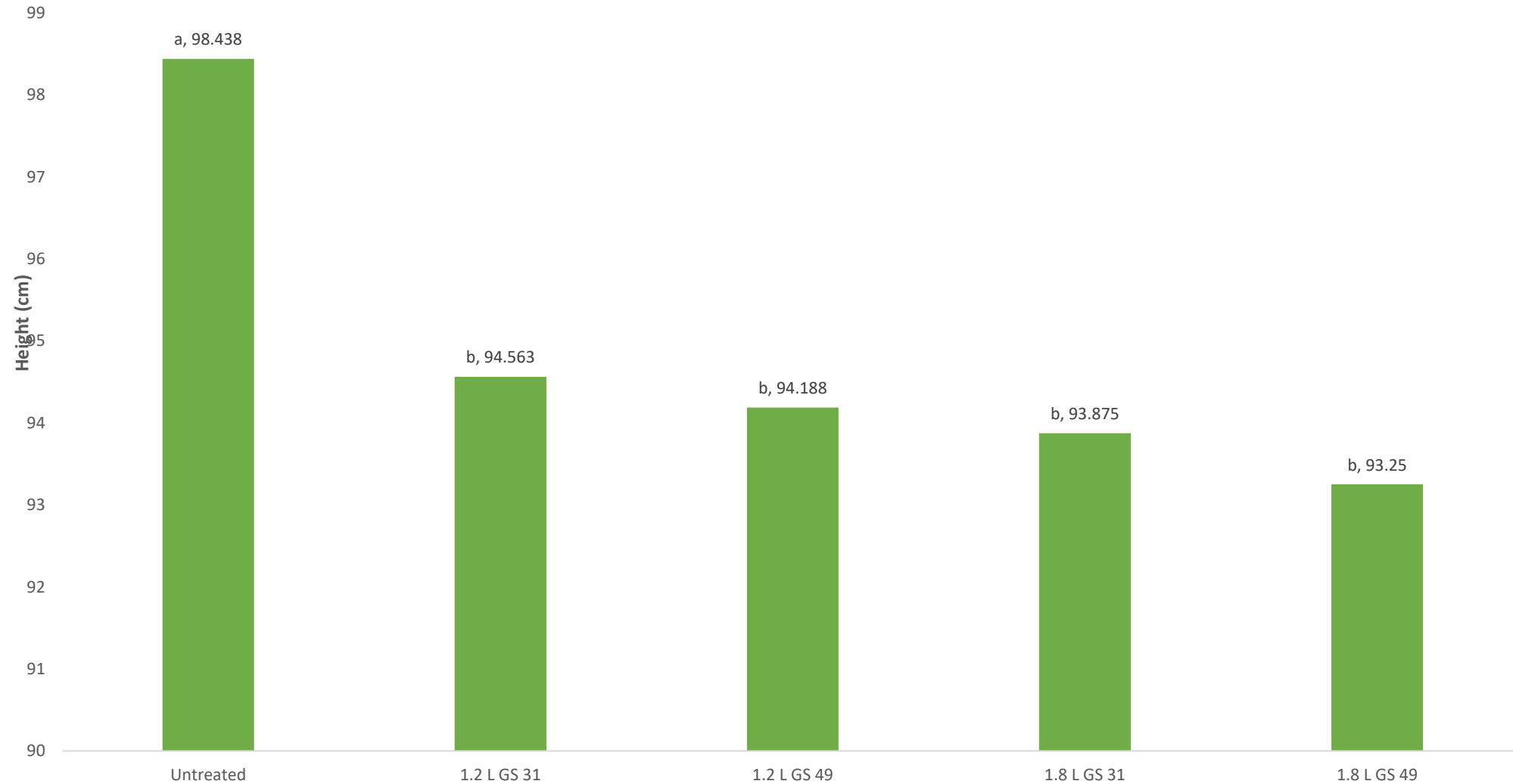
- Illustrate the response of oats to Manipulator application at different rates and timings and continue to build varietal response data.

Variety	PGR Rate	PGR Timing
CS Camden/CDC Arbourg	Untreated	None
	1.24 L/ha	1-2 nodes
	1.8 L/ha	1-2 nodes
	1.24 L/ha	Flag Leaf
	1.8 L/ha	Flag Leaf

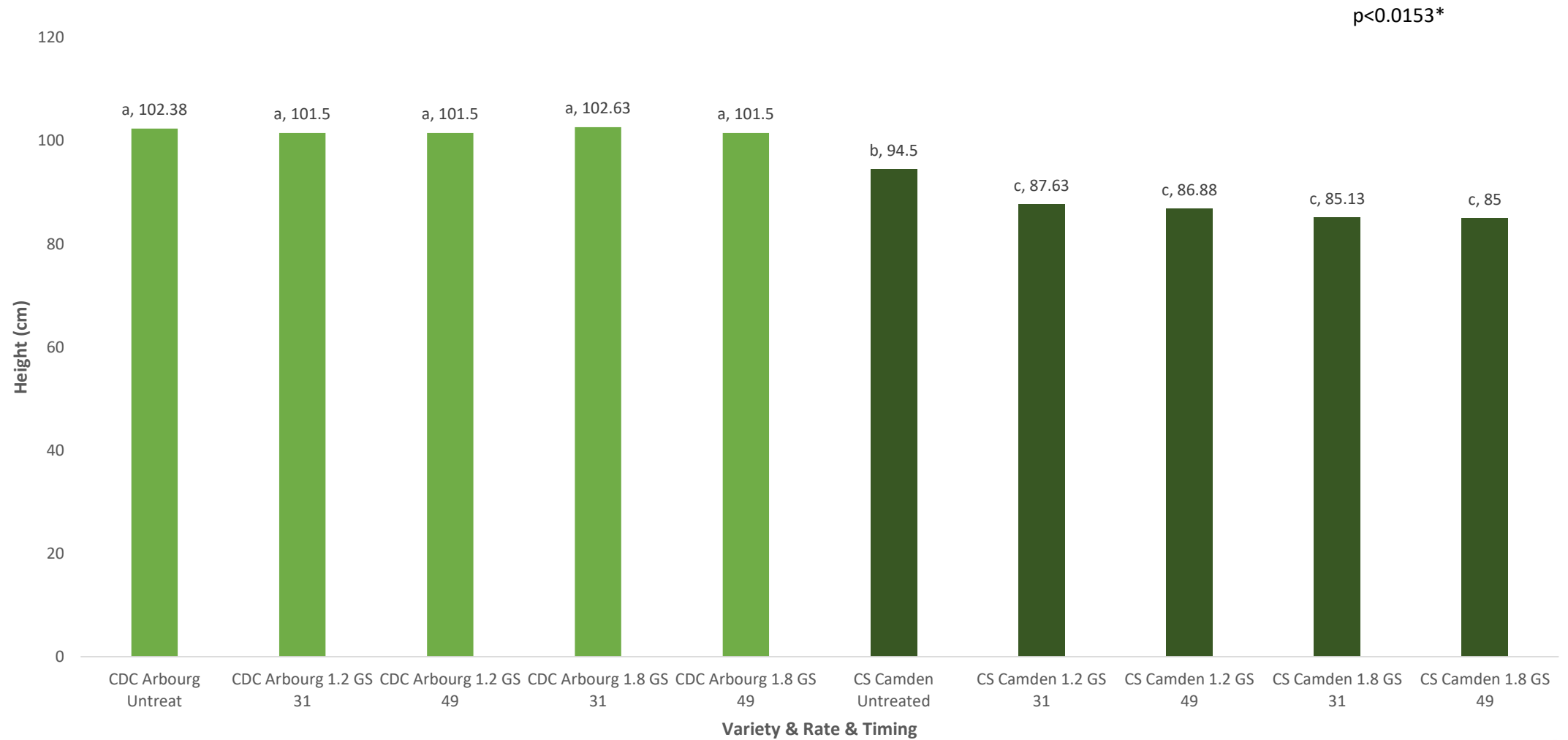
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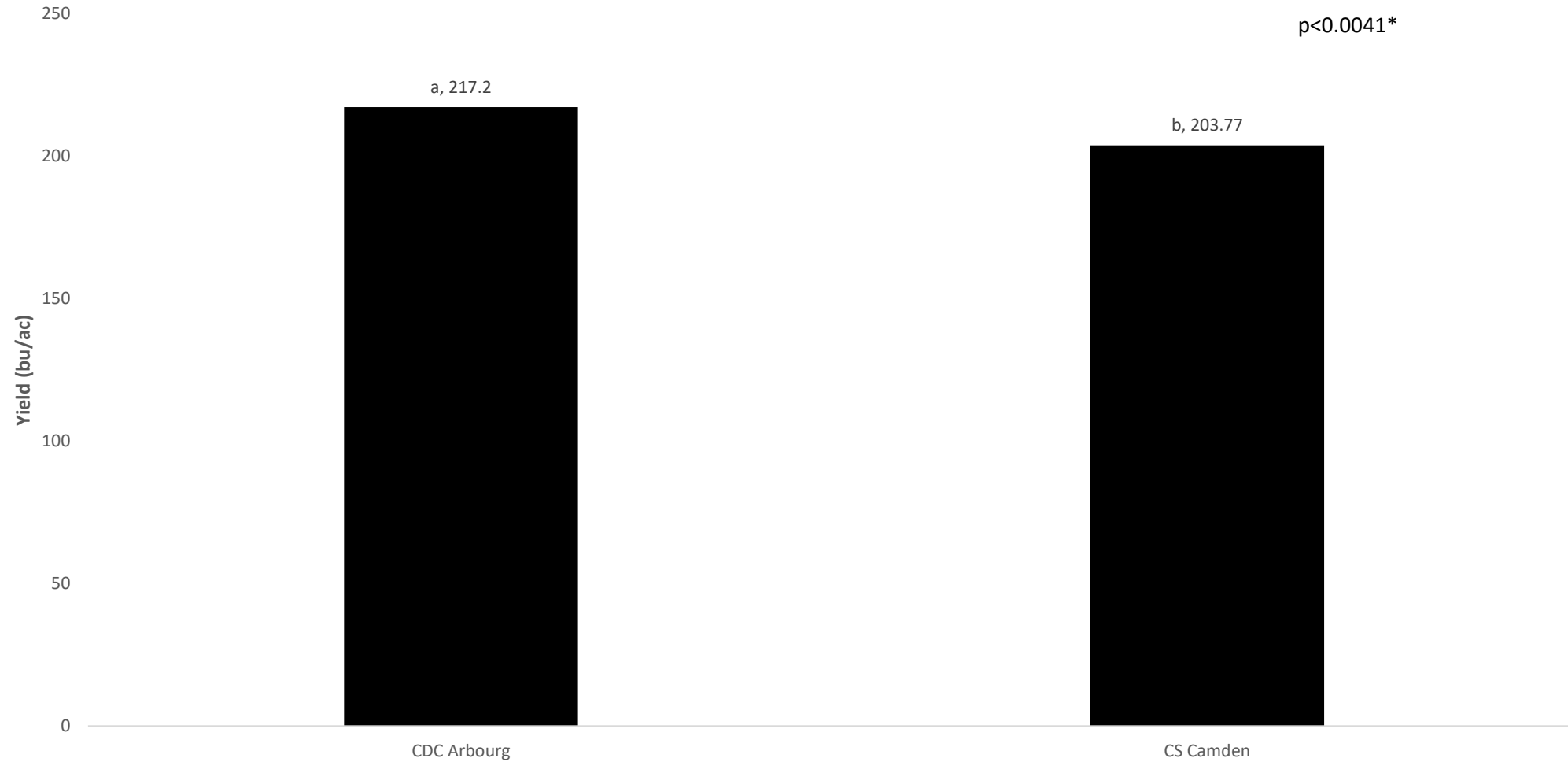
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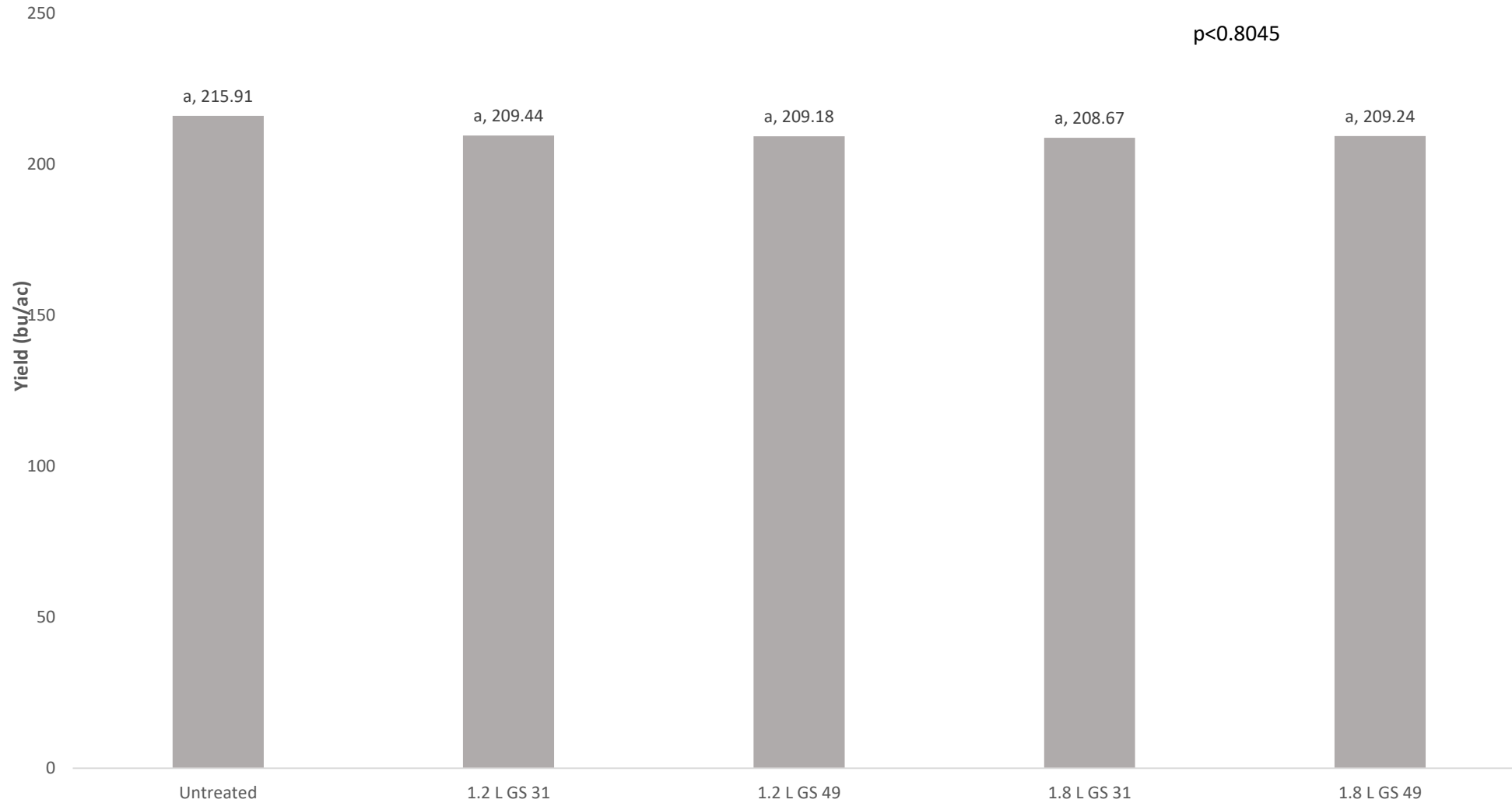
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# Oat Pea Intercropping

Combination	Pea Seeding Rate	Oat Seeding Rate
Intercrop	80	25
Intercrop	80	50
Intercrop	80	75
Intercrop	80	100
Intercrop	80	125
Monocrop (oat)	0	200
Monocrop (pea-weed free)	80	0
Monocrop (pea- weedy check)	80	0



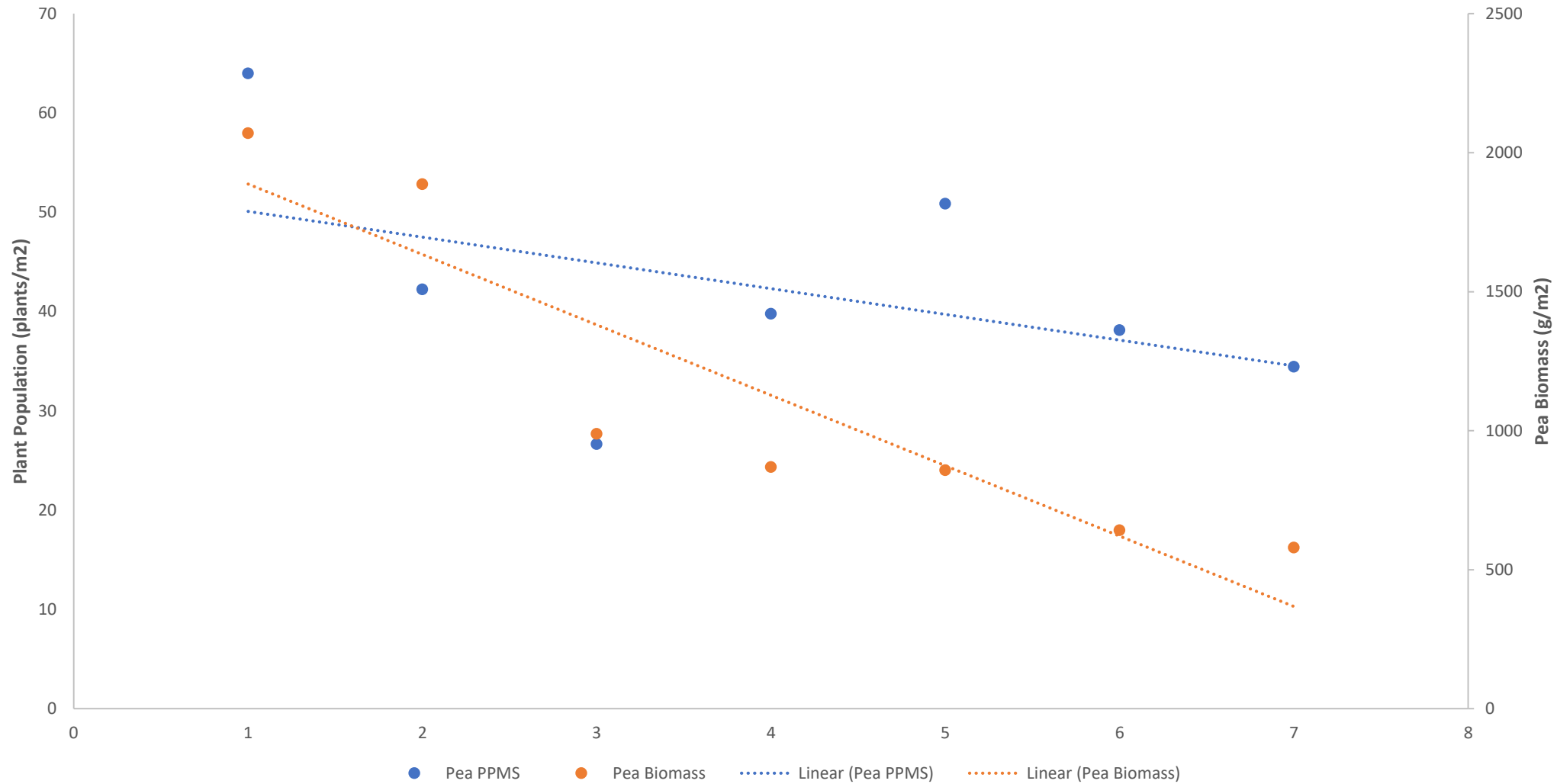
# Oat Pea Intercropping

- Plant density, weed biomass, crop biomass, crop height, weed control, quality
- Lodging: had significant issues in Melfort, peas dragged down the oats, instead of the oats keeping the peas upright
  - Change in optimal density of pea rather than oats?

# Oat Pea Intercropping

- Maturity: gap in maturity can be a deal breaker!
  - Over a month at Melfort, half a month at Redvers
  - Peas rotted or pods shattered in intercrop mixtures prior to oat maturity
  - Okay if doing as a silage mixture, maybe not so for grain production in high moisture environments
- Of the 6 sites, 3 went to yield.
  - Outlook: Marrowfat peas were out-competed by oats.
  - Prince Albert: deer enjoyed the tasty combination
  - Melfort: eager swather operator
  - Redvers: birds would sit on the peas and eat the oats = lower oat yields than expected
  - Yield data pending

# Oat Pea Intercropping



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