

# Neonicotinoid Education & Research

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# Impact of Treated Seed on Plant Stands

- **Borderview Research Farm: Year 1**

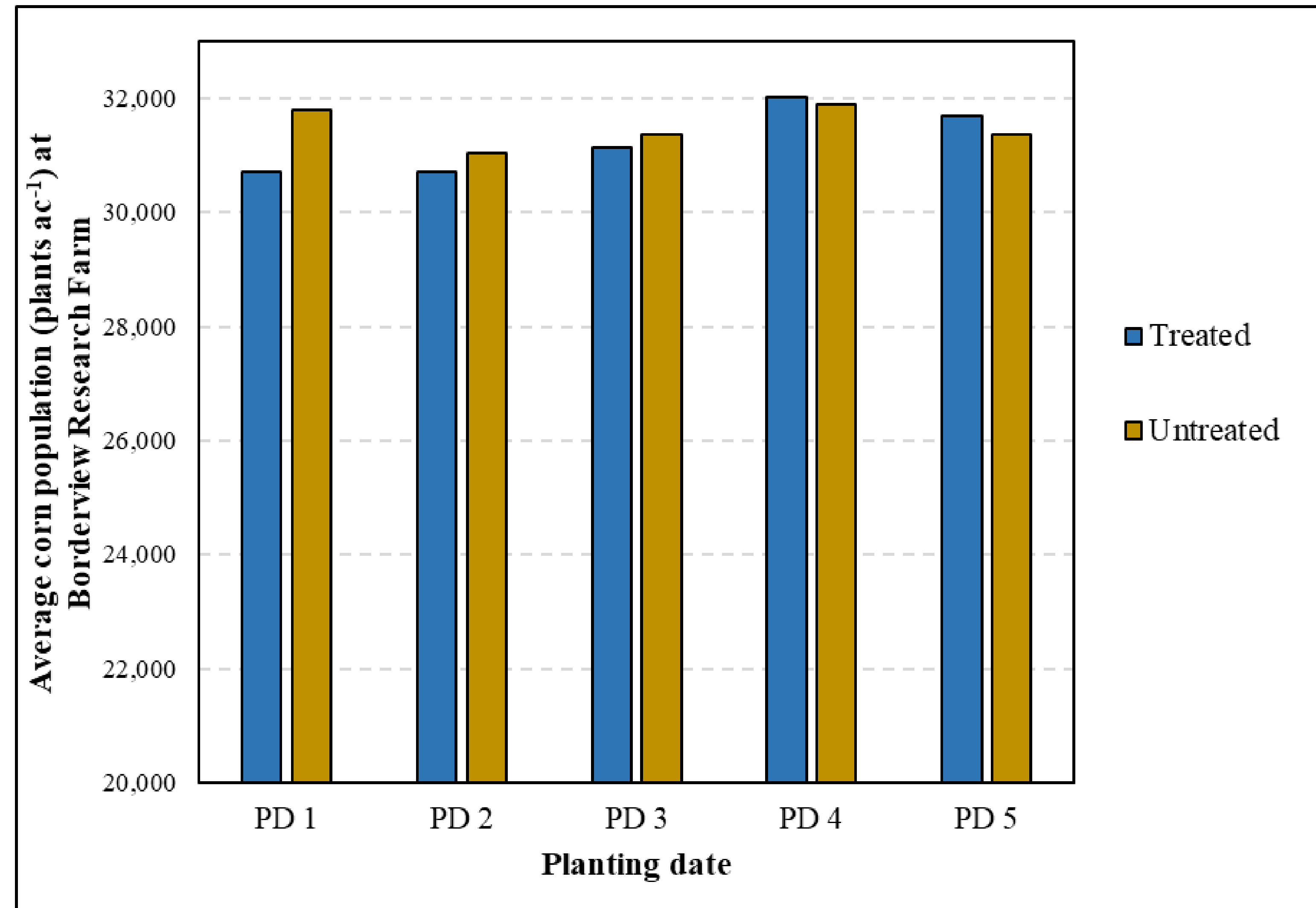
- Replicated trial
- Two treatments: treated and untreated
- Five planting dates (6<sup>th</sup> eliminated due to planting error)
- Soil & crop measurements

Planting date number	Planting date
PD 1	10-May
PD 2	16-May
PD 3	26-May
PD 4	1-June
PD 5	9-June
PD 6	16-June





# Impact of Treated Seed on Plant Stands

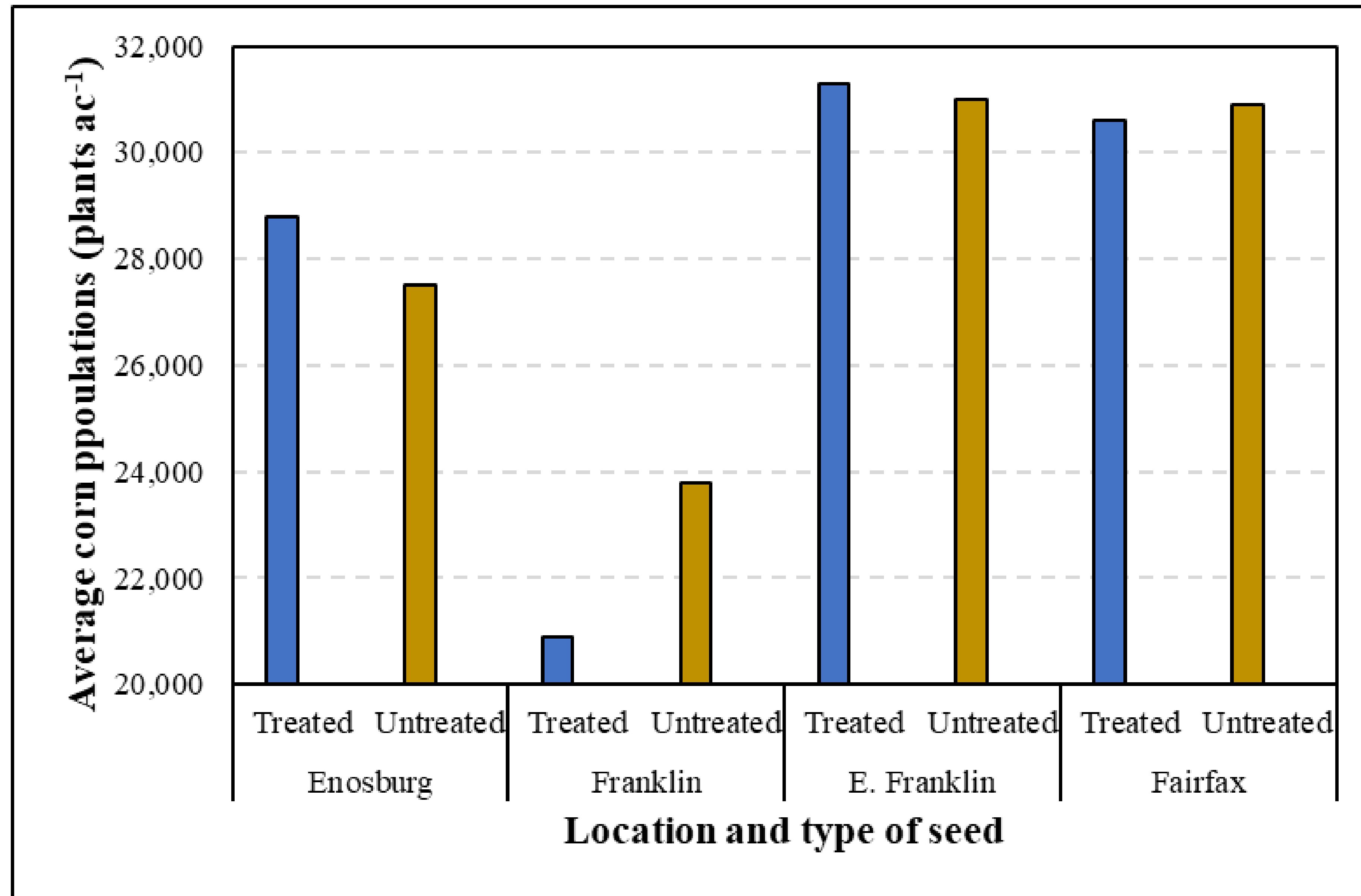


No statistical difference in corn populations between treated and untreated corn seed.





# Impact of Treated Seed on Plant Stands

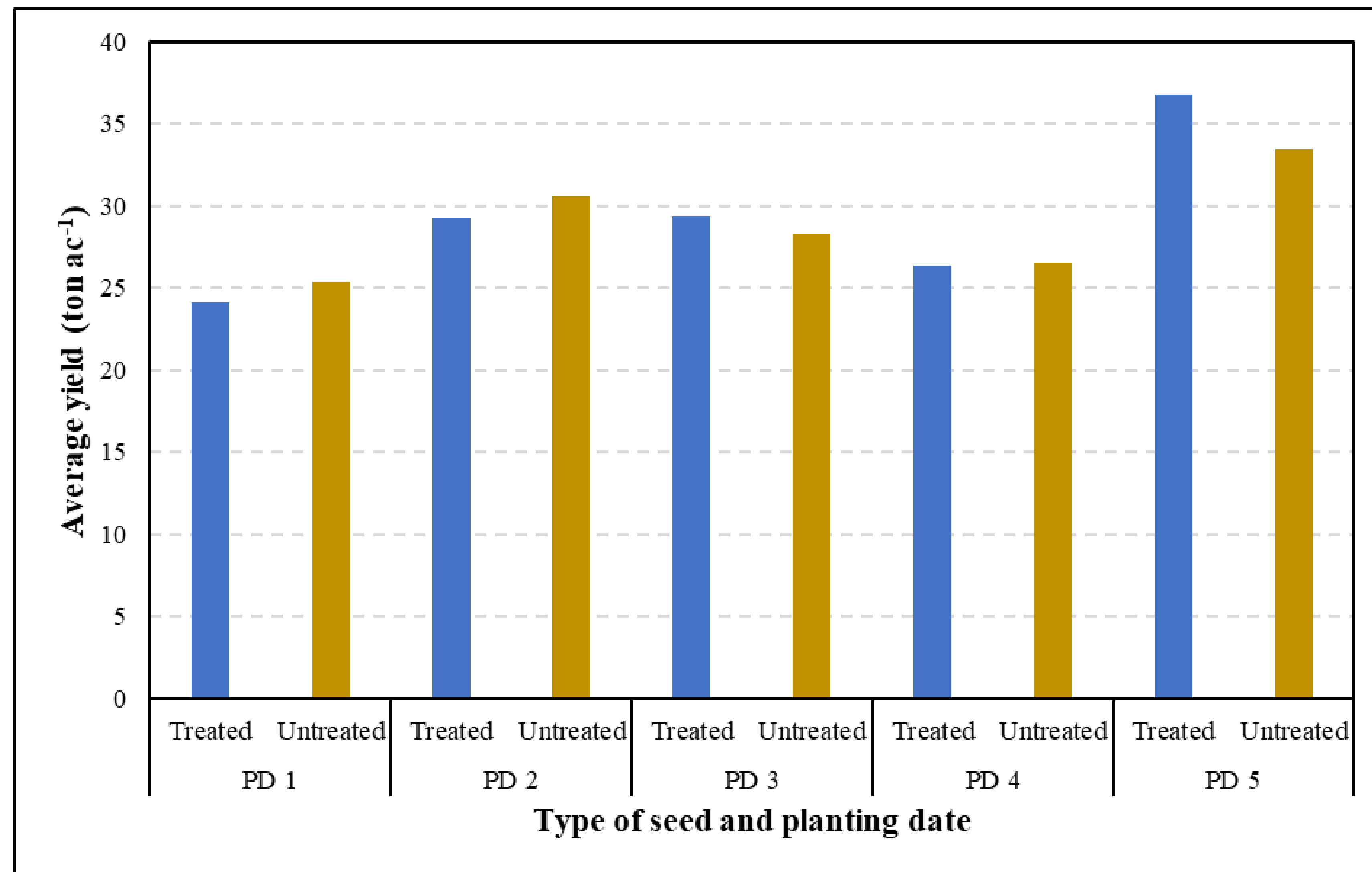


On-farm sites (one planting date) observes some differences in populations; however, related to bird damage and dry conditions at planting.





# Impact of Treated Seed on Yields

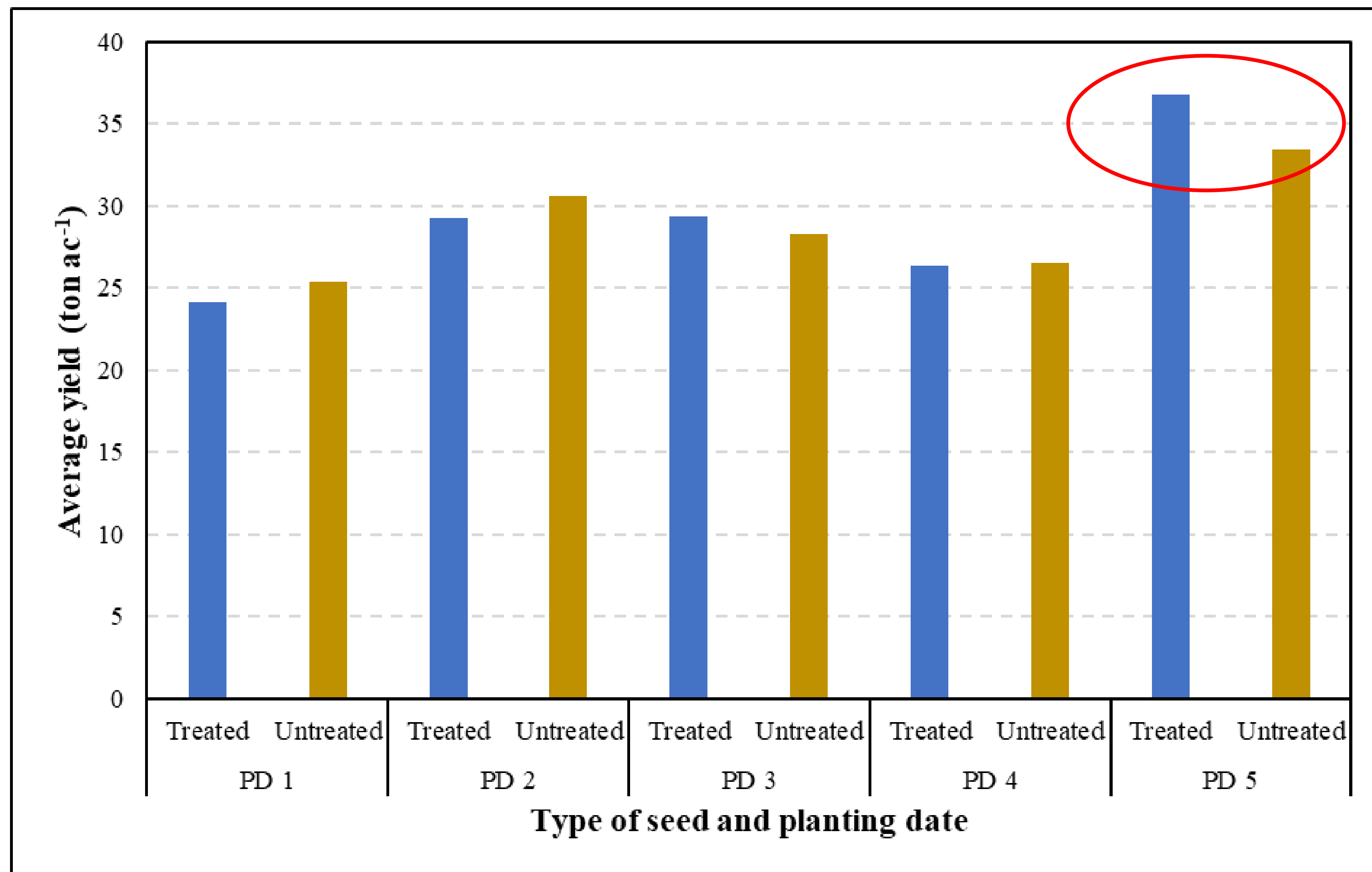


No statistical difference in corn yields between treated and untreated corn seed.





# Impact of Treated Seed on Yields

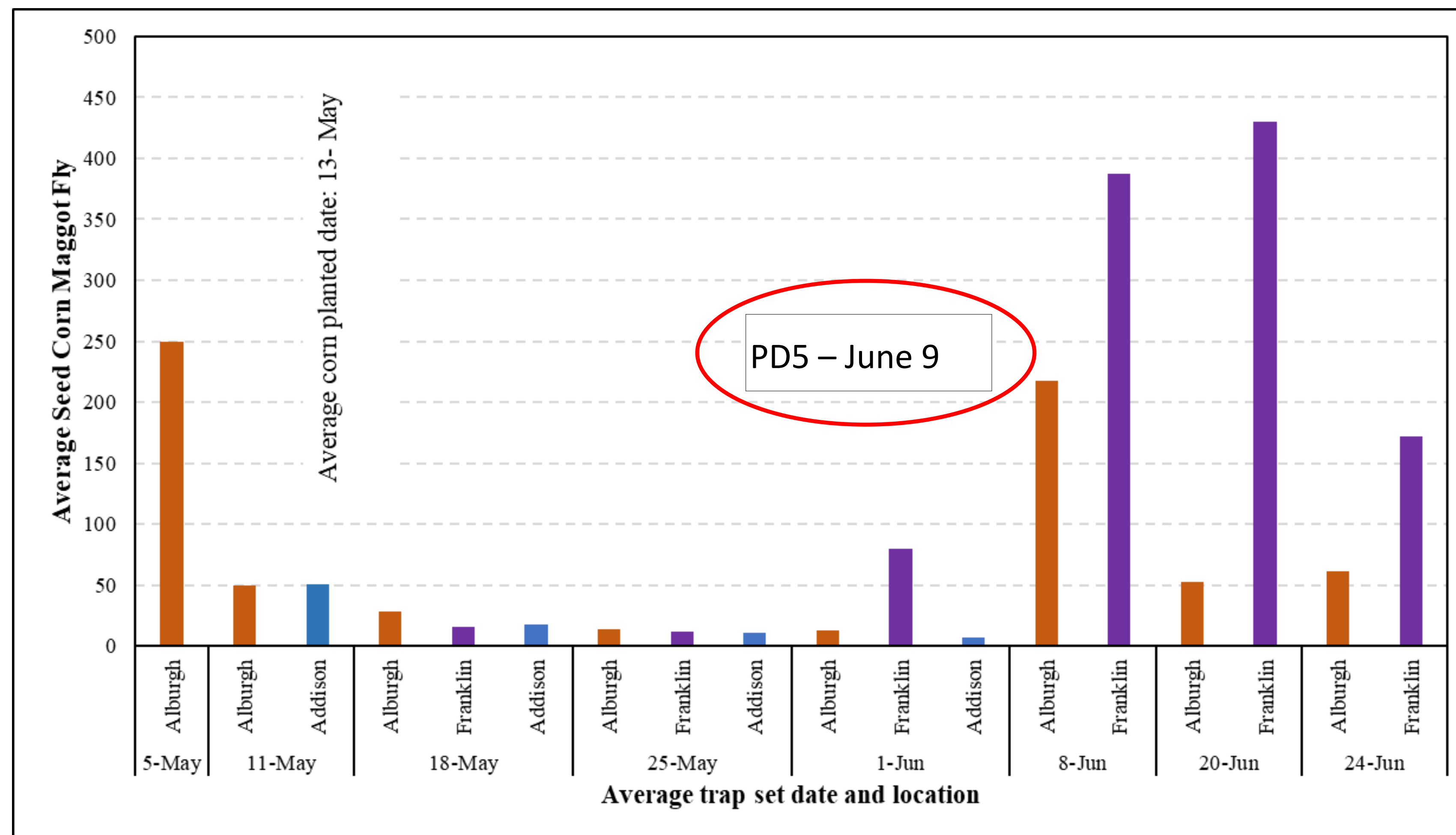


What about planting date 5? This is a 4-ton yield difference!





# Corn Seed Maggot Flies



Seed corn maggot flight recorded on 8-Jun. Did this impact the corn yield at this planting date?





# Frequency and concentration of clothianidin at different soil depths prior to corn planting, Alburgh, VT, 2023.

Soil type: Benson rocky silt loam, over shaly limestone

Crop history: No direct use of neonicotinoid seed treatments in 15 years. Previous crops include hemp grain & fiber, summer annuals, milkweed. Equipment for planting same as corn in some cases.

	<i>0 - 2.5 in.</i>		<i>2.5 - 6 in.</i>	
	Detects <sup>†</sup>	Average concentration <sup>‡</sup>	Detects	Average concentration
	%	ppb	%	ppb
Pre-plant (9-May)	0	n/a	75	6.0

<sup>†</sup> The number of samples with concentration greater than reporting limit (2.0 ug/kg or ppb) divided by total number of samples (n=4), reported as a percentage of samples where analyte was detected.

<sup>‡</sup> Average concentration of samples where concentration was greater than reporting limit.





# Frequency and concentration of clothianidin in soil 41 days after planting , Alburgh, VT, 2023.

Soil type: Benson rocky silt loam, over shaly limestone

Crop history: No use of neonicotinoid seed treatments in 15 years  
Previous crops include hemp grain & fiber, summer annuals, milkweed

	<i>0 - 6 in.</i>	
	Detects <sup>†</sup>	Average concentration <sup>‡</sup>
	%	ppb
41 days after planting	100	11.3

<sup>†</sup> The number of samples with concentration greater than reporting limit (2.0 ug/kg or ppb) divided by total number of samples (n=4), reported as a percentage of samples where analyte was detected.

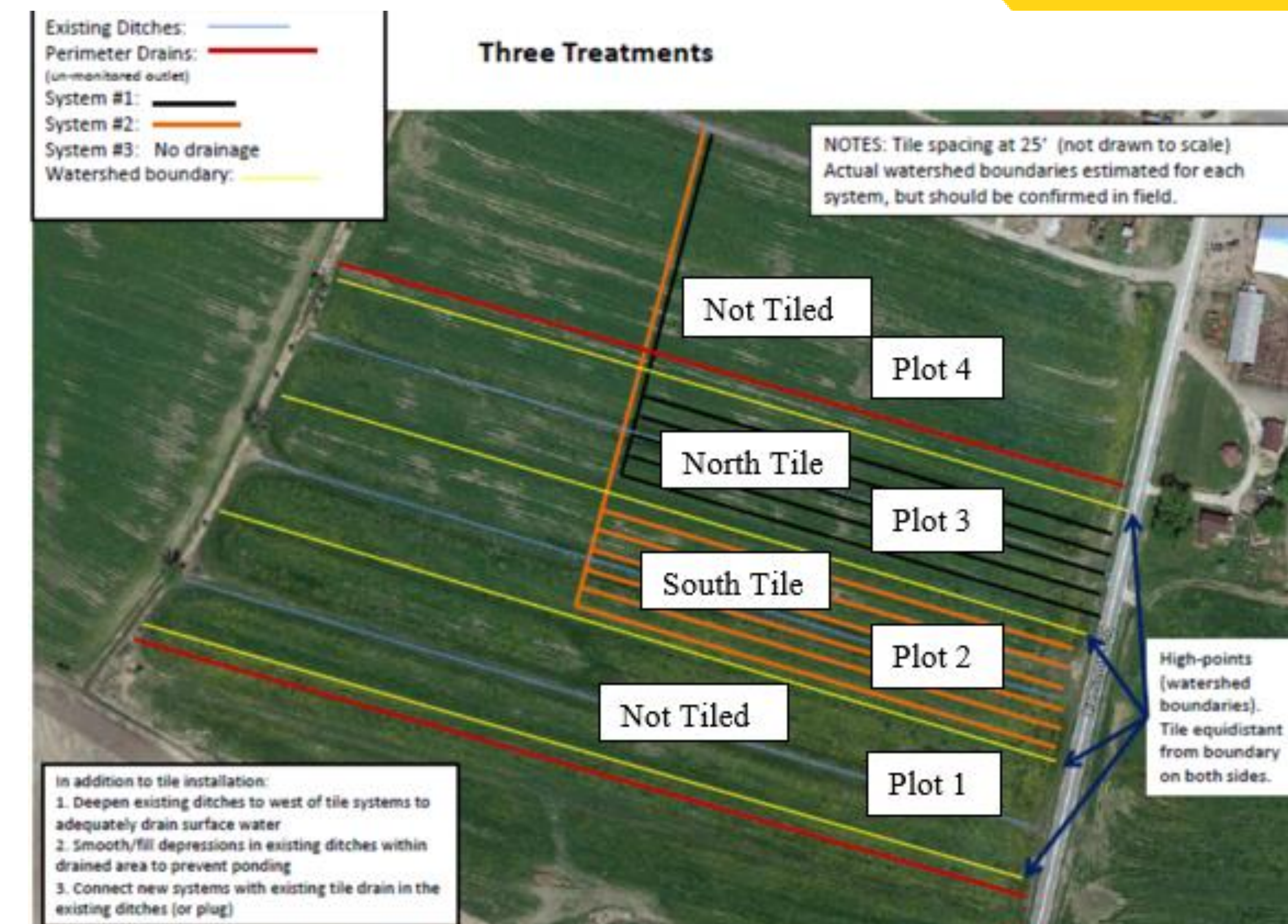
<sup>‡</sup> Average concentration of samples where concentration was greater than reporting limit.



## Scope of Work: VAAFM & LCBP

- **Discovery Acres**

- Assess the impact of management methods on water quality (N&P).
- Neonicotinoid movement in surface and subsurface water.





# Frequency and concentration of clothianidin at different soil depths prior to corn planting, St. Albans, VT, 2023.

<i>0 - 2.5 in.</i>		<i>2.5 - 6 in.</i>	
Detects <sup>†</sup>	Average concentration <sup>‡</sup>	Detects	Average concentration
%	ppb	%	ppb
87.5	3.95	43.4	4.65

Soil type: Covington clay, poorly drained.

Crop history:  
3<sup>rd</sup> year of corn silage with cover crop

Historic use of neonicotinoid treated seed

Previous crop- alfalfa

<sup>†</sup> The number of samples with concentration greater than reporting limit (2.0 ug/kg or ppb) divided by total number of samples (n=8), reported as a percentage of samples where analyte was detected.

<sup>‡</sup> Average concentration of samples where concentration was greater than reporting limit.





# Frequency and concentration of clothianidin in soil 37 days after planting, St. Albans, VT, 2023.

	<i>0 - 6 in.</i>	
	Detects <sup>†</sup>	Average concentration <sup>‡</sup>
	%	ppb
37 days after planting	94.0	3.72

Soil type: Covington clay, poorly drained.

Crop history:  
3<sup>rd</sup> year of corn silage with cover crop

Historic use of neonicotinoid treated seed

Previous crop- alfalfa

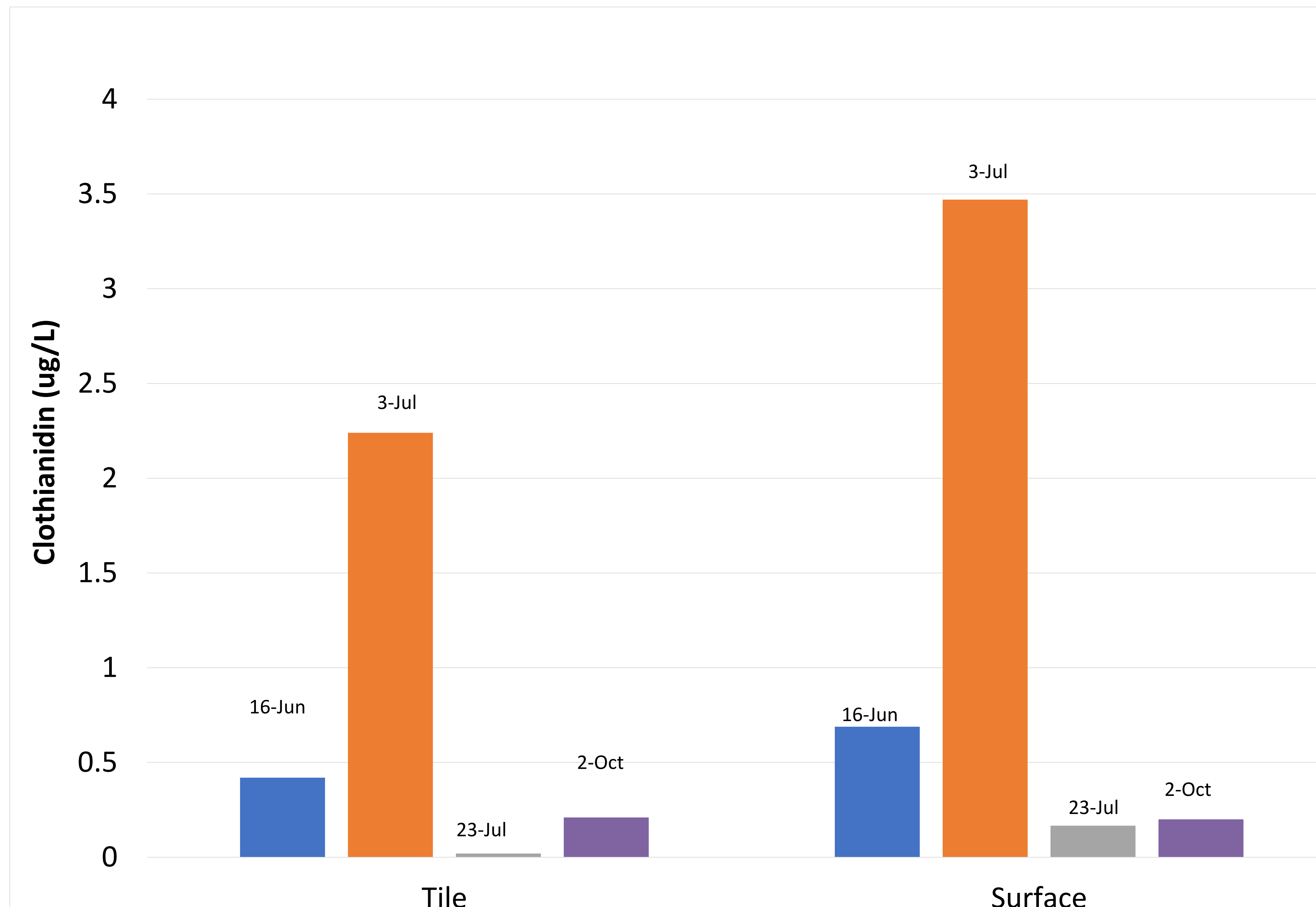
<sup>†</sup> The number of samples with concentration greater than reporting limit (2.0 ug/kg or ppb) divided by total number of samples (n=8), reported as a percentage of samples where analyte was detected.

<sup>‡</sup> Average concentration of samples where concentration was greater than reporting limit.





# Concentration of clothianidin in Tile & Surface water post corn planting, St. Albans, VT, 2023.



Samples with concentration greater than reporting limit (0.0500 ug/L).

\*This is not the loading rate just concentrations from single samples taken from surface or tile when there was water moving off from surface or out of the tiles.



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