Integrated management of **Aphanomyces and Fusarium root rot** in field peas: (2) Fungicide seed treatment

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in collaboration with Edson Ncube and Audrey Kalil, NDSU Williston Research Extension Center

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Northern Pulse Growers Association

North Dakota Department of Agriculture Pesticide Harmonization and Registration Board

USDA Specialty Crop Block Grant Program administered by the

North Dakota Department of Agriculture




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BASF, Bayer, Corteva, FMC, Gowan, Syngenta, and other private-sector partners

Research methods:

Study design:

Randomized studies with six replicates (randomized complete block with a split-split-plot arrangement, main factor = plant date, sub-factor = variety, sub-sub-factor = seed treatment)

Plots 5 ft x 30 ft at planting, 5 ft x approx. 20 ft at harvest.

Plots consist of 7 rows, each 7.5 or 7.0 inches apart

Seeding rate = 330,000 viable seeds/ac

Data collection:

Root rot: assessed at early to mid vegetative growth (4-10 nodes). The percent of the epicotyl + top 2.5 cm of the tap root diseased; assessed on 16, 36, 40, or 50 roots/plot, depending on study and planting date. Half of the roots were collected from each plot end outside of the area assessed for yield.

Wilt: assessed at mid to late pod-fill. A visual estimate of the percent of the plants exhibiting root rot associated wilt symptoms. This was always assessed at a consistent growth stage across field pea varieties within each planting date.

Within each study, every effort was made to assess root rot and wilt at a consistent growth stage across every planting date and every field pea variety.

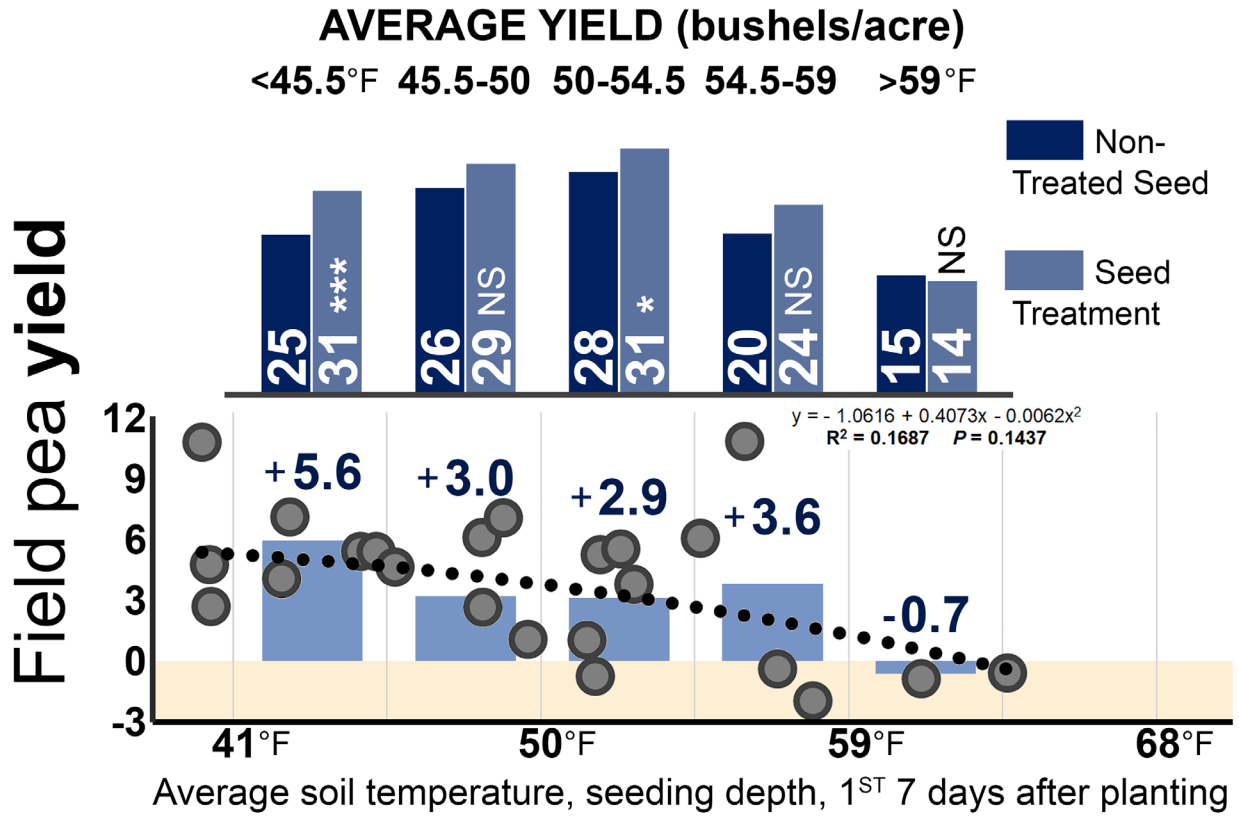
Yield: moisture was assessed at harvest and yields are reported at a standard 13.5% moisture

Efficacy of fungicide seed treatments:
Fields with long history of pea and/or lentil production

Fields with elevated root rot pressure caused by a long history of field pea and lentil production.
Williams, Mountrail and McLean Counties (2019, 2020); Foster County (2017-2020)

IMPACT OF SEED TREATMENT ON YIELD

Seed treatment with **Obvius (4.6 fl oz/cwt)** conferred average yield gains of **3.3 to 5.7 bu/ac** when soil temp. was <50°F in the first 7 days after planting (soil temp. at 2-inch depth).



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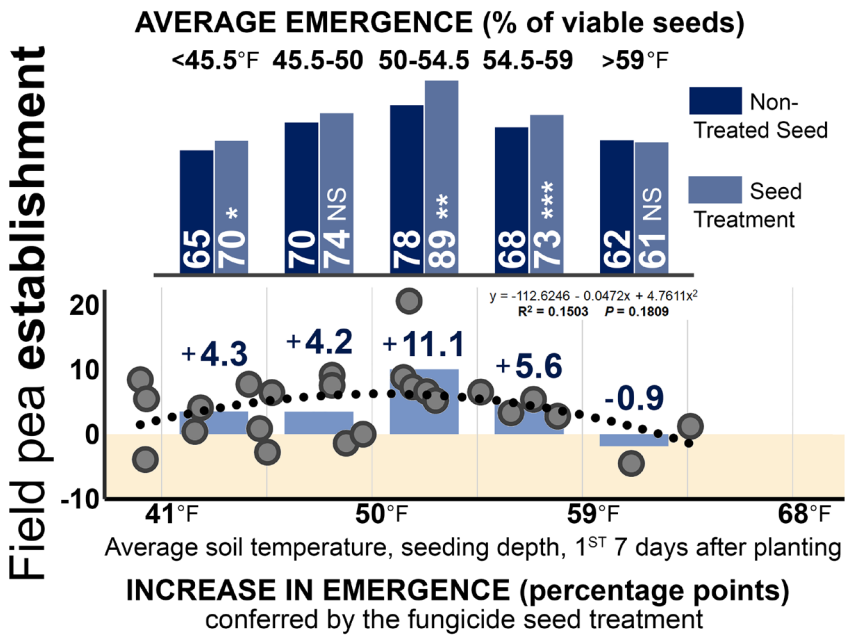
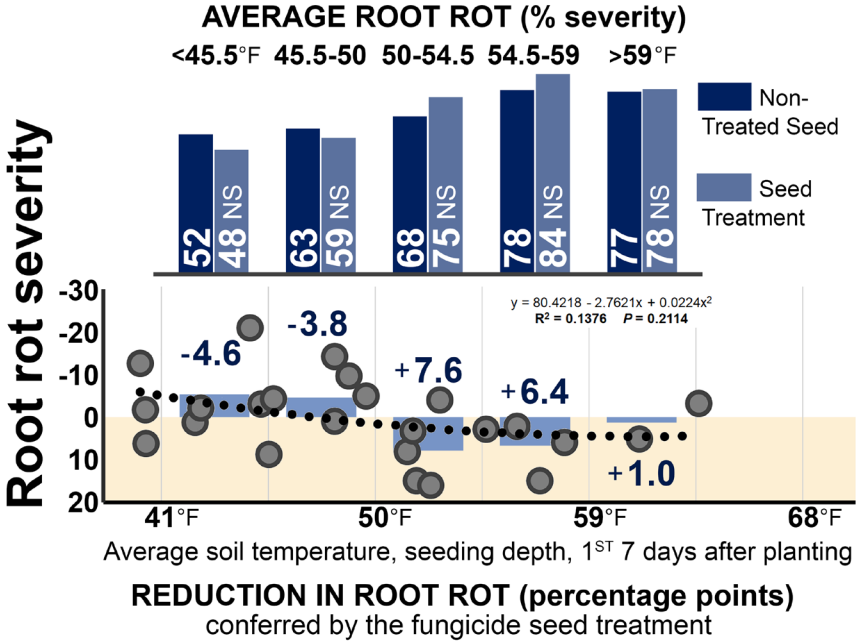
SEED TREATMENT WITH OBVIUS (4.6 FL OZ/CWT):

Yield gains from the seed treatment were conferred primarily by improvements in field pea establishment, not reductions in root rot.

Impact of seed treatment with Obvius (4.6 fl oz/cwt) on **emergence** and **root rot severity**:





Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

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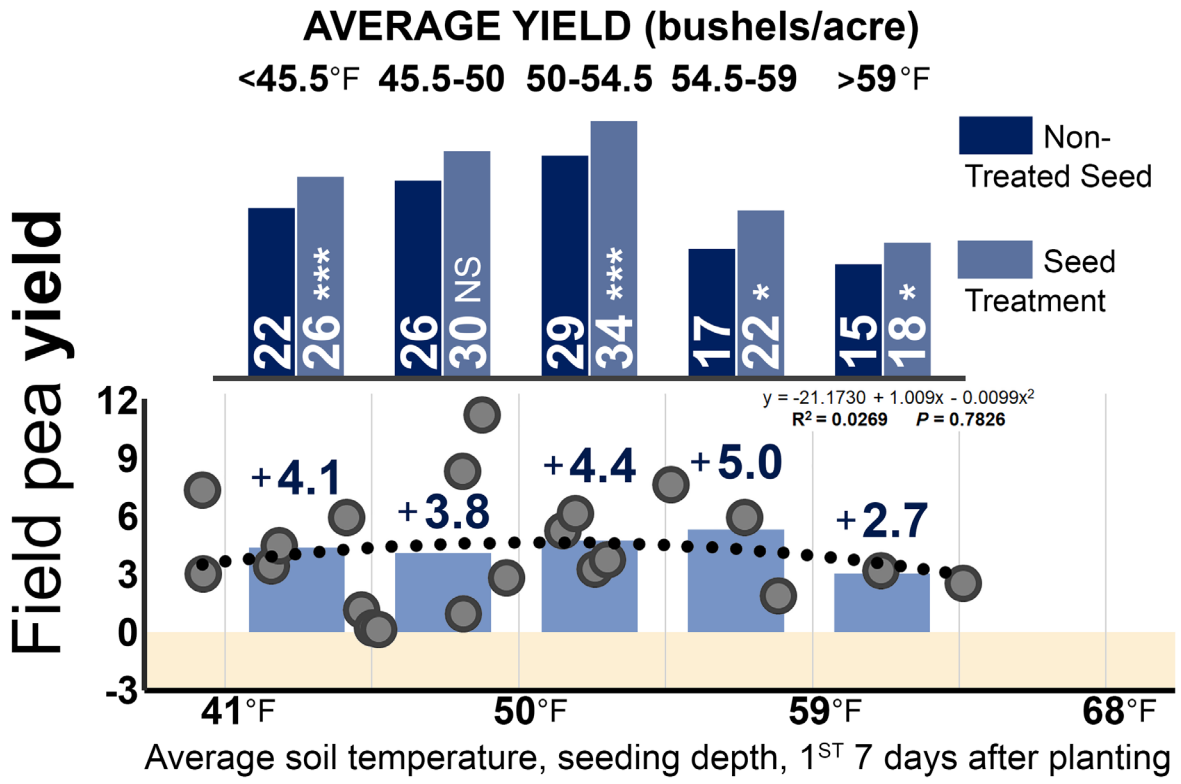
IMPACT OF SEED TREATMENT ON YIELD

Seed treatment with **Xtend C** (0.38 fl oz/cwt) + **Proline** (0.26 fl oz/cwt) + **Allegiance** (0.25 fl oz/cwt) conferred average yield gains of **3.8 to 5.0 bu/ac** when soil temp. was <59°F in the first 7 days after planting (soil temp. at 2-inch depth).



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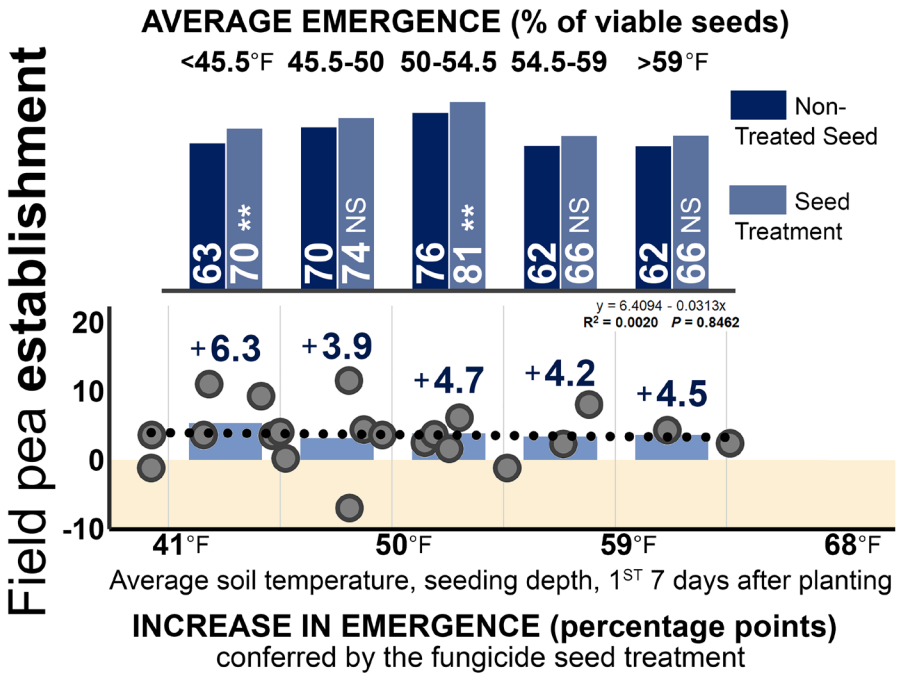
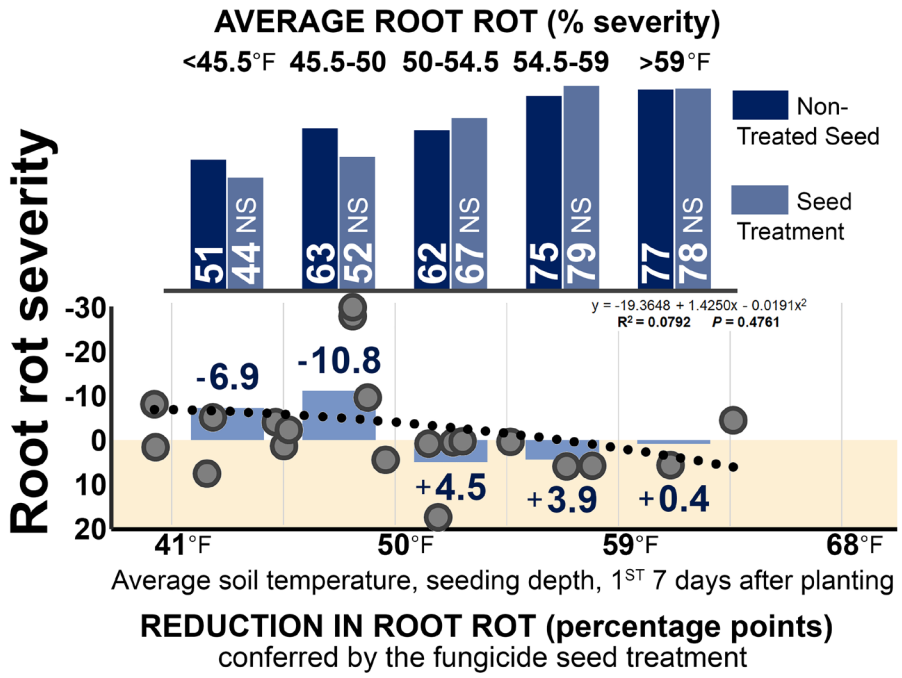
Impact of seed treatment with Xtend C + Proline + Allegiance on **emergence** and **root rot**:





Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Efficacy of fungicide seed treatments:
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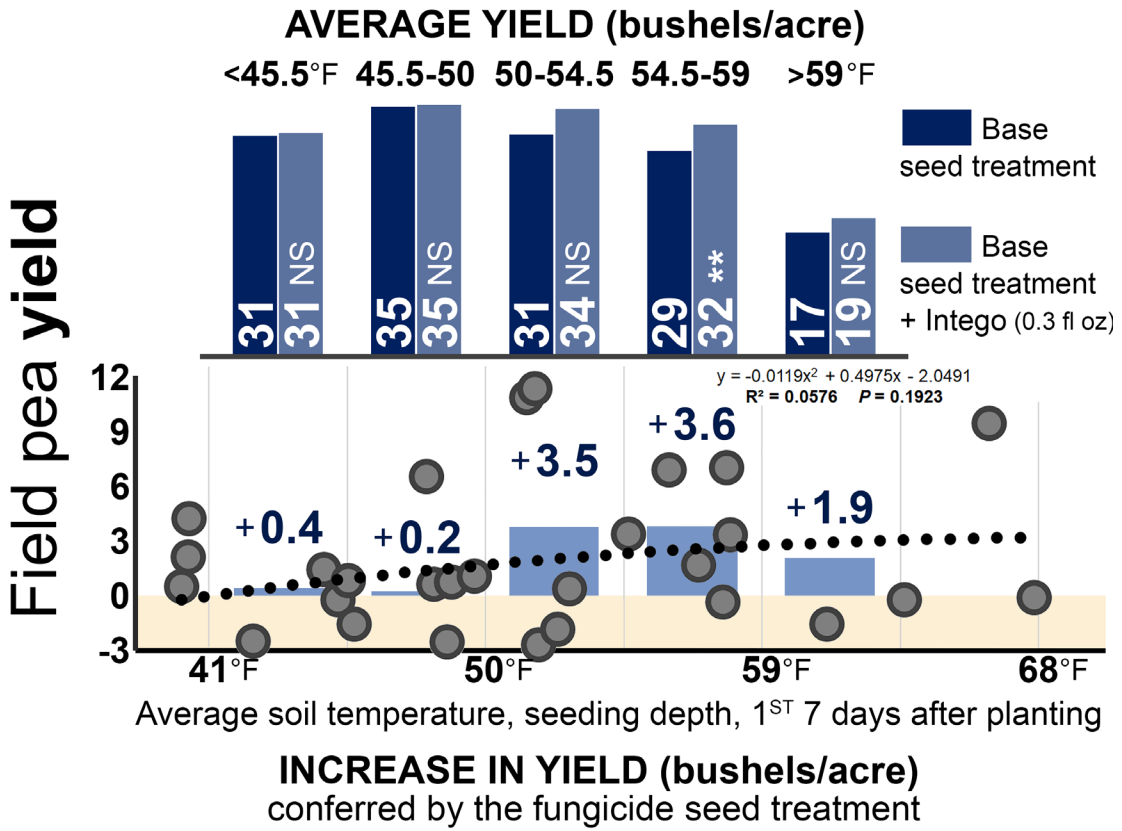
Seed treatment with **Intego Solo** (0.3 fl oz/cwt) only conferred consistent yield gains when soil temperature was 55-59°F in the first 7 days after planting (soil temp. at 2-inch depth).
HIGHER YIELDS WERE ACHIEVED BY PLANTING INTO COOLER SOILS WITHOUT INTEGO.

Intego Solo was tested as an addition to seed treatment packages with efficacy against Pythium, Rhizoctonia, Fusarium and insect pests.



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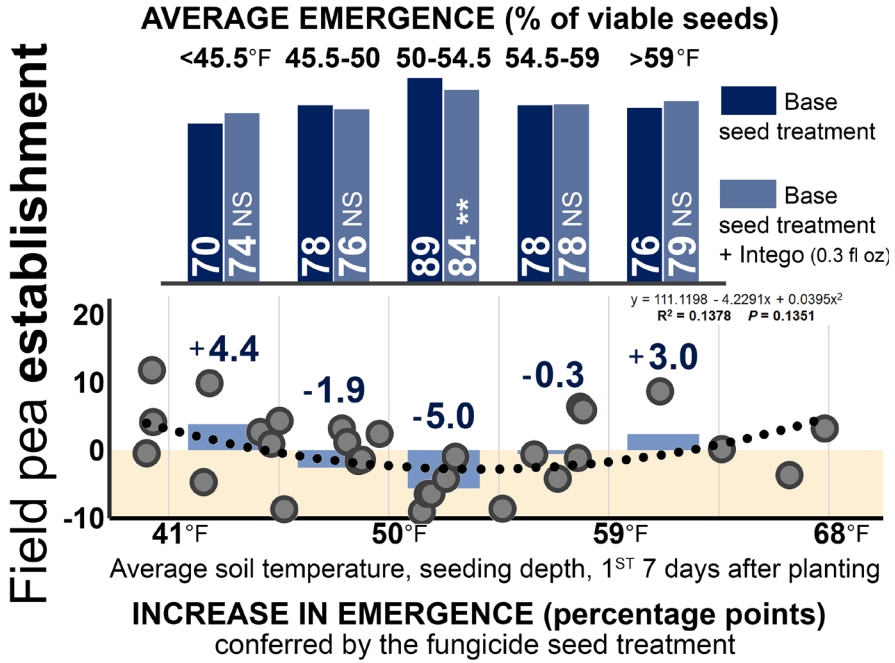
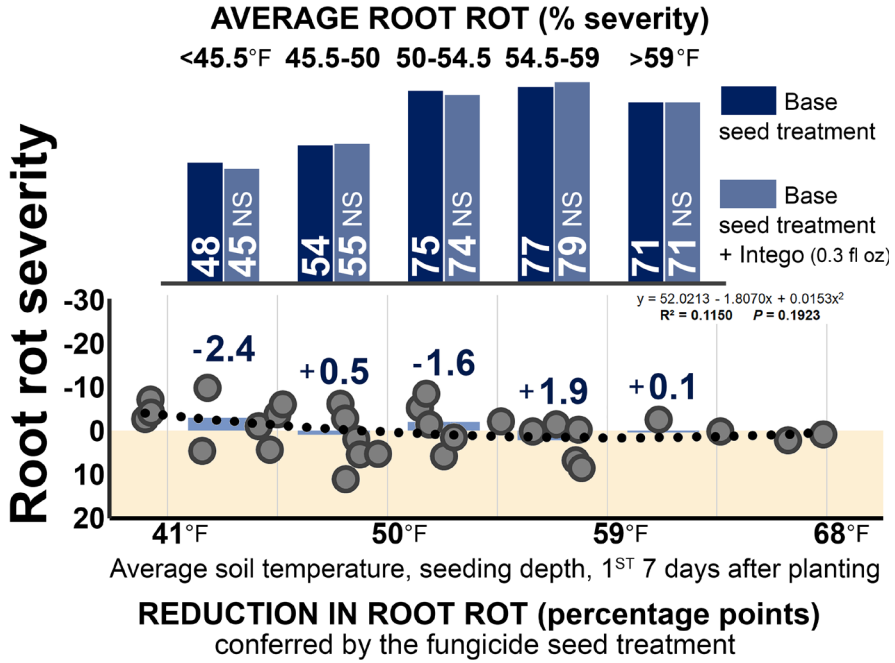
ADDING INTEGO SOLO (0.3 fl oz/cwt) to a base seed treatment with efficacy against Rhizoctonia, Pythium and insect pests:

Intego solo had little or no effect on root rot severity, and increased field pea establishment only under very cool or very warm soils (highly favorable for Pythium or Aphanomyces).

Intego Solo exhibits moderate phytotoxicity to field peas and should not be applied above 0.4 fl oz/cwt. The reduction in field pea emergence observed at 50-54.5°F, soil temperatures not favorable for the pathogens controlled by Intego (Pythium and Aphanomyces), is a reflection of this moderate phytotoxicity

Impact of seed treatment with Intego Solo on **emergence** and **root rot severity**:





Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Impact of cropping history on the impact of

Fungicide seed treatment with active ingredients targeting Rhizoctonia and Fusarium

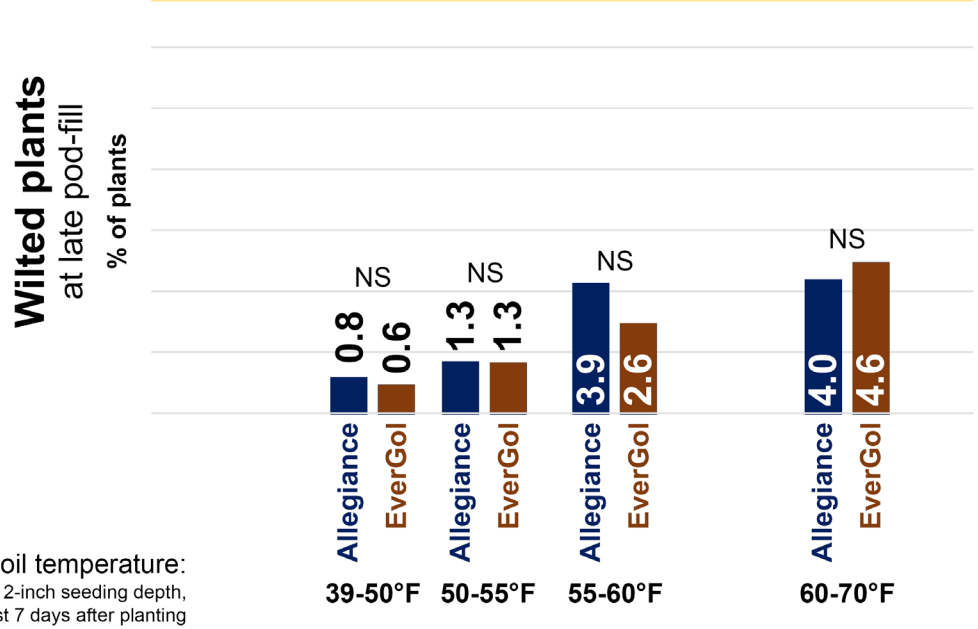
Allegiance:
Metalaxyl

Evergol Energy:
Metalaxyl + Penflufen + Prothioconazole

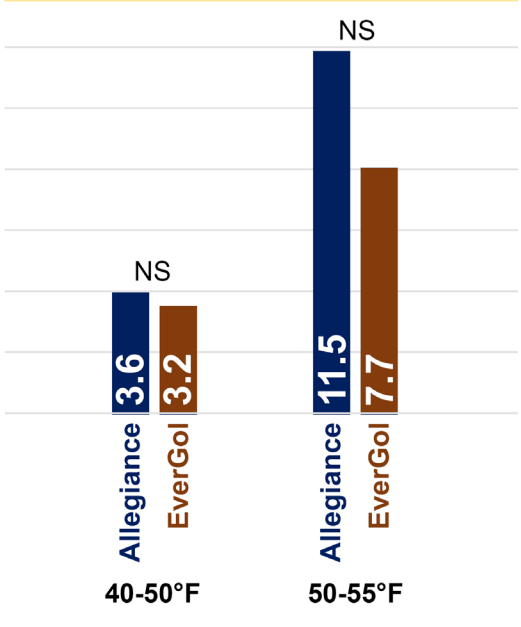
Study locations, years:
Studies conducted in fields without a long history of pea or lentil production: Carrington (2018, 2019) and Williston (2018, 2019).

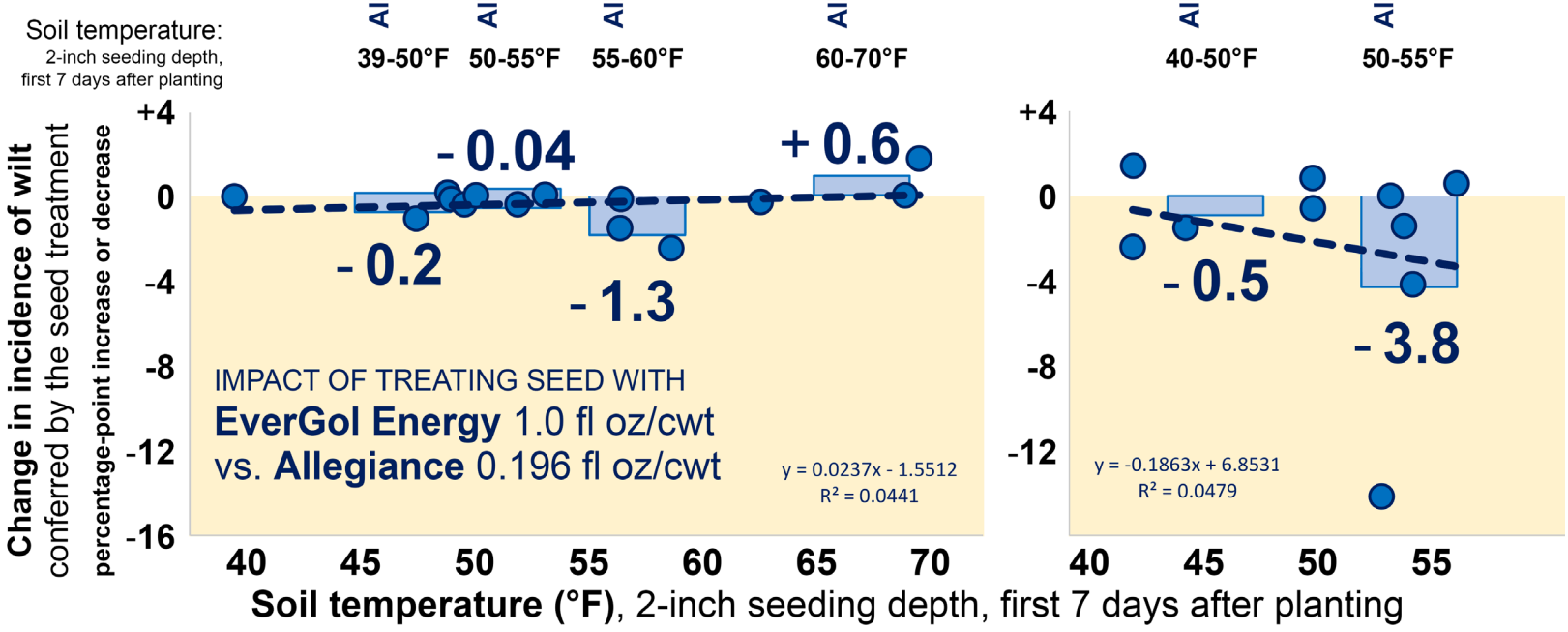
Studies conducted in fields with a long history of pea or lentil production: Carrington (2019, 2020); McLean County (2019); Mountrail County (2019).

Studies conducted in fields **without a long history of pea or lentil production**



Studies conducted in fields **with** long history of pea or lentil production





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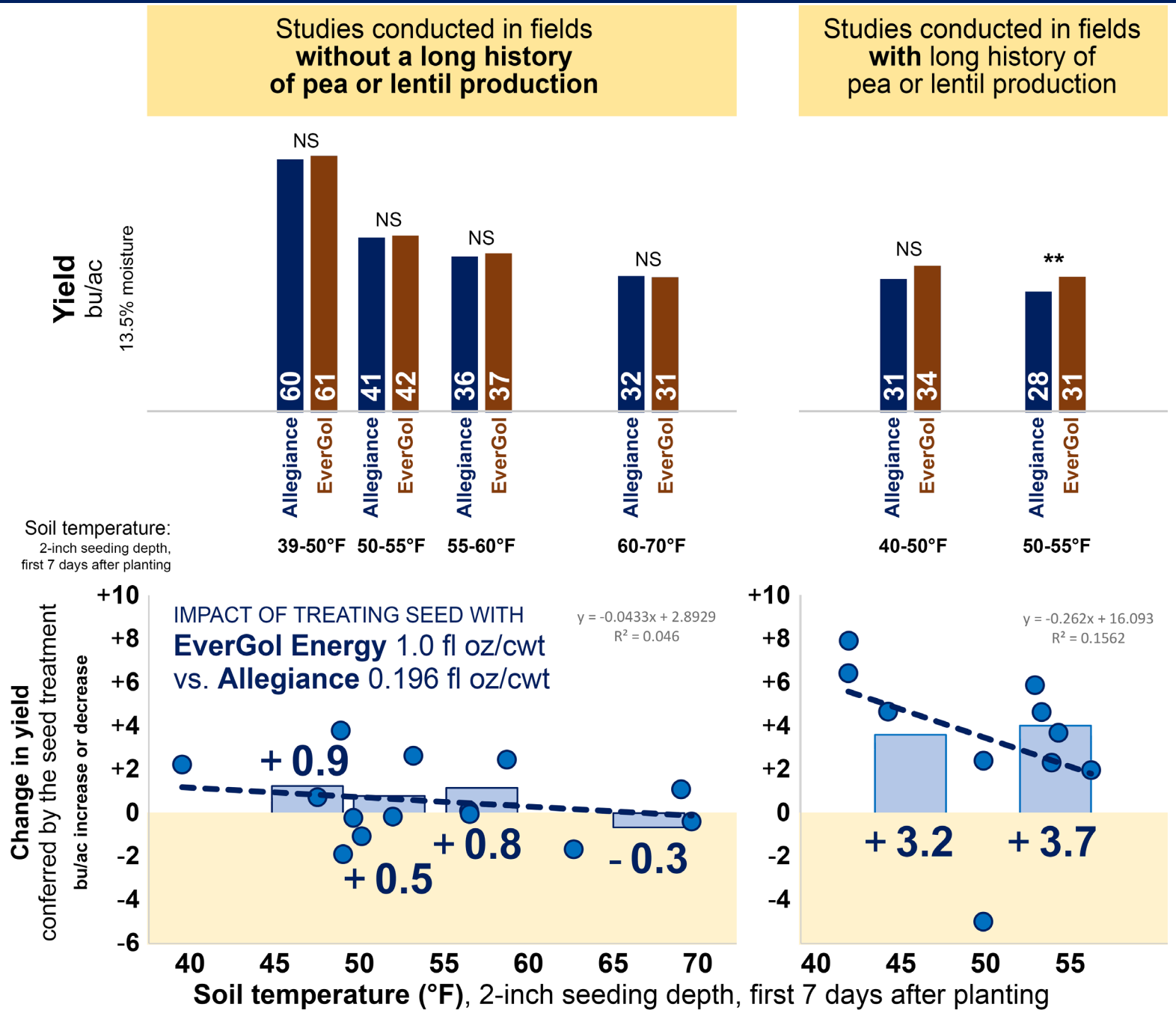


Conclusions from multi-location testing

conducted in 2017-2020

Fields with elevated root rot pressure caused by a long history of field pea and lentil production.
Williams, Mountrail and McLean Counties (2019, 2020); Foster County (2017-2020)

Fungicide seed treatment is most likely to confer strong yield gains in fields with a long history of pea and/or lentil production.

In fields with a long history of pea and/or lentil production, use of a fungicide seed treatment with efficacy against Pythium and Rhizoctonia conferred yield gains of 3-5 bu/ac when planting into soils below 60°F.

In fields with elevated Aphanomyces pressure, early planting was more effective than seed treatment with ethaboxam. Adding ethaboxam (with efficacy against Aphanomyces and Pythium) to a standard fungicide seed treatment only conferred consistent yield gains when soil temperatures were 54.5-59°F (seeding depth, 1st 7 days after planting).

Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Carrington, ND (2024)

Planting date studies conducted in 11 fields differing in Aphanomyces and Fusarium root rot severity.

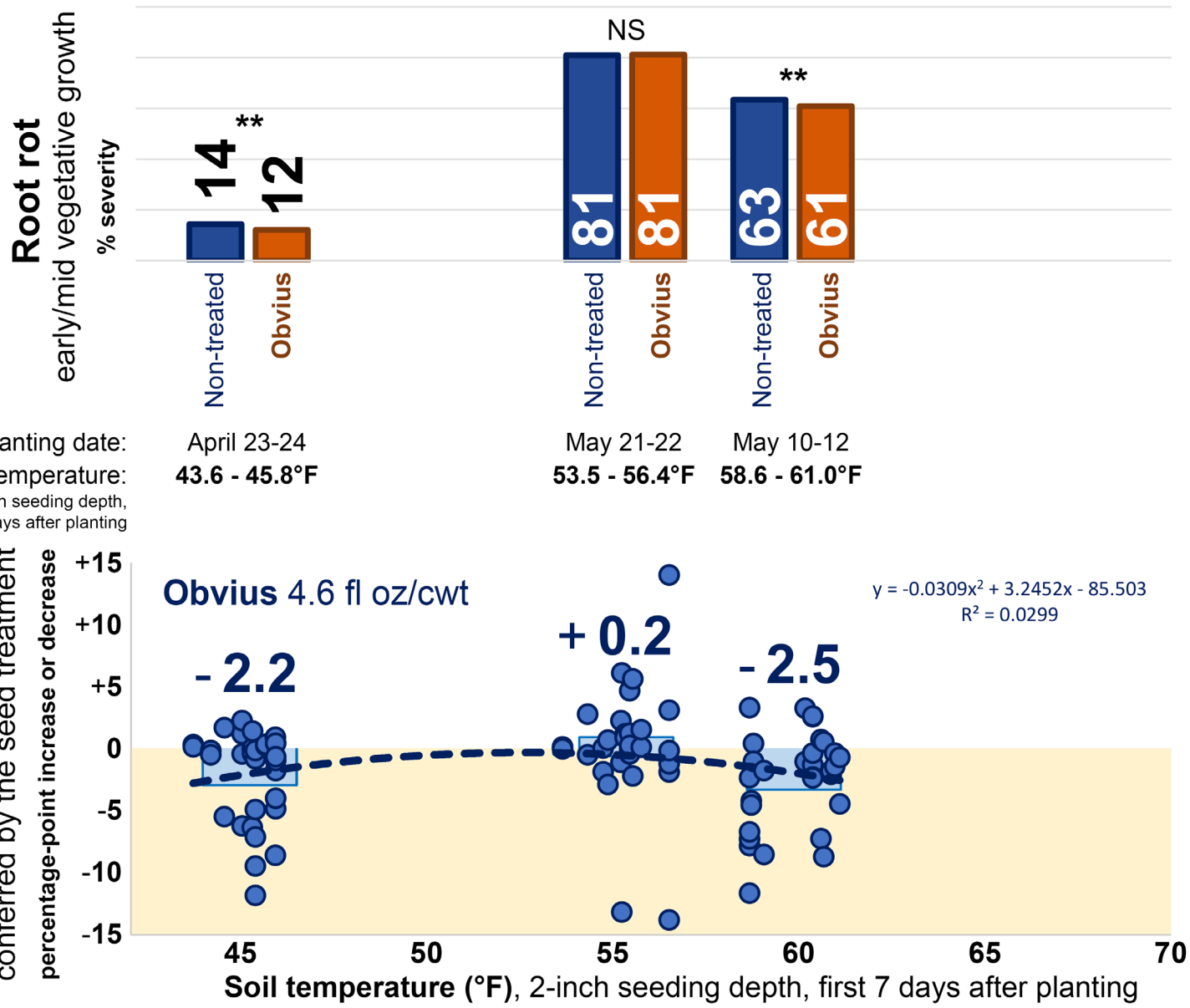
Field pea varieties:
'AAC Julius' and 'AAC Profit', planted with and without seed treatment in each planting date of each study.

Seeding rate:
330,000 viable seeds/ac

Row spacing:
7.5"

Tillage:
Direct-seeded into last year's crop (7 studies); conventional tillage (4 studies)

Planting dates:
April 23-24
May 10-12
May 21-22
June 12-13



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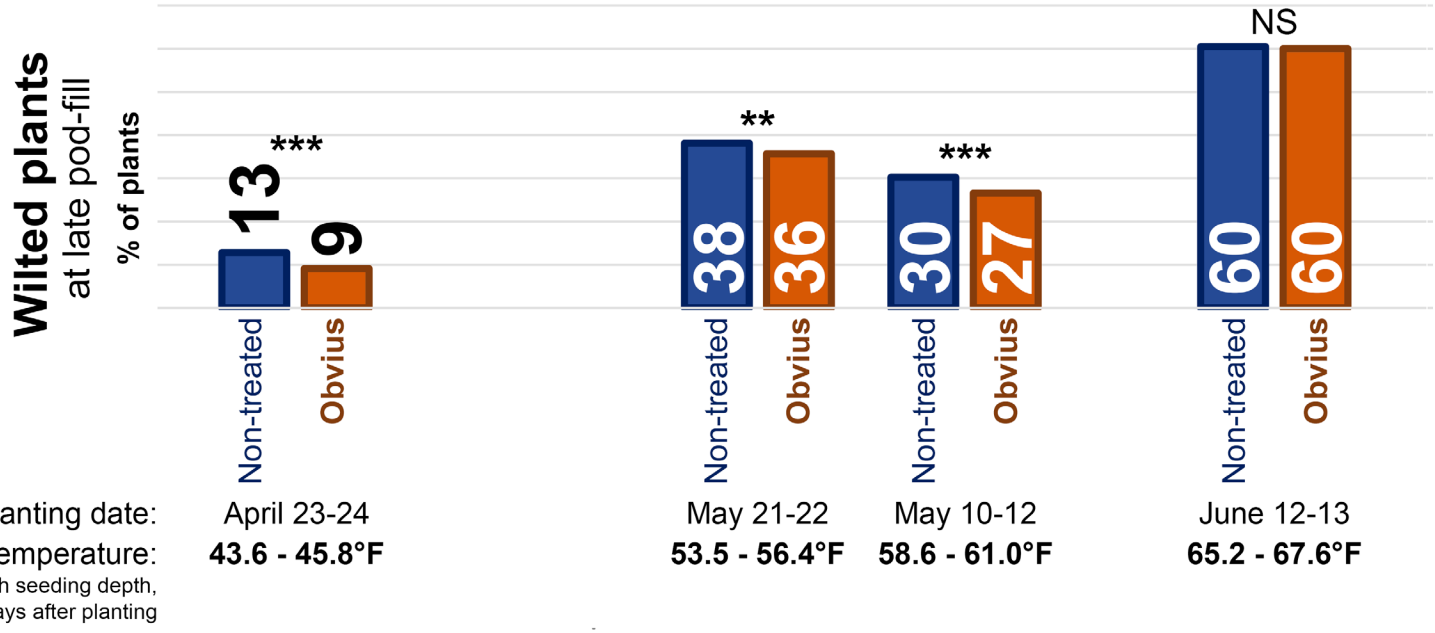

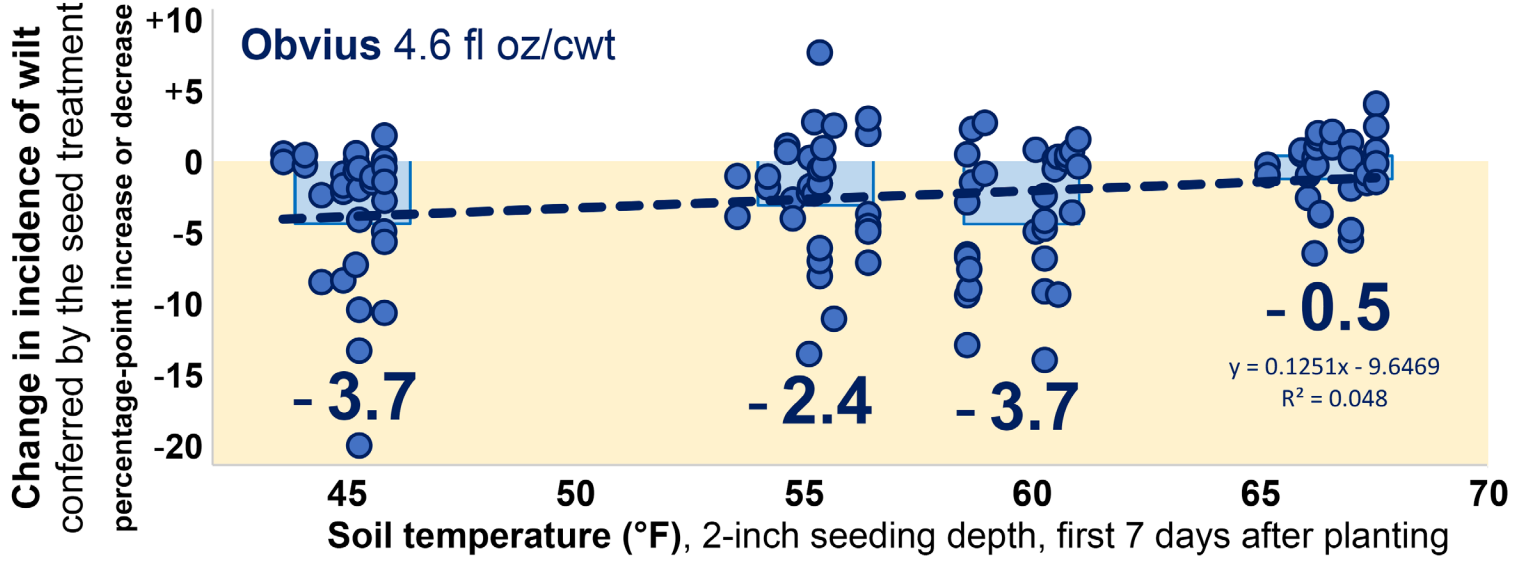

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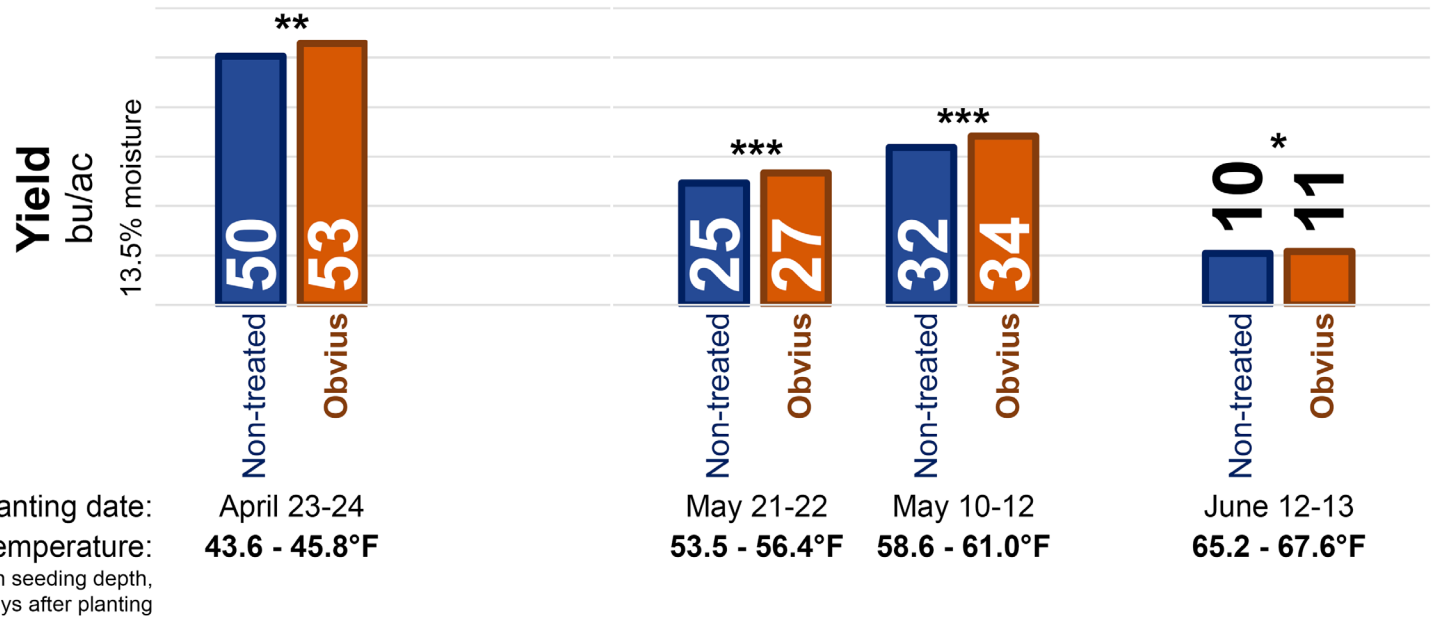
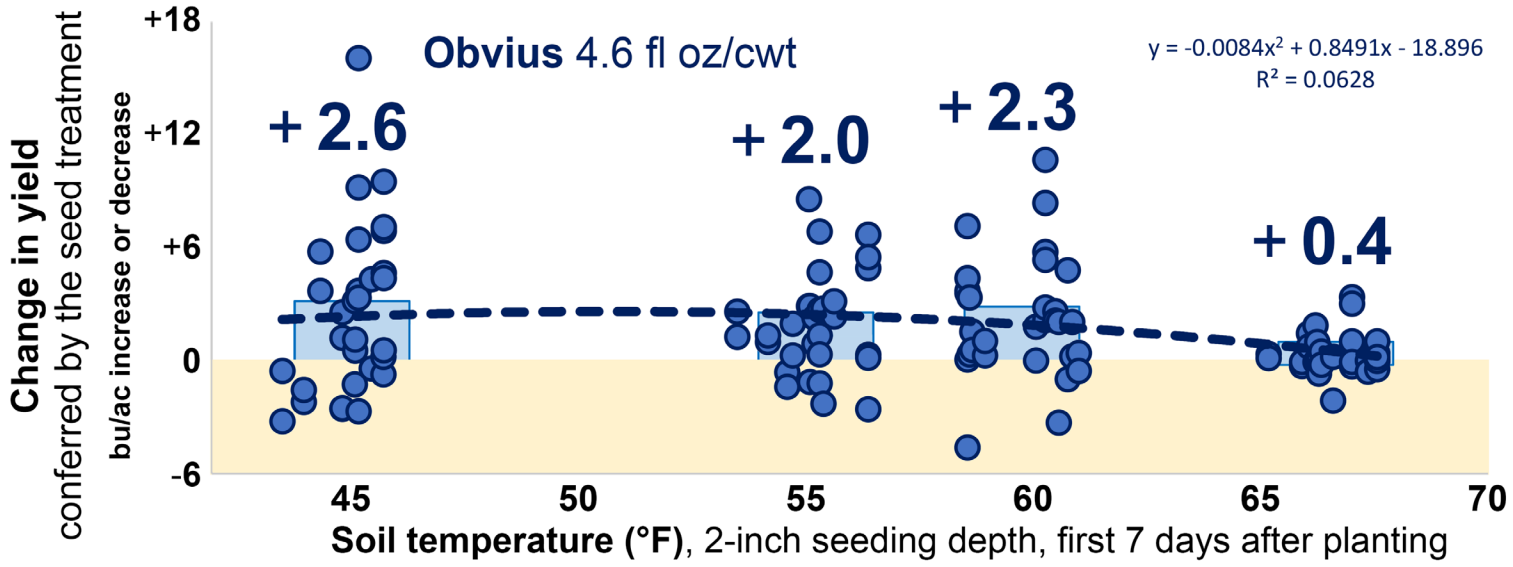




Fusarium and Aphanomyces root rot of field peas: Integrated Management

Carrington, ND (2024)

Study #1 Field 17

		Planting date #1		Planting date #2		Planting date #3		Planting date #4	
	Date:	**April 23-24**		**May 10**		**May 22**		**June 12-13**	
	soil temperature:	**45.2°F**		**60.3°F**		**56.4°F**		**67.6°F**	
average soil temp. at seeding depth in the 1st 7 days after planting		**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)
Field pea variety	**Fungicide seed treatment**	80-97% pods fully filled	13.5% moisture	75-90% pods fully filled	13.5% moisture	85-100% pods fully filled	13.5% moisture	40-85% pods fully filled	13.5% moisture
AAC IronHorse	Non-treated seed	3 a*	69 a*	18 a*	42 a*	30 a*	38 a*	55 a*	14 b*
AAC IronHorse	Obvius, 4.6 fl oz/cwt	2 a	85 a	13 a	50 a	25 a	44 a	58 a	14 b
AAC IronHorse	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	3 a	85 a	17 a	54 a	24 a	37 a	59 a	13 b
AAC IronHorse	Vibrance Total, 5 fl oz/cwt	3 a	77 a	15 a	50 a	23 a	45 a	44 a	17 a
AAC IronHorse	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	3 a	73 a	12 a	50 a	23 a	42 a	37 a	19 a
	CV:	47.1	14.6	36.1	14.1	28.8	20.4	59.8	13.3
AAC Julius	Non-treated seed	10 a*	74 a*	27 a*	36 a*	57 a*	18 a*	71 b*	12 bc*
AAC Julius	Obvius, 4.6 fl oz/cwt	8 a	77 a	22 a	42 a	53 a	25 a	72 b	12 bc
AAC Julius	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	10 a	80 a	26 a	41 a	57 a	19 a	72 b	12 c
AAC Julius	Vibrance Total, 5 fl oz/cwt	8 a	87 a	23 a	44 a	47 a	25 a	65 ab	16 ab
AAC Julius	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	6 a	83 a	20 a	45 a	45 a	26 a	58 a	17 a
	CV:	44.8	10.9	25.6	19.0	19.0	31.8	11.2	17.5
ND Dawn	Non-treated seed	10 b*‡	73 a*	41 a*	31 b*	44 a*	29 a*	58 a*	15 a*
ND Dawn	Obvius, 4.6 fl oz/cwt	5 a	79 a	39 a	41 a	47 a	27 a	62 a	14 a
ND Dawn	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	6 ab	74 a	38 a	38 ab	46 a	28 a	65 a	13 a
ND Dawn	Vibrance Total, 5 fl oz/cwt	5 a	77 a	29 a	43 a	36 a	32 a	59 a	17 a
ND Dawn	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	5 a	79 a	31 a	42 a	36 a	33 a	58 a	18 a
	CV:	20.8	7.1	23.2	14.5	30.8	24.6	17.8	20.9
Caphorn	Non-treated seed	20 b*	67 a*	78 c*	23 a*	78 ab*	10 ab*	84 a*	4 a*
Caphorn	Obvius, 4.6 fl oz/cwt	9 ab	71 a	64 b	25 a	73 ab	10 ab	88 a	4 a
Caphorn	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	9 ab	78 a	68 bc	24 a	83 b	8 b	84 a	3 a
Caphorn	Vibrance Total, 5 fl oz/cwt	8 a	74 a	54 a	26 a	73 ab	13 ab	89 a	4 a
Caphorn	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	8 a	72 a	53 a	32 a	65 a	16 a	76 a	6 a
	CV:	60.9	9.9	11.0	27.3	10.6	36.4	17.6	59.8
AAC Profit	Non-treated seed	47 b*	50 b*	89 b*	10 c*	80 b*	10 a*	90 ab*	2 b*
AAC Profit	Obvius, 4.6 fl oz/cwt	33 ab	47 b	80 ab	15 abc	82 b	10 a	90 ab	3 b
AAC Profit	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	33 ab	51 b	83 ab	14 bc	86 b	8 a	91 b	2 b
AAC Profit	Vibrance Total, 5 fl oz/cwt	28 a	70 a	80 ab	20 ab	76 ab	9 a	88 ab	3 a
AAC Profit	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	24 a	59 ab	69 a	21 a	63 a	16 a	78 a	5 a
	CV:	29.2	14.7	10.4	25.0	10.2	38.2	8.3	33.7
LG Amigo	Non-treated seed	72 b*	27 a*	96 b*	6 b*	95 b*	4 a*	66 a*	4 a*
LG Amigo	Obvius, 4.6 fl oz/cwt	51 a	37 a	88 b	8 ab	88 b	9 a	65 a	5 a
LG Amigo	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	60 ab	30 a	91 b	6 b	95 b	6 a	59 a	6 a
LG Amigo	Vibrance Total, 5 fl oz/cwt	52 ab	39 a	83 ab	10 ab	86 b	6 a	66 a	6 a
LG Amigo	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	56 ab	39 a	68 a	12 a	66 a	8 a	59 a	9 a
	CV:	19.9	26.5	10.2	38.4	9.5	61.0	11.8	39.7

Seeding rate = 330,000 viable seeds/ac Row spacing = 7.5 inches

Fusarium and Aphanomyces root rot of field peas: Integrated Management

Carrington, ND (2024)

Study #2 Field 18 south

		Planting date #1		Planting date #2		Planting date #3		Planting date #4	
	Date:	**April 23**		**May 12**		**May 22**		**June 12**	
	soil temperature:	**45.8°F**		**58.6°F**		**55.3°F**		**67.0°F**	
average soil temp. at seeding depth in the 1st 7 days after planting		**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)	**Wilted plants** (%)	**Yield** (bu/ac)
Field pea variety	**Fungicide seed treatment**	85-100% pods fully filled	13.5% moisture	70-100% pods fully filled	13.5% moisture	85-100% pods fully filled	13.5% moisture	78-100% pods fully filled	13.5% moisture
AAC IronHorse	Non-treated seed	**3** a*	**62** a*	**6** a*	**47** a*	**7** a*	**45** a*	**78** a*	**21** b*
AAC IronHorse	Obvius, 4.6 fl oz/cwt	**1** a	**69** a	**6** a	**43** a	**7** a	**45** a	**73** a	**24** ab
AAC IronHorse	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**2** a	**68** a	**8** a	**44** a	**9** a	**46** a	**77** a	**21** b
AAC IronHorse	Vibrance Total, 5 fl oz/cwt	**2** a	**65** a	**4** a	**44** a	**6** a	**44** a	**73** a	**25** ab
AAC IronHorse	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**1** a	**65** a	**3** a	**45** a	**5** a	**45** a	**69** a	**25** a
	CV:	62.8	7.9	58.6	9.8	35.2	7.0	12.5	11.2
AAC Julius	Non-treated seed	**3** a*	**55** a*	**17** b*	**31** a*	**20** a*	**32** b*	**92** a*	**17** c*
AAC Julius	Obvius, 4.6 fl oz/cwt	**5** a	**60** a	**10** ab	**34** a	**28** a	**31** b	**92** a	**18** bc
AAC Julius	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**6** a	**57** a	**13** ab	**33** a	**24** a	**32** b	**92** a	**17** bc
AAC Julius	Vibrance Total, 5 fl oz/cwt	**2** a	**58** a	**7** a	**35** a	**19** a	**35** ab	**86** a	**20** ab
AAC Julius	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**1** a	**61** a	**7** a	**35** a	**21** a	**38** a	**85** a	**23** a
	CV:	113.7	6.6	46.6	14.1	28.4	8.5	6.8	9.7
ND Dawn	Non-treated seed	**5** a*	**49** a*	**14** a*	**36** a*	**21** a*	**32** b*	**93** ab*	**19** b*
ND Dawn	Obvius, 4.6 fl oz/cwt	**2** a	**59** a	**11** a	**40** a	**13** a	**39** a	**94** b	**19** b
ND Dawn	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**2** a	**59** a	**13** a	**42** a	**15** a	**38** ab	**94** b	**18** b
ND Dawn	Vibrance Total, 5 fl oz/cwt	**3** a	**55** a	**15** a	**34** a	**17** a	**37** ab	**88** ab	**24** a
ND Dawn	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**3** a	**59** a	**10** a	**37** a	**11** a	**39** ab	**88** a	**25** a
	CV:	96.0	11.6	44.4	13.9	40.4	11.2	4.2	12.2
Caphorn	Non-treated seed	**14** a*	**58** a*	**34** a*	**28** a*	**36** b*	**26** b*	**94** b*	**9** b*
Caphorn	Obvius, 4.6 fl oz/cwt	**13** a	**58** a	**24** a	**32** a	**30** ab	**30** ab	**88** ab	**12** ab
Caphorn	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**19** a	**56** a	**25** a	**33** a	**30** ab	**28** b	**94** ab	**10** b
Caphorn	Vibrance Total, 5 fl oz/cwt	**14** a	**58** a	**26** a	**31** a	**24** ab	**31** ab	**84** ab	**12** b
Caphorn	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**14** a	**57** a	**23** a	**34** a	**21** a	**34** a	**82** a	**16** a
	CV:	39.0	7.6	25.9	14.5	26.7	11.0	8.7	17.5
AAC Profit	Non-treated seed	**24** b*	**50** a*	**55** b*	**19** c*	**65** b*	**16** c*	**99** a*	**4** b*
AAC Profit	Obvius, 4.6 fl oz/cwt	**13** ab	**55** a	**42** ab	**26** b	**57** ab	**18** bc	**97** a	**5** ab
AAC Profit	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**20** ab	**51** a	**41** ab	**23** bc	**63** b	**17** c	**99** a	**4** b
AAC Profit	Vibrance Total, 5 fl oz/cwt	**11** ab	**54** a	**33** a	**26** b	**47** a	**23** ab	**95** a	**6** ab
AAC Profit	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**9** a	**53** a	**30** a	**30** a	**42** a	**24** a	**96** a	**7** a
	CV:	42.6	7.4	19.9	14.3	16.6	13.8	2.9	32.8
LG Amigo	Non-treated seed	**28** a*	**12** b*	**44** b*	**10** a*	**61** b*	**7** b*	**92** ab*	**5** bc*
LG Amigo	Obvius, 4.6 fl oz/cwt	**22** a	**19** a	**38** ab	**10** a	**59** b	**8** ab	**92** ab	**5** bc
LG Amigo	Obvius, 4.6 fl oz/cwt + Relenya, 0.4 fl oz/cwt	**22** a	**21** a	**36** ab	**10** a	**68** b	**7** b	**96** b	**5** c
LG Amigo	Vibrance Total, 5 fl oz/cwt	**16** a	**23** a	**24** a	**11** a	**57** b	**10** ab	**86** a	**7** b
LG Amigo	Vibrance Total, 5 fl oz + Trebuset, 0.614 fl oz/cwt	**14** a	**21** a	**24** a	**12** a	**37** a	**11** a	**86** a	**10** a
	CV:	63.7	16.2	24.9	17.7	17.1	21.4	6.6	18.3

Seeding rate = 330,000 viable seeds/ac Row spacing = 7.5 inches

Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Carrington, ND (2024)

Planting date studies conducted in two fields differing in Aphanomyces and Fusarium root rot severity.

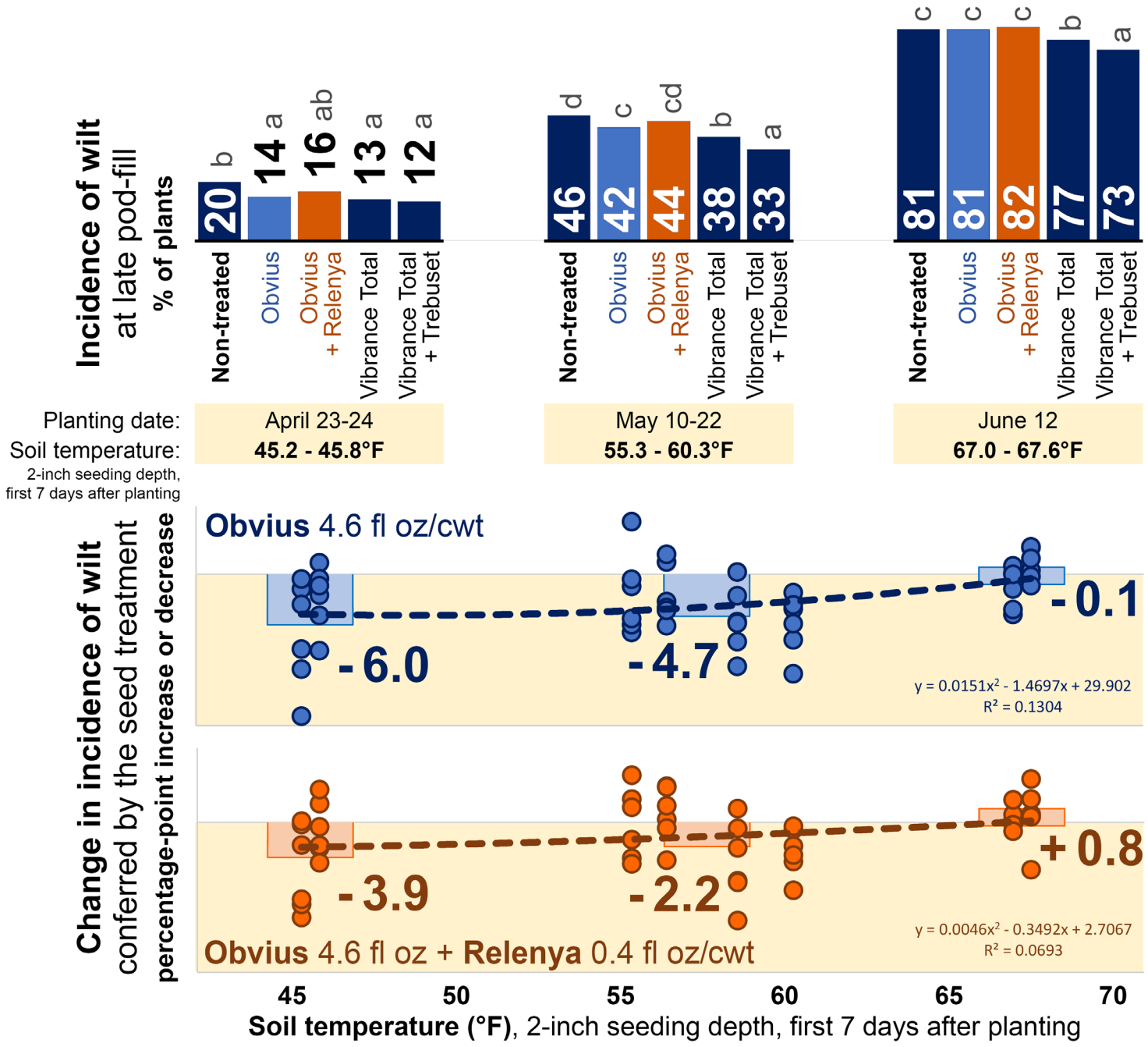
Field pea varieties:
All four seed treatments versus non-treated seed were tested on each of six field pea varieties (AAC IronHorse, AAC Julius, ND Dawn, Caphorn, AAC Profit, and LG Amigo) across four planting dates in two studies conducted on fields with elevated Aphanomyces and Fusarium pressure

Seeding rate:
330,000 viable seeds/ac

Row spacing:
7.5”

Tillage:
Direct-seeded into last year’s crop (7 studies); conventional tillage (4 studies)

Planting dates:
April 23-24
May 10-11
May 21-22
June 12



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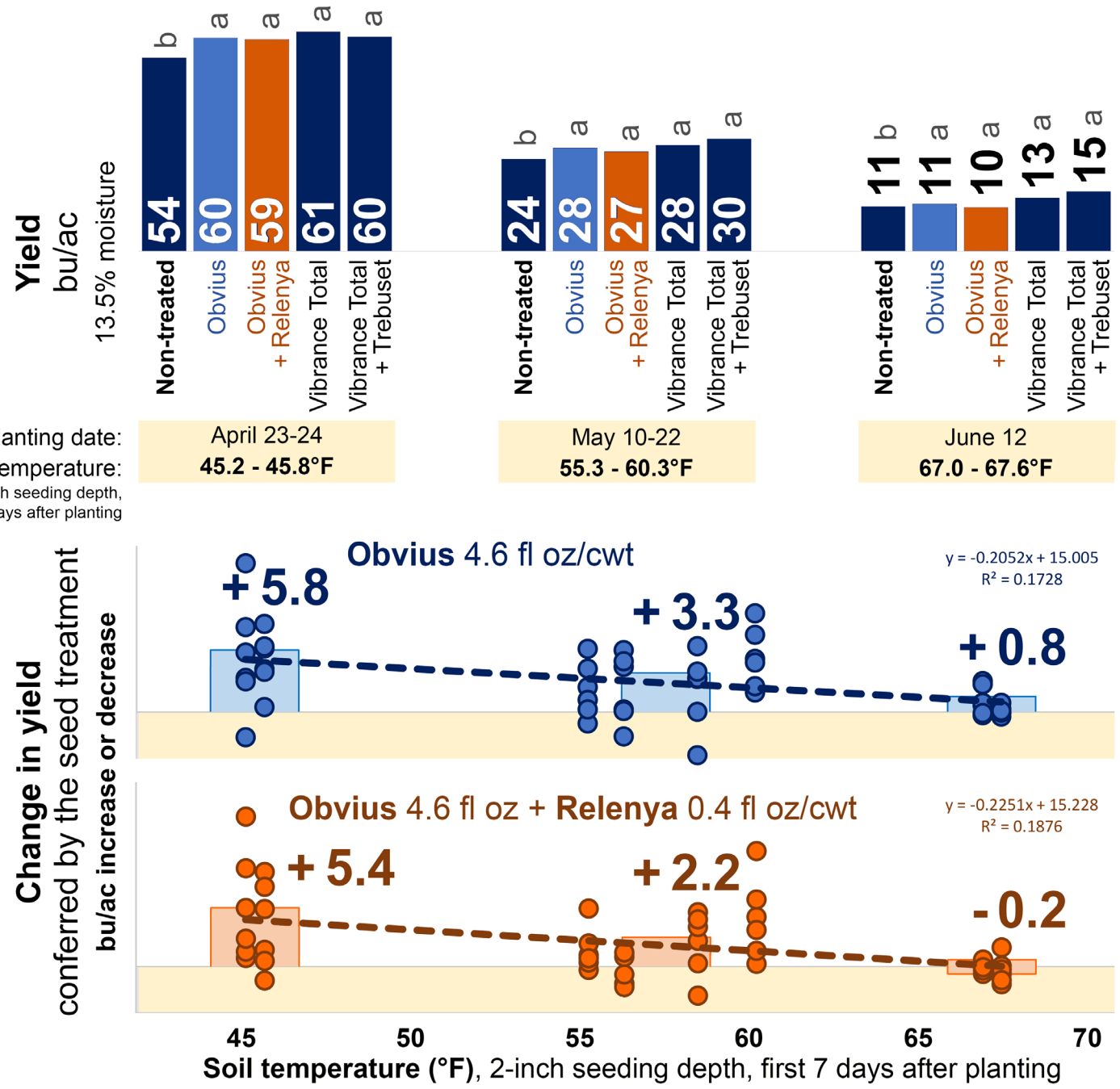

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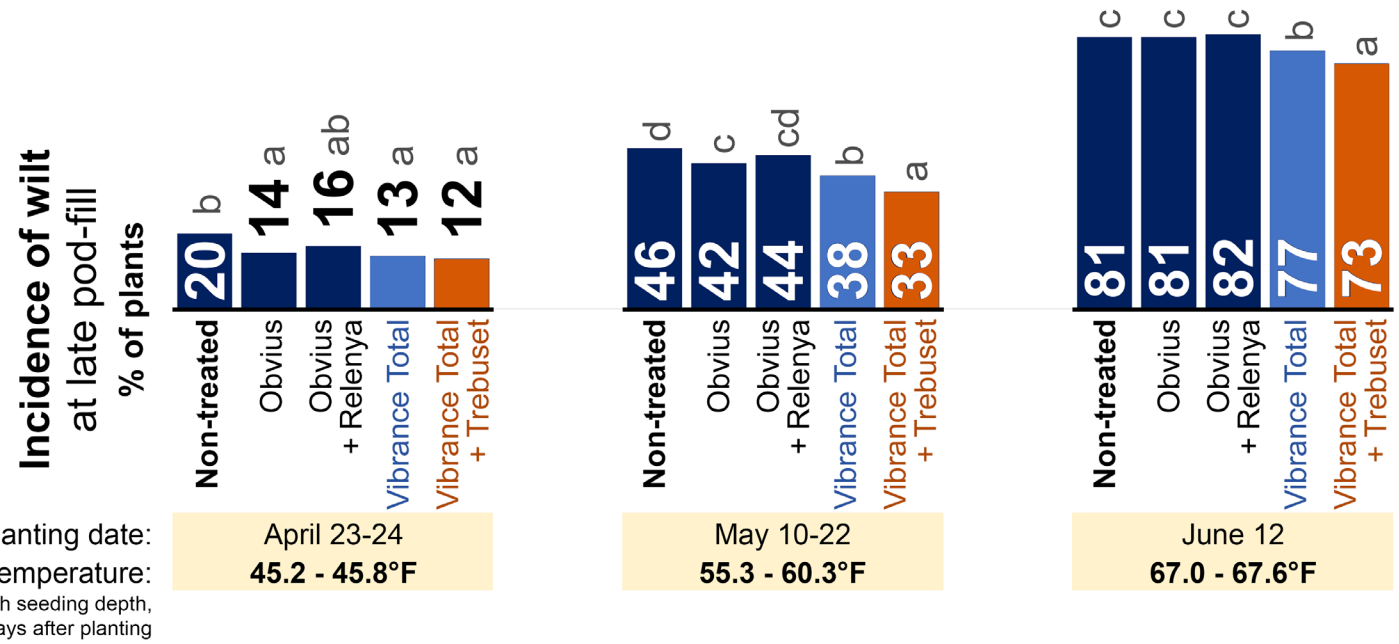
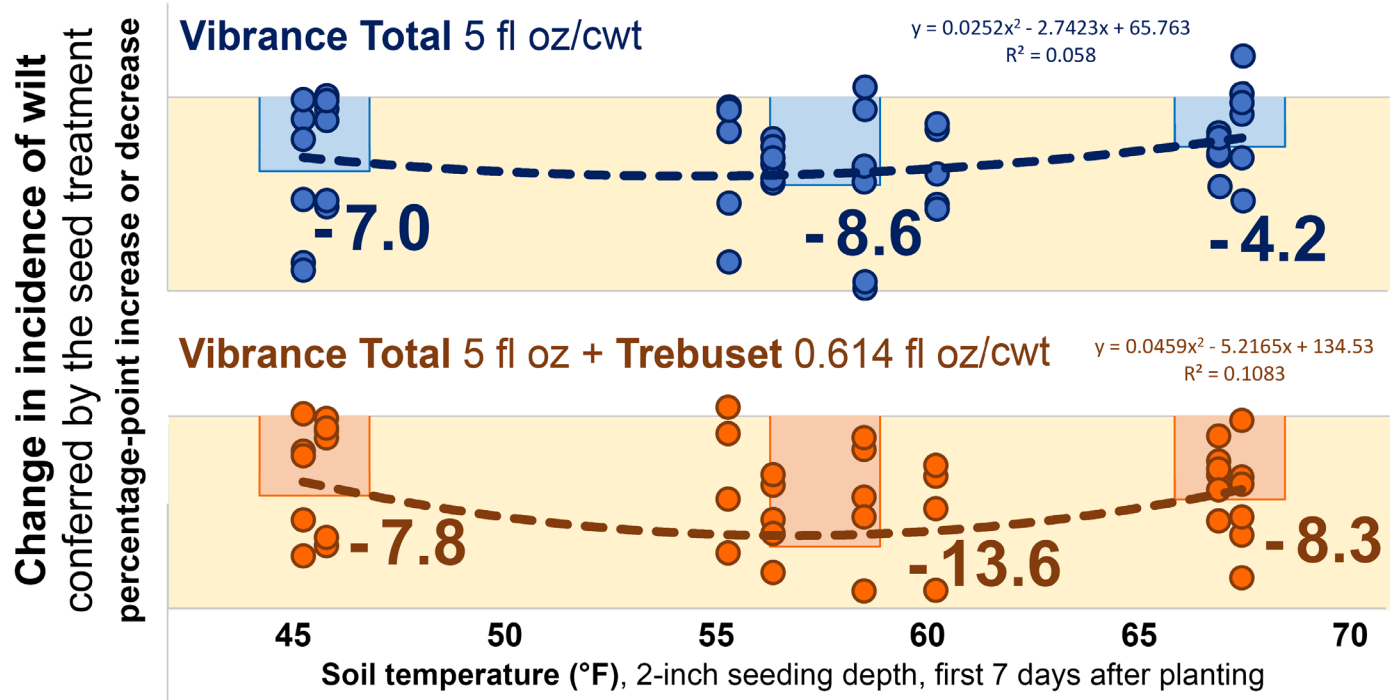
May 21-22
June 12





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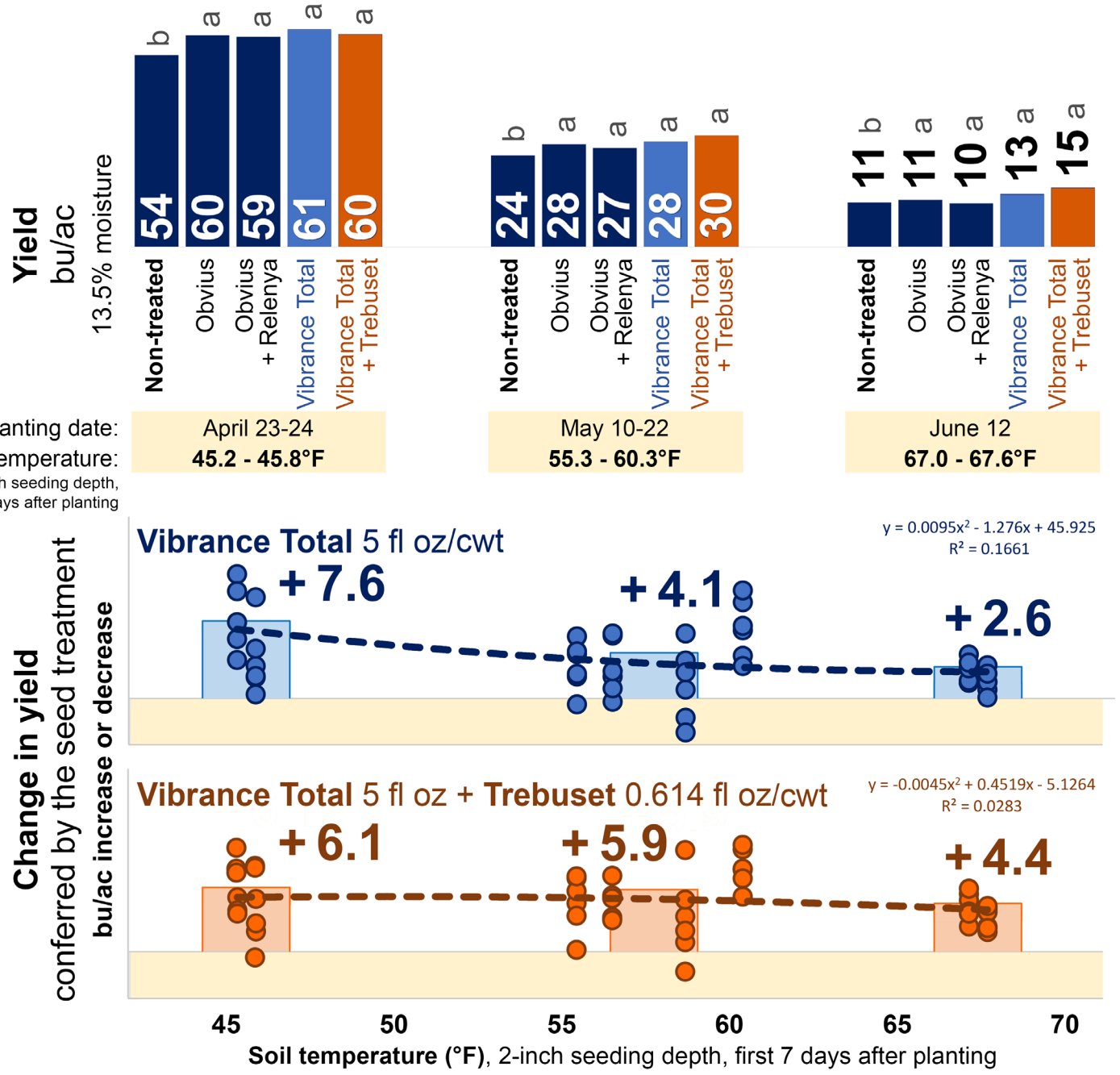
Planting dates:
April 23-24
May 10-11
May 21-22
June 12



Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Carrington, ND (2023)

Planting date studies conducted in 11 fields differing in Aphanomyces and Fusarium root rot severity.

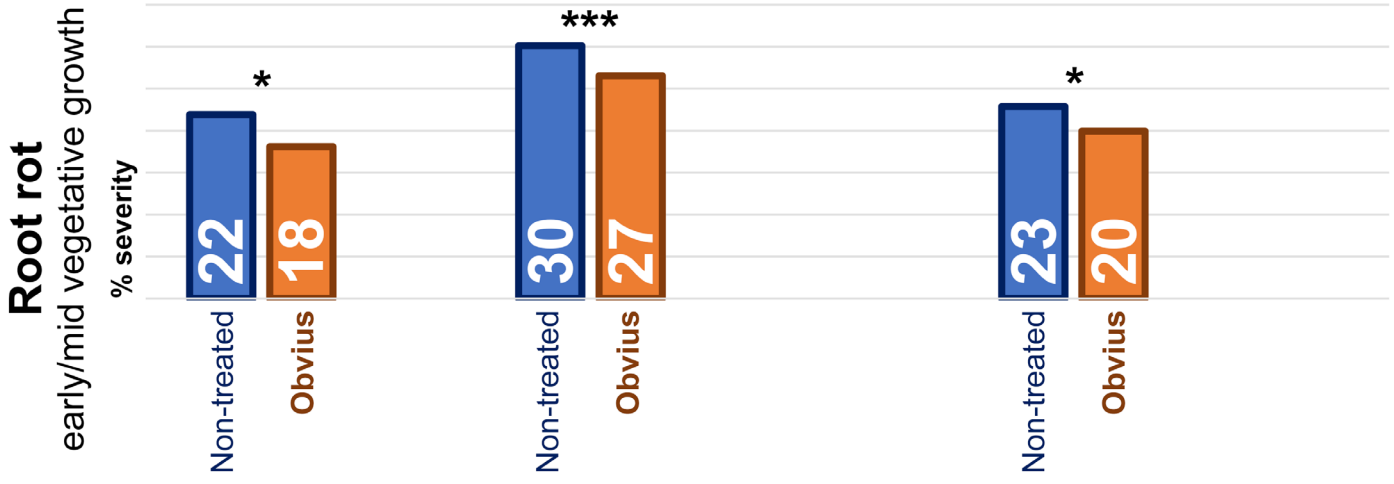
Field pea varieties:
'AAC Julius' and 'AAC Profit', planted with and without seed treatment in each planting date of each study.

Seeding rate:
330,000 viable seeds/ac

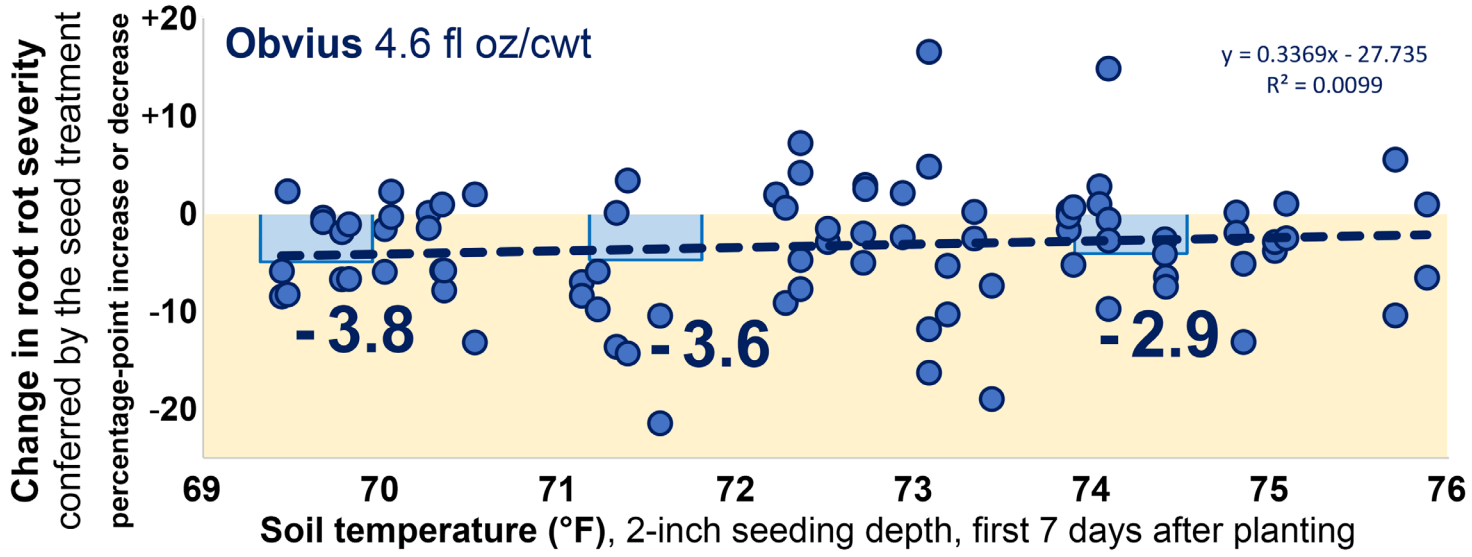
Row spacing:
7.5"

Tillage:
Direct-seeded into last year's crop (7 studies); conventional tillage (4 studies)

Planting dates:
May 22-23
May 26
June 1 and 6
June 7 and 9



	May 22-26	May 22 - June 9	May 26 - June 9
Planting date:			
Soil temperature: (2-inch seeding depth, first 7 days after planting)	**69.42 - 69.8°F**	**70.0 - 72.9°F**	**73.1 - 75.9°F**



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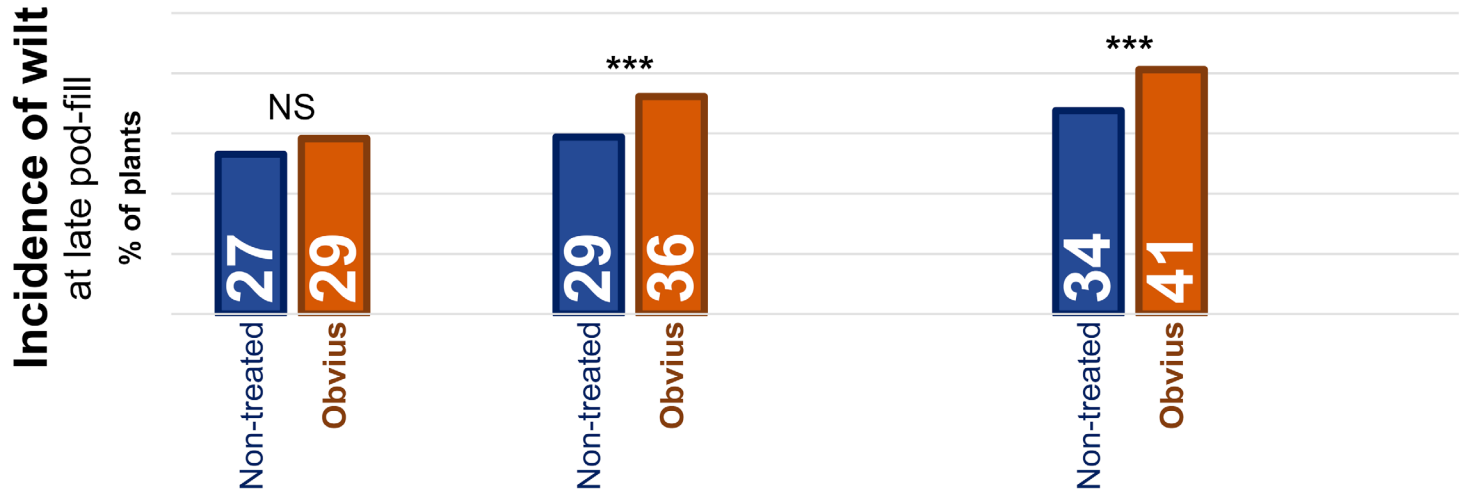
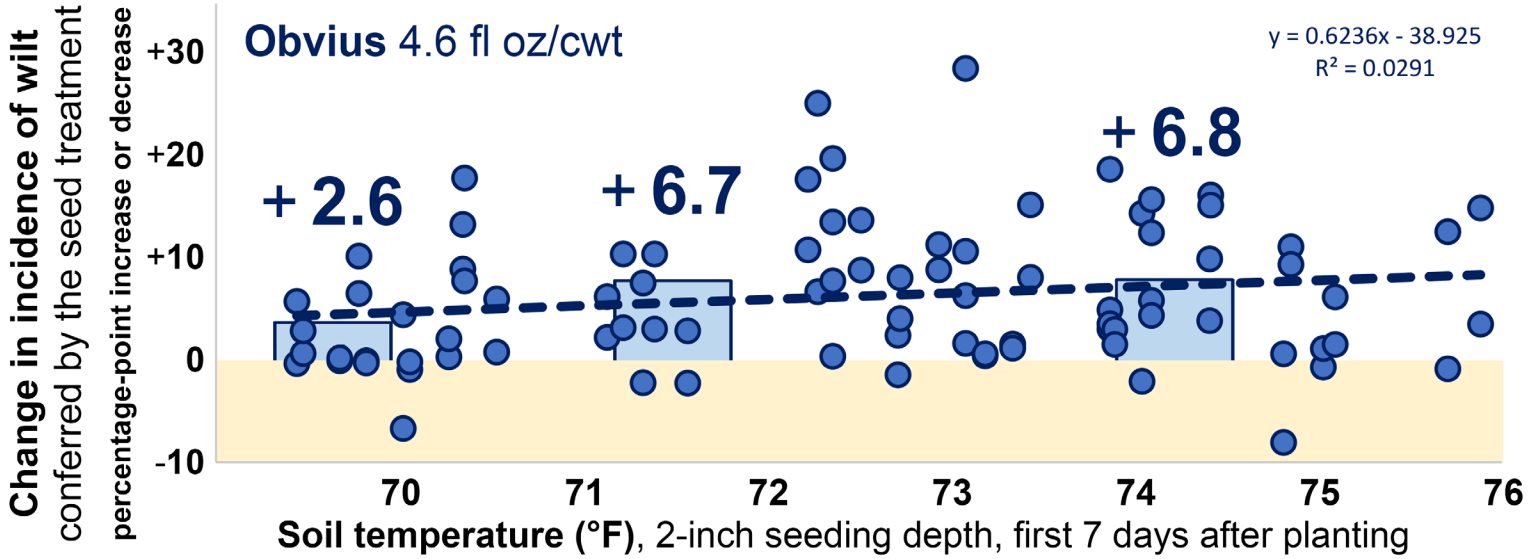
Row spacing:
7.5"

Tillage:
Direct-seeded into last year's crop (7 studies); conventional tillage (4 studies)

Planting dates:
May 22-23
May 26
June 1 and 6
June 7 and 9



Planting date:	May 22-26	May 22 - June 9	May 26 - June 9
Soil temperature: 2-inch seeding depth, first 7 days after planting	**69.42 - 69.8°F**	**70.0 - 72.9°F**	**73.1 - 75.9°F**



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Planting date studies conducted in 11 fields differing in Aphanomyces and Fusarium root rot severity.

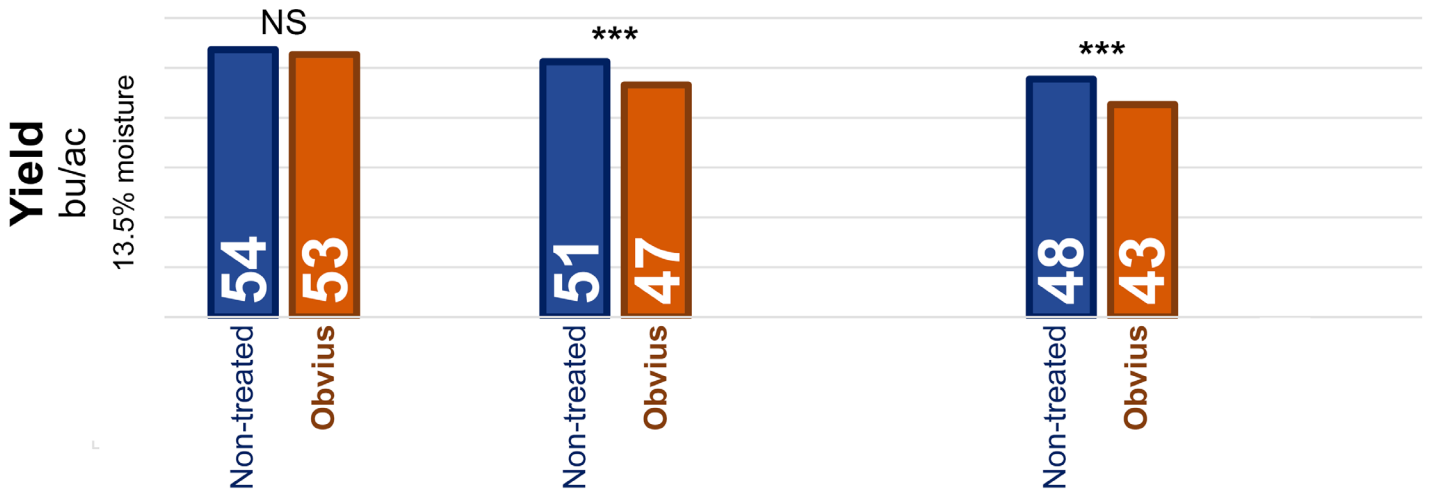
Field pea varieties:
'AAC Julius' and 'AAC Profit', planted with and without seed treatment in each planting date of each study.

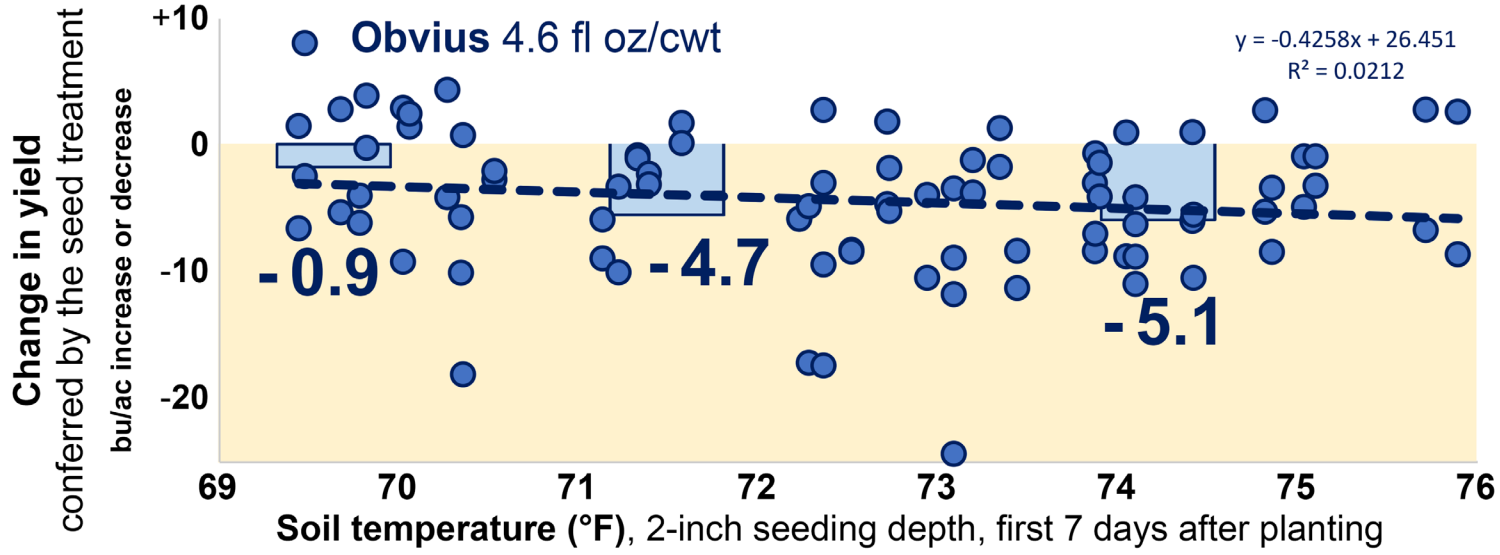
Seeding rate:
330,000 viable seeds/ac

Row spacing:
7.5"

Tillage:
Direct-seeded into last year's crop (7 studies); conventional tillage (4 studies)

Planting dates:
May 22-23
May 26
June 1 and 6
June 7 and 9





Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Williston, ND (2023-2024)

Planting date studies conducted in 3 fields with low root rot pressure

Field pea varieties:
'AAC Julius' and 'AAC Profit (2023), AAC Julius (2024) planted with and without seed treatment in each planting date of each study.

Seeding rate:
330,000 viable seeds/ac

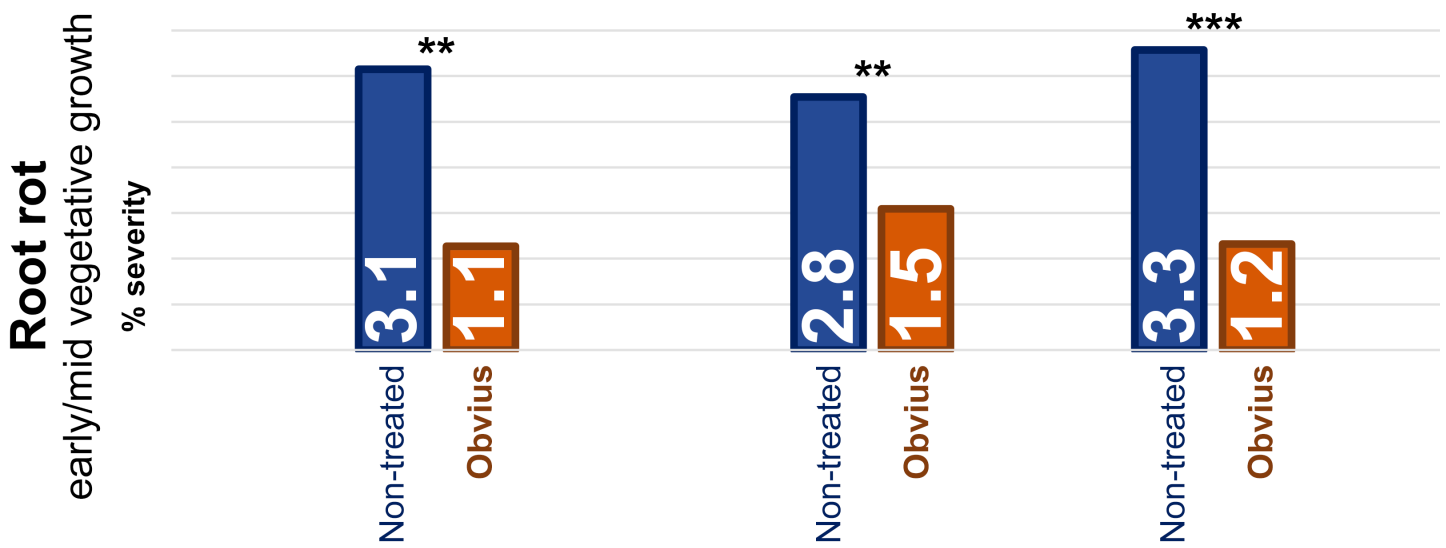
Row spacing:
7"

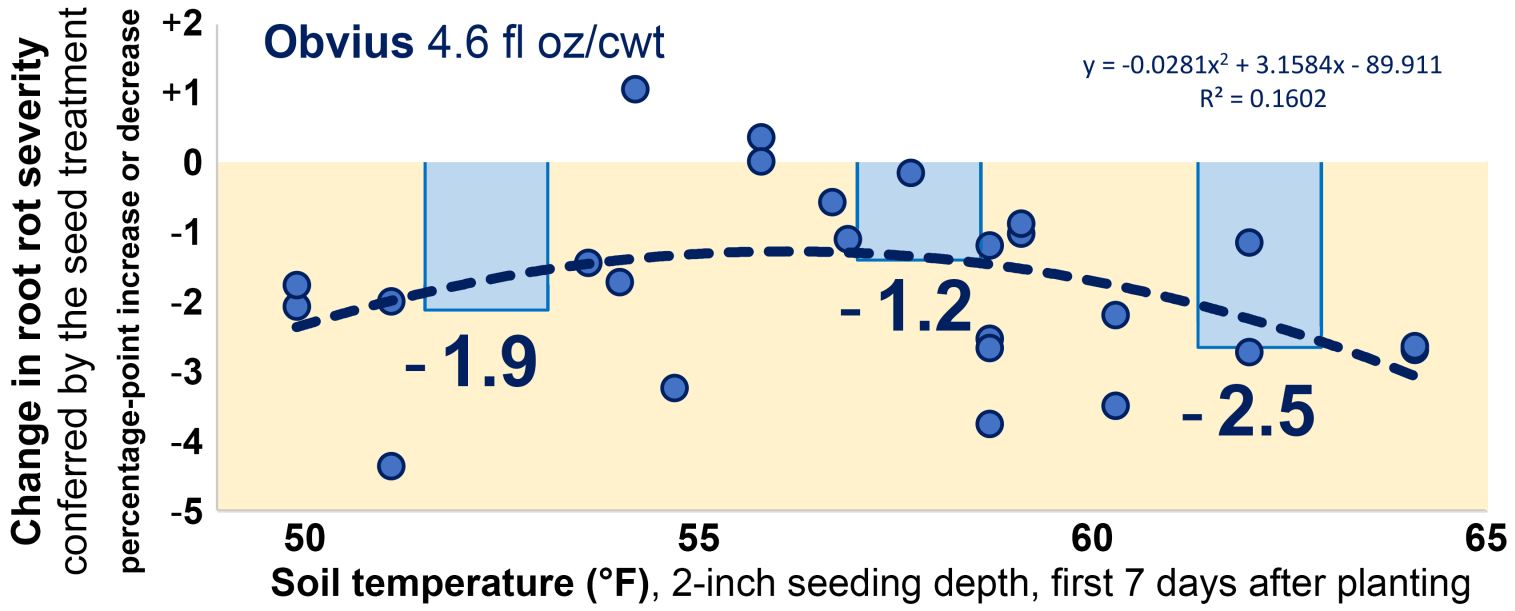
Tillage:
Long-term no-till

Planting dates:

April 25, 2023
May 1, 2023
May 8, 2023
May 17, 2023

April 25, 2024
May 5, 2024
May 19, 2024





Fusarium and Aphanomyces root rot of field peas: Impact of **seed treatment**

Williston, ND (2023-2024)

Planting date studies conducted in 3 fields with low root rot pressure

Field pea varieties:
'AAC Julius' and 'AAC Profit' (2023), AAC Julius (2024) planted with and without seed treatment in each planting date of each study.

Seeding rate:
330,000 viable seeds/ac

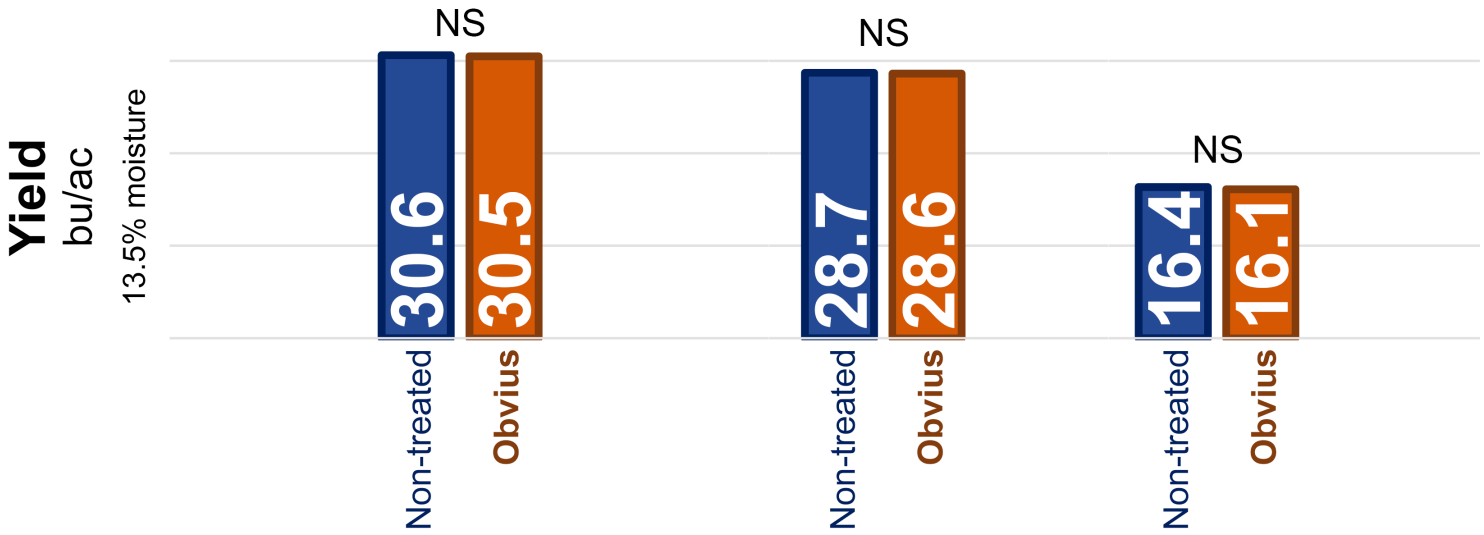
Row spacing:
7"

Tillage:
Long-term no-till

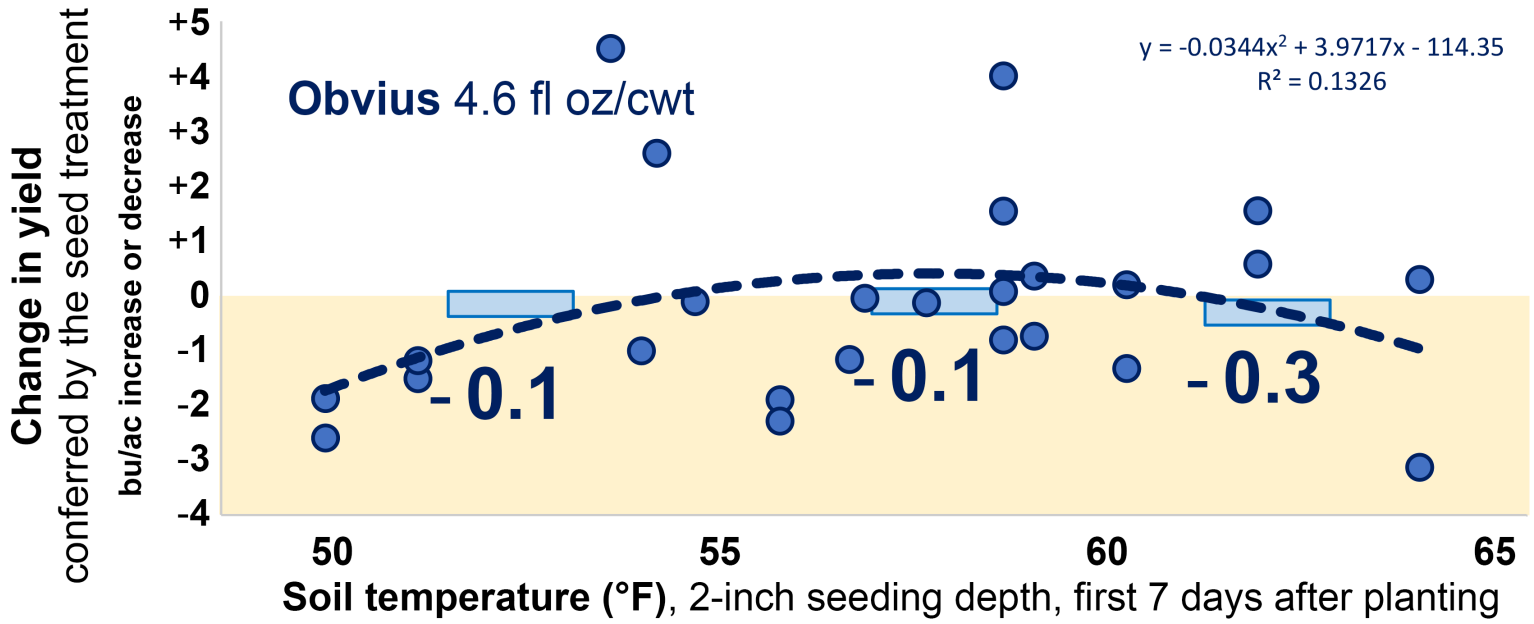
Planting dates:

April 25, 2023
May 1, 2023
May 8, 2023
May 17, 2023

April 25, 2024
May 5, 2024
May 19, 2024



Planting date:	Apr. 25 - May 19	May 5 - May 19	May 8 - May 17
Soil temperature: 2-inch seeding depth, first 7 days after planting	**49.9 - 54.7°F**	**55.8 - 59.1°F**	**60.3 - 64.1°F**



Conclusions from multi-location testing conducted in 2017-2024

Fields with elevated root rot pressure caused by a long history of field pea and lentil production.
Williams, Mountrail and McLean Counties (2019, 2020); Carrington = Foster County (2017-2020, 2023, 2024)

In fields with a long history of pea and/or lentil production, use of a fungicide seed treatment with efficacy against Pythium and Rhizoctonia conferred yield gains of 3-7 bu/ac when planting into soils below 60°F.

In fields with elevated Aphanomyces and Fusarium, early planting was more effective than adding seed treatments targeting Aphanomyces or Fusarium.
Supplementing a standard fungicide seed treatment with Intego Solo (ethaboxam, targeting Aphanomyces) or with Trebuset (adepidyn, targeting Fusarium) only improved yields when soil temperatures exceeded 55°F at 2-inch seeding depth, first 7 days after planting. The yield gain from the additional seed treatment did not compensate for the yield loss associated with delayed planting.

Vibrance Total and Obvius performed similarly when planted into cold soils. In warmer soils, Vibrance Total performed better than Obvius. When planting into soils below 50°F (2-in. seeding depth, first 7 days after planting), Vibrance Total and Obvius were similar. In soils above 55°F, Vibrance Total was more effective than Obvius (lower wilt, higher yield).

Adding Trebuset (0.614 fl oz/cwt) **to Vibrance Total reduced wilt and increased yield in warm soils; adding Relenya** (0.4 fl oz/cwt) **to Obvius did not.** The addition of Relenya @ 0.4 fl oz/cwt to Obvius @ 4.6 fl oz/cwt did not improve field pea agronomic performance.

It is unclear what caused the deleterious impact on wilt and yield observed with Obvius when planting into soils above 70°F and whether this deleterious impact might also be observed with other fungicide seed treatments in very warm soils.

These are preliminary conclusions from research that is still in progress

Integrated management of **Aphanomyces and Fusarium root rot** in field peas: (2) Fungicide seed treatment

Michael Wunsch, Suanne Kallis, Jesse Hafner, Aaron Fauss NDSU Carrington Res. Ext. Center

in collaboration with Edson Ncube and Audrey Kalil, NDSU Williston Research Extension Center

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USDA Specialty Crop Block Grant Program administered by the

North Dakota Department of Agriculture