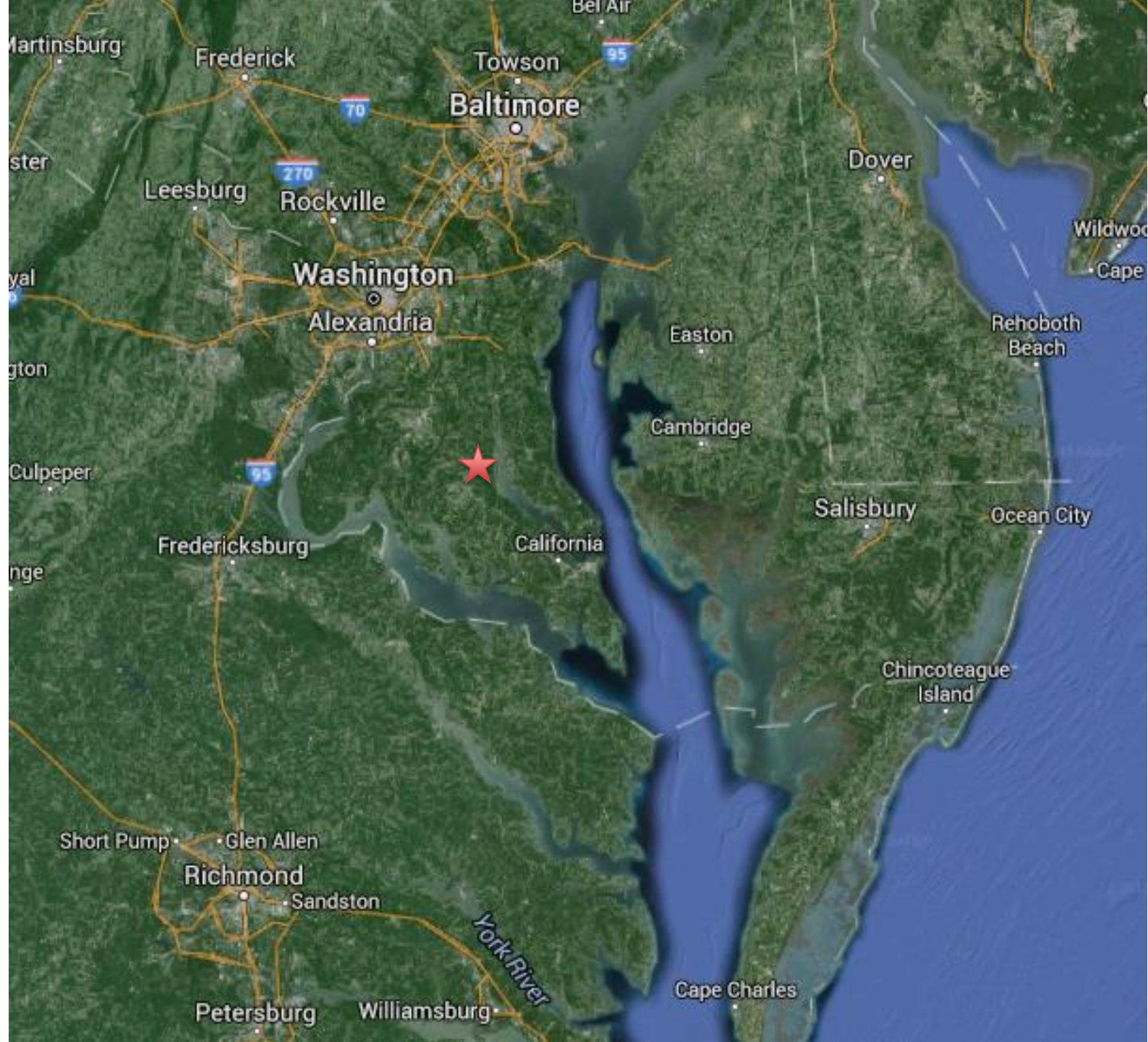


Performance of Fungicides and Varietal Resistance for the Management of Black Shank in the Southern Maryland Region

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Background Information

- Region historically planted MD 609 Type 32 tobacco, with good resistance to black shank. Prior to the introduction MD 609 in 1965, black shank was a common problem.
- Transition to Type 31 burley tobacco around 2004-2006
- Black Shank became a problem again, with losses of 50-90% in susceptible varieties and fields with a history of black shank.
- Varieties with very good resistance to Race 0, but susceptible to Race 1 exhibit heavy losses.



On-farm fungicide and variety trials

- Trials:
 - Planted in field with high levels of black shank in previous years.
 - Standard agronomic practices followed.
- Varieties:
 - KY 14xL8LC: Early maturing variety with a black shank rating of 10 for Race 0 and 0 for Race 1
 - 2015: KT 209LC: Medium to late maturing variety with a black shank rating of 10 for Race 0 and 8 for Race 1
 - 2016: HB4488PLC Late-maturing variety with a black shank rating of 10 for Race 0 and 4 for Race 1

Methods

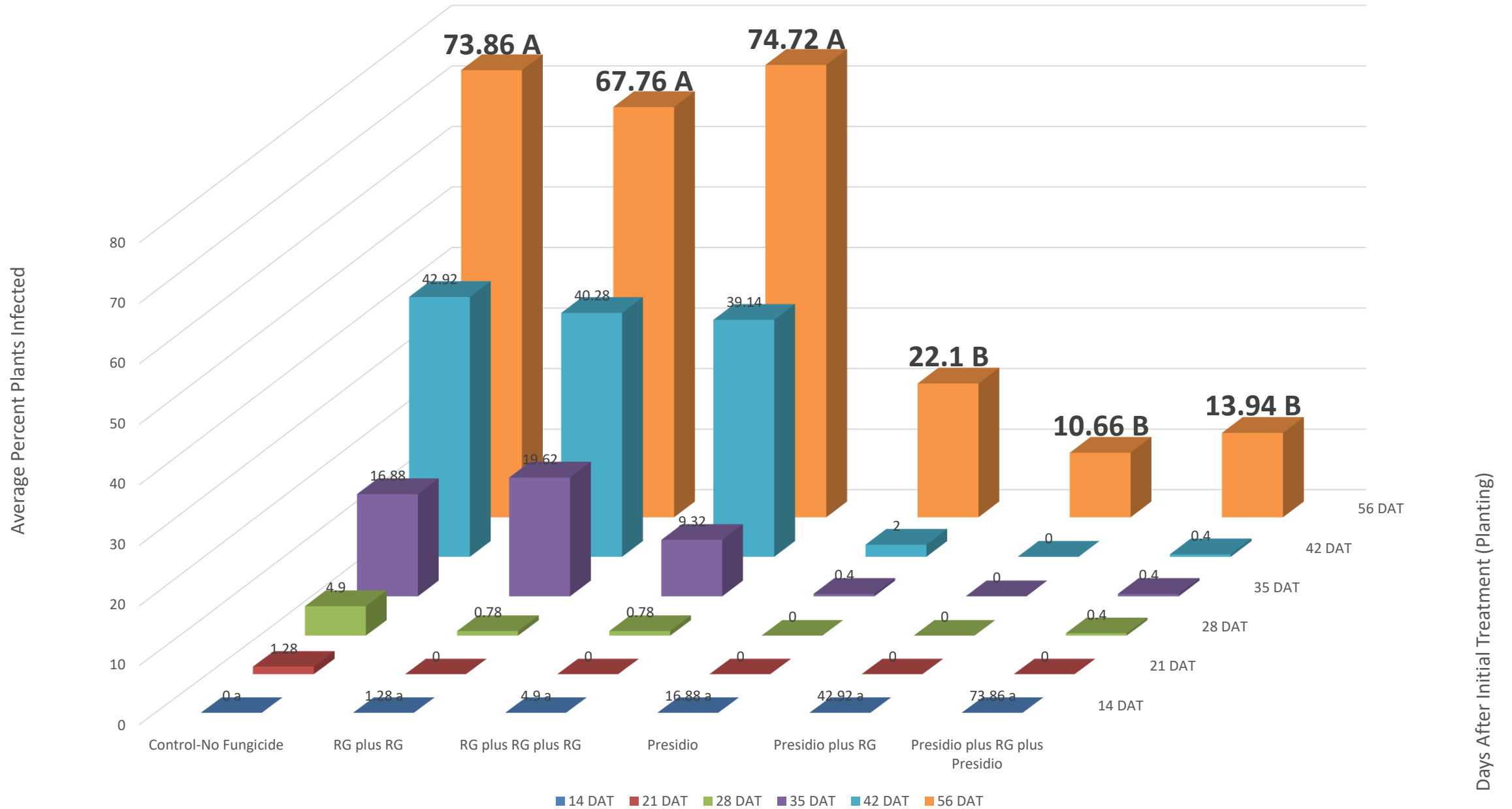
- The field was moldboard plowed and disked/harrowed in April. The field was tilled just prior to planting and an herbicide application consisting of Command 3EC was applied after transplanting.
- The field was cultivated three times and fertilizer side-dressed during each cultivation. Nutrients were applied at a combined per acre rate of 220 N, 40 P and 250 K. The KY-14 L8LC variety was topped 58 days after planting and the KT 209LC variety 68 days after planting.
- Plots consisted of three rows 100 feet long in 2015, and two rows 50 feet long in 2016.
- Trials used a complete block randomized design. Five replications in 2015; Four replications in 2016.
- The trial was planted utilizing a one row horse drawn Mechanical transplanter.
- Treatments were applied following planting as a simulated transplant treatment with each plant receiving 3.5 ounces of water/solution applied directly to the base of the plant, which equates to an effective rate of 197 gallons water/solution per acre.
- A backpack sprayer was utilized to apply first cultivation and/or layby treatments to selected plots in a banded spray directed at the base of plants/bed shoulders. Application was followed by cultivation.
- Plots were evaluated for black shank symptoms 14, 21, 28, 35, 42, and 56 days in 2015 and 14, 21, 28, 35, 42, 56, 63, 70, 77, and 84 days in 2016 after initial treatment. The total number of plants and number of affected plants was recorded.

2015 Trial: Focus on Presidio

- **Control:** No fungicides applied
- **RG plus RG:** 8 oz Ridomil Gold at transplanting followed by 16 oz Ridomil Gold at layby
- **RG plus RG plus RG:** 8 oz Ridomil Gold at transplanting followed by 16 oz Ridomil Gold at first cultivation followed by 16 oz Ridomil Gold at layby
- **Presidio:** 4 oz Presidio at transplanting
- **Presidio plus RG:** 4 oz Presidio at transplanting followed by 16 oz Ridomil Gold at layby
- **Presidio + RG + Presidio:** 4 oz Presidio at transplanting followed by 16 oz Ridomil Gold at first cultivation followed by 4 oz Presidio at layby



2015 Efficacy of Fungicides for Control of Black Shank in KY14xL8

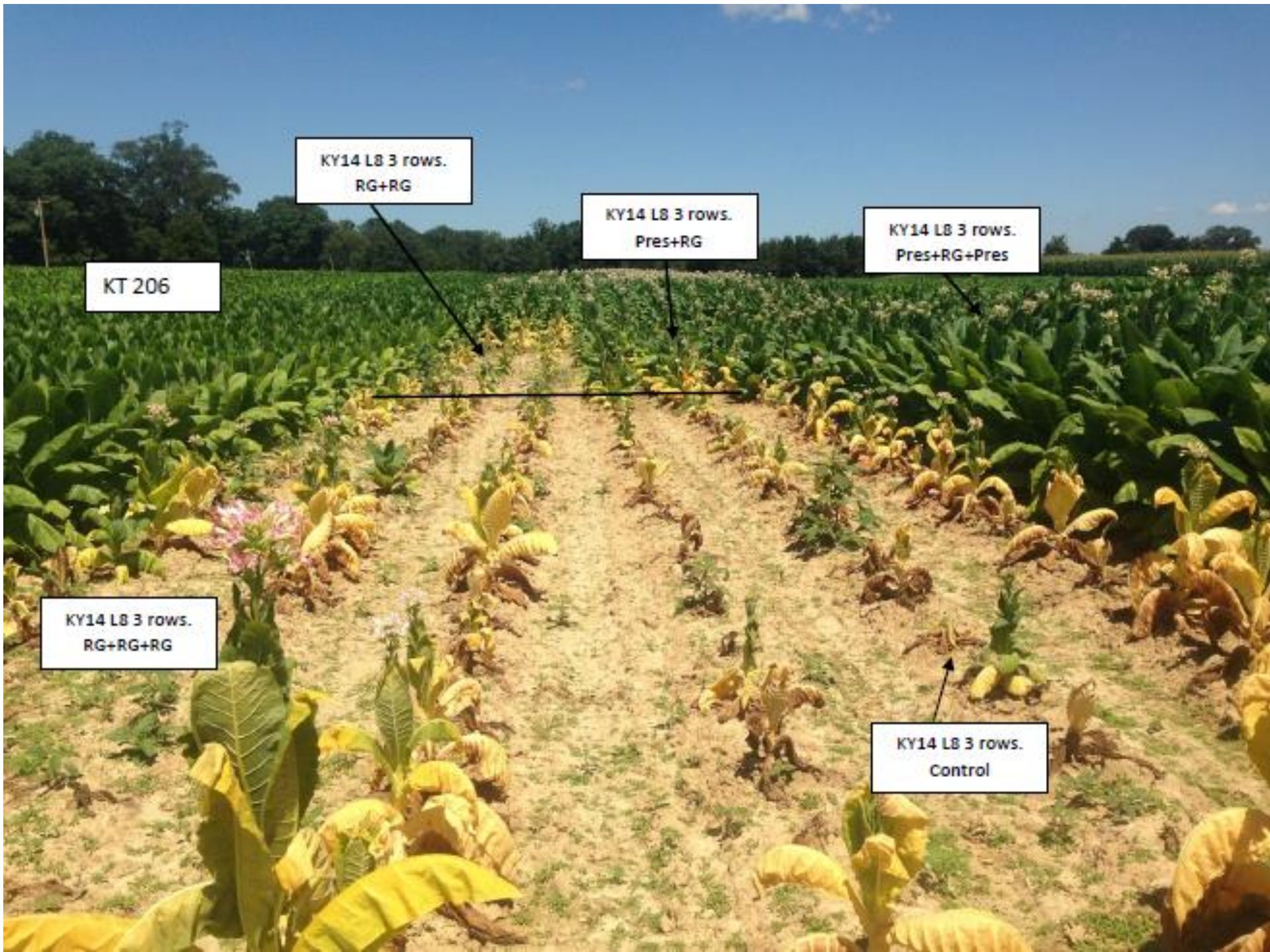


Average Percentage of Plants with Black Shank KY14 L8

Treatment	14 DAT	21 DAT	28 DAT	35 DAT	42 DAT	56 DAT
Control-No Fungicide	0 A	1.28 A	4.9 A	16.88 A	42.92 A	73.86 A
RG plus RG	0 A	0 A	0.78 AB	19.62 A	40.28 A	67.76 A
RG plus RG plus RG	0 A	0 A	0.78 AB	9.32 A	39.14 A	74.72 A
Presidio	0 A	0 A	0 B	0.4 B	2 B	22.1 B
Presidio plus RG	0 A	0 A	0 B	0 B	0 B	10.66 B
Presidio plus RG plus Presidio	0 A	0 A	0.4 B	0.4 B	0.4 B	13.94 B

Percentages followed by different letters within a treatment date are significantly different using Tukeys-Kramer HSD test (P<.05)

KY 209LC	% of Plants Affected by Black Shank					Avg
	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
Control-No Fungicide	0	0	0	0	0	0
RG plus RG	0	0	0	0	0	0
RG plus RG plus RG	0	0	0	0	0	0
Presidio	0	0	0	0	0	0
Presidio plus RG	0	0	0	0	0	0
Presidio plus RG plus Presidio	0	0	0	0	0	0



KT 206

KY14 LB 3 rows.
RG+RG

KY14 LB 3 rows.
Pres+RG

KY14 LB 3 rows.
Pres+RG+Pres

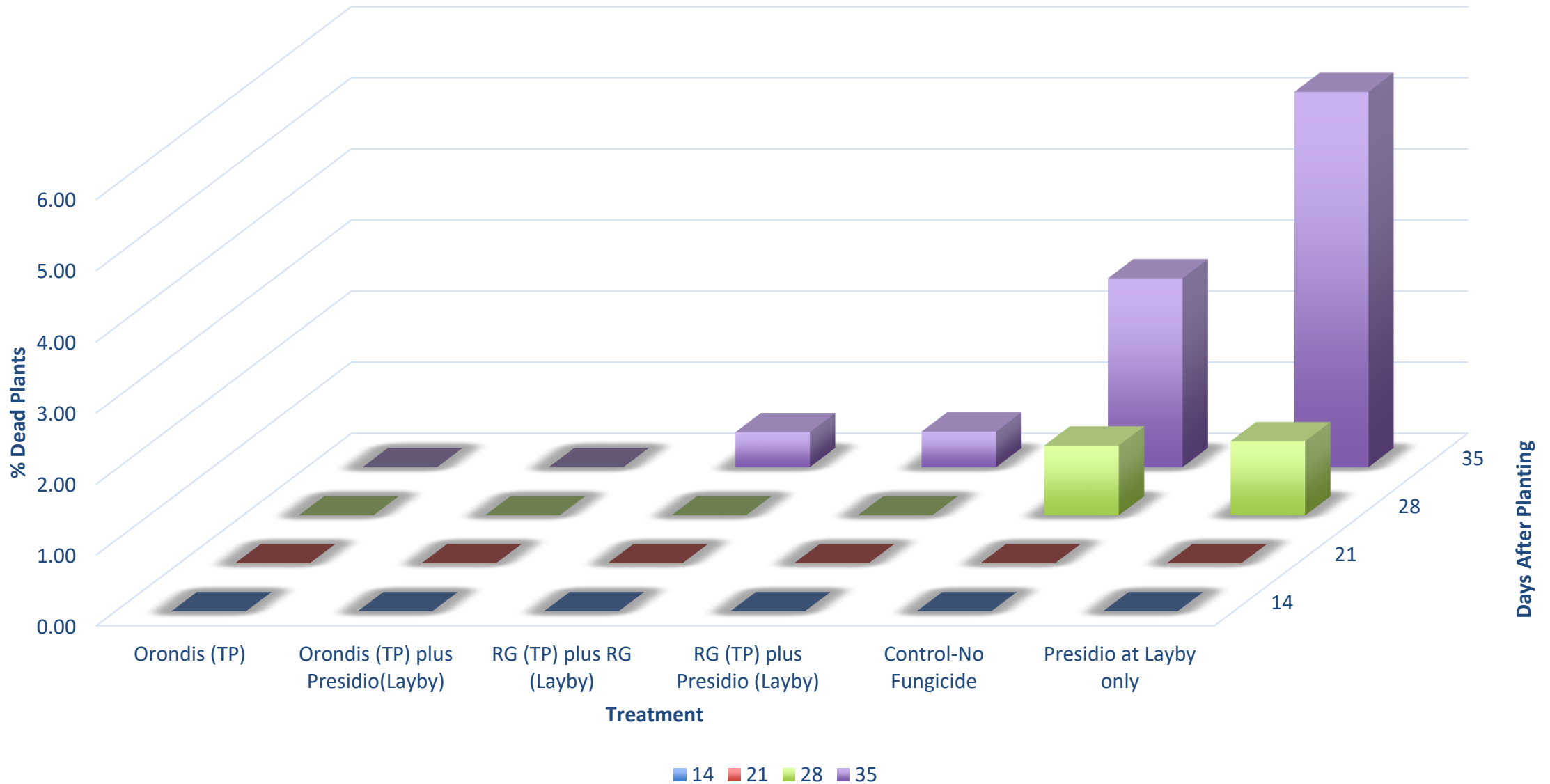
KY14 LB 3 rows.
RG+RG+RG

KY14 LB 3 rows.
Control

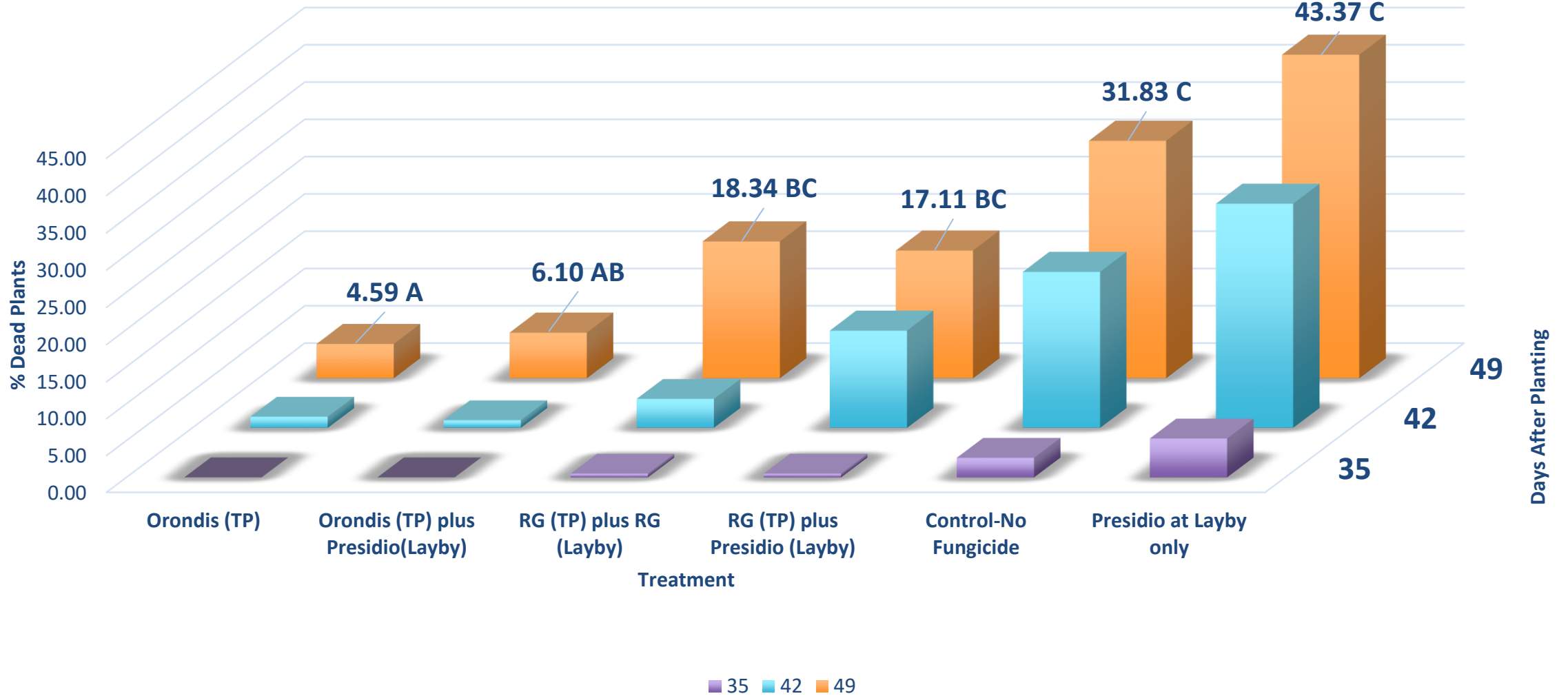
2016 Trial: Focus on Orondis

- **Control:** No fungicides applied
- **Presidio:** 4 oz Presidio applied at second cultivation
- **RG plus RG:** 8 oz Ridomil Gold at transplanting followed by 16 oz Ridomil Gold at layby
- **RG plus Presidio:** 8 oz Ridomil Gold at transplanting followed by 4 oz Presidio at layby
- **Orondis Gold :** 4.8 oz Orondis Gold 200 plus 8 oz Ridomil at transplanting applied through transplant water
- **Orondis Gold plus Presidio:** 4.8 oz Orondis Gold 200 plus 8 oz Ridomil at transplanting followed by 4 oz Presidio at layby

Efficacy of Fungicides for Control of Blackshank in KY14xL8 14-35 Days After Planting

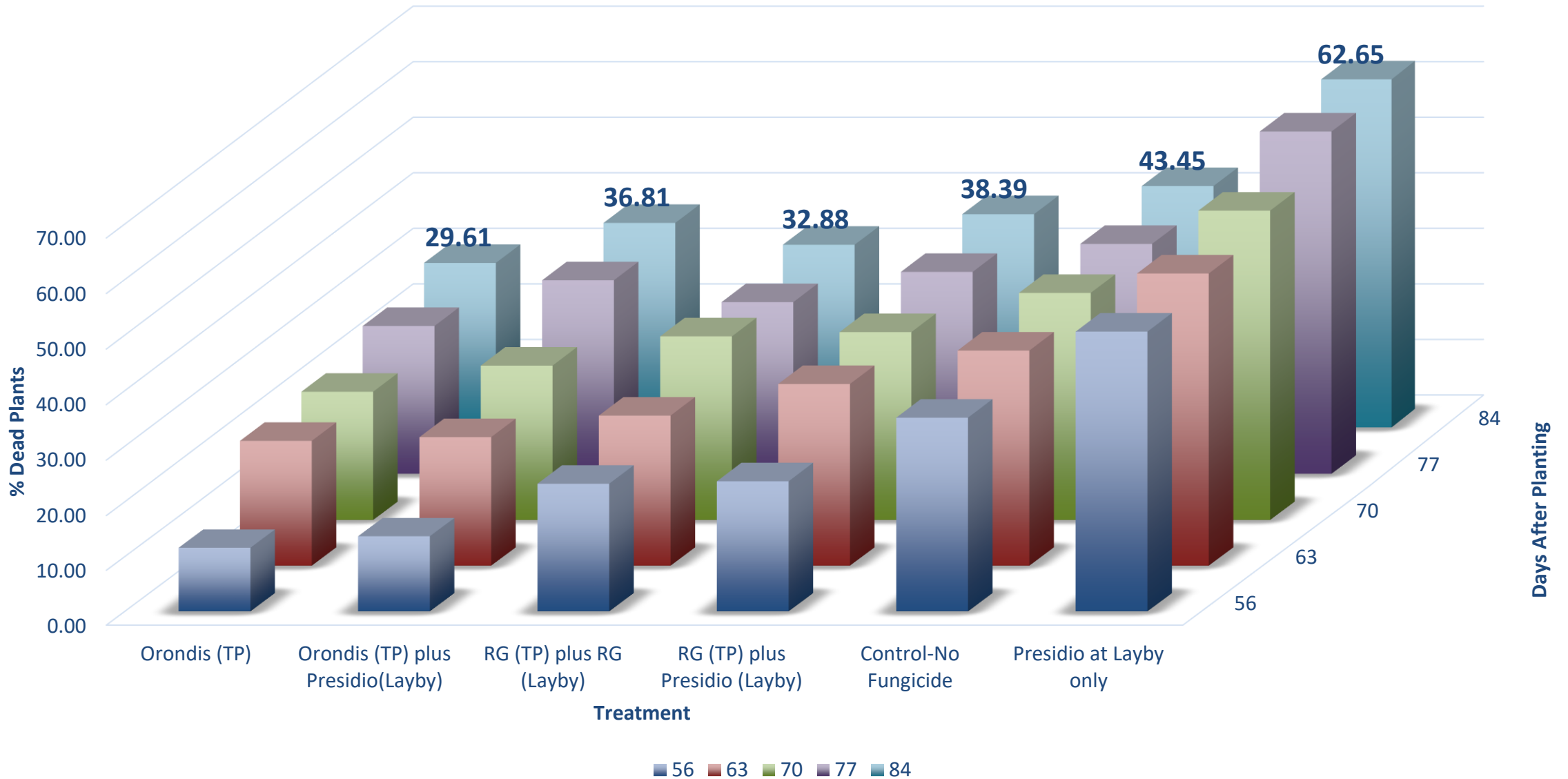


Efficacy of Fungicides for Control of Blackshank in KY14xL8 35-56 Days After Planting



Efficacy of Fungicides for Control of Blackshank in KY14xL8

56-84 Days After Planting



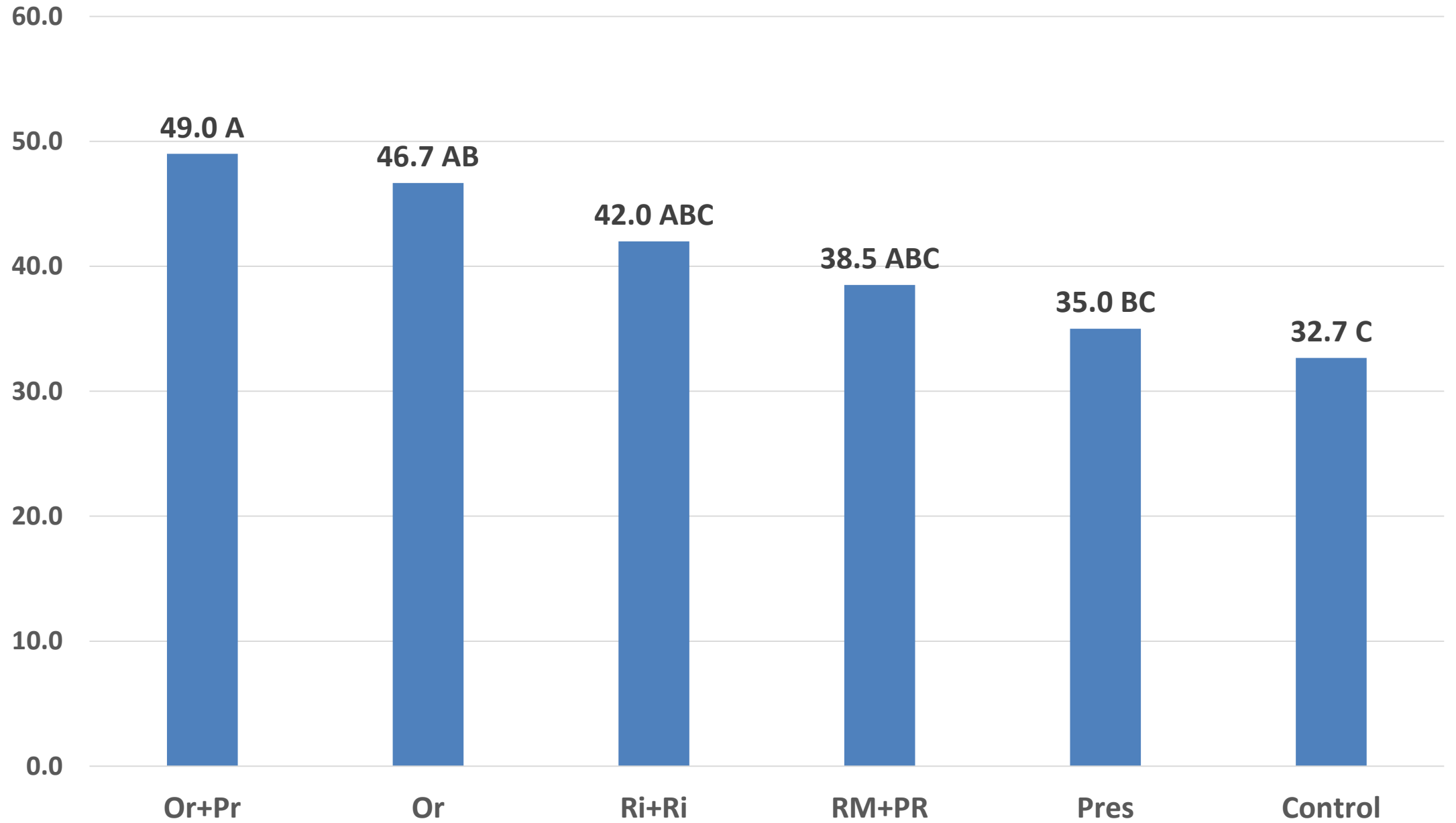
Summary of mean of percentage of plants infected over 4 replications for KY 14-L8LC variety.

	14	21	28	35	42	49	56	63	70	77	84
Orondis (TP)	0.00 A	0.00 A	0.00 A	0.00 C	1.50 D	4.59 A	11.61 B	22.61 B	23.11 B	26.61 B	29.61 B
Orondis (TP) plus Presidio(Layby)	0.00 A	0.00 A	0.00 A	0.00 C	1.02 CD	6.10 AB	13.70 B	23.28 B	27.82 B	34.83 B	36.81 B
RG (TP) plus RG (Layby)	0.00 A	0.00 A	0.00 A	0.49 BC	3.92 CD	18.34 BC	23.24 B	27.16 B	33.08 B	30.90 B	32.88 B
RG (TP) plus Presidio (Layby)	0.00 A	0.00 A	0.00 A	0.50 BC	13.10 BC	17.11 BC	23.68 B	32.85 B	33.85 B	36.35 B	38.39 B
Control-No Fungicide	0.00 A	0.00 A	0.98 A	2.65 AB	20.98 AB	31.83 C	35.14 B	38.87 AB	40.90 B	41.38 B	43.45 B
Presidio at Layby only	0.00 A	0.00 A	1.04 A	5.27 A	30.12 A	43.37 C	50.63 A	52.74 A	55.72 A	61.61 A	62.65 A

Percentages followed by different letters are significantly different at the .05 level

HB4488PLC: No plants exhibited blackshank symptoms in any treatment

Mean(Day of First Incidence)





42 Days after planting



08/20/2019
R-Growth Control in
transplant water
+
Preston at layby

RG + Pr

08/20/2019
Preston applied at 2nd
walkover

Pr

08/20/2019
Osmorhiza in transplant
water
+
Preston at layby

Or + Pr

49 Days after planting



RG + Pr

Pr

Or + Pr



K12345
Control- No Fungicide

Control

K12345
Prasido applied at first cultivation

Pr

K12345
Orondis in transplant

Orondis

Conclusions

- Blackshank management requires an integrated approach
- Variety selection is critical for fields with heavy blackshank pressure.
- Fungicides alone will not control black at a satisfactory level, but are an important tool in an integrated approach
- Orondis performed the best in reducing total % of plants affected and well as delaying the onset of symptoms.
- Presidio still has a fit as a rotational partner for later in-season applications

Special thanks:

Altria

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Questions?

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