

# Insect Control: *Challenges & Solutions*



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EXTENDING KNOWLEDGE >> CHANGING LIVES

NDSU

EXTENSION

# Chlorpyrifos Update

## History:

Feb. 2022: EPA revoked all food tolerances

Nov. 2023: 8<sup>th</sup> Circuit Court vacated EPA's 2022 revocation

## Current status: state-specific, evolving

**ND:** only Pilot 4E and Pilot 15G registered for beets in 2024

– NO other branded products, period

– NO unused, leftover product

**MN:** working w/ 3 registrants; stay tuned; follow BMPs

Questions: consult NDSU Extension, Coop. Agriculturists, consultants

# Midac

- Imidacloprid (a neonicotinoid insecticide)
  - Sept. 2022: EPA postponed imidacloprid review completion to 2024
  - Paused Vive's sale of new Midac to retailers
  - Midac in supply chain can be sold & applied to sugarbeet
  - Vive anticipates sale of new product in 2025

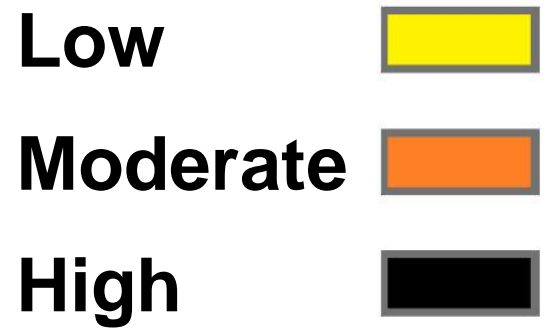
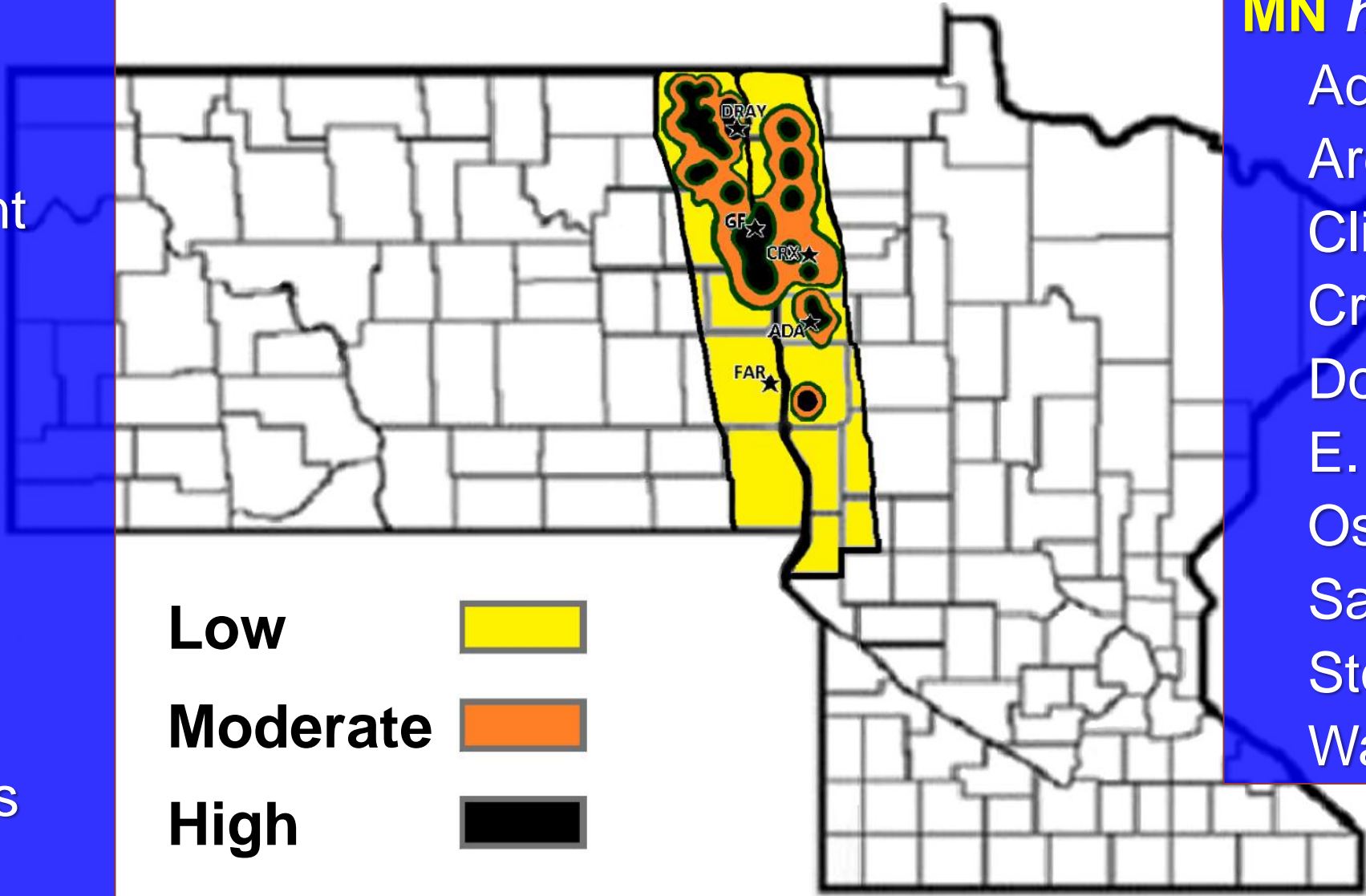
**ND high risk:**

- Auburn
- Backoo
- Bathgate
- Bowesmont
- Buxton
- Cavalier
- Crystal
- Drayton
- Hensel
- Oakwood
- Reynolds
- St. Thomas
- Thompson
- Veseleyville
- Voss

# 2024 Root Maggot Forecast\*

**MN high risk:**

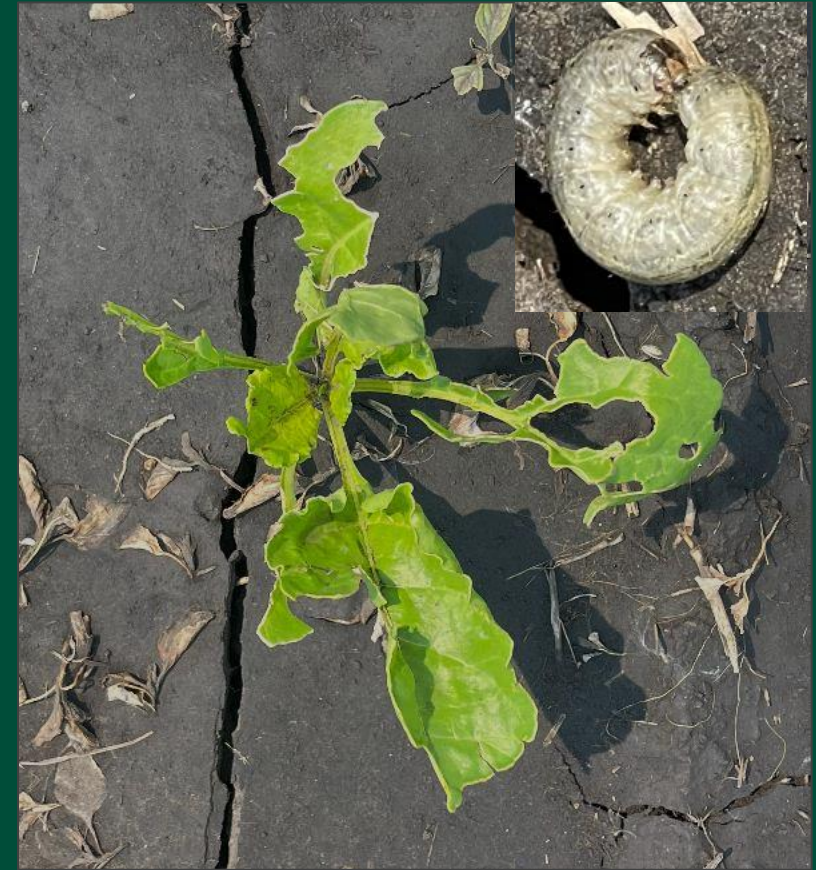
- Ada
- Argyle
- Climax
- Crookston
- Donaldson
- E. Grand Forks
- Oslo
- Sabin
- Stephen
- Warren





# Sugarbeet Root Maggot Control

St. Thomas, 2023





What if I only have  
moderate SBRM pressure?



Counter 7.5#



Ctr 7.5# + Lor Adv 2 pts



Poncho Beta



PBeta + Lor Adv 2 pts



Check

# Single Post Sprays to Manage Moderate SBRM Infestations: 2016-2018

Treatment	RSA	Tons/ac	\$\$/ac above check
Counter 7.5# B + Lorsban Adv. 2 pt	9,837 a	32.6 a	\$245
Poncho Beta + Lorsban Adv. 2 pt	9,532 ab	31.4 ab	\$217
Counter 7.5# B + Lorsban Adv. 1 pt	9,498 abc	31.1 ab	\$224
Poncho Beta + Lorsban Adv. 1 pt	9,325 abc	30.8 abc	\$187
Counter 8.9# B	8,919 bc	29.1 bcd	\$159
Counter 7.5# B	8,800 bc	28.7 cde	\$145
Poncho Beta	8,754 c	28.5 de	\$144
Check	7,881 d	26.4 e	---
<b>LSD (0.05)</b>	<b>760.9</b>	<b>2.31</b>	



# Postemerge Insecticides & Exponent Synergist for SBRM Control St. Thomas, ND – 2023

At-Plant	Post (6d <u>after</u> Peak Fly)	Feeding Injury (0-9)	Rec. Sucrose (lb/ac)	Tons/ac	\$/ac above Check
Counter 20G 7.5 lb	Mustang Maxx + Exponent	1.55 cde	11,309.3 a	36.5 a	\$1,177
Counter 20G 7.5 lb	Asana + Exponent	1.83 cd	10,808.8 ab	35.9 ab	\$981
Counter 20G 7.5 lb	Mustang Maxx + Asana (10 d)	0.73 e	10,346.5 ab	33.5 ab	\$941
Counter 20G 7.5 lb	Mustang	1.28 de	9,660.6 ab	31.8 ab	\$735
Counter 20G 7.5 lb	Asana	1.48 cde	9,570.6 b	31.7 ab	\$701
	Exirel 20 fl oz/ac	3.13 b	9,529.3 b	31.9 ab	\$666
	Mustang Maxx	3.13 b	9,367.7 bc	31.9 ab	\$592
	Exirel 13 fl oz/ac	4.20 a	9,166.5 bc	30.7 bc	\$584
Counter 20G 8.9 lb		2.35 bc	9,112.3 bc	31.6 ab	\$491
Counter 20G 7.5 lb		2.90 b	7,683.0 cd	26.1 c	\$220
CHECK		4.93 a	6,355.1 d	20.5 d	---
	<b>LSD (0.05)</b>	0.98	1,714.8	5.40	NS



# Exirel<sup>®</sup>: cyazypyr, or cyantraniliprole

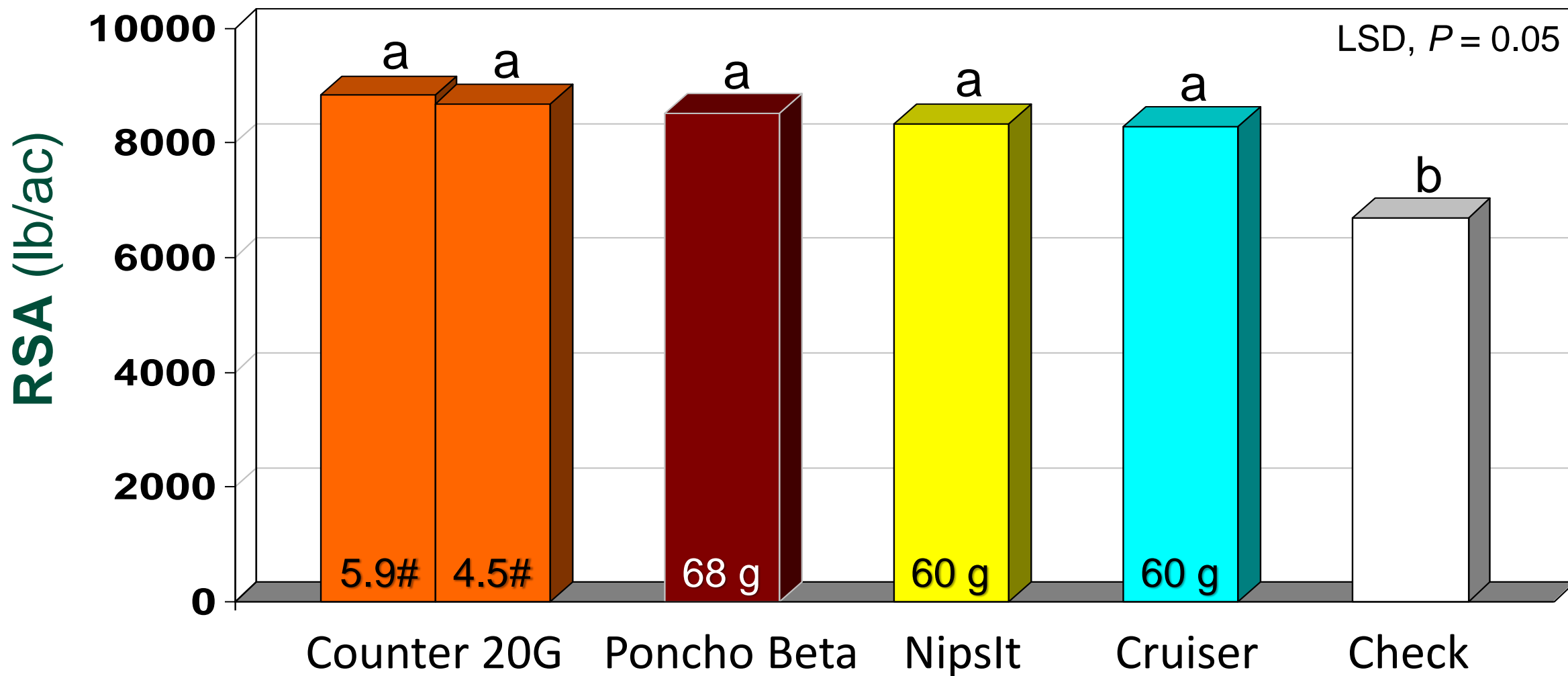
- Alt. mode of action (Diamides)
  - Recently registered for use in sugarbeet
  - Foliar application only
  - Product cost @ 20-oz rate: \$60+/ac

# Root Maggot – Summary

- SBRM populations continued at high levels in 2023 (eg., Sabin)
- Be aware of your risk: monitor fields (and online fly counts)
- Most of Minn-Dak:
  - Counter, Mustang, Midac, or a seed trt.
  - Unexpected high fly activity:  
Chlorpyrifos, Asana, or Mustang Maxx (2-3 d pre-peak)
- High-risk areas (Sabin, Baker):
  - Use a 2 or 3-component combination



# Springtail Control in Red River Valley: 6-year combined analysis





# Springtail Control Prosper, ND



CHECK



Counter 20G  
5.9 lb BAND



Cruiser  
60 g



Poncho Beta  
68 g



NipsIt Inside  
60 g

# Revenue Increases from Springtail Control (6-yr data set)

Treatment	Rate	Gross revenue gain (above check)*
Counter 20G	5.9 lb/ac	\$260
Counter 20G	4.5 lb/ac	\$258
Poncho Beta	68 g	\$214
NipsIt	60 g	\$190
Cruiser	60 g	\$185

\*Based on grower payment schedule.

# 2023 Springtail Trial

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**Location:** Prosper, ND

**Planting Date:** July 7

**Plot size:** 2 rows X 25 ft long

**Design:** Randomized Complete Block; 4 replications

**Assessments:** plant stand counts, yield, revenue



# Insecticide Programs for Springtail Control – Prosper, ND, 2023

Planted: July 7, 2023

Treatment	RSA (lb/ac)	Root yield (tons/ac)	Revenue/ ac	Gain over Check
Poncho Beta + Mustang Maxx 4 fl oz DIF	6,586 a	26.2 a	\$937	\$595
Counter 20G 8.9# Band	5,054 ab	19.9 ab	\$733	\$391
Counter 20G 5.9# Band	4,735 b	19.5 b	\$641	\$299
Poncho Beta + Movento HL 2.5 fl oz <b>10" Post Band</b>	4,671 b	18.9 b	\$650	\$308
Counter 20G 4.5# Band	4,523 b	18.5 b	\$615	\$273
Poncho Beta + Midac FC 13.6 fl oz DIF	4,447 b	18.5 b	\$588	\$246
Mustang Maxx 4 fl oz DIF	4,354 b	18.3 b	\$564	\$222
Midac FC 13.6 fl oz DIF	4,093 bc	17.1 b	\$539	\$197
Poncho Beta	3,552 bc	15.4 bc	\$438	\$96
Check	2,553 c	10.5 c	\$342	---
<b>LSD (0.10)</b>	1,724.7	6.54		



# Summary: springtail trial

- **Best plant stand protection & yield:**
  - Poncho Beta + Mustang Maxx 4 oz DIF
  - Counter 20G @ 8.9 lb
- **Poncho Beta alone vs. P. Beta + Movento (10" POST Band):**
  - Numerical (NS) increases in stands & yield; \$212/ac revenue increase
- **Poncho Beta + Mustang Maxx:**
  - greater stands & yield than either product alone
  - over \$200/ac greater revenue than any other treatment
- **Poncho Beta + Midac:**
  - greater stands & yield than either product alone
  - ~\$50 to \$150 more rev. “ “ “ “



## Springtail Control – Take-home Points

- **Counter 20G:** 6 to 7.5-lb is sufficient in ND & MN
- **Mustang Maxx, Midac, Seed Treatments:** similar to lower rates of Counter
- **Unexpected infestation?** Consider Movento (foliar)
- **Unsatisfactory performance with your insecticide program?**
  - Counter at planting
  - Two-pronged approach:  
Seed treatment + Midac or Mustang Maxx



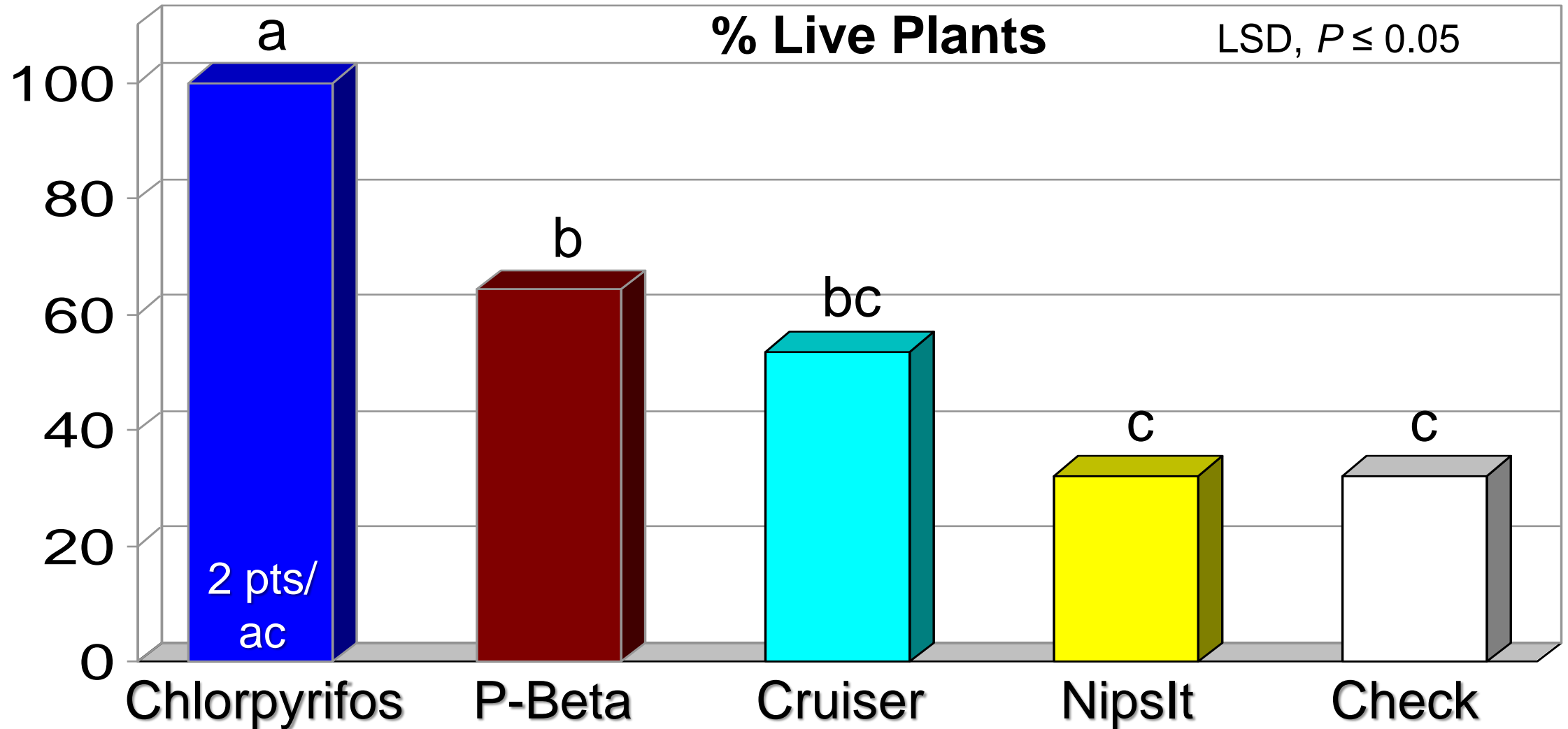
# Cutworm Control – Greenhouse Trial



Maintained 4 weeks  
in greenhouse

# Black Cutworm Control

## Greenhouse Study – Combined Analysis (2 trials)



# Cutworm Control – Take-home Points

- Poncho Beta – only seed treatment that increased plant survival (vs. check)
- Cruiser & NipsIt – over 45% stand losses
- Key: catching infestations early (scouting)
- Rescue options:
  - Chlorpyrifos (state label??)
  - Mustang or Asana XL
  - Coragen or Exirel?

# Economic Thresholds for Caterpillars

- **Cutworms:** *treatment usually justified at 4 to 5% cutting of seedlings*
  - **Armyworms:** *no established threshold (be conservative)*
- \* *Seed treatment insecticides do not control these pests*



# Acknowledgments

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- Seed & Crop Protection Industry
- **Crew:** Evan Dietrich, Bryce Friday, Nathan Hayes, Reed Thoma
- Peter Hakk

# Thank you

A sunset over a field with trees in the distance. The sky is filled with orange and yellow clouds, and the sun is low on the horizon. The foreground is a dark green field, and the background is a line of trees.

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