# Determining the Efficacy of Insecticide Seed Treatments and In-Furrow Insecticides for Wireworm Management

**Adam Varenhorst and B. Hauswedell: SDSU**

**J. P. Michaud: KSU**

**J. Knodel: NDSU**

# Early season sunflower insect pests

- Wireworms

# Early season sunflower insect pests

- Wireworms

- White grubs

# Early season sunflower insect pests

- Wireworms

- White grubs

- Palestriped flea beetles

# Early season sunflower insect pests

- Wireworms

- White grubs

- Palestriped flea beetles

- Cutworms

# Solution to the early season pests?

- No emergency treatments
- In-furrow insecticides

# Solution to the early season pests?

- No emergency treatments
- In-furrow insecticides
- Insecticide seed treatments



# Solution to the early season pests?

- No emergency treatments
- In-furrow insecticides

- Insecticide seed treatments

- T-Band insecticides

# The problem?...What about IPM?

- No management recommendations
- Almost all sunflower seed treated
- What pests are they really managing?

# The seed treatment problem

- Neonicotinoids
  - Call to reduce their use
  - Requires recommendations

# Sunflower seed treatment question

Are seed treatments in sunflower economical for North Dakota and South Dakota farmers, and are they effective?

# Experimental design

- Multi-state study with two locations in:
  - ND, SD

# Experimental design

- Multi-state study with two locations in:
  - ND, SD

- But, South Dakota not included in 2015

# Experimental design

- Multi-state study with two locations in:
  - ND, SD
- But, South Dakota not included in 2015
- Only showing SD data

# Experimental design: finding fields

- Searched or fields with wireworms
- Sampled numerous fields

# Experimental design

- Stand counts taken at 14 d after planting
- Root ratings at 14 d after planting
  - Dug five roots for the outer two rows
  - 0-10 (0 the worst) injury scale
- Harvested middle two rows for yield

# Experimental design

- **Six treatments:**

1) Untreated control

- **Seed Treatments**

2) Cruiser 5FS (.25)
3) Cruiser 5FS (.375)

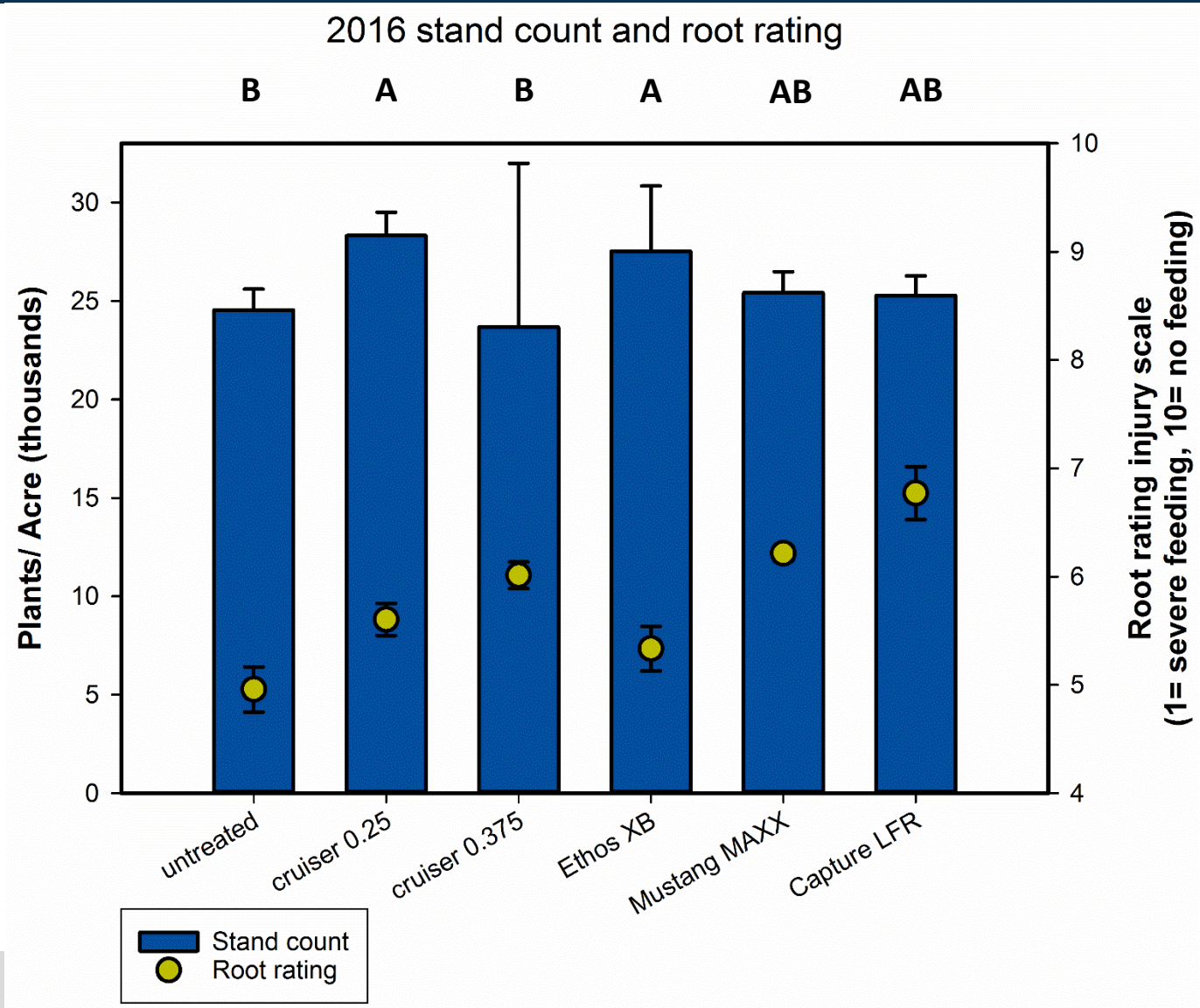
- **In-furrows**

4) Mustang Maxx
5) Capture LFR
6) Ethos XB

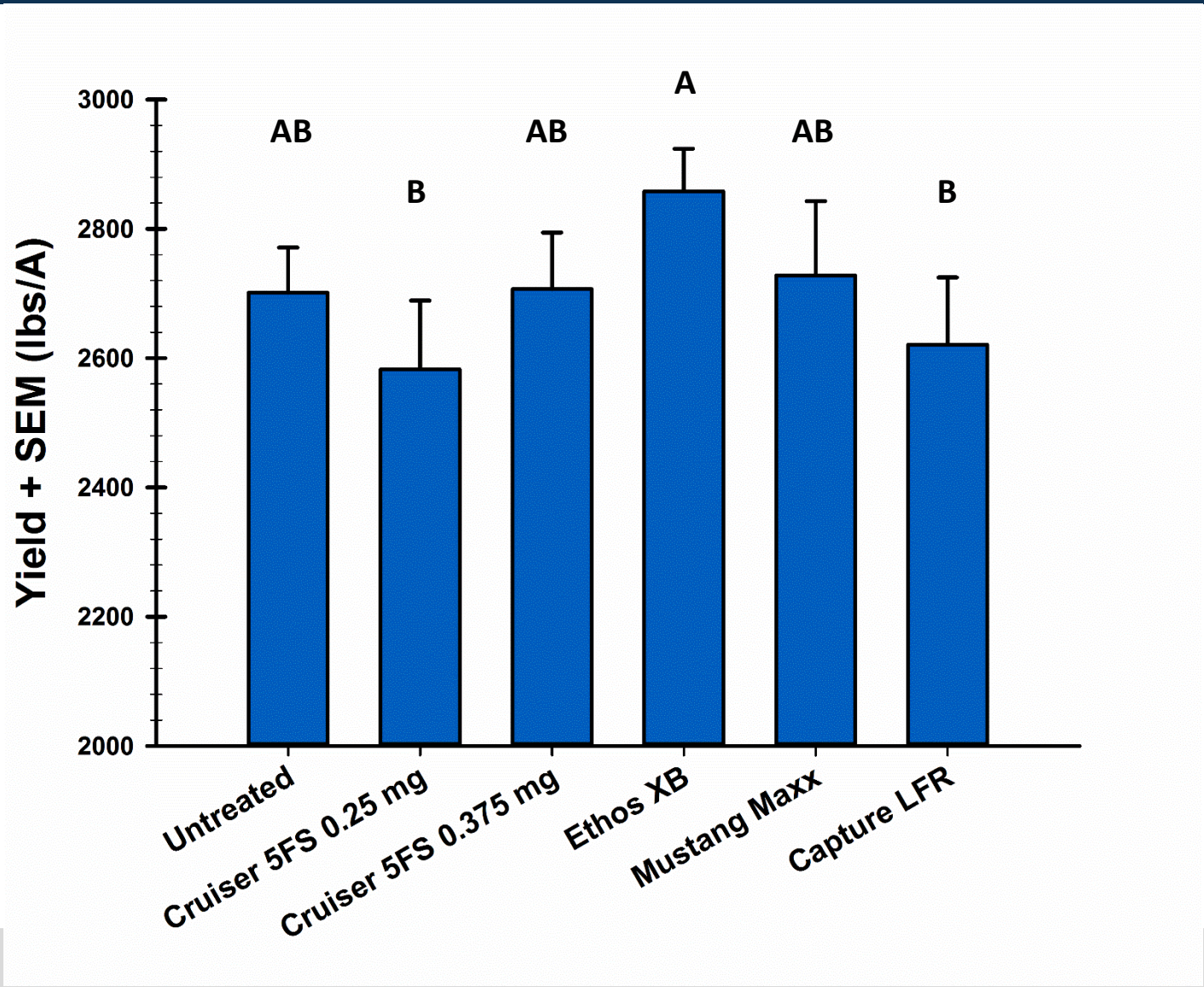
# Treatments affected stand counts

# Treatments affected root ratings

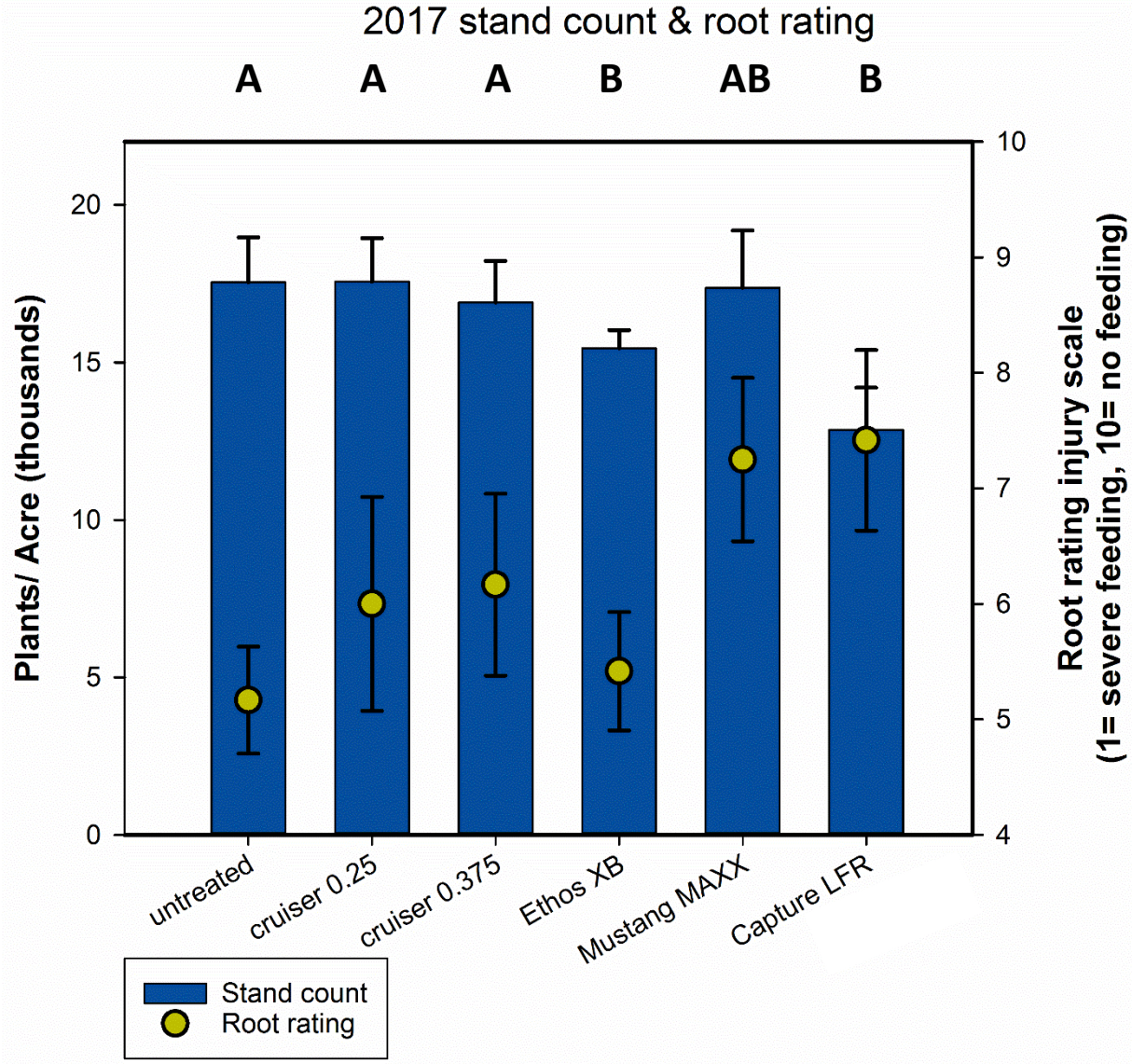
# 2016 Stand Counts and Root Ratings



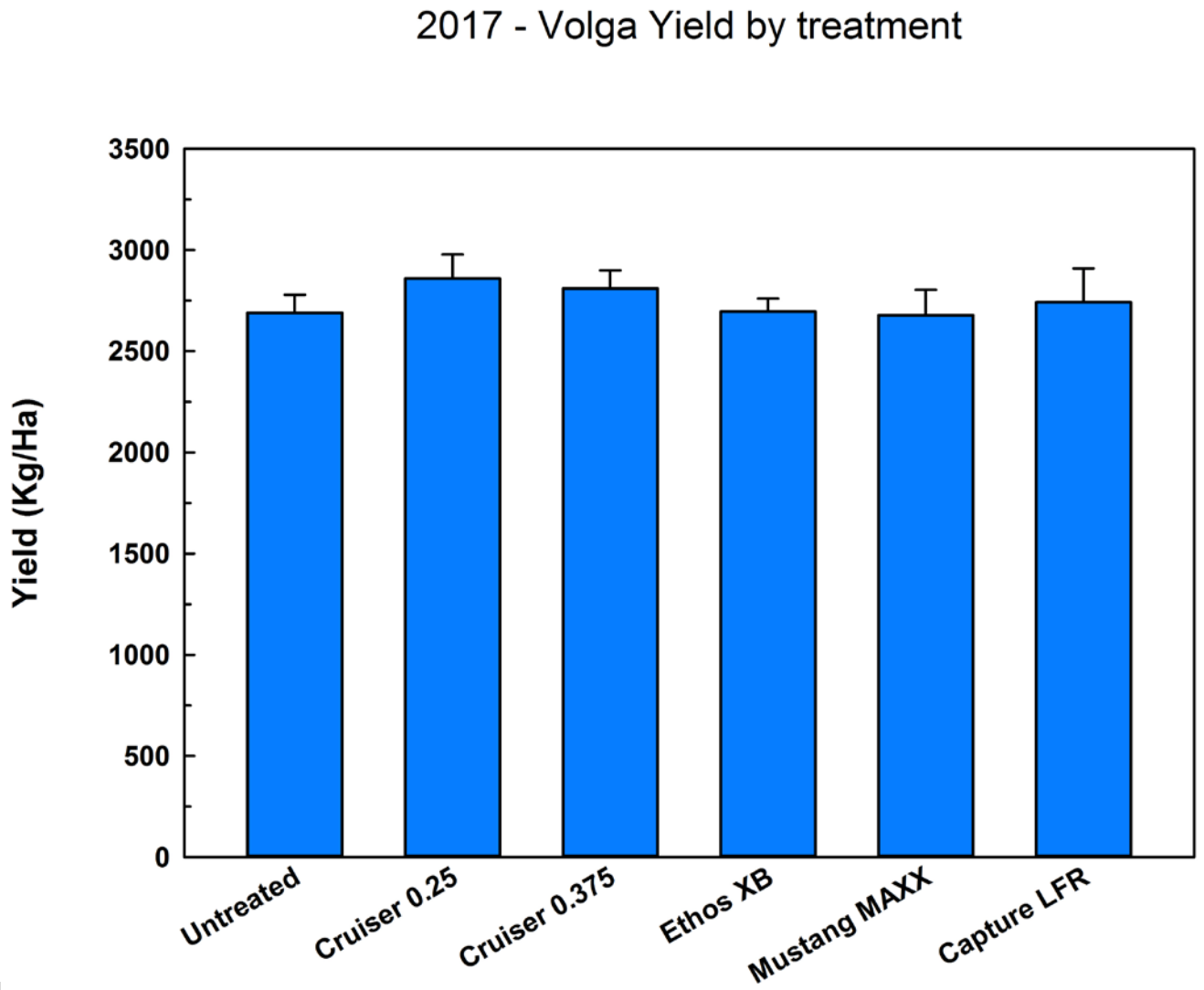
# 2016 Yield



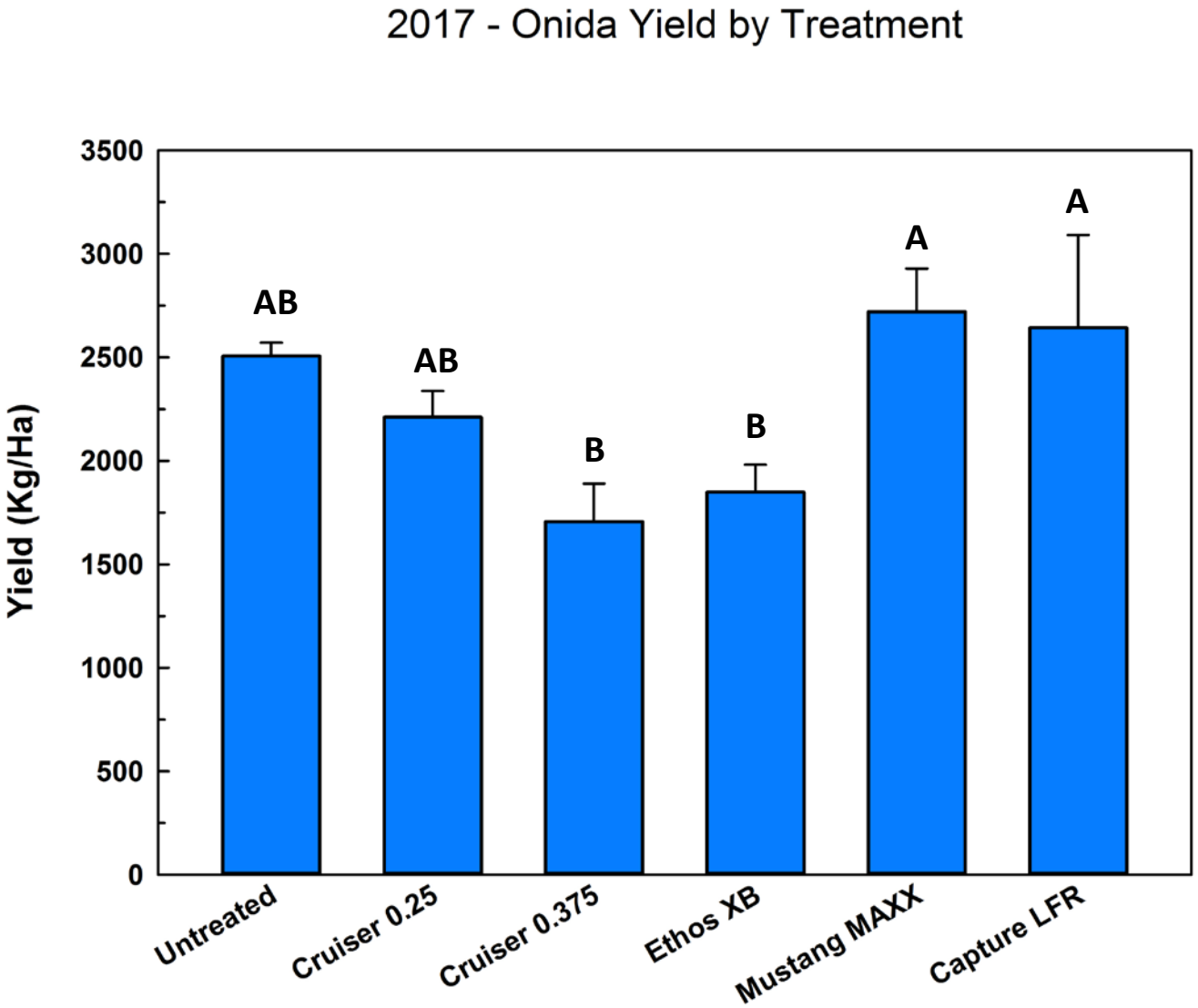
# 2017 Stand Counts and Root Ratings



# 2017 Yield



# 2017 Yield



# Conclusions

- Stands may be variable due to planter
- In-furrows provided better root protection
- Yield was variable among treatments

# Acknowledgements

- **Funding**

National Sunflower Association

- **Staff and Students**
  - Philip Rozeboom
  - Cole Dierks
  - Nathan Braun

SDSU Extension

# Adam J. Varenhorst

SDSU Extension Entomology Specialist

**South Dakota State University**
220 Berg Agricultural Hall (SAG), Box 2207A, SDSU
Brookings, SD 57007

**Office:** 605.688.6854

**Email:** adam.varenhorst@sdstate.edu