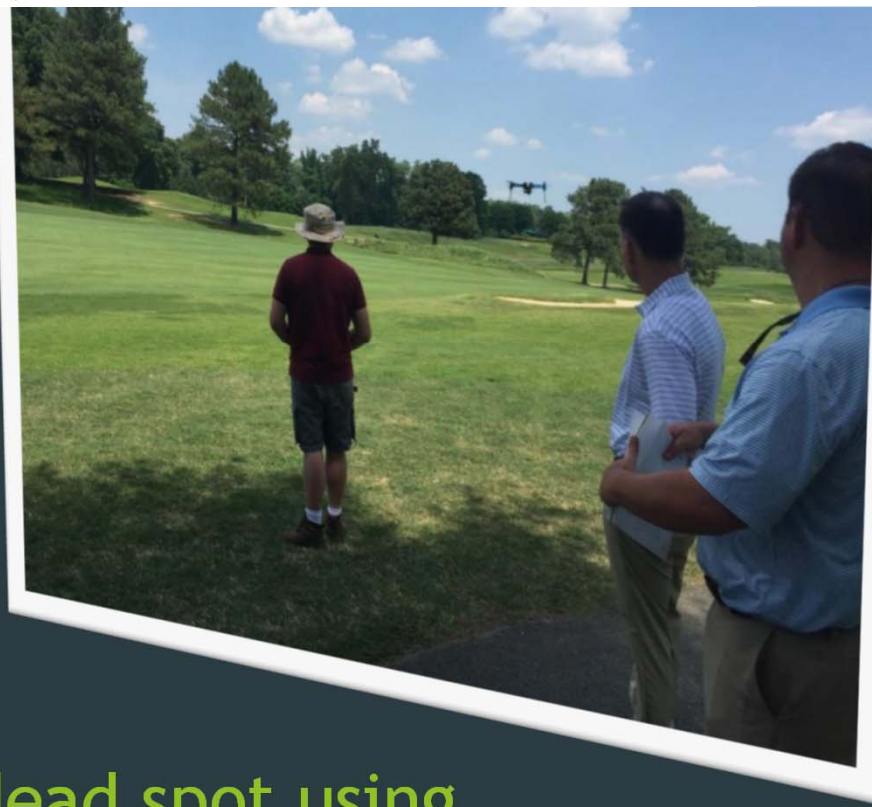


David McCall, Ph.D.  
Virginia Tech  
Turfgrass Pathologist  
@VTTurfPath



Jordan Booth, CGCS

Mapping spring dead spot using  
unmanned aerial vehicles for site-specific  
management.

Hey, cool pic!

Now what  
are you going  
to do with it?

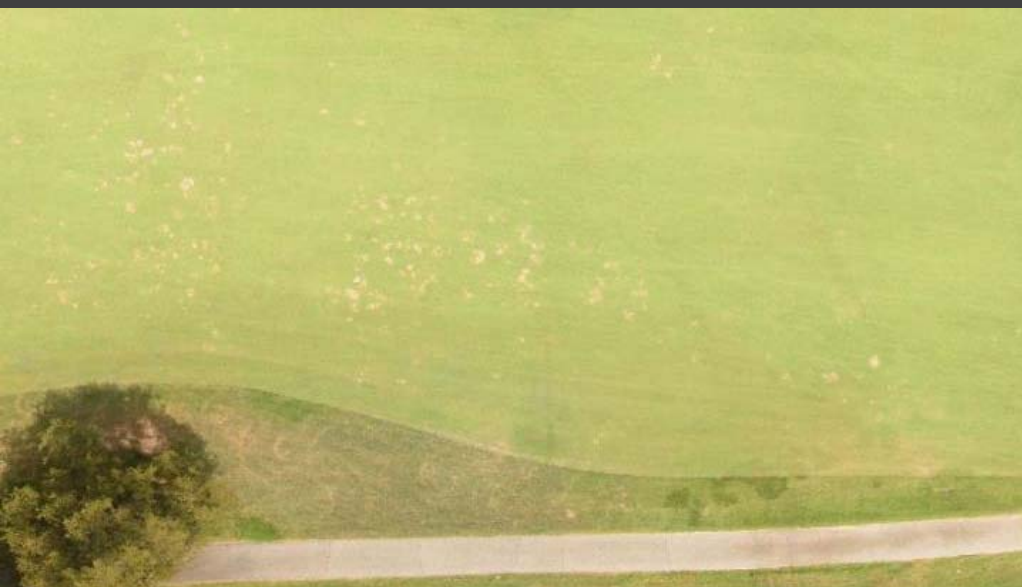


Photo credit: @GreenGCA



## Reasons for developing aerial DIA

- Objective quantification of field evaluations
  - Rapid, unbiased assessments
- Improved understanding of plant disease epidemiology
  - Spatial and temporal components
- Platform for site-specific management and reduced inputs
  - Targeted applications = reduced pesticide inputs and cost savings







# Site-Specific Management

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**The right product/practice, to the right place, at the right time**

# Pest Mapping and Site-Specific Management



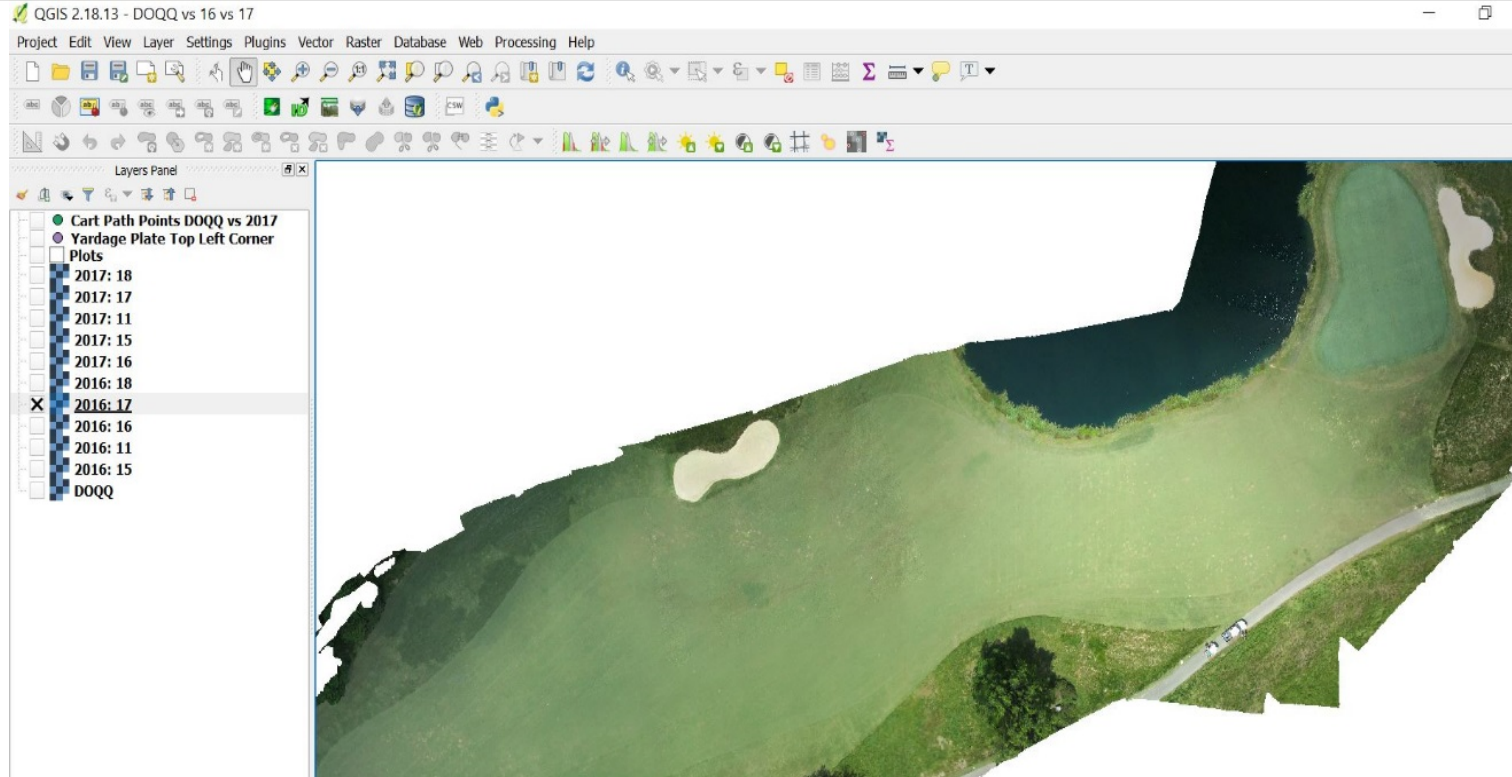
## Rationale for using SDS as our guinea pig

- ▶ Green vs. Brown... can't get much more simple than that
- ▶ SDS re-occurs in the same place over several years
- ▶ Opportunities for precision-guided applications
- ▶ Presents the opportunity for more effective fungicides applied over smaller acreage



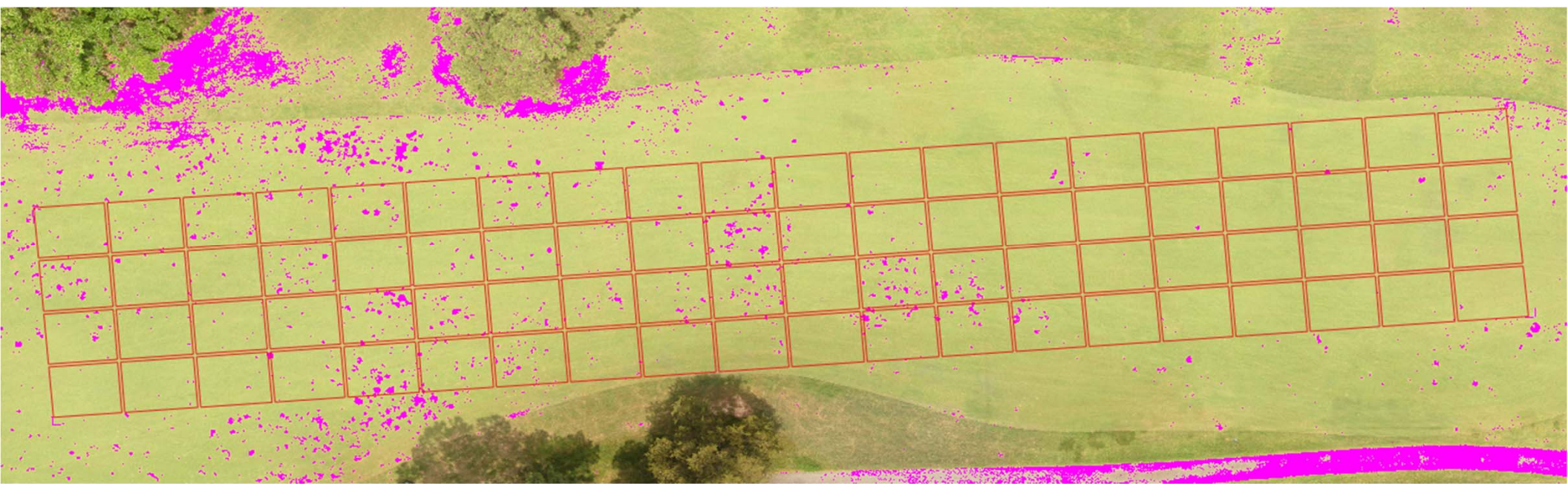


# Build the map



# Identify the disease

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# Develop the spray map



Treatment 1: Untreated



Treatment 2: Blanket Tebuconazole



Treatment 3: Blanket Penthioppyrad

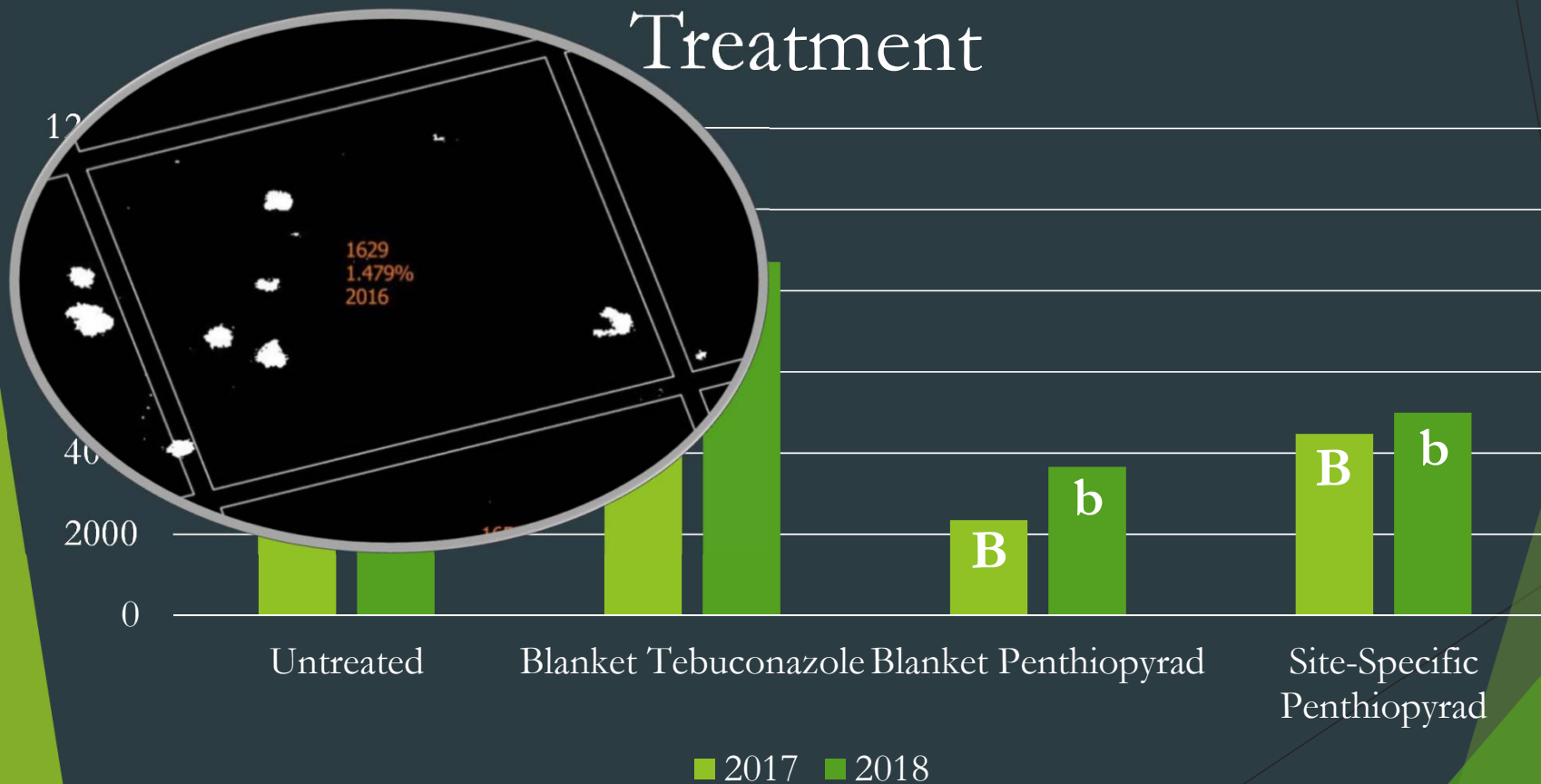


Treatment 4: Site-Specific  
Penthioppyrad

# Unnecessary sprayable areas

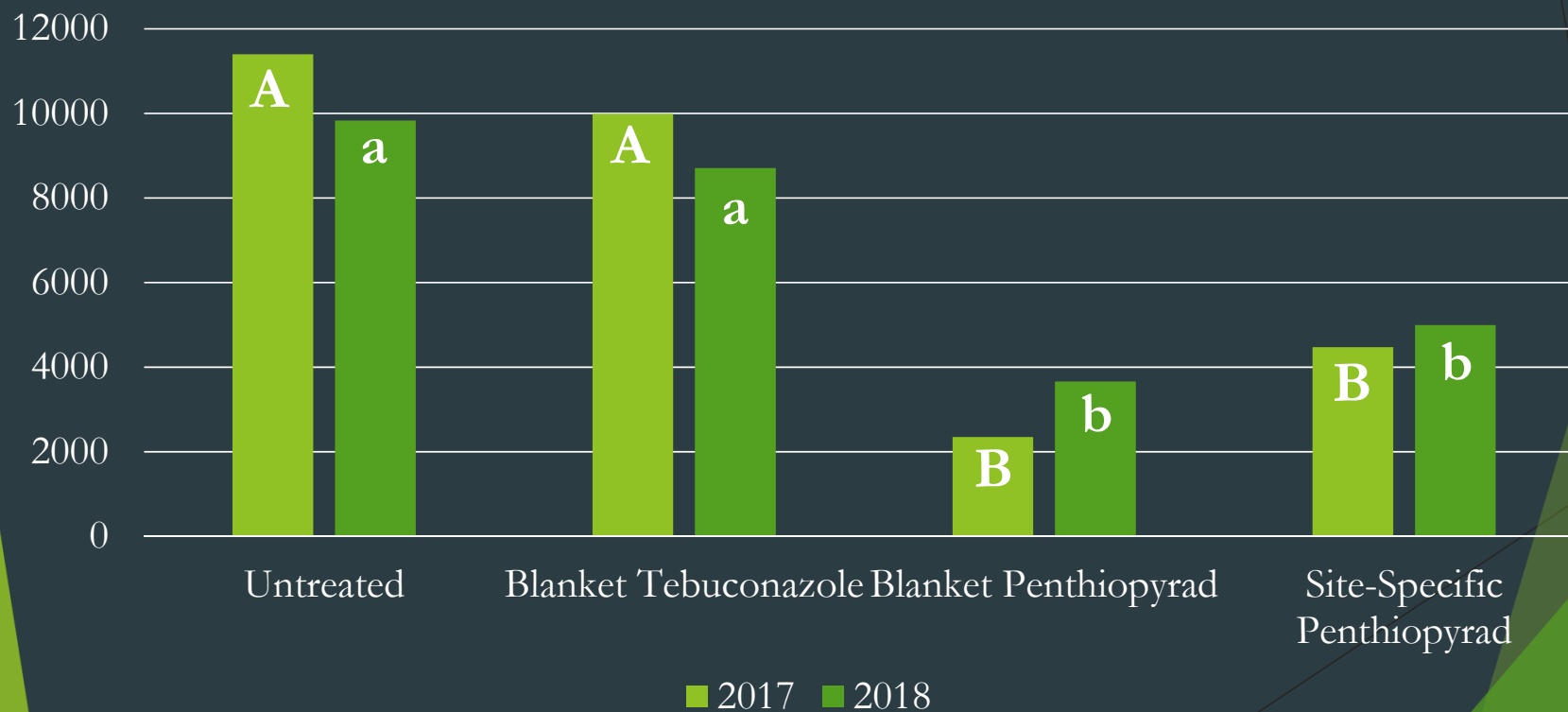


# Diseased Area (mm<sup>2</sup>/m<sup>2</sup>) by Treatment

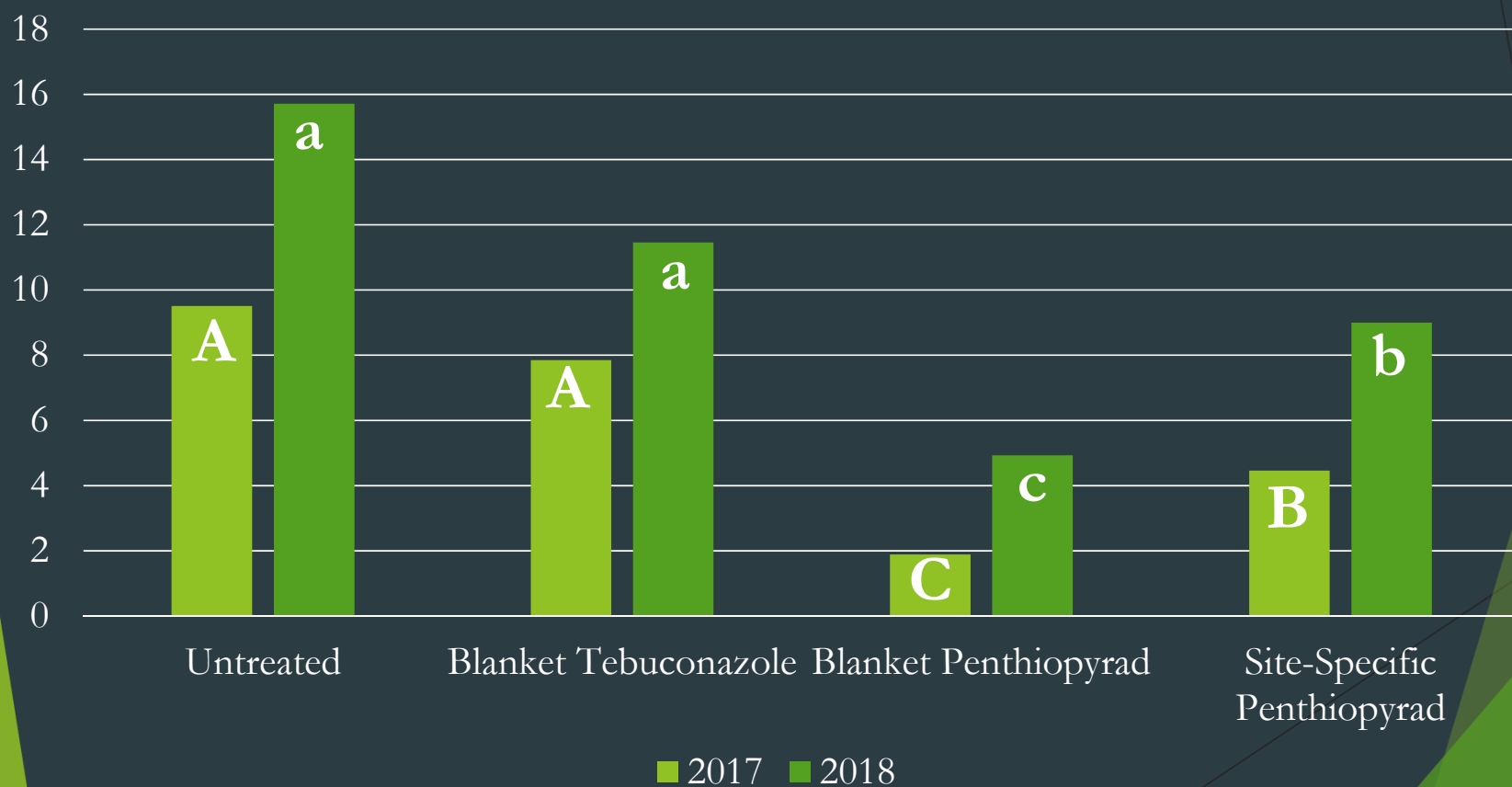




# Diseased Area ( $\text{mm}^2/\text{m}^2$ ) by Treatment



# Patch Count by Treatment



## Our success story...

- ▶ 65% fungicide reduction using site-specific penthiopyrad
- ▶ Site-specific penthiopyrad was as effective as broadcast applications of penthiopyrad
- ▶ Did not account for new infections
  - ▶ NOT A ONE AND DONE
- ▶ Approximately 1/3 cost (not including sprayer/drone technologies)
  - ▶ ~ 3 yr ROI if only using for this application



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