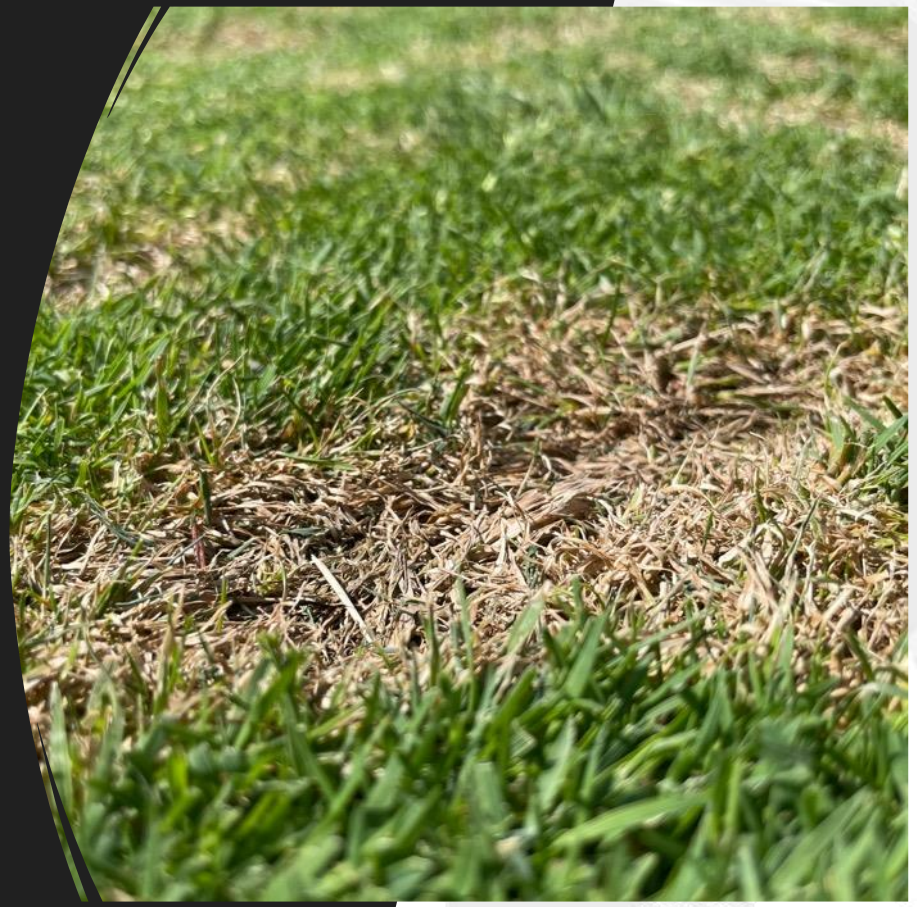
Main research findings and future challenges, risks, and opportunities



Paul Koch, PhD

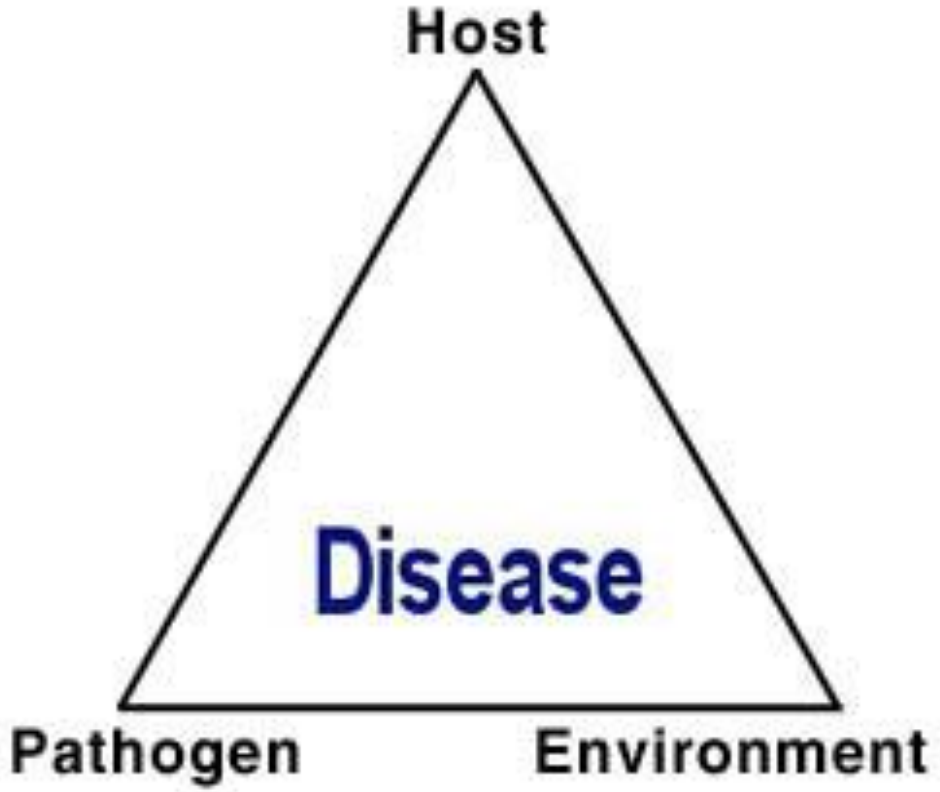
Professor

Department of Plant Pathology

University of Wisconsin - Madison

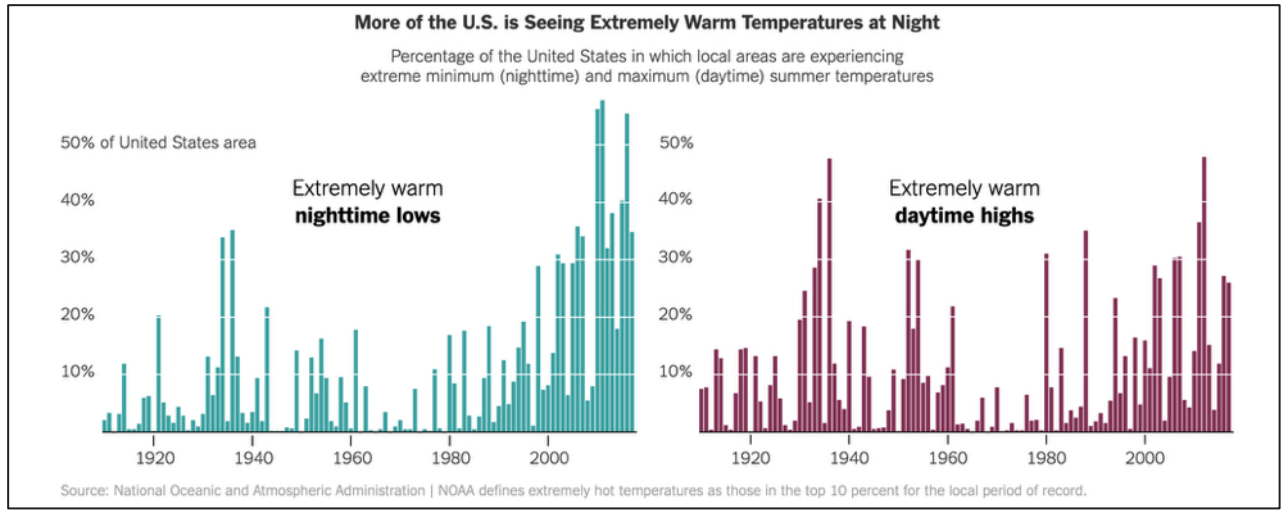
Why is dollar spot such a frustrating disease?

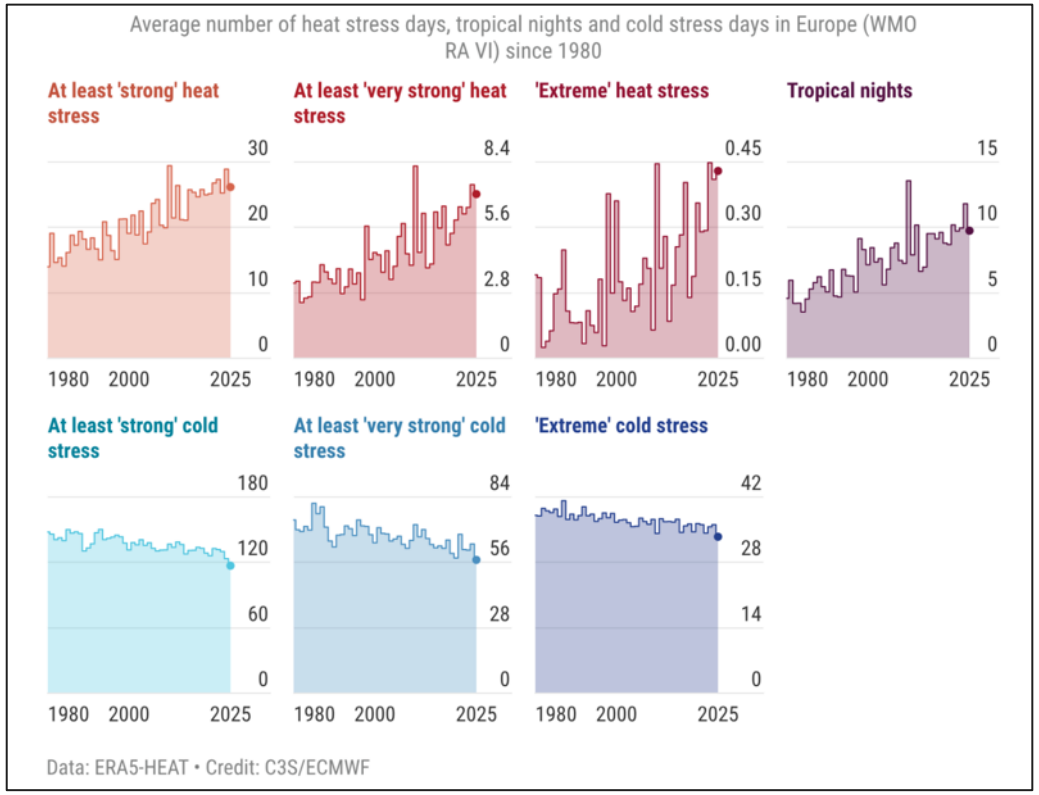




Greenkeepers are fighting a 2-front battle

- On the climate side…
  - Increasing nighttime temperatures
  - More humidity in the atmosphere





Greenkeepers are fighting a 2-front battle

- On the product side…
  - Increasing pesticide restrictions
  - Fewer new fungicides coming to market
  - Increasing amounts of fungicide resistance on those fewer products
  - Biologicals don't appear to be the answer…yet

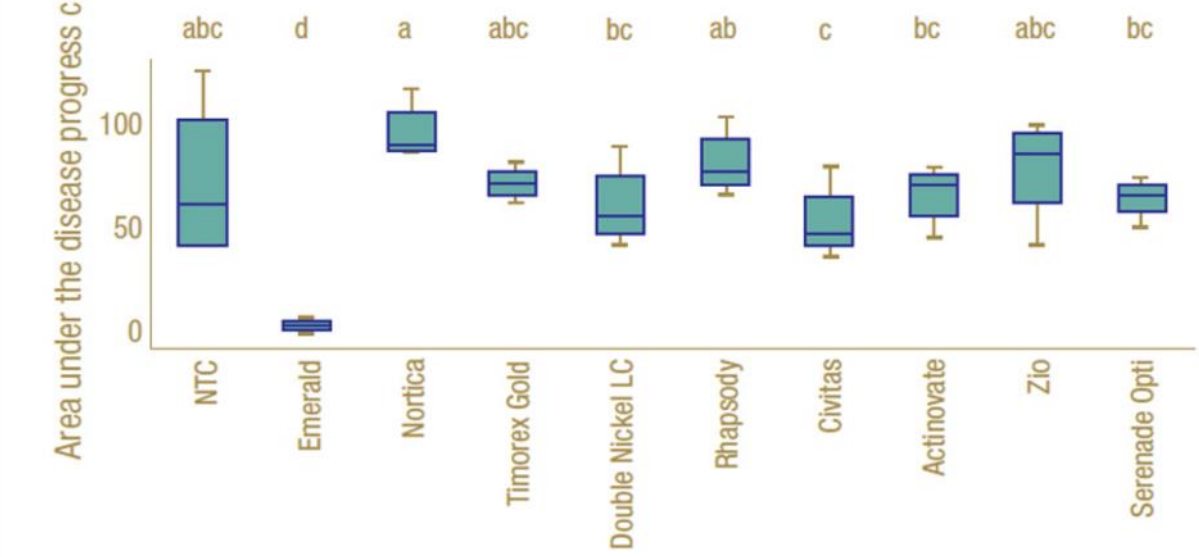


Figure 3. Dollar spot area under the disease progress curve (AUDPC) values for 2017 in Madison, Wis. Treatments with the same letter above the column are not significantly different.

Our International Turfgrass Research Initiative Team

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON



HOCHSCHULE OSNABRÜCK
UNIVERSITY OF APPLIED SCIENCES





NIBIO



STRI





The Project

- Our **overall goal** is to improve dollar spot suppression without the aid of traditional fungicides
- Objectives:
  1. Assess robotic mowers for their ability to suppress dollar spot
  2. Validate the Smith-Kerns Dollar Spot Model for use across Europe, Scandinavia, and the UK
  3. Evaluate alternative dollar spot management products across a broad geographic area
  4. Determining the efficacy of integrating UVC light with other alternative dollar spot management strategies



Using autonomous mowers to suppress dollar spot

- Two Studies
  - ITRI-funded study in collaboration with Tatsiana Espevig and NIBIO investigating multiple overnight mowings on dollar spot development
    - Thank you to Husqvarna for providing an Automower 580L EPOS with brush attachment for this research
  - Additional study investigating the timing impacts of a single overnight mowing on dollar spot development
    - Thank you to Kress for providing a discounted KR236 mower for this research





Impact of a single mower timing on dollar spot development











Impact of a single mower timing on dollar spot development – collaboration with NIBIO

Thank you to the ITRI for funding this research





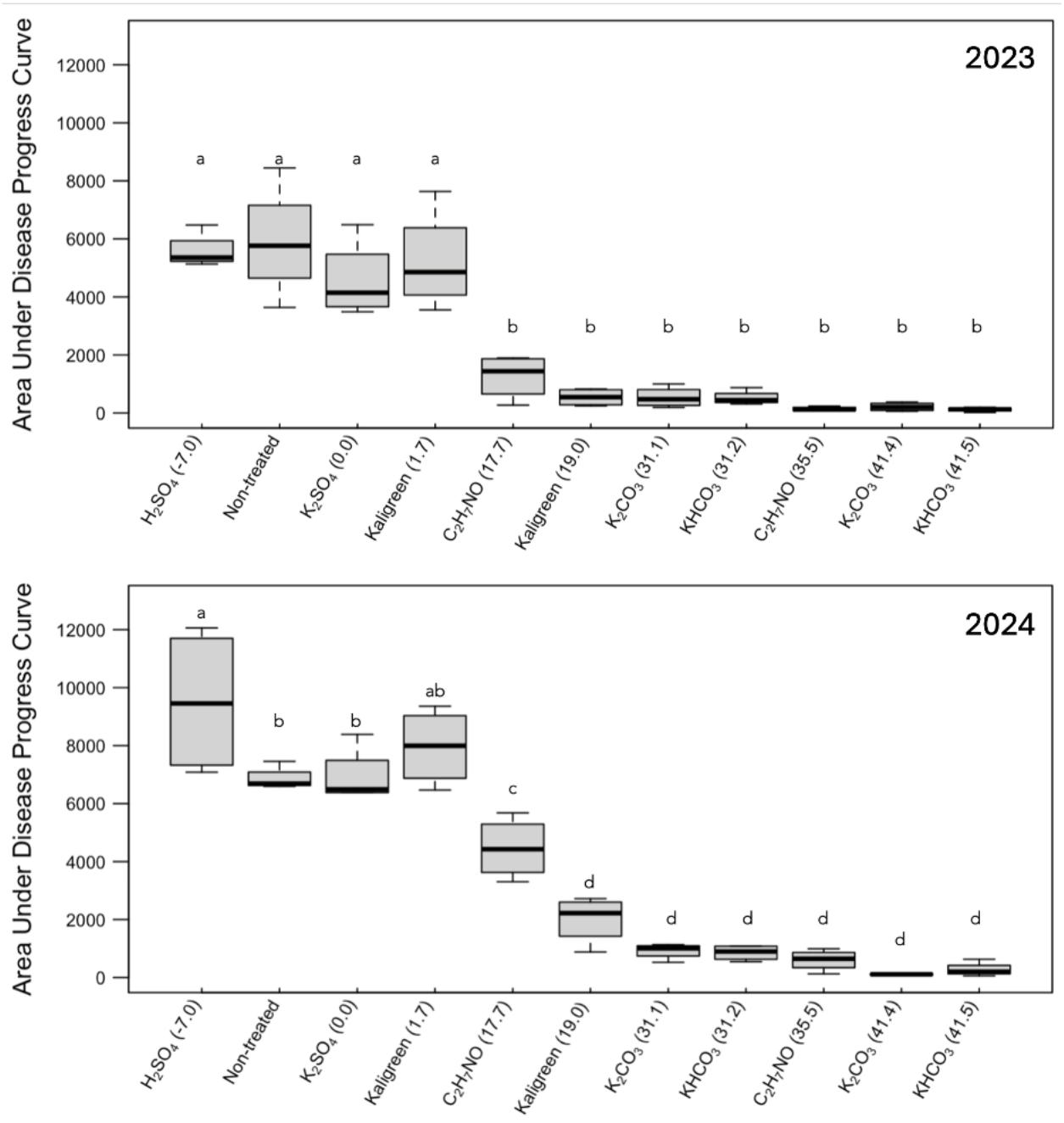


Foliar pH and dollar spot development

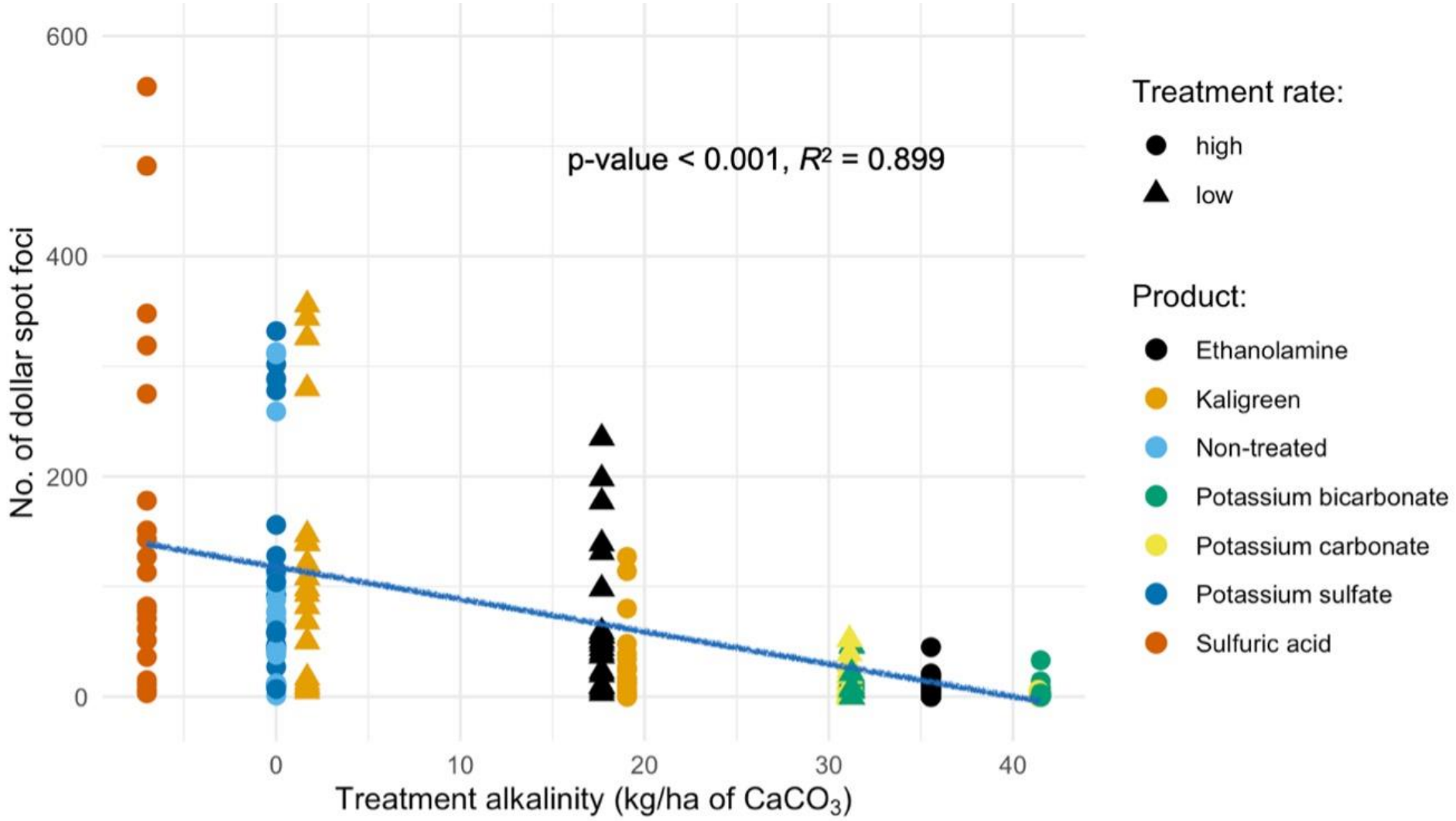
- Numbers in parentheses indicate the alkalinity calculated as kg ha^{-1} of $CaCO_3$-equivalent
- Very strong effect of increased alkalinity and decreased dollar spot



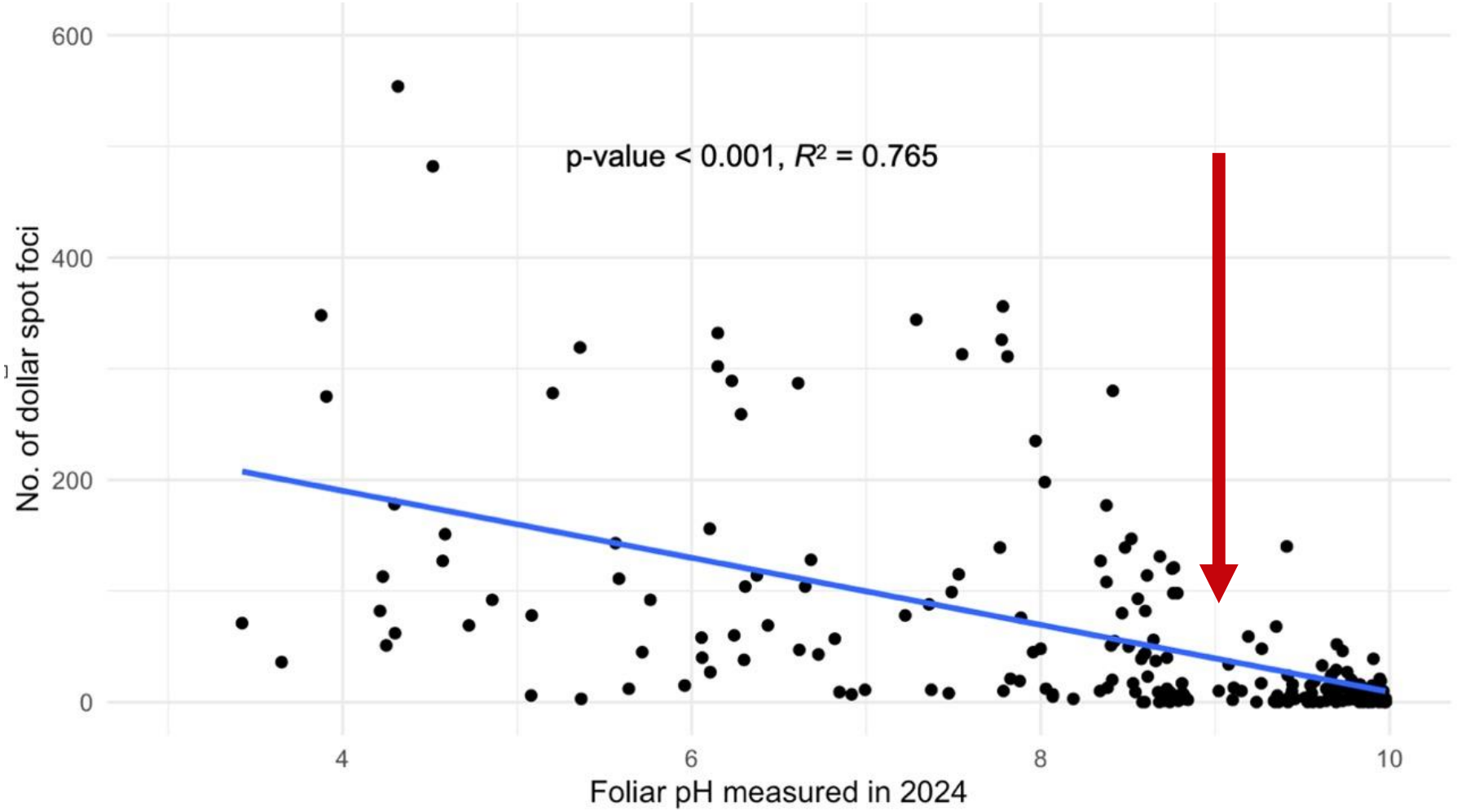
Research led by former MS student Zoltan Banyai



Dollar spot severity vs treatment alkalinity



Dollar spot severity vs foliar pH




Nontreated
Control
Potassium bicarbonate
1.7 lb/1000 ft2
7 day

This also shows promise in the UK

- Potassium bicarbonate research by Sam Swires and Glenn Kirby at STRI R&D HQ in Bingley, UK on slender red creeping fescue
- Photo taken on Sep 14, 2026 and provided by Sam Swires



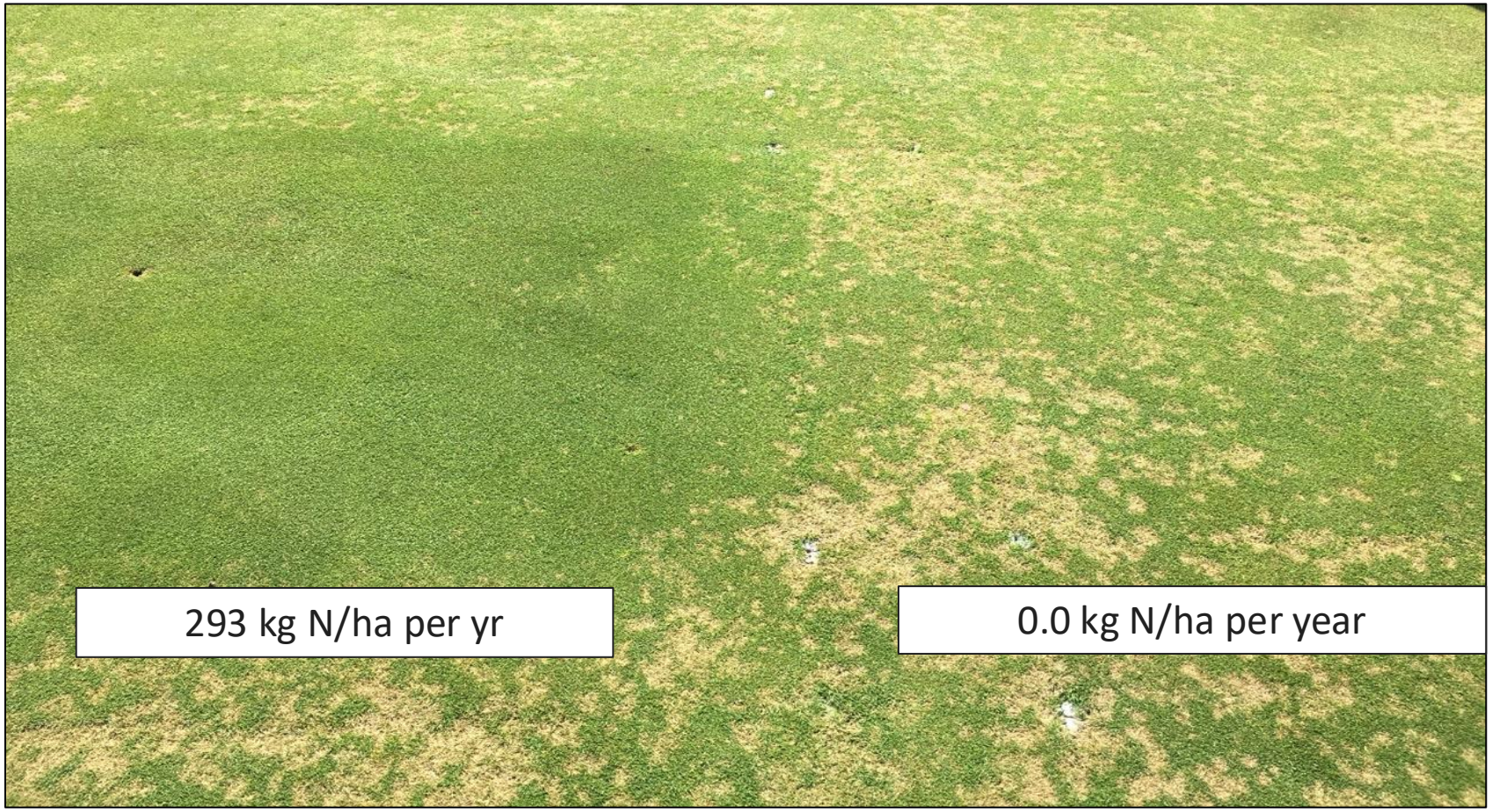
All of these are potassium bicarbonate applied every 14 days during the summer

But wait…there's a BIG catch!

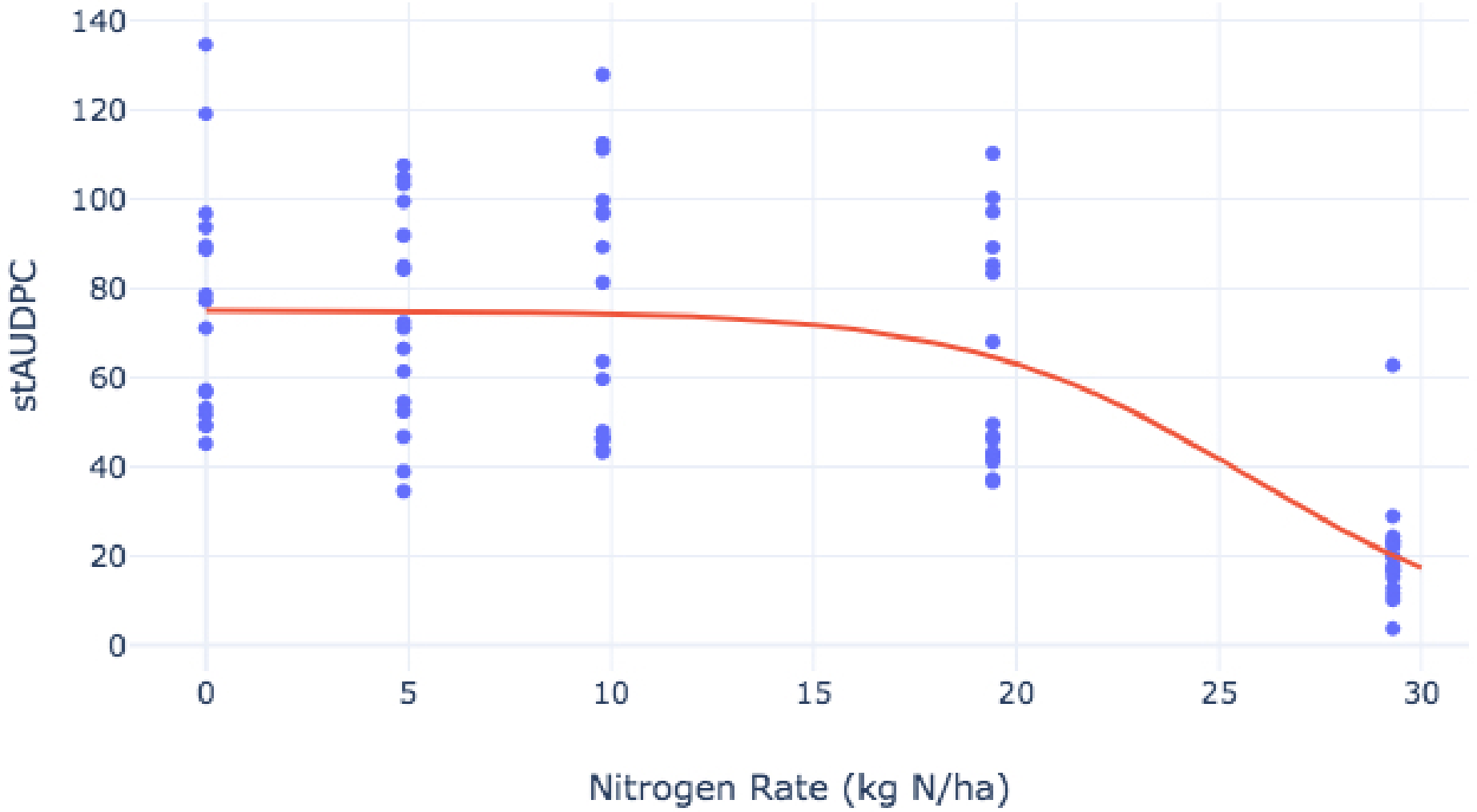


Phytotoxicity in response to alkaline products is currently a significant issue that we're working on

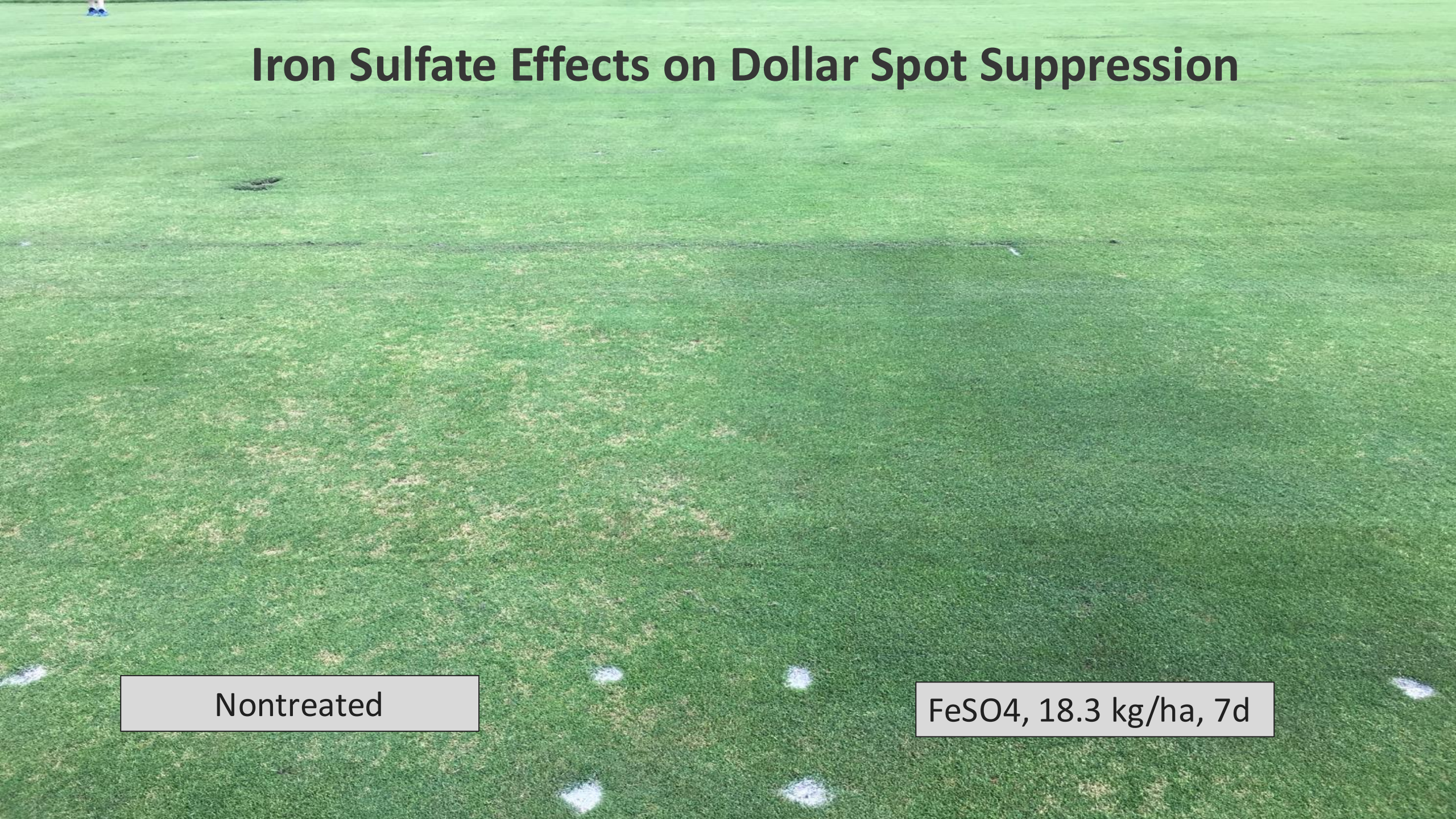
Influence of nitrogen rate on dollar spot severity



Only high rates of nitrogen suppressed dollar spot



Iron Sulfate Effects on Dollar Spot Suppression



Iron sulfate research points

- Clear dollar spot reductions, though complete elimination of fungicides unlikely
- Shorter intervals provide more consistent control
- No water volume impacts observed
- Can be phytotoxic to annual bluegrass under certain conditions
- Mixability in water can be a significant hurdle to overcome



Key presentation takeaways

- Dollar spot has become a significant problem for greenkeepers across Europe and is only likely to worsen in the years to come
- A truly integrated approach is critical to successfully suppress dollar spot
- Several research strategies show promise:
  - Using autonomous mowers to disrupt dew formation
  - Increasing the leaf pH to limit fungal infection
  - Applying fertility to help suppress dollar spot development
  - Using iron sulfate to stunt fungal growth

Thank you!



- Please contact me with questions:
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  - Twitter: @plkoch2
  - LinkedIn: www.linkedin.com/in/paul-koch-33057211