

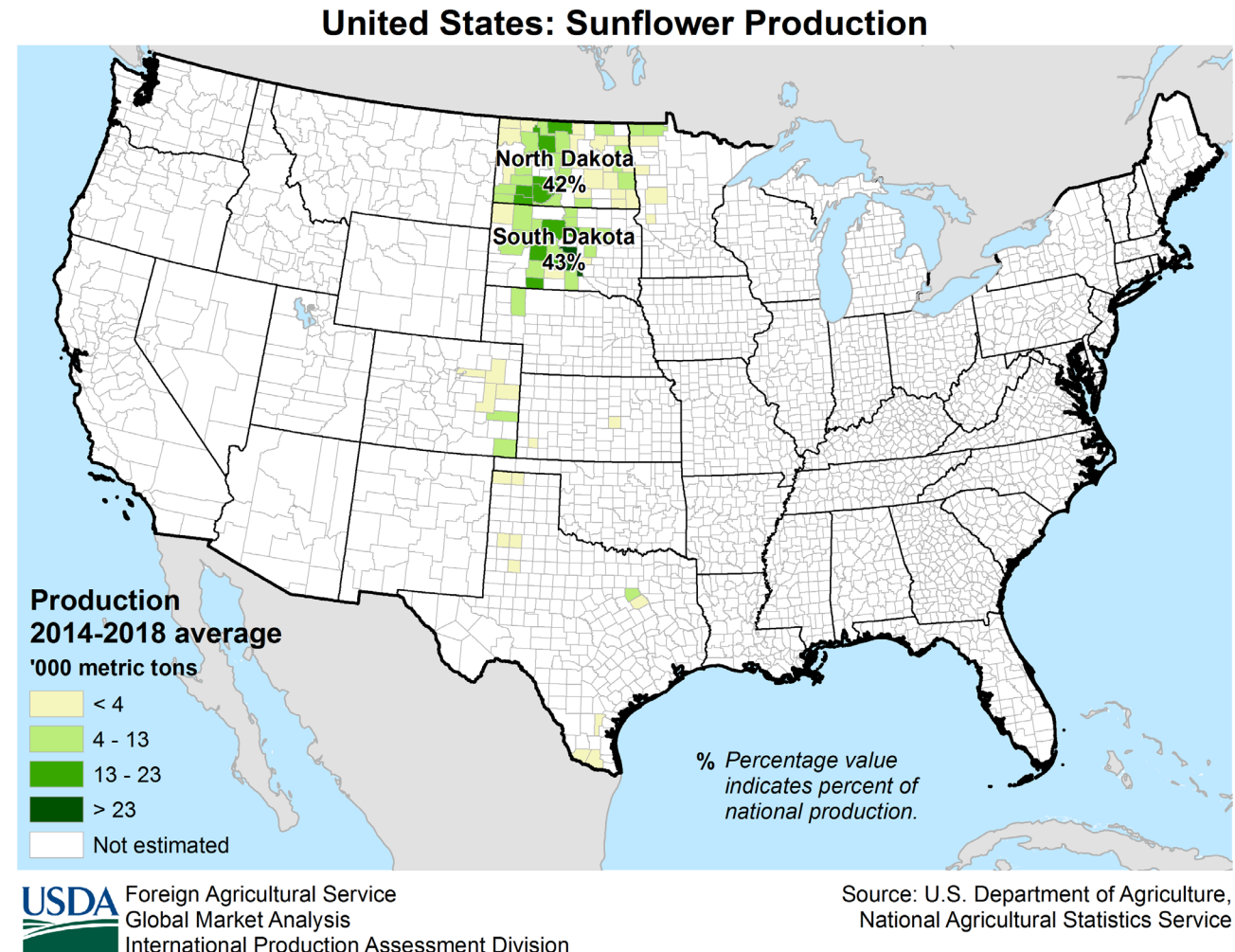
The background of the slide is a dark, high-contrast image of a bowl filled with many small, light-colored, oval-shaped seeds. The bowl is dark and the seeds are piled together, creating a textured, granular appearance. The entire scene is framed by a thin, light-colored border.

Spatial patterns of seed weevil damage in grower fields in central South Dakota

Jeff Cluever, Zachary Tarble, and Jarrad Prasifka

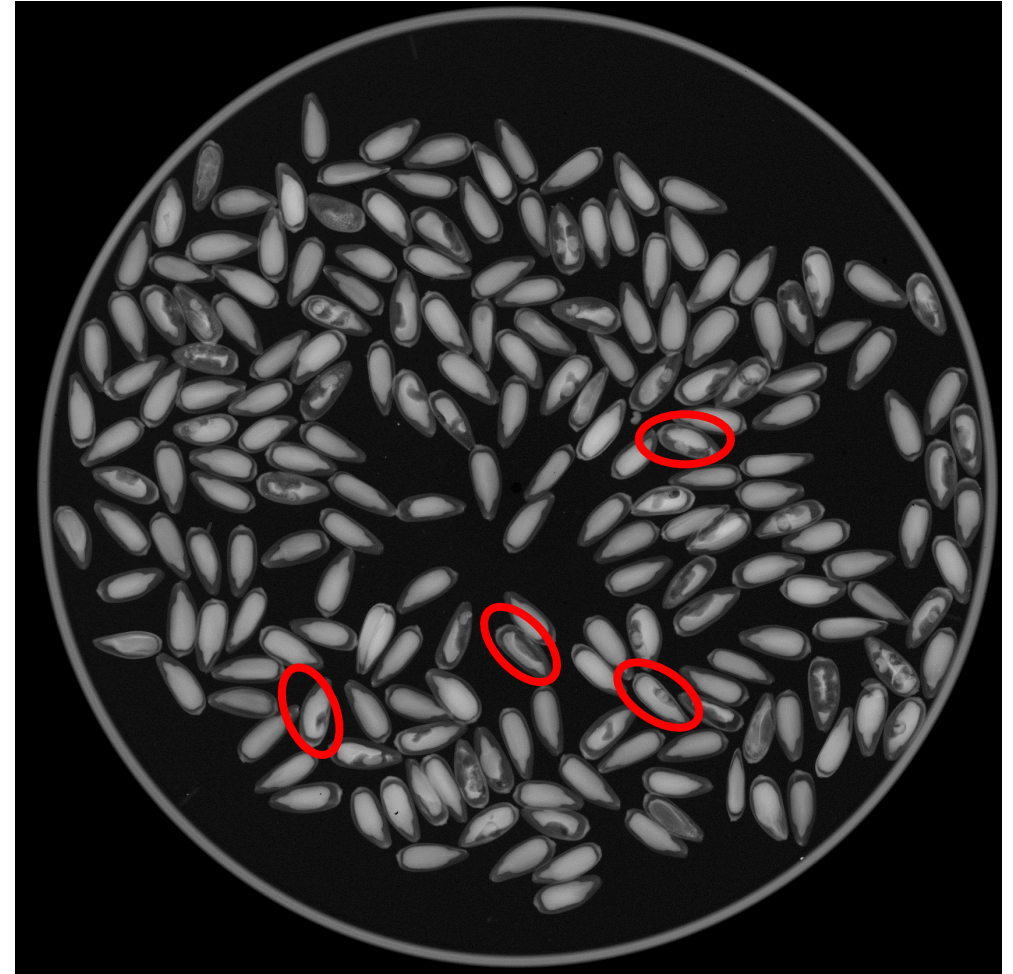
Sunflower a native North American crop

- US has about 2% of world production
- \$794 million (2022)
- Most acres are for oil ($\approx 91\%$)
- Has a large pest complex



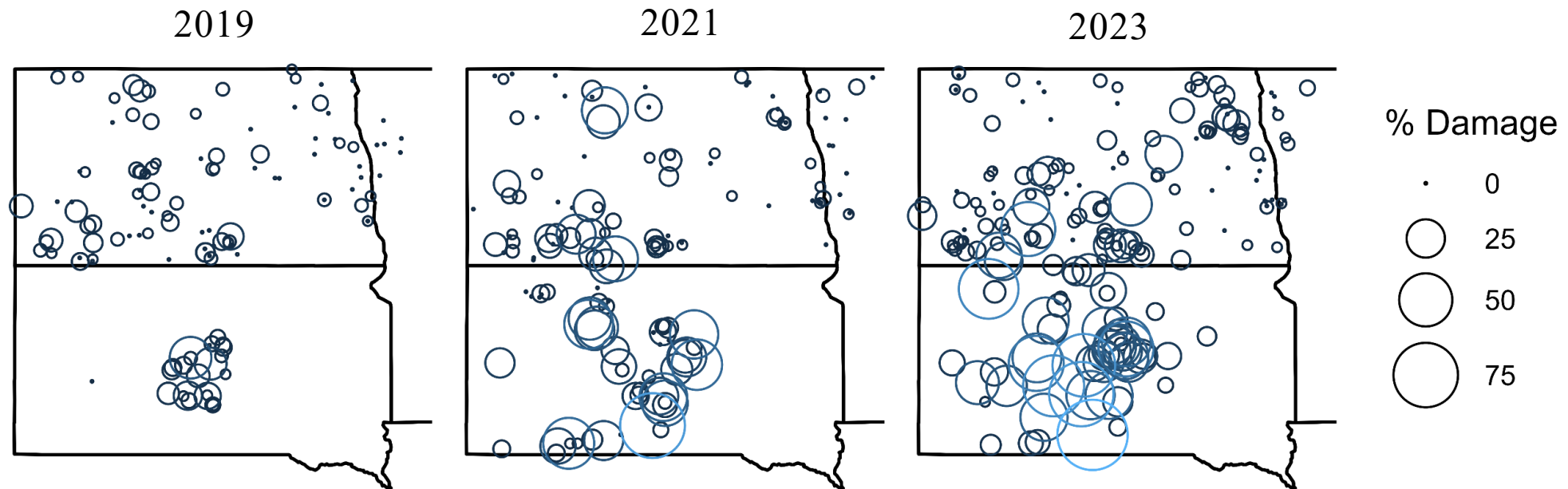
Red sunflower seed weevil

- 1 Generation /year
- Emerge from soil
- Feed on pollen
- Consume $\approx 1/3$ of seed



Problems with management

- Damage of 70% or more
- Populations many times greater than threshold
- Pyrethroid resistance in SD



Management

- Early Planting
- Tillage
- Insecticide applications at bloom



How do you know if a spray is needed?

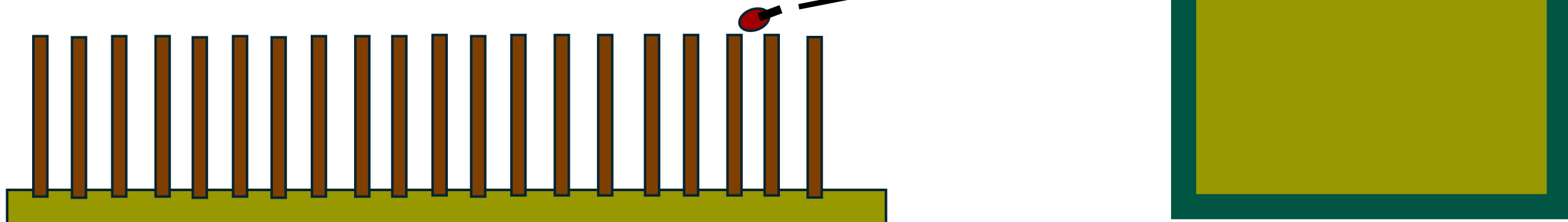
- Start scouting at R5.0
- Scout at least 75 ft in from the edge
- Check 5 heads at 5 locations
- Use DEET-based repellent
- Continue every 5-7 days
- Thresholds vary 4-15 RSSW /head

Why not at the edge?

- Start scouting at R5.0
- Scout at least 75 ft in from the edge
- Check 5 heads at 5 locations
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Previous Year

Current Year



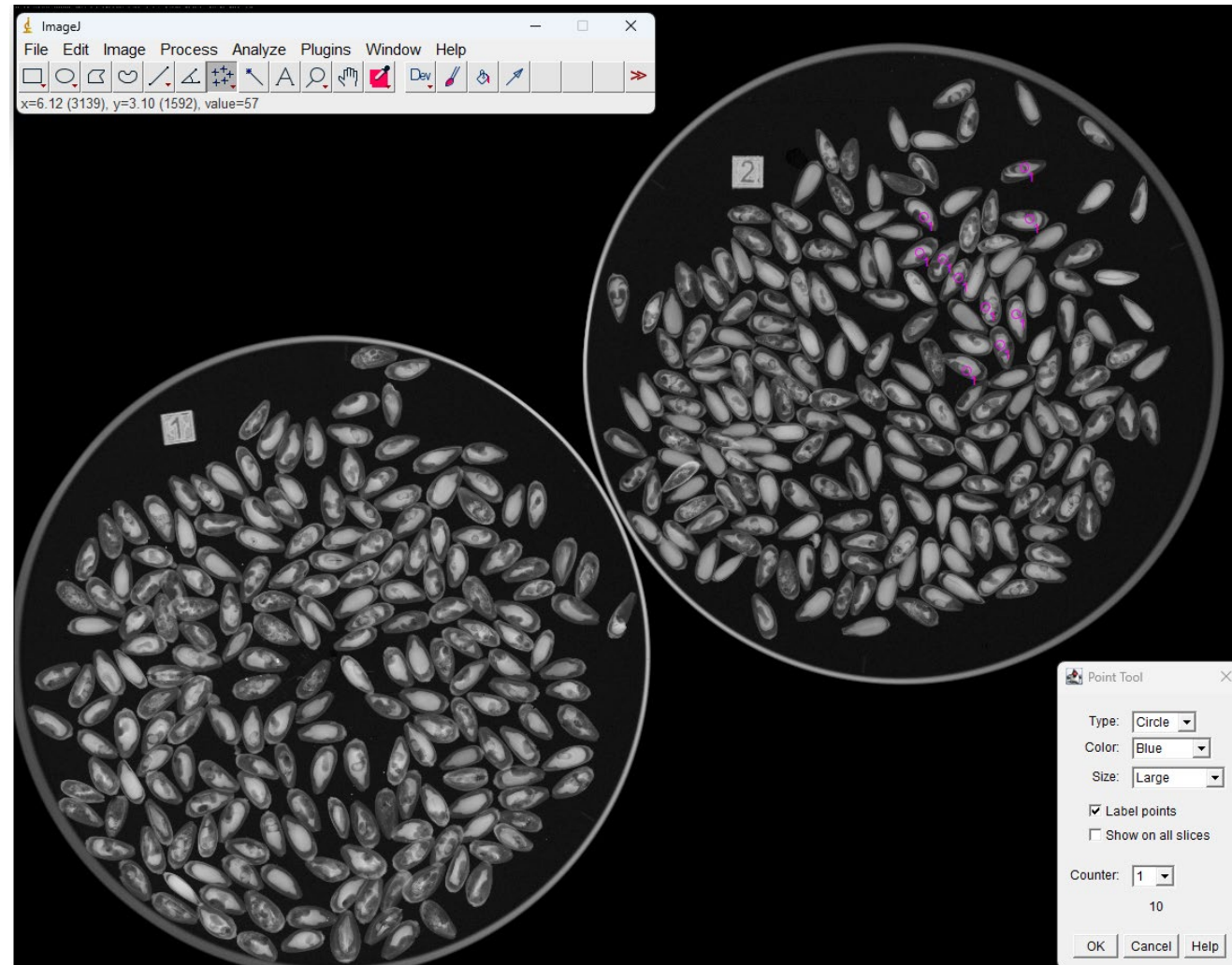
Methods

- Selected 10 fields in central SD
- Gather 5 heads at 0, 16, 32, 65, 164, 328, and 656 ft in from edge

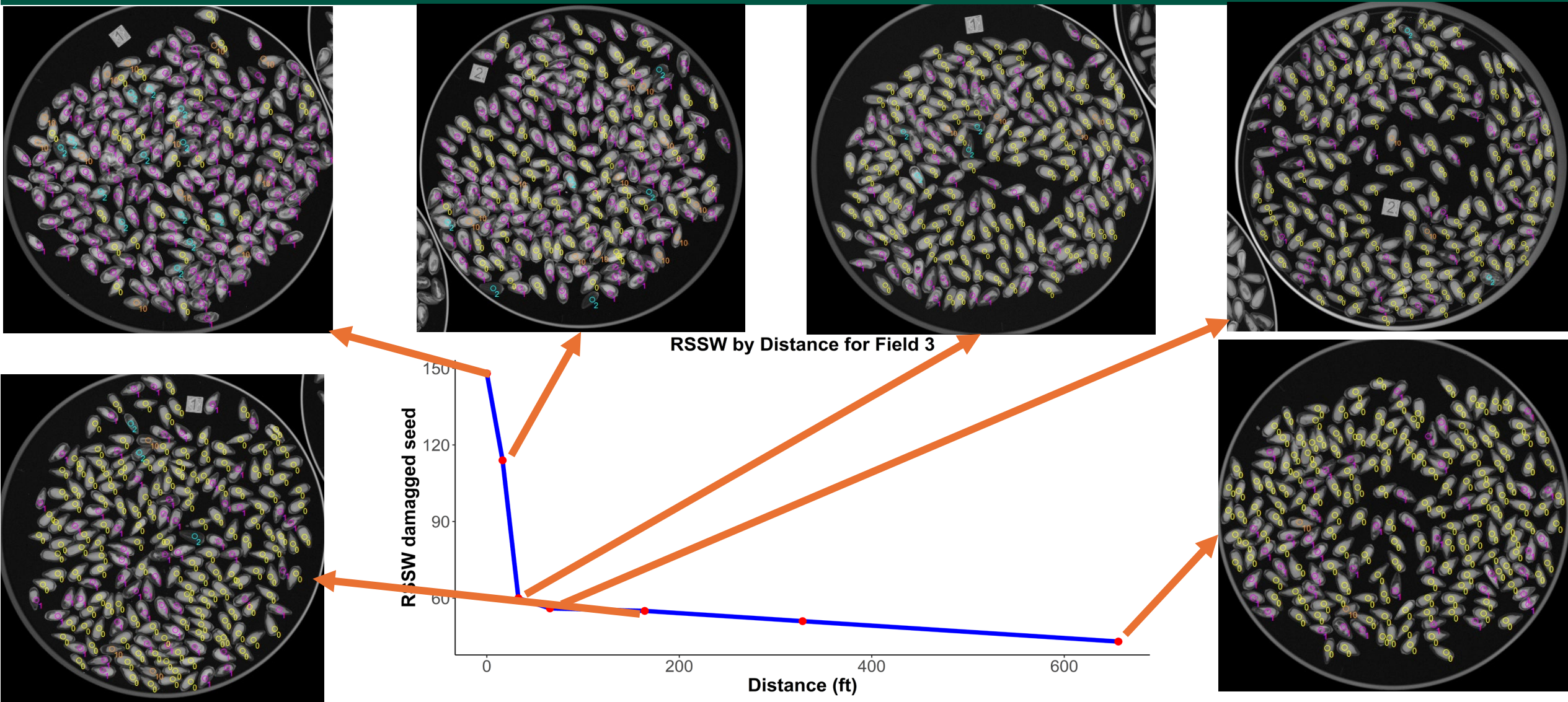


Methods

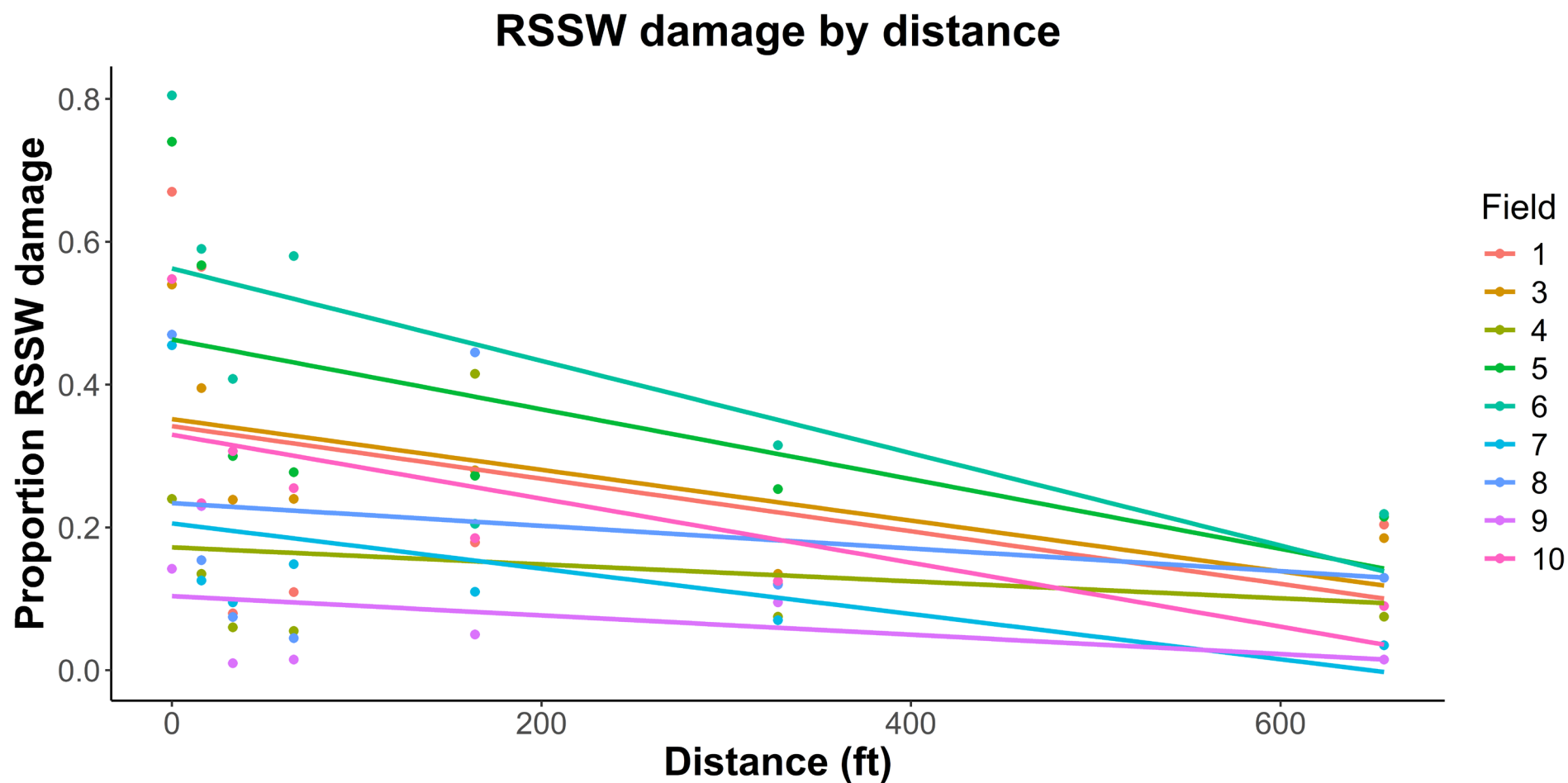
- Dried and threshed heads
- X-ray 200 seed samples
- Visually rated each seed



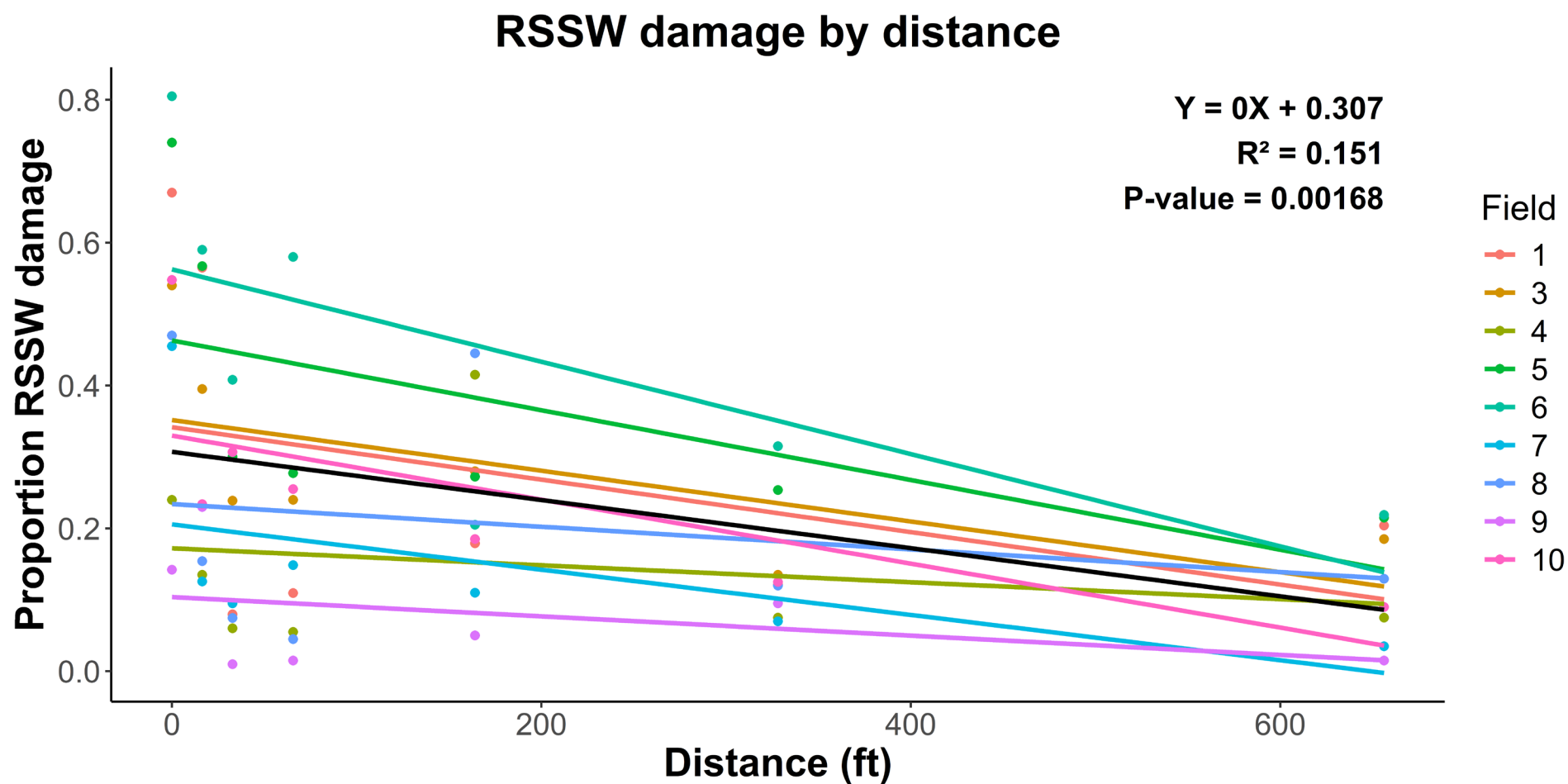
Results: Large edge effect



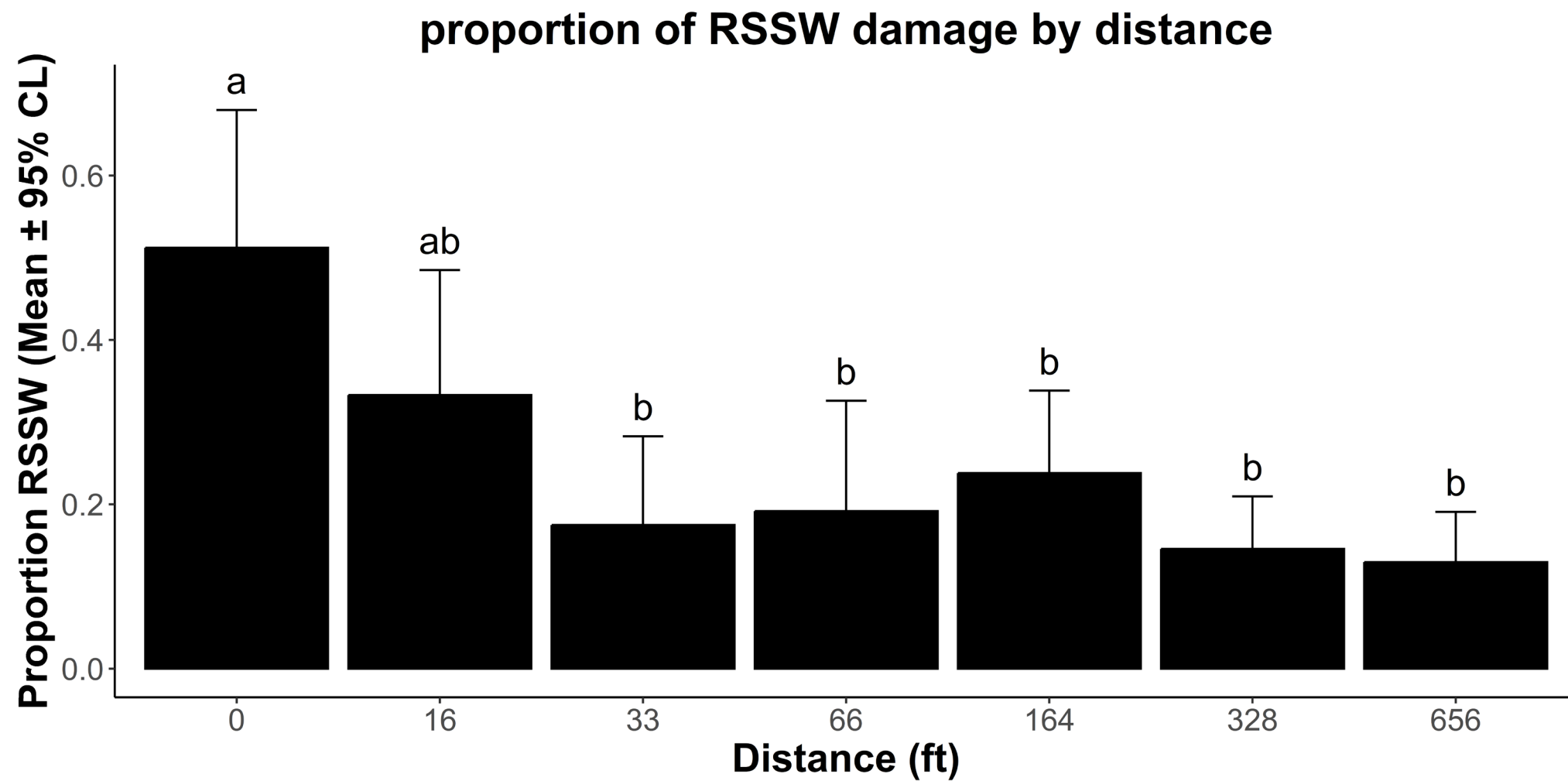
Results: Large edge effect



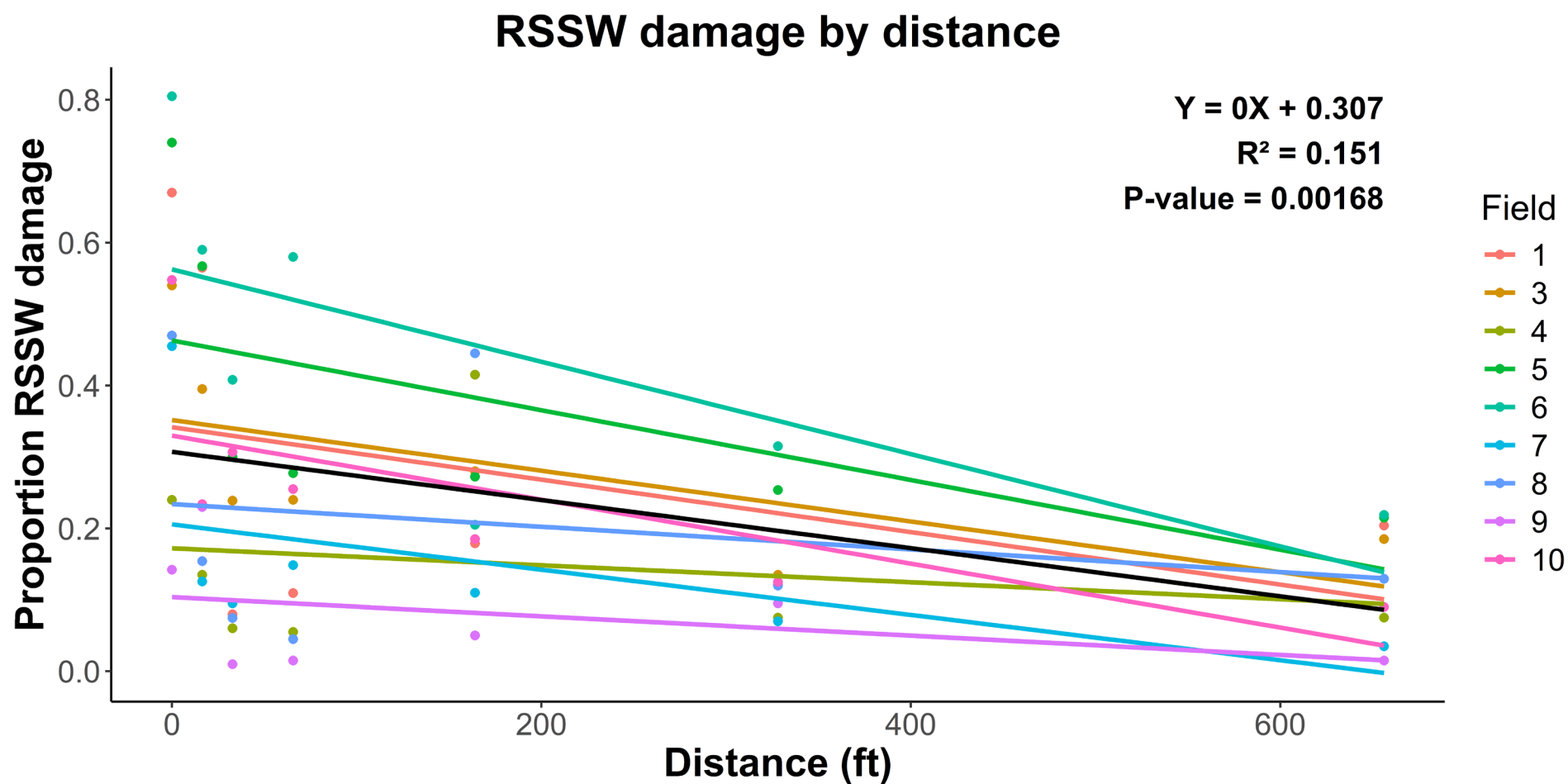
Results: Large edge effect



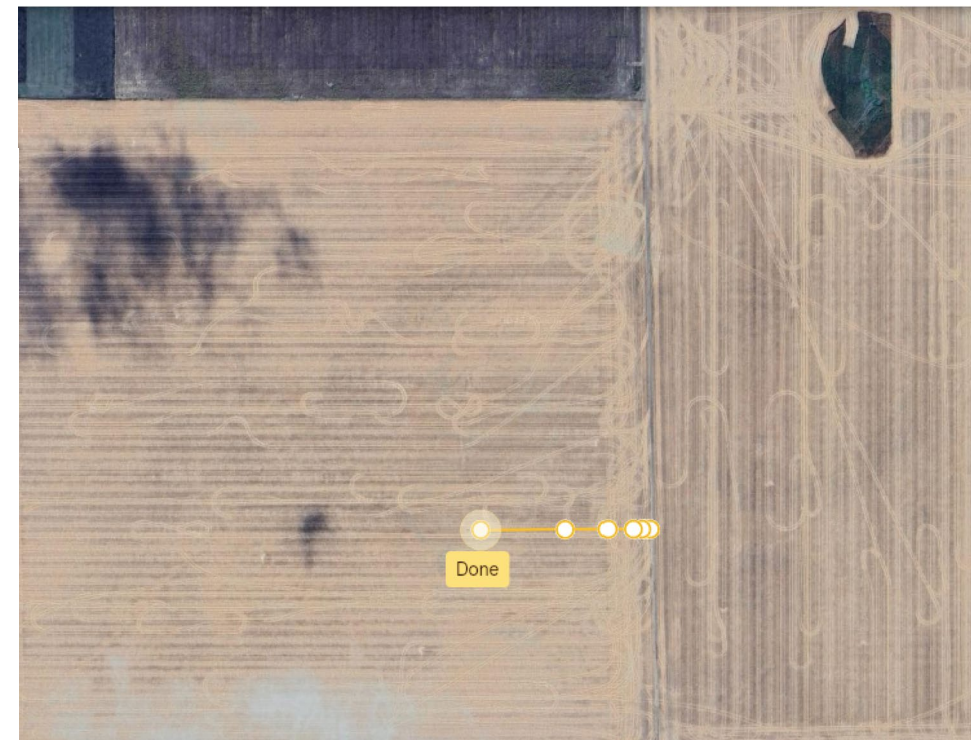
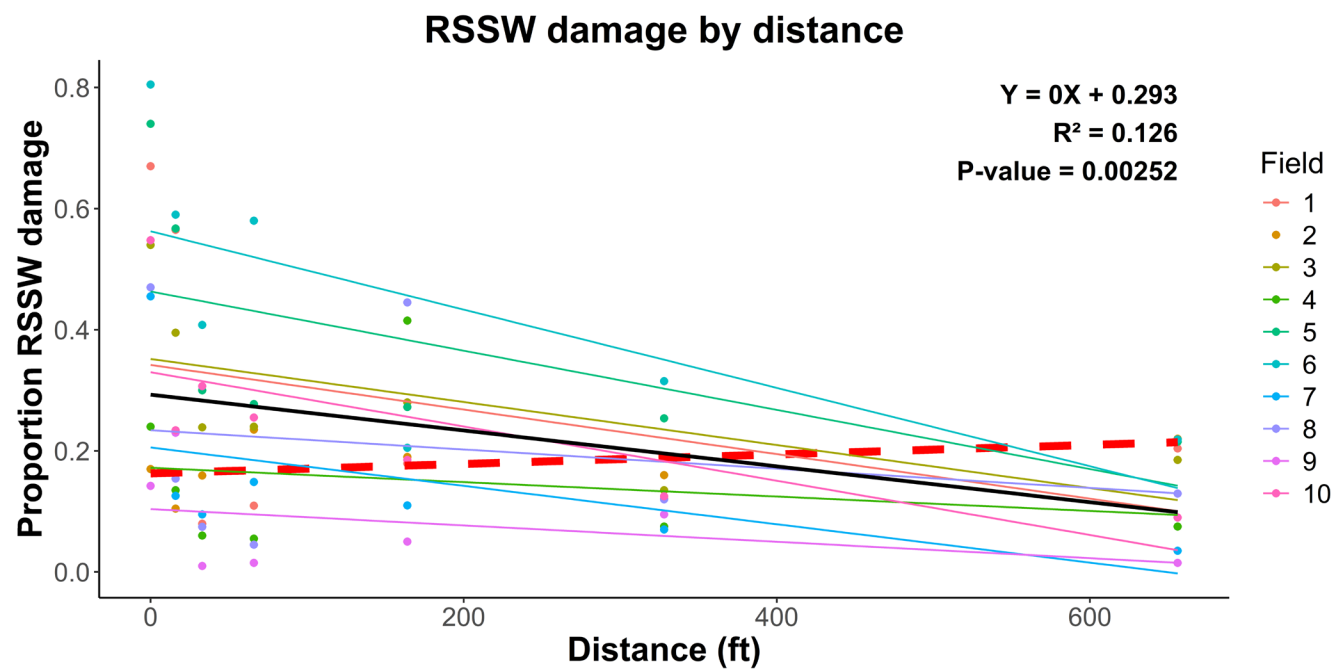
Results: Most damage between 0 and 16 ft



Results: Large edge effect



Results: Large edge effect



Implications

- Scouting from the edge may overestimate risk
- High RSSW
 - Long, narrow fields may increase your overall damage
 - Adjacent fields may spread out risk
 - Management (tillage, biological insecticides) on edges
- Low RSSW
- Border-only applications may be a feasible method of RSSW control

Acknowledgements

- Grower cooperators
- Questions?

