

Advances in Sweet Corn Bird Management

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THE
UNIVERSITY
OF RHODE ISLAND
COOPERATIVE
EXTENSION

The Problem

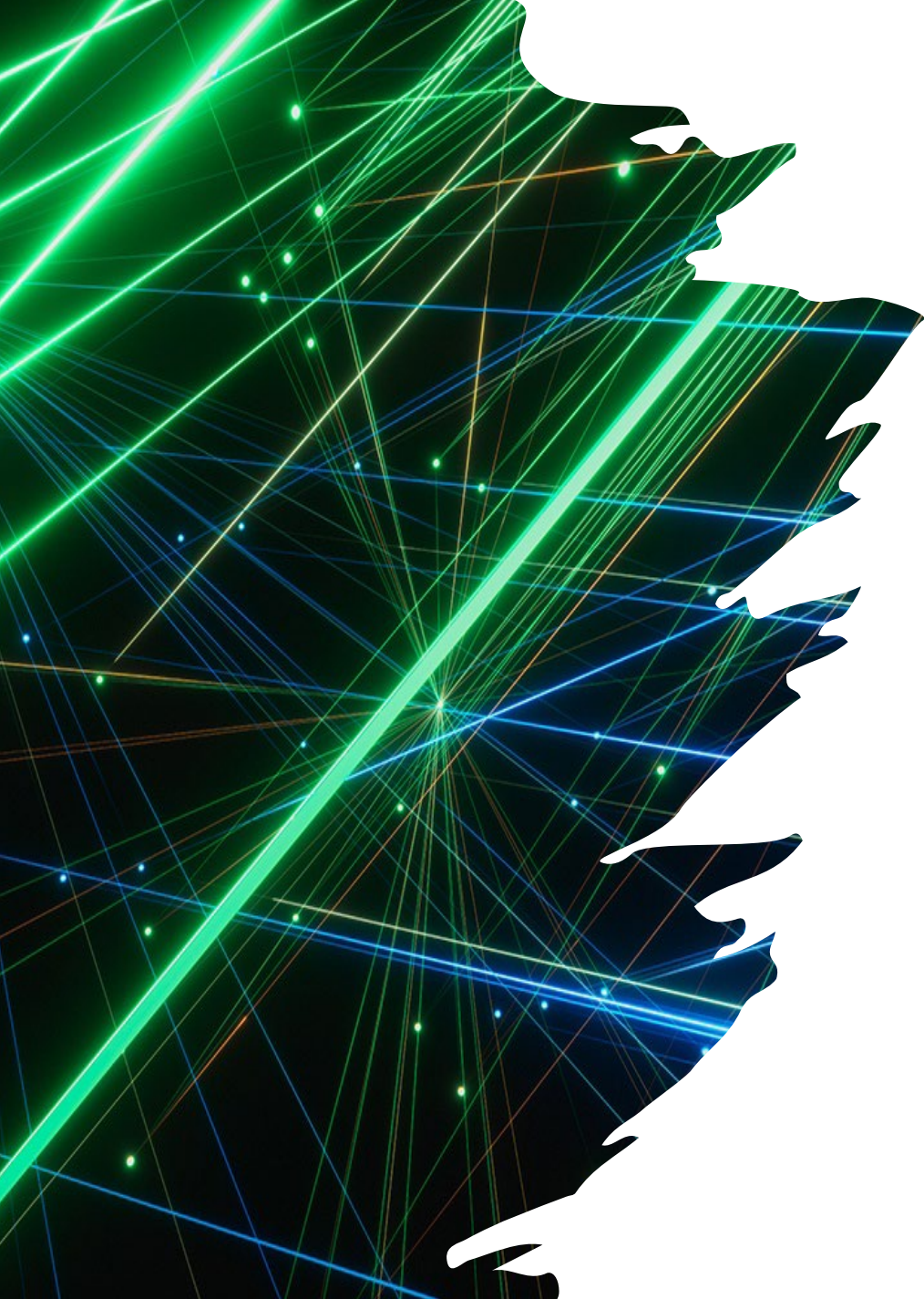


Usual Solutions

- Bird Scare Cannons
- Pyrotechnics
- Birdshot
- Distress and Predator Calls
- Repellents
- Scary Eye Balloons
- Effigies
- Accept the losses







Advantages of Lasers as Bird Deterrents

- Minimal labor required to set up/take down
- A single unit can cover a large area
 - Coverage depends on laser power, crop, and terrain
- Area of impact can be controlled
- No interference with field access or crop management
- Laser beams are not affected by wind or rain
- Quiet – won't alarm or annoy neighbors
- Can be fully automated and movement can be randomized

Bird Vision is more sensitive than Human

- Able to see a wider range of colors than humans and to better distinguish between colors
- More sensitive to motion
- Able to process visual signals more quickly
- Birds can see laser beams when humans cannot

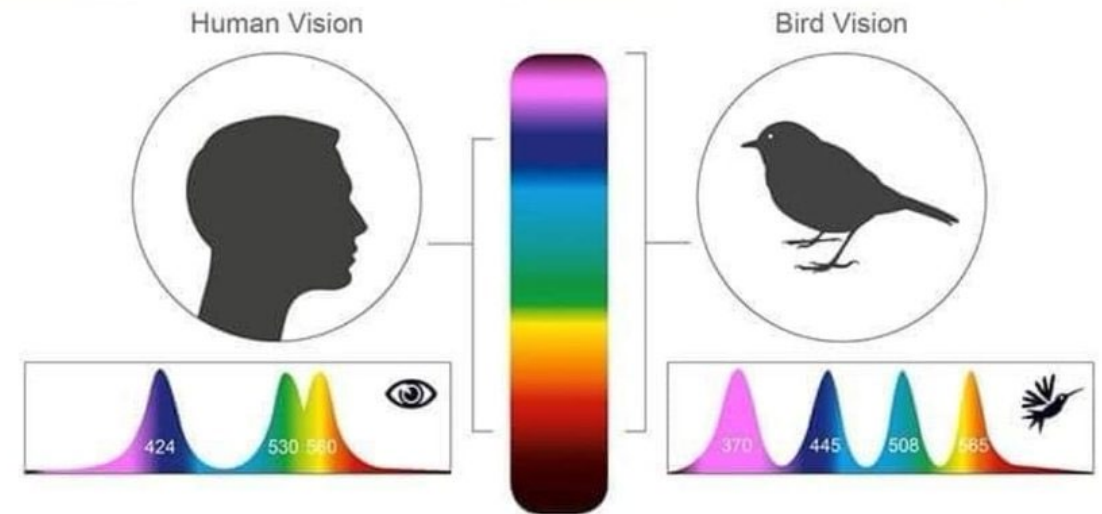
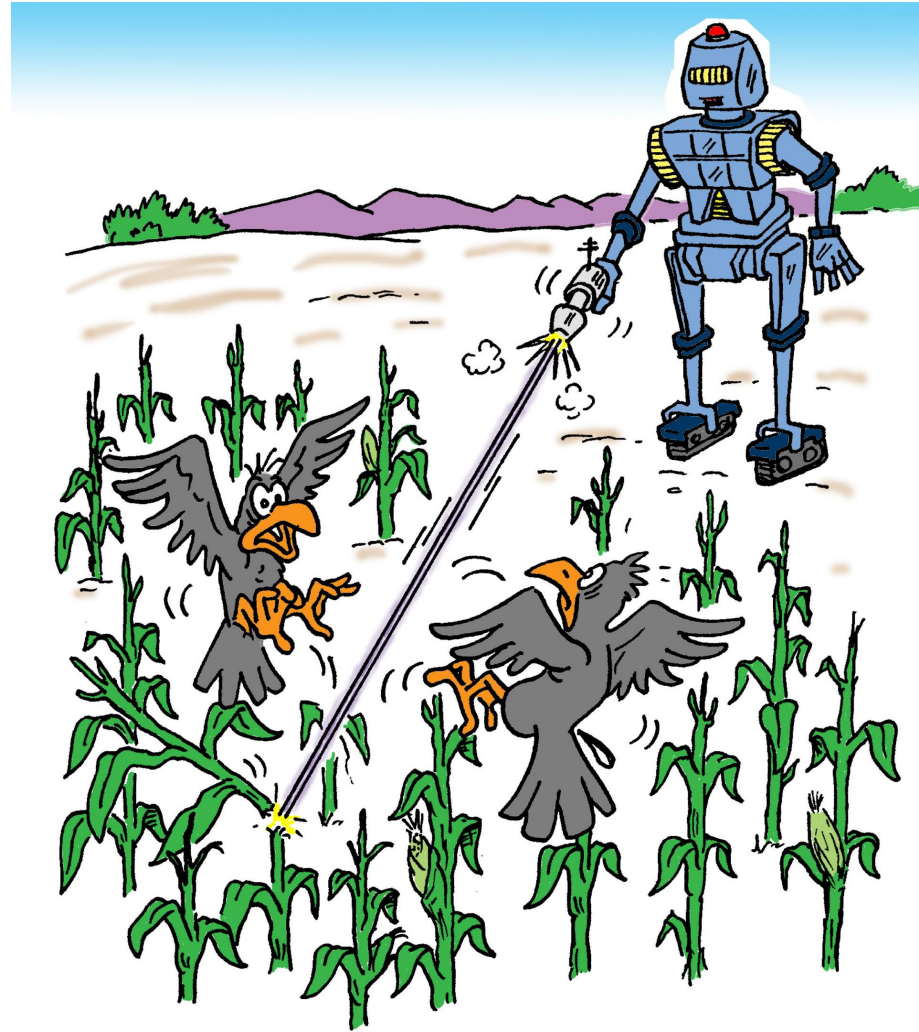


Illustration from <https://i.redd.it/uwlwfvdt4x991.png>

But do lasers scare birds?

The Research



" IF YOU ASK ME TODAY'S FARMER IS GETTING TOO MODERN ! "

Photo by
Julie Kikkert



Open Field Trials

Laser versus No Bird Control

Methods

- Three years of trials in Rhode Island – research farm and commercial farms
- **Split field design** with replication over time

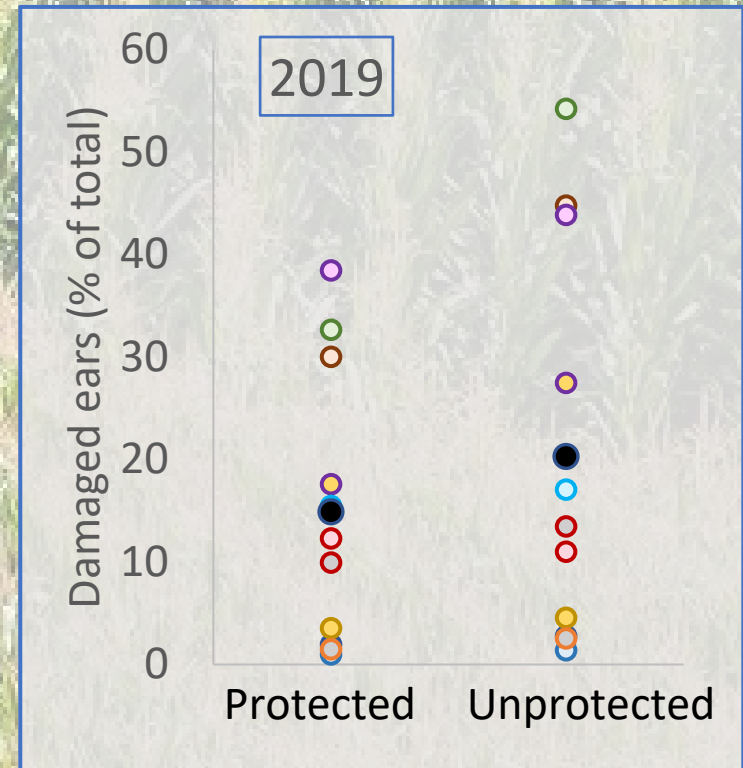
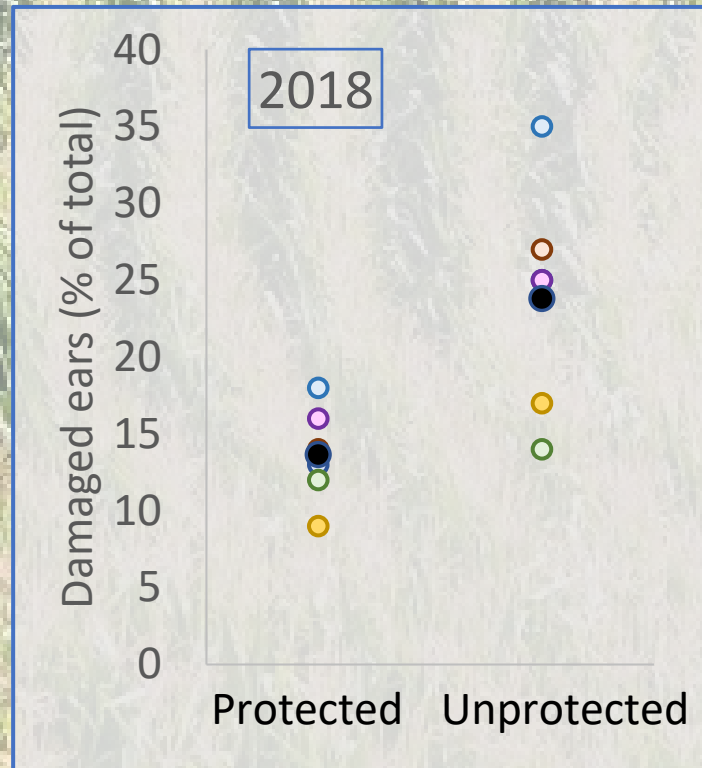
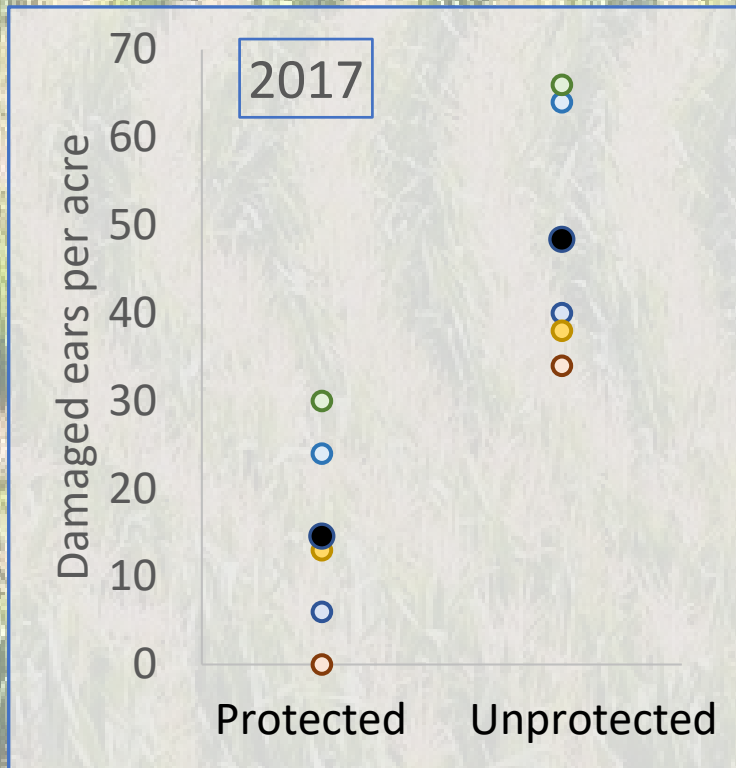
- Half of field was protected by laser, half was unprotected as control
- Each corn planting or sampling date serves as experimental unit

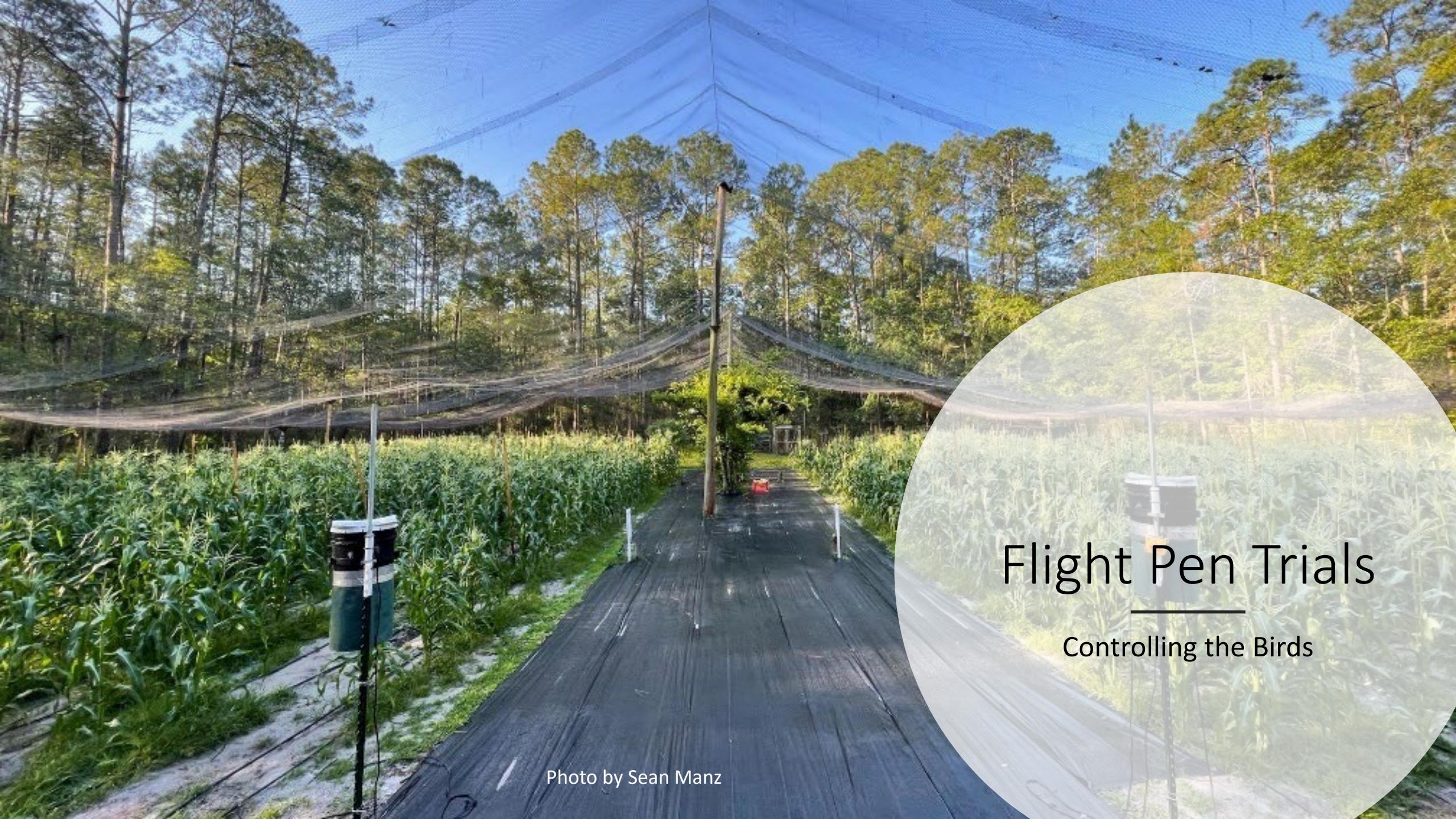
- Counted damaged ears in each plot at harvest
- Analysis using paired T-test



Results

Year	T-test Significance
2017	$P = 0.0002$
2018	$P = 0.0046$
2019	$P = 0.0332$





Flight Pen Trials

Controlling the Birds

Photo by Sean Manz

Methods

- Conducted in a half-acre flight pen at the National Wildlife Research Center Florida Field Station in Gainesville, FL Fall 2021 and Spring 2022
- Multiple cohorts of European Starlings; 10 birds per cohort
 - Each cohort tested on 5 days
- Pen contained two planting areas (A and B) each $\sim 1/6$ acre planted to sweet corn





Two Types of Tests

- Stick Corn using purchased ears
- Natural Corn

Questions

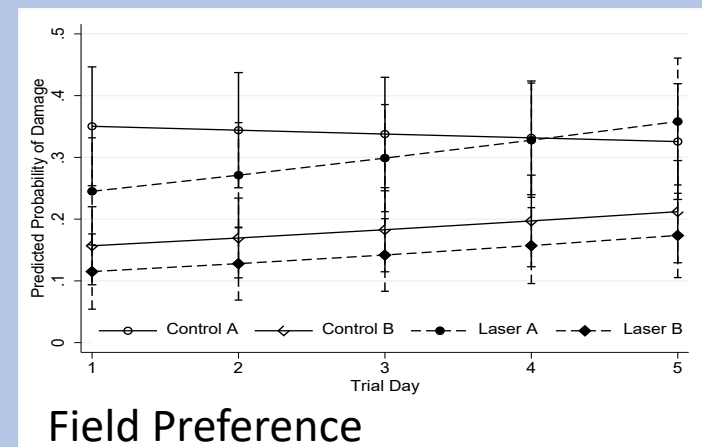
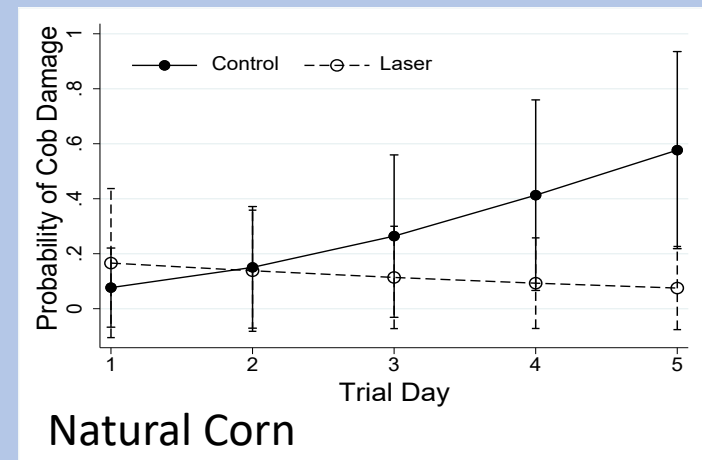
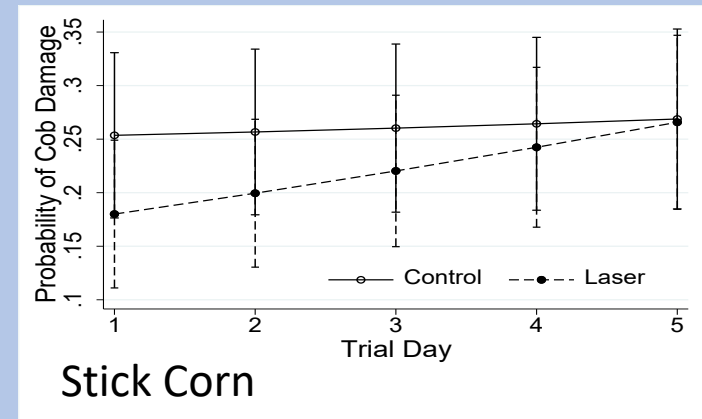
1. Does the laser decrease the likelihood of damage to ears?
2. Do the birds habituate to the laser?



Photo by Sean Manz

Results

- Stick corn in Laser Plot had 74% lower probability of damage than control
- Natural corn in Laser Plot had 1000% lower probability of damage than control
- Damage was much more likely in Field A, closest to roosting area
- Probability of damage in Laser Plot increased over time in stick corn but not in natural corn (habituation)
- Habituation only occurred in Field A





Visual + Auditory

Does combining recorded distress calls with lasers further decrease damage?

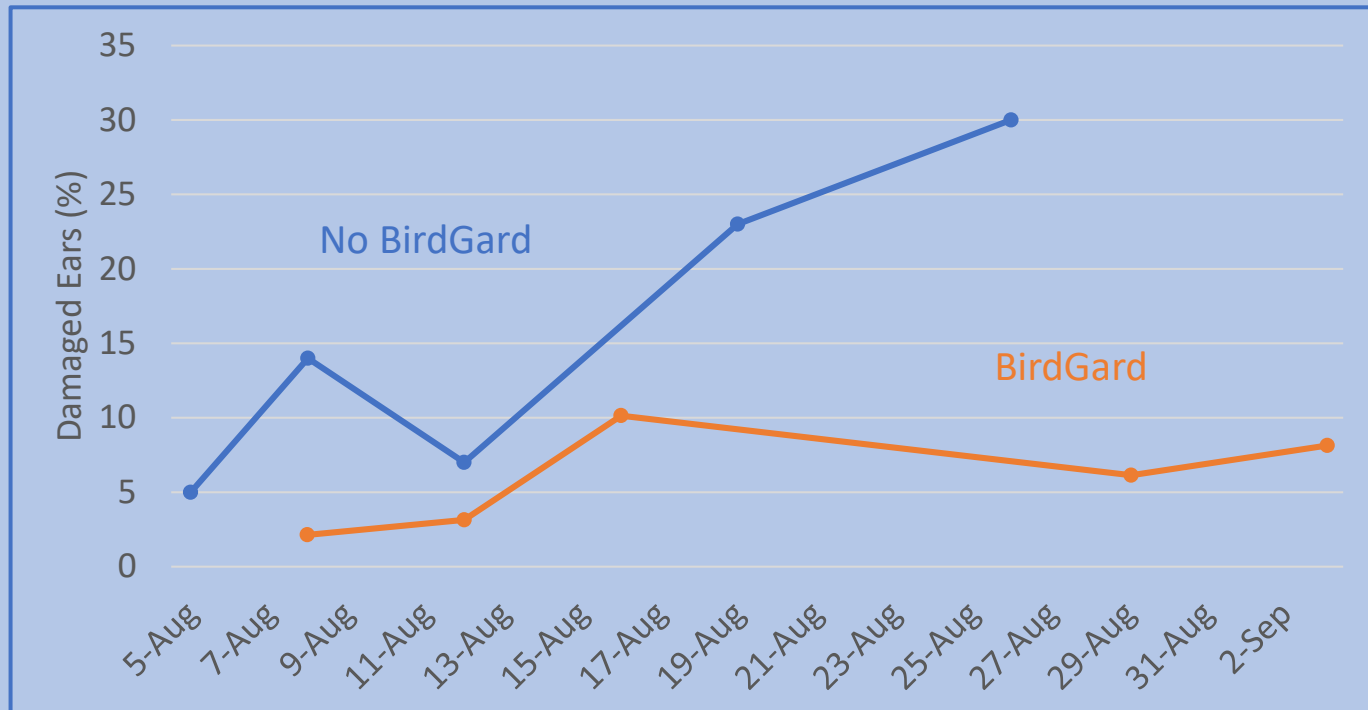
Methods

- Two fields, ~ 2,000 ft apart
- 5 planting blocks per field – 65, 70, 75, 80, 85 days to maturity
- Both fields equipped with URI Laser Scarecrow and BirdGard Super Pro distress call system (optimized for starlings and red-winged blackbirds) running dawn to dusk
- Laser scarecrow ran continuously beginning 1 week before first ears matured
- Status of BirdGard toggled on/off after each data collection
- Damaged ears counted on two dates for each planting block – at prime harvest and 3 to 5 days after prime



Results

- Treatment with Laser Scarecrow alone averaged 20.7% damaged ears
- Treatment with Laser Scarecrow + BirdGard averaged 7.1% damaged ears
- Difference is statistically significant $P < 0.01$





Conclusions

- Laser Scarecrows can significantly reduce bird damage to sweet corn
- Habituation is unlikely unless birds are strongly motivated
- Adding auditory deterrent further reduces damage

Acknowledgements

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- BirdGard Super Pro units were donated by BirdGard
- More information at www.laserscarecrow.info