A large flock of birds, likely terns, is seen flying over a field of green vegetation. The birds are scattered across the sky, with some in the foreground and others further away. The background consists of a dense line of trees and a bright, hazy sky.

Laser Scarecrows: A 21st Century Approach to Bird Control

DR. REBECCA BROWN, UNIVERSITY
OF RHODE ISLAND

The Problem

- 2012 survey of major production regions showed that bird damage ranged from 3.8% to 18.2% of yield (Anderson et al. 2013)
- Majority of growers (63% to 100%) were using bird protection
- Bird damage is very difficult to quantify, especially in PYO operations





Traditional Control Options

- Netting is most effective but...
- Auditory deterrents are somewhat effective
- Tube men, flash tape, balloons, and effigies are not effective in controlled studies and inconsistent in the field

WE NEED TO THINK (OR SEE!) LIKE
THE BIRDS!

Vision is the primary
sense for birds so
visual deterrents
should work...



Bird Vision is different from Human Vision

- 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



Illustration from Tedore and Nilsson 2019

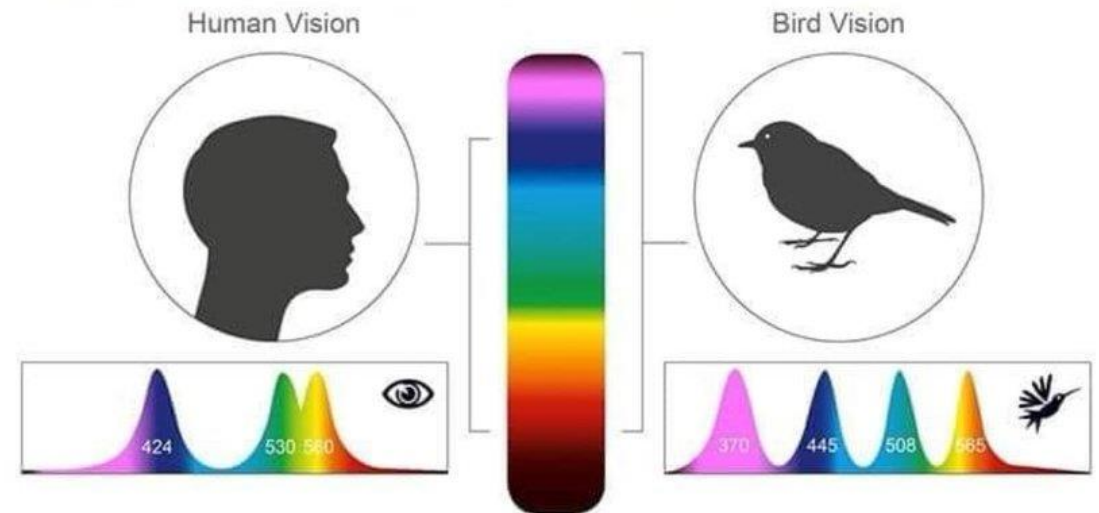
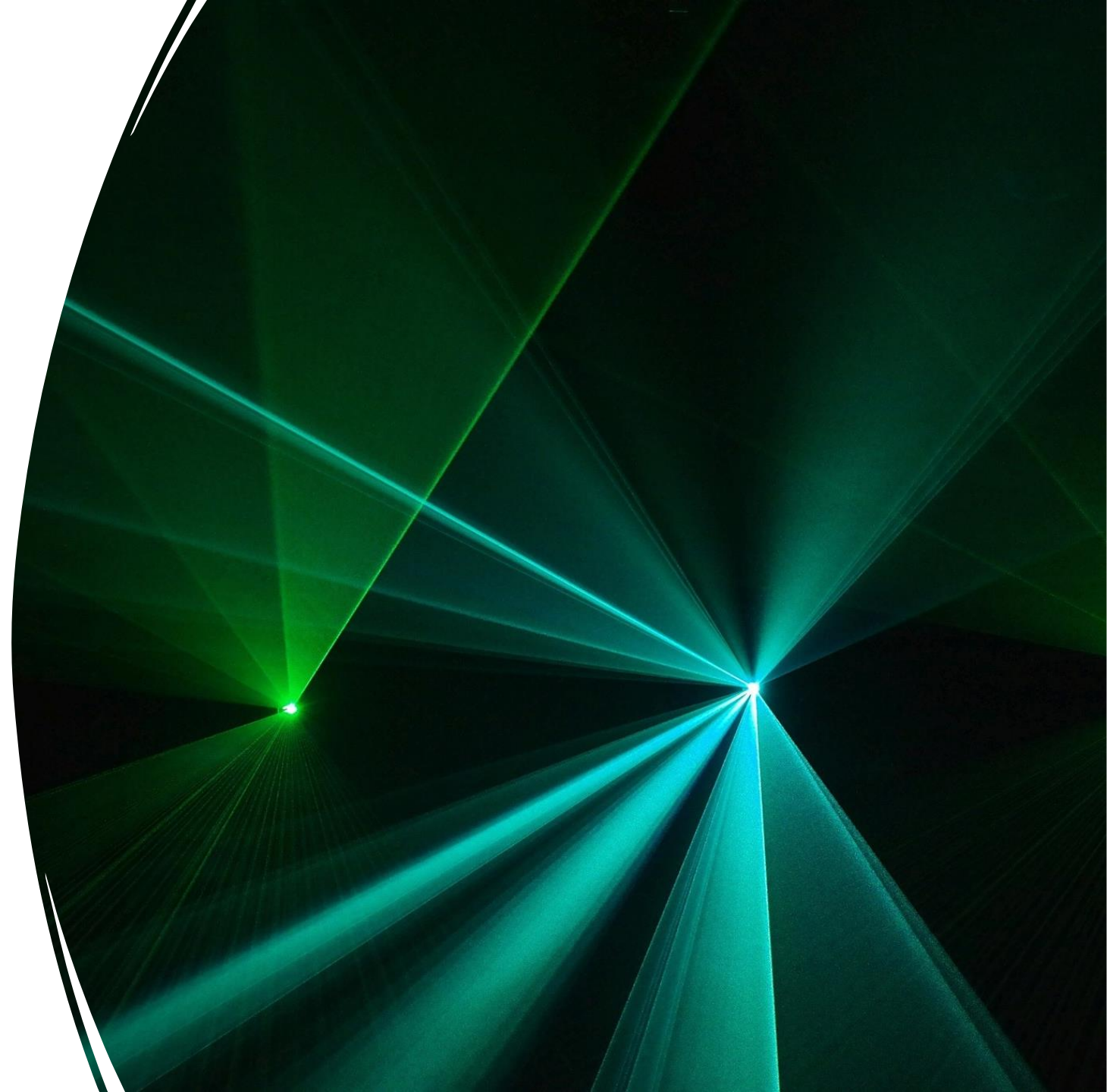
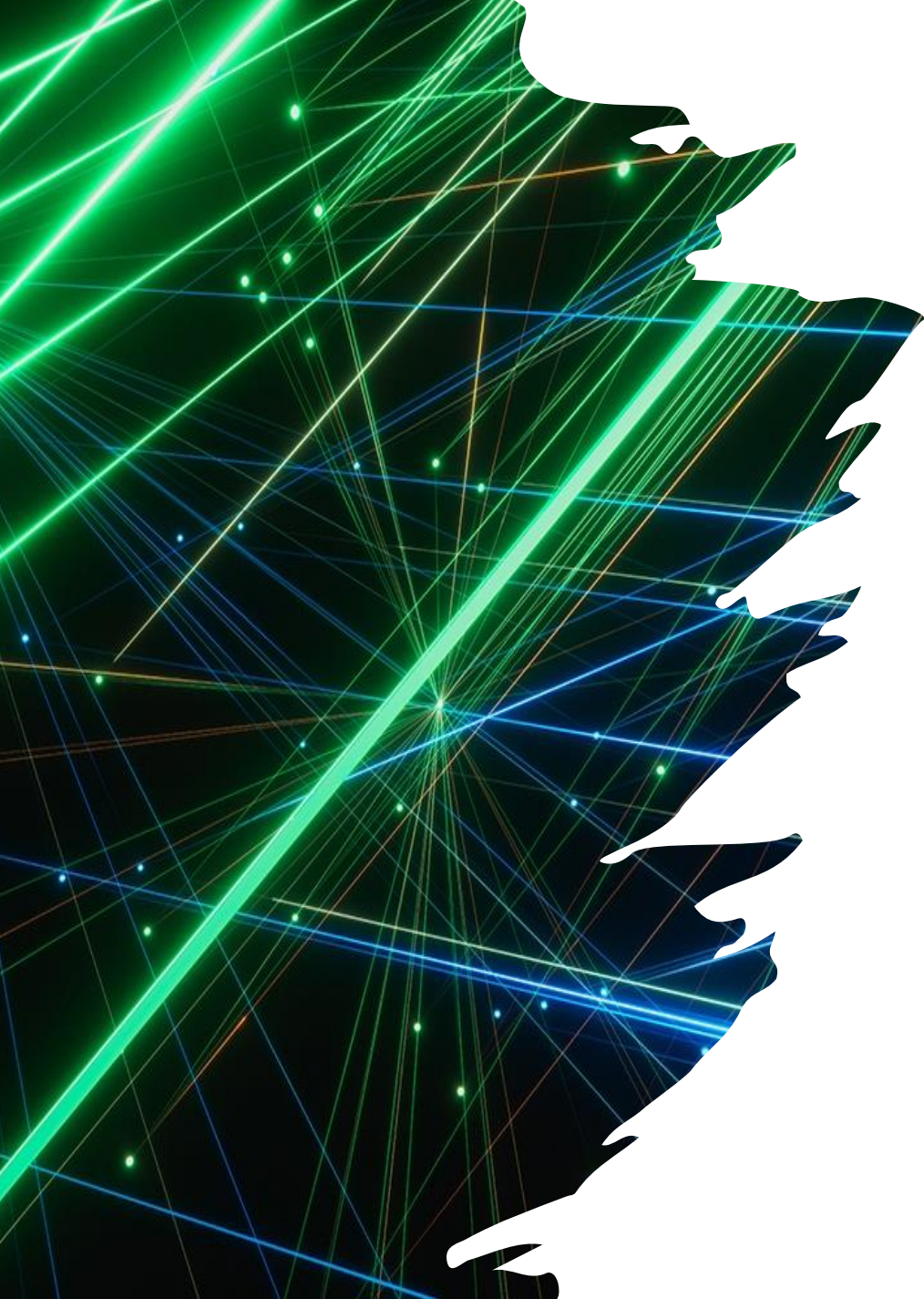


Illustration from <https://i.redd.it/uwlwfvdt4x991.png>

How do birds see laser beams?

- Birds can see beam/spot in bright light
- Birds react to a moving beam as if it were a solid object
- Green laser beams reflect and refract off leaves, may make plants look “wrong”





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
- Lasers plus distress calls work better than either alone

The URI Laser Scarecrow





The Avix Autonomic

- Commercially available from Bird Control Group
- Tested on 3 blueberry farms in RI in 2018
- Numerical reduction in bird damage in protected fields but results not statistically significant

Issues with lasers for blueberries

- Birds may become habituated to the laser
 - Controlled trials with corn ears on sticks found that birds habituated in 5 days if strongly motivated
 - Birds did not habituate in trials with intact corn plants
- Bird deterrents use Class IIIb lasers, which have the potential to cause eye injury if the beam directly impacts the retina for sufficient time
- Lasers work well against flocks of birds but individuals can hide in the foliage

