

# LASER SCARECROW TECHNOLOGY FOR PREVENTION OF BIRD DAMAGE

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## INTRODUCTION

Birds are wonderful creatures, yet they also cause problems for farmers around the world. Farmers in India make a man-like effigy known as a “SCARECROW” to keep birds from sitting on the seeds and destroying the farmland. The war between farmers and birds has raged on since the start of agriculture. Pests such as starlings, blackbirds, and crows can destroy up to 75% of crops within 48 hours after the harvest, resulting in a significant financial loss. Crows have earned their reputation as pest birds by devouring freshly scattered seeds, uprooting sprouting corn, plucking ripe grapes from the vine, and pecking away at vegetables and grains before harvest.

In the name of insect control, growers have tried everything. Other than that, there are a variety of unprofessional and haphazard techniques to toss and fire the birds. Nothing has been able to outrun nature’s evolutionary wit, from

traditional scarecrows to propane cannons. Although these conventional, stationary scarecrows do deter “pest birds” (such as crows and blackbirds), the effect is nearly usually transient. The birds eventually become used to the motionless dummies and continue to their destructive behaviour.

A researcher from the University of Rhode Island recently developed a new deterrent to keep these destructive birds at bay and prevent damage. The laser scarecrow emits green laser light that people cannot see in the sun. They work because birds are sensitive to the colour green. The automated laser darts over fields up to 600 feet, effectively startling birds and preventing crop destruction. In comparison to the use of netting, they are also less environmentally damaging and labour-intensive. For more than two decades, lasers have been employed to control birds, although usually in enclosed or

semi enclosed environments such as warehouses and sports stadiums.

“Several things came together in the last five years or so to make the technology possible. LED-based lasers have grown significantly less expensive, and they can now be powered by more powerful and less expensive batteries, as well as solar panels to charge the batteries off the grid. We’ve been able to take advantage of all of these changes.

## LASER SCARECROWS SUCCESSFUL AT KEEPING BIRDS FROM EATING SWEETCORN

Sweet corn (*Zea mays* L.) is an important direct retail and local wholesale crop in the United States. Birds have long been recognized as a pest of corn, which they damage by shredding the husks and eating the kernels. This study was performed to evaluate moving green laser beams as a bird control strategy in sweet corn. A portable, battery-powered robotic scarecrow was designed to continuously move a 14 mm diameter, 532 nm wavelength beam from a 50 mW laser.

Laser bird deterrent systems are the latest tool in the battle against agricultural bird damage. They have been shown to effectively manage bird populations on a variety of orchards, vineyards, and field crops. A single automated laser system effectively reduced damage to farmer’s sweet corn crop by 80 to 85% after a series of unsuccessful attempts using streamers, noisemakers, cannons and even shotguns.





# LASER SCARECROWS WORK?

The laser scarecrow is housed inside a plastic bucket that protects it from the elements and is attached to an adjustable pole to set the laser at the same height as the corn tassels. The green laser light – which is the most effective colour because birds are especially sensitive to green lighting – automatically moves back and forth across the tassels in a field. The lasers, which can cover a section 600 ft (185 m) on a side, scan back and forth, scaring the birds. We think the birds perceive the laser as a solid object they need to get away from, but we don't know exactly. We can't get inside the head of a bird, we know from tests done using hand-held lasers that if the laser isn't constantly moving, the birds will eventually ignore it. It works especially well if there are other sources of food nearby that the birds can go to instead of eating the corn. We're just trying to make the corn less desirable." Treatment of roosting places at dawn and dusk is an efficient strategy because it provides birds time to select alternate roosts outside of your control area. Even if you put them under a lot of pressure, diurnal birds will not abandon a roost location in complete darkness, so start laser treatment as soon as they return to their roost.

The most successful way is to carefully approach the roosting spot with the laser beam. Keep in mind that birds perceive the laser light as a predatory presence, so you must offer them an escape route. Use the laser beam to herd birds towards and out of the house.



## BIRD DETERRENT SUCCESS WITH LASERS

Lasers are an effective, long-lasting and humane way to deter birds from growing crops and planted seeds with proven results. Unmitigated, the damage to crops can be substantial, including damage caused by:

- Crop consumption
- Accumulation of bird waste
- Trampling of crops
- Erosion and run-off that occurs in bird-grazed fields

There have been different variations of the laser technology, some of which come solar-powered, and with an auto-targeting system on birds. The technology has also been adopted by pest control companies who claim the device can prevent up to 90% of crop losses. It is a silent tactic that doesn't disrupt neighbours. It is highly effective and to date, comes with a low chance of birds adapting to its scare tactics.

It's probably going to turn out that it's best deployed as part of a multi-tool approach to bird control, but it definitely seems to be reducing bird damage.