



## TRI-NUT PROJECT REPORT

### **Three-Year Trial of a Bird Laser in a Walnut Orchard:**

At Rainbow Creek Nuts, we run both a walnut and hazelnut orchard at our farm located in Cowwarr, Victoria. As our walnut trees have matured and began production, we have faced a growing challenge from cockatoo damage. Our farm's location is directly in the path between roosting sites and prime feeding areas for local cockatoo populations.

This means that each morning and later in the afternoon, flocks of birds pass through or stop at our farm to feed on our walnuts. Without intervention, this could result in significant crop loss.



**Photo 1: Property Photo including the weir.**

Cockatoos are highly intelligent and adaptive birds. They have excellent vision and can remember the locations of food sources over large areas. This makes them quite difficult to deter once they become aware of a food source. As our trees matured, we noticed the frequency and intensity of cockatoo visits increased dramatically, and bird control began to take up a large portion of our time and efforts.



**Photo 2: Cockatoo Damage**

To address this issue, we began to research into numerous non-lethal bird control methods. We used netting for a few seasons, but they became difficult to install and remove.

In 2023, we decided to trial a bird laser in our most mature walnut block, which contains approximately 600 trees that had recently come into production. This laser was bolted on top of a 6-metre-tall light tower, which allowed for good angles and coverage.



**Photo 3: Laser on the tower.**

### **Year One: Initial Installation and Observations:**

The laser was installed later in the season than ideal, so we supplemented its use with netting on the outside rows of the orchard. Even with this delayed installation, the laser proved highly effective. When directed at cockatoos perched in the orchard, the birds immediately took flight. Over the first few weeks, there was a noticeable reduction in cockatoo presence in the trial block.

However, as the season progressed, the birds began adapting to the laser's pattern. We observed the birds skirting areas not covered by the laser, and over time, they discovered trees that were located in hollows where the laser's path passed overhead.

After the harvest season, we switched off the laser, and immediately, hundreds of cockatoos returned to feed on the remaining nuts. We reactivated the laser, and the birds dispersed again.

#### **TAKEAWAY:**

**The laser worked really well at first, but birds explored and exploited gaps in coverage.**

### **Year Two: Reliability Challenges and Reduced Effectiveness:**

In the second year of our trial, the laser's effectiveness began to decline. Observations suggested that overall success dropped to about 50%. While damage was still lower than in previous years without the laser, supplemental use of a shotgun became necessary to protect the crop.

A significant challenge occurred on Boxing Day, when a thunderstorm resulted in the laser unit being struck by lightning. After the storm had passed, the unit returned to its normal pattern, but that wasn't the end of our challenges. After the lightning incident, the unit began to stop and start without warning. Although the laser had Bluetooth connectivity, we found that the system was limited in diagnosing failures. We only became aware of malfunctions through physical inspection of the unit. This meant that there was no way of checking if the system was working remotely, which removed the perk of 'set and forget' that we had initially relied on.

Replacement parts were shipped when issues arose, but no installation or service was offered by the company. Eventually, the entire system was replaced.

#### **TAKEAWAY:**

**Reliable remote monitoring and maintenance is critical. Without intervention, equipment downtime can quickly undo the benefits of any deterrent system.**

By the third season of the trial, the laser's effectiveness had diminished significantly, reducing cockatoo activity by only around 10%. Birds would still be startled by the moving laser, but they quickly resumed feeding behaviour once it had passed.

Observations suggested that the birds had learned the pattern of the laser and recognised that it posed no real threat.

In attempt to delay habituation, we limited laser use to roughly once every two weeks, when we were unable to supervise the orchard due to other commitments. However, this limited use had minimal effect. Cockatoos continued to feed in the trial area and extensive shotgun use was required to protect our crop.

#### **TAKEAWAY:**

**Any deterrent with a predictable, non-lethal pattern will eventually become less effective over time. Intelligent bird species like cockatoos are quick to adapt, making simple deterrent methods largely ineffective.**

#### **Additional Observations and Lessons Learnt:**

Over the three-year trial, several key insights emerged.

##### **1. Landscape and orchard layout will affect the laser.**

The presence of nearby trees, hollows, and hard-to-reach areas allowed cockatoos to discover parts of the orchard that the laser did not cover. Trees on the outskirts of the orchard (near a busy road.) were hard to cover without the laser reaching the road, and bigger trees in the orchard blocked the laser light, providing protection to some parts of the orchard furthest away from the tower.

##### **2. Supplementary Methods must be used.**

While the laser provided immediate deterrence, human presence and lethal control remained essential for crop protection.

##### **3. Timing and consistency are critical.**

The laser was most effective when used consistently during peak feeding times. Use during the off-season allowed the birds to become habituated to the presence of the laser, reducing its effectiveness.

##### **4. High-tech solutions need monitoring and technical support.**

Equipment failures, either from weather events or technical malfunctions, can significantly reduce effectiveness. Reliable monitoring, maintenance protocols and rapid access to technical support are essential when relying on high tech deterrent methods.

## **CONCLUSION:**

Over the course of three years, our bird laser trial in a walnut orchard demonstrated that while lasers can produce strong short-term results, their effectiveness can decline over time due to habituation, equipment reliability issues, and landscape features that allow birds to get used to and avoid the laser. Non-lethal deterrents such as lasers, gas guns, bird calls, and netting all have limitations when used predictably, and no single method can fully protect a large, mature orchard easily on its own.

This trial has shown that bird lasers can serve as a useful supplementary tool, particularly for immediate dispersal or during peak feeding periods, but they should be integrated into a broader bird management strategy. Combining multiple deterrent methods, rotating strategies, ensuring comprehensive coverage, and maintaining reliable equipment are all critical for long term effectiveness.

In summary, the trial highlighted the uses and limitations of bird lasers in orchard management. They would be most effective when part of a diversified, well monitored, and flexible approach. This demonstrates that while technology can assist in protecting crops, lasers are unable to consistently protect a crop on their own, and an understanding of bird behaviour, orchard layout, and adaptive strategies remain essential for pest control.

Report prepared by:

Teagan Dikkenberg, Rainbow Creek Nuts.