



HINKLER AGTECH INITIATIVE

Automatic Pest Bird Management System

INTRODUCTION

This trial was undertaken as part of CQUniversity's Hinkler AgTech Initiative. The Initiative aimed to increase the productivity and profitability of the Bundaberg region's agricultural sector through greater availability and utilisation of agricultural technology (AgTech). An extensive consultative process undertaken with agribusinesses identified on-farm needs that may be addressed using AgTech. Trials of selected AgTech products and services were then undertaken in partnership with agribusinesses and technology providers to determine the technologies' efficacy in on-farm conditions. This summary provides an overview of findings from one of the technology trials, including grower feedback and considerations for other growers when deciding whether to utilise the technology in their own enterprise.

Background

Bird damage is a significant problem in Australian agriculture, with total damage to horticultural production alone amounting to more than \$300 million annually. In addition to destroying crops, pest birds can spread disease and parasites. Another issue with pest birds is their tendency to congregate in large numbers, which can attract other pests, such as insects and rodents. This can lead to even more damage to crops and can also create sanitation problems for farmers. Mitigating this damage is difficult for growers because of the unpredictable nature of pest bird populations and lack of information on management strategies. These strategies include bird netting, aerial drones, audible systems, repellents, trapping and shooting. These strategies can be costly and time-consuming and, in some cases, raise many social, environmental and legal issues. There is a clear need for a safe, cost-effective management solution that causes negligible harm to bird populations.

The Technology

The AVIX Autonomic Mark II is a fully automated, laser-based bird repellent system. The system emits a green laser beam randomly over a pre-defined area of crop. Birds perceive the moving laser as a physical threat and flee immediately when the beam passes over them.

The randomness of the laser beam also discourages bird habituation because they cannot pre-empt its movement.

The system enables growers to choose from a selection of pre-loaded laser patterns and change the coverage area via their mobile phone. The beam covers a span of 350m in full sun and 500m in overcast conditions or nighttime. The unit is usually mounted to a pole or platform to provide adequate elevation and can be operated by grid or solar power.

The Trial

This trial involved one AVIX Autonomic Mark II system, installed in a commercial peanut crop in Bundaberg where the dominant pest bird species were magpie geese and wood ducks. The unit was mounted 3m above the ground and set to cover an area of approximately 30ha, including a farm dam. The system was only operated during peak bird presence, i.e., in early morning and evening, for the entire growing season from November to March.

RESULTS

Farm management and on-farm workers reported a high degree of effectiveness for the system during its operation. There was no bird habituation observed and no plants lost to bird damage, during the trial period.





Value to Business

The greatest value of this technology to growers is the increased crop production and profitability resulting from the elimination of pest bird impacts.

Another potential value to growers is the saving in ongoing time and cost commitments, compared to traditional management strategies. The outright purchase price of an AVIX Autonomic Mark II system as trialed, is \$20,000*. Alternatively, the system can be leased from the supplier for \$3000 / month*. These costs are significant but once installed, the laser system operates autonomously with minimal maintenance, other than replacement of the lamp every 5000 hours.

By comparison, the cost of traditional methods ranges from \$500-\$1000/ha* for repellants and scaring systems, to \$2500/ha* for netting. Many farmers also deploy quad bikes and drones, but these are time-consuming practices and require constant vigil to be effective.

Grower Feedback

Trial Summary Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I see value in this technology			✓		
I found the technology easy to use				✓	
The technology was easy to integrate within my business				✓	
I was satisfied with the service provided by the AgTech company				✓	
I intend using this technology in my business			✓		
I recommend this technology to other growers			✓		

Other Considerations

When deciding whether to purchase or lease an AVIX Autonomic Mark II system growers should consider:

- The system should be sited and directed so it does not impact on neighbouring properties, roads, houses or airports.
- The number of units required to be effective depends on the terrain of the cropped area. Flat areas can be covered by fewer units than hilly areas. Similarly, the unit covers a greater area the higher it is mounted above ground.
- The system has been proven to be effective on a range of bird species, including crows, cockatoos, geese and sparrows, in a range of horticultural and broad-acre crops.

Further Information



For further information on this trial and results, email CQUniversity's agricultural research team:
agriculture@cqu.edu.au

For further details on the AVIX Autonomic Mark II system, including case studies and user stories, contact Bird Control group at:
birdcontrolgroup.com

Summaries of other technology trials undertaken through the Hinkler AgTech Initiative are available at:
bundabergagtechhub.com.au

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