

# Smart Trapping in Sweetcorn

## Research Summary

### Overview:

*Helicoverpa armigera*, or Corn Ear Worm (CEW), is a significant pest for sweetcorn in New Zealand, affecting crop yield and marketability. Effective pest monitoring is crucial for Integrated Pest Management (IPM), particularly since control methods are most effective in CEW's early life stages. Traditional bucket pheromone traps require weekly checks, which are labor-intensive and slow. In contrast, new AI-driven smart traps provide real-time updates on CEW populations, enabling quicker IPM decisions. This study compared the accuracy and practicality of Scoutlabs smart traps against bucket traps for effective pest management.

### Methodology:

#### Trap Designs:

- Both bucket and smart traps used a *Helicoverpa armigera* pheromone lure
- The Scoutlabs smart trap featured an AI-enabled camera, sticky trap, solar panel, and remote connectivity

#### Field Setup:

- Ten smart traps were placed in key sweetcorn regions: Pukekohe, Gisborne, Hawkes Bay, and Canterbury
- A consistent layout and placement at crop edges allowed for site comparisons and high moth interception

#### Assessments:

- Weekly manual moth counts were recorded for both trap types; smart traps data was available daily.
- Cross-validation of smart imaging and manual assessments identified false positives and negatives
- Project leads cross-referenced suspicious identifications and stored unclear specimens for expert analysis

### Key Findings

- Scoutlab smart traps had acceptable accuracy levels (87%)
- Smart traps allowed for a significant decrease in data delivery times, allowing for faster decision making and higher efficacy of bio-insecticides
- Smart traps had consistent and robust performance across different regions and conditions, showing the technology is reliable in real life use
- Trends across bucket traps and smart traps were the same, however bucket traps were more sensitive, making them more applicable under lower pest pressure

Results from traps, regions, and paddocks showed significant variability in CEW pressure, emphasizing the need for effective localized monitoring.

