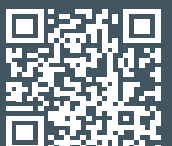




CASE STUDY

SPLAT CONTROL OF LBAM AT TEN MINUTES BY TRACTOR

By Fabiano Frangi, Ten Minutes by Tractor, Karen Thomas, Melbourne Water
and Dr Mary Retallack, Retallack Viticulture Pty Ltd



SPECIALISED PHEROMONE AND LURE APPLICATION TECHNOLOGY (SPLAT)

What is SPLAT?

Specialised pheromone and lure application technology (SPLAT), provides an alternative to existing pheromone application techniques.

SPLAT LBAM technology (available in the USA) provides a similar efficacy to disrupt the mating of *Epiphyas postvittana*, light brown apple moth (LBAM) when compared to pheromone infused twist ties, while streamlining the application of pheromones via manual, or mechanical application.

A recent trial in the Mornington Peninsula demonstrated the capacity for SPLAT to control light brown apple moth (LBAM) below economically damaging thresholds when compared to the untreated control.

Pheromones for mating disruption

SPLAT is an environmentally friendly mating disruption product that provides sustained and controlled release of the light brown apple moth pheromone. Independent field studies have shown SPLAT LBAM to be as or more effective than leading mating disruption products.

SPLAT LBAM contains a sex pheromone for light brown apple moth within a polymer matrix (waxy paste). The pheromone is continuously released by the polymer matrix into the crop which confuses the moths and effectively disrupts mating. The pheromone is species specific to *Epiphyas postvittana*, LBAM.

For most vineyards, one application of SPLAT LBAM has been demonstrated to provide mating disruption protection for the whole season when application is timed in early spring.

SPLAT recommendations

- The recommended application rate is 625 to 1,000 g per hectare (use the higher rate to increase the level of mating disruption).
- For best results, use the mating disruption strategy on areas great than 4 hectares.
- Apply early in the season, prior to or at the first sign of male LBAM flight.
- Use pheromone bait traps to monitor infestation levels.
- When applying by hand, apply the 1 gram dollops using a spatula or caulking gun at the upper level of plant foliage (i.e. on the top of intermediate posts in a vineyard) or high in the tree canopy in orchards.
- To achieve the recommended minimum 4 ha application area, some vineyards may need to negotiate application in a neighbouring vineyard if they are near your LBAM hot spot.



Background

The Ten Minutes by Tractor, Coolart Vineyard is located in Hastings on the Mornington Peninsula. It is a 25 hectare vineyard with 14 ha planted to Pinot Noir.

The vineyard has surrounding patches of remnant vegetation as well as European windbreaks. Warrangine Creek is nearby and this flows into Western Port Bay.

The ecological vegetation class (plant community) is EVC16 Lowland Forest, part of the Gippsland Plain Bioregion. This plant community is dominated by tall eucalypts with a range of understory species including shrubs, grasses and herbs. Fertile, well drained soils and high annual rainfall.



Situated between two bays, frosts are not an issue. However this vineyard has a history of light brown apple moth (LBAM) problems, and the vineyard seeks long term integrated pest management (IPM) options that focus on implementing biological and cultural management in response to industry aspirations to reduce chemical interventions for invertebrate pests and weeds.



Figure 1: Ten Minutes By Tractor, Coolart Vineyard EcoVineyards SPLAT demonstration area, August 2023 [Image: NatureKit].

What were you hoping to achieve and why?

The vineyard is interested in pioneering a new practice that might offer an alternative option to growers seeking a biological management approach to controlling LBAM in vineyards where this pest pressure is high.

"If we can demonstrate a cost/benefit at least equal to our current management costs, then this provides us with a good alternative to manage LBAM in the vineyard"

Fabiano Frangi, Ten Minutes by Tractor, Vineyard Manager

What did you do and when?

The process is called specialised pheromone and lure application technology (SPLAT). [SPLAT LBAM HD-O](#) is a mating disrupting pheromone that is formulated into a waxy paste that can be applied by 'splatting' it onto vineyard posts by hand with a caulking gun or mechanically with a suitable spray rig.

The pheromone needs to be applied at the start of the growing season and can last throughout this timeframe with a peak focus efficacy of about 10 weeks. At Ten Minutes by Tractor (TMBT) the demonstration site was set up in September 2023 with 3 people using caulking guns. The treatment sites need to be minimum 4 ha and the trial was established on a 4 ha block (treated) and corresponding control block (no SPLAT). Application took approximately 5 hours. Two monitoring traps were positioned in the treated area and two in the control area.

Both blocks were monitored over the growing season with LBAM lure and delta traps to detect incursions.



Figure 2: Leesa from Melbourne Water applying SPLAT at Ten Minutes By Tractor, September 2023 [Photo: Melbourne Water].



Figure 3: Neil Hinchey from Organic Crop Protectants applying SPLAT to a post in the treatment block [Photo: Melbourne Water].



Figure 4: LBAM pheromone traps and caulking gun used to apply SPLAT [Photo: Neil Hinchey].



Figure 5: Application of SPLAT to the tops of intermediate posts via a caulking gun [Photo: Neil Hinchey].

Observations

The number of LBAM moths observed in the pheromone traps were relatively low in both treated and untreated blocks until early December 2023 (i.e., 0 to 3 moths per trap per week).

- LBAM numbers started to rise in the untreated area progressively in December and there was a three week delay and lower numbers in the treated block.
- LBAM abundance was higher in the areas adjacent to the surrounding bushland.
- Entrust (Spinosad) was applied on the 28 December 2023 to manage the populations in the control block to reduce LBAM numbers below the economic threshold.

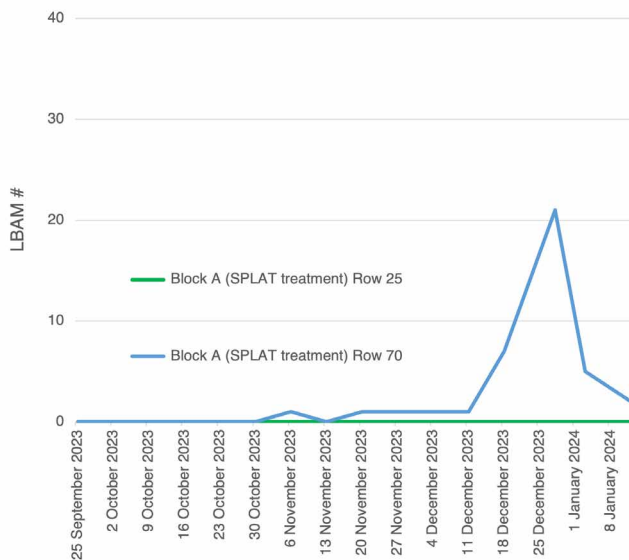


Figure 6: Splat LBAM treatment 2023/24

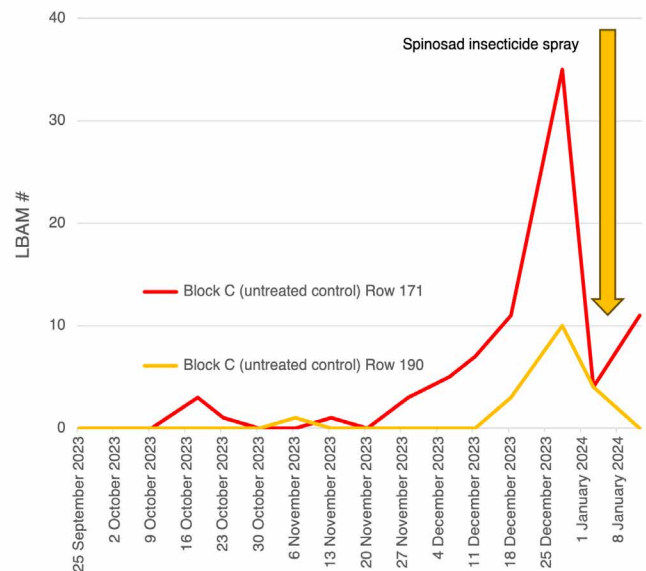


Figure 7: Untreated control 2023/24

Insights

The SPLAT treated block maintained LBAM numbers well below economic thresholds (minimal moths detected) and the control required chemical intervention during grapevine flowering.

TMBT was really happy with the result as it provides another control option, especially in seasons where LBAM pressure is predicted to be worse and multiple control options may be needed.

An optimally timed early season intervention such as SPLAT may be more economically viable than repeat chemical interventions. If more growers use SPLAT, this will hopefully bring some costs down with bulk orders and sharing resources to apply the pheromone.

SPLAT does not interfere with beneficial insects which makes it a compatible and favourable practice in the vineyard.

Where to from here?

Growers can use this information to trial SPLAT on a 4 ha block that suffers from LBAM pressure and compare this with a control block over a growing season. Compare the intervention costs (and potential crop loss) and have informed decisions in future about best practice IPM approaches that may be cost effective over repeat spraying and chemical management. In future drone applications might be worth trialling to find innovations and cost savings to apply the SPLAT pheromone.

To achieve the recommended minimum 4 ha application area, some vineyards may need to negotiate application in a neighbouring vineyard if they are near your LBAM hot spot.



TMBT is also planting insectary plants at the end of the rows to encourage beneficial insects within the vineyard. With an overhead trimmer, these plants can be maintained easily plus provide a source of nectar and pollen when flowering.

Species include

- *Leptospermum continentale*, prickly tea-tree
- *Leptospermum myrsinoides*, silky tea-tree
- *Goodenia ovata*, hop goodenia
- *Patersonia occidentalis*, long purple flag

Pitfalls to avoid?

Some of the costs and resourcing issues will need to be considered when looking at SPLAT as a management intervention at the start of the growing season. The purpose built 'splatigator' application unit which can be towed behind an ATV or ute may not fit down narrow vineyard rows so the pheromone will need to be applied with caulking guns which is more labour intensive.

SPLAT has a short shelf life, so the product needs to be ordered in autumn to enable shipping before the spring growing season. Shipping is cheaper than air freight so the longer lead in time, the more likely the product can be shipped cheaper than by air freight. The down side to shipping is that the product is losing shelf life due to the longer freight.

Costs

Item	Cost (exc GST)
Importation of SPLAT product including air mail	Lower rate (used): \$216/250g tube x 2.5 tubes per ha (assuming a rate of 625g/ha) = \$540 per ha x 4 ha = \$2,160 (ex GST) Higher rate (comparison): \$216/250g tube x 4 tubes per ha (assuming a rate of 1kg/ha) = \$850 per ha x 4 ha = \$3,400 (ex GST)
5 hrs labour (to cover 4 ha) hand application with caulking gun and 3 people (a total of 15 labour hours, or 3.75 labour hours per ha)	\$50/hr x 5 hrs x 3 people or \$750
LBAM lure and delta traps for monitoring 2 traps/ha = 16 total (treatment + control blocks)	\$640 May need extra lures if trapping longer than September to December
Weekly trap monitoring	1 person x 2 hrs Sept- Dec = 24 hrs over 4 months x \$50/hr = \$1,200
Total	\$4,750 per 4 ha (or \$1,188 per ha) ex GST



Acknowledgements

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ACKNOWLEDGEMENT OF COUNTRY

EcoVineyards proudly acknowledges the Aboriginal and Torres Strait Islander Peoples, and their ongoing cultural and spiritual connection to this ancient land on which we work and live.

As the Traditional Custodians of this land, we recognise their wealth of ecological knowledge and the importance of caring for Country.

We pay our respects to elders past and present and extend this respect to all Aboriginal and Torres Strait Islander Peoples.

