AdvisoryNetPEST

Alyssum companion plants to improve thrips control in strawberries.

Farmer's name
Robert Busby

Contact
Andrew.gladman.@adas.co.uk

Name of the farm
Busby Partners Limited

Country
United Kingdom

Description of the farm context

The farm grows everbearer varieties of strawberry and other soft fruit. The site is surrounded by several water bodies in central England. Some of the polytunnels remain covered over winter but most are removed due to risk of storm damage and are re-covered in February. Grass is grown under the tabletops and is mown regularly, keeping vegetation under the strawberries helps to balance the microclimate and provide habitat for invertebrates.

Partner Organization

ADAS www.adas.co.uk

THE TECHNIQUE

Short Description:

Alyssum as a companion/banker plant for *Orius laevigatus* to improve thrips control in strawberries.

Crop Sector:

Soft Fruit
Also relevant to: Vegetables, Ornamentals

Targeted pest and diseases:

Thrips species

Objective of the NA:

The novel approach involves using sweet alyssum *Lobularia maritima* as companion plants in strawberry production. The plants serve as a trap plant for thrips and a banker plant for *Orius laevigatus* to reduce thrips damage to strawberries.

AdvisoryNetPEST

The **AdvisoryNetPEST** project aims to create a **network** and **upgrade advisory services** across the EU to increase the sharing of knowledge and the **adoption of innovative solutions to reduce the use and risks of pesticides** (RURP) in all **EU Member States**, enabling the agricultural sector to achieve the targets proposed by the Farm to Fork Strategy.

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Level of practice adoption across the country:

1 2 3 4

The practices identified in this project are called 'Novel Approaches' and abbreviated as 'NA'

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Expectations regarding RURP

The challenge was to help manage pest thrips species, such as *Frankliniella intonsa*, *Thrips fuscipennis*, *T. major*, and *T. tabaci* (Figure 1), which are thought to only enter the crop during a short period of the year, but are not controlled by the predatory mites used for western flower thrips, *F. occidentalis* control. This novel approach aimed to improve the performance of *Orius* predatory bugs (Figure 2), which can feed on all life stages of many species of thrips. There is additional pressure from retailers (the customers) to produce strawberries with as few insecticide applications as possible.

Key success factors

The farm requires the ability to produce alyssum plants or a supplier that can propagate the plants early in the season, as the alyssum plants ideally need to be in placed in the crop before thrips are present. The alyssum plants require growing media, pots and irrigation, like any crop plant and space either on the tabletops, hanging from them, or on the ground. The approach also benefits from the grower releasing *Orius* predatory bugs, though alyssum alone is likely to benefit natural predator populations. The release of *Orius* by growers varies between countries, as *Orius* is a high value biocontrol agent. However, in the UK, growers consider that the cost of *Orius* acceptable, and they can be released early enough (typically mid-May) to establish in the crop. This novel approach also requires markets that value low use of pesticides to drive uptake.

Methods/strategy of application in the farm

The farm started using alyssum companion plants four years ago. In a trial the variety of alyssum grown was 'Clear Crystal', which is vigorous and produces many flowers. The alyssum was planted at 9 m intervals in the two central tabletop rows between strawberry cv. 'Eve's Joy' (Figure 3). The alyssum was raised from seed in a glasshouse; (Figure 4), 6 plug plants were planted into each 3 L pot. *Orius* was pre-inoculated on the alyssum on 30 April at 6/plant. *Orius laevigatus* was released in the field on 22 May and 2 June at 0.7/plant.

Improvements of the NA

Alyssum plants in the UK can be grown early in the season either in a heated glasshouse or an unheated glasshouse or polytunnel using horticultural fleece. Some growers place alyssum plants below the tabletops, or hang them from the side of the crop, to not reduce the number of strawberry plants. 3L alyssum pots in a trial were spaced at 9m intervals, this ensures regular presence throughout the tunnel, though likely incurs some yield penalty.

Resources and skills needed to adopt the NA

This novel approach requires either the facilities to grow alyssum plants and pot them up, or a reliable propagator able to supply them early enough in the season. Growing alyssum on site requires additional labour to pot on the alyssum, plant it out and irrigate it - if using a separate system from the strawberry irrigation.

Figure 1: *Thrips tabaci* © Nigel Cattlin / FLPA

Figure 2: *Orius laevigatus* © Nigel Cattlin / FLPA

Figure 3: Alyssum cv. 'Clear Crystal' 12 122ks after planting in the field. © ADAS

Figure 4: Alsyssum plants propagated in a glasshouse. © ADAS

*RURP : Reduction of Use and Risks of Pesticides

Advice from the Advisor

Infertile cultivars of alyssum can be used so that they do not set seed in the crop, but Busby Partners Limited find that self-seeding varieties are not a problem.

Farmers Testimony

An estimated 50% yield is lost from the two strawberry plants adjacent to the alyssum plants due to shading. However small yield losses are acceptable as damage from thrips can cause whole crop failure.

Policies and Regulatory Support

Retailers drive adoption to reduce pesticide residues; some supermarkets set strict limits. UK incentives fund companion planting in some crops but exclude others. More research is needed on efficacy. The end of producer organisation schemes in England will make growers more price-sensitive in biocontrol use. In some other countries, small payments support use of biological controls.

Social and Cultural Acceptance

The main resistance is worry that the alyssum plants may attract thrips and provide resources for them to breed on. Regional climate affects resistance to uptake of this approach as parts of the UK are very wet such as Wales, where the alyssum is not likely to thrive, unless under protection.

To go further on NA replication:

This novel approach can be used in other countries where strawberries are grown under protection and growers have enough labour resources to grow alyssum plants on site, or access to a propagator for alyssum. Growers also need to release the predatory bug *Orius* early in the season, to alyssum plants, even before the alyssum is planted into the strawberry crop. Alyssum can be put in the strawberry crop in different locations and densities depending on the preference of the grower.

BENEFITS

Orius populations breed on alyssum, boosted further by supplementary food if used. Thrips numbers remain low with minimal fruit damage; alyssum may act as a trap plant for thrips without raising crop damage. Beneficial insects are attracted, though impact is hard to measure. Thrips levels are similar with or without alyssum, but this approach ensures that Orius establishes and strengthens biocontrol.

BARRIERS

It can be difficult to grow the alyssum plants early enough in the season for a strawberry grower without a glasshouse, heating, or lighting in the UK. Placing alyssum on top of the tabletops, next to the strawberries reduces the number of productive strawberry plants in the crop. However, this is likely to be the most effective method for trapping thrips, as research has shown that species of thrips that damage strawberry fly above the tabletops and mainly only cereal thrips fly below the tabletops.

Systemic Feasibility Analysis: Expert insights from Literature and Field Data

CRITERIUM	INDICATOR	INDICATOR SCORE	EVALUATION
Pesticide use reduction level	Reduction of the applied volume of pesticides	high reduction (>25%) **moderate reduction (10-25%)** low reduction (<10%) no reduction	
Effectiveness of controlling the target pest/diseases/weed	Percentage reduction of the target pest/weed infestation or of the damage caused by the target disease	high reduction (>60%) moderate reduction (30-60%) **low reduction (<30%)** no reduction	
Biodiversity	Impact on arthropods other than bees	-- / - / 0 / + / **++**	
Water quality	Impact on pesticide losses to surface water (runoff)	-- / - / 0 / **+** / ++	
Air quality	Impact on pesticide emissions	-- / - / 0 / + / **++**	
Working conditions	Impact on working-time	-- / **-** / 0 / + / ++	
	Impact on human health	high risk moderate risk low risk **no risk**	
	Risk mitigation on operator/employee exposure	high mitigation moderate mitigation low mitigation **no mitigation**	
Costs	Required level of investment	> EUR 100.000 EUR 50.000 - 100.000 EUR 10.000 - 50.000 **< EUR 10.000**	
	Impact on various types of variable costs: fuel, energy, labour, water, consumables...	Consumables **+**	
Outputs	Impact on quality (and marketable crop)	**+**	
Profitability	Impact on profit margin	**+**	

Impact Highlights

The systemic feasibility analysis indicates that the novel approach, involving companion crops as trap or banker plants, offers a sustainable alternative to insecticide-based thrips control.

The outcomes show effective pest suppression combined with moderate pesticide reduction, leading to improved environmental safety through lower emissions and runoff, as well as the protection of beneficial arthropods. In addition, no health risks are posed to operators, investment requirements remain minimal, and positive effects on yield and profit margins are expected.

In contrast, while insecticides remain cheaper, their reliance contributes to resistance development, operator hazards, environmental toxicity, and persistent crop losses.

Evaluation: