Case study: IPM and biodiversity in lettuce, Winter 2026

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Summary:

This case study shares use of Integrated Pest Management (IPM) and biodiversity to support pest management throughout the growing season of a winter lettuce crop.

Introduction

This report details the winter 2026 lettuce crop, focusing on the use of Integrated Pest Management (IPM) and biodiversity to support pest management throughout the growing season. The primary objective was to encourage natural pest control through increased on-farm biodiversity and beneficial insect populations, thereby reducing reliance on chemical sprays. However, biodiversity support was limited during this crop due to unforeseen circumstances.

Crop overview

This section provides an overview of the lettuce crop's growth and the environmental conditions experienced during the winter 2026 season. The crop experienced predominantly dry conditions throughout much of the growing period, along with several periods of frost, which had minimal impact on crop development. Despite these conditions, the crop grew well and was successfully harvested.

Crop details

The lettuce variety ‘Ice Helio’ was transplanted on 16 June 2026. Harvesting commenced on 9 September 2026, marking the completion of the winter growing cycle.

Monitoring details

Crop monitoring was initially scheduled on a seven-day cycle, adjusted to more frequent intervals when scouting thresholds were triggered. During each session, 10 plants were systematically scouted in a diagonal pattern across the cultivation block, following basic industry guidelines.



Newly planted lettuce crop with the herbicide damaged permanent native plantings along the field edge (2 July 2026).

Spray thresholds were set according to these guidelines and were further refined by field experience to enhance decision-making processes.

Pest Overview

Very low numbers of insect pests were observed throughout the monitoring period, reflecting the reduced pest pressure typically associated with winter growing conditions.

Natural enemies overview

No natural enemies were recorded during crop monitoring.

Disease update

Low levels of *Botrytis* and *Sclerotinia* were observed during the growing season.

Thresholds

During this crop cycle, we utilized threshold guidelines from the Information Guide for IPM in Outdoor Lettuce (August 2007), focusing particularly on the aphid-to-predator and caterpillar thresholds. Monitoring primarily targeted the aphid threshold where the ratio of aphids to predators (excluding spiders) is calculated as follows:

Aphid/Predator Ratio =	**Total Number of Aphids / Total Number of Predators**

Based on this calculated ratio, the following actions were prescribed:

Less than 10: No action required; schedule the next scouting in 7 days.

Close to 10: No immediate action; increase scouting frequency to every 3-4 days.

Greater than 10: Apply a selective insecticide and scout again in 7 days.

Monitoring details

Due to the very low numbers of insect pests and natural enemies recorded, along with low disease levels, there was insufficient data to produce meaningful graphs, as have been produced in other case studies, for this crop.

Crop monitoring was initially scheduled for a seven-day cycle, with frequency increased when pest thresholds were triggered.

Very low numbers of insect pests were observed throughout the monitoring period, reflecting the reduced pest pressure typically associated with winter growing conditions.

The accompanying table provides a summary of additional species observed during the growing season, including pests and beneficial insects not routinely monitored. These observations include species recorded during regular crop monitoring and those encountered incidentally, providing a broader overview of insect activity within the crop.

Diversity of insect species observed in the lettuce crop:

	Pest		Beneficial
Monitoring	Aphid-winged		

Biodiversity planting impact

Biodiversity support was very limited during this crop, with none of the planned biodiversity plantings available to support beneficial insect populations. The permanent native plantings along the central drain had been severely damaged by a herbicide application in October, leaving very little established native habitat remaining in this section. No annual flower mix was planted alongside the crop due to the requirements of projects planned for the following crop, and the mobile biodiversity pods were unavailable as they were undergoing maintenance.

There was, however, a mixed cover crop established in the neighbouring block. This was still relatively young at the time of harvest and would have provided only limited shelter and habitat for beneficial insects, with little to no pollen or nectar available to support natural enemies.

As a result, it was difficult to determine whether the surrounding biodiversity provided any benefit to the lettuce crop, as there was effectively no established biodiversity habitat directly supporting it during the growing season.



Mixed cover crop established in the neighbouring block adjacent to the lettuce crop (28 August 2026).

The following data provides a summary of the total number of insect pests and natural enemies recorded during monitoring, along with the diversity of species observed within the lettuce crop:

Pests	1 individual across 1 species
Natural enemies	0 individuals across 0 species

As discussed, these results reflect the very low insect activity recorded during the winter growing season.

With limited biodiversity habitat available and no natural enemies recorded, it was not possible to assess the contribution of biodiversity plantings to pest management in this crop.

Harvest

The crop was successfully harvested, meeting the grower's expectations for both quality and yield.

Reducing insecticides

Both the project crop and the grower's conventional crop received an aphid insecticide drench at planting.

However, no additional foliar insecticides were required in the project crop throughout the growing season. This was consistent with the very low insect pest pressure recorded during monitoring.

The table on the next page outlines the schedule of fungicide and insecticide applications made during the crop cycle, comparing the biodiverse crop with a similar conventional crop nearby.

This comparison illustrates the reduced reliance on chemical treatments due to the integrated pest management and biodiversity strategies.



Herbicide-damaged permanent native plantings along the central drain (7 August 2026).

This comparison with a similar conventional crop illustrates the reduced reliance on chemical treatments due to the IPM and biodiversity strategies.

Demonstration crop treatment			Nearby crop treatment		
Date	Fungicide	Insecticide	Date	Fungicide	Insecticide
		Imidacloprid drench @ transplant			Imidacloprid drench @ transplant
02/07/2026	Intuity +Mancozeb		01/07/2026	Chief +Mancozeb	
07/07/2026	Bravo		08/07/20...	Intuity +Mancozeb	
15/07/2026	Intuity +Integralis		17/07/2026	Cavalry	
22/07/2026	Cavalry		22/07/2026	Cavalry	
29/07/2026			27/07/2026	Cavalry	
05/08/2026	Cavalry		07/08/20...	Sumisclex + Integralis	
11/08/2026			10/08/2026	Sumisclex +Incursus Field +Integralis	
18/08/2026	Intuity +Incursus Field +Integralis		17/08/2026	Cavalry +Incursus Field +Integralis	
25/08/2026	Incursus Field +Integralis		27/08/2026	Incursus Field +Integralis	
02/09/2026			05/09/2026	Incursus Field +Integralis	

This schedule provides an overview of the treatments applied to both crops, allowing a comparison of chemical use between the project crop and the grower's conventional crop.

Conclusion

In conclusion, insect pest pressure remained very low throughout the growing season, as expected for a winter crop, despite the lack of established biodiversity plantings to support natural enemies. Disease incidence was also low, likely influenced by the predominantly dry conditions experienced during the season.

Given the absence of most of the biodiversity plantings and the lack of natural enemies recorded during monitoring, it is unlikely that natural enemy activity contributed significantly to pest control in this crop.

The low pest pressure was more likely a result of the winter growing conditions, although the aphid insecticide drench applied at planting may also have contributed to the low aphid numbers observed.

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Other resources

Case study: Trap cropping in sweet corn, Spring 2025 - here

This case study shares the crop protection approach taken in successfully harvesting a sweet corn crop using trap crops as a control strategy for green vegetable bug (GVB).

Biodiverse planting on vegetables farms project - here

This project is designed to show manipulation of plant diversity on a farm can increase beneficial insect numbers and reduce the pests in a crop, meaning less use of insecticides is required.

Linked on this page are many grower resources relating to this biodiversity project, including how to guides and monitoring sheet templates.