A survey of beet leaf miner

Background

Beet leaf miner (*Pegomya hyoscyami)* is a small fly that lays its eggs on chard, beetroot or sugar beet. You are most likely to notice the pale blotches and winding trails on the leaves as the small maggot tunnels around. Until recently, it was just an occasional pest, causing minor blemishes on a few leaves but over the last couple of years, pest numbers have risen leading to extensive leaf spoilage[i]. It is thought that mild winters may have contributed to this increase.

Adult flies are dull grey brown and around 7mm in length. In April – May, adults lay the eggs on the undersides of leaves. Eggs are cylindrical and white and a few mm long. They hatch in early summer and the larva enters the leaf, then eats and tunnels between the upper and lower surfaces. The larva is grey green, almost translucent, and has no defined head. After a few weeks, it falls off the leaf and pupates in the soil. In the UK, there can be several generations spanning into October.

Although we have some understanding of the life cycle of this pest, little work has been done to record when and where it is active in UK gardens.

Aims of this experiment

We would like you to record the severity of damage once a month so that we can build up a map of where and when this pest is active. This will improve our understanding so that we are able to provide better advice to growers.

Included in this pack:

Instructions, recording sheets

You will also need:

- A plot where you are growing chard or perpetual spinach in your garden

Assessments

Damage assessment

Once a month, assess the damage caused by the leaf miner in your garden, using the scale provided on the data recording sheet. Wherever possible assess the same crop throughout the season. Optionally, you can monitor more than one crop but please use different recording sheets for different crops.

Egg counts

Once a month, please select 5 leaves at random and count the number of beet leaf miner eggs on the underside of the leaf. The eggs are a few mm long and are white and cylindrical. They are usually laid in clusters of 2 to 10 eggs.

Data recording
Beet leaf miner at your site

• What is your postcode?

• Is beet leaf miner a problem at your site			
Never a problem ☐	Occasional light damage ☐	Regular moderate damage ☐	Regular severe damage ☐

• If possible, please give the year that you first noticed beet leaf miner at your site

• What measures do you use against it? (Tick all that apply)			
Mesh or fleece ☐	Time of planting ☐	Removing affected leaves ☐	None ☐
Other (please specify):			

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Record sheet 1 – please use a different sheet for each crop

• Sowing date

• Variety

• Method of sowing	
Direct ☐	Into trays ☐

• Transplanting date (if sown into trays first)

• Each month count the total number of eggs on the underside of <u>5 leaves</u> selected at random.	
March	
April	
May	
June	
July	
August	
September	
October	
November	

• Damage scale – tick which applies for each month					
	1.No damage – leaf completely clean	2. One or two small trails visible on leaves	3. Moderate sized blisters occupying some leaves	4. Around half of leaves are spoilt by blisters	5. Majority of leaves covered in blotches and spoilt
March	☐	☐	☐	☐	☐
April	☐	☐	☐	☐	☐
May	☐	☐	☐	☐	☐
June	☐	☐	☐	☐	☐
July	☐	☐	☐	☐	☐
August	☐	☐	☐	☐	☐
September	☐	☐	☐	☐	☐
October	☐	☐	☐	☐	☐
November	☐	☐	☐	☐	☐

- Any other comments on growth of plants

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Record sheet 2 (optional) – please use a different sheet for each crop

• Sowing date

• Variety

• Method of sowing	
Direct ☐	Into trays ☐

• Transplanting date (if sown into trays first)

• Each month count the total number of eggs on the underside of 5 leaves selected at random.	
March	
April	
May	
June	
July	
August	
September	
October	
November	

• Damage scale – tick which applies for each month					
	1.No damage – leaf completely clean	2. One or two small trails visible on leaves	3. Moderate sized blisters occupying some leaves	4. Around half of leaves are spoilt by blisters	5. Majority of leaves covered in blotches and spoilt
March	☐	☐	☐	☐	☐
April	☐	☐	☐	☐	☐
May	☐	☐	☐	☐	☐
June	☐	☐	☐	☐	☐
July	☐	☐	☐	☐	☐
August	☐	☐	☐	☐	☐
September	☐	☐	☐	☐	☐
October	☐	☐	☐	☐	☐
November	☐	☐	☐	☐	☐

- Record sheet 3. Any other comments on growth of plants

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Record sheet 3 (optional) – please use a different sheet for each crop

• Sowing date

• Variety

• Method of sowing	
Direct ☐	Into trays ☐

• Transplanting date (if sown into trays first)

• Each month count the total number of eggs on the underside of <u>5 leaves</u> selected at random.	
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• Damage scale – tick which applies for each month					
	1.No damage leaf completely clean	2. One or two small trails visible on leaves	3. Moderate sized blisters occupying some leaves	4. Around half of leaves are spoilt by blisters	5. Majority of leaves covered in blotches and spoilt
March	☐	☐	☐	☐	☐
April	☐	☐	☐	☐	☐
May	☐	☐	☐	☐	☐
June	☐	☐	☐	☐	☐
July	☐	☐	☐	☐	☐
August	☐	☐	☐	☐	☐
September	☐	☐	☐	☐	☐
October	☐	☐	☐	☐	☐
November	☐	☐	☐	☐	☐

- Any other comments on growth of plants

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Please answer the following questions about this Members' Experiment

Please tick which of the boxes you think applied to your experience of taking part in this Members' Experiment.					
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I enjoyed taking part in this experiment	☐	☐	☐	☐	☐
I felt I learnt something new	☐	☐	☐	☐	☐
I felt I was contributing to something useful	☐	☐	☐	☐	☐
I am likely to take part again	☐	☐	☐	☐	☐
Other comments					
Any suggestions for future Members' Experiments:					

Submitting results

By far the easiest way to send the data is to enter it online. The links to the forms are on this page. https://www.gardenorganic.org.uk/what-we-do/citizen-science-and-research/members-experiments/beet-leaf-miner-experiment-2024

You can now store results on the form as you go – it will email you a link, which you can then use to resume entering results. Please keep this email in a safe place so that you can retrieve the results. If you do lose it, then you will need to email (experiments@gardenorganic.org.uk) and ask for a new link.

or
you can return the record sheets to us by **15 December 2024** at the following address:

Members' Experiment Coordinator,
Garden Organic,
Ryton on Dunsmore,
Coventry.
CV8 3LG.
Electronic versions of these instructions are available in the Members' Experiment section of our website: www.gardenorganic.org.uk/members-experiments .
We welcome good quality photos. The best ones may be published in our magazine and on social media. Please send photos to experiments@gardenorganic.org.uk. Unfortunately, we are unable to use hard copy prints.