Aphid monitoring in seed potatoes 2025 - Albert Bartlett (Airdrie) Limited funded traps

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Original thinking .. applied

Potato virus symptoms

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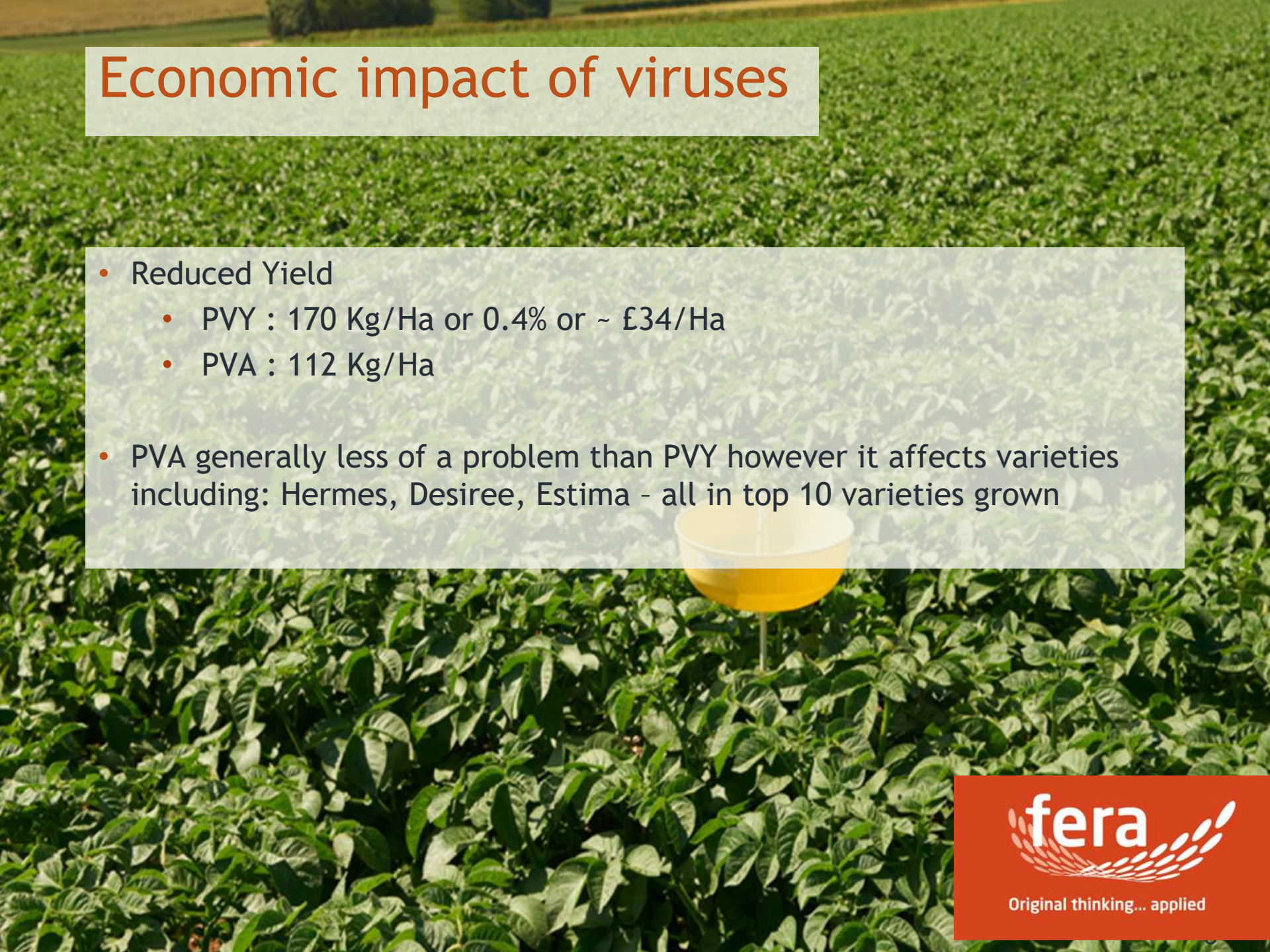
Original thinking... applied

Economic impact of viruses

- Reduced Yield
  - PVY : 170 Kg/Ha or 0.4% or ~ £34/Ha
  - PVA : 112 Kg/Ha

- PVA generally less of a problem than PVY however it affects varieties including: Hermes, Desiree, Estima – all in top 10 varieties grown



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Original thinking... applied

Growers use their results to make decisions about aphid control for virus management:

- Whether to spray insecticides – economic and environmental benefits, resistance management, whether to use home-saved seed.
- What to spray based on the aphid species present and their capabilities as vectors of persistent (circulative) and non-persistent (non-circulative viruses).
- To decide when to desiccate potato haulms at the end of the season.

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Original thinking... applied

Logistics

- Since 2004: ~800 samples per year across ~100 locations concentrated in seed potato growing areas of GB.
- Contact growers by email and/or phone in Feb-March to check if they want to be part of the scheme
- Send out kit in March-April
- Receive forms/emails/phone calls with grid references (check these)
- Allocate login permissions for the website.
- Receive permission to share results on the website
- Enter all of the above on the database
- When samples arrive, log, identify, enter results, send out results by email
- Results picked up from database and website updated twice daily
- Follow-up if samples are received but no grid ref or permission to share data on the website is supplied
- Respond to queries about results, the general situation and requests for more kit.

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Original thinking... applied

Reporting results to growers/agronomists

- Individual email sent the same day we receive a sample
- Uploaded to website twice daily
- Automatic early warning emails and text messages
  - when M. persicae is first reported in region and
  - when threshold no. *M. persicae* in a single trap reached in region
- Weekly summaries on the website and by email
- Users sign up for alerts and summary emails via the website.

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Original thinking... applied

The kit

Original thinking... applied

Identification of aphids and collating and reporting results

- For each site:
  - Numbers of each species
  - Multiplied by the VIRUS INDEX for that species
  - Gives cumulative total virus pressure

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Original thinking... applied

Website

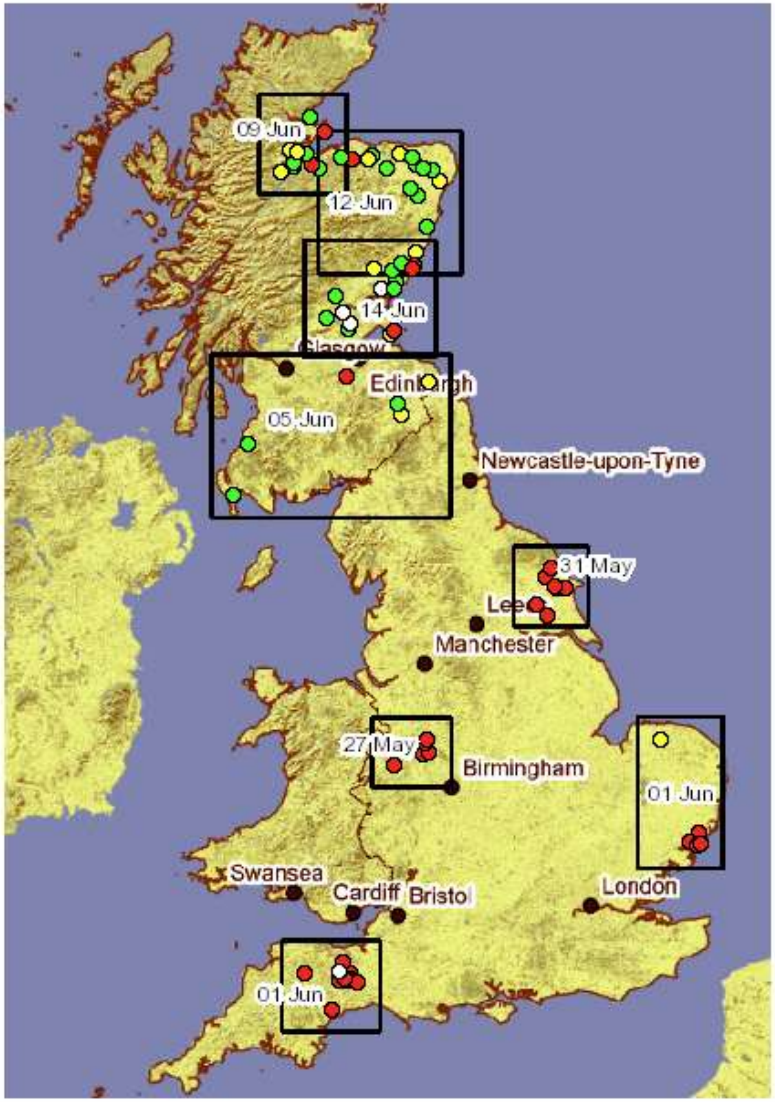
Accessed via

https://aphmon.fera.co.uk/

Original thinking... applied

National and regional results

Aphid monitoring water trap results for 2023



Angus & Perthshire aphid monitoring water trap results for 2023

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Original thinking... applied

Example of individual site results

Aphid Species	Common Name	Aphid PVY Index	12/06	19/06	26/06	04/07	10/07	17/07	01/08	Total PVY Index
Myzus Persicae	Peach-Potato Aphid	1.00	3	37	31	2	1			74
Acyrthosiphon pisum	Pea Aphid	0.70	1	2						2.1
Sitobion avenae	Grain Aphid	0.60		1						0.6
Cavariella aegopodii	Willow-Carrot Aphid	0.50		5		1				3
Metopolophium Dirhodum	Rose-Grain Aphid	0.30	1	1	2					1.2
Brachycaudus Helichrysi	Leaf-Curling Plum Aphid	0.21	1							0.21
Macrosiphum euphorbiae	Potato Aphid	0.20		1						0.2
Aphis Fabae	Black-Bean Aphid	0.10			30	8	7			4.5
Acyrthosiphon Spp.		0.00			1					0
Amphorophora rubi	Bramble Aphid	0.00		4						0
Cavariella Pastinacea		0.00				1	3			0
Megoura viciae	Vetch Aphid	0.00		2						0
Microlophium Carnosum	Nettle Aphid	0.00	1							0
Myzocallis Castanicola		0.00	1							0
Pemphigus spp.		0.00		1						0
Unidentifiable		0.00		1		1				0
Unidentified Non-Vector		0.00		3		1				0
Weekly Index			4.21	42	34.6	3.3	1.7	0	0	
Cumulative Index			4.21	46.21	80.81	84.11	85.81	85.81	85.81	85.81

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Original thinking... applied

Traps run and samples processed 2025 funded by Albert Bartlett

- 48 trap sites signed up and equipment sent out
- 1 site only returned 4 samples
- 35 individuals ran traps (average of 1.3 traps each)
- On average people submitted 9.43 samples from each trap
- 443 samples were processed

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Original thinking... applied

Numbers of traps and samples per region

Region	Trap sites signed up	Number of samples received
North Scotland	15	147
Grampian	11	98
Angus & Perthshire	15	133
Borders	7	56
Totals	**48**	**434**

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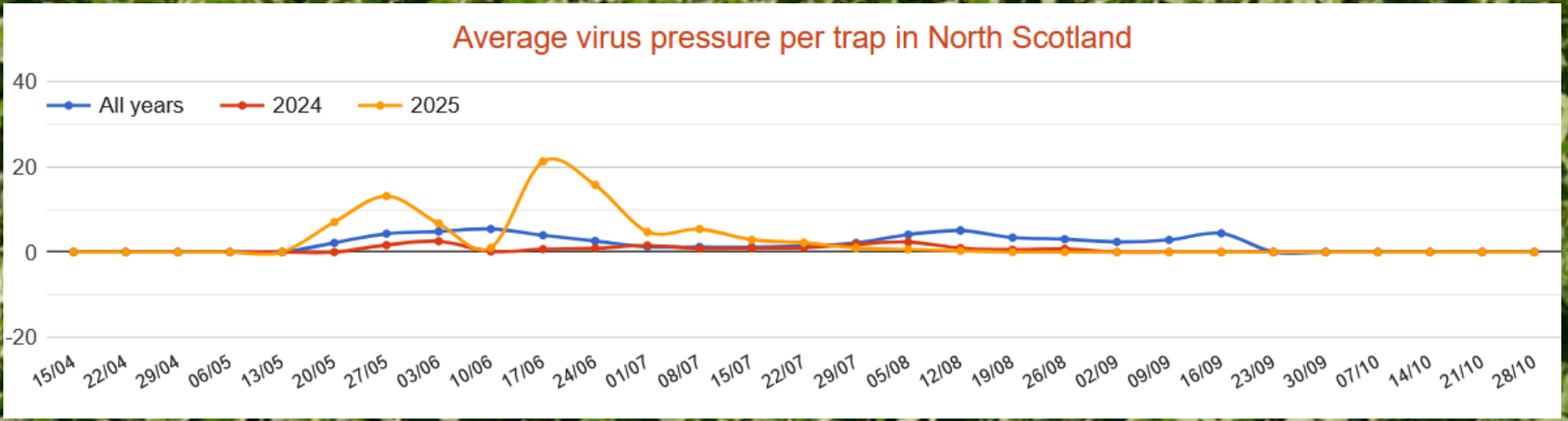
Original thinking... applied

North of Scotland – overall virus pressure

- The first peak in virus pressure (VP) was at the end of May, one week earlier than 2024 and two weeks earlier than usual. It was 3x higher than the all-year average, dropping back in early June before a second, larger peak spiking to 5x the all-year average in mid-June.
- Another smaller peak occurred in early July, which was 4x higher than the all-year average for that period.
- During most of the season VP was well above the all-year average, only falling below it from August. It was a very different picture to 2024, when VP had remained below or very close to the all-year average throughout the season



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Original thinking... applied

North of Scotland – species contributing to peaks in virus pressure

The first peak was driven by (potato colonising species are in **red**):

- *Cavariella aegopodii* (Willow-Carrot Aphid) 2x all-year average
- ***Macrosiphum euphorbiae* (Potato Aphid) -** more than 2x all-year average
- ***Myzus persicae* (Peach-Potato Aphid) -** 3x all-year average

The second peak in VP was driven by:

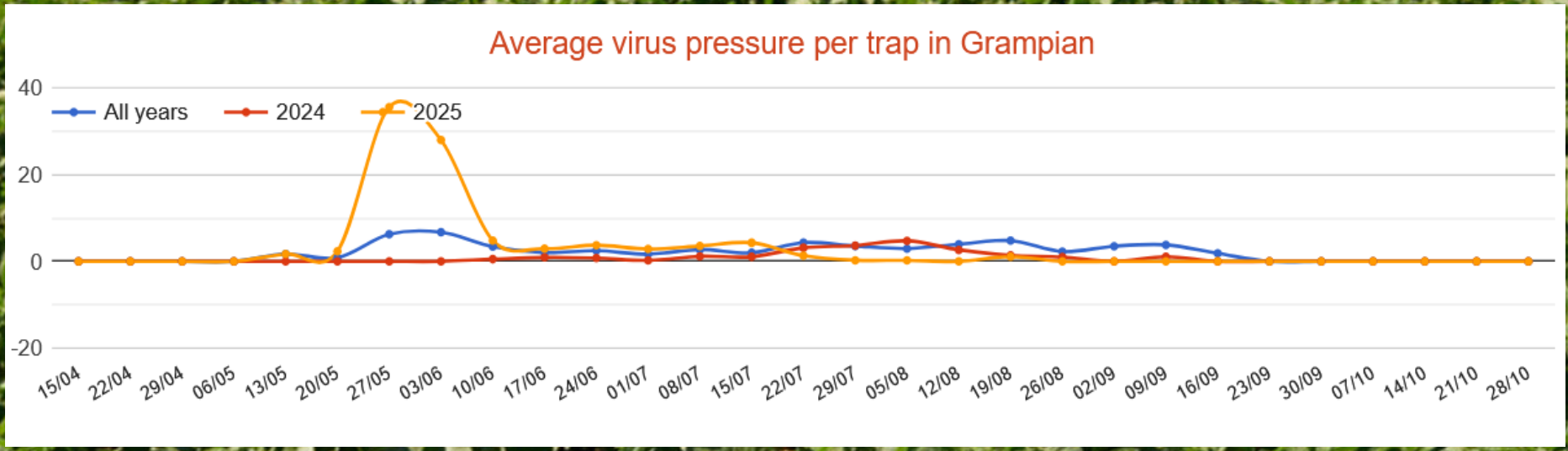
- ***Cavariella aegopodii* (Willow-Carrot Aphid)**
- ***Myzus persicae* (Peach-Potato Aphid)** - more than 2x all-year average
- ***Sitobion avenae* (Grain Aphid) -** 2x all-year average

The third peak was driven by:

- ***Myzus persicae* (Peach-Potato Aphid) -** 2x all-year average

Grampian – overall virus pressure

- Virus pressure was at or above the all-year average until mid-July.
- One main peak of 6x the all-year average covered three weeks at the end of May and early June, with a second smaller peak of 2x in mid-July. VP mostly remained slightly higher than average until the end of July.



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Original thinking... applied

Grampian – species contributing to peaks in virus pressure

Main peak (potato colonising species are in **red**):

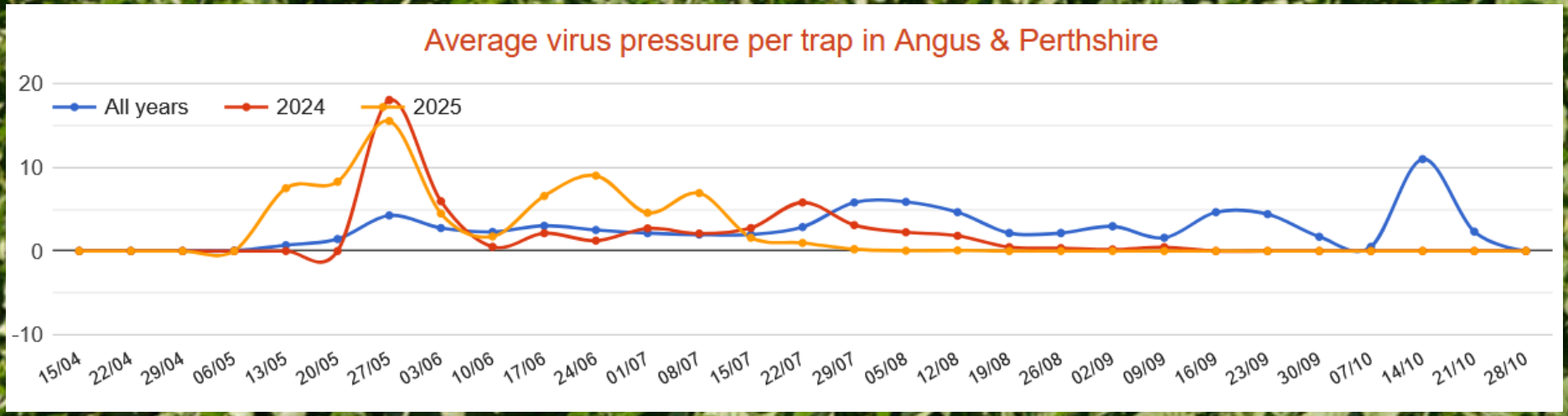
- ***Macrosiphum euphorbiae* (Potato Aphid) -** 2x higher than all-year average
- ***Myzus persicae* (Peach-Potato Aphid) -** 3x higher than all-year average
- ***Brachycaudus helichrysi* (Leaf-Curling Plum Aphid)** - 2.5x higher than all-year average

2nd peak:

- ***Brevicoryne brassicae (Cabbage aphid)*** *- nearly 2x higher than all-year average*

Angus & Perthshire – overall virus pressure

- VP was above average for most of the growing season, only dropping from mid-July
- Late May peak – VP was 3x higher than the all-year average but slightly lower than in 2024
- Late June peak – VP was nearly 4x higher than the all-year average
- Early July peak was 3x higher than the all-year average



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Original thinking... applied

Angus & Perthshire – species contributing to peaks in virus pressure

Species responsible for 1st peak (potato colonising species are in **red**):

- ***Cavariella aegopodii* (Willow-Carrot Aphid)** – 3.6x higher than all-year average
- ***Brachycaudus helichrysi* (Leaf-Curling Plum Aphid)**- 25% higher than all-year average
- ***Brevicoryne brassicae* (Cabbage Aphid)** – 2x higher than all-year average
- ***Macrosiphum euphorbiae* (Potato Aphid)** – 50% higher than all-year average
- ***Myzus persicae* (Peach-Potato Aphid)** - 30% higher than all-year average
- ***Aulacorthum solani* (Glasshouse & Potato Aphid)** – 20% higher than all-year average

Species responsible for the 2nd peak:

- ***Acyrthosiphon pisum* (Pea Aphid)** – nearly 2x higher than all-year average
- ***Metopolophium dirhodum* (Rose-Grain Aphid) -** nearly 3x higher than all-year average
- ***Rhopalosiphum padi* (Bird Cherry-Oat Aphid) -** 3x higher than all-year average
- ***Myzus persicae* (Peach-Potato Aphid)** – 30% higher than all-year average

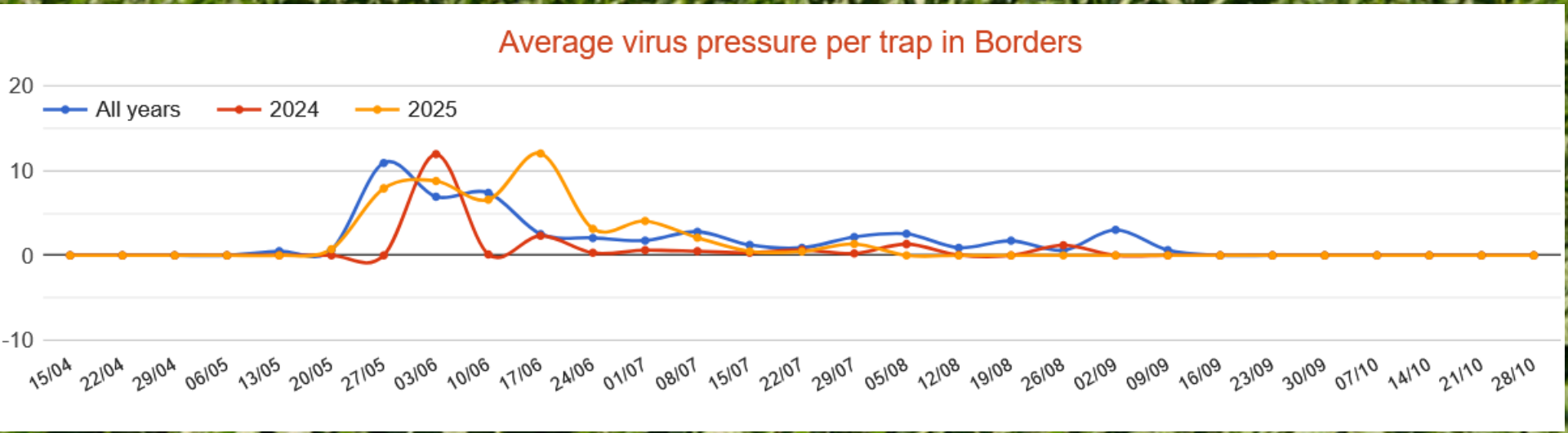
Angus & Perthshire – species contributing to peaks in virus pressure

Species responsible for 3rd peak (potato colonising species are in **red**):

- ***Brevicoryne brassicae* (Cabbage Aphid)** – 2x higher than all-year average
- ***Macrosiphum euphorbiae* (Potato Aphid)** – 50% higher than all-year average
- ***Myzus persicae* (Peach-Potato Aphid)** – nearly 2x higher than all-year average
- ***Acyrthosiphon pisum* (Pea Aphid)** – nearly 2x higher than all-year average
- ***Aphis fabae* (Black-Bean Aphid)** – 2x higher than all-year average

Borders – overall virus pressure

- Virus pressure (VP) was at its highest in May and June, broadly equal to or below the average for all years after the first week of July.
- The first peak in June was at a similar time to 2024 but didn't reduce by much before a second peak in June, which was nearly 5x the all-year average.
- The third peak at the start of July was 2x higher than the all-year average.



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Original thinking... applied

Borders – species contributing to peaks in virus pressure

Species responsible for the peak in early June (potato colonising species are in **red**):

- ***Rhopalosiphoninus latysiphon*** **(Bulb and Potato aphid) – found 3 weeks early**
- ***Aulacorthum solani*** **(Glasshouse and Potato Aphid) - 12.5% higher than the all-year average**

Species responsible for the 2nd peak in mid-June :

- ***Myzus persicae*** **(Peach-Potato Aphid) – 3x the all-year average**

Species responsible for the 3rd peak at the start of July :

- ***Brevicoryne brassicae*** **(Cabbage Aphid)** - nearly 2x the all-year average

This work was funded by Albert Bartlett & Sons (Airdrie) Limited