



Suction-trap network sites

Potato and Brassica Aphids forecast 2019

The 55 years of aphid data from our suction-trap network, combined with the equivalent run of weather data available from the Met Office and others, makes it possible to establish relationships between weather and the timing of the start of aphid flights and aphid abundance in spring and early summer. The best predictor is the mean temperature in January and February, and confidence is greatest for those aphid species which pass the winter in the active stages (as opposed to eggs), this includes Peach–potato aphid (*Myzus persicae*) and Potato aphid (*Macrosiphum euphorbiae*). This is because active stages are susceptible to low winter temperatures but can take advantage of warm conditions, whereas eggs are very cold hardy and in diapause, so don't respond to warm conditions in mid-winter. Although Mealy Cabbage aphid (*Brevicoryne brassicae*) overwinters mainly in the active stages it flies later and is more difficult to predict, thus December temperature is also taken into account for this aphid.

	Monthly mean temp °C		Mean
	Jan	Feb	Jan-Feb
Dundee (D)	2.82	5.17	4.00
Gogarbank (G)	3.81	6.28	5.05
Ayr (Ay)	4.34	6.79	5.56
Newcastle (N)	4.81	6.61	5.71
Preston (P)	3.95	7.10	5.53
Kirton II (K)	4.13	6.87	5.50
Broom's Barn (BB)	3.62	7.11	5.37
Wellesbourne (We)	3.78	6.36	5.07
Hereford (H)	4.34	6.70	5.52
Rothamsted (RT)	3.41	6.21	4.81
Writtle (Wr)	3.89	6.27	5.08
Silwood (SP)	4.24	6.43	5.34
Wye (W)	4.53	7.19	5.86
Starcross (SX)	4.84	7.20	6.02

In a reversal of last year's cold weather event, unseasonably warm weather at the end of February this year has pushed winter temperatures up by around 1°C above the 30-year average temperature throughout most of Britain suggesting that first aphid flight may be about 2 weeks early. The forecasts are based on the mean temperature in January and February, because over the last 55 years this has shown the strongest correlation with the timing and size of aphid migrations. The temperatures in January and February appear to reset aphid activity each year with temperatures in November/December or March/April having little apparent impact.

The general message is that, if spring does not throw any abnormal conditions at us, aphids will be flying around 2 weeks earlier than they would be expected to historically.

The tables give the following information for *Myzus persicae*, *Macrosiphum euphorbiae* and *Brevicoryne brassicae*:

- i) The actual first arrival date if caught before and including the 03/03/2019.
- ii) The predicted date range of first capture at the listed sites, together with the position of this year's prediction out of all years of trap operation (e.g. 22/51 = 22nd earliest out of 51 years).
- iii) for *Myzus persicae* and *Macrosiphum euphorbiae*, the predicted numbers caught by 17th June.
- iv) For *Brevicoryne brassicae* by 7th October, together with the position of this year's prediction out of all years of trap operation (e.g.=13/50 = tied 13th largest number out of 50 years).

By no means is all the variability in the aphid data is captured by winter temperature and the actual dates should be seen as approximate.

Peach—potato aphid (<i>Myzus persicae</i>)						
Site	1st Capture in suction trap			Numbers to 17th June		
	Actual date of first arrival 2019	Prediction date range (75% Confidence limits)	Ranking	Predicted	75% Confidence limits	Ranking
Dundee	-	(15 May - 4 July)	22/51	2	(0 - 6)	=13/50
Gogarbank	-	(9 May - 23 June)	=17/51	3	(0 - 13)	=12/51
Ayr	-	(20 May - 8 July)	=13/39	1	(0 - 2)	=5/38
Newcastle	-	(28 April - 20 June)	=10/51	6	(1 - 20)	=10/51
Preston	-	(9 April - 13 June)	=17/44	14	(4 - 50)	11/44
Kirton	-	(10 April - 15 May)	9/40	42	(8 - 202)	=11/40
Broom's Barn	-	(11 April - 15 May)	=12/55	88	(16 - 453)	18/55
Wellesbourne	-	(7 March - 20 May)	4/13	205	(34 - 1220)	6/11
Hereford	-	(16 April - 27 May)	=11/48	31	(6 - 137)	16/48
Rothamsted	-	(16 April - 17 May)	17/55	43	(12 - 155)	13/55
Writtle	-	(29 March - 19 May)	17/45	92	(22 - 376)	20/45
Silwood Park	-	(9 April - 20 May)	=10/40	27	(7 - 99)	15/39
Wye	-	(22 March - 26 May)	=9/52	60	(18 - 195)	14/50
Starcross	-	(19 March - 21 May)	16/50	21	(6 - 65)	=14/48

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Potato aphid (<i>Macrosiphum euphorbiae</i>)						
Site	1st Capture in suction trap			Numbers to 17th June		
	Actual date of first arrival 2019	Prediction date range (75% Confidence limits)	Ranking	Predicted	75% Confidence limits	Ranking
Dundee	-	(2 May - 20 June)	=25/51	5	(1 - 17)	21/50
Gogarbank	-	(20 April - 3 June)	=15/51	20	(5 - 73)	17/51
Ayr	-	(2 May - 8 June)	15/41	6	(2 - 13)	=11/39
Newcastle	-	(28 April - 6 June)	10/51	9	(2 - 31)	=14/51
Preston	-	(25 April - 26 May)	12/44	18	(8 - 40)	=14/44
Kirton	-	(7 April - 15 May)	10/40	27	(8 - 88)	8/40
Broom's Barn	-	(14 April - 25 May)	16/55	14	(4 - 38)	=13/55
Wellesbourne	-	(22 April - 23 May)	=5/14	16	(6 - 39)	6/11
Hereford	-	(16 April - 19 May)	13/48	22	(7 - 70)	17/48
Rothamsted	-	(16 April - 26 May)	16/55	16	(5 - 47)	22/55
Writtle	-	(3 April - 15 May)	=16/45	30	(10 - 84)	20/45
Silwood Park	-	(10 April - 12 May)	=12/40	26	(8 - 82)	14/39
Wye	-	(14 April - 26 May)	=14/51	15	(4 - 51)	=13/50
Starcross	-	(1 April - 17 May)	20/49	25	(9 - 65)	=18/48

Cabbage aphid (<i>Brevicoryne brassicae</i>)						
Site	1st Capture in suction trap			Numbers to 7th October		
	Actual date of first arrival 2019	Prediction date range (75% Confidence limits)	Ranking	Predicted	75% Confidence limits	Ranking
Dundee	-	(6 June - 29 August)	=19/48	11	(1 - 63)	19/47
Gogarbank	-	(15 May - 8 August)	=12/48	12	(3 - 47)	12/46
Ayr	-	(3 June - 18 August)	=7/35	3	(1 - 12)	=8/31
Newcastle	-	(17 May - 13 July)	8/50	17	(3 - 76)	=11/47
Preston	-	(15 April - 27 June)	10/44	42	(10 - 172)	10/41
Kirton	-	(3 April - 9 June)	=4/40	286	(55 - 1479)	9/38
Broom's Barn	-	(26 April - 30 May)	=9/55	339	(65 - 1746)	15/53
Wellesbourne	-	(23 April - 8 June)	7/13	298	(70 - 1255)	3/8
Hereford	-	(13 April - 26 May)	=4/48	594	(113 - 3098)	9/44
Rothamsted	-	(23 April - 12 June)	=9/55	140	(22 - 879)	19/54
Writtle	-	(17 April - 25 May)	=9/45	653	(110 - 3850)	12/43
Silwood Park	-	(19 April - 10 June)	10/37	173	(30 - 983)	8/34
Wye	-	(8 April - 7 June)	7/50	220	(37 - 1300)	14/45
Starcross	-	(29 March - 22 May)	=9/48	233	(80 - 677)	11/42

[N.B. *Brevicoryne brassicae* predictions are based on December to February temperatures.]

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Further information

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