

Early season aphid activity in 2016

Prolonged exposure to low winter temperatures are known to have lethal and sub-lethal effects on populations of *M. persicae* which, in Scotland, overwinters in the larval stage. Poor over-winter survival delays the build up of populations of this species in the forthcoming growing season. Prior to 2011, SASA has used the mean temperatures for January and February to predict when *M. persicae* will become active in the summer. In 2011, following an extremely cold December 2010, SASA predicted early season aphid activity have been based on the mean temperatures during the three-month period of December-February. We intend to continue to use the model based on the three month period.

During winter 2016-17, the mean temperatures were above the mean over the last 50 years: 5.6°C at SASA (Edinburgh; mean = 4.0°C) and 5.1°C at JHI (Dundee; mean = 3.7°C). These winter temperatures rank the 5th warmest from the last 49 years at Edinburgh and the 4th warmest from the last 51 years at Dundee. Based on these figures, the predictions for the first flight of *M. persicae* is 22 May at Edinburgh (average date of first catch is 15 June) and 29 May at Dundee (average date of first catch is 16 June). Therefore, *M. persicae* activity in 2017 is expected to commence 2 to 3 weeks earlier than in an average summer.

In 2016, the first *M. persicae* at Edinburgh was recorded on 20 June, 5 days later than the average date of first catch and 25 days later than predicted. The first *M. persicae* at Dundee was recorded on 1 June, 15 days earlier than the average date and 3 days earlier than predicted. The Dundee prediction was well within the 75% confidence limits; the reasons for the late arrival of the Edinburgh aphids are unclear.

The predictions for the Rose-Grain aphid *Metopolophium dirhodum* and the Grain aphid *Sitobion avenae* are provided by Rothamsted Research and are based on mean temperatures over January and February 2016.

Table 1

| | 2016 Prediction | 75% Confidence Limits | 2015 Obs'n | 2016 Obs'n |
|-------------------------------|-----------------|-----------------------|------------|------------|
| Edinburgh | | | | |
| <i>Myzus persicae</i> | 25 May | 5 May - 17 June | 4 June | 20 June |
| <i>Macrosiphum euphorbiae</i> | 6 May | 16 April - 27 May | 4 June | 30 May |
| <i>Metopolophium dirhodum</i> | 17 May | 30 April - 2 June | 9 June | 23 May |
| <i>Sitobion avenae</i> | 28 May | 7 May - 18 June | 11 June | 30 May |
| Dundee | | | | |
| <i>Myzus persicae</i> | 4 June | 9 May - 30 June | 30 June | 1 June |
| <i>Macrosiphum euphorbiae</i> | 19 May | 24 April - 13 June | 22 June | 25 May |
| <i>Metopolophium dirhodum</i> | 21 May | 30 April - 11 June | 1 June | 31 May |
| <i>Sitobion avenae</i> | 6 June | 18 May - 24 June | 2 June | 9 May |

The average temperatures over the 2015-16 winter indicate that the first flights of *M. persicae* should be 12 - 22 days earlier than the mean dates in mid-June. Consequently, they have more potential to

develop to significantly high population levels. The prediction for the total of *M. persicae* caught by 31 July is 31 at Edinburgh and 34 at Dundee. The 75% confidence intervals for these predictions are 10 at the lower end and 114 at the upper for Dundee and 8 at the lower end and 114 at the upper for Edinburgh. Therefore, populations of *M. persicae* could build up to significant levels during 2016. Therefore, it the potential exists for the risk of leafroll transmission to develop to high levels, particularly in crops of potato varieties that are highly susceptible. *M. persicae* is also a vector of PVY but it appears that only in exceptional years do populations of this species develop within crops to such an extent as to present a risk comparable to that provided by the usually much more numerous cereal aphids.