

# SPCS - APHID & VIRUS PREDICTIONS FOR 2002 SEASON

## Predictions for 2002 and Performance in 2001

### *Early aphid activity*

Our predictions, based on meteorological data collected at SASA, for the dates of first capture of the two main species of potato aphids in the East Craigs Suction Trap are as follows:

East Craigs	2002 Prediction	75% Confidence Limits	2001 Prediction
<i>Myzus persicae</i>	22 May	2 May – 12 June	25 June
<i>Macrosiphum euphorbiae</i>	11 May	21 April – 30 May	1 June

The 75% confidence limits quoted provide an estimate of the expected accuracy of this prediction, i.e. 3 times out of 4 the prediction should fall within these limits. The average date (for 1969-2001) of first capture for *M. persicae* is 15 June, and for *M. euphorbiae* is 25 May. Therefore, *M. persicae* is expected 24 days earlier than on average and *M. euphorbiae* 14 days earlier. In comparison to 2001, when the first *M. persicae* was recorded at East Craigs on 12 June and the first *M. euphorbiae* on 18 June, both aphid species should appear between three and five weeks earlier.

The predicted dates of first capture for the suction trap at the SCRI site, Dundee, are 7 June for *M. persicae*, and 24 May for *M. euphorbiae*. These figures compare with first catch dates during 2001 of 7 July and 12 May, respectively. Therefore, whilst *M. persicae* is expected a month earlier in 2002 compared with 2001, *M. euphorbiae* is predicted to be later than last years unexpected early appearance.

The 2001/2002 winter was warmer than the average over the past 33 years: Jan/Feb temperatures at East Craigs averaged 5.2°C, compared with a mean of 3.6°C. The predictions indicate that the first records of both of the main aphid species will be around the 7<sup>th</sup> earliest over the past 33 years.

In terms of abundance, totals are likely to be above average. We are predicting that 49 *M. persicae* will be caught in the East Craigs suction trap before 1 August (75% confidence interval of between 14 and 170 aphids).

## Incidence of Viruses in 2001 and 2002

### *Leafroll*

During 2001, the total area of seed crops in which leafroll was detected was 135 ha from a total area of 12,672 ha, i.e. an incidence of leafroll of 1.07%. For 2002, two predictive models are available which use data collected by the suction trap catches operated at SASA and SCRI. The

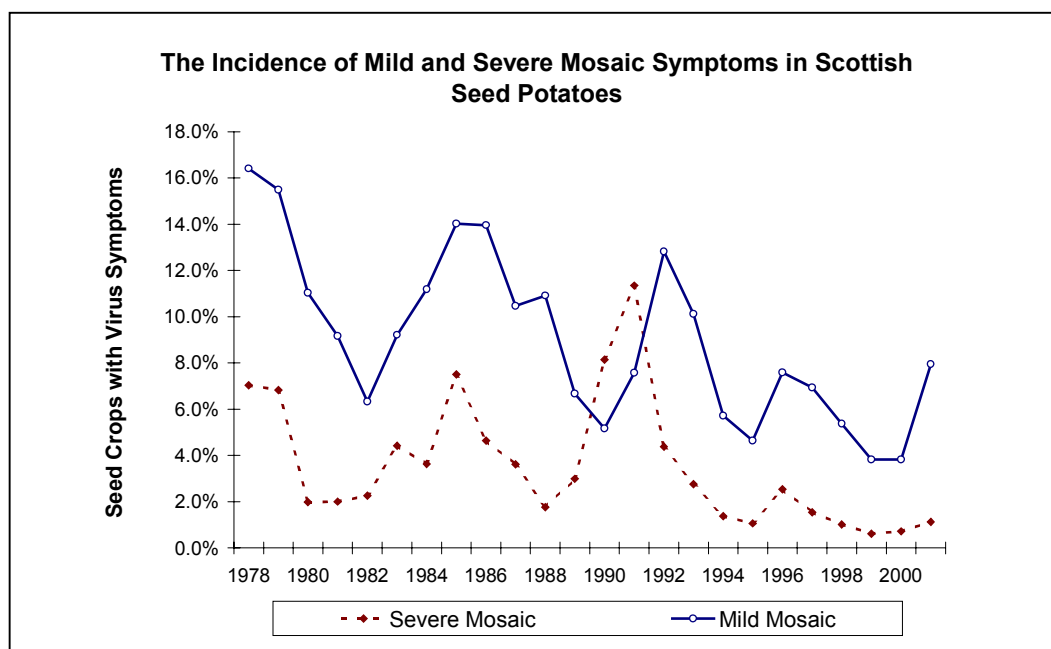
East Craigs model uses the aphid abundance over the whole season together with the and virus incidence observed during 2001. This model indicates that, given no aphid control, the incidence of leafroll symptoms in the growing crop should be around 3.3%. The Dundee model uses the aphid abundance prior to 1 August and predicts that, given no aphid control, the incidence of leafroll symptoms in the growing crop should be around 1.5%. If aphid control measures in 2001 achieved similar levels of success in limiting virus transmission as in previous years, then the incidence of leafroll in 2002 should be around either 1.3% or 0.8% depending upon which model is used. In summary, the level of leafroll is unlikely to change significantly from that observed in the 2001 growing crop. However, as the forecast suggests that *M. persicae* may be relatively abundant in 2002, there is a risk that virus transmission will increase in this year's growing crop.

### ***Severe and Mild Mosaics***

In 2001, mild mosaic symptoms were observed in 7.9% of the seed crop (up from 3.8% in 2000), whereas the incidence of severe mosaics also increased to 1.1% of the crop (from 0.7%) (see figure). The incidence of both mild and severe mosaics is expected to decrease in the 2002 crop, as the aphid vector pressure was exceptionally low during the 2001 growing season. The incidence of these symptoms remains relatively low compared with the available historical data.

### ***Aphid Monitoring Programme 2002***

The indications are that potato aphid activity in 2002 will start earlier than usual. It is hard to predict how the coming year will compare with recent years. The winter has not been as warm as 1998, when, despite an early start, aphid numbers failed to build up. However, it has been considerably warmer than 1995, the last year in which aphid populations were responsible for high levels of virus transmission.



## ***Summary & Recommendations***

The activity of potato aphids is expected to be greater during the 2002 season than it was in 2001. As the incidence of virus within the Scottish seed crop is expected to remain at relatively low levels, but the risk of virus transmission is likely to be higher than in many recent years. Therefore, there remains a need to continue to operate an aphid monitoring programme. However, in view of the extent of aphicide resistance observed in 2001, it is proposed to make several modifications to the existing SPCS Aphid Monitoring programme. Two significant changes are proposed. Firstly, the discontinuation of the aphid control alerts. Secondly, the introduction of a short 'aphid control' period between the date on which high aphid populations are first observed by agricultural inspectors and the date on which a requirement for a post harvest tuber test of the same crop is made.

*Jon Pickup*

**JON PICKUP**

*Virology & Zoology Section*

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