NJF Report • Vol 3 • No 5 • Year 2007

Nordic Association of Agricultural Scientists

NJF Seminar 402

Virus vector management

Kristianstad, Sweden, 9-11 October 2007

NJF
Nordic Association of Agricultural Scientists

Forecasting Rhopalosiphum padi in Finland and experiences of POMO-project

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Rhopalosiphum padi is the most important aphid species on cereals. There are however great differences in its annual occurrence. The prediction of the abundance of bird-cherry aphid comprises winter-egg counts, suction trap catches and aphid observation in cereal crops. Counting the winter eggs of bird-cherry aphid from the twigs of Prunus padus is made in late autumn from the same trees annually in different parts of Finland. The twigs are collected from 3-5 bird-cherries at one site. The eggs are counted from one hundred buds per tree. The probable mortality is taken off from the amount of eggs. The probable mortality changes from 55% in inland areas to 90% in the coast of North Ostrobothnia. The coastal area means here the zone of 0-80 kilometres from the coast. Weather data is not included in the forecast. This method gives an reliable estimate of the size of the domestic bird-cherry aphid population in the spring. Yellow sticky traps are used to determine the real field situation. Additionally three suction traps in Viikki, Jokioinen and Tyrnävä, as well as the weather radar of Helsinki university registrating insect migration are used to monitor aphids. Field monitoring of the above mentioned pest is used to evaluate the reliability of the forecast.

POMO (Multi-scientific applications of polarimetric radars) -project

Besides aphids there are a lot of insects that can cause considerable damage to agriculture. Some of the insects have very local habitat, some migrate. The using of pesticides can be optimized if it would be possible to estimate the timing of the maximum appearance. The aim of one part of the POMO project is to study if it is possible to estimate the migration beforehand by adding meteorological information to the decision making. With the knowledge of life span and meteorological conditions a prototype system will be developed and tested for forecasting and warning of insect migration. The project is a cooperation of MTT, University of Helsinki and FMI.

The most harmful and numerous insects have been selected (aphids, cabbage moths). A theoretical study of the life span and meteorological conditions effecting migration of the insects was made. Then a field experiment with insect traps was made. The catch network covered most of Southern Finland. Some of the traps were collected twice a

week from middle of May to the end of June. Some were collected during periods of favorable migration conditions according to the ” insect weather” forecasts and warnings from FMI. Insects and all relevant meteorological data (weather radar and satellite data) was collected. The field experiment will be analyzed in the autumn.