

Monitoring raspberry cane midge, *Resseliella theobaldi*, with sex pheromone traps: results from 2006

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Abstract: The sex pheromone of the raspberry cane midge has been identified and synthesised by East Malling Research (EMR) and Natural Resources Institute (NRI) and has proved to be highly attractive and useful for pest monitoring. East Malling Research coordinated a collaborative ring test of standard raspberry cane midge sex pheromone traps in 2006. The aims were to investigate the seasonal temporal pattern of the midge flight in different raspberry production regions of Europe and the relationship between the magnitude of catches and the numbers of eggs and larvae which developed subsequently in artificial splits in the primocane of untreated raspberry plantations. The standard raspberry cane midge sex pheromone trap used for the ring test consisted of a white delta trap containing a 20 x 20 cm sticky base and with a rubber septum lure impregnated with 10 µg of the raspberry cane midge sex pheromone racemate. Pairs of traps, separated by >20 m, were deployed in the centre of raspberry plantations at a height of 0.5 m in Italy, Hungary, Norway, Poland, Russia, Serbia, Sweden, Switzerland, Norway and the UK.

The traps proved effective and easy to use for monitoring the flight of adult male raspberry cane midge. There were very large variations (~ 30 fold) between plantations in total numbers of midges caught over the season indicating plantations which are at comparatively low and high risk from the pest. Three generations of adult flight were apparent in Norway, Russia and Sweden and four generations in the central European countries with possibly 5 generations in Italy, though later generations were often difficult to distinguish. In the northern countries, the 1st generation first and peak flight occurred on Julian days 150 and 165, respectively, whereas in Italy the 1st generation first and peak flight occurred approximately on Julian days 110 and 130 respectively. The 1st generation flights occurred much earlier in polytunnel protected crops than in open field crops. Data obtained on the occurrence of larvae were variable in quality but a linear relationship between the peak numbers of males captured in the pheromone traps per week for a given generation (M) and the peak numbers of eggs and larvae per cm in artificial splits in the primocanes for that generation subsequently (L) was apparent ($L = 0.025 M$; $R^2=0.61$). A nominal threshold of 30 midges per trap per week had been proposed but the linear relationship derived indicates that this threshold, which would result in ~ 0.75 eggs + larvae/cm, is too high. In reality, the degree of larval infestation that occurs and the resultant severity of crop damage will depend on the numbers of natural splits in the crop. The ring test is being continued in several countries in 2007.

Key words: *Resseliella theobaldi*, crop damage assessment, damage threshold, midge blight, pest monitoring, pheromone trap