

DISTRIBUTION OF *RHAGOLETIS CERASI* (DIPTERA: TEPHRITIDAE) IN THE DIFFERENT VERTICAL LEVELS OF THE TREE CROWN IN LATVIA: ONE YEAR RESULTS

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European cherry fruit fly *Rhagoletis cerasi* is an economically important pest in the cherry orchards in Europe, especially in the sweet cherry. Larvae may damage even 100% of the sweet cherry yield. Monitoring of pest activity and caused damages to the plant/yield is one of the first activities in the Integrated Plant Management (IPM) system. Yellow sticky traps are used for the monitoring of European cherry fruit fly flight activity, and fruit analysis – for yield damage level evaluation. The influence of the tree crown vertical levels on the distribution of European cherry fruit fly is not known in Europe. This factor could influence the monitoring of flies. The aim of this work was to make out differences of cherry fruit fly vertical distribution in the tree crown levels.

The research was done in the orchard of Latvia State Institute of Fruit-Growing in 2011. There were 60 sweet cherry trees (cultivars 'Iputj' and 'Krupnoplodnaya' and some hybrids) in the trial area. Tree height was approximately 4 m. European cherry fruit fly flight activity was evaluated by using yellow sticky traps (flies on trap) in the three levels of tree crown (the bottom, the middle and the top level of the crown) in 8 trees of the cultivar 'Iputj' and 6 trees of the cultivar 'Krupnoplodnaya'. Half of trees of the each cultivar was under the "Voen" rain cover protection. Traps were placed out in trees that were not treated with insecticides. For detection of larvae invasion level 50 fruits from the middle and the top level of a tree crown of the early ripening cultivar 'Iputj' were collected on June 28. Data were transformed by using arc sine square root transformation or square root transformation, if it was necessary. One-way analysis of variance (ANOVA) (at $\alpha = 0.05$) in the program R 2.14.1 was performed to test the significance of differences.

European cherry fruit fly flight activity was higher in the middle level of a tree crown, when a flight activity was analyzed from all trees together, from the each cultivar separately and also from trees under the rain cover. Imago flight activity was higher in the top level of a tree crown, when a flight activity was analyzed from trees without a rain cover. It was not concluded, that the flight activity differs significantly in the different vertical levels of the tree crown. Tree height may influence differences of European cherry fruit fly flight activity in the different vertical levels of the tree crown. There were only few invaded cherries in 2011, so it was not possible to evaluate differences between vertical levels of the tree crown. The location of the trial area in the orchard (too far from the same and other cultivar cherry trees in this orchard) and cultivar 'Iputj', which fruits were analyzed (early ripening sweet cherry cultivars are less damaged by European cherry fruit fly than late ripening ones), may be the main reasons of only few invaded fruits.

It was concluded that European cherry fruit fly flight activity is higher (not statistically significant) in the middle level of the early and medium late ripening cherry tree crowns, if trees are approximately 4 m high. It was not possible to evaluate the differences of fruit damage level in different vertical levels of the tree crown. Research has to be continued in this field, including other cultivars, other cherry orchards and singly growing cherry trees.