

Variety-depending susceptibility of cherries to *Drosophila suzukii* according to fruit firmness and other ripening parameters

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The invasive pest species Spotted Wing Drosophila (SWD), *Drosophila suzukii*, was first recorded in Germany in 2011. *D. suzukii* is an extremely polyphagous pest and can reproduce on a large number of cultivated and wild fruits. With their serrated ovipositor females lay eggs in undamaged ripening and ripe fruits. During larval development infested fruits collapse rapidly and become unmarketable. *D. suzukii* can cause tremendous economic crop losses, especially in cherries and soft berries.

Characteristics of the fruit, especially fruit firmness and skin parameters, can influence oviposition behaviour. Hence, cherry varieties were analysed during the ripening phase: Firstly, with a texture measuring apparatus which indicates the force and energy needed to puncture the cherry skin; secondly by measuring the impedance, i.e. the resistance of the skin, in different positions (top, side and bottom) and thirdly, skin thickness (wax layer and subjacent cell layers) will be determined by microscopy. These data were correlated with the natural infestation level in the field. In addition, oviposition tests were carried out in the laboratory with cherries from the corresponding sampling dates. For this study, the sweet cherry varieties 'Hedelfinger' and 'Regina' and the sour

cherry variety 'Schattenmorelle' were chosen. During the ripening process samples were taken from the field at different ripening stages determined by the colour of the fruits.

Texture analysis shows a decline of penetration force and energy during the ripening process. The same tendency can be observed for the impedance. However, variations were noted depending on the tested positions. The quantitative determination of the cherry skin thickness is in process and statistical analyses have not been finalized, yet.

First results show that the skin characteristics and the firmness of different cherry varieties have an effect on the oviposition preference of *D. suzukii*. With decrease of fruit firmness and skin resistance connected with the ripening process, oviposition increases.

These findings should be confirmed with a larger selection of cherry varieties over several growing seasons. This study provides initial indication for the possibility of managing *D. suzukii* in cherries by developing new cherry varieties with more resistant fruit skin.