Importance and management of *Drosophila suzukii* in Swiss vineyards

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Abstract: In 2011, the spotted-wing drosophila *Drosophila suzukii* native to Asia has been identified for the first time in Switzerland. Year later this novel pest could be found all over the country without causing noteworthy damages in Swiss vineyards over the following years. In 2014, the mild winter as well as the rainy and coolish summer led to the build-up of large autumnal *D. suzukii* populations. Consequently, red grape cultivars, such as Garanoir, Regent, Cabernet Dorsa, Dornfelder, Dakapo, Mara, Acolon and Muscat Bleu, were attacked heavily. However, the wet summer did not only favour *D. suzukii*, but also the development of fungal diseases and the bursting of berries. These three factors together promoted sour rot. Overall, the disease destroyed nearly 10% of the Swiss vintage and tripled harvest efforts. In 2015, the very hot summer had a negative impact on the fly and no significant damages have been recorded. In 2016, fly catches broke new records but only a few varieties suffered real damages with an average of 1.6% of infested berries observed in more than 600 plots. Varieties like Cabernet Dorsa, Dakapo, Dunkelfelder, Regent, Mara confirmed to be much more sensitive than Merlot, Syrah, Gamaret and Pinot noir. These susceptible varieties represent less than 5% of the Swiss vineyards surface. New skin break force tests confirmed the relationship between skin hardness and varietal susceptibility to *D. suzukii* egg laying. Practical trials showed the good efficacy of various types of nets varying from 90% to 75% according to the mesh size. Exclusion nets also allowed a reduction of the frequency and intensity of rots without affecting the quality of the wines. Among insecticides, kaolin and spinosad showed the best results although not miraculous! Both products will be officially registered in 2017 against *D. suzukii* in vineyards.

In 2016, despite high *D. suzukii* populations no significant sour rot has been observed in the vineyards. The national monitoring of egg laying confirmed high variations in susceptibility among varieties and showed that the main varieties grown in Switzerland are not at risk. For 2017, the management strategy is still based on a rigorous implementation of all preventive sanitation measures. In particular an early thinning of grapes, a consequent defoliation of the grape zone, a short plant cover after veraison, an avoidance of mechanical damages to grapes and the renouncement of deploying marc in unharvested vineyards. For small surfaces of high value varieties, nets provide a very good protection at a reasonable cost. Kaolin should be sprayed only on susceptible varieties at the very beginning of egg laying as well as spinosad (max. 4% of infested berries), which showed more or less the same level of protection.