

Arthropod biodiversity and natural pest suppression in vineyards under innovative management.

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Current growing practices in viticulture are lacking sustainability regarding environmental, economic and social aspects.

One promising approach to a more environmentally friendly viticulture is growing fungus resistant cultivars with the novel cultivation method of the minimal pruning of trellis trained grapevines (MPTS). This practice reduces the tremendous amounts of fungicides needed to protect traditional cultivars and is expected to increase biodiversity compared to vineyards with traditional trellis trained grapevines (TS).

In MPTS vineyards, plant architecture is very different from TS trained systems. The higher canopy volume might lead to a changed microclimate and to a higher structural complexity of the grapevine, offering more habitat and more options for overwintering. In vineyards with fungus resistant cultivars, the input of plant protection

chemicals is reduced and disturbances from applying these products are decreased. These factors could support a richer biodiversity which is an important ecosystem service to viticulture. A shift in the arthropod community structure could potentially improve natural pest control. The main pests in focus are grape berry moths, pest mites and botrytis vectors such as earwigs and drosophilids.

Arthropods are sampled throughout the vegetation period using a variety of sampling methods to obtain a comprehensive view of their general and functional diversity. To compare predation pressure between MPTS and TS systems, grape berry moth eggs and pupae are exposed in the vegetation and removal rates as well as parasitization will be examined. In addition, grapes are infected with grape berry moth eggs and the resulting damage is compared between traditional and novel pruning systems, and different plant protection intensities.