

# NoViSys: Novel Viticulture Systems for sustainable production and products

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The aim of the NoViSys project is the investigation of innovative new growing systems in viticulture.

Within the last 100 years high quality, fungus resistant grapevine cultivars so-called PIWIs (for "Pilzwiderstandsfähige Rebsorten") are the biggest innovation in viticulture. These varieties are the approach to reduce the environmental concerns of the public regarding the extraordinary high input of fungicides in both conventional and organic viticulture. The novel cultivation method of the "minimal pruning of trellis trained grapevines" (MPTS) enables a high reduction of manual work by exclusive mechanical pruning and yield reduction. Combining the use of resistant cultivars with the MPTS cultivation system, a grapevine production which is environmental friendly, economically beneficial and adapted to the on-going climatic changes can be achieved.

To evaluate new resistant grapevine cultivars in such an advanced production system an interdisciplinary consortium was formed comprising a high level of expertise for all important fields of the wine sector. This includes grapevine breeding, plant protection, visual and sensor based screening, application engineering, physiological and molecular analyses, analytical and sensorial evaluation of grape must and wine,

business management, wine marketing, and social economy.

The goal of NoViSys is to evaluate the behavior of different grapevine cultivars in the most common vertical shoot positioning in trellis-system (TS) and compare it to MPTS. In addition the typical reaction of those cultivars to the mechanical thinning which is needed in MPTS cultivation to reduce yield, is validated. Therefore sensor-based approaches using cameras and 3D point cloud reconstruction is used.

Another focus is laid on the validation of grape cluster architecture, the biodiversity in the vineyards and the quality of resulting wines will be evaluated and compared. We intend to unravel the cause of ripening delay upon viticultural treatments, and to develop the technological basis for a broad introduction of the new cultivation system into viticultural practice.

Our comprehensive investigation will empirically and functionally address field studies where new cultivars are raised in the new cultivation concept. We will generate validated information for the wine growers to demonstrate benefits and risks. In addition the economical advantages as well as supporting marketing to improve consumer acceptance will be investigated.