

## 8.10 Can the microbiome drive the suppression of grapevine trunk diseases?

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Grapevine trunk diseases (GTDs), caused by several fungal species, are among the most destructive grapevine diseases in New Zealand and other grape-growing countries. The control of the diseases is problematic, and there is currently no approved fungicide for their eradication. This has necessitated seeking alternative strategies, including a sustainable biological control approach, to manage the diseases. Therefore, this study aimed to identify taxa in the grapevine microbiome that contribute to plant health. In some New Zealand vineyards, observations have revealed vines that remain healthy within a background of trunk diseases. These grapevines were termed 'disease-escape' to represent their apparent health under heavy disease pressure. Recent research on the grapevine microbiome has shown that microorganisms from these 'disease-escape' plants could contribute to disease suppression. Putative disease escape vines were identified in vineyards in two grape-growing regions in New Zealand: Hawke's Bay and Canterbury. The vines were selected based on their presence in a diseased area, maturity, and absence of trunk disease symptoms. Trunk core samples were taken from the disease-escape vines and neighbouring symptomatic vines. Subsequently, the samples' total fungal and bacterial communities were identified and compared using culture-independent DNA metabarcoding and culture-dependent approaches. After analysing the metabarcoding and culturing results, microbial taxa that were differentially more abundant in disease-escape grapevines and the ones that correlated negatively with GTD pathogens were identified. The next stage of the study is to design a synthetic community using members of the taxa of interest from the disease-escape grapevines. This SynCom will be introduced into young grapevines and monitored for their ability to suppress the development and severity of GTDs. The research results will provide information on the roles (if any) that the grapevine trunk's microbiome plays in suppressing GTDs.