

## Selection of beneficial endophytes from Sicilian grapevine germplasm

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### Abstract (250 words)

The recent expansion of arid areas due to climate change is putting grapevine and the other traditional productions at risk in all Mediterranean countries with a limited availability of fundamental resources such as water. It is possible to improve the resilience of vineyards by developing sustainable agricultural practices based on biological and natural resources such as endophytic microorganisms that colonize inner plant tissues, and which can potentially increase the tolerance to abiotic stresses. A selection of grapevine endophytes was conducted from 2021 to 2023 as part of the PRIMA project PROSIT. In particular, the research aimed to select consortia of endophytic bacteria and/or fungi able to improve the grapevine tolerance to drought. To this aim, vine leaves were harvested during two vegetative seasons, from local varieties subjected to a long-lasting adaptation to arid conditions without regular irrigation. A wide diversity of genera and species belonging to different microbial phyla was isolated on artificial media (NA and PDA) from surface-sterilized grapevine leaves. Selected fungal and bacterial isolates were identified by molecular barcoding based on ITS and 16S rDNA sequences, respectively. Overall, bacterial endophytes were isolated in higher numbers than fungal ones. In 2022, a higher abundance of fungal colonies was isolated at the end of the growing season, suggesting a seasonal dynamic of the microbiota composition. Some of the selected isolates belong to species already known as PGP endophytes of crops, including grapevine. Preliminary *in vitro* experiments confirmed that those strains can increase the concentration of auxins, ammonium and soluble phosphate.

**Keywords:** drought stress, culturable endophytes, bacteria, fungi