differed in their composition and chemical features between palm species; this variation was not linked to phylogenetical relatedness either at the palm genus or at the palm species level. However, fungal endophytic communities clustered according to the known susceptibility status of the palms to *R. ferrugineus*, suggesting that these plant-associated microorganisms may determine host preference by this invasive insect pest.

EVALUATION OF BIOCONTROL POTENCY OF ANDOPHYTIC SYMBIONTS AGAINST XYLELLA FASTIDIOSA INFECTIONS

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Xylella fastidiosa (Xf) is a xylem-limited bacterium, regulated as a quarantine pest, that is causing a devastating disease on olive crops, in the southern area of Apulia (Italy). Its potential spread in the Mediterranean area poses a severe threat to EU agriculture and landscape environment. Despite the vast literature on Xf relationships with host plants, few efforts have been made so far to investigate the potential role of microbial interactions on the disease phenotype of Xf-infected plants. Having been established a prominent role of endophytic microbiome for protecting plants against biotic and abiotic stresses or promoting growth, the goal of our study is to evaluate if endosymbionts may have an effect on the incidence of Xf disease in olive. To acquire a thorough knowledge of the composition of microbial communities inhabiting the xylem vessels of olive cultivars showing different susceptibility to Xf infection, a whole-metagenome shotgun analysis accomplished by an unrestricted genome sequencing of all the microorganisms present in the tissue, is currently ongoing. In parallel, efforts to isolate culturable microorganisms to be used in antagonistic assays against Xf, will be performed. Concurrently with this approach, is already under way the attempt to explore the biocontrol potency of Paraburkholderia phytofirmans PsJN strain, a widely studied plant growth-promoting rhizobacterium, whose beneficial effects in reduction of symptom severity caused by plant pathogenic bacteria have been recently described. In our attempt, an experimental workflow is now being established, to test the capability of P. phytofirmans to colonise xylem vessels and interact with Xf, in N. benthamiana, as a proof of concept, and later on in olive plantlets, being the true target of our sustainable biocontrol strategy.

PLANTS, MYCORRHIZAL FUNGI AND BACTERIA: A NETWORK OF INTERACTIONS WITH GREAT BIOTECHNOLOGICAL POTENTIAL

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Currently, the production of crop plants is an expensive process that involves the use of large amounts of water, which it is not readily available in all parts of the world and fertilizers, that have significant negative ecological impacts and high costs. The purpose of my project is to characterize the molecular responses of bread wheat (*Triticum aestivum*), one of the most important sources for food, animal feed, and industrial raw materials, to colonisation by the arbuscular mycorrhizal (AM) fungus *Funneliformis*