
Are mycorrhizal-bacterial community networks impacted by the sexual type of their host tree?

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Abstract

The determination of tree sexual type during the production of seedlings in nursery constitutes a major issue for the set up of efficient orchards. In the case of carob trees (*Ceratonia siliqua*), a multi-use tree of high socio-economical added value in Mediterranean regions, the majority is dioecious but some are also hermaphrodite. Physiological differences between carob male and female have been described but the development of robust indicators of tree sexuality remains of particular interest for the carob sector.

Carob tree is highly dependent on arbuscular mycorrhizal (AM) symbiosis, and bacterial endophytes are also hypothesized to play a role in carob nutrition. Symbiotic communities are known to be key factors of plant nutrition and growth, affecting greatly plant physiology. The intimate connection between physiology and symbiotic community of carob may suggest a potential specificity of symbionts regarding the carob sexual type.

In the framework of the international project DYNAMIC (Deciphering sYmbiotic Networks in cArob-based MedIterranean agro-eCosystems), a metabarcoding approach was developed to characterized the symbiotic microbial diversity and assemblages associated to carob trees in the Mediterranean basin. The results may provide new guidelines for the determination of bio-indicators of tree sexual type and the design of more productive orchards.

Keywords: Symbiotic community, diversity, Carob, New Generation Sequencing

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