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## SIGNIFICANCE AND POTENTIAL FOR APPLYING MYCORRHIZA TECHNOLOGY TO HORTICULTURE

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The root of most plant species live associated with certain soil fungi by establishing what are known as mycorrhiza. Mycorrhizal functions include improvement of plant establishment, enhancement of nutrient uptake, protection against cultural and environmental stresses, either abiotic or biotic, and the improvement of soil structure. Mycorrhizal symbiosis can be found in nearly all types of ecological situations, and most plant species are able to form this symbiosis naturally, the most common type involved in the normal cropping systems, including horticultural plants, is the arbuscular mycorrhizal (AM) type.

Practical application of AM fungal inoculation is feasible and rewarding for crop using a transplant stage as a common agricultural practice, as it is the case with horticulture. The main effects of AM inoculation in horticultural crops include: (i) enhanced seedlings growth; (ii) reduced phosphate requirements; (iii) increased survival rate and development of micropropagated plantlets; (iv) increased resistance to fungal root pathogens; (v) increased resistance to abiotic stresses; (vi) early flowering and fruiting; (vii) increased crop uniformity; (viii) improved rooting of cuttings; and

(ix) increased fruit production. Given the effects of AM fungi as “biofertilizers” and “bioprotectors”, it is accepted that that the appropriate management of the symbiosis would permit a satisfactory reduction of chemical fertilizers and biocides inputs, key issue for sustainable horticultural plant production approaches. Maximum benefits will only be obtained from inoculation with efficient AM fungi and a careful selection of compatible host/fungus/ substrate combinations. The performance of micropropagated plants or artificial seeds may be greatly improved by ensuring a suitable mycorrhizal establishment at outplanting.

Since AM fungi are obligate symbionts, they must be multiplied on living roots. This is a limitation for inocula production. However, several substrates and procedures have been described for inoculum production and application in Horticulture/Fruitculture. A Federation of European Producers of AM inoculum has been established aimed at ensuring the high quality and legal control of AM inoculum production.

A number of case-studies will be analysed concerning the application of AM technology to horticultural systems, with special reference to avocado plants propagation.