POPULATION OF MYCORRHIZAL AND ENDOPHYTIC FUNGI COLONIZING ROOTS RICE GROWN IN SIMIL-UPLAND CONDITION

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In the last few years, different experiments were designed at CRA - Istituto Sperimentale per la Cerealicoltura in Vercelli (Italy) to find well performing-rice varieties in dry land condition. As parallel study, a survey of the presence of colonizing fungi in rice roots was performed. Therefore, the populations of arbuscular mycorrhizal (AM) fungi and of endophytic fungi were studied in the roots of twelve different rice varieties grown in simil-upland condition.

AM fungi provide to plants a partnership in which a complex system of intra-radical and extra-radical hyphae is involved. The symbiotic system contributes to the uptake of water and nutrients and creates a modified rhizosphere, which confers protection to the plant under stress conditions. Endophytes live asymptomatically within plant tissues and may have effects on their host such as enhancement of stress-, insect- and disease-resistance and herbicide activity. Endophytes usually occur in above-ground plant tissue, but they are also occasionally found in roots.

Rice roots were observed under optical microscope after staining with Cotton blue. The observations showed the presence in all the varieties of fungal structures, as hyphae, vesicles, spores. Some structure, like arbuscules and vesicles could be assigned to AM fungi, which were present with a percentage of arbuscularisation between 19% and 62%. Other structures belonged probably to other kind of endophytic fungi, which were isolated after plating roots homogenate on malt extract medium. All the fungal isolates obtained were tentatively grouped based on morphology on MEA medium. Some isolates from each morphological group were chosen for identification by means of molecular analysis. All the varieties, except one, resulted colonized by endophytic fungi, though at different extent. About 300 fungal isolates were obtained, belonging mainly to *Penicillium, Plectosphaerella, Fusarium, Acremonium* genera. The possible role of these fungal isolates on the rice plant biology will be discussed and tested in *in vitro* experiments for pathogenic fungal competition and/or growth promotion.