



Active microbial soil communities in different agricultural managements

S. Landi and R. Pastorelli

Center for Agrobiology and Pedology, Agricultural Research Council (C.R.A), Florence, Italy (silvia.landi@entecra.it, +39055241485)

We studied the composition of active eubacterial microflora by RNA extraction from soil (bulk and rhizosphere) under different environmental impact managements, in a hilly basin in Gallura (Sardinia). We contrasted grassy vineyard, in which the soil had been in continuous contact with plant roots for a long period of time, with traditional tilled vineyard. Moreover, we examined permanent grassland, in which plants had been present for some years, with temporary grassland, in which varying plants had been present only during the respective growing seasons.

Molecular analysis of total population was carried out by electrophoretic separation by Denaturing Gradient Gel Electrophoresis (DGGE) of amplified cDNA fragments obtained from 16S rRNA.

In vineyards UPGMA (Unweighted Pair Group Mathematical Average) analysis made up separate clusters depending on soil management. In spring both clusters showed similarity over 70%, while in autumn the similarity increased, 84% and 90% for grassy and conventional tilled vineyard respectively. Permanent and temporary grassland joined in a single cluster in spring, while in autumn a partial separation was evidenced. The grassy vineyard, permanent and temporary grassland showed higher richness and diversity Shannon-Weiner index values than vineyard with conventional tillage although no significant.

In conclusion the expected effect of the rhizosphere was visible: the grass cover influenced positively the diversity of active microbial population.