



S07.07-P -34

SOIL ORGANIC MATTER FRACTIONS UNDER LONG-TERM CONSERVATION TILLAGE IN RAINFED ARAGON (NE SPAIN)

Blanco-Moure Nuria*^[1], Gracia Ricardo^[1], Bielsa Ana^[1], López Maria Victoria^[1]

^[1]Aula Dei experimental station (EEAD-CSIC) ~ Soil and Water ~ Zaragoza ~ Spain

Conservation tillage has been proposed as a management alternative to conventional tillage system to enhance organic carbon (OC) accumulation in the soil surface. This paper assesses the long-term (21 years) effect of tillage on soil OC content and its distribution among different organic matter fractions in a dryland field of semiarid Aragón. Two conservation tillage treatments (reduced tillage, RT, and no-tillage, NT) were compared with conventional tillage (CT) under both continuous cropping and cereal-fallow rotation. A nearby uncultivated land (NAT) was also selected. Soil samples, taken at 3 different depths (0-5, 5-20 and 20-40 cm) were subjected to physical fractionation to obtain 4 organic matter fractions: coarse particulate organic matter (cPOM, >250 μm in size), fine particulate organic matter (fPOM, 250-53 μm), mineral-associated organic matter occluded within stable microaggregates (Min- μagg , <53 μm) and easily dispersed mineral associated fraction (Min-d, <53 μm). The effect of tillage was mostly observed in the first 5 cm of soil depth with the highest OC contents in the NT and NAT soils due to the increase mainly of the cPOM and fPOM under both cropping systems. Soil texture seemed to be a factor influencing the Min fraction since significant relationships were found between silt plus clay content and C-Min or C-Min- μagg at different depths. These results are consistent with other studies carried out in different world regions and indicate that POM (cPOM and fPOM) is the most sensitive fraction to soil management while the Min fraction (more precisely Min- μagg) is also influenced by soil texture.