



Cropland versus Gariga schrubland on soil organic carbon storage under Mediterranean climatic condition of Sicily

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Soil organic carbon (SOC) pool is the largest among the terrestrial pool and it plays a key role to mitigate climate change. The restoration of SOC pool represents a potential sink for atmospheric CO₂. Land use is one of the most important factors controlling organic carbon content. The main land uses throughout the Mediterranean are croplands (olive, wheat and vineyards) and scrublands. The land abandonment or the reclamation of land is changing the cover of scrubland and cropland. This will change the carbon cycle. The aim of this work is determining the direction and magnitude of soil organic change associated with land use change under Mediterranean Climatic Conditions. Using both historic record and land cover crop maps we estimated the effect of land cover change on the stock carbon from 1972 to 2008 in Sicily. A system of paired plots was established on Mollic Gypsirc cambisol and Gypsirc cambisol on agriculture and rangeland land uses. The study sites were selected at the natural reserve "Grotta di S. Ninfa", in the West of Sicily. Soil samples (24) were taken at 20 and 40 cm depth, air dried and sieved at 2 mm. Dry aggregate size fractions selected were >1000 µm, 1000-500 µm, 500-250 µm, 250-63 µm, 63-25 µm and <25 µm. The results show that gariga increase the organic matter in soil, mainly on the organic horizon.

Key words: Land use change, Soil organic Carbon , Mediterranean, aggregates, gariga, cropland.