



Development of a Soil Degradation Index for Monitoring of Organic Olive Orchards in Southern Spain

Álvarez, S. (1), Soriano, M.A. (2), Gómez, J.A. (1)

(1) Instituto de Agricultura Sostenible, C.S.I.C.

Apartado 4084, 14080 Cordoba Spain.

Ph: +34-957-499210; e-mail: ag2gocaj@uco.es

(2) Dpt. of Agronomy. University of Cordoba

Forty six organic olive orchards under different soil management systems were surveyed in the province of Córdoba (Southern Spain) to evaluate their soil properties and to determine the risk of degradation of its topsoil, and the possibilities for monitoring this risk. Our study indicated that 40% of the sampled orchard presented a low risk of soil degradation with most of its deficiencies been in soil nutrients, what can be explained by the low intensity of the farming systems used in a large part of the study area. Twenty five percent of the sampled orchards had a large number of soil properties, physical chemical and sometimes biological, that can be considered degraded and are classified as seriously degraded. The remaining surveyed orchards are in an intermediate stage. Three soil degradation indexes have been developed trough Principal Component Analysis of the analysed soil properties. The three of them have the ability to distinguish between farms that are at low risk of soil degradation and those in a serious degradation stage. Two of the indexes are basically integrative indexes that can be used in relatively large surveys considering a large number of soil properties. The third index developed uses only three variables, organic C, water stable macroaggregates, and extractable P, and has the potential to be used as a relatively easy and inexpensive screening test of soil degradation of the organic olive farms in the area before severe symptoms appear.