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Some problems of the determination of best management practices to maintain the quality of agricultural soils

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In spite of the great effort of scientific research exploring the influence of agricultural practices on soil quality, many aspects remain unclear, possibly precluding a more general adoption of the best management systems by farmers and land use planners.
Among other causes of this knowledge gap, the wide variety of agricultural practices due to different climates, landforms, soils, and crop types make hard to find either a general best management system or at least common rules of larger applicability. Nevertheless the more important problem is that we usually consider soil as an invariant entity which does not change, or if it does, its changes are controlled.
The purpose of this report is the discussion of the results of a meta-analysis of the effects of agricultural management practices on physical aspects of soil quality, throughout the published research data of countries of the central and western part of the European continent. Soil physical quality was evaluated through several indicators which were evaluated in the research reports found. The indicators were: bulk density, resistance to penetration, stability of aggregates, permeability and water and sediment yield.
The results indicate that there are agricultural practices which could be classified as convenient, although their possible advantages are not always evident, as, for instance, direct drilling as compared to conventional tillage, where the farm operations induce a certain compaction not always alleviated in absence of tillage.
To further explore some of the results, the evolution of some properties of a clay soil subject to a long term experiment in dry farming conditions in southern Spain is considered. The evolution of the soil properties must be taken into account, for a more precise evaluation of the efficiency of management practices.