

Innovative Soil Management Practices (SMP) Assessment in Europe and China

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The growing world population poses a major challenge to global agricultural food and feed production through the pressure to increase agricultural outputs either by increasing the land area dedicated to agriculture or by productivity increases. Whether in developed or developing regions, agricultural intensification based on conventional approaches has resulted in severe environmental impacts and innovative soil management practices are needed to halter ongoing soil degradation and promote sustainable land management capable to produce more from less.

The *iSQAPER* project – *Interactive Soil Quality Assessment in Europe and China for Agricultural Productivity and Environmental Resilience* – aims to develop a Soil Quality app (SQAPP) linking soil and agricultural management practices to soil quality indicators. This easy friendly tool will provide a direct and convenient way to advise farmers and other suitable actors in this area, regarding the best management practices to be adopted in very specific and local conditions.

In this particular study from *iSQAPER*, we aimed to identify the most promising innovative *soil management practices* (SMP) currently used and its geographical distribution along different pedo-climatic regions in Europe (Boreal, Atlantic, Mediterranean Temperate, Mediterranean Semi-Arid, Southern Sub-Continental and Northern Sub-Continental) and China (Middle Temperate, Warm temperate and Central Asia Tropical). We have identified 155 farms where *innovative* SMP's are used, distributed along 4 study site regions located in China (Qiyang,

Suining, Zhifanggou and Gongzhuling) and 10 study site regions located in Europe (The Netherlands, France, Portugal, Spain, Greece, Slovenia, Hungary, Romania, Poland and Estonia) and covering the major pedo-climatic regions.

From this identification we concluded that the most used innovative SMP's in the study site regions in Europe are Manuring & Composting (14%), Min-till (14%), Crop rotation (12%), Leguminous crops (10%), Change of Land Use Practices (10%), Residue Maintenance (8%), no-till (8%) and permanent soil cover (6%). In China, innovative SMP's are Manuring & Composting (24%), Residue maintenance/Mulching (16%), No-till (11%), Irrigation management (9%), Change of Land Use Practices (7%), Cover crops (7%), Crop rotation (7%) and Green manure (7%). The implementation of such practices reflects the general concern of farmers regarding Erosion and Soil Organic Matter (SOM) decline problems in their soils, while other threats such as Compaction or Water Holding Capacity are still not managed correctly in these regions.

Keywords: Agriculture, Soil threats, Management Practices, Sustainability.