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Economic wealth and soil erosion in new Citrus plantations in Eastern Spain or how to explain the Land Degradation

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We use to accept the idea that the best oranges are coming from Valecia Region in Eastern Spain. Although the oranges are originally from Eastern Asia, Valencia is having a mild climate in winter, with a low recurrency of frost and is strategically located close to the largest market of citrus: Western Europe. This resulted in a continuous growth of production and trade of citrus, and contributed to make the Valencia Region the largest World exporter (Bono, 2010). This economical success reached the highest point after the EU and Spain agreement in 1986. This expansion of citrus plantations were done on steep slopes allowed by the drip irrigation systems that does not need leveling the land as it was done by new farmers with large properties. The traditional farming of oranges was done in small properties, flood irrigation and leveled land.
Those changes are triggering intense soil erosion rates such were shown by previous researchers in Valencia (Cerdà et al., 2009). This impact is also shown in other regions with a similar citrus production evolution, and China is a clear example (Wang et al., 2010; Liu et al., 2012). Land
This research evaluate the relations between the investment (economic wealth) of the owners of citrus plantations and the soil erosion rates on their orchards. The economic wealth of the onwers was measured on the size of their properties and after an interview. The soil erosion rates were measured by means of rainfall simulation experiments in each farm by means of thunderstorms of 10 years return period (55 mm h-1). The results show that the soil losses in the new plantations are extremely high (> 10 Mg ha-1 y-1), and that we can show three types of orchards: < 0.99 ha; 1-10 ha and > 10.1. The soil erosion rates where positively related to the size of the farms.
The higher erosion rates are shown also by the scientific literature review. Chemically treated plantations (Cerdà, 2002) show high erosion rates due to the road construction too (Cerdà, 2007) and is higher than rainfed agriculture soil (García Orenes et al., 2009).

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