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Providing tools for agricultural practitioners: Monitoring system to assess water erosion risk in an olive producing area in Southern Spain combining RUSLE, stakeholders' surveys, and publicly available information

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In many agricultural regions, the maintenance of profitability and other ecosystem services without intensifying soil loss due to erosion is still a challenge on a global scale. However, the first steps to address this challenge should be done at farm scale where technicians and farmers have the possibility to make decisions and modify agricultural practices considering local conditions of each farm.

The Protected Appellation of Origin Estepa (DOP Estepa) in Southern Spain, encompass approximately 40,000 ha of olives trees under different soil management systems. In this region, the awareness of balancing economical and environmental sustainability is a fact and there has been a strong collaboration among stakeholders since 2019, reinforced within two large cooperative actions, the EIP-Agri Operational Group BIOLIVAR and the H2020 TUDI project.

One of the activities developed in the DOP Estepa was to evaluate the hillslope water erosion risk at farm plot. For this, a GIS project was created (QGIS v.3.4.11) to aggregate spatial information to apply RUSLE (Dabney et al., 2012). All the key layers freely provided by different regional and national institutions (e.g. CNIG, REDIAM, CAPADR-JA) and Sentinel-2-L-2A images (EOS, 2020). The LS factor was obtained using the algorithms accessible from QGIS based on Desmet and Govers (1996), the K factor was determined based on the soil classification and calibration for different soil types made by Gómez et al. (2014) and R was directly taken from the map provided by REDIAM. The C factor was calculated for the most common soil managements implemented in the area (previously identified through farmers' questionnaires by Gómez et al., 2021) using the ORUSCAL tool (Biddoccu et al., 2020, Gómez et al., 2021). The use of bare soil or temporary cover crop at plot level was identified comparing differences in the enhanced vegetation index EVI between winter 2019 and summer 2020 Sentinel images (Guzmán et al. (2022)).

This communication presents a prototype of a geospatial database, and future steps to improve it, on which its expansion for other purposes can be easily evaluated by technicians, such as the effect of alternative management scenarios on soil erosion or adding other variables of interest such as, farm yield or pests' incidence. Its final goals are to establish a monitoring system to detect

areas with higher risk of soil erosion, raise farmers' awareness on the need to improve soil conservation and, in general terms, to contribute to the improvement of olive orchards' sustainability in the region.

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