



Short-term soil loss by eolian erosion in response to different rain-fed agricultural practices

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Eolian (wind) erosion is a widespread process and a major form of soil degradation in arid and semi-arid regions. The present study examined changes in soil properties and eolian soil loss at a field scale in response to different soil treatments in two rain-fed agricultural practices. Field experiments with a boundary-layer wind tunnel and soil analysis were used to obtain the data. Two practices with different soil treatments (after harvest), mechanical tillage and stubble grazing intensities, were applied in the fallow phase of the rotation (dry season). The mechanical tillage and the stubble grazing had an immediate and direct effects on soil aggregation but not on the soil texture, and the contents of soil water, organic matter, and CaCO_3 . Higher erosion rates, that was measured as fluxes of total eolian sediment and particulate matter $<10 \mu\text{m}$ (PM10), were recorded under mechanical tillage and grazing intensities compared with the undisturbed topsoil of the control plots. The erosion rates were higher in grazing plots than in tillage plots. The calculated soil fluxes in this study indicate potentially rapid soil degradation due to loss of fine particles by wind. The finding may have implications for long-term management of agricultural soils in semi-arid areas.