

The Effect on Soil Erosion of Different Tillage Applications

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Traditional soil cultivation systems, with excessive and inappropriate soil tillage, will generally lead to soil degradation and loss of soil by wind erosion. Continuous reduced tillage and no-till maintaining soil cover with plant residues called Conservation Agriculture that is considered as effective in reducing erosion. There exist a wide variety of practices using different tools that comply with reduced tillage principles. However, few studies have compared the effect of several of such tools in reducing wind erosion and related soil and surface properties. We therefore measured sediment transport rates over bare soil surfaces (but with under stubbles of wheat, *Triticum aestivum L.*) subjected to three tillage practices using two pulling type machines and one type of power takeoff movable machines and generated with a portable field wind tunnel. At 10 ms⁻¹, sediment transport rates varied from 107 to 573 gm⁻¹h⁻¹, and from 176 to 768 gm⁻¹h⁻¹ at 13 ms⁻¹. The lowest transport rates were observed for N(no-tillage) and the highest for Rr(L-type rototiller). After tillage, surface roughness, mean weighted diameter, wind erodible fraction, mechanical stability and soil water content were measured as well and varied from 5.0 to 15.9%, 6.9 to 13.8 mm, 14.3 to 29.7%, 79.5 to 93.4% and 8.6 to 15.1%, respectively, with again N is being the most successful practice. In terms of conservation soil tillage technique, it can be said that the applications compared with each other; direct sowing machine is more appropriate and cause to the less erosion.