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SOIL PROPERTIES AND WHEAT YIELD AS AFFFECTED BY SOIL EROSION IN A PALOUSE SILT LOAM SOIL OF EASTERN WASHINGTON, USA

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ABSTRACT

A commercial winter wheat farm with complex, eroded hills near St. John, Washington, USA was intensively sampled along four 655 m long transects separated by 122 m. Samples were taken at intervals of 15.2 m to a depth of 1.8 m. Organic matter content, available phosphorus, soil pH, and ammonium-N were measured on 0-30 cm surface samples while total profile water and nitrate-N were measured on 0-30 cm increments to a depth of 1.8 m. Wheat crop was grown on the farm and grain yields were measured at sampling locations. It was found during these studies that the severely eroded location had the significantly lowest values of soil properties such as available phosphorus, organic matter, total profile water, total profile nitrate-N and grain yield as compared with slightly and moderately eroded spots. The reason was that the top soil was removed and hard pan was exposed which has low fertility status and crop productivity. Further research work needs to determine ways to restore crop productivity of these soils.