

Study shows no-till's benefits for Pacific Northwest wheat growers

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Wheat farmers in eastern Oregon and Washington who use no-till production systems can substantially stem soil erosion and enhance efforts to protect water quality, according to research by U.S. Department of Agriculture (USDA) scientists.

Agricultural Research Service (ARS) hydrologist John Williams led a study that compared runoff, [soil erosion](#) and crop yields in a conventional, intensively tilled winter wheat-fallow system and a no-till 4-year cropping rotation system. ARS is USDA's chief intramural scientific research agency, and this research supports the USDA mission of promoting sustainable agriculture.

Williams and his colleagues at the ARS Columbia Plateau Conservation Research Center in Pendleton, Ore., set up research plots in two small neighboring ephemeral drainage areas in the Wildhorse Creek Watershed in northeast Oregon. From 2001 to 2004, they measured runoff and sediment loads at the mouth of each drainage channel in the study area after almost every rainfall.

The scientists found that 13 rainfalls generated erosion from conventionally tilled fields, but only three rainfalls resulted in erosion from no-till fields. In addition, they noted that 70 percent more runoff and 52 times more eroded material escaped from the conventionally tilled fields than from the no-till fields.

No-till production left the [soil surface](#) intact and protected pore space

beneath the soil surface, which allowed more water to infiltrate into the subsoil. In addition, there was no significant yield difference between the no-till and conventional till production, and direct seeding in no-till production saved fuel and time.

Other research on no-till production and soil erosion had been conducted in small experimental plots, but this work provides much-needed information for farmers in eastern Oregon and Washington on how no-till management can reduce soil erosion across entire production fields.

More information: Results from this work were published in the *Journal of Soil and Water Conservation*.

Provided by United States Department of Agriculture

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