

Calibrating corn production in potato country

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Scientists at the U.S. Department of Agriculture (USDA) are studying soil moisture levels and other field dynamics to help Pacific Northwest farmers maximize the production of corn, a relatively new regional crop that helps support Idaho's growing dairy industry.

Agricultural Research Service (ARS) scientists David Tarkalson and David Bjerneberg conducted a 2-year study to see if farmers who use [conventional tillage](#) and fertilizer application methods could increase [corn](#) yields by banding fertilizer with strip tillage instead. Both scientists work at the ARS Northwest Irrigation and Soils Research Laboratory in Kimberly, Idaho. ARS is USDA's chief intramural scientific research agency.

[Farmers](#) using strip tillage make just one pass through fields to excavate a single row for planting—around 6 to 12 inches wide and 6 to 8 inches deep—with a knife-like shank that can also inject fertilizer directly below the seed. This single pass also pushes crop residues away from the tilled row, but the residues still remain on the soil surface.

Tarkalson and Bjerneberg studied corn yields from two fields for two years. In both years, one of the study areas was located at the top of an eroded slope, and the other was located at the bottom of a slope where the soils eroded from higher elevation had accumulated.

The scientists used either strip tillage or conventional tillage to sow the corn seeds. They also fertilized the fields either with broadcast

applications of nitrogen and phosphorus or by using the strip-till shank to add subsurface bands of phosphorus and nitrogen when the seeds were planted.

The scientists found that using strip tillage and placing fertilizers 6 to 8 inches directly below the seed increased corn grain yields on the higher elevations—where severely eroded soils were largely devoid of crop nutrients—by 12 percent the first year and 26 percent the second year. This translated into yield increases between 11 and 26 bushels per acre.

More information: Results from this work, published in *Crop Management*, support the USDA priority of promoting international food security.

Provided by United States Department of Agriculture

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