five crops of spring barley (*Hordeum vulgare* L.) over an 11-month period in a greenhouse at 60°F. Relative activity of *R. solani* AG-8 was monitored with a toothpick baiting technique. At the first planting, activity of *R. solani* was higher in the center and inside edge, but after the second planting, there were no differences among the patch positions. Based on plant height, patches were maintained in only 6 out of 16 sets of cores. *R. solani* activity was similar at all soil depths from 1 to 8 inches. These results indicate that a natural suppression may develop with monocropping of a susceptible crop, and may explain why patches disappear over time in a field.

SOIL QUALITY AND WATER INTAKE IN CONVENTIONAL-TILL VS. NO-TILL PAIRED FARMS IN WASHINGTON'S PALOUSE REGION

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Many farmers in the steeply-sloped Palouse region of eastern Washington and northern Idaho practice no-till (NT) farming because water erosion on partially frozen soils is often severe when residue cover is lacking. Several soil quality and water intake parameters were assessed in standing wheat stubble along summit, back, and toe slope positions in a 2-year study at three paired-farm sites under conventional-till (CT) vs. NT management. Paired sites had similar south-facing slope and aspect and NT fields had not been tilled from 2- to 20 years. Soil organic carbon in NT was greater than in CT, especially in the 0-to 2-inch surface depth. Two sites had calcium carbonate (caliche) evident at the back-slope position of CT and pH was higher in CT compared to NT. Soil microbial activity, measured as dehydrogenase enzyme activity, was stimulated with CT, mainly due to the exposed caliche layer and higher pH; not due to higher organic carbon, indicating the necessity to use several quality parameters to evaluate soils. Differences in time in NT at the three sites altered the composition of the microbial communities as seen by fatty acid methyl ester analysis and phospholipid fatty acid analysis. Microbial communities in CT at back-slope and toe-slope positions were different from those in NT, while differences in the soil microbial communities from the summit were not as apparent. There were no differences in over-winter soil water storage or in ponded water infiltration rate in undisturbed standing wheat stubble between CT and NT within any paired farm or when averaged across farms and years, indicating that soils with equivalent quantity of standing stubble have similar over-winter soil water storage and ponded water infiltration rate regardless of tillage history. However, significant over-winter soil water storage differences were measured among slope positions with toe > back > summit. These data represent an important step to further quantify soil quality and soil water dynamics as affected by long-term tillage management on cropland in the Palouse.