Canola in Wheat-Based Rotations: Update from Two Long-Term Field Experiments Near Ritzville

Bill Schillinger, John Jacobsen, Ron Jirava, Tim Paulitz, Jeremy Hansen, Dan Schlatter, Cassandra Rieser, and Dave Huggins

Two long-term canola cropping systems experiments are well underway at the Ron Jirava farm near Ritzville, WA. In Study 1, canola grown in a 3-year WC-SW-NTF rotation is compared to 3-year rotations of WW-SW-UTF and WT-SW-NTF (acronyms are defined below). Note that SW follows WC, WW, and WT and that a 13-month fallow period occurs after SW in all three rotations. In Study 2, canola is grown in a 4-year rotation of WC-NTF-WW-NTF and is compared to WP-NTF-WW-NTF as well as a 2-year WW-UTF check. Spring canola is substituted for WC when adequate WC stands are not achieved. Both experiments have gone through full rotation sequences; thus, all crops are truly "in rotation". Agronomic data collected from these experiments includes: soil water dynamics from all phases of all rotations, foliar and root diseases, weed ecology, and grain yields. Soil microbial activity is currently being assessed in both canola rotations using DNA sequencing (Schlatter and Paulitz, see next abstract) and PLFA methods (Hansen, Rieser, Huggins). In addition, mycorrhizal inocula to enhance/promote soil microbial biomass in canola and subsequent crops are being evaluated. Such data can only be obtained through long-term cropping systems experiments. Schillinger and colleagues have published several scientific journal articles on these topics in the past three years and more publications are expected as we more fully explore canola rotations for Washington's drylands.

Acronyms used: NTF, no-till summer fallow; PLFA, phospholipid fatty acid analysis; SW, spring wheat; UTF, undercutter-tilled summer fallow; WC, winter canola; WP, winter pea; WT, winter triticale; WW, winter wheat.