

Spring Canola in Rotation at WSU Wilke Farm

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Spring canola has been incorporated into the 4-year direct seeded crop rotation at the WSU Wilke Research and Extension Farm near Davenport, WA to help control cereal rye infestations, diversify herbicide chemistry and improve profitability. Roundup Ready 'DKL 45-51' canola was seeded in 2012 into Dark Northern Spring (DNS) residue and yield 1,542 lb/ac. In the 4-year crop rotation, canola had the second largest economic return over costs at \$341/ac and was only \$12/ac behind hard white spring wheat (HWSW) and \$82 and \$101/ac better than barley and DNS wheat. Winter wheat and fallow were not included in rotation because of cereal rye. A mixture of three Roundup Ready canola varieties was seeded in 2013 into HSWW residue and yield 1,748 lb/ac. In the 4-year crop rotation, canola had the second largest economic return over costs at \$225/ac and was \$86/ac less than soft white spring wheat (SWSW) and \$51 better than DNS wheat. Consequently, the SWSW was following the 2012 canola crop. Fallow was included in rotation but winter wheat was not included in rotation because of cereal rye. Overall, given current market prices, yield potential and weed species, canola has been economically competitive with cereal grains in rotation.

Feral Rye (*Secale Cereale L.*) Control in Winter Canola (*Brassica Napus*) in the Pacific Northwest

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In the Pacific Northwest (PNW), where feral rye (*Secale cereale L.*) is considered a noxious weed in WA, very little research has been conducted on its biology, ecology, and management. Thus far, one study in 1977 evaluated paraquat and barban for control of feral rye in winter wheat (*Triticum aestivum*) and a second study in 1984 evaluated the effect of various herbicides on feral rye seed germination. Since then no research has been conducted with feral rye in PNW crops. With the introduction of winter canola into the winter wheat/fallow region an opportunity exists for growers to better manage feral rye in their production systems. In Oklahoma, clethodim, quizalofop, and glyphosate effectively controlled cereal rye in winter canola as measured by weed seed reduction compared to the nontreated check. In north central Washington, a study is being conducted to evaluate these three herbicides on a natural stand of feral rye in winter canola. In the 2010-2011 growing season, feral rye seed production was decreased 79%, 99% and 100% by spring applications of clethodim, quizalofop, and glyphosate respectively. Winter canola treated with these three herbicides increased yield 31% to 33% compared to the nontreated canola yield. In the 2011-2012 growing season, the most effective treatments were when quizalofop and glyphosate were split-applied in the fall and spring. These treatments decreased greatly feral rye plant population and seed population and increased substantially canola yield compared to the nontreated check.

Oilseeds in Crop Rotation in the Intermediate Rainfall Zone

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The rotational study at the Beulah Wilke Research Farm near Davenport, WA was initiated in 2011 and is in its fourth cropping season. In total, six rotations are being evaluated for agronomics and economics. Three rotations are being evaluated in a three-year system. WW-SW-NTF represents a typical rotation for the area, while WW-SW-SC and WW-SW-SW allow researchers to evaluate the possibility of replacing fallow with a spring crop, and if there is a rotational benefit to using spring canola instead of spring wheat as the fallow-replacing crop. Three rotations are being evaluated in a four-year system. The conventional rotation is WW-SW-SW-NTF, which is compared to WW-SW-SW-CAM, where the oilseed