about camelina production, winter canola in rotation with winter wheat, and a second set of case studies of oilseed producers were published. A concerted effort is being made the rest of this year to publish fact sheets covering a range of topics from the WBCS project, such as oilseed diseases, biennial/dual purpose winter canola, case studies of irrigated canola producers, enterprise budgets, wide row canola spacing for spring canola, oil quality analysis, and more.

Recently released data from USDA-NASS shows a projected increase of canola acreage in WA from 15,000 acres in 2012 to 25,000 acres 2013, a reflection of strong markets, favorable growing conditions, and the extension and outreach efforts of the WBCS and its affiliate projects. Future plans are to coordinate regional oilseed extension and research efforts more closely, as outlined in a recently submitted PNW Oilseed grant proposal submitted to USDA NIFA, which would involve Montana, Idaho, Washington and Oregon.

Winter Canola Production in the Low- to Intermediate-Rainfall Zones of the Pacific Northwest

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Background: Approximately 60% of the rainfed production area of the PNW is in the winter wheat/summer fallow system. This system is plagued by winter annual grass weeds such as jointed goatgrass, feral rye, and downy brome. Several years ago a grower in Douglas County, WA experienced a $1.45/bu dockage in his winter wheat because of feral rye contamination. Growers have become increasingly interested in producing winter canola in this region to improve pest management strategies, diversify markets (food, fuel, and feedstock), and increase sustainability. However, winter canola stand establishment is an impediment to growers in the non-irrigated, low- to intermediate-rainfall zones. Previous funding from the WBCS allowed us to initiate the first-ever winter canola seeding date and rate studies in these zones to improve canola emergence and stand establishment. Data indicate that the optimum time to plant winter canola in the fallow region is between July 25 and August 25 and most importantly when "Mother Nature tells you", i.e., when cooler temperatures (85°F) are forecast after planting. At the present time, there has been no research on winter canola variety trials in the wheat/fallow region. The U of I conducts variety trials in the irrigated area, high rainfall annual cropping region, and the high-end of the intermediate rainfall zone. Varieties that tolerate cold temperatures and open winters need to be found for this region to reduce production risks. As with winter canola, very little spring canola research has been conducted in the wheat/fallow region with the exception of determining the effect of planting methods on spring canola establishment, yield, and oil quality. In the PNW, winter annual grass weeds (especially feral rye) are a major problem in winter wheat. The only effective control measure for feral rye in the

growing crop is to use imazamox resistant winter wheat varieties. However, research in the southern Great Plains has shown great variation in feral rye tolerance to imazamox. Therefore crop and chemical rotation are important strategies for the management of feral rye.

Results: In the PNW, where feral rye 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 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 north central WA 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.

Spring Canola Production at the WSU Wilke Research and Extension Farm

AARON ESSER, WSU EXTENSION, LINCOLN-ADAMS AREA

The WSU Wilke Research and Extension Farm is a 320 acres facility located on the eastern edge of Davenport, WA. This farm is a direct seeded cropping system that utilizes no-till fallow, winter wheat, and spring cereals. Broadleaf crops also remain a viable option and are substituted when conditions warrant. Because of cereal rye infestations, 'DKL51-45' roundup ready spring canola was seeded into Plot 1 instead of no-till fallow. It was seeded and fertilized in one pass with a SeedMaster direct seed hoe drill on 12" spacing on May 2, 2012 at 2.6 lb/ac, and treated with Prosper FX. Anhydrous ammonium was applied below the seed at 51-0-0-0 and liquid ammonium thiosulfate, 11-37 and NACHURS was applied at a rate of 9-15-1-9 with the seed. Prior to seeding canola on April 21, 32.0 oz/ac RT3 herbicide, 1.5 qt/100 gal Alliance, and 1.0 qt/100 gal Activate was applied. Roundup PowerMax® was applied on June 8 at 16 oz/ac with 15 lb/100 AMS Max®. On June 15, Assure II was applied at 8.0 oz/ac with 1 qt/100 non-ionic surfactant. On August 11, 16 oz/ac Spodnam was applied by airplane to help reduce pod shatter. Weed control in the spring canola was very good, and a heavy lady bug population helped eliminate the need for insecticide application in the crop. The crop was harvested with our John Deere 6622 combine on August 28. The canola yielded 1,542 lb/ac, was marked at $0.29/lb and generated $447.50 gross economic return. Total input costs that includes seed, fertilizer, herbicides and pod sealant totaled $106.09/ac. Overall spring canola was the second most profitable crop on the farm in 2013 and returned $82.46 and $113.33/ac more than spring barley and spring wheat, respectively.

Winter Canola Rotation Benefit Experiment in the Intermediate Precipitation Zone

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Acronyms used: NTF, no-till summer fallow; SW, spring wheat; WC, winter canola; WW, winter wheat

The objective of this long-term experiment is to determine the benefits of winter canola (WC) grown in a 3-year WC-spring wheat (SW)-no-till fallow (NTF) rotation compared to the traditional winter wheat (WW)-SW-NTF rotation in the intermediate precipitation zone on water dynamics, grain yield of the subsequent SW crop, and soil microbial changes.

The study was initiated in August 2007 on deep, productive soils at the Hal Johnson farm west of Reardan, WA. Annual precipitation averages 18 inches. We are comparing a WC-SW-NFT rotation with the more traditional WW-SW-NTF system. All crops are direct seeded with a Kile hoe-opener drill. The experimental design is a randomized complete block with six replications. Individual plot size is 100 ft x 16 ft. Fertilizer application rate is based on soil test results. In addition to WC, WW, and SW grain yield (determined using a plot combine), we measure soil water content in all plots (i) just after harvest in August, (ii) in early April, and (iii) in NTF in August. Plant diseases and microbial attributes are assessed by Tim Paulitz and Ann Kennedy, respectively.