Managing Feral Rye in Winter Canola through Herbicide Selection

FRANK YOUNG[1], DENNIS ROE[2], LARRY MCGREW[1], DALE WHALEY[2], CHASITY WATT[3]
[1]USDA-ARS; [2]DEPT. OF CROP AND SOIL SCIENCES, WSU; [3]COLVILLE CONFEDERATED TRIBES

A preliminary herbicide efficacy study for the management of feral rye in winter canola was initiated in the spring of 2011. Our objective is to evaluate herbicides to improve the quality of subsequent winter wheat crops and prevent herbicide resistance in weeds. Select (clethodim), Assure II (quizalofop), and Roundup (glyphosate) were applied early spring. Because winter canola plants had canopy closure in the fall of 2010, feral rye was sprayed only in the spring. Final feral rye control in mid-May was 74%, 64%, and 99% for Assure II, Select Max, and Roundup, respectively (see table). Feral rye biomass and head counts responded similarly within each herbicide treatment. In the plots treated with Roundup no seed heads were produced, and Assure II treated plots resulted in only three feral rye seed heads/yd^2. This is in sharp contrast to 255 feral rye heads/yd^2 produced in the untreated plots. Winter canola yield increased 40% to 48% compared to the untreated check depending on the herbicide treatment.

Effect of grass herbicides on feral rye control, biomass, seed heads, and winter canola yield.[a]

Herbicide	Control	Rye Biomass	Heads	Yield
	%	lbs/A	no yd^{-2}	lbs/A
Untreated	0	3,920	255	1,165
Assure II	74	823	3	1,635
Select Max	64	1,597	40	1,680
Roundup	99	290	0	1,730

[a]Biomass and head counts recorded June 1, 2011. Control recorded on May 16, 2011.

Additional plots we established last fall (2011) in a severe, natural infestation of rye in Douglas Co. Assure II, Select 2EC, and Roundup were applied to CP115 winter canola (glyphosate tolerant) on October 16, 2011. Three weeks later control of the initial severe feral rye population with Roundup was excellent; however controlling this population opened up the canopy and a new flush of feral emerged. This new flush of rye was not occurring in the untreated or other two herbicide treated plots because feral rye ground cover was complete in these treatments. Assure II and Select 2EC stunted the feral rye considerably.

Feral rye at Okanogan and Bridgeport was controlled with glyphosate.

A Change is in the Air: Refining Canola Fertilizer Recommendations

BILL PAN, ASHLEY HAMMAC, TAI MCCLELLAN, MEAGAN HUGHES, JOHN RUMPH, RON BOLTON, AND RICH KOENIG
DEPT. OF CROP AND SOIL SCIENCES, WSU

Current nitrogen (N) recommendations for canola are widely variable. Our objective is to develop nutrient (primarily N and sulfur) recommendations for major oilseed crops that maximize oil yield and quality. We initiated a N x sulfur (S) experiment in 2007 at the Wilke Farm near Davenport and the Palouse Conservation Field Station (PCFS) near Pullman that includes a range of N rates (0

to 160 lb N/acre with 15 lb S/acre). Fall-spring split applications of N, and select N fertilizer treatments with no added S are also included.

Residual inorganic soil N was low at both locations in 2011, 73 lb N/acre at the Wilke Farm and 103 lb N/acre at PCFS. Spring canola grain yields at PCFS were higher than in previous years, and therefore more responsive to N fertilizer additions (see graph). No consistent yield responses to S additions were observed. The economically optimum N rate (at $0.22/lb canola and $0.56/lb N as urea) at the Wilke Farm was 69 lb N/acre, while at PCFS it was determined that no N fertilizer added under these yield response and price scenarios paid for itself.

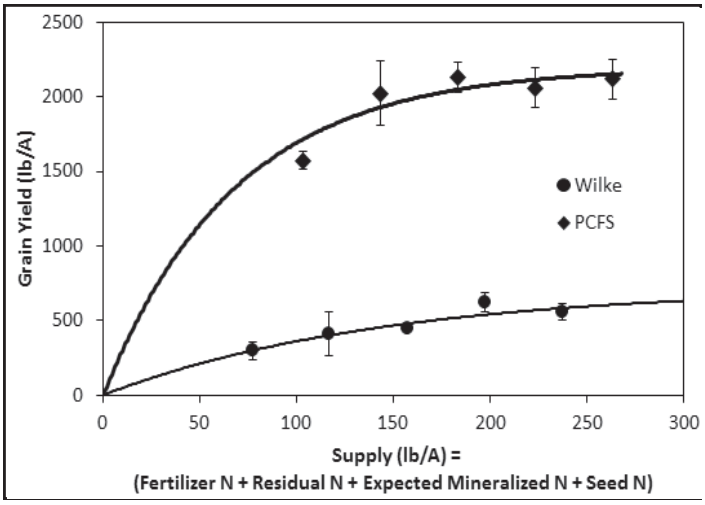

Fig. 1. Canola seed yield response to N supply at Pullman (PCFS) and Davenport (Wilke). The left-most plotted point on each response curve represents 0 N fertilizer applied.

The four year N x S fertility experiment indicates that accurate estimation of soil N supply and canola yield potential is critical in determining proper N fertilization rates. In recognition that canola can aggressively utilize residual soil N supplies if available, N fertilizer rates should be reduced when residual soil N is present. In addition, canola returns significant crop residue N to the soil following harvest. Thus, we have expanded the study in 2012 to follow the carryover N from canola residues and its effects on subsequent legumes and wheat grown in rotation. This research is leading towards a modification of existing regional guidelines for canola fertility management with a goal of maximizing yield and oil productivity.

Establishing Switchgrass for Biofuel in the North Columbia Basin

STEVE FRANSEN, WSU-PROSSER IAREC

Switchgrass biofuel research started at WSU in 2002 in Prosser after observing irrigated circles of switchgrass seed produced by Rainier Seed Company in 2001. This project was initiated to investigate new 'windows' for successful establishment of switchgrass in the Columbia Basin and to evaluate long term storage of switchgrass hay for bioenergy conversion. Cellulosic biorefineries will operate daily for about eleven months per year. Crops cannot be harvested continuously over this time so the feedstock will require storage.

Date of planting studies were conducted at WSU-Othello in 2008 and 2009 and a study evaluating long-term storage as dry or high moisture hay was initiated at Othello in 2008 intending for two complete grass hay harvests in 2009, 2010 and 2011. These are the first hay results from a lowland switchgrass (Kanlow) or Eastern Gamagrass (Nemaha) from as far north as WSU-Othello (46° N). Results confirm that warm season grass hay can be consistently produced in the northern Columbia Basin region.

This study will conclude after the post-storage hay bales are processed and NIRS scanning completed on cored samples. Our studies will provide four years of data that can be used in developing guidelines for long term storage. Results from the date of planting studies have been incorporated into a switchgrass production Extension bulletin that is expected to be published in 2012.

Extension and Outreach Activities

KAREN SOWERS, DENNIS ROE, BILL PAN, AND DEB MARSH; DEPT. OF CROP AND SOIL SCIENCES, WSU

The Washington State Biofuels Cropping Systems Research and Extension Project (WBCS) has been funded since 2007, and has included 15-20 projects, 18 principal investigators, 12 collaborators, and nearly 50 agency and university affiliates, technicians, and graduate students. Written and online publications; a dedicated website; and presentations at workshops, field days, and