

Impact of Preceding Crops on Incidence and Severity of Disease in Canola (2002)

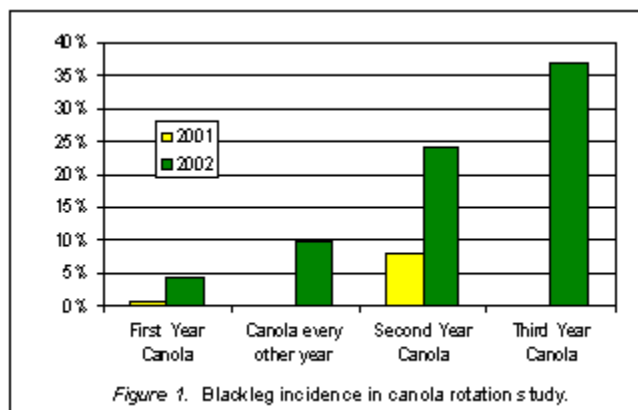
Low crop prices and severe disease problems have encouraged many spring wheat producers in the northern plains to turn to alternative broadleaf crops such as canola. However, current recommendations are to plant a broadleaf crop like canola or sunflower no more than once every four years to avoid buildup of disease inoculum, but producers want rotations involving more profitable broadleaf crops to be shortened.

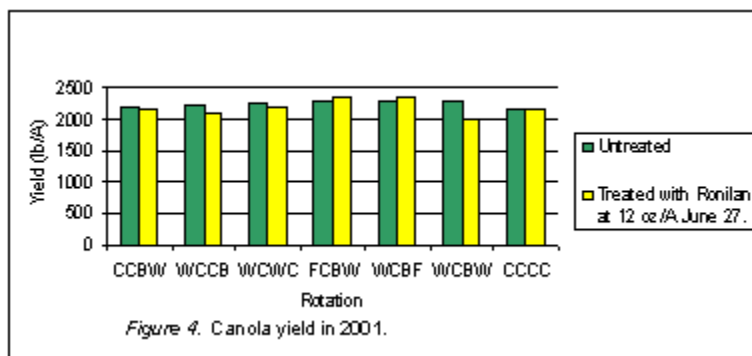
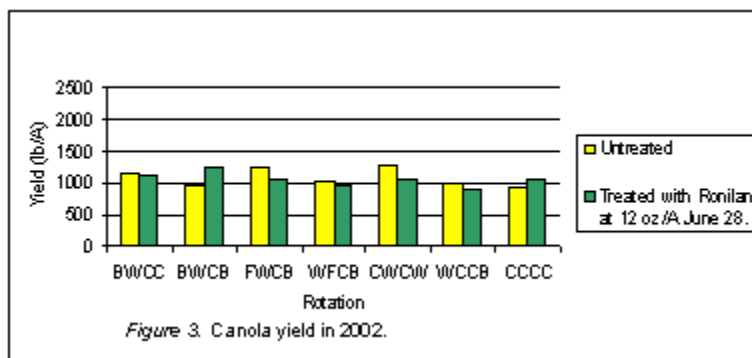
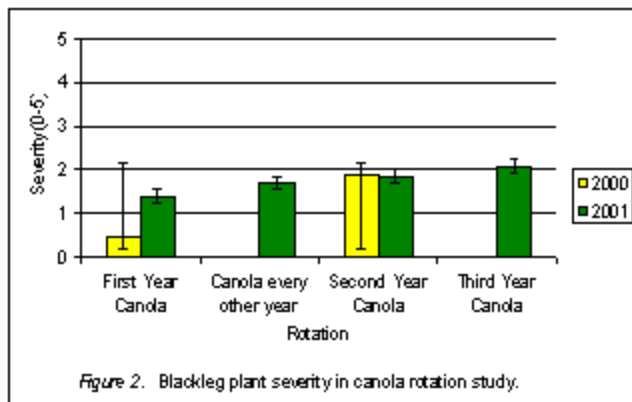
The objectives of this research were to: (1) document the influence of crop rotation on the incidence and severity of sclerotinia stem rot (SSR), and blackleg in canola; (2) determine the impact of the previous crop on disease levels in canola; and (3) determine if fungicide applications can be eliminated by altering the sequence of crops in the rotation.

A four-year crop rotation study was initiated in 2000. Seven rotations are being evaluated and every phase of the rotation is present every year in a randomized complete block design replicated four times. The rotations consist of canola every one, two, three, or four years preceded by either canola, flax, or wheat. Half of each canola plot will be treated with fungicide to prevent Sclerotinia stem rot (SSR). Plots will be evaluated for SSR risk, SSR and blackleg incidence and severity, yield and test weight.

To date, there has been little risk or incidence of SSR, regardless of rotation or fungicide treatment, in this study. There was no history of canola on this site prior to 2000, and weather conditions were not optimal for SSR infection in 2001 and 2002.

Blackleg incidence has gradually increased each year (Figure 1). There was no blackleg detected in 2000, the first year of the study. In 2001, blackleg incidence was up to 8% in canola on canola rotations. In 2002, the third year of the study, blackleg incidence was 37% in canola preceded by two years of canola, 24% in canola on canola, and less than 10% in first year canola or canola preceded by wheat preceded by canola (canola every other year). Although blackleg incidence in canola every other year was slightly higher than in first year canola, it was not significantly different. Blackleg severity did not increase with the occurrence of canola in the rotation and yield was not affected by blackleg incidence (Figure 2). No yield response to higher blackleg incidence is likely due to below normal precipitation and high temperatures during flowering in 2002. In fact, overall canola yields were down compared to 2001 (Figures 3 and 4).





Treatment ^a	Jul 22			August 12	
	Scab plot severity	Scab plant severity	Scab incidence	Yield	Test Wt
	%			bu/a	lb/bu
Barley					
CCBW-F	0	4.4	10	43	48.5
CCBW	0	4.5	11	52	48.5
FCBW-F	0	3.0	14	45	48.3
FCBW	0	3.4	10	41	48.2
WCBF-F	0	4.0	10	44	48.3
WCBF	0	2.9	9	55	48.1
WCBW-F	0	3.8	9	41	48.1
WCBW	0	4.2	8	33	48.2

Wheat				August 20	
CBWC-F	0	0	0	36	60.8
CBWC	0	0	0	34	61.3
WCWC-F	0	0	0	31	60.5
WCWC	0	0	0	27	60.3
CBWF-F	0	0	0	29	60.4
CBWF	0	0	0	24	60.3
BFWC-F	0	0	0	34	61.6
BFWC	0	0	0	33	61.2
CBWC-F	0	0	0	34	60.8
CBWC	0	0	0	31	61.5
Flax				September 4	
BWFC	NA	NA	NA	9	53.0
CBFW	NA	NA	NA	8	53.0

^aRotations followed by "-F" were treated with Folicur at 4 fl oz on July 13.