Title: **Evaluation of Solid- and Hollow-Stem Winter Wheat Variety Mixtures for Control of Sawfly-Induced Stem Lodging.**

Year: 2008

Location: Western Triangle Research Center, Conrad, MT

Personnel: Gregory D. Kushnak

Introduction: Lodging associated with sawfly stem-cutting is sometimes delayed when cut stems lean against supporting un-cut stems, or when un-cut stems block wind that would otherwise break the cut stems over. This study was conducted to measure the amount of lodging-reduction in a hollow-stem variety by the presence of un-cut stems of a solid-stem variety.

Methods: The solid-stem sawfly-resistant winter wheat variety Genou was planted with the hollow-stem sawfly-susceptible variety Falcon as a mixed stand. Two levels of seed mixture were included: 25% Genou + 75% Falcon; and 50% Genou + 50% Falcon. Both mixtures were compared to pure stands of each variety.

Lodging in this study was defined as stems horizontal on or near the ground. Lodging was measured on a "timely-harvest" basis – no more than two days beyond dead-ripe. Harvest was not delayed, and therefore no temporal data were obtained. The study was grown at two locations in the Western Triangle Area.

Results: Stem lodging from sawfly cutting was less than 10% for Genou, and greater than 80% for Falcon. Lodging was substantially less for the variety-mixture treatments than for Falcon, but considerably greater than for Genou (Tables 1 - 2).

Yields were not significantly different among treatments, and test weights and protein percentages were not significantly greater than for Genou.

Conclusion: Stem lodging of the mixture treatments, though less than Falcon, was greater than for Genou. Consequently, Genou was the easiest to harvest with the combine. Yield, test weight and percent protein of the mixture treatments were not greater than for Genou. Therefore, the data indicate no advantage of variety mixtures over pure-stand Genou for lodging control, yield, test weight or percent protein.

Future Plans: This study is concluded.

Table 1. Effect of solid- and hollow-stem variety mixtures on sawfly stem-lodging.

On-Station:

Treatment	% Stem lodging	Yield bu	Test Wt lbs	Protein %
Genou	7.1	56.2 a	61.3 a	11.1
50:50 mix	43.4	50.7 a	61.6 a	10.1
25 Genou:75 Falcon	53.8	51.0 a	61.3 a	10.4
Falcon	82.5	54.6 a	61.3 a	10.6
Average	46.7	53.1	61.3	10.6
LSD.05		7.82	0.67	
C.V.		9.20	0.69	

Location: Western Triangle Ag Research Center, Conrad MT.
Planted Sept 14, 2007. Harvest: Aug 12, 2008.
Fertilizer: 71-52-0

Table 2. Effect of solid- and hollow-stem variety mixtures on sawfly stem-lodging.

Off-Station:

Treatment	% Stem lodging	Yield bu	Test Wt lbs	Protein %
Genou	7.5	54.1 a	61.6 a	13.9 a
50:50 mix	32.5	55.3 a	60.8 ab	13.5 ab
25 Genou:75 Falcon	38.8	55.6 a	60.1 b	12.9 b
Falcon	86.3	59.7 a	60.8 ab	13.0 ab
Average	41.3	56.2	60.8	13.3
LSD.05		8.98	1.34	0.97
C.V.		9.99	1.37	4.54

Cooperator & location: Bob Inabnit, 20 mi east of Conrad.
Planted Sept 13, 2007. Harvest: Aug 7, 2008.
Fertilizer: 50-30-25
Conducted by Western Triangle Ag Research Center, Conrad MT