PROJECT TITLE: Hoelon Surfactant Study

PROJECT LEADERS: Bob Stougaard and Todd Keener, NWARC, Kalispell, MT.

OBJECTIVES: To determine if surfactants would improve wild oat control with Hoelon.

RESULTS: The current Hoelon label restricts the use of surfactants when applications are made to spring barley because of crop injury concerns. This study was established to determine if surfactants could be used with reduced rates of Hoelon without causing barley injury while maintaining acceptable wild oat control at the same time. Hoelon was applied at the 1X, 1/2X, and 1/4X use rates at 1 and 2 weeks after barley emergence. These treatments were either applied alone or in combination with a non-ionic surfactant (Activator-90) or a non-ionic surfactant plus methylated sunflower blend (Sunit-II).

Results were erratic with applications made 1 week after barley emergence. Surfactants did not provide any clear advantage compared to Hoelon alone with respect to the level of control obtained. Weed and crop responses were more obvious when the same treatments were made 2 weeks after barley emergence. Wild oat control and barley yield were improved when either Activator-90 or Sunit-II were applied Hoelon. This indicates that surfactants are more helpful when weeds become larger. This response was again most apparent at the lower rates. Of the two surfactants, Sunit-II increased control and yield the most. The 1/2X rate of Hoelon plus Sunit-II provided control and yields comparable to the recommended 1X rate without surfactants.

SUMMARY: The timing of herbicide applications to control wild oat in cereals becomes of critical importance especially when considering the reduction of herbicide rates. Comparable yields and control of wild oats in spring barley was achieved with 1/2X use rates of Hoelon with Sunit-II applied two weeks after barley emergence.

FUTURE PLANS: These results also suggest that expanding this research to include other crop oil concentrates is warranted. Research concerning reduced herbicide rates and surfactants will be continued in the future as part of the Weed Management Program at NWARC.

Montana State University

Hoelon Surfactant Study on Spring Barley

Northwestern Agricultural Research Center, Kalispell, MT.

All rates are specified as lb ai/A

Trt No	Treatment Name	Rate	Grow Stage3/	Barley Yield Bu/A 9/22	Barley Injury % 6/25	Barley Injury % 6/9	Wild Oat Control % 7/29
1	HOELON	1.0	EPOS	64.5	0	8	83
2	HOELON	.50	EPOS	65.8	0	3	63
3	HOELON	.25	EPOS	70.2	0	2	22
4	HOELON	1.0	EPOS	84.3	0	7	79
4	NIS 1/	.25% V/V					
5	HOELON	.5	EPOS	67.2	0	7	56
5	NIS	.25% V/V					
6	HOELON	.25	EPOS	67.8	0	5	47
6	NIS	.25% V/V					
7	HOELON	1.0	EPOS	81.9	0	15	86
7	SUN-IT 2/	1 QT/A					
8	HOELON	.50	EPOS	89.5	0	6	82
8	SUN-IT	1 QT/A					
9	HOELON	.25	EPOS	74.8	0	3	38
9	SUN-IT	1 QT/A					
10	HOELON	1.0	POST	77.5	0	6	59
11	HOELON	.50	POST	58.4	0	5	30
12	HOELON	.25	POST	46.5	0	7	0
13	HOELON	1.0	POST	76.3	0	7	67
13	NIS	.25% V/V					

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Trt No	Treatment Name	Rate	Grow Stage3/	Barley Yield Bu/A 9/22	Barley Injury % 6/25	Barley Injury % 6/9	Wild Oat Control % 7/29
14	HOELON	.50	POST	53.7	0	6	52
14	NIS	.25%	V/V				
15	HOELON	.25	POST	61.6	0	3	37
15	NIS	.25%	V/V				
16	HOELON	1.0	POST	82.0	0	9	91
16	SUN-IT	1	QT/A				
17	HOELON	.50	POST	79.1	0	8	71
17	SUN-IT	1	QT/A				
18	HOELON	.25	POST	64.9	0	7	40
18	SUN-IT	1	QT/A				
19	UNTREATED			47.3	0	4	0
20	UNTREATED			38.4	0	5	0
LSD (.05) =				22.7	0	8	31
Standard Dev. =				13.74	0	4.71	18.78
CV =				20.33	0	76.19	37.48
Block Prob(F)				.0021	1.00	.0189	.0243
Treatment Prob(F)				.0020	1.00	.4231	.0001

1/ NIS = Nonionic surfactant (Activator 90) added at .25% v/v
2/ SUNIT II added at 1 qt/A
3/ Growth Stages at application: EPOS = Early postemergence (1 week after barley emergence), POST = Postemergence (2 weeks after barley emergence).