PROJECT TITLE: Hoelon Surfactant Study

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

OBJECTIVES: Evaluate the effect of Hoelon, rates and surfactants on wild oat control.

RESULTS:

The current Hoelon label restricts the use of surfactants when applications are made to spring barley due to crop injury concerns. This study was established to determine if surfactants could be used with reduced rates of Hoelon without causing barley injury and 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 (R-11) 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. The one exception was that it appeared that wild oat control and barley yield did not decline as dramatically at the reduced rates when surfactants were included.

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 R-11 or Sunit-II were applied with Hoelon. This response was again most apparent at the lower rates. Of the two surfactants, Sunit-II increased control and yield the most. The 1/4X rate of Hoelon plus Sunit-II provided control and yields comparable to the 1X rate without surfactants. Sunit-II also resulted in the greatest degree of crop injury. Injury was initially severe at the 1X and 1/2X rates of Hoelon when applied with Sunit-II. Although injury was noticeable, these same treatments produced the highest barley yields.

SUMMARY:

This first years preliminary results indicate that Hoelon rates can be reduced when applied with Sunit-II and maintain acceptable wild oat control and barley yields. This research should be repeated to determine the consistency of these treatments, especially in light of the crop injury observed.

FUTURE PLANS:

These results also suggest that expanding this research to include other crop oil concentrates is warranted.

Table 1. Hoelon Surfactant Study on Spring Barley. Northwestern Agricultural Research Center, Kalispell, MT.

Trtmnt Name	Rate Lb ai	1/ Growth Stg.	BARLEY YIELD BU/A 8-22-92 94 DAA	BARLEY % INJURY 6-1-92 30 DAA	BARLEY % INJURY 6-25-92 55 DAA	AVEFA 2/ % CONTROL 6-25-92 55 DAA
HOELON	1.0	EPOS	101.8	20	3	86
HOELON	.50	EPOS	77.0	7	13	72
HOELON	.25	EPOS	72.6	3	0	53
HOELON R-11	1.0 1 Qt	EPOS	75.1	7	5	70
HOELON R-11	.5 1 Qt	EPOS	81.3	3	0	62
HOELON R-11	.25 1 Qt	EPOS	73.9	15	3	67
HOELON SUN-IT	1.0 .25% V/V	EPOS	75.2	22	8	85
HOELON SUN-IT	.50 .25% V/V	EPOS	59.2	12	2	73
HOELON SUN-IT	.25 .25% V/V	EPOS	69.6	10	3	60
HOELON	1.0	POST	89.4	27	10	85
HOELON	.50	POST	78.4	10	0	72
HOELON	.25	POST	63.3	13	2	53
HOELON R-11	1.0 1 Qt	POST	89.1	30	13	92
HOELON R-11	.50 1 Qt	POST	81.5	12	3	70
HOELON R-11	.25 1 Qt	POST	71.8	23	3	70
HOELON SUN-IT	1.0 .25% V/V	POST	87.9	78	60	98

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Table 1 (Cont'd). Hoelon Surfactant Study on Spring Barley.

Trtmnt Name	Rate Lb ai	Grow Stg	BARLEY YIELD BU/A	BARLEY % INJURY	BARLEY % INJURY	AVEFA 2/ % CONTROL
HOELON SUN-IT	.50 .25% V/V	POST	91.2	50	28	98
HOELON SUN-IT	.25 .25% V/V	POST	83.2	20	12	82
UNTREATED	--	--	49.2	2	0	33
UNTREATED	--	--	49.3	7	0	50
P VALUE =			.048	.000	.000	.068
LSD (.05) =			28.2	17	13	36

1/ Growth stages at application: EPOS = Early postemergence, 1 week after barley emergence. POST = Postemergence, 2 weeks after barley emergence.

2/ AVEFA = Wild oat (Avena fatua) . Letters are a WSSA-approved computer code from Composite List of Weeds