

PROJECT TITLE: Fargo/Showdown Rate and Incorporation Study on Newana Spring Wheat

YEAR/PROJECT: 1990/754

PROJECT PERSONNEL: Leader - Vern R. Stewart, Todd K. Keener - Research Specialist, NWARC, Kalispell, MT.

OBJECTIVE: Determine crop tolerance and evaluate incorporation methods of two triallate formulatons.

SUMMARY: A second incorporation of triallate four days after the application and first incorporation contributed to significant increases in yield, test weight, and percent wild oat control with significantly less lodging.

RESEARCH METHODS:

Two formulations of triallate were applied at two rates to a test area on 4/19/90 using a Valmar TM 240 air-granular applicator. Treatments were immediately incorporated (one-pass) after application using a vibra-shank field cultivator set to a depth of 2-3 inches. Half of the test plots were incorporated again, perpendicular to the previous incorporation, four days after the applications (4/23/90). The entire test area was then seeded to Newana spring wheat at 60 lbs/A using a press drill. The test area was fertilized at seeding with 200 lb/A of 29-14-0. Each plot was 40' X 40' with three replications. The test was a split-plot randomized complete block design.

A uniform application of Bronate plus Harmony Extra (1/4 lb + 3/8 oz ai/A) was applied for broadleaf weed control on 6/6/90. Yields were obtained from 144 square foot (4' X 36') subplots utilizing a Hege plot combine on 9/5/90.

RESULTS:

Significant differences were found in yield, test weight, percent wild oat control, and severity of lodging when data was compared from once incorporated versus twice incorporated plots. All treated plots had significantly higher yields, test weights and % wild oat control with much less severity and prevalence of lodging than the check plots. Plant injury was noted in all treated plots and was significantly greater in the plot treated with the high rate of Fargo. Plant injury did not vary significantly across incorporation regimes.

The significant increases noted in yield or test weight and the occurrence of greatly reduced lodging can mainly be attributed to increases in percent wild oat control that was obtained by the double/delayed incorporation technique. This increase in wild oat control was significantly greater in all the double/delay incorporation treatments in comparison to the single incorporation plots.

Agronomic data demonstrated that Fargo, and especially Showdown, are more effective in spring wheat if twice incorporated by the methods used in this study. Lodging was virtually eliminated in all treated plots when triallate granules were applied and double/delay incorporated.

Table 1. Agronomic data from the Fargo/Showdown Rate and Incorporation Study on Newana Spring wheat grown on the Northwestern Agricultural Research Center in Kalispell, MT.

YIELD (BU/A)				
Treatment	Rate lb ai/A	1 X Incorp.	2X Incorp.	Treatment Means
Fargo	1.0	48.92	63.88	56.40
Fargo	1.25	50.70	76.65	63.37
Showdown	1.0	46.85	81.11	64.13
Showdown	1.25	35.90	68.68	52.29
Check	-----	5.99	9.23	7.60
Incorporation Means		37.66	59.96	
LSD (.05) between incorporation means = 43.20 bu/A (P=.0383)				
LSD (.05) between treatment means = 21.66 bu/A (P=.0000)				
LSD (.05) between interaction means not significant (P=.2101)				

Table 2. Fargo/Showdown Rate and Incorporation Study. (Cont'd)

TEST WEIGHT (LB/BU)				
Treatment	Rate lb ai/A	1 X Incorp.	2X Incorp.	Treatment Means
Fargo	1.0	59.83	60.70	60.27
Fargo	1.25	59.03	60.13	59.58
Showdown	1.0	58.20	60.87	59.53
Showdown	1.25	56.73	59.77	58.25
Check	-----	52.23	53.77	53.00
Incorporation Mean		57.21	59.05	
LSD (.05) between incorporation means = 3.29 lb/bu (P=.0328)				
LSD (.05) between treatment means = 1.77 lb/bu (P=.0000)				
LSD (.05) between interaction means not significant (P=.3034)				

Table 3. Agronomic data from the Fargo/Showdown Rate and Incorporation Study on Newana Spring wheat grown on the Northwestern Agricultural Research Center in Kalispell, MT.

PLANT INJURY 1/				
Treatment	Rate lb ai/A	1 X Incorp.	2X Incorp.	Treatment Means
Fargo	1.0	.83	.67	.75
Fargo	1.25	1.17	1.50	1.33
Showdown	1.0	.50	.50	.50
Showdown	1.25	.67	.83	.75
Check	-----	0.00	0.00	0.00
Incorporation Means		.63	.70	

LSD (.05) between incorporation means not significant (P=.822)
 LSD (.05) between treatment means = .996 (P=.0161)
 LSD (.05) between interaction means not significant (P=.9538)
 1/ Plant injury rated on 0-10 scale; 0 = no injury, 10 = dead plants

Table 4. Fargo/Showdown Rate and Incorporation Study. (Cont'd)

% WILD OAT CONTROL 2/				
Treatment	Rate lb ai/A	1 X Incorp.	2X Incorp.	Treatment Means
Fargo	1.0	35	68	51.7
Fargo	1.25	32	74	52.8
Showdown	1.0	38	68	53.0
Showdown	1.25	33	75	54.2
Check	-----	0	0	0.0
Incorporation Means		27.7	57.0	

LSD (.05) between incorporation means = 8.48 (P=.0000)
 LSD (.05) between treatment means = 22.70 (P=.0000)
 LSD (.05) between interaction means not significant (P=.0747)
 2/ Wild oat percent control by ocular observation

Table 5. Fargo/Showdown Rate and Incorporation Study. (Cont'd)

LOGGING SEVERITY AND PREVALENCE 1/							
Treatment	Rate lb ai/A	1 X Incorp.		2X Incorp.		Treatment Means	
		Sever	Prev	Sever	Prev	Sever	Prev
Fargo	1.0	2.7	5.0	0.0	0.0	1.3	2.5
Fargo	1.25	5.3	26.7	0.0	0.0	2.7	13.3
Showdown	1.0	4.0	23.3	0.0	0.0	2.0	11.7
Showdown	1.25	4.0	28.3	0.0	0.0	2.0	14.7
Check	-----	8.7	96.0	8.7	96.0	8.7	96.0
Incorporation Means		4.93	35.9	1.73	19.2		

Severity (Sever)
 LSD (.05) between incorporation means = 5.87 (P=.0346)
 LSD (.05) between treatment means = 5.171 (P=.0035)
 LSD (.05) between interaction means not significant (P=.6112)

Prevalence (Prev)
 LSD (.05) between incorporation means not significant (P=.0514)
 LSD (.05) between treatment means = 34.25 (P=.0000)
 LSD (.05) between interaction means not significant (P=.6254)

1/ Lodging rated by ocular observations. Severity is the degree the wheat has lodged to ground and is rated on a 1 to 9 scale. 0 = no lodging (perpendicular to ground), 9 = lodged to ground. Prevalence is the percentage of plot that has lodged