PROJECT TITLE: Small Grain Seeding Rate Studies under No-Till Conditions.

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OBJECTIVE: To determine optimum small grain seeding rates for no-till seeding.

SUMMARY:

No-till seeding rate studies were initiated at several locations with winter and spring wheat and spring barley. Several locations were not harvested this year because of weather and mechanical problems. Winter wheat yields were again unaffected by seeding rate while spring wheat yields were the highest with the higher seeding rates. In the row spacing study, winter wheat yields, protein levels, test weights, and plant heights were higher with the 24 inch row spacing.

RESULTS:

The data from the spring and winter wheat seeding rate studies conducted at Moccasin are summarized in tables 1 and 2, respectively. Other locations were seeded but were not harvested for weather and mechanical problems. Excellent yields and protein content of no-till, recrop spring wheat were measured this year, along with a yield response to increased seeding rates. Winter wheat yields were about average for recrop, and seeding rate did not affect grain yield again. However protein levels decreased with increasing seeding rate. Grain yield and protein content and test weight were higher in the wide rows ie. 24 inch vs. 12 inch row spacing.

FUTURE PLANS: Continue no-till, small grain research.

TABLE 1. EFFECT OF SEEDING RATE ON NO-TILL SPRING WHEAT.
Central Ag. Research Center, Moccasin, MT 1989.

TREATMENT	GRAIN YIELD	GRAIN PROTEIN	TEST WT.	PLANT HT.	TILLERS
	bu/ac	%	lb/bu	in	no
30 seeds/ft	38.2	15.3	59.8	25	131
25 seeds/ft	36.9	15.2	59.6	24	114
20 seeds/ft	34.3	15.4	60.1	26	130
15 seeds/ft	33.9	15.8	59.3	25	107
EXPERIMENTAL MEANS	35.8	15.4	59.7	25	121
TOTAL OBSERVATIONS	16.0	16.0	16.0	16.0	16.0
NO. OF REPLICATIONS	4.0	4.0	4.0	4.0	4.0
REP. MEAN SQUARE	9.51	.01	.88	5.77	506.17
TRT. MEAN SQUARE	16.69	.24	.44	2.10	571.00
ERROR MEAN SQUARE	2.33	.19	.11	1.25	216.50
ERROR DEGREES OF FREEDOM	9.0	9.0	9.0	9.0	9.0
F TEST FOR REPS.	4.09	.04	7.80	4.62	2.34
F TEST FOR TRT.	7.17	1.26	3.95	1.68	2.64
STANDARD ERROR	1.53	.43	.34	1.12	14.71
STANDARD ERROR OF THE MEAN	.76	.22	.17	.56	7.36
C.V. 1: (S/MEAN)*100	4.26	2.82	.56	4.50	12.21
C.V. 2: (S OF MEAN/MEAN)*100	2.13	1.41	.28	2.25	6.11
LSD (0.05)	2.4	N.S.	.5	N.S.	N.S.

Grain yields based 60 lb/bu as standard test weight.
Planting Date: April 21, 1989
Growing Season Precipitation: 10.16
Variety: Lew
Previous Crop: Winter Wheat, sprayed with glyphosate on April 18, 1989. Approximately 3000 lbs of stubble.
Fertilizer: 90-30-0, treble super phosphate with the seed, urea in the deep band.
Drill: Haybuster 8000 in deep banding mode with colters.

TABLE 2. EFFECT OF ROW SPACING AND SEEDING RATE ON NO-TILL WINTER WHEAT. Central Ag. Research Center, Moccasin, MT. 1989.

TREATMENT						
Seeding Rate	Row Space	GRAIN YIELD	GRAIN PROTEIN	TEST WT.	TILLERS	PLANT HT.
seeds/ft	in	bu/ac	%	lb/bu	no.	in
10	24	37.0	10.0	62.9	133	32
30	24	34.5	9.9	63.2	212	33
20	24	33.0	10.2	63.5	137	31
15	24	32.2	10.4	63.2	102	32
25	12	32.2	9.6	63.2	99	30
25	24	31.7	10.0	63.6	160	32
5	24	31.5	10.9	60.4	90	32
15	12	30.8	9.7	62.8	69	31
5	12	30.2	10.1	57.4	64	30
30	12	30.2	9.0	63.1	94	30
10	12	30.0	9.9	62.0	54	31
20	12	28.8	9.0	62.3	94	30
OVERALL MEAN		31.9	9.9	62.3	109	31
SEEDING RATE SUMMARY						
5		30.9	10.5	58.9	77	31
10		33.5	10.0	62.4	94	31
15		31.5	10.1	63.0	85	31
20		30.9	9.6	62.9	116	31
25		32.0	9.8	63.4	130	31
30		32.4	9.4	63.2	153	31
P-VALUE		.83	.03	.00	.04	.93
LSD (0.05)		N.S.	.6	1.4	50	N.S.
ROW SPACING SUMMARY						
12		30.4	9.6	61.8	79	30
24		33.3	10.2	62.8	139	32
P-VALUE		.03	.00	.02	.00	.00
INTERACTION P-VALUE		.60	.43	.32	.44	.80
TOTAL OBSERVATIONS		36.0	36.0	36.0	36.0	36.0
NO. OF REPLICATIONS		3.0	3.0	3.0	3.0	3.0
ERROR MEAN SQUARE		14.57	.26	1.441	737.02	1.72
ERROR DF		22.0	22.0	22.0	22.0	22.0
C.V. 1: (S/MEAN)*100		11.98	5.15	1.93	38.22	4.20

Grain yields based on 60 lb/bu as standard test weight.
Planting Date: October 5, 1988 Variety: Tiber
Fertilizer: 0-30-0 with the seed, 90-0-0 as urea in the deep band.
Growing Season Precipitation: 10.16
Previous Crop: Clark Barley
Drill: Haybuster 8000