

PROJECT TITLE: The effect of rate of seeding and planting date on yield and quality of Bowman, Clark and Gallatin spring barley varieties. SARC, CARC, Narc, 1989.

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PROJECT LOCATION: MSU - Southern Agricultural Research Center, Huntley, MT 59037

OBJECTIVES:

To evaluate the yield and quality of three spring barley varieties grown under dryland cropping to compare two Montana barley selections to the North Dakota variety Bowman, which has demonstrated superior yield and test weight under severe moisture stress conditions.

SUMMARY AND RESULTS:

The data for the effect of planting date and seeding rates for effect on yield, test weight, 1000 kernel weight, heads/meter row, percent plump, percent thin, plant height and heading dates are given in tables 1-8. Bowman had the highest yields, test weight, and 1000 kernel weight at all planting dates when compared to Clark and Gallatin. Seed yields, heads/meter, and plant height decreased as planting date was delayed. Date of planting had no effect on test weight, 1000 kernel weight, percent plump or thins. Seed yields were significantly lower only from the 8 lb/ac rate. As seeding rates increased, heads/meter increased, percent plump decreased, while no effect was noted for test weight, 1000 kernel weight, percent thins, or plant heights.

FUTURE PLANS:

The data presented is only preliminary. The study will continue for three years.

TABLE 1. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON YIELD OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	64.43 b	50.13 c	38.90 c	26.40 b
CLARK	52.84 a	42.38 a	29.65 a	19.39 a
GALLATIN	55.98 a	46.67 b	33.22 b	21.99 a
PROB.	.0000	.0000	.0000	.0001
LSD. (0.05)	3.447	2.855	3.366	2.811
SEEDING RATE				
8	52.78 a	38.97 a	26.85 a	16.24 a
13	57.73 b	44.45 b	35.40 b	20.93 b
18	58.60 bc	51.81 c	36.21 b	27.58 c
23	61.90 c	50.34 c	37.24 b	25.62 c
PROB.	.0006	.0000	.0000	.0000
LSD. (0.05)	3.980	3.296	3.887	3.246
INTERACTION VAR*SEED RATE				
PROB.	.7983 NS	.3426 NS	.6369 NS	.8172 NS

Note: Values followed by the same letter are not statistically different.

TABLE 2. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON TEST WEIGHT. OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	47.66 c	46.62 c	48.38 c	46.45 c
CLARK	42.08 a	41.54 a	44.37 a	40.56 a
GALLATIN	44.47 b	42.94 b	47.04 b	44.34 b
PROB.	.0000	.0000	.0000	.0000
LSD.(0.05)	.6740	.7286	.5252	.8903
SEEDING RATE				
8	45.64 b	43.51	46.65	43.81
13	45.10 b	44.07	46.57	43.76
18	43.92 a	43.62	46.66	44.20
23	44.28 a	43.61	46.50	43.36
PROB.	.0003	.5432	.9456	.4381
LSD.(0.05)	.7782	NS	NS	NS
INTERACTION VAR*SEED RATE				
PROB.	.7611 NS	.5586 NS	.6835 NS	.7383 NS

Note: Values followed by the same letter are not statistically different.

TABLE 3. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON THOUSAND-KERNEL-WEIGHT OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	35.97 c	35.74 c	36.56 b	34.94 c
CLARK	27.83 a	29.78 a	30.54 a	26.46 a
GALLATIN	29.21 b	29.77 b	31.02 a	29.52 b
PROB.	.0000	.0000	.0000	.0000
LSD. (0.05)	1.178	.8739	.9346	.6523
SEEDING RATE				
8	33.29 b	32.41 b	33.63 b	30.08
13	32.00 b	31.49 b	32.43 a	30.45
18	29.24 a	31.47 b	32.64 ab	31.12
23	29.48 a	29.28 a	32.13 a	29.57
PROB.	.0000	.0000	.0451	.2372
LSD. (0.05)	1.360	1.009	1.079	NS
INTERACTION VAR*SEED RATE				
PROB.	.6236 NS	.3148 NS	.5204 NS	.0890

Note: Values followed by the same letter are not statistically different.

TABLE 4. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON PLANT POPULATION IN HEADS-PER-LINEAR-METER OF ROW OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	124.4	130.2	83.06	81.44 a
CLARK	135.1	125.7	92.31	95.00 b
GALLATIN	136.1	128.9	82.56	79.94 c
PROB. LSD. (0.05)	.1956 NS	.8694 NS	.2614 NS	.0963 7.401(0.10)
SEEDING RATE				
8	119.7 a	117.3 a	71.33 a	63.25 a
13	130.2 a	117.6 a	85.67 ab	89.33 b
18	129.8 a	137.6 ab	95.75 b	91.50 b
23	147.7 b	140.7 b	91.17 b	97.75 b
PROB. LSD. (0.05)	.0135 16.43	.0399 20.58	.0171 15.43	.0016 17.39
INTERACTION VAR*SEED RATE				
PROB.	.4475 NS	.7595 NS	.6705 NS	.6678 NS

Note: Values followed by the same letter are not statistically different.

TABLE 5. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON KERNEL PLUMPNESS PERCENT OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	37.00 c	35.63 c	43.24 c	32.38 c
CLARK	4.50 a	6.69 a	18.92 a	6.26 a
GALLATIN	11.50 b	20.31 b	30.58 b	17.77 b
PROB.	.0000	.0000	.0000	.0000
LSD. (0.05)	3.944	4.888	4.361	3.331
SEEDING RATE				
8	23.92 c	25.77 b	35.15 b	18.18 a
13	18.75 b	21.10 b	29.50 a	18.62 ab
18	13.67 a	22.63 b	31.09 ab	21.67 b
23	14.33 ab	14.00 a	27.92 a	16.73 a
PROB.	.0002	.0015	.0381	.0848
LSD. (0.05)	4.555	5.644	5.036	1.890(0.10)
INTERACTION VAR*SEED RATE				
PROB.	.0083 **	.0949	.7642 NS	.2452 NS

Note: Values followed by the same letter are not statistically different.

TABLE 6. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON KERNEL THINNESS PERCENT OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	27.25 a	33.36 a	28.14 a	37.67 a
CLARK	78.13 c	74.47 c	53.46 c	75.56 c
GALLATIN	59.81 b	52.05 b	41.71 b	54.79 b
PROB.	.0000	.0000	.0000	.0000
LSD. (0.05)	5.591	5.960	1.898	4.643
SEEDING RATE				
8	45.58 a	46.17 a	39.02	55.74 ab
13	53.83 b	51.33 a	41.27	55.98 ab
18	61.67 c	52.30 a	40.31	51.91 a
23	59.17 cb	63.38 b	43.82	60.40 b
PROB.	.0001	.0001	.1833	.0269
LSD. (0.05)	6.456	6.881	NS	5.362
INTERACTION VAR*SEED RATE				
PROB.	.4768 NS	.2321 NS	.4934 NS	.1297 NS

Note: Values followed by the same letter are not statistically different.

TABLE 7. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON PLANT HEIGHTS (INCHES) OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	29.19 a	28.88	25.16 C	21.66
CLARK	30.97 b	29.25	22.69 a	20.75
GALLATIN	29.94 ab	28.03	23.66 b	21.31
PROB. LSD. (0.05)	.0189 1.215	.3415 NS	.0000 .7694	.1068 NS
SEEDING RATE				
8	30.17	28.29	23.96 b	20.92 a
13	30.04	28.29	24.33 b	20.75 a
18	30.08 c	28.96	22.96 a	22.13 b
23	29.83	29.33	24.08 b	21.17 ab
PROB. LSD. (0.05)	.9680 NS	.6389 NS	.0186 .8884	.0343 .9821
INTERACTION VAR*SEED RATE				
PROB.	.9516 NS	.0634	.2484 NS	.4607 NS

Note: Values followed by the same letter are not statistically different.

TABLE 8. INFLUENCE OF 3 VARIETIES AT 4 SEEDING RATES AND 4 PLANTING DATES ON HEADING DATES (JULIAN) OF DRYLAND BARLEY AT SOUTHERN AG. RESEARCH CENTER, HUNTLEY, MT. 1989 GROWING SEASON.

VARIETY	-----DATE OF SEEDING-----			
	APRIL 21	MAY 2	MAY 18	MAY 26
BOWMAN	170.0 a	178.1 a	185.9 a	193.9 a
CLARK	176.8 b	182.7 c	192.5 c	199.3 c
GALLATIN	176.1 b	181.3 b	188.9 b	197.4 b
PROB.	.0000	.0000	.0000	.0000
LSD. (0.05)	.9217	.7694	1.106	.8557
SEEDING RATE				
8	175.7 c	182.0 c	190.1 b	197.8 b
13	174.3 b	181.2 cb	188.2 a	196.8 ab
18	174.0 ab	180.4 b	189.3 ab	196.0 a
23	173.3 a	179.3 a	188.8 ab	196.8 ab
PROB.	.0006	.0000	.0315	.0111
LSD. (0.05)	1.064	.8884	1.277	.9880
INTERACTION VAR*SEED RATE				
PROB.	.0486	.6254 NS	.2573 NS	.5769 NS

Note: Values followed by the same letter are not statistically different.