

SPRING GRAIN IMPROVEMENT - IRRIGATED

Irrigated spring grain nurseries planted on the Station in 1951 contained 20 - 30 varieties each of wheats, oats, and barley. These were planted in 3 row plots spaced 1 foot, rows 18 feet long, with 3 replications. 16 feet of the center row was harvested for yield.

Off-Station nurseries of 9 varieties each of wheat, oats, and barley were seeded in four replications, two in Lake County and one in Sanders and Lincoln Counties. These nurseries were seeded in one row plots with four replications. The Sanders County nursery was not harvested because of poor stands. The oats were damaged in one Lake County nursery and the Lincoln County nursery by livestock to the extent that comparable yields could not be obtained.

Nine variety nurseries were grown on the Horticultural Branch Station in Navalli County and delivered to Creston for threshing. The barleys were harvested in four sacks with no plot identification so 3 plot averages are all the data that can be obtained.

1951 yield data for the irrigated spring wheat is shown in Tables XVIIa to XVIIc, for oats in Tables XVIIIa to XVIIIc, and for barley in Tables XIXa to XIXc. Other data for wheat, oats, and barley is shown in Tables XVIIA, XVIIIA, and XIA.

An attempt is made in Tables XVIIA, XVIIIA, and XIA to show at a glance how the other varieties being studied compare with one of the better approved varieties.

Table XVIIA compares spring wheat varieties with Pilot. None of the hard red wheats that have been grown in 10 or more nurseries have produced 100% of Pilot. Cores, an approved variety for dryland, comes very close with 97.7%. Soft feed wheats grown in 10 or more nurseries have produced from 5 to 8 percent more than Pilot.

Three hard red spring wheats grown in limited trials have satisfactory yield and test weight and ^{are} early enough and have sufficient resistance to lodging, as compared to Pilot, to justify further study. Protein percentages have not been secured for these from locally produced samples.

Tables XVIIIA shows how oats varieties compare with Bridger. None of the varieties tested extensively has produces as well on the average as Bridger, and few in limited trials have exceeded its yield. However, there is demand for an early oat with shorter straw that will approach the yield of Bridger, and some varieties in limited trials have met these requirements better than Gopher.

Table XIA shows barley varieties in comparison to Titan. Titan is not the leader in yield that Pilot is in wheat or that Bridger is in oats. In fact of the 8 varieties grown in 7 or more nurseries only 2 have produced less than Titan. A variety not now recommended has demonstrated leadership in yield in extensive tests and should be recommended to occupy this position. Other factors including early maturity, resistance to lodging, and high test weight will doubtless insure popularity for Titan for an extended period.

Table _____. Off-Station spring wheat, irrigated nursery, Corvallis, Montana, 1951.

Variety	C. I. or N No.	Bushels Per Plot			Total Bushel	Average Bushels Per Acre
		I	II	III		
Lemhi	11415	53.1	51.7	53.9	158.7	52.9**
Ceres	6900	56.7	51.0	48.2	155.9	52.0**
Onas	6221	56.7	52.4	46.1	155.2	51.7**
Idaad	11706	48.9	45.5	52.4	146.7	48.9**
Rescue	12435	51.7	39.7	51.0	142.4	47.3**
Pilot	11945	47.5	42.5	51.0	141.0	47.0**
Awmed Onas	12235	48.2	40.4	48.2	136.8	45.6**
Hope x Lemhi ⁴	12685	43.2	41.1	51.7	136.0	45.3**
Thatcher	10003	36.9	31.2	33.3	101.4	33.8

Note: Thatcher is used as a check in this nursery.

**Yields significantly higher than Thatcher.

Mean Yield.....47.2
 S. E. \bar{x} 2.2
 L.S.D (5%)..... 6.1
 C. V. 4.66%

Table _____. Off Station Spring Wheat Irrigated Nursery, Roman, Montana, 1951.

Date Planted, May 28, 1951.

Date Harvested September 15, 1951.

Variety	C. I. or N No.	Bushels per Acre				Total Bushels	Average Bushels Per Acre
		I	II	III	IV		
Pilot	11945	46.8	39.7	33.3	36.1	155.9	39.0*
Ceres	6900	31.2	36.9	34.7	34.0	136.8	34.2*
Pilot x Mida (N1756)	12303	31.9	30.5	39.0	35.4	136.8	34.2*
Onas	6221	26.2	33.3	32.6	31.9	124.0	31.0*
Awned Onas	12235	22.0	28.3	34.0	31.9	116.2	29.1
Mida x Cadet (N1831)	12363	33.3	26.9	27.6	26.2	114.0	28.5
Lemhi	11415	24.8	22.7	25.5	32.6	105.6	26.4
Thatcher	10003	26.2	22.7	22.0	28.3	99.2	24.8
Rescue	12435	22.7	17.7	26.2	16.2	82.8	20.7

*Varieties yielding significantly higher than Thatcher

Mean Yield.....29.8
 S. E. \bar{x} 2.1
 L.S.D. (5%)..... 6.0
 C. V. 7.05%

Table _____ Off-Station Spring wheat, Irrigated Nursery, Charlo, Montana, 1951.

Variety or Cross	C. I. or N No.	Date Planted, May 28, 1951				Harvested, September 6, 1951	
		I	II	III	IV	Total Bushel	Average Bushels Per Acre
Pilot	11945	31.2	26.9	28.3	24.1	110.5	27.6
Ceres	6900	26.2	27.6	29.1	26.9	109.8	27.5
Rescue	12435	25.5	21.3	28.3	32.6	107.7	26.9
Pilot x Mida (N1756)	12303	22.7	26.9	31.2	24.1	104.9	26.2
Onas	6221	26.2	19.1	31.2	22.0	98.5	24.6
Awmed Onas	12235	13.5	22.1	34.0	25.5	95.1	23.8
Lemhi	11415	24.1	21.3	29.1	19.8	94.3	23.6
Thatcher	10003	22.7	22.0	25.5	17.0	87.2	21.8
Mida x Cadet (N1831)	12363	19.1	19.8	19.8	24.1	82.8	20.7

Mean Yield.....24.7
 S. E. \bar{x} 2.0
 L.S.D. (5%).....N. S.
 C. V. 8.10%

Table _____. Off-Station Spring Wheat Irrigated Nursery, Eureka, Montana- 1951.

Date Planted, May 11, 1951

Date Harvested, Sept. 5, 1951.

Variety	C. I. or N No.	Bushels Per Plot				Total Bushels	Average Bushels Per Acre
		I	II	III	IV		
Lemhi	11415	44.7	26.9	54.6	41.8	168.0	42.0
Onas	6221	43.2	34.7	38.3	39.0	155.2	38.8
Avned Onas	12235	45.4	35.4	33.3	36.9	151.0	37.8
Pilot x Mida (N1756)	12303	36.9	33.3	34.7	33.3	138.2	34.6
Mida x Cadet (N1831)	12363	35.4	33.3	40.4	26.9	136.0	34.0
Thatcher	10003	31.9	24.8	48.2	26.9	131.8	33.0
Rescue	12435	31.2	31.2	39.0	29.8	131.2	32.8
Ceres	6900	39.0	28.3	31.9	31.9	131.1	32.8
Pilot	11945	33.3	31.9	27.6	32.6	125.4	31.4

Mean Yield.....35.2
 S. E. X..... 2.8
 L.S.D. (P .05).....N. S.
 C. V. 7.95%

TABLE XVII

COMPARISON OF SPRING WHEAT WITH PILOT

Yield % of Pilot

Variety	Station dry		Off-sta dry		Station Irr.		Off-sta Irr.		All trials		Maturity		1951 lbs/bu	1951 Ht. in.	1951 % lodging
	No.	%	No.	%	No.	%	No.	%	No.	%	Days More	Days Less			
Rescue	2	82	1	84	1	133	6	89	10	91.5	same		No inf.	-3	3
1996	1	100	-	-	1	96	-	-	2	98		2	same	same	4
Reward	2	81	-	-	2	91	-	-	4	86		2	1	3	-21
Thatcher	2	93	3	93	2	103	10	87	17	90.6	2		-1	2	27
H1552 x Mida	1	107	-	-	1	104	-	-	2	105.5	2		1	2	17
Lee	2	96	-	-	2	90	-	-	4	93	same		-3	3	4
(H2211)	1	112	-	-	1	100	-	-	2	106	3		-1	same	20
H1764 x Rescue	1	109	-	-	-	-	-	-	1	109	same		-1	2	13
Tin x Hewth	1	109	-	-	1	101	-	-	2	105	2		-1	same	37
Mida	2	91	-	-	1	128	-	-	3	103	same		2	6	-2
Ceres	2	101	3	100	2	95	10	97	17	97.7	same		same	6	39
(H1831)	2	106	-	-	2	100	-	-	4	103	6		3	6	9
Rushmore	1	114	-	-	-	-	-	-	1	114	same		1	2	same
Red Thatcher	1	106	-	-	-	-	-	-	1	106	6		2	4	1

Saunders	1	92	-	-	-	-	-	-	1	92	same	-3	-4	same
Marquis	2	93	3	86	1	126	5	78	11	87.3	3	1	same	-2
(M1756)	2	97	-	-	2	124	3	97	7	104.7	2	1	2	-1
Soft Wheats														
Am. Onas	1	118	1	109	2	119	7	100	11	106	same	-3	-2	20
Onas	1	131	3	104	2	103	10	108	16	108	same	-3	same	17
Lenhi	1	121	2	105	2	106	10	104	16	105.5	7	-4	2	37
Marfed	-	-	-	-	2	99	-	-	2	99	4	-1	-	2
Bart	-	-	-	-	2	104	-	-	2	104	same	same	-	37
Bart 46	-	-	-	-	2	101	-	-	2	101	4	2	-	7
White Fed.	-	-	-	-	2	132	-	-	2	132	same	same	-	4
Federation	-	-	-	-	2	95	-	-	2	95	1	-4	-	27
Idaed	-	-	-	-	2	99	-	-	2	99	same	1	-	-20
Hope x Lenhi	1	114	-	-	2	109	-	-	3	111	5	-2	same	-11

TABLE XVIII

COMPARISON OF OATS VARIETIES TO BRIDGER

Variety	Yield % of Bridger										Maturity		1951 lbs/bu	1951 Ht. in.	1951 % lodging
	Station No.	Dry %	Off-sta No.	dry %	Station No.	Irr. %	Off-sta No.	Irr. %	All trials No.	%	Days more	Days less			
Mission	2	90	7	83	2	88	10	77	21	81		6	same	-6	5
Gopher	2	96	7	89	2	92	10	84	21	87.5		10	-2	-16	-10
4283	2	102	7	90	2	100	10	91	21	92.5		6	-1	-12	-10
5347	1	94	-	-	1	89	-	-	2	91.5		5	-2	-10	-4
Aberystwyth	-	-	-	-	1	88	-	-	1	88		2	same	-14	20
Banock	-	-	7	86	2	106	10	97	19	94		3	-1	-2	33
Zephyr	2	104	7	90	2	85	10	80	21	86		4	-1	-8	-4
Can. Hybrid	2	106	-	-	1	95	2	106	4	103		5	same	-12	3
5983	1	102	7	92	2	102	10	94	20	94.5		5	-1	-12	5
5989	-	-	-	-	1	95	-	-	1	95		9	same	-14	3
6013	2	98	-	-	1	94	-	-	3	97		8	same	-12	3
6014	2	106	-	-	1	113	-	-	3	108		5	same	-14	3
6016	2	105	-	-	1	102	2	89	5	98		4	1	-10	-7
Cody	1	98	-	-	1	103	-	-	2	100		7	-5	-16	-4
Gold. Rain	-	-	-	-	1	100	-	-	1	100		3	1	-6	-5

Overland	2	105	7	86	2	104	10	82	21	88	4	-2	-16	-14
Res. Clinton	2	97	-	-	1	92	-	-	3	95	5	same	-8	-15
Mag. 044	-	-	-	-	1	98	-	-	1	98	same	2	-6	-10
Exeter	1	99	-	-	-	-	-	-	1	99	5	-1	-13	same
G x Clinton	1	87	-	-	-	-	-	-	1	87	10	-1	-16	-3
F x Clinton	2	98	-	-	-	-	-	-	2	98	5	-2	-16	-3
Vieland	2	98	-	-	-	-	-	-	2	98	10	-3	-14	-2
M.R. x Mission	2	92	-	-	-	-	-	-	2	92	3	1	-13	4
5834	2	103	-	-	-	-	-	-	2	103	7	-1	-12	-2
5835	2	98	-	-	-	-	-	-	2	98	8	-2	-12	1