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Small Grain Yield Trials South Dakota, 1959

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by
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This progress report has been prepared by the project leaders of the small grain breeding and testing projects of the Agricultural Experiment Station, South Dakota State College. The name of the project leader for each crop will appear at the head of that section.

The format used in this presentation of yield data represents a transitional stage between the old booklet of previous years and new and more readily usable form which will be used for this pamphlet in future years. To aid the reader, a standard sized page of 8 1/2 x 11 inches will be used. These will be arranged for storage in a standard notebook cover and can then be filed with similar sized "fact sheets," letters, and pertinent material such as clippings from farm magazines and the like.

We, the authors, hope these and forthcoming changes meet with your approval and that you will find this information to be more usable in future years.

The following have assisted in collecting these data:

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Performance of Winter Wheat and Rye in South Dakota in 1959

by V. A. Dirks and D. D. Harpstead

Two critical problems are reflected in the 1959 winter grain performance: fall stand establishment and June drought. Dry fall seedbed was especially critical at Presho, Cottonwood and Eureka; at Newell, the fall seeding was "irrigated up." Highmore, Brookings, and Menno had adequate moisture reserves in the fallow. Spotty fall germination at the drier stations was reflected, of course, in 1959 stands. Additional winterkilling due to cold and exposure appeared to be largely confined to the Brookings and Highmore locations.

The growing season of 1959 was marked by a brief interval between the last frost and extremely hot weather in mid June. The latter was associated with high winds which prematurely ripened late winter wheats. Recommended rye varieties and winter wheats at the earlier end of the maturity scale were able to escape this damage. A hailstorm at Presho in late June caused considerable shattering and head breaking. Yield levels attained appeared to depend largely on the quantity of moisture stored in the fallow. The bulk of the season beyond mid June was relatively cool and test weights were largely satisfactory.

Stem rust, leaf rust (and mosaic at Presho) were recorded, but the degree of injury caused by these diseases appeared to be quite moderate. The outstanding result of the 1959 season was the performance of the Central Type winter wheats, such as Nebred and Cheyenne. Extremely late varieties, like Kharkof MC22, suffered very serious reduction in test weight due to premature ripening and high temperatures. The performance of the new high quality variety Aztec appeared quite promising. Southern Type varieties, like Concho and Ponca, were winter injured so that their yield potential was not realized.

The great potential superiority of winter wheat over spring wheat was amply demonstrated in South Dakota in 1959. Winter wheat out-yielded spring wheat at all stations except Newell and Eureka. Part of this yield difference must, of course, be credited to the use of fallow, with its fertility and moisture differential.

The 1959 rye yield tests showed no differences among the three varieties recommended at this time.

Recommended Varieties:

Winter Wheat:	Minter	(east of Missouri only)
	Nebred	
	Cheyenne	(southeast winter wheat area)
Rye:	Pierre	
	Antelope	
	Caribou	

Table 1. Winter Wheat Variety Yields in Bushels per Acre at Seven South Dakota Locations in 1959

Variety	Brookings	Highmore	Presho	Menno	Cottonwood	Newell	Eureka
Northern Types:							
Minter	22.9	30.6	9.2	21.4	14.0	35.5	7.4
Minturki	22.2	39.8	11.7	22.2	12.8	32.3	5.4
Marmin	21.6	36.2	8.4		14.6		7.2
Yogo	19.0	33.0	11.3		17.7	45.1	
Kharkof MC22	14.8	30.8	8.3		7.6	39.5	5.1
Central Types:							
Nebred	15.8	32.3	7.7	23.8	26.0	45.1	
Cheyenne	16.7	35.0	12.2	22.1	17.3	42.5	
Cheyenne 432	15.9	28.4	11.0	24.6			
Kharkof	19.5	30.7	11.5	19.0			
Omaha	20.1	27.5	12.5	22.5			
Warrior	16.1	32.3	11.1	24.7			
Aztec	20.2	24.3	13.9				
C.I. 13279	13.4	31.1	9.1	28.4			
Southern Types:							
Wichita	22.3	27.6	8.5	27.2	13.5		
Pawnee	15.8	32.9	12.6	24.5	19.2		
Bison	26.4*	33.3	11.1		16.6		
Concho	14.5	21.9	10.2				
Ponca	21.3	26.9	10.2				
L.S.D.	6.8	10.8	5.7	7.8	6.4	4.1	1.6

*Other data for this variety at this location in 1959 are: Bison, 7.7 bu./acre, Nebred, 23.8 bu./acre.

Table 2. Winter Wheat Variety Yield Averages in Bushels per Acre at Seven South Dakota Stations for Indicated Periods

Variety	Brookings 1955-59	Brookings 1957-59	Highmore 1957-59	Presho 1958-59	Menno 1958-59	Cottonwood 1955-59	Eureka 1957-59
Northern Types:							
Minter	30.9	36.1	39.1	20.0	30.8	18.3	16.5
Minturki	30.9	35.4	43.3	18.6	29.4	16.1	14.1
Marmin	27.4	28.4	41.9	17.8			13.3
Yogo	28.6	32.0	39.1	16.7		16.9*	
Kharkof MC22	22.6	26.7	36.3	14.4		13.9*	
Central Types:							
Nebred	27.7	32.6	38.9	16.4	29.3	19.8	
Cheyenne	22.7	28.1	44.3	21.7	34.2	19.0	
Cheyenne 432		29.0		22.0			
Kharkof	25.6	30.5	41.6	18.0	29.0		
Omaha	23.1	27.7	36.8	18.0	26.6		
Warrior		26.2	43.9	18.0	31.5		
Aztec				20.9			
C.I. 13279		33.7		18.2	31.4		
Southern Types:							
Wichita	22.7	28.8	42.6	16.8	31.8	17.1	
Pawnee	19.6	26.2	41.7	21.2	30.2	19.9	
Bison		32.2	33.9	17.8			
Concho	16.5	24.2	40.8	18.6			
Ponca	19.5	30.5		20.8			
L.S.D.	5.1	7.7	5.8	5.4	5.3	2.4	2.2

*1956-59 average; comparable Nebred = 18.8 bu./acre.

Table 3. Percent Winter Survival of Winter Wheat Varieties Grown at Seven South Dakota Locations, 1959*

Variety	Brookings	Highmore	Presho	Menno	Cottonwood	Newell	Eureka
Northern Types:							
Minter	75	85	53	88	45	40	44
Minturki	72	87	66	80	39	20	35
Marmin	90	85	62		40		37
Yogo	78	66	48		42	30	
Kharkof MC22	87	77	47		50	50	
Central Types:							
Nebred	48	62	58	76	50	20	
Cheyenne	38	60	67	86	48	25	
Cheyenne 432	53	33	57	63			
Kharkof	58	65	54	68			
Omaha	57	53	51	59			
Warrior	37	68	57	78			
Aztec	43	37	62				
C.I. 13279	20	48	60				
Southern Types:							
Wichita	60	52	52	64	36		
Pawnee	45	50	65	77	45		
Bison	45	55	64		18		
Concho	22	38	53				
Ponca	60	32	58				

*1958-59 averages for Presho, Menno, and Cottonwood; 1957-59 averages used for Eureka.

Table 4. Selected Performance Scores of Winter Wheat Varieties Grown at South Dakota Locations in 1959.

Variety	Brookings					Highmore	Presho
	Date Headed	Stem Rust Percent	Leaf Rust Percent	Height Inches	Test Wt. Lbs.	Test Wt. Lbs.	Test Wt. Lbs.
Northern Types:							
Minter	6- 9	9	40	27	58	60	55
Minturki	-11	35	50	31	56	60	54
Marmin	- 8	25	25	28	60	60	54
Yogo	-12	33	50	28	54	59	55
Kharkof MC22	-12	37	60	28	50	60	46
Central Types:							
Nebred	6- 5	25	47	25	58	61	56
Cheyenne	- 6	40	60	27	56	61	57
Cheyenne 432	- 6	47	37	28	56	61	55
Kharkof	- 9	37	50	26	56	60	55
Omaha	- 3	17	40	24	59	61	56
Warrior	- 6	37	57	24	56	61	56
Aztec	- 4	27	40	28	59	62	60
C.I. 13279	- 6	40	33	27	56	62	56
Southern Types:							
Wichita	6- 2	22	35	26	62	62	57
Pawnee	- 3	45	37	28	56	60	56
Bison	- 2	45	40	26	59	61	56
Concho	- 4	40	55	29	55	61	56
Ponca	- 2	15	40	28	59	60	56

Table 5. Rye Variety Yields in Bushels per Acre at Six South Dakota Locations in 1959.

Variety	Brookings	Highmore	Cottonwood	Presho	Menno	Eureka
Pierre	41.4	18.4	18.5	7.1	28.3	14.1
Antelope	41.7	22.2	23.0	9.5	30.4	12.8
Caribou	41.3	27.2	18.4	11.2	31.3	13.2
Tetra Petkus	19.4	8.2		1.3	17.6	6.0
L.S.D.	8.5	4.4	N.S.	5.1	6.6	1.7

Table 6. Rye Variety Yield Averages in Bushels per Acre for Six South Dakota Locations for Two or More Years, as Shown.

Variety	Brookings 1955-59	Highmore 1955-59	Cottonwood 1955-59	Presho 1958-59	Menno 1958-59	Eureka 1955-59
Pierre	40.5	27.6	17.2	18.7	33.3	16.6
Antelope	42.6	32.5	19.5	23.4	40.1	15.5
Caribou	43.2	33.0	19.9	22.9	35.0	14.5
Tetra Petkus	16.8	13.2	7.9	9.5	23.0	5.9

Table 7. Rye Variety Winter Survivals and Test Weights at Selected South Dakota Locations in 1959.

Variety	Average Winter Survival in Percent					Test Weight in Pounds		
	Brookings	Highmore	Cottonwood	Menno	Eureka	Brookings	Highmore	Eureka
Pierre	100	100	30	88	35	56	55	59
Antelope	100	90	40	91	45	56	55	58
Caribou	100	98	30	90	50	56	55	57
Tetra Petkus	60	20	4	34	5	51	51	53

Oats

by D. D. Harpstead

Oat production in South Dakota in 1959 was severely limited by extremes of drought and temperature over nearly all of the state's major oat growing region. While moisture reserves were limited over most of the state at planting time, cool temperatures and some May rainfall provided near normal early growth at all stations except Highmore. The most severe damage to the 1959 crop came during the second week of June when 100° F. temperature and hot, southwest winds ravaged the area for five successive days. During this period anything but very early varieties were at a stage of growth where this damage resulted in extensive yield reduction.

Other yield reducing factors had a relatively small effect on the total oat production of South Dakota. Locally important infections of virus diseases have been reported from eastern South Dakota.

Yields from Brookings, Cottonwood and Newell (irrigated) undoubtedly represent the truest picture of relative variety performance under the conditions which were measured this year. Five year averages now contain yield from both extremes of the production scale, the very good yields of 1957 and 1958, as well as the near crop failure years of 1956 and 1959. The prudent reader must use careful judgement when evaluating his needs in the light of these data.

Recommended Varieties of Oats

Andrew	Dupree	Minhafer
Burnett	Garry	Ransom
Cherokee	Marion	Rodney
Clintland 60	Mo-0-205	Waubay
	Newton	

The addition of the new variety, Clintland 60, is to provide the southeastern oat grower with a productive oat type well suited to his region and one that has broadened disease resistance to reduce the hazards of stem and crown rust.

Table 8. Oat Variety Yields in Bushels per Acre at Eight South Dakota Locations, 1959

Variety	Brookings	Watertown	Highmore	Cottonwood	Eureka	Menno	Presho	Newell dryland	Newell irrigated
Northern Types:									
Ajax	28.4	19.3	*						77.2
Branch	25.1								
Garry	41.0	19.3		34.1	43.6	3.5			86.3
Park									94.3
Rodney	34.5	20.7							104.4
Sauk	44.0	24.1				8.0			
Shield					34.2			5.2	84.7
Simcoe		20.3							
Waubay	37.0				27.5	8.5			82.5
Central Types:									
Andrew	40.5	16.4		34.1	35.8	7.3	6.3	5.4	
Burnett	39.5	19.4			47.6	8.3	6.2		88.0
Cherokee	39.5			29.9		9.5			
Clintland 60	31.0	11.2		29.4	30.1	4.4	6.0	6.5	67.0
Clinton									
Goodfield	21.0	10.6			28.4	5.4			58.7
Marion	39.5			36.0	41.3	7.0			74.6
Minhafer	38.0	23.9		34.6	31.1	12.4	5.0	3.8	80.2
Minton	38.5	23.6			28.9	7.0			
Newton	16.0					6.7			
Ransom	41.0	15.5		33.8	27.4	7.4		6.7	78.2
Western Types:									
Brunker				30.9				2.9	
Dupree	44.5			29.8	38.4		8.8	6.0	75.4
Macon	29.0			33.3		8.9		5.2	
Mo-0-205	45.5	14.1		31.9	19.1	6.9	6.7	5.9	82.2
Nehawka	33.5			31.6		14.6	5.6	5.4	72.8
Osage				30.2	27.6			5.4	74.9
Trojan				31.9					83.1
Vikota									69.9
L.S.D.	5.9	7.6			17.6	4.6	1.8	N.S.	12.1

* Crop failure in 1959 was due to drought and accompanying high June temperatures.

Table 9. Oat Variety Yield Averages in Bushels per Acre at Eight South Dakota Locations for the Years 1955-59 or Otherwise Specified Periods

Variety	Brookings	Watertown[1/]	Highmore[2/]	Cottonwood	Eureka	Menno[1/]	Presho[3/]	Newell	
								dryland	irrigated
Northern Types:									
Ajax	66.5	64.4	51.9						73.4
Branch	65.3	77.4(3)				48.3(3)			
Garry	69.1	89.0	53.1	46.5	58.8	38.9			72.0
Park									73.7
Rodney	61.9(4)[4/]	68.1				38.7(3)			71.4
Sauk	67.8	71.3							
Simcoe		68.2				54.0(3)			
Waubay	62.2	73.0(3)	61.7		60.5	40.6			73.5
Central Types:									
Andrew	62.8	48.4(3)	52.2	50.8	59.3	41.3	33.4	26.2	
Burnett	65.1(4)	64.3	58.6(3)	52.3(3)	62.0(4)	42.7	35.8		76.6(3)
Cherokee	55.9	70.5	49.1	37.9		40.6			
Clintland 60	52.1(2)				69.3(2)	52.0(3)			
Clinton			51.7(3)						
Goodfield	39.0(2)					42.2(3)			
Jackson			56.1(3)			55.7(3)			
Marion	65.0	78.4(3)	57.2	48.0	58.2	38.3			70.6(3)
Minhafer	64.4(3)	64.0	81.3(2)	52.6(3)	80.0(3)	43.9	29.3	28.6(2)	62.0(2)
Minton	59.3(2)					49.3(3)			
Newton	54.4		47.1			37.4			
Ransom	63.5	55.7	51.3	44.6	54.7	39.3		27.4	64.4
Richland					65.5(3)				
Western Types:									
Brunker				45.2				23.7	
Dupree	69.5		55.9	47.4	63.0		39.3	28.0	74.3
Macon	45.1(2)					27.7(2)			
Mo-0-205	69.8	55.9	63.8	52.2	63.0	43.5	35.4	26.0	73.2
Nehawka	45.2(2)			59.7(2)		49.7(3)			
Osage			58.9	51.4	57.5			24.8	74.3
Trojan			40.8(3)	46.8					78.9(3)
Vikota			37.6(3)		60.7(4)				70.3

1/ 1956-59 yield averages, the period in which the stations have been operating.
2/ 1955-58 yield averages included for references only and should not be used in comparisons with other stations.
3/ 1958-59 yield averages, the period in which the station has been operating.
4/ Yield averages where less than those for the specified period.

Table 10. Oat Performance Data from Selected Locations in 1959

Variety	Heading Date	Test Weight		
		Brookings	Menno	Newell (irrigated)
Northern Types:				
Ajax	6-24	33		32
Branch	-25	33		
Garry	-23	30	25	32
Park				31
Rodney	-26	28		35
Sauk	-23	35	28	
Shield	-16	35		34
Simcoe	-22	35		
Waubay	-18	36	31	35
Central Types:				
Andrew	6-16	33	27	
Burnett	-17	36	28	36
Cherokee	-16	32	23	
Clintland 60	-17	36	29	34
Clinton	-19	36		
Goodfield	-18	35	31	34
Jackson	-18	35		
Marion	-17	33	27	34
Minhafer	-16	33	27	33
Minton	-21	33	30	
Newton	-17	33	27	
Ransom	-17	33	27	34
Richland	-17	32		
Western Types:				
Brunker	6-14	32		
Dupree	-15	32		36
Macon	-17	35	32	
Mo-0-205	-16	32	30	38
Nehawka	-15	34	31	32
Osage	-16	32		33
Trojan	-15	32		34
Vikota	-18	34		34