

SPRING GRAIN IMPROVEMENT

Spring wheat (Irrigated)

A total of five irrigated spring wheat nurseries were seeded in the spring of 1954. One nursery was located on the station and the remaining four were located as follows: Lake County (Ronan), Sanders County (Plains), Lincoln County (Eureka), and Ravalli County (Corvallis). The nursery at Corvallis was not harvested due to hail damage.

The advance yield nursery was grown on the station in four row plots ten feet long and five replications. Due to the wet season, particularly at harvest time there was considerable lodging in many of the varieties. The mean yield of this nursery was 72.7 bushels per acre. Only one variety was significantly better in yield than the check (Thatcher), namely 1502 x 1752 C. I. 13041. Table XXIII.

The off-station nurseries contained eleven varieties, three of which were white wheats and eight hard red varieties. The nursery in Lake County near Ronan contained a large number of wild oats. The mean yield was 22.9 bushels per acre. Table XXIV.

Using Pilot as check Thatcher and Lee were found to be significantly lower in yield in the nursery at Plains. Improper irrigation is due in part to the low yields in this nursery. Table XXV.

Table XXVI gives the results of the nursery at Eureka in Lincoln County. Thatcher and Lee were significantly lower in yield than Pilot. The mean yield of this nursery was 33.9 bushels per acre.

Table XXVII shows the rank of the varieties grown in Northwestern Montana in 1954. Pilot ranks number one of the varieties this year.

Data, for the period 1949-1954, of work done on hard red spring wheats at Creston and in Northwestern Montana are shown in tables XXVIII and XXIX.

Table XXX thru XXXIV are summaries of the work done in individual counties throughout Northwestern Montana.

Table XXIV XIV Agronomic data from irrigated spring wheat nursery grown in Lake County.
Single row plots, four replications. Paul Metzger farm, Ronan, Montana, 1954.

Date Planted. April 26, 1954 Date Harvested. September 1, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Plot Yields in Bushels Per Acre				Total Bushel	Average Bushels Per Acre
		I	II	III	IV		
Thatcher	10003	10.7	24.1	17.8	13.5	66.1	16.5
Selkirk	13100	27.0	35.5	19.9	22.7	105.1	26.3*
Pilot	11945	21.3	27.7	20.6	21.3	90.9	22.7
Onas	6221	28.4	38.3	24.3 ¹	21.3	112.3	28.1*
Lemhi	11415	22.7	27.0	22.7	18.4	90.8	22.7
Chinook	H-4258	24.1	17.8	13.5	21.3	76.7	19.2
Mida	12008	22.0	31.2	17.8	19.9	90.9	22.7
Henry	12265	25.6	24.1	20.6	15.6	85.9	21.5
Lee	12488	19.9	20.6	19.9	14.2	74.6	18.7
Awmed Onas	12235	24.1	42.6	17.8	26.3	110.8	27.5*
Ceres	6900	36.2	29.8	18.5	19.9	104.4	26.1*

¹Calculated missing plot.

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

Note: Wild oats were very bad in this nursery.

*Varieties yielding significantly more than the check.

Mean Yield.....22.9
S. E. \bar{x} 2.27
L.S.D. (5%)..... 2.3
C. V. 9.92%

Table XXV. Agronomic data from irrigated spring wheat nursery grown in Sanders County.
 XXV Single row plots, four replications. Howell farm, Plains, Montana, 1954.

Date Planted. April 30, 1954 Date Harvested. August 18, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Plot Yields In Bushels Per Acre				Total Bushel	Average Bushels Per Acre
		I	II	III	IV		
Thatcher	10003	8.5	14.9	14.2	10.7	48.3	12.01*
Selkirk	13100	17.8	15.6	12.8	11.4	57.6	14.4
Pilot	11945	19.9	12.8	18.5	14.9	66.1	16.5
Onas	6221	22.0	22.0	19.9	12.1	76.0	19.0
Lemhi	11415	24.1	20.6	15.6	11.4	71.7	17.9
Chinook	H-4258	13.5	13.5	14.2	11.4	52.6	13.2
Mida	12008	17.0	14.2	18.5	9.9	59.6	14.9
Henry	12265	15.6	9.9	10.7	14.2	50.4	12.6*
Lee	12488	12.8	9.2	7.8	9.9	39.7	9.9**
Awmed Onas	12235	16.3	16.3	16.3	15.6	64.5	16.1
Ceres	6900	17.8	14.2	14.9	14.2	61.1	15.3

Note: Pilot is the check in this nursery.

*Varieties yielding significantly less than the check (5%).

**Varieties yielding significantly less than the check (1%).

Mean Yield.....14.7
 S. E. \bar{x} 1.22
 L.S.D. (5%)..... 3.52
 L.S.D. (1%)..... 4.74
 C. V. 8.3%

Table XXVI. Agronomic data from irrigated spring wheat nursery grown in Lincoln County. Single row plots, four replications. Wilfred Johnson ranch, Eureka, Montana 1954.

Date Planted. May 12, 1954 Date Harvested. September 9, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Plot Yields in Bushels Per Acre				Total Bushels	Average Bushels Per Acre	Bushel Wt. in Pounds
		I	II	III	IV			
Thatcher	10003	36.9	14.9	24.1	14.9	90.8	22.7*	59
Selkirk	13100	24.1	29.8	33.4	24.1	111.4	27.6	59
Pilot	11945	44.0	43.3	27.7	34.1	149.1	37.3	60
Onas	6221	40.5	48.3	42.6	46.9	178.3	44.6	57
Lemhi	11415	40.5	56.1	35.5	45.4	177.5	44.4	57
Chinook	H-4258	21.3	32.7	33.4	6.4	93.8	23.5*	-
Mida	12008	42.6	39.1	31.2	28.4	141.3	35.3	60
Henry	12265	42.6	27.7	23.4	20.6	114.3	28.6	59
Lee	12488	29.8	37.6	12.1	16.3	95.8	24.0*	59
Awmed Onas	12235	50.4	39.8	48.3	41.9	180.4	45.1	58
Ceres	6900	52.5	39.8	32.0	34.8	159.1	39.8	60

Pilot is used as a check in this nursery.

*Varieties yielding significantly less than the check (5%).

Mean Yield.....33.90
 S. E. E..... 3.396
 L.S.D. (5%).....11.4
 L.S.D. (1%).....15.3
 C. V.....11.6%

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Table XXVII Summary of eleven varieties of spring wheat in Northwestern Montana under irrigated conditions in 1954.
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Variety or Cross	C. I. or N No.	Location				Average Bushel Per Acre	Rank
		Creston ¹	Ronan	Plains	Eureka		
Thatcher	10003	74.7	16.5	12.1	22.7	31.5	6
Selkirk	13100	76.4	26.3*	14.4	27.6	36.2	4
Pilot	11945	77.3	22.7	16.5	37.3	38.4	1
Onas	6221		28.1*	19.0	44.6	30.6	8
Lemhi	11415		22.7	17.9	44.4	28.3	11
Chinook	H-4258	67.6	19.2	13.2	23.5	30.9	7
Mida	12008	80.1	22.7	14.9	35.3	38.2	2
Henry	12265		21.5	12.6	28.6	20.9	9
Lee	12488	80.4	18.7	9.9	24.0	33.2	5
Awned Onas	12235		27.5*	16.1	45.1	29.6	10
Ceres	6900	70.0	26.1*	15.3	39.8	37.8	3
Mean Yield		72.7	22.9	14.7	33.9		
S. E. \bar{x}		3.438	2.27	1.22	3.396		
L.S.D. (5%)		12.8	2.3	3.52	11.4		
C. V.		4.73%	9.92%	8.3%	11.6%		

*significantly more than Pilot
111 of 25 entries.

Table XXVIII Annual and six year summary of yield data from hard red spring wheat grown under irrigated conditions at Creston, Montana 1949-1954.
 XXVIII

Variety or Cross	C. I. or N No.	1949	1950	1951	1952	1953	1954	Average Bu./A	Years Grown
Reward	8182	23.4	38.5	57.4				39.8	3
Supreme	8026	33.8	46.1		48.0	54.6	79.0	52.3	5
Thatcher	10003	38.2	45.8	64.3	48.2	55.3	74.7	54.4	6
Marquis	3641	34.2	43.2				69.6	49.0	3
Pilot	11945	35.4	34.3	72.1	54.5	60.4	77.3	55.7	6
Ceres	6900	27.4	46.3	54.8	50.3	64.2	70.0	52.2	6
Pilot x Mida (N1756)	12303		57.6	75.1				66.4	2
Pilot x Mida (N1953)	12445		52.5					52.5	1
Mida x Cadet (N1831)	12363		48.4	57.9				53.2	2
Rescue	12435		45.8		51.0	50.6	55.1	50.5	4
Mida	12008		43.9		53.9	70.7	80.1	61.4	4
Merit x Pilot (N1810)	12355		40.9					40.9	1
Cadet	12053		39.7					39.7	1
Pilot x Merit (N1898)	12442		39.5					39.5	1
Lee	12488		36.9	59.3	54.8	63.2	80.4	58.9	5
N 1552 x Mida	12746			74.9				74.9	1
Tinstein x Newthatch	12739			73.3				73.3	1
1764 x Henry (N2211)	12733			72.5	47.0	55.9		58.5	3
Pilot x Merit (N1996)	12648			69.2				69.2	1
Canada 4232-20	12695				54.6			54.6	1
1764 x Rescue	B49-90				48.5	52.6		50.6	2
1552 x Mida	12746				46.5			46.5	1
1750 x Rescue	B50-120				46.3	51.4		49.3	1
1750 x 1753 (N2256)	12975				56.9		81.2	69.1	2
Chinook	H-4258				43.5	50.6	67.6	53.9	3
Rushmore	12273				56.5	53.3	63.2	57.7	3
1750 x Rescue	B49-102				49.6	61.5		55.6	2
Pilot ² x Thatcher (N2170)	12974				53.9	58.8	75.8	62.8	3
Henry	12265				63.1	64.0		63.6	2
Rescue x Thatcher	B50-18					63.5	83.9	73.7	2
1750 x 1752 (N2389)	13041					66.6	91.3	79.0	2
Selkirk C.I.186	13100					57.6	76.4	67.0	2
Pilot x Regent ² (N2183)	13042					67.2	71.6	69.4	2

Table XXIX . Six year summary of yield data on hard red spring wheats under irrigated conditions in Northwestern Montana 1949-1954.
 XIX

Variety or Cross	C. I. or N. No.	Creston	Lincoln	Sanders	Ravalli	Lake	Missoula	Average Bu./A	No. Trials
Reward	6182	39.8	16.3	26.8				27.6	5
Supreme	8026	52.3	22.9	27.9	25.7			32.9	6
Thatcher	10003	54.4	30.2	26.2	31.8	23.6	16.9	30.5	24
Marquis	3641	49.0	20.1	30.0	38.8	25.7		32.3	7
Pilot	11945	55.7	37.3	34.7	37.0	30.3	26.5	36.9	24
Ceres	6900	52.2	38.2	36.2	37.6	29.7	24.5	36.4	24
Pilot x Mida (N1756)	12303	66.4	34.6			30.2		43.7	5
Pilot x Mida (N1953)	12445	52.5						52.5	1
Mida x Cadet (N1831)	12363	53.2	34.0			24.6		37.2	6
Rescue	12435	50.5	36.0		37.9	26.8	20.1	34.2	13
Mida	12008	61.4	35.5			22.7		39.8	6
Merit x Pilot	12355	40.9						40.9	1
Cadet	12053	39.7						39.7	1
Pilot x Merit (N1898)	12442	39.5						39.5	1
Lee	12488	58.9	35.3		22.7	23.3	22.4	32.5	14
N1552 x Mida	12746	74.9						74.9	1
Timstein x Newthatch	12739	73.3						73.3	1
1764 x Henry (N2211)	12733	58.5	48.5		25.0	28.7	24.5	37.0	12
Pilot x Merit (N1996)	12648	69.2						69.2	1
Canada 4232-20	12695	54.6						54.6	1
1764 x Rescue	B49-90	50.6						50.6	2
1552 x Mida	12746	46.5						46.5	1
1750 x Rescue	B50-120	46.3						46.3	1
1750 x 1753 (N2256)	12975	69.1						69.1	2
Chineok	H-4258	53.9	35.4		24.6	24.1	29.6	33.5	8
Rushmore	12273	57.7	39.0		20.2	33.1	25.5	34.5	7
1750 x Rescue	B49-102	55.6						55.6	2
Pilot ² x Thatcher (N2170)	12974	62.8						62.8	2
Henry	12265	63.6	28.6			21.5		37.9	4
Rescue x Thatcher	B50-18	73.7						73.7	2
1750 x Rescue	B50-120	59.4						59.4	1
1750 x 1752 (N2389)	13041	79.1						79.1	2
Selkirk C. I. 186	13100	67.0	27.6			26.3		40.3	4
Pilot x Regent ² (N218)	13042	69.4						69.4	2

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Table XXX. Six year summary of white spring wheats under irrigated conditions in Northwestern Montana 1949-1954.
 xxx

Variety or Cross	C. I. or N No.	Creston	Lincoln	Sanders	Navalli	Lake	Missoula	Average	No. Trials
								Bushel Per Acre	
Idaed	11706	49.8	13.9	33.5	42.3	35.0		31.2	11
Lemhi	11415	55.0	44.3	37.3	46.7	25.8	22.2	35.3	23
Onas	6221	51.6	42.8	34.4	40.6	28.7	18.8	36.2	23
Federation 41 M	12391	59.1			27.6			43.4	2
Armed Onas	12235	57.8	48.0		38.1	27.9	26.0	44.4	20
Federation	4734	49.5			33.5			41.5	5
Baart	1697	54.4			26.0			40.2	5
White Federation 38	11906	65.0			20.9			43.0	5
Baart 46	12386	54.8			37.6			46.2	5
Hope x Lemhi ⁴	12685	61.1			41.8			51.5	5
Marfed	11919	50.9			31.5			41.2	5
Baart 38	11907	47.7			27.0			37.4	2
Marfed x Merit-22	13057	61.0						61.0	1
K.F.D.E.B.-121	12944	37.1						37.1	1
Marfed x Merit-28	13058	61.2						61.2	1
Kenya x Lemhi ⁴	13051	45.4						45.4	1
Kenya x Lemhi ²	12947	46.5						46.5	1
W-5-67 (Lemhi x Hope-Fed)	13053	55.5						55.5	1
Marfed x Merit-10	13056	69.2						69.2	1
Onas 52	12946	45.8						45.8	1
Idaed x Merit-5	13055	54.8						54.8	1
Idaed x Merit-2	13054	58.8						58.8	1
Pacific Bluestream	4067				26.2			26.2	1

Table XXXI. Summary of spring wheat data in Lake County 1950-1954 under irrigated conditions.
 XXXI

Variety or Cross	C. I. or N No.	Location and Year						Average Bushel Per Acre	Years Grown
		1953 Charlo	1950 Ronan	1951 Ronan	1951 Charlo	1952 Charlo	1954 Ronan		
Idaed	11706		35.0					35.0	1
Pilot	11945	35.4	30.7	39.0	27.6	26.2	22.7	30.3	6
Ceres	6900	37.2	30.2	34.2	27.5	22.8	26.1	29.7	6
Thatcher	10003	31.2	29.7	24.8	21.8	19.8	16.5	23.6	6
Onas	6221	33.3	29.1	31.0	24.6	26.0	28.1	28.7	6
Rushmore	12273	33.1						33.1	1
Rescue	12435	29.6	28.4	20.7	26.9	27.8		26.7	5
Henry							21.5	21.5	1
Marquis	3641		25.7					25.7	1
Armed Onas	12235	35.6	24.8	29.1	23.8	26.8	27.5	27.9	6
Lemhi	11415	39.0	15.1	26.4	23.6	28.3	22.7	25.8	6
Pilot x Mida (N1756)	12303			34.2	26.6			30.4	2
Mida	12008						22.7	22.7	1
Mida x Cadet (N1831)	12363			28.5	20.7			24.6	2
Lee	12488	30.8				20.6	18.7	23.3	3
1764 x Henry (N2211)	12733	32.4				24.1		28.7	2
Selkirk (C.I. 186)	13100						26.3	26.3	1
Chinook	H-4258	29.1					19.2	24.1	1

Table XXXII . Summary of spring wheat data in Missoula County 1952-1953
 X1711 under irrigated conditions.

Variety or Cross	C. I. or H No.	Location and Years		Average Bushel Per Acre	Years Grown
		1952 Potomac	1953 Potomac		
Aimed Onas	12235	19.7	32.2	25.9	2
1764 x Henry (N2211)	12733	18.2	30.6	24.5	2
Ceres	6900	22.0	27.1	24.51	2
Rescue	12435	13.3	26.8	20.1	2
Lenhi	11415	4.8	39.5	22.1	2
Lee	12488	20.5	24.3	22.4	2
Thatcher	10003	12.9	20.9	16.9	2
Onas	6221	7.7	29.8	18.7	2
Pilot	11945	22.2	30.7	26.5	2
Rushmore	12273		25.5	25.5	1
Chinook	H-4258		29.6	29.6	1

Table XXXIII. Summary of Spring wheat data in Lincoln County 1949-1954 under irrigated conditions.

Variety or Cross	C. I. or H No.	Location and Year					Average Bushels Per Acre	Year Grown
		1949 Eureka	1951 Eureka	1952 Eureka	1953 Eureka	1954 Eureka		
Reward	8182	16.3					16.3	1
Supreme	8026	22.9					22.9	1
Thatcher	10003	21.3	33.0	43.6	30.5	22.7	30.2	5
Idaed	11706	13.9					13.9	1
Lemhi	11415	25.0	42.0	51.6	58.8	44.4	44.3	5
Onas	6221	25.5	38.8	56.5	48.9	44.6	42.8	5
Marquis	3416	20.0					20.0	1
Pilot	11945	24.6	31.4	50.3	43.2	37.3	37.3	5
Ceres	6900	21.5	32.8	61.1	38.3	37.8	38.2	5
Awmed Onas	12235		37.8	58.8	50.3	45.1	48.0	4
Pilot x Mida (N1756)	12303		34.6				34.6	1
Mida x Cadet (N1831)	12363		34.0				34.0	1
Rescue	12435		32.8	43.4	31.9		36.0	3
Lee	12488			46.5	35.4	24.0	35.3	3
N1764 x Henry (N2211)	12733			60.2	36.9		48.5	2
Rushmore	12273				39.0		39.0	1
Chinook	H-4258				35.4	23.5	29.4	2
Selkirk	13100					27.6	27.6	1
Mida	12008					35.3	35.3	1
Henry	12265					28.6	28.6	1

Table XXXIV . Summary of spring wheat data in Ravalli County 1949-1953, under irrigated conditions.
 XXXIV

Variety or Cross	C. I. or N No.	Location and Year				Bushel Per Acre	Years Grown
		1949 Corvallis	1950 Corvallis	1951 Corvallis	1953 Corvallis		
Hope x Lemhi 4	12685	40.4		45.3		41.8	2
Barrt 46	12386	37.6				37.6	1
Lemhi	11415	37.0	65.0	52.9	31.9	46.7	4
Onas	6221	34.1	52.9	51.7	23.6	40.6	4
Federation	4734	33.5				33.5	1
Armed Onas	12235	33.2	52.0	45.6	21.6	38.1	4
Marfed	11919	31.5				31.5	1
Federation 41-M	12391	27.6				27.6	1
Barrt 38	11907	27.0				27.0	1
Pacific Bluestream	4067	26.2				26.2	1
Barrt	1697	26.0				26.0	1
Supreme	8026	25.7				25.7	1
Pilot	11945	25.4	45.6	47.0	30.0	37.0	4
Ceres x Burbank		25.1				25.1	1
Idead	11706	23.7	54.3	48.9		42.3	3
Thatcher	10003	23.6	49.8	33.8	20.0	31.8	4
Ceres	6900	21.8	49.8	52.0	26.9	37.6	4
White Federation 38	11906	20.9				20.9	1
Rescue	12435		42.0	47.3	24.5	37.9	3
Marquis	3641		38.8			38.8	1
Lee	12488				22.7	22.7	1
Rushmore	12273				20.0	20.0	1
1764 x Henry	N2211				25.0	25.0	1
Chinook	H-4258				24.6	24.6	1

SPRING GRAIN IMPROVEMENT

Wheat (Dryland)

Seven dryland nurseries were seeded in May 1953 on and off-station. Four were located on the station and three off-station. The off-station nurseries containing eleven varieties were located in Mineral County (Superior), Missoula County (Frenchtown), and Flathead County (Stillwater).

The advance yield hard red spring nursery was grown on the station with 25 entries, four row plots and three replications. The mean yield of this nursery was 52.8 bushels per acre. Lee had a light infection of loose smut and Chinook a trace. There was some lodging of all varieties except C. I. 13041. Using Thatcher as a check C. I. 13041, Ceres, C. I. P51-9 and P51-43 were significantly higher in yield. See table XLI for complete agronomic data.

Heavy infestation of leaf rust and powdery mildew were noted on the varieties in the Western Regional white wheat nursery. C. I. 13054 showed the most resistance to leaf rust with only seven per cent and no mildew infection. It was also significantly higher in yield than Onas which is used as a check. Table LXII shows complete agronomic data.

A test was conducted to determine the effect of awns in the yield of Onas and Awned Onas white wheats. Also kernel weights were made on each of the white wheats. Thatcher was included for a check. Plots were single row plots, ten replications. Awned Onas was significantly higher in yield than Onas, also the weight per one thousand kernels was higher. Table LXIII.

The milling and baking plots were planted in 1/80 acre plots and harvested with the combine after trimming the plots. The mean yield of these plots were 34.4 with Marquis being high with 41.0 bushels per acre. Table LXIV.

The nursery in Mineral County was grown on a dry sandy soil. The mean yield of this nursery was 12.06 bushels per acre. Using Pilot as a check, Lemhi was significantly higher in yield. Table LXV.

The nursery at Frenchtown was very badly infested with wild oats, thus giving only a mean yield of 12.0 bushels per acre. This can not be considered a reliable test because of the wild oats. Table LXVI.

Table LXVII shows the yield data of the nursery grown in Flathead County in the Stillwater area. The mean yield was 20.2 bushels per acre.

Table LXVIII gives a summary of work on spring wheat off-station in 1954. Lemhi ranks first for white wheats, also first of all varieties. Mida ranked fifth of all varieties, and first of the hard red spring varieties.

The annual and six year summary of yield data at Creston is shown in Table LXIX. A six year summary of data of work in Northwestern Montana is shown in table LXI.

Table LXXI and LXXII are summaries of work done with white wheats at Creston and in Northwestern Montana 1949-1954, respectively.

Summary of yield data for individual counties is given in table LXXIII thru LXXVI.

Table LXVII. Agronomic data from dryland western regional white wheat nursery, Creston, Montana 1954.
 LXII Four row plots three replications.

Date Planted. May 14, 1954 Date Harvested. September 23, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Head- ing Date	Height in Inches	Leaf Rust %	Mil- dew %	Lod- ging %	Plot Yield in			Total Bushel	Average Bushel Per Acre	Bushel Wt. in Pounds
							Bushels Per Acre	I	II			
Lemhi	11415	7-18	46	95	35	32	78.8	68.9	77.4	225.1	75.0*	57
Onas	6221	7-22	43	94	52	57	64.6	62.5	59.6	186.7	62.2	55
Idaed	11708	7-10	45	57	12	23	76.7	75.3	76.7	228.7	76.2**	58
Federation	4734	7-23	48	92	88	45	51.1	48.3	51.8	151.2	50.4	52
Idaed x Merit - 5	13055	7-14	42	13	-	13	83.1	80.2	86.6	249.9	83.3*	58
Kenya x Lemhi - 2	12947	7-16	45	90	-	17	85.2	83.1	79.5	247.8	82.6*	57
Idaed x Merit - 2	13054	7-15	44	7	-	32	80.2	74.6	77.4	232.2	77.4**	58
Onas 52	12946	7-21	44	88	73	55	84.5	74.6	73.8	232.9	77.6**	57
Thatcher	10003	7-14	44	78	-	8	68.9	82.4	67.5	218.8	72.9*	58
Lemhi x Hope-Fed. W5-67	13053	7-16	46	93	-	27	76.0	68.2	66.7	210.9	70.3	54
Lemhi 53	13068	7-19	48	88	38	27	83.8	85.2	63.9	232.9	77.6**	57
Baart	1697	7-18	46	92	-	65	66.7	63.2	67.5	197.4	65.8	60
Marfed	11919	7-19	45	65	-	48	66.7	75.3	76.0	218.0	72.7*	59
Henry	12265	7-15	46	17	-	30	74.6	68.2	84.5	227.3	75.8*	59
Awne Onas	12235	7-19	44	88	25	27	65.3	75.3	63.9	204.5	68.2	56
Marfed x Merit - 28	13058	7-16	47	10	12	47	70.3	79.5	76.7	226.5	75.5*	59
Marfed x Merit - 22	13057	7-18	50	55	-	45	51.8	66.7	69.6	188.1	62.7	57
Kenya x Lemhi ⁴	13051	7-16	46	95	-	20	68.2	68.2	77.4	213.8	71.3	57
Marfed x Merit - 10	13056	7-19	46	30	-	15	71.0	87.3	85.9	244.2	81.4	59

Note: Onas is the check in this nursery.

*Varieties yielding significantly more then the check (5%).

**Varieties yielding significantly more then the check (1%).

Mean Yield.....72.6
 S. E. \bar{x} 3.5686
 L.S.D. (5%).....10.3
 L.S.D. (1%).....13.7
 C. V. 4.92%

Table LXIII. Agronomic data from Awn test nursery dryland conditions, Creston, Montana 1954.
LXIII Single row plots, ten replications.

Date Planted, May 15, 1954

Date Harvested, September 14, 1954

Size of Plot, 16 feet

Variety	C. I. or N No.	Head- ing Date	Heading Height in Ins.	Plot Yields in Bushels Per Acre										Total Bushels	Average Bushels Per Acre
				I	II	III	IV	V	VI	VII	VIII	IX	X		
Onas	6221	7-20	46	57.5	58.9	59.6	54.9	51.8	59.6	56.8	47.6	47.6	56.8	551.1	55.1
Thatcher	10003	7-15	43	51.1	54.7	46.9	39.8	56.1	58.2	45.4	49.7	50.4	56.1	508.4	50.8
Awned Onas	12235	7-19	44	59.6	65.3	55.4	55.4	61.8	58.2	55.4	63.9	63.9	58.2	597.1	59.7

Mean Yield.....55.2
 S. E. %.....1.528
 L.S.D. (5%).....4.5
 L.S.D. (1%).....6.2
 C. V.2.77%

Variety	C. I. or N No.	Head- ing Date	Heading Height in Ins.	Kernel weights for Onas and Awned Onas in grams/1000 Kernels										Total Weight	Average Grams/1000 Kernels
				I	II	III	IV	V	VI	VII	VIII	IX	X		
Onas	6221			40.8	38.8	42.1	40.5	41.1	39.9	39.1	37.3	39.0	39.3	397.9	39.79
Awned Onas	12235			42.2	43.3	42.7	42.5	42.9	42.7	40.8	41.9	43.4	39.8	422.2	42.22

1. Bushel Weights	Reps. 1-5	Reps. 6-10	Average
Onas	58	58	58
Awned Onas	59	59	59
Thatcher			59

2. Not sufficient seed for individual plot weights.

Table LXIV. Agronomic data from milling and baking plots.
LXIV Dryland, Creston, Montana 1954.

Date Planted. May 20, 1954

Date Harvested. October 8, 1954

Variety or Cross	C. I. or N No.	Heading Date	Lodging Percent	Bushels Per Acre
Rescue	12435	7-24	80	28.0
Thatcher	10003	7-20	65	37.3
Chinook	H-4258	7-21	85	30.7
Thatcher x Rescue	B50-18	7-22	70	33.3
Selkirk	13100	7-19	65	36.0
Marquis	3641	7-22	90	41.0

Mean Yield.....34.4

Table LXV. Agronomic data from dryland spring wheat nursery grown in Mineral County. Single row plots four replications, Frank Lanum farm, Superior, Montana 1954.

Date Planted. May 6, 1954 Date Harvested. August 30, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Plot Yield In Bushels Per Acre				Total Bushel	Average Bushel Per Acre
		I	II	III	IV		
Thatcher	10003	7.1	5.7	19.2	11.4	43.4	10.9
Selkirk	13100	5.7	4.3	17.0	15.6	42.6	10.7
Pilot	11945	5.7	5.7	20.6	14.2	46.2	11.6
Onas	6221	6.4	6.4	20.6	14.9	48.3	12.1
Lemhi	11415	7.1	9.9	22.7	19.9	59.6	14.9*
Chinook	H-4258	7.8	7.1	17.8	12.8	45.5	11.4
Mida	12008	5.7	8.5	19.9	16.3	50.4	12.6
Henry	12265	3.6	7.1	17.8	14.9	43.4	10.9
Lee	12488	7.1	7.8	14.2	12.8	41.9	10.5
Awmed Onas	12235	7.8	7.8	22.0	17.0	54.6	13.7
Ceres	6900	7.1	7.8	20.6	15.6	51.1	12.8

Note: Pilot is the check in this nursery.

*Varieties yielding significantly more than the check (5%).

Mean Yield.....12.06
 S. E. \bar{x}792
 L.S.D. (5%)..... 2.3
 L.S.D. (1%)..... 3.1
 C. V. 6.61%

1
3
1

Table LXVI • Agronomic data from dryland spring wheat nursery grown in Missoula County.
LXVI Single row plots, three replications. A. Donovan farm, Frenchtown, Montana 1954.

Date Planted. April 29, 1954 Date Harvested. September 1, 1954 Size of Plot. 16 feet

Variety or Cross	C. I. or N No.	Plot Yields In Bushels Per Acre			Total Bushels	Average Bushels Per Acre
		I	II	III		
Thatcher	10003	7.1	7.1	11.4	25.6	8.5
Selkirk	13100	10.7	9.2	12.1	32.0	10.7
Pilot	11945	13.5	5.7	13.5	32.7	10.9
Onas	6221	18.5	13.5	14.9	46.9	15.6**
Lemhi	11415	17.0	12.8	16.3	46.1	15.4*
Chinook	H-4258	12.8	11.4	11.4	35.6	11.9
Mida	12008	13.5	11.4	13.5	38.4	12.8
Henry	12265	9.2	9.2	11.4	29.8	9.9
Lee	12488	14.9	7.1	11.4	33.4	11.1
Awned Onas	12235	17.8	14.2	12.8	44.1	14.7*
Ceres	6900	12.8	7.1	13.5	33.4	11.1

Note: Pilot is the check in this nursery.

* Varieties yielding significantly more than the check (5%).

** Varieties yielding significantly more than the check (1%).

Mean Yield, ... 12.0
 S.E. \bar{x} , ... 1.15
 L.S.D. (5%), ... 3.4
 L.S.D. (1%), ... 4.6
 C.V., ... 9.58%

Table LXVII . Agronomic data from dryland spring wheat nursery grown in Flathead County.
 Lxvii Single row plots, four replications. Conrad Gilbertson farm, Kalispell,
 Montana 1954.

Date Planted. May 4, 1954 Date Harvested. August 31, 1954 Size of Plot. 16 feet

Variety or Cross	C. I or N No.	Plot Yield In Bushels Per Acre				Total Bushel	Average Bushel Per Acre
		I	II	III	IV		
Thatcher	10003	20.6	22.7	17.0	18.5	78.8	19.7
Selkirk	13100	18.5	24.1	23.4	18.5	84.5	21.1
Pilot	11945	23.4	20.6	17.8	18.5	80.3	20.1
Onas	6221	18.5	21.3	22.0	20.6	82.4	20.6
Lemhi	11415	29.8	31.2	26.3	19.2	106.5	26.6
Chinook	H-4258	16.3	22.7	14.2	17.8	71.0	17.8
Mida	12008	22.7	20.6	17.8	15.6	76.7	19.2
Henry	12265	16.3	21.3	17.8	21.3	76.7	19.2
Lee	12488	22.7	17.8	11.4	17.0	68.9	17.2
Awned Onas	12235	17.8	22.7	26.3	14.9	81.7	20.4
Ceres	6900	22.7	23.4	17.0	17.8	80.9	20.2

Ceres is used as a check in this nursery.

Mean Yield.....20.2
 S. E. \bar{x} 1.576
 L. S. D. (5%)..... 4.5
 C. V. 7.8%

Table LXVIII. Summary of eleven varieties of spring wheat in Northwestern Montana under dryland conditions in 1954.
LXVIII

Variety or Cross	C. I. or H No.	Superior	Location French- town	Still- water	Average Bushel Per Acre	Rank
Thatcher	10003	10.9	8.5	19.7	13.4	8
Selkirk	13100	10.7	10.7	21.1	14.2	6
Pilot	11945	11.6	10.9	20.1	14.2	6
Onas	6221	12.1	15.6	20.6	16.1	3
Lemhi	11415	14.9	15.4	26.6	19.0	1
Chinook	H-4258	11.4	11.9	17.8	13.7	7
Mida	12008	12.6	12.8	19.2	14.8	4
Henry	12265	10.9	9.9	19.2	13.3	9
Lee	12488	10.5	11.1	17.2	12.9	10
Awmed Onas	12235	13.7	14.7	20.4	16.3	2
Ceres	6900	12.8	11.1	20.2	14.7	5
Mean Yield		12.1	12.0	20.2	14.4	
S. E. \bar{x}		.792	1.15	1.576		
L.S.D. (5%)		2.3	3.4	4.5		
C. V. Per cent		6.61	9.58	7.8		

Table LXIX . Annual and six year summary of hard red spring wheat at Creston, Montana 1949-1954.
 LXIX (Dryland)

Variety or Cross	C. I. or N No.	1949	1950	1951	1952	1953	1954	Average Bushels Per Acre	Years Grown
Rescue x Th s615	B51-43						63.2	63.2	1
Reward	8182	33.3	43.9	41.8				39.7	3
Supreme	8026	37.3	58.3	49.1	41.6	37.1	50.4	45.6	6
Thatcher	10003	41.1	51.5	43.7	31.9	36.4	48.1	42.1	6
Marquis	3641	37.6	58.4	40.2			42.8	44.7	4
Ceres	6900	45.4	57.9	48.5	40.4	36.2	67.2	49.3	6
Pilot	11945	44.7	63.1	42.3	35.7	39.5	53.5	46.5	6
Pilot x Mida (N1756)	12303		61.2	40.9				51.1	2
Mida x Cadet (N1831)	12363		61.2	50.3				55.8	2
Lee	12488		60.5	41.1	36.9	38.8	49.0	45.2	5
Pilot x Mida (N1953)	12445		59.8					59.8	1
Merit x Pilot (N1860)	12355		59.3					59.3	1
Cadet	12053		59.1					59.1	1
Mida	12008		53.4	47.2	39.9	43.2	54.0	47.5	5
Rescue	12435		48.2	38.5	38.7	38.9	50.2	42.9	5
Pilot x Merit (N1898)	12442		58.1					58.1	1
Rushmore	12273			48.4	40.6	41.8	49.2	45.0	4
N1764 x Henry (N2211)	12733			47.5	37.6	38.3		41.1	3
1764 x Rescue	B49-90			46.5	39.0	37.8		41.1	3
Tinstitutein x Newthatch	12739			46.3				46.3	1
N 1552 x Mida	12746			45.4	44.9			45.1	2
Red Thatcher				45.1				45.1	1
Pilot x Merit (N1996)	12648			42.5				42.5	1
Saunders	3516			39.0				39.0	1
1750 x Rescue	B50-120				39.2	40.2		39.7	2
1750 x 1753 (N2256)	12975				42.8		57.5	50.1	2
1750 x Rescue	B49-102				41.1	36.6		38.9	2

Table LXIX. Continued.
LXIX

Variety or Cross	C. I. or N No.	1949	1950	1951	1952	1953	1954	Average Bushels Per Acre	Years Grown
Pilot ² x Thatcher (N2170)	12974				42.5	41.6	50.2	44.8	3
Chinook	H-4258				36.6	41.6	46.4	41.5	3
Rescue x Th s615	B51-16						54.7	54.7	1
Rescue x Thatcher	B50-18					43.7	58.0	50.8	2
1520 x 1752 (N2389)	13041					38.0	60.4	49.2	2
Selkirk C. I. 186	13100					38.9	49.2	44.0	2
Pilot x Regent (N2183)	13042					42.1	48.3	45.2	2
Rescue x Th s615	B51-27						52.6	52.6	1
Henry	12265				62.2	74.9	75.8	70.9	3
Rescue x 1831	B 51-9						63.2	63.2	1
1764 x Rescue	B49-78						52.8	52.8	1
Rescue x Regent	4337-35						49.9	49.9	1
Pilot ² x Merit	N2164						52.6	52.6	1
Willet	13099						50.2	50.2	1
Narquis	Lohr						46.9	46.9	1

Table LXX. Six year summary of hard red spring wheats in Northwestern Montana under dryland conditions 1949-1954.
LXX

Variety or Cross	C. I. or H No.	Cres- ton	Lin- coln	San- ders	Lake	Miss- oula	Flat- head	Min- eral	Average Bu./A	Number Trials
Rescue x th s 615	B51-43	63.2							63.2	1
Rescue x th s 615	B51-16	54.7							54.7	1
Reward	8182	39.7	5.7	19.1	7.3				18.0	6
Supreme	8026	45.6	4.6	20.3	9.0				19.9	7
Thatcher	10003	42.1	9.5	13.0	9.0	8.5	15.3	9.6	15.3	24
Marquis	3641	44.7	11.2	13.2	9.9		13.5		18.5	11
Cores	6900	49.3	9.9	14.7	8.5	11.1	15.1	10.5	17.0	24
Pilot	11945	46.5	9.3	14.6	9.5	10.9	14.9	10.8	16.6	24
Pilot x Mida (W1756)	12303	51.1							51.1	2
Mida x Cadet (W1831)	12363	55.8							55.8	2
Lee	12488	45.2	11.4	13.0		11.1	13.5	11.6	17.6	16
Pilot x Mida (W1953)	12445	59.8							59.8	1
Merit x Pilot (W1860)	12355	59.3							59.3	1
Cadet	12053	59.1							59.1	1
Mida	12008	47.5				12.8	19.2	12.6	23.0	8
Rescue	12435	42.9	10.1	13.5			12.1	10.5	17.8	16
Pilot x Merit (W1898)	12442	58.1							58.1	1
Rushmore	12273	45.0	5.5	9.0			9.6	18.4	17.5	8
1764 x Henry (W2211)	12733	41.1	9.5	12.8			9.0	8.6	16.2	12
1764 x Rescue	B49-90	41.1							41.1	3
Timstein x Newthatch	12739	46.3							46.3	1
1552 x Mida	12746	45.1							45.1	2
Red Thatcher		45.1							45.1	1
Pilot x Merit (W1996)	12648	42.5							42.5	1
Saunders	3516	39.0							39.0	1

Table LXX. Continued.
LXX

Variety or Cross	C. I. or N No.	Cres- ton	Lin- coln	San- ders	Lake	Miss- oula	Flat- head	Min- eral	Average Bu./A	Number Trials
1750 x Rescue	B50-120	39.7							39.7	2
1750 x 1753 (N2256)	12975	50.1							50.1	2
1750 x Rescue	B49-102	38.9							38.9	2
Pilot x Thatcher (N2170)	12974	44.8							44.8	3
Chinook	H-4258	41.5	6.2	10.3		11.9	15.0	15.3	16.7	10
Rescue x Thatcher	B50-18	50.8							50.8	2
1520 x 1752 (N2389)	13041	49.2							49.2	2
Selkirk C. I. 186	13100	44.0				10.7	21.1	10.7	21.6	5
Pilot x Regent (N2183)	13042	45.2							45.2	2
Henry	12265	70.9				9.9	19.2	10.9	27.7	6
Rescue x th s 615	B51-27	52.6							52.6	1
Rescue x 1831	B51-9	63.2							63.2	1
1764 x Rescue	B49-78	52.8							52.8	1
Rescue x Regent	4337-35	49.9							49.9	1
Pilot ² x Merit	N2164	52.6							52.6	1
Willet	13099	50.2							50.2	1
Marquis	Lohr	46.9							46.9	1

Table LXXI. Six year summary of white spring wheats under dryland conditions Creston, Montana
 1949-1954.

Variety or Cross	C. I. or N No.	1949	1951	1952	1953	1954	Average Bushels Per Acre	Years Grown
Idaed	11706	41.1		61.9	65.7	76.2	61.2	4
Lemhi	11415	43.4	51.5	73.4	72.8	75.0	63.2	5
Onas	6221	44.2	55.8	63.5	68.5	62.2	58.8	5
Hope x Lemhi ⁴	12685		48.5	72.8			60.7	2
Awmed Onas	12235			72.3	69.9	68.2	70.1	3
Marfed	11919			62.4	70.6	72.7	68.6	3
Federation	4734			60.2	69.2	50.4	59.9	3
White Federation 38	11906			65.0	77.7		71.4	2
Baart	1697			72.8	60.2	65.8	66.3	3
Baart 46	12386			56.0	56.7		56.4	2
Marfed x Merit-22	13057				74.2	62.7	68.4	2
K.F.D.E.B. - 121	12944				69.7		69.7	1
Marfed x Merit-28	13058				72.3	75.5	73.9	2
Kenya x Lemhi ⁴	13051				70.9	71.3	71.1	2
Kenya x Lemhi ²	12947				62.6	82.6	72.6	2
W-5-67 (Lemhi x Hope-Fed)	13053				71.3	70.3	70.8	2
Marfed x Merit-10	13056				78.4	81.4	79.9	2
Onas 52	12946				78.9	77.6	78.2	2
Idaed x Merit-5	13055				65.2	83.3	72.2	2
Idaed x Merit-2	13054				61.0	77.4	69.2	2
Lemhi 53	13068					77.6	77.6	1

Table LXXII. Six year summary on white spring wheats under dryland conditions in Northwestern Montana
LXXII 1949-1954.

Variety or Cross	C. I. or N No.	Creston	Lincoln	Sanders	Lake	Flathead	Missoula	Mineral	Average	No. Trials
									Bushels Per Acre	
Idaed	11706	61.2	9.1	15.0	8.5	16.5			22.0	9
Lemhi	11415	63.2	10.7	16.5	9.9	19.3	15.4	12.4	21.0	23
Onas	6221	58.8	10.1	15.0	9.2	16.5	15.6	10.5	19.5	23
Hope x Lemhi ⁴	12685	60.7							60.7	2
Aimed Onas	12235	70.1	9.7	13.9		15.3	14.7	10.8	22.1	18
Marfed	11919	68.6							68.6	3
Federation	4734	59.9							59.9	3
White Federation 38	11906	71.4							71.4	2
Baart	1697	66.3							66.3	3
Baart 46	12386	56.4							56.4	2
Marfed x Merit-22	13057	68.4							68.4	2
K.F.D.E.B.-121	12944	69.7							69.7	1
Marfed x Merit-28	13058	73.9							73.9	2
Kenya x Lemhi ⁴	13051	71.1							71.1	2
Kenya x Lemhi ²	12947	72.6							72.6	2
W-5-67 (Lemhi x Hope-Ped)	13053	70.8							70.8	2
Marfed x Merit-10	13056	79.9							79.9	2
Onas 52	12946	78.2							78.2	2
Idaed x Merit-5	13055	72.2							72.2	2
Idaed x Merit-2	13054	69.2							69.2	2
Lemhi 53		77.6							77.6	1

Table LXXIII. Summary of spring wheat work in Sanders County 1949-1953 under dryland conditions.

LXXIII

Variety or Cross	G. I. or H No.	1949 Flains	1950 Trout Creek	1950 Flains	1952 Noxon	1952 Canas Praire	1953 Trout Creek	Average Bushel Per Acre	No. Trials
Reward	8182	19.1						19.1	1
Supreme	8026	20.3						20.3	1
Thatcher	10003	20.5	4.3	18.7	15.6	10.8	8.0	13.0	6
Idaed	11706	17.0	5.0	23.0				15.0	3
Lemhi	11415	23.6	5.9	23.9	23.1	11.2	11.3	16.5	6
Onas	6221	25.5	4.5	19.8	19.3	12.8	7.8	14.8	6
Marquis	3641	17.2	5.9	19.6				14.2	3
Pilot	11945	20.0	5.7	21.2	18.4	11.5	10.1	14.5	6
Ceres	6900	20.3	4.3	19.9	18.0	13.4	9.4	14.2	6
Rescue	12435		6.4	18.0	21.0	10.3	11.7	13.5	5
Awned Onas	12235		6.2	23.1	19.0	11.9	9.2	13.9	5
1764 x Henry (N2211)	12733				15.2	12.9	10.3	12.8	3
Lee					18.3	12.9	8.0	13.1	3
Rushmore	12273						9.0	9.0	1
Chinook	H-4258						10.3	10.3	1

Table LXXIV . Summary of spring wheat data in Mineral County, 1952-1954 under dryland conditions.
 LXXIV

Variety or Cross	C. I. or N No.	Location and Year			Average Bushels Per Acre	No. Trials
		1952 Superior	1953 Superior	1954 Superior		
Awmed Onas	12235	5.7	13.0	13.7	10.8	3
Ceres	6900	4.3	14.4	12.8	10.5	3
Rescue	12435	5.9	15.1		10.5	2
Lemhi	11435	7.6	14.7	14.9	12.4	3
Lee	12488	6.1	18.2	10.5	11.6	3
Thatcher	10003	6.9	11.1	10.9	9.6	3
Onas	6221	6.5	13.0	12.1	10.5	3
Pilot	11945	7.8	13.0	11.6	10.8	3
Rushmore	12273		18.4		18.4	1
1764 x Henry (W2211)	12733	6.4	10.9		8.6	2
Chinook	H-4258		19.2	11.4	15.3	3
Solkirk	13100			10.7	10.7	1
Kida	12008			12.6	12.6	1
Henry	12265			10.9	10.9	1

Table LXXV. Summary of spring wheat data in Lincoln County 1949-1953 under dryland conditions.
LXXV

Variety or Cross	C. I. or N No.	Location and Years				Average Bushel Per Acre	Number Trials
		1949 Eureka	1950 Eureka	1952 Eureka	1953 Eureka		
Reward	8182	5.7				5.7	1
Supreme	8026	4.6				4.6	1
Thatcher	10003	6.6	13.2	13.2	5.1	9.5	4
Idaed	11706	3.8	14.4			9.1	2
Lemhi	11415	6.6	15.3	14.0	6.7	10.6	4
Onas	6221	6.0	14.1	14.6	5.9	10.1	4
Marquis	3641	9.0	13.4			11.2	2
Pilot	11945	7.8	9.7	14.6	5.0	9.1	4
Ceres	6900	6.6	13.1	14.7	5.3	9.9	4
Awmed Onas	12235		14.4	9.1	5.7	9.7	3
Rescue	12435		12.0	12.6	5.7	10.1	3
1764 x Henry (N2211)	12733			14.3	4.6	9.4	3
Lee	12488			16.3	6.6	11.4	2
Rushmore	12273				5.5	5.5	1
Chinook	H-4258				6.2	6.2	1

Table LXXVI . Summary of spring grain data in Flathead County (Stillwater) 1950-1954
 LXXVI under dryland conditions.

Variety or Cross	C. I. or H No.	1950 Still- water	1953 Still- water	1954 Still- water	Average Bushel Per Acre	Years Grown
Thatcher	10003	16.5	9.4	19.7	15.3	3
Idaed	11706	16.5			16.5	1
Leshi	11415	15.0	16.3	26.6	19.3	3
Onas	6221	13.9	15.2	20.6	16.5	3
Marquis	3641	13.5			13.5	1
Ceres	6900	13.4	11.7	20.2	15.1	3
Rescue	12435	13.2	12.4		12.3	2
Ames Onas	12235	13.0	12.6	20.4	15.3	3
Pilot	11945	12.5	12.2	20.1	14.9	3
Lee	12488		9.9	17.2	13.5	2
Rushmore	12273		9.6		9.6	1
1764 x Henry	12733		9.0		9.0	1
Chinook	H-4258		12.2	17.8	15.0	2
Salkirk	13100			21.1	21.1	1
Mida	12008			19.2	19.2	1
Henry	12265			19.2	19.2	1