

SPRING GRAIN IMPROVEMENT  
Spring wheat (Irrigated)

A Total of six spring wheat nurseries were seeded in the spring of 1952. Two of these were located on the station at Creston, and four were located off-station. The off-station nurseries were located in Sanders County (Lonopine, not harvested), Lincoln County (Sorens), Lake County (Charlo), and Missoula County (Potomac).

The advance yield and western regional nurseries were grown on the station. The mean yield for the advance yield nursery was 50.58 bushel per acre. There was no significant difference when this test was analysed statistically. Considerable leaf rust was noted in this nursery. Table XX. The mean yield for the western regional white wheat nursery was 61.21 bushel per acre. Using Onas as a check, White Federation 38, Bart 46, and Thatcher were significantly less in yield. Considerable stem and leaf rust were noted. Table XXI.

The off-station nurseries contained nine varieties three of which were white wheat and six hard red spring wheats. Considerable damage was done by deer in the nursery at Potomac in Missoula County. Table XXII. Yields were outstanding in the nursery in Lincoln County, with a mean yield of 52.44. Eighty-five percent of this nursery lodged. A great amount of mildew and leaf rust were noted on most of the varieties. Table XXIII.

Table XXIV shows the results of test at Charlo, Lake County. In this test, three white and two hard red spring wheats were significantly better than Thatcher.

Table XXV gives the average of all trials under irrigation in 1952. named Onas ranks number one followed by Onas, Lemhi, and Pilot respectively.

Data for the period 1949-1952 is shown in Table XXVI. For thirteen station years Pilot has produced more than any of the hard red spring wheats. Onas was highest yielding white wheat for the same period.

Table XVI. Agronomic data from western regional white wheat yield nurseries of three replications under irrigated conditions, Creston, Montana, in 1952.

Variety or Cross	Date of seeding 7-12-52		Date of emergence 5-19-52					Size of plot <u>16 feet</u>				Average Bushels /a
	C. I. or N No.	First Headed date	Plant Height (ins.)	Leaf Rust %	Stem Rust	Lodging %	Test wt.	Yield Per plot, bu/a			Total	
								I	II	III		
Marfed	11919	7-16	46	62	x	-	62	65.2	56.7	64.5	186.4	62.1
Onas	6221	7-18	45	83	x	-	61	65.2	68.0	68.0	201.2	67.1
White Fed 38	11906	7-8	43	53	x	-	60	55.3	53.1	51.0	159.4	53.1*
Baart	1697	7-15	52	80	-	30	63	61.7	68.0	58.9	188.6	62.9
Lemhi	11415	7-14	48	72	x	-	62	68.0	65.2	73.0	206.2	68.7
Hope x Lemhi <sup>4</sup>	12685	7-14	47	52	x	-	61	73.0	61.7	65.2	199.9	66.6
Henry	12265	7-12	48	42	-	-	60	56.7	58.9	73.7	189.3	63.1
Idaed	11706	7-5	45	57	x	-	61	64.5	68.0	51.7	184.2	61.4
Federation	4734	7-19	48	82	x	-	61	67.3	49.6	62.4	179.3	59.8
Baart 46	12386	7-15	53	82	-	35	62	56.0	50.3	54.6	160.9	53.6*
Auned Onas	12235	7-16	46	77	x	-	61	60.2	61.7	63.8	185.7	61.9
Thatcher	10003	7-10	45	37	-	-	61	56.0	49.6	56.7	162.3	54.1*

Note: Onas is considered the check variety for this nursery.

\* Varieties yielding significantly less than Onas.

x Stem rust present.

Mean yield.....61.21  
 S. E.  $\bar{x}$ ..... 2.91  
 L.S.D. ( $P = .05$ )..... 8.51  
 C. V..... 4.75%

Table XXII. Yield data from Spring wheat nursery grown under irrigated conditions in Missoula County. Single row plots four replications, Hays farm, Potomac, Montana.

Date Planted 5-20-52

Size of Plot 16 feet

Variety or Cross	C. I. or N No.	Yield per plot, bu/a				Total	Average bushels /a
		I	II	III	IV		
Awned Onas	12235	9.9	24.8	26.9	17.0	78.6	19.65
1764 x Henry (N2211)	12733	12.8	16.8 <sup>1</sup>	19.8	23.4	72.8	18.20
Ceres	6900	17.0	22.7	15.5	32.6	87.8	21.95*
Rescue	12435	2.8	8.5	20.6	21.3	53.2	13.30
Lemhi	11415	4.3	3.5	5.7	5.7	19.2	4.80
Lee	12488	12.0	17.0	27.6	25.5	82.1	20.53*
Thatcher	10003	5.7	9.2	17.7	19.1	51.7	12.93
Onas	6221	3.5	8.5	10.8 <sup>1</sup>	7.8	30.6	7.65
Pilot	11945	20.8	17.7	24.8	25.5	88.8	22.20**

\* Varieties yielding significantly more than Thatcher (5%).

\*\* Varieties yielding significantly more than Thatcher (1%).

<sup>1</sup> Calculated by missing plot formula.

Note: Thatcher is considered the check in this nursery.

Mean Yield.....15.69  
 S. E.  $\bar{X}$ ..... 2.31  
 L.S.D. ( $P_{.05}$ )..... 6.76  
 L.S.D. ( $P_{.01}$ )..... 9.21  
 C. V. ....14.72%

Table XXIII. Yield data from Spring wheat nursery grown under irrigated conditions in Lincoln County. Single row plots four replication on Wilfred Johnson ranch, Bureka, Montana.

Date Planted 5-14-52

Size of Plot 16 feet

Variety or Cross	C. I. or H No.	Yield per plot, bushel per acre				Total	Average Bushels Per acre
		I	II	III	IV		
Leo	12488	41.1	45.4	58.9	40.4	185.8	46.45
Lemhi	11415	26.2	65.9	64.5	49.6	206.2	51.55
Thatcher	10003	38.3	43.9	43.9	48.2	174.3	43.58
Ceres	6900	53.9	65.2	65.9	59.5	244.5	61.13*
N1764 x Henry (H2211)	12733	73.7	56.7	60.9	49.6	240.9	60.22*
Amed Onas	12235	65.2	59.5	60.2	50.3	235.2	58.80*
Rescue	12435	41.8	39.7	44.7	47.5	173.7	43.42
Onas	6221	61.7	59.5	49.6	55.3	226.1	56.53*
Pilot	11945	50.3	54.6	54.6	41.8	201.3	50.32

Note: Thatcher is considered check in this nursery.

\* Varieties yielding significantly more than Thatcher.

Mean Yield .....	52.44
S. E. $\bar{x}$ .....	4.27
L.S.D. ( $P = .05$ ) .....	12.43
C. V. ....	8.13%

Table XXIV. Yield data from Spring wheat nursery grown under irrigated conditions in Lake County. Single row plots four replications, Bill Eldridge farm, Charlo, Montana.

Date Planted 5-9-52

Size of Plot 16 feet

Variety or Cross	C. I. or N No.	Yield per plot, bu/a				Total	Average Bushels /a
		I	II	III	IV		
Lee	12488	14.8	20.6	24.8	22.0	82.2	20.55
Lenhi	11415	26.6	31.2	27.6	27.6	113.0	28.25**
Thatcher	10003	17.7	21.3	24.8	15.5	79.3	19.83
Ceres	6900	18.4	28.3	26.9	17.7	91.3	22.82
1764 x Henry (N2211)	12733	25.5	22.7	26.2	22.0	96.4	24.10
Awmed Onas	12235	26.9	26.9	23.4	29.8	107.0	26.75**
Rescue	12435	22.0	26.9	36.9	25.5	111.3	27.83**
Onas	6221	21.3	26.9	28.3	27.6	104.1	26.03*
Pilot	11945	24.8	24.1	29.1	26.9	104.9	26.23*

\* Varieties yielding significantly more than Thatcher (5%).

\*\* Varieties yielding significantly more than Thatcher (1%).

Note: Thatcher is considered the check in this nursery.

Mean Yield.....24.71  
 S. E. E..... 1.64  
 L.S.D. (P= .05)..... 4.79  
 L.S.D. (P= .01)..... 6.51  
 C. V. .... 6.66%

Table XXV. Summary of nine varieties of wheat in Northwest Montana under irrigated conditions in 1952.

Variety or Cross	Station or Location				Average Bu/acre	Rank
	Creston	Charle	Potomac	Bureka		
Lee	54.83	20.55	20.53	46.45	35.58	7
Lenhi <sup>1</sup>	68.70	28.25	4.80	51.55	38.33	4
Thatcher	48.20	19.83	12.93	43.58	31.14	9
Ceres	50.30	22.82	21.95	61.13	39.05	3
1764 x Henry (H2211)	47.00	24.10	18.20	60.22	37.38	6
Awned Onas <sup>1</sup>	61.90	26.75	19.65	58.80	41.75	1
Rescue	51.00	27.83	13.30	43.42	33.89	8
Onas <sup>1</sup>	67.10	26.03	7.65	56.53	39.33	2
Pilot	54.53	26.23	22.20	50.32	38.32	5

<sup>1</sup>White wheats.

1949-1952. (Irrigated Experiments).

Variety or Cross	Creston 1949-1952 4 yr. Av.	Lincoln Co. 1949, 51, 52 3 yr. Av.	Navaho Co. 1950-51 2 yr. Av.	Lake Co. 1950-52 3 yr. Av.	Missoula Co. 1952 1 year	Average	Rank	Station Years
atcher	49.1	32.7	41.8	30.9	12.9	33.4	7	13
llet	48.9	35.4	46.3	28.9	22.2	36.6	3	13
eres	44.7	38.5	45.0	22.0	22.0	30.0	10	13
ee	50.3*	46.5***	—	20.6***	20.5	34.4	5	6
764 x Henry (N2211)	59.9**	60.2***	—	24.1***	18.2	40.8	2	5
uprene	42.6*	22.9***	—	—	—	32.7	8	4
eward	40.2*	16.3***	—	—	—	28.2	11	4
escue	48.4**	38.1**	44.7	26.7	13.3	34.2	6	10
ans <sup>1</sup>	54.3	39.3	52.3	27.7	7.7	36.3	3	13
amed Onas <sup>1</sup>	63.0*	48.3**	48.8	26.0	19.7	41.2	1	11
arquis	38.7**	20.1**	38.8***	25.7***	—	30.8	9	5
amhi <sup>1</sup>	34.4	37.2	58.8	22.7	4.8	35.6	4	13

White wheat.

\* Three year average only.

\*\* Two year average only.

\*\*\* One year only.

SPRING GRAIN IMPROVEMENT  
Wheat (Dryland)

Seven dryland nurseries were seeded during May 1952, in four Northwest Montana Counties. Two of these seven nurseries were located on the home station at Creston. The remaining five were off-station in Lincoln, Sanders, and Mineral Counties. One nursery was seeded in each county except Sanders where three nurseries were seeded. Only two of the nurseries were harvested in Sanders County.

The mean yield of the advanced yield nursery was 40.54 bushels per acre. When analysed statistically there was no significant difference in yield. Table XL.

The western regional white wheat nursery had a mean yield of 65.21 bushels per acre. Considerable leaf rust was noted on all varieties, with Baart having a reading of 96%. Stem rust was found on all the white wheats but Baart, and Baart 46. Table XLI.

The nursery on the Harker farm in Sanders County was seeded quite late in the spring. This date was about two weeks after most plantings had been done in that area. The mean yield was 18.65 bushels per acre. All of the white wheats were significantly better when compared to Thatcher and Rescue was found to be significantly better than Thatcher. Table XLII.

The yields in the nursery at Casag Prairie were very low with a mean yield of 11.9 bushels per acre. Very little moisture fell during the growing season. There was no significant difference in the test when analysed statistically. Table XLIII.

Livestock damage in the Mineral County nursery reduced the yields and made the test inconclusive. The mean yield was 6.3 bushels per acre, with no significant difference between varieties. Table XLIV.

The mean yield of the nursery on the Grubb farm in Lincoln County was 13.70 bushels per acre. Using Thatcher as a check there was no variety significantly higher in yield. Table XLV.

Table XLVI shows work done in Northwest Montana in 1952. The white wheats rank in the following order; Onas, Awmed Onas, Lemhi, followed by Ceres a hard red spring wheat. Table XLVII gives data for all trials and ranks Onas number one white wheat and Pilot is the highest yielding hard red spring wheat in 15 trials.



XLI. Agronomic data from western regional white wheat yield nursery of three replications under dryland conditions, Creston, Montana, in 1952.

Date of seeding 5-12-52

Date of emergence 5-19-52

Size of plot 16 feet

Variety or Cross	C. I. or N No.	First Headed date	Plant Height (ins.)	Leaf Rust %	Stem Rust	Lod- ging %	Test wt.	Yield Per plot, bu/a			Average Bushels /a	
								I	II	III		Total
	11706	7-5	45	53	x	-	62	55.3	77.3	53.1	185.7	61.9
Onas	12235	7-4	47	88	x	-	60	62.4	78.7	75.9	217.0	72.3
	11919	7-15	49	75	x	-	65	63.1	66.6	57.4	187.1	62.4
	11415	7-12	47	70	x	-	62	80.1	89.1	51.0	220.2	73.4
ation	4734	7-18	47	87	x	-	61	60.9	60.9	58.9	180.7	60.2
Federation 38	11906	7-6	47	58	x	-	60	64.6	62.4	65.9	194.9	65.0
	1697	7-15	54	96	x	10	62	85.1	65.9	67.3	218.3	72.8
46	12386	7-14	56	92	-	15	62	58.9	51.7	57.4	168.0	56.0
her	10003	7-10	47	47	-	-	60	58.1	65.9	56.7	180.7	60.2
	12265	7-10	48	25	-	10	60	90.1	53.9	42.5	186.5	62.2
	6221	7-16	50	83	x	15	61	56.0	68.7	65.9	190.6	63.5
x Lenhi	12685	7-13	50	85	x	-	60	85.1	70.9	62.4	218.4	72.8

Onas is considered the check for this nursery.  
Stem rust present.

Mean yield.....65.21  
S. E.  $\bar{x}$ ..... 6.36  
L.S.D. ( $P = .05$ ).....18.6  
C. V. .... 9.74%

Table XLIII. Yield data from Spring wheat nursery grown under dryland conditions in Sanders County. Single row plots four replication, John Harker farm, Noxon, Montana.

Date Planted 5-22-52

Size of plot 16 feet.

Variety or Cross	C. I. or N No.	Yield per plot, bu/a				Total	Average Bushels /a
		I	II	III	IV		
Awne'd Onas	12235	21.3	18.4	19.1	17.0	75.8	18.95 *
1764 x Henry (N2211)	12733	17.0	14.8	17.7	11.3	60.8	15.20
Ceres	6900	18.4	18.4	20.6	14.8	72.2	18.05
Rescue	12435	18.4	20.6	26.9	18.4	84.3	21.07**
Lemhi	11415	19.1	26.6	26.9	19.8	92.4	23.10**
Lee	12488	17.0	17.0	24.8	14.2	73.0	18.25
Thatcher	10003	12.0	17.7	17.7	14.8	62.2	15.55
Onas	6221	19.1	19.8	20.6	17.7	77.2	19.30*
Pilot	11945	19.1	16.2	20.6	17.7	73.6	18.40

\* Varieties yielding significantly more than Thatcher (5%).

\*\* Varieties yielding significantly more than Thatcher (1%).

Note: Thatcher is considered the check in this nursery.

Mean Yield.....18.65  
 S. E.  $\bar{x}$ ..... 1.09  
 L.S.D. ( $P = .05$ )..... 3.17  
 L.S.D. ( $P = .01$ )..... 4.30  
 C. V..... 5.82%

Single row plots, four replication, Richard Sipes farm, Camas Prairie, Montana.

Date Planted 5-16-52

Size of Plot 16 feet

Variety or Cross	C. I. or N. No.	Yield per plot, bu/a				Total	Average bushels /a
		I	II	III	IV		
Awned Onas	12235	12.8	12.1*	9.9	12.8	47.6	11.9
1764 x Henry (N2211)	12733	12.8	10.6	14.8	13.5	51.7	12.9
Ceres	6900	9.2	18.4	15.5	10.6	53.7	13.4
Rescue	12435	11.3	12.0	12.8	5.0	41.1	10.3
Lenhi	11415	13.5	7.1	10.6	13.5	44.7	11.2
Lee	12488	12.8	14.8	10.6	13.5	51.7	12.9
Thatcher	10003	11.3	11.3	12.0	8.5	43.1	10.8
Onas	6221	12.8	12.8	11.3	14.2	51.1	12.8
Pilot	11945	9.9	14.8	9.9	11.3	45.9	11.5

\* Calculated by missing plot formula

Note: Analysis of variance indicates no significant difference.

Mean Yield .....11.9  
 S. E.  $\bar{x}$  ..... 1.34  
 L.S.D. ( $P = .05$ ) ..... N. S.  
 C. V. ....11.21%

Table XLIV. Yield data from Spring wheat nursery grown under dryland conditions in Mineral County. Single row plots three replication, on Otto Hansen farm, Superior, Montana.

Date Planted 5-13-52

Size of plot 16 feet

Variety or Cross	C. I. or N No.	Yield per plot, bu/a				Total	Average bushels /a
		I	II	III	IV		
Awmed Onas	12235	4.3		7.1	5.7	17.1	5.7
1764 x Henry	12733	5.0		7.1	7.1	19.2	6.4
Ceres	6900	.7		5.7	7.8	14.2	4.3
Rescue	12435	2.1		6.4	9.2	17.7	5.9
Lenhi	11415	3.5		5.7	13.5	22.7	7.6
Lee	12488	2.8		6.4	9.2	18.4	6.1
Thatcher	10003	5.0		7.1	8.5	20.6	6.9
Onas	6221	3.8		7.1	8.5	19.4	6.5
Pilot	11045	4.3		9.2	9.9	23.4	7.8

Note: One rep destroyed by livestock.  
The analysis of variance indicates no significant yield differences.

Mean Yield..... 6.3  
S. E.  $\bar{X}$ ..... .9228  
L.S.D. ( $P = .05$ )..... N. S.  
C. V. ....14.48

Table XLV. Yield data from Spring wheat nursery grown under dryland conditions in Lincoln County. Single row plots four replicati~~on~~, on Fred Grubb farm, Eureka, Montana.

Date Planted 5-14-52

Size of plot 16 feet

Variety or Cross	C. I. or N No.	Yield per plot, bu/a				Total	Average bushels /a
		I	II	III	IV		
Armed Onas	12235	9.2	8.5	8.5	10.0*	36.2	9.1
1764 x Henry (N2211)	12733	12.0	14.8	15.5	14.8	57.1	14.30
Ceres	6900	12.8	14.2	14.2	17.7	58.9	14.73
Rescue	12435	13.5	17.0	12.8	7.1	50.4	12.60
Lemhi	11415	12.0	16.2	13.5	14.2	55.9	14.00
Lee	12488	16.2	17.0	17.0	14.8	65.0	16.25
Thatcher	10003	9.9	12.8	13.1*	17.0	52.8	13.20
Onas	6221	13.5	13.5	12.8	18.4	58.2	14.55
Pilot	11045	11.3	14.8	14.8	17.7	58.6	14.6

\* Calculated by missing plot formula.

Note: Thatcher considered check in this nursery.

Mean Yield.....13.70  
 S. E.  $\bar{x}$ ..... 1.17  
 L.S.D. ( $\times 5\%$ )..... 3.42  
 C. V..... 8.53%

Table XLVI. Summary of nine varieties of wheat in Northwestern Montana in 1952, under dryland conditions.

Variety or Cross	C. I. or H No.	Station or Location					Average Bushel Per Acre	Rank
		Creston	Superior	Heron	Camas Prairie	Eureka		
Awmed Onas	12235	50.80	5.70	18.95	11.90	9.10	19.29	2
1764 x Henry	12733	37.60	6.40	15.20	12.90	14.30	17.28	8
Ceres	6900	40.40	4.30	18.05	13.40	14.73	18.18	4
Rescue	12435	38.73	5.90	21.07	10.30	12.60	17.72	6
Lemhi	11415	-----	7.60	23.10	11.20	14.00	18.63	3
Lee	12488	36.87	6.10	18.25	12.90	16.25	18.07	5
Thatcher	10003	31.87	6.90	15.55	10.80	13.20	15.66	9
Onas	6221	43.73	6.50	19.30	12.80	14.55	19.30	1
Pilot	11945	35.67	7.80	18.40	11.50	14.60	17.59	7

Table XLVII. Wheat data, selected varieties, of varietal work done in Northwestern Montana 1949-52, (Dryland Experiments).

Variety or Cross	C. I. or H No.	Greston	Lake Co.	Lincoln	Sanders	Flathead	Mineral	Ave- rage	Rank	Station Years
		1949-52 4 yr. Av.	1949 1 year	County 1949-50,51 3 yr. Av.	County 1949-50,52 3 yr. Av.	County 1950 1 year	County 1952 1 year			
Thatcher	10003	42.10	9.00	11.00	15.00	16.50	6.90	16.80	5	13
Pilot	11945	46.50	9.50	10.70	16.10	12.50	7.80	17.20	3	13
Ceres	6900	48.10	8.50	11.30	16.00	13.40	4.30	16.90	4	13
Lee	12488	46.20 <sup>3</sup>	—	16.30 <sup>1</sup>	15.60 <sup>1</sup>	—	6.10	21.10 <sup>4</sup>		6
1764 x Henry	12733	42.50 <sup>2</sup>	—	14.30 <sup>1</sup>	14.00 <sup>1</sup>	—	6.40	19.30 <sup>4</sup>		5
Supreme	8026	36.20	9.00	4.60 <sup>1</sup>	20.30 <sup>1</sup>	—	—	17.50 <sup>4</sup>		7
Revard	8182	39.70 <sup>3</sup>	7.30	5.70 <sup>1</sup>	19.10 <sup>1</sup>	—	—	18.00 <sup>4</sup>		6
Rescue	12435	41.80 <sup>3</sup>	—	12.30 <sup>2</sup>	13.90 <sup>2</sup>	13.20	5.90	17.40 <sup>4</sup>		9
Onas	6221	47.90 <sup>3</sup>	9.20	11.60	17.80	13.90	6.50	17.80	2	12
Aimed Onas	12235	50.30 <sup>2</sup>	—	11.70 <sup>2</sup>	15.00 <sup>2</sup>	13.00	5.70	19.20 <sup>4</sup>		8
Marquis	3641	45.40 <sup>3</sup>	9.90	11.20 <sup>2</sup>	14.90 <sup>2</sup>	13.50	—	18.60 <sup>4</sup>		9
Lenhi	11415	47.90 <sup>2</sup>	9.90	11.90	18.50	15.00	7.60	18.50	1	11

<sup>1</sup>One year average.

<sup>2</sup>Two year average.

<sup>3</sup>Three year average.

<sup>4</sup>Not included in rank column.