

Winter Grain Nurseries

Winter Wheat

Three winter wheat nurseries were established in the fall of 1959. Two on irrigated land, one in Crook county and the second in Deschutes County. The third nursery was seeded on a dryland location in Crook county.

The irrigated winter wheat nurseries were composed of the eighteen varieties or lines with the same varieties or lines seeded at each location. The Crook county nursery was established on the Claude Williams farm six miles N. W. of Prineville in the Crooked River Valley. Due to limited water, this nursery received only one irrigation. The combination of water shortage and a hot dry summer reduced the yield 25-50% below the normal production for this area. Table No. 9 is a summary table showing the yield both in bushels per acre and pounds per acre, the multiple range test for significance, bushel weight, average heading date and plant height in inches. The yields by replicate are presented in appendix table no. 11.

Under the severe conditions that existed during both the winter and the growing season, the more winter hardy types e.g. Columbia, Kharkof and Wasatch appeared to be superior to varieties such as Omar, Elmar and to those varieties with Orford in their percentage. Burt was fourth ranking which would attest to its high yielding potential under conditions more favorable to its growth. (14 x 50 - 3) x Burt Sel. 9 was the highest yielding but not significantly higher yielding than Itana, Columbia, Burt, 14 x 53 - Sel. 58 or Kharkof.

The second winter wheat nursery was established on the farm of Bob Beesley in the Tumalo district of Deschutes County. The soil was a Deschutes sandy loam. There was heavy winter injury at this location. The irrigation water was not limited in this area, however, during the latter part of July and first of August, it was impossible to keep the soil moist with normal irrigation practices because of extremely warm weather. Consequently, there was reduction in yield, but the reduction from normal was not as severe as in the Crook County nursery.

Table No. 10 is a summary table presenting the yield in bushels per acre and pounds per acre, the multiple range test for significance, bushel weight, plant height in inches and average heading date. Appendix Table No. 12 shows the yield by replicates.

In comparing the results of the nurseries grown in Crook and Deschutes Counties, certain points are interesting. Burt and Itana, both high-yielding at the Williams nursery are among the lowest at the Beesley location. On the other hand, 14 x 53 Sel. 9 ranking 13th out of 18 varieties at the Williams location. These changes in relative rank may indicate that, for example, Burt while being a high producing variety on loamy type soil is less adapted to a lighter soil. Many of the varieties maintained the same relative rank at each location.

The dryland winter wheat nursery established in Crook county was not harvested. The nursery was severely damaged by livestock.

The information pertaining to plot design and techniques used may be found in the Cereal nurseries section of the appendix.

Winter Barley Nurseries.

A dryland winter barley nursery was established on the farm of Howard Campbell, Culver, Oregon. Winter killing was severe at this location and the nursery was abandoned.

An irrigated winter barley nursery was established on the Bob Beesley farm at Tumalo, Oregon. This location was also abandoned because of severe winter kill. Within each replicate, there appeared to be varieties better able to withstand winter injury. These varietal differences were highly variable between replications indicating that moisture levels or seeding depth may be important considerations in the ability of varieties to withstand winter kill. It is recognized that both conditions are basic, but at what moisture level or seeding depth will seedings be most likely to survive?

Table No. 9

Yield in Bushels and Pounds Per Acre, Bushel Wt., Plant Height in Inches, and average Heading Date for the Irrigated Winter Wheat Varieties Grown on the Claude Williams Farm Prineville, Oregon - 1960

Variety or Line	Pedigree	Yield		Multiple Range Test for Sig.Dif.	Bushel Wt.	Plant Height in inches	Average Heading Date
		Bushels Per Acre	Pounds Per Acre				
(14 x 50 - 3) x Burt Sel. 9	13448	64.0	3840.0		60.00	28.0	6/16
Itana	12933	56.0	3358.9		62.75	39.8	6/15
Columbia	12928	54.8	3284.7		61.50	34.6	6/12
Burt		54.0	3241.0		60.00	35.0	6/14
14 x 53 Sel. 58	13447	53.8	3227.7		56.25	33.8	6/16
Kharkof	1442	53.8	3225.4		61.00	39.0	6/16
Fullman Sel. 9	13432	53.0	3177.5		58.00	31.0	6/15
Wasatch	11925	47.0	2819.9		61.75	43.5	6/15
Athena x Blackhull x Rex		46.6	2795.9		59.50	38.5	6/16
Rio. Rex x Cheyenne	12925	46.5	2791.5		60.00	36.5	6/12
Norin 10 x Staring 55-1673	13273	46.2	2771.2		56.25	30.0	6/17
Omar	13072	42.8	2565.8		58.25	33.0	6/16
14 x 53 Sel. 9	13449	40.3	2419.6		58.50	27.8	6/13
Rio. Rex x Athena P63		39.1	2343.9		57.75	32.0	6/14
Elmar	12392	38.9	2334.9		58.50	31.8	6/16
Orfed x Elgin x Elmar		37.7	2263.0		58.50	33.8	6/15
Orfed x Wasatch		34.6	2073.4		63.00	33.8	6/14
Norin 10 x Staring 55-1744	13275	25.8	1550.1		54.00	23.5	6/16

Seeded: November 2, 1959
Harvested: August 8, 1960

Coefficient of Variation 21.3%

(1) The yields of any two varieties spanned by the same line are not significantly different.

Table No. 10

Yield in Bushels and Pounds per acre, Bushel Wt., Plant Height in Inches, and Average Heading Date for the Irrigated Winter Wheat Varieties Grown on the Bob Beesley Farm, Tumalo, Oregon 1960

Variety or Line	Pedigree	Yield		Multiple Range test. for Sig. Dif.	Bushel Wt.	Plant Height in inches	Ave. Heading Date
		Bushels Per Acre	Pounds Per acre				
14 x 53 Sel 9	13449	56.7	3400.1		61.50	23.5	6/17
(14 x 50 - 3) x Burt Sel. 9	13448	52.9	3170.7		62.00	25.3	6/20
Pullman Sel. 9	13432	50.7	3041.0		57.00	23.8	6/20
Columbia	12928	48.4	2903.1		63.25	35.8	6/14
14 x 53 Sel. 58	13447	48.1	2882.9		60.25	30.3	6/23
Athena x Blackhull x Rex		47.6	2852.9		60.75	33.8	6/21
Norin 10 x Staring 55-1673	13273	44.8	2685.8		58.50	24.8	6/21
Omar	13072	44.6	2676.8		59.00	31.8	6/21
Rio. Rex x Athena P63		43.1	2587.5		58.00	32.5	6/17
Kharkof	1442	43.0	2581.5		62.75	39.8	6/19
Elmar	12392	42.4	2544.8		60.00	29.0	6/21
Orfed x Elgin x Elmar		41.2	2472.1		60.25	35.3	6/18
Itana	12933	39.0	2340.9		62.50	33.8	6/17
Wasa tch	11925	37.0	2222.5		63.00	44.0	6/19
Orfed x Wasatch		35.6	2137.8		63.00	35.3	6/17
Rio. Rex x Cheyenne	12925	33.6	2014.9		62.75	34.0	6/16
Norin 10 x Staring 55-1744	13275	33.4	2001.4		56.50	22.3	6/22
B urt		28.9	1733.5		61.00	30.8	6/21

Coefficient of Variation 16.6%

Seeded: Nov. 21, 1959

Harvested: August 8, 1960

(1) The yields of any two varieties spanned by the same line are not significantly different.

Cereal Grains.

All of the cereal grain nurseries were a randomized block design with four replications. The plots consisted of four rows one foot apart and seeded 12 feet long. The seeding rate was one gram per square foot or roughly 96 pounds per acre for winter and spring irrigated wheat. Spring barley was seeded at a rate of 108 pounds per acre and oats at 120 pounds per acre.

The plots were seeded with a V-belt hand seeder at approximately the same date as the farmer seeded the remainder of the field.

Shortly after heading, the plots were trimmed to eight feet. At harvest, the two center rows of the plot were cut by hand sickle and wrapped. The bundles were hauled to Redmond and stored until the harvest of all plots was complete and then threshed in a plot thresher.

Agronomic measurements were taken on plant height, heading date, lodging or diseases and maturity date. During 1960 no lodging or disease were in evidence and because of the hot weather and shortage of moisture there was very little difference in the maturity dates of any of the varieties.

Appendix Tables 11, 12, 13, 14 and 15 show the yields of the varieties in the nurseries harvested in 1960 by replicate in pounds per acre of seed and the average yield in pounds per acre.

Appendix Table No. 11

Yield in Pounds Per Acre by Replicate for the Winter Wheat Varieties
Grown on the Claude Williams Farm, Prineville, Oregon - 1960

Variety or Line	Pedigree	Yield by Replicate				Average Yield
		I	II	III	IV	
Burt	12696	2938.3	2848.4	3310.1	3867.8	3241.0
Omär	13072	3157.2	1541.1	3040.3	2524.6	2565.8
Athena x Blackhull x Rex		3052.3	2872.4	2956.3	2302.7	2795.9
Rio. Rex x Cheyenne	12925	3082.3	3202.2	2194.8	2686.5	2791.5
Norin 10 x Staring 55-1673	13273	3286.1	2587.5	3031.3	2179.8	2771.2
Norin 10 x Staring 55-1744	13275	1445.2	2008.8	1903.9	842.5	1550.1
Pullman Sel. 9	13432	2869.4	2011.9	3672.9	4155.6	3177.5
Itana	12933	3049.3	3382.1	3190.2	3813.8	3358.9
Elmar	12392	2740.4	1658.1	3070.3	1870.9	2334.9
Columbia	12928	3052.3	3010.3	3487.3	3589.0	3284.7
Kharkof	1442	2524.6	3301.1	3334.1	3741.9	3225.4
Wasatch	11925	2476.6	2992.3	2605.5	3205.2	2819.9
Orfed x Elgin x Elmar		1984.9	2524.6	2902.4	1640.1	2263.0
Rio. Rex x Athena p63	13066	2431.6	2290.7	2428.6	2224.7	2343.9
Orfed x Wasatch		1984.9	2179.8	2524.6	1604.1	2073.4
14 x 53 Sel. 9	13449	2140.8	2614.5	2290.7	2632.5	2419.6
(14 x 50-3) x Burt Sel. 9	13448	2062.8	4485.5	3801.8	5010.2	3840.0
14 x 53 Sel. 58	13447	3310.1	4209.6	2638.5	2752.4	3227.7

Coefficient of Variation 21.3%

Seeded: Nov. 2, 1959
Harvested: August 8, 1960

Appendix Table No. 12

Yield in Pounds Per Acre by Replicate for the Winter Wheat Varieties Grown
on the Bob Beesley Farm, Tumalo, Oregon - 1960

Variety or Line	Pedigree	Yield in Pounds Per Acre by Replicate				Average Yield
		I	II	III	IV	
Burt	12696	1795.0	2893.4	1013.4	1232.3	1733.5
Omar	13072	2554.6	2677.5	2869.4	2605.5	2676.8
Athena x Blackhull x Rex		2677.5	2956.3	2629.5	3148.2	2852.9
Rio. Rex x Cheyenne	12925	2176.8	2071.8	1748.0	2062.8	2014.9
N orin 10 x Staring 55-1673	13273	2422.6	2362.7	3238.2	2719.5	2685.8
Norin 10 x Staring 55-1744	13275	1981.9	2752.4	1658.1	1613.1	2001.4
Pullman Sel. 9	13432	3145.2	2010.3	2707.5	3301.1	3041.0
Itan	12933	2281.7	2053.8	2509.6	2518.6	2340.9
Elma r	12392	2386.6	2668.5	2479.6	2644.5	2544.8
Columbia	12928	2848.4	2665.5	3307.1	2791.4	2903.1
Kharkof	1442	2764.4	2398.6	2794.4	2368.7	2581.5
Wasatch	11925	2707.5	1936.9	2041.7	2203.8	2222.5
Orfed x Elgin x Elmar		2407.6	2332.7	2302.7	2844.8	2472.1
Rio. Rex x Athena P 63	13066	2137.8	3148.2	2449.6	2614.5	2587.5
Orfed x Wasatch		2113.8	2062.8	2008.9	2365.7	2137.8
14 x 53 Sel. 9	13449	3681.9	3100.2	3547.0	3271.1	3400.1
(14 x 50 - 3) x Burt Sel. 9	13448	2620.5	3382.1	3385.1	3295.1	3170.7
14 x 53 Sel. 58	13447	3705.9	3259.2	3178.2	1388.2	2882.9

Seeded: November 21, 1959

Harvested: August 8, 1960