

TITLE: Small Grain Investigations

PROJECT NUMBER: 5023 (Spring Wheat)

PERSONNEL: Leader - Vern R. Stewart
Cooperator - F. H. McNeal

FUNDS: State - \$ 441.66

LOCATION: Northwestern Montana Branch Station in field number Y-7

DURATION: Indefinite

OBJECTIVES:

1. To determine the adaptation of new and introduced spring wheat varieties and selection by comparison with recommended varieties
2. To evaluate material from spring wheat breeding program in Montana and other stations.

EXPERIMENTAL DATA:

INTRODUCTION

Spring wheat yields have been quite low in western Montana under dryland conditions the past three seasons. The yield variations between winter and spring wheat have been much greater the past three years than in previous years.

Spring wheat work this past season was limited to two nurseries grown under non-irrigated conditions.

MATERIALS AND METHODS

The two nurseries grown this season are described below. The advanced yield nursery had four durum wheat entries and twenty hard red entries. It was grown in four row plots replicated four times. The Uniform Western Regional white wheat nursery had twenty-four entries and Thatcher is included as a hard red variety. This nursery was grown in three replications.

RESULTS AND DISCUSSIONS

Yields were very good in this nursery in spite of the low rainfall. B 59-1 was the highest yielding entry with 71.2 bushels per acre. All entries with Norin 10 parentage were significantly higher in yield than Thatcher. Lakota durum also was very good in yield being significantly higher in yield than Thatcher. Stripe rust was noted on several entries. The entries with Norin 10 parentage had the highest rust reading. See Table XXXI for complete agronomic data.

The mean of the white wheat nursery was somewhat lower than the hard red nursery. Onas 53 was the only entry that was significantly better in yield than Lemhi. Stripe rust infection rates are quite variable between entries with some of them showing considerable resistance. Those entries with Idaed parentage all show good to moderate resistance to stripe rust. See Table XXXII for complete agronomic data.

Table XXXI. Agronomic data from Advanced Yield spring wheat nursery at Creston, Montana in 1962. Four row plots, four replications.

| Variety | C. I. Number | In. g Date | Head- ing Date | Ht. In. | Lodg- ing % | Stripe Rust | Grams per Plot | | | | Total Grams | Yield in Bu/Acre | Bu. Wt. in Pounds |
|------------------------------------|--------------|------------|----------------|---------|-------------|-------------|----------------|-----|-----|-----|-------------|------------------|-------------------|
| | | | | | | | I | II | III | IV | | | |
| Nrn-10-Evr 14 x Cnt. B59-3 | 13587 | 7-5 | 7-5 | 38 | 0 | 3.7 | 774 | 655 | 450 | 754 | 2633 | 65.8 ** | 60.5 |
| Mindum (durum) | 5296 | 7-6 | 7-6 | 50 | 12.5 | 2.0 | 586 | 570 | 476 | 314 | 1946 | 48.7 | 64.0 |
| Chinook | 13220 | 7-2 | 7-2 | 47 | 10.0 | .3 | 420 | 450 | 445 | 360 | 1675 | 41.9 | 60.4 |
| Langdon (durum) | 13165 | 7-2 | 7-2 | 48 | 0 | 2.0 | 521 | 486 | 450 | 465 | 1922 | 48.1 | 62.5 |
| Centana | 12974 | 7-5 | 7-5 | 45 | 0 | 1.0 | 554 | 665 | 625 | 521 | 2365 | 59.1 | 61.0 |
| K 338 x Lee | B61-88 | 6-29 | 7-4 | 43 | 0 | .7 | 569 | 588 | 710 | 726 | 2593 | 64.8 ** | 60.5 |
| Sawtana | 13304 | 7-7 | 7-7 | 46 | 0 | 1.0 | 478 | 465 | 450 | 410 | 1803 | 45.1 | 61.1 |
| Justin (ND 102) | 13462 | 7-4 | 7-4 | 42 | 0 | 0 | 560 | 535 | 293 | 415 | 1803 | 45.1 | 60.4 |
| Hartman Sel. 15 | | 7-6 | 7-6 | 46 | 1.3 | 3.0 | 584 | 422 | 481 | 524 | 2011 | 50.3 | 60.0 |
| Nrn-10-Evr 14 x Cnt. | B59-1 | 7-4 | 7-4 | 38 | 0 | 3.3 | 737 | 715 | 565 | 831 | 2848 | 71.2 ** | 60.2 |
| Selkirk | 13100 | 7-2 | 7-2 | 42 | 0 | 0 | 547 | 465 | 501 | 574 | 2087 | 52.2 | 58.5 |
| Minn. II-53-404 | 13465 | 6-29 | 7-4 | 43 | 0 | .7 | 513 | 539 | 405 | 495 | 1952 | 48.8 | 60.1 |
| II-50-17 x Pilot B61-95 | 13586 | 7-2 | 7-2 | 48 | 0 | 0 | 619 | 665 | 545 | 545 | 2374 | 59.4 | 60.9 |
| Rescue | 12435 | 7-4 | 7-4 | 43 | 12.5 | .3 | 436 | 382 | 365 | 460 | 1643 | 41.1 | 60.0 |
| Hartman Sel. 19 | 13463 | 7-5 | 7-5 | 43 | 0 | 2.7 | 524 | 570 | 500 | 644 | 2238 | 56.0 | 59.9 |
| Lee ² x K.F., R.L. 2938 | 13332 | 6-28 | 7-4 | 42 | 0 | 1.3 | 614 | 695 | 482 | 550 | 2341 | 58.5 | 60.6 |
| Pembina | 13333 | 7-1 | 7-1 | 41 | 0 | .3 | 469 | 535 | 482 | 486 | 1972 | 49.3 | 60.0 |
| Wells (durum) | 10003 | 7-1 | 7-1 | 42 | 0 | 1.7 | 461 | 611 | 525 | 495 | 2102 | 52.6 | 62.0 |
| Thatcher | 13762 | 7-3 | 7-3 | 45 | 0 | .3 | 550 | 555 | 395 | 489 | 1989 | 49.7 | 59.9 |
| B49-102 x K338-B61-18 | 13457 | 7-2 | 7-2 | 43 | 0 | .3 | 645 | 405 | 519 | 710 | 2279 | 57.0 | 60.5 |
| Lathrop | 6900 | 7-4 | 7-4 | 45 | 5.0 | 1.7 | 544 | 582 | 570 | 570 | 2266 | 56.7 | 60.1 |
| Ceres | B59-10 | 7-2 | 7-2 | 34 | 0 | 2.7 | 490 | 535 | 325 | 379 | 1729 | 43.2 | 60.5 |
| Nrn 10-Dr 14 x Cnt. | 13335 | 7-2 | 7-2 | 43 | 0 | 3.3 | 660 | 535 | 659 | 681 | 2535 | 63.4 * | 59.0 |
| Lakota (durum) | | 7-2 | 7-2 | 43 | 0 | 2.0 | 680 | 760 | 523 | 634 | 2597 | 64.9 ** | 61.6 |

\bar{x} 53.8
 S.E. \bar{x} 3.9439
 L.S.D. (.05) 11.2
 L.S.D. (.01) 14.8
 C.V. 7.33 %

1. Calculated missing plot
 Note: Thatcher is used as a check in this nursery
 * Varieties yielding significantly more than the check (.05).
 ** Varieties yielding significantly more than the check (.01).

Analysis of Variance

| Source | D.F. | Mean Square | F |
|--------------|------|-------------|---------|
| Replications | 3 | 27408.65 | 4.41 ** |
| Varieties | 23 | 27736.8783 | 4.45 ** |
| Error | 64 | 6221.67734 | |
| Total | 90 | | |