**UNITED STATES DEPARTMENT OF AGRICULTURE**

**AGRICULTURAL RESEARCH SERVICE**

**In cooperation with**

**STATE AGRICULTURAL EXPERIMENT STATIONS**

**Report on Hard Red Spring Wheat Varieties Grown in Cooperative Plot and**

**Nursery Experiments in the Spring Wheat Region in 2022**

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Agricultural Research Service

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Midwest Area

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**2022 HARD RED SPRING WHEAT UNIFORM REGIONAL NURSERY REPORT**

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**COOPERATING AGENCIES, STATIONS, AND PERSONNEL FOR THE 2022 HRSWURN**

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**Entering Lines with Protected or Patented Genes into the Hard Red Spring Wheat Uniform Regional Nursery**

Transgenic wheat lines may be considered for the nursery program ONLY if they have been granted permanent non-regulated status. Non-regulated status is granted only after the originator files a formal petition to de-regulate a line with APHIS. However, ultimately the decision whether to include or exclude such germplasm will reside with individual location cooperators.

**U.S. SPRING WHEAT PRODUCTION, 2022**

***SPRING WHEAT (OTHER THAN DURUM)*: Growers produced an estimated 482 million bushels of spring wheat. This production estimate is 45.7 percent higher than year 2021 production. Yield averaged 46.2 bushels per acre, an increase of 13.6 bushels per acre from year 2021. Acres harvested totaled 10.4 million acres, which is approximately 2.8 percent higher than the acreage harvested in 2021.**

**Spring Wheat Production Statistics, 2020-2022\***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Acres Harvested (x1000) |  | Production (x1000 Bushels) |  | Yield (Bushels/Acre) |
|   | 2020 | 2021 | 2022 |   | 2020 | 2021 | 2022 |   | 2020 | 2021 | 2022 |
| Minnesota | 1,360 | 1,160 | 1,210 |  | 72,080 | 55,680 | 73,810 |  | 53 | 48 | 61 |
| Montana | 3,310 | 2,180 | 2,440 |  | 125,780 | 37,060 | 61,000 |  | 38 | 17 | 25 |
| North Dakota | 5,630 | 5,210 | 5,260 |  | 275,870 | 174,535 | 263,000 |  | 49 | 33.5 | 50 |
| South Dakota | 755 | 580 | 700 |  | 35,485 | 16,820 | 33,600 |  | 47 | 29 | 48 |
| USA | 12,095 | 10,155 | 10,440 |   | 587,505 | 330,850 | 482,190 |   | 48.6 | 32.6 | 46.2 |

\* Source: National Agricultural Statistics Service: (https://quickstats.nass.usda.gov) as of 1-3-23.

**2022 NURSERY DESCRIPTION AND SUMMARY**

The Hard Red Spring Wheat Uniform Regional Nursery (HRSWURN) was planted for the 92nd year in 2022. The nursery contained 21 entries submitted by 5 different scientific or industry breeding programs, and 6 checks (Table 1). Trials were conducted as randomized complete blocks with three replicates except where noted. The HRSWURN was planted at 14 locations in 4 different states in the USA (MN, ND, SD, MT). All fourteen locations provided data included in this report (Figure 1, Table 2). Data summaries for each of the reporting locations are presented in individual tables. Overall means across locations for a set of core traits are summarized in Table 17, and yield rankings for individual locations are found in Table 18. Entries were also evaluated for various diseases at different locations; these can be found by looking at individual location data summaries. Leaf rust and stem rust resistance was evaluated in St. Paul, MN. These results are presented in Tables 19-20. Entries were evaluated for Fusarium head blight at St. Paul and Crookston, MN; these results are provided in Tables 21 and 22, respectively. For the first time, entries were inoculated and evaluated for bacterial leaf streak at Prosper, ND; these results are provided in Table 23. Molecular marker genotyping for select agronomic, quality and disease resistance traits was also performed; this information is presented in Table 24. The highest average yielding location was Crookston, MN, with 84.1 Bu/Ac, while the lowest yielding location was Williston, ND, with 30.2 Bu/Ac.

**Figure 1. Hard Red Spring Wheat Uniform Regional Performance Nursery Locations, 2022**

