**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 2020**

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This is a joint progress report of cooperative investigations underway in the State Agricultural Experiment Stations and the Agricultural Research Service of the U.S. Department of Agriculture. It contains preliminary data which have not been sufficiently confirmed to justify general release, and interpretations may be modified after additional experimentation. Confirmed results will be published through established channels. This report is primarily a tool for use by cooperators and their official staffs, and for those persons having direct and special interest in the development of agricultural research programs.

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Agricultural Research Service

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Midwest Area

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**2020 HARD RED SPRING WHEAT UNIFORM REGIONAL NURSERY REPORT**

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**COOPERATING AGENCIES, STATIONS, AND PERSONNEL FOR THE 2020 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, 2020**

***SPRING WHEAT (OTHER THAN DURUM)*: Growers produced an estimated 586 million bushels of spring wheat. This production estimate is 4.2 percent higher than year 2019 production. Yield averaged 48.6 bushels per acre, an increase of 0.4 bushels per acre from year 2019. Acres harvested totaled 12.06 million acres, which is 3.4 percent higher than the acreage harvested in 2019.**

**Spring Wheat Production Statistics, 2018-2020\***

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Acres Harvested (x1000) | | |  | Production (x1000 Bushels) | | |  | Yield (Bushels/Acre) | | |
|  | 2018 | 2019 | 2020 |  | 2018 | 2019 | 2020 |  | 2018 | 2019 | 2020 |
| Minnesota | 1,570 | 1,400 | 1,360 |  | 92,630 | 79,800 | 72,080 |  | 59 | 57 | 53 |
| Montana | 2,820 | 2,760 | 3,280 |  | 95,880 | 102,120 | 124,640 |  | 34 | 37 | 38 |
| North Dakota | 6,490 | 5,950 | 5,630 |  | 318,010 | 291,550 | 275,870 |  | 49 | 49 | 49 |
| South Dakota | 965 | 605 | 760 |  | 40,530 | 26,015 | 35,720 |  | 42 | 43 | 47 |
| USA | 12,896 | 11,660 | 12,060 |  | 623,232 | 562,380 | 585,990 |  | 48.3 | 48.2 | 48.6 |

\* Source: National Agricultural Statistics Service: (https://quickstats.nass.usda.gov) as of 1-8-20.

**2020 NURSERY DESCRIPTION AND SUMMARY**

The Hard Red Spring Wheat Uniform Regional Performance Nursery (HRSWURN) was planted for the 90th year in 2020. The nursery contained 23 entries submitted by 5 different scientific or industry breeding programs, and 5 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 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 through 21. Entries were evaluated for Fusarium head blight resistance at St. Paul and Crookston, MN; these results are provided in Tables 22 and 23, respectively. 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 Bozeman, MT, with 86.1 Bu/Ac, while the lowest yielding location was Hettinger, ND, with 27.3 Bu/Ac.

**Figure 1. Hard Red Spring Wheat Uniform Regional Performance Nursery Locations, 2020**

