

6105

WAMPUM

PROPOSAL TO RECOMMEND RELEASE OF A
HARD RED SPRING WHEAT

Agencies: Washington State University Agricultural Research Center and United States Department of Agriculture, Agricultural Research Service, Pullman, WA 99164

1. General Situation:

- a) Need: Additional HRS varieties are needed in Washington to broaden the base of genetic variability for disease resistance in high-quality semi-dwarf HRS varieties available to growers.
- b) Use type: Hard red spring
- c) To supplant: None, to complement Wared, Borah, Peak 72, and privately developed cultivars

2. Identification:

- a) CI No: 17691 WA No. WA6105; Breeder No. K7205061 200 gr.
- b) Proposed name:
- c) Pedigree: (Henry/Karn, Sel 90)//Awned Onas/CI12731/3/CI13730

3. Description:

WA6105 is medium tall, stiff strawed, light "red" chaffed, semi-awned spikes with resistance to local races of stripe rust, leaf rust and mildew. The grain produced is of high test weight and with satisfactory bread making quality.

4. Testing history:

- a) Washington locations: Pullman (4 years); Walla Walla, Dayton, Pomeroy, Lind, Harrington, Waterville (3 years); Royal Slope, Horse Heaven (2 years)
- b) Western Regional Spring Wheat Trials (17 locations) 2 years.
- c) Washington State Extension Observation Trials (1 year, 1976).

Yield:

WA6105 appears to perform competitively with other hard red spring wheats, and in several locations WA6105 has been superior in yield to Wared and Sawtell (Table 1). In some dry land tests, ID47 (Sawtell) has shown superiority over both Wared and WA6105. WA6105 may be better adapted to high potential locations, especially irrigation, as indicated by some 1975 and 1976 tests (Table 2). In the Western Regional Nursery, WA6105 was the overall high average yielding hard red spring wheat in 1976, but in 1974 and 1975, WA6105 performed below Sawtell, the highest yielder in those years. WA6105 has a different genetic background from Wared and both appear to have somewhat more leaf and stripe rust resistance than

Sawtell. Observation nursery trials in 1976 also showed WA6105 to have outstanding yield potential (Table 3).

d) Evaluation of quality characteristics:

Micromilling and baking: Cooperative tests by the Western Wheat Quality Laboratory, have shown WA6105 to have satisfactory milling and baking properties, and slightly greater protein strength than Wared (Table 4).

e) Diseases:

- 1) Stripe rust and leaf rust: Resistance to local races. WA6105 has shown good resistance to local races of stripe rust, with a higher (race specific) resistance than either Wared or ID47. WA6105 is resistant in the seedling stage to several local races of leaf rust, while Sawtell is susceptible. However, in preliminary field tests at Minneapolis, MN, Dr. R.E. Heiner reported in 1975 a 20% S reaction for leaf rust on WA6105 (similar to that of Borah) while Wared had 10 MR and ID47 had an 80% susceptible reaction. In Minneapolis in 1976, WA6105 was again susceptible. However, the leaf rust races in the PNW appear to be different from those in the Midwest. The evidence indicates mainly the specific nature of the leaf rust resistance of WA6105.
 - 2) Stem rust: Susceptible. WA6105 had a 10% moderately susceptible to susceptible reaction to stem rust, whereas Wared and ID47 had 0 reactions to this disease in Minnesota in 1975. In 1976, at Minneapolis, WA6105 showed a 60S reaction. Stem rust is generally unimportant in Washington.
 - 3) Bunt: Resistant to some races. Common bunt tests by J.S. Hoffman and J.T. Waldher indicated that WA6105 may carry Bt9 which confers resistance to races T13, L16, and X-1 and provides moderate tolerance to races L8 and X-15. Treatment of early planted spring wheat with HCB to control Common bunt would still be advisable.
 - 4) Mildew: Highly resistant to local races. Wared is resistant, Sawtell is highly susceptible. Mildew resistance is advantageous for production under irrigation.
 - 5) Septoria: Moderately susceptible? WA6105 showed Septoria disease equal to that of Fielder, Norana and slightly more than Sawtell in one test at Bonners Ferry in 1975. Septoria is not an important disease where HRS wheats would be grown in Washington.
- f) Winterhardiness: WA6105 is a strictly spring wheat.
- g) Emergence: No problems expected. No specific observations made.
- h) Other strong points:
- 1) Good lodging resistance from most tests in Washington.
 - 2) High performance under irrigation. Based on the 1975 Western Regional data, WA6105 appears to perform better under irrigated

conditions than most HRS wheats. The 1974 Royal Slope data suggested its performance was about equal to Wared and Sawtell, but 1976 data showed WA6105 to be higher yielding than Sawtell or Wared. However, 1975 and 1976 data from Northrup King and our 1976 Royal Slope data suggest that WA6105 has excellent potential as an irrigated HRS wheat. (Tables 2,5, Fig. 1).

i) Weaknesses: None obvious, possibly tall height; better stem rust resistance would be desirable, but stem rust is rarely a problem in the Pacific Northwest. Leaf and stripe rust resistances may be race specific. However, this is not yet certain.

5. Seed source, status, and increase procedure:

a) About 1,000 single plant progenies were selected by C.F. Konzak in 1975. These were grown as plant lines for production of Breeders Seed in 1976 via Washington State Crop Improvement cooperation but harvested as plant lines to prevent possible white seed mixtures and the lines were visually inspected by C.F. Konzak. No white seeds were observed. Bird and herbicide damage reduced the available seed stock from the 1976 plots to about 600 lbs. New plant selections were made to provide for a future supply of Breeders Seed stock in the Breeders Seed increase plots.

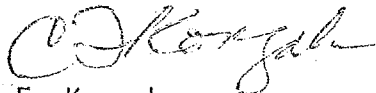
b) No commercial milling test is planned.

6. Other comments: None

7. Possible date for release:

WA6105 is proposed for release in spring 1977 via the Washington State Crop Improvement Association.

Prepared by,



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Plant Breeder