

A Proposal

for the release of the hard red winter wheat

ID74-55/20 pedigree Bezostaja/Burt-178383

1. CI 17727

2. Proposed name. ~~Western~~ (a small town in Franklin County Idaho).

3. Release justification. The wheat 55/20 is proposed for release because in addition to the virtues of having a good straw and a very high tolerance to dwarf smut and stripe rust plus a fair tolerance to snowmold and leaf rust, it is also uniquely earlier than other available commercial hard red winter wheats, thus fulfilling a need not met by other wheat varieties.

4. Description. Selection 55/20 is a medium height, erect, stiff strawed, brownchaffed, awned hard red winter wheat with a moderately arched head. It has very high tolerance to dwarf smut and to stripe rust, and a moderate tolerance to snowmold and leaf rusts. The seed is dark red, medium long, has a good test weight and acceptable medium strength quality with high water absorption values.

5. Developmental history. The Bezostaja parent is a beardless Russian wheat with a stiffer straw and fewer tillers than the usual 'Turkey type' wheat. It has enough general adaptation characteristics that it was at one time the world's most widely grown winter wheat. The Burt-178383 parent is a non-commercial wheat with very high levels of tolerance to dwarf smut, snowmold, and stripe rust. These wheats were combined in 1966 (by L. Byrne, who lives at Rexburg). It was noted in 1968 that the F₂ population from this cross had a far better stand and vigor than the winter hardy Cheyenne and Itana. This implied that this population had an increased level of tolerance to the Moscow forms of the soil disease complex. In the next year, 1969, an early planted Moscow trial had severe snowmold and other associated troubles. This population had a high survival when many other populations were dead. In 1970 numerous crosses were made to selections from this population. The line 55/20 was derived from one of these single F₄ parent plants and was attractive enough to have survived in various plantings in northern Idaho in the years 1971 to 1973.

The key differential came in 1974 when an extensive planting on the Smith farm in Franklin County southeastern Idaho, was subjected to a moderately severe snowmold and very severe dwarf smut infection. Sel. 55/20 survived with a moderate stand and a very low level of dwarf smut. (Table 34). Seed from these surviving plants was increased. It is possible that this shifted the population to a more snowmold tolerant type, but this has never been confirmed.

In 1976, a second differential occurred, in that 55/20 was early enough to have escaped a general late spring frost in southeastern Idaho, and was the only hrv wheat with good yields (Also Faro, and early club from Oregon.) Again in 1977, the earliness of 55/20 made it well adapted to the dry season. Prior to 1976, sel 55/20 had attracted only ordinary interest (Tables S 1-4; K 1-2)

The 1977 plantings included subline tests of 15 selections of 55/20 (Table 32) and Drill strips on the Smith and Koller farms in Franklin County, and trials at Bonners Ferry in Boundary County. In the regional nursery at Bonners Ferry (Data courtesy J. Benson) sel 55/20 was second only to the soft red semidwarf ID745101. In tillage trials on wheat stubble land 55/20 was moderately good at mid-position among 12 other red and white wheats. (Tables 21-22)

1977 trials at Reubens (Nez Perce County) were harvested October 25, by which time there had been 6 inches of rain since the grain was ripe. In the fertile bottom site many wheats were badly lodged with partially disintegrated straw. Surprisingly several red wheats were standing well including 55/20, the sib line 55/19 and several of the newer Utah wheats (Table 33). Yields in such a situation are more a measure of non-deterioration than valid yield at seasonable harvest. The white wheats other than Peck were severely sprouted with exposed seeds hanging by roots from the standing heads. Sel 55/20 had very little sprouting and a good yield. At Cavendish where there had been 9 inches of rain sel 55/20 was also still standing (data not shown). At Moscow in 1977 sel 55/20 was earlier than the other wheats and damaged by birds (Table 21).

6. Seed increase. Seed from the surviving 1974 Smith plots was increased at Moscow in 1975, then at Tetonia in 1976. To get into an earlier harvest cycle this seed was moved to the Hubbard farm at Bonners Ferry October 76. For 1978 some 12 acres have been planted on the Tetonia experiment station and a small planting was made on the bench land at Bonners Ferry. There are farmer trials near Tetonia, near Pocatello, and in Franklin County. Some 10 to 20 bushels of seed remains at Moscow, Bonners Ferry, and Tetonia.

7. Regional trials. The variety 55/20 was put in the Western Regional Cooperative trials in the fall of 1977. Small samples were sent to each breeder in the previous Sept, after the closing date of the nursery. Presumably no one grew them. Twenty lbs. were submitted for the Washington large scale quality trials in the fall of 1976. It is my understanding that these were abandoned because of the unsatisfactory dry conditions.

8. Summary by years.

- 1) 1966 - Cross made.
- 2) 1968 - F₂ population bulk noted to have more vigor than most wheats.
- 3) 1969 - F₃ population bulk survived snowmold. P Sed.
- 4) 1973 - Sedimentation value noted high in 55/20 12.2 48
55/19 12.6 26
- 5) 1974 - Line 55/20 superior on dwarf smut, fair on snowmold.
- 6) 1975 - Performance ordinary on Smith farm, superior on Kollar farm, Franklin County.
- 7) 1976 - Line 55/20 escaped frost. Only good yield in 76. Earliness striking.
- 8) 1977 - Increase moved to Bonners Ferry. Yields superior in south and north.
- 9) 1978 - Increase 12 acres at Tetonia, smaller amount Bonners Ferry.
Proposed for release.

9. Recommendation. It is recommended that since the selection 55/20 has a high level of those sorts of resistance to disease required in winter wheats in southeastern Idaho, and has had a good yield performance in the last two years under conditions favoring earliness and 5 years of testing in the area for which it was developed, that it be released for the fall of 1978 with publicity timed for about July 1, 1978 or as convenient for southern Idaho field days.

W. K. Pope
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