NOTES

WINTER SURVIVAL OF ROUGH- AND SMOOTH-AWNED BARLEYS

In a previous paper, a relationship between smooth-awnedness and spring habit of growth was shown in segregates from a cross of two barley strains when spring seeded. From fall seeding the rough-awned types produced significantly higher yields than did the smooth-awned types, but no differences were observed in their winter survival. The purpose of this note is to present the results of additional studies on the relationship of awn type and habit of growth.

For these studies a series of six crosses was used, which involved three smooth-awned, three rough-awned, and one hooded strain. The varieties and strains used were Glabron, C. I. 4577; Vaughn, C. I. 1367; Smooth Awn 88, C. I. 7028; Wisconsin Winter, C. I. 2159; Davidson, C. I. 6373; Randolph, C. I. 6372; and Hooded Sel. 1-26; C. I. 7026. On the basis of studies made by Dr. G. A. Wiebe on spring-seeded material at Madison, Wis., and elsewhere, Glabron and Vaughn are classified as spring types, Randolph as intermediate in habit of growth, and all the others as winter barleys.

The crosses listed in Table 1 were made in the spring of 1939. In 1941 the F₂ plants were classified according to type of awn, the rough- and smooth-awned plants being separated by feeling them. In none of the crosses did the number of rough- and smooth-awned plants differ significantly from a ratio of 3:1; and in the two crosses in which a hooded parent was used, the total population showed the expected segregation of approximately 12 hooded: 3 rough-awned: 1 smooth-awned plant.

That fall (1941) seed was planted from 10 smooth-awned and 30 rough-awned plants chosen at random from each cross. The progenies were classified the following spring. All smooth-awned plants and approximately one-third of the rough-awned plants bred true, confirming the single-factor difference between rough- and smooth-awnedness in each of the crosses.

The true-breeding rough- and smooth-awned lines were bulked by types and planted at Statesville, N. C., in a paired experiment, nine pairs of single 16-foot rows of each cross being planted. The winter of 1942-43 was exceptionally cold and severe injury occurred in the nursery. A difference in type of growth and in hardiness between rough- and smooth-awned types was apparent in most crosses from early in the winter until the last freeze in April, the smooth-awned types having a more erect plant type. The only exception to this was in the cross of Smooth Awn 88 × Randolph. In this cross, notes taken in March show the smooth-awned types to have made slightly more

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