THE DIFFERENTIAL RESPONSE OF SPRING-SOWN
VARIETIES OF OATS AND BARLEY TO DATE OF
SEEDING AND ITS BREEDING SIGNIFICANCE1

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IT IS generally recognized that the selection and testing of crop
plants should be conducted under conditions similar to those
which obtain on farms in the areas where the crops are to be grown.
In the process of originating and testing new cereal varieties, adapta-
tion to the normal range of soil and climatic conditions is sought.
A customary method is to test hybrid lines and selections in each
of several seasons during which the less fit material is eliminated.
The better material is then tested further, preferably at several
separated places where its adaptation to different soil-climatic
environments can be studied.

When, in addition to being tested at different places and in several
years, a cereal variety or strain is sown at different dates at the same
location, its adaptation to the range of conditions which occur at
that place is determined more completely than from sowing at a
single date. Sowing at more than one date entails extra work and, by
introducing another variable into the design of a test, it reduces
somewhat the sensitivity of the test as to varietal differences. Yet it
may reveal important differences in varietal adaptation, for in one
season at the same place it exposes a variety to different environments
not confused with soil differences. Whether the advantages of sowing
at different dates are sufficiently tangible to outweigh the disad-
vantages is a question of some importance.

REVIEW OF LITERATURE

Relatively little has been published on the differential reaction of grain varieties
to date of seeding. In 1929, Florell (2)3 reported distinct differences in the com-
parative performances of varieties of both wheat and barley when sown at differ-
ent dates. In 1931, Bayles and Martin (1) found that two spring wheat varieties
responded differentially when sown at two widely separated dates in the spring.
Harrington and Horner (3) and Horner (4) found that varieties of wheat sown
at weekly intervals from April 15 to June 15 reacted differentially, the variety-
date interaction being highly significant in each of several years. In 1940, Harring-
ton, Horner, and Quincke reported4 on a three-year date-of-seeding test of barley
varieties sown at Hagen and Star City, Saskatchewan. They found highly sig-
nificant variety-date interactions in each of the three years. Olson, et al. (5),
in a 3-year experiment, found Garton's and OAC-21 barley to yield similarly
when sown about May 1 but significantly differently when sown 2 weeks later.

1Contribution from Department of Field Husbandry, University of Saskatche-
wan, Saskatoon, Saskatchewan, Canada. Also presented at the annual meeting of
the Society at Columbus, Ohio, March 1, 1946. Received for publication July 9,
1946.
2Professor. The writer wishes to thank all those who assisted in making the
tests, and particularly Mr. J. Whitehouse for his help in arranging the tests and
in summarizing and analyzing the data.
3Figures in parenthesis refer to "Literature Cited", p. 1081.
4Typed report of the Barley Cultural Study, Field Husbandry Department,
University of Saskatchewan.

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