A BIOMETRICAL ANALYSIS OF THE EFFECT OF ENVIRONMENT ON A PURE LINE OF OATS

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INTRODUCTION

This experiment was undertaken at a time when there was considerable discussion as to the possible effect of different environmental conditions on the permanency of a pure line. The results of Johannsen (1) had pointed out the importance of pure lines and their permanency under local conditions. It was the thought in planning the present experiment to study a pure line under different conditions. With this in mind, a cooperative experiment was arranged by the authors whereby the oats were to be grown in Montana and New York for several years. The crops were grown on the grounds of the agricultural experiment stations at Bozeman, Montana, and at Ithaca, New York. The authors express their appreciation to the officials of these stations, and to all others whose help made this experiment possible. In connection with the Montana work it is desired to mention especially Professors W. D. Tallman and L. P. Giesecker and Mr. Ernest Morris. Thanks are also due to W. T. Craig and Frances Feehan of the Plant Breeding Department of the College of Agriculture at Ithaca, N. Y.

MATERIAL AND METHODS

Oats, as stated above, was the crop chosen for the experiment, since both authors at that time were interested in this crop, and also because it is one that grows well in both states. A pure line of Sixty Day oats, which had been grown in New York previous to this experiment, was selected for the investigation.

The plan of the experiment was to grow a lot of plants in each place and make a study of the individual plants from year to year. The seed was sown with sufficient space so that individual plants could be harvested. It was also planned that after two or three years an exchange of seed was to be effected, thus making it possible to determine whether the different environments were producing any heritable changes in the plants.

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2President, Montana State College of Agriculture, and Professor of Plant Breeding, Cornell University, respectively.

3Reference by number is to "Literature Cited," p. 1291.