THE ADAPTATION OF CORN TO CLIMATE

THE article on "The Adaptation of Corn to Climate" which appeared recently in this JOURNAL (Vol. 27, pages 261 to 270), is interesting and stimulating. Agronomists may well maintain open minds regarding the factors involved in the ecological relations of crop plants. However, the value of correlating individual facts to develop working hypotheses must depend largely on whether the data used are typical for the problem awaiting solution. The validity of an ecological theory may be tested by its success or failure in explaining responses to the same factors elsewhere.

Extensive variety testing of standard corn varieties at New Brunswick, New Jersey, for a 3-year period, has indicated that varieties introduced into that state from other corn-growing states to the north, south, and west were almost invariably inferior to well-adapted local strains. The average yield of 61 standard varieties from 14 other states was 19.2% less than that of adapted strains, when the value of both grain and stover was included. In grain yield alone, the introduced varieties averaged 27.8% less than that of adapted strains. Only two of the introduced varieties equaled the yield of adapted varieties, and none exceeded the best local strains. Certain of the so-called silage varieties produced more dry matter per acre than the better local strains, but they yielded considerably less actual feed per acre because of the greatly inferior ear development of the southern varieties.

It was found in cooperative tests with farmers that many local strains were poorly adapted, either because of the recent introduction of seed from other states or because of seed selection methods which ran contrary to natural selection of adapted types. The detailed results of these tests are presented in New Jersey Agricultural Experiment Station Bulletin 537. Although the number of varieties tested yearly since 1930 has been reduced, the later results have substantiated the earlier findings.

Since New Jersey is not greatly separated from Connecticut in distance, nor markedly different in climate and soil, the results of variety testing in the two states should show similar trends. The trials of corn varieties in New Jersey do not support the general rule proposed by Jones and Huntington which states that, "Corn may be moved from a less favorable to a more favorable climatic region without loss of productive capacity, and usually with distinct gain." On the contrary, the figures in Table 1 from the New Jersey experiments support the principle that varieties grown and properly selected in a given environment normally exhibit greater adaptation to that particular complex of conditions than varieties introduced from a region with different conditions of soil, climate, and pests.

In making comparisons with introduced varieties, a great deal depends on the particular local strains used as the standard. In a state where comparatively little attention has been given to selection of adapted strains, many of those grown by farmers are low