THE ADAPTATION OF CORN TO UPLAND AND BOTTOM LAND SOILS

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The extent to which corn undergoes heritable changes in response to differences in soil conditions is a phase of the problem of adaptation concerning which there have been relatively few data available. It has come to be well recognized that the vegetative characteristics of corn most suitable in various regions differ greatly in relation to the prevailing climatic conditions.

The pronounced effects of such regional adaptation of corn to climate in Nebraska have been investigated and reported by Kiesselbach and Keim (2). No significant histological or physiological differences were noted. The heritable effects were found to be largely restricted to vegetative size and earliness of maturity as influenced by rainfall, temperature, and length of growing season. These characters are associated with the economy of water usage, utilization of the full growing season, and maturity before frost.

But the question, "Does it make a material difference under what soil conditions the seed of open-pollinated varieties has been produced?" has remained largely unanswered. The investigations herein reported have been conducted for the purpose of obtaining some additional information bearing on this question.

It would seem desirable to conduct a study of this kind in such manner as to eliminate as far as possible other influencing factors aside from soil productivity itself. This would often preclude the possibility of dividing a state into a number of soil regions and ignoring the effects of associated climatic differences. Thus it would not be possible in Nebraska to compare corn types native to the Sand hills region of northwestern Nebraska with types from the Loess soils of southeastern Nebraska and attribute the plant differences to the soil factors.

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2Agronomists.
3Reference by number is to "Literature Cited," p. 937.