SOME PLANT CHARACTERS DETERMINING YIELDS IN
FIELDS OF WINTER AND SPRING WHEAT IN 1926
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INTRODUCTION

Agronomists who work with wheat are constantly striving for larger yields. Plant breeders and crop and soil investigators are endeavoring to produce or find varieties with better yielding ability, and rotations or cultural methods which will cause a given variety to produce more grain per acre. Investigations have been conducted to determine what characters of the plant are most closely associated with yield. It is realized that yield is the final result of a large number of interacting environmental and plant factors. As the wheat plant stands in the field at harvest time, some of the more important characters determining yield are number of heads per unit area, number of kernels per head, and weight of kernels.

Sprague (3), working with Nebraska No. 60 wheat grown at Lincoln, Nebr., in 1921 and 1922, found that there was a high positive correlation between yield per unit area and average number of spikes per area. Smaller positive correlation was found for yield per unit area with grain yield per spike and weight per kernel. For spring and winter wheat in nursery experiments in Minnesota in 1926, Hayes, Aamodt, and Stevenson (1) found that plumpness of grain was rather highly correlated with yield.

Under field conditions it is a question whether it would be better to have thick stands at a possible expense of head size or to have thin stands and larger heads. Martin (2) has pointed out that the larger heads which accompany thinner stands have frequently deceived farmers in semiarid regions into believing that thin stands produce the highest yields. From the standpoint of the plant breeder, it is of interest to know if varieties should be developed which tend to produce more heads per plant or varieties with fewer but larger heads. It is also important to know whether the number of heads can be increased without decreasing the kernel size or plumpness. It is fully realized that environment will have a great influence on the relation of these characters, and that the effects will not necessarily be the same each year.

1 Contribution from Western Wheat Investigations, Office of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. Received for publication March 5, 1928.
2 Associate Agronomist.
3 Reference by number is to “Literature Cited,” p. 499.