A PARTIAL ANALYSIS OF YIELD OF CERTAIN COMMON AND DURUM WHEATS

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In this article an analysis is made of certain plant characters of spring wheat varieties grown at two localities in North Dakota. The characters have to do mainly with prolificacy. Correlation coefficients are presented between yield and certain other characters, and these are discussed. A discussion of means of these characters between certain variety-groups is also taken up.

It is shown that many varieties of common spring wheat do not possess one character of prolificacy, kernels per spike, in a degree sufficient to prevent lessened yields in comparison with other varieties possessing this character. It is evident, then, that full consideration must be given to breeding for high yields per se, in addition to breeding for disease resistance. The analyses given indicate that something has already been accomplished in this direction.

An increase of yield in farm crops is held desirable provided that the cost of increasing the yield is less than the value of the increased return. Particular stress is being laid upon elimination of disease by hybridization and subsequent selection. Evidently the introduction of new varieties, resistant or immune, relative to certain diseases, will result in increased yields in so far as previous yield deficiencies may have been caused by these diseases. Moreover, the cost of gains in yield increases of this nature will be relatively low.

In breeding thus for increased yield attention must be paid not only to disease elimination, but also to the production of varieties possessing an inherently high-yielding capacity. In the enthusiasm attendant upon disease elimination there is danger of neglecting high-yielding capacity.

In an analytical study of parents proposed, for the production of new varieties, it is possible to anticipate, in a measure, the probable outcome of the hybrid offspring as to their prolificacy, particularly number of kernels per spike. Nilsson-Ehle (4), in a thought-provoking article, has discussed the possibility of breeding for much higher cereal yields in northern regions than are now secured by using as one series of parents varieties of high-yielding capacity grown in southern regions. Percival (5) states that bearded wheats, especially those

1Contribution from the North Dakota Experiment Station, Fargo, N. Dak. Published with the approval of the Director. Received for publication December 27, 1928.
2Plant Breeder.
3Reference by number is to "Literature Cited," p. 309.