CORRELATIONS AND YIELD IN BREAD WHEATS

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The subject of yield in wheat, and the factors affecting it, is very old and probably has been under observation since the advent of cultivated varieties. The problem has in general three phases, viz., (a) determining what types, varieties, and strains are best adapted to certain environmental and cultural conditions, (b) producing new varieties by crossing and selection, and (c) determining just how the various environmental and cultural factors affect the growth and yield of a given variety or strain. The investigation here reported deals with some features of the third phase, particularly the correlations between morphological characters with respect to yield of grain and straw in three pure strains of common bread wheat.

HISTORICAL

Variation and correlation in cereals have been widely discussed in the past few decades and the use of the various statistical constants has thrown considerable light on the subject of yield. Organic correlations have been variously classified by different workers. East (6) makes two groups, viz., (a) somatic and (b) gametic. These correspond to the genetic and non-genetic groups of Conner (4). Love and Leighty (14) have further classified somatic correlations as (a) fluctuating or (b) stable, depending on their behavior under different environmental conditions. The correlations presented in this article are of the somatic type and both fluctuating and stable correlations are found.

Love (12) made a correlation study of peas, buckwheat, and corn with soils varying in fertility, and also (13) of the large and small grain question. Atkinson (3) gives data on eight spring wheat populations and Roberts (19) on three pure strains of wheat during two years. Meyers (15) measured the effect of fertility on variation and correlation in Dawson's golden chaff wheat. Whitcomb (22) compared correlations in barley, handling the data in two different ways. Parker (16) observed a high correlation between lengths of internode and the rachis of an English variety of wheat. Love and Leighty (14) and Leighty (11) studied variation and correlation in

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3Reference by number is to "Literature Cited," p. 995.