Yield is usually regarded as a complex character which is the resultant of many environmental and inherent factors acting together. Soil type, soil fertility, moisture, and temperature are important environmental factors that affect seed yield mainly by affecting plant growth. When one or more of these factors vary, differences in yield result. Similar yield differences are apparent when varieties or strains are compared under the same environmental conditions. Such differences due to strain indicate that yield is an inherited character and can be studied and dealt with as such.

In crop improvement seed yield is usually the most important of the desired characters. Selections of heads or plants are made in large numbers, and they are tested in head or plant rows. The best are continued in rod-row tests, using the grain weights of the threshed rows as evidence of superior yielding ability. There can be no question that this method has led to the discovery of improved strains. However, it does not indicate why one strain is a better yielder than another. It does not make it easier for the breeder to select high-yielding strains in the future. Farmers have been benefited by the distribution of seed of higher yielding types, but the science and methods of plant breeding have not been correspondingly advanced.

The purpose of this paper is to present the results of a study of the plant population of three varieties of barley. In this study an attempt has been made to break down the complex character seed yield into simpler components, and to determine in what components one variety is superior or inferior to another. It is an attempt to get an answer to the question, "Why is one variety a better yielder than another?"