

INTRODUCTION.

The yield of a plant is an expression that can be measured exactly after reaping, but is extraordinarily difficult to assess beforehand. Any attempt at the estimation of a crop is complicated by the large number of factors, both internal and external, which may interact, or limit the yield, as they diverge from their optima.

By working with cleverly controlled pot or sand cultures the chemist is enabled to assess the range and importance of many of the factors external to the plant, and thus to indicate field conditions making for high or low yields; but even when these external factors are standardised there yet remains a variation too wide to be ascribed to chance, and this must be set down as due to genetical differences between the individuals of the population concerned.

Recent work, notably dealing with perennial crops, has shown that yields may vary from plant to plant to such an extent that one quarter of the individuals may be responsible for three fourths of the total yield of a population; and that if each were to yield at the same rate as the best, then the return from the whole would be increased by a very considerable amount.

Improved methods of cultivation and manurial treatment have tended to level out differences in the environment of each plant, but it is quite clear that with homogeneous planting material variances in yield would be greatly reduced.