ANALYSIS OF YIELD IN CEREALS.

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One of the first things attempted by the professors of agriculture in the early days of experimental work was the testing of varieties. As the work of the stations became more precise and specialized, variety testing became less and less a feature. At some stations, however, the work is still retained, but the testing has been put into the hands of the farmers, leaving the experiment stations to make the arrangements and give suggestions for the tests.

With the recent development of large areas of land in the western semi-arid districts, variety testing has been revived to a greater or less extent. The variety work that is being done now has been carried forward on much the same basis as it was years ago. There is one difference, however. The Department of Agriculture has stations in the middle west and it is also co-operating with many substations. This has enabled the work to be more or less unified over large areas, something which was not done in the early days.

Many valuable results have already been secured from the tests that have been carried on and help has been extended to the plant breeders in indicating what varieties and strains should be developed.

Variety testing as it has been conducted cannot be carried on indefinitely with value. The plant breeder will develop the most promising forms, and perhaps it is possible for the agronomist to still continue the comparative study of varieties, though by somewhat more refined methods than have generally been used in the past. It is apt to be the case, where yield has been made the ultimate aim of an experiment, that the factors which go to make up the difference in yield have been more or less neglected. In short, where yield has been the measuring stick, where the experiment has been put on a strictly utilitarian basis, the causes which bring about the differences in the result have received rather scant attention.

If the work is to be conducted so as to command the attention of experimental workers in other lines, more exactness must be used in the methods. In order to bring about exactness and allow a critical view of the results to be obtained, plantings must be subject to more exact control.

It is of value no doubt to obtain the purely empirical results of yield, but it is of more basic value to ascertain the causes of differences in yield. We should distinguish between the various stages of empir-