SOME EXPERIMENTS IN BREEDING HIGH-NITROGEN WHEAT.

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Among the most striking successes of modern scientific agriculture are the results which have been recently obtained in plant breeding. Breeding for improvement in yield has been practiced with increasing success for a considerable length of time. But more recently, breeding for improvement in chemical composition or some physical property has received very general attention. Extremely gratifying results of this kind of work have been obtained with cotton in improving the quality of its fiber, with tobacco in changing the shape and texture of leaf, with several sugar-bearing plants in increasing the purity and percentage of sugar content, with corn in varying almost at will its protein and oil content. It is a noticeable fact, however, that very little has yet been accomplished in the way of breeding wheat, one of the most important of all our farm crops, for improvement in its chemical composition, either from the standpoint of its food value or its milling quality. This apparent lack of progress has probably not been due to lack of interest in the matter, but rather to a lack of knowledge as to how to proceed in such a way as to have a reasonable assurance of success. Possibly, it has also been due to the fact that the rapid deterioration in yield in many sections of the country made improvements in yielding power of such vital necessity as to overshadow the other important line of improvement. In the Northwest Pacific Coast States, however, conditions have not yet become such as to make deteriorations in yield a matter of such critical importance. Hence while improvement along this line is of highest desirability and is receiving due attention, improvement in chemical composition is equally important. Its need is also accentuated by the well-known effect of our long, slow ripening period in tending to produce a much softer, more starchy grain than that of many sections of more rapid maturity, with which our grain must compete in the world's markets.

The chemical department of the Washington Experiment Station has, therefore, undertaken an extensive series of experiments in breeding of high-nitrogen wheat. The work has been in progress for three years, two generations of grain having been harvested from several of the experimental selections. The results are yet far too