THE RELATION OF PROTEIN CONTENT OF WHEAT TO RAINFALL.

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The results which I wish to present, very briefly, are an indirect outcome of a study of the chemical composition of Washington wheats which we have been carrying on at the State Experiment Station at Pullman, Washington, for the past five years. The complete data, as obtained in this study, have been published as Bulletins Nos. 84, 91, and 100, of the Station. It was only after the study was completed and the results tabulated and averaged that the definite relationships to be here presented became apparent.

The wheat-belt of eastern Washington is particularly well adapted to serve for a study of relation of total annual rainfall to crop growth. The soil over the entire belt is of uniform origin, the famous basaltic loam of the Palouse Country. This soil is remarkably uniform in its mineral composition. It varies somewhat in its percentage of humus, with the variations in annual rainfall, but these differences are not very marked, and the soil is unusually uniform in type for so large an area. The length of the growing season is practically the same over the entire area. The distribution of the rainfall throughout the year is practically identical everywhere in the wheat belt, there being the characteristic "rainy season" in the winter, and the "dry season" in the summer. The wheat crop very generally secures its moisture from the supply stored up in the soil from the winter season. Even the elevation above sea level is practically uniform, the wheat being generally grown on the upland plateau formed by the great basaltic overflow which is of the same general elevation. In short, the total rainfall for the year is practically the only variable among the factors which influence plant growth and composition. The region, therefore, serves admirably for the purposes of study of the relation of protein content of wheat to rainfall supply.

The analyses made during our five years' study included a total of 456 samples of wheat. Nineteen different varieties were represented, but the great majority of the samples were from the eight varieties most commonly grown, the remainder being represented by only a few scattering samples. The samples came from all the different wheat-growing sections of the state and were so selected as to secure