much as the number of ears harvested per plot did not differ significantly for the various treatments, the increased yield was due to larger-sized ears in the nitrogen-treated plots.

It is interesting to note that the response to nitrogen applied 57 days before planting was obtained in spite of (1) an inadequate stand, which averaged only 7,000 plants per acre; and (2) an early killing frost, which occurred September 23 when the kernels were in the medium dough stage. When the plots were harvested on October 7, the shelled corn averaged 42.6% moisture. Analysis of variance indicated that the various treatments did not affect the moisture content of the shelled corn.—M. T. Vittum, Vegetable Crops Division, New York State Agricultural Experiment Station, Geneva, N. Y.

EFFECT OF 2,4-D UPON THE PROTEIN CONTENT OF WHEATS

Two years ago selective weed control studies in Idaho revealed that 2,4-D (2,4-dichlorophenoxyacetic acid) produced a stunting effect upon the wheat plant whenever a dosage was used that would kill even the most sensitive annual weeds growing with the crop. Furthermore, the larger the amount of 2,4-D applied, the greater the stunting effect. This indicated that this growth-regulating substance was capable of altering the wheat plant morphologically. Since these plants had been altered morphologically, it was also possible that 2,4-D might alter the wheat plant physiologically and physio-chemically. Since chemical changes in the plant are apparently involved, the use of these materials may also alter the chemical composition of the wheat grain.

Several studies have now been made to determine the physiological effect of 2,4-D upon several weeds and the histological effect upon some weeds and crop plants. Treatments with 2,4-D are known to cause a rapid disintegration of starches and sugars in dandelion, Taraxacum officinale, and bindweed, Convolvulus arvensis.

Protein analyses on 10 samples of Orfed winter wheat grown in 1946 revealed that the 2,4-D treatments increased the protein content, and that the protein content increased as the rates of 2,4-D were increased. In 1947, six additional varieties of wheat were treated to determine the influence of 2,4-D upon their various agronomic characteristics. The wheat varieties included in these studies, in addition to Orfed, were Idaed, Federation, Lemhi, Dicklow, Baart, and White Federation. A total of 58 analyses of wheats grown under both dryland and irrigated conditions are included in Fig. 1.

Fig. 1 shows that the protein content in seven wheat varieties increased in direct relation to the amount of 2,4-D applied. These increases in protein content occurred with all types of material, whether or not weeds were present and regardless of decreases or

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