THE DURATION OF THE FAVORABLE INFLUENCE OF
ALFALFA ON THE COTTON FIELDS OF ARMENIA

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In a previous paper it was shown that under conditions prevailing in the Echmiadzin district of Armenia, with its semi-desert soils containing a small amount of organic matter and having a medium mechanical composition, the continued growing of alfalfa created many favorable conditions for the cultivation of cotton. These included an increase in the non-capillary porosity of the soil and of the exchangeable Ca, the latter increasing chiefly on account of a decrease of exchangeable Na; an increase in organic matter as a consequence of which the soil acquires an aggregate structure; an increase in the total nitrogen; and a decrease in the water-soluble salts, as well as the carbonates.

In order to determine the duration of this beneficial effect, in the beginning of 1929, the alfalfa field in which these observations had been made was planted to cotton continually up to 1933. A standard fertilizer containing phosphorous and nitrogen was applied each year. The results of four years' observations on the changes in this soil under continuous cotton are summarized in this paper. In order to compare the data with those reported previously, the same methods were used throughout.

Changes in the physical properties of the soil are shown in Table 1. It will be seen from this table that the total porosity declined gradually from 63% to 65% in 1929 to 54% in 1932. It will be noted, too, that in the first year of cotton cultivation the total porosity in the arable horizon showed an increase.

Examining the correlation between the capillary and non-capillary porosity, it will be seen that non-capillary porosity which at first comprised nearly one-third of the total porosity has decreased considerably during the 4 years of cotton cultivation, while capillary porosity, on the contrary, increased. The specific gravity of the soil increased slightly as the result of some decline in the humus con-

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