NITROGEN ECONOMY IN SOILS

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COMBINED NITROGEN IN RAINWATER.

After listening to Liebig’s lectures before the British Association for the Advancement of Science in 1840, Lawes and Gilbert returned to Rothamsted with the determination of testing the accuracy of his conclusions as to the sufficiency of the ammonia of the atmosphere as the source of the nitrogen of plants. Accordingly, arrangements were made for collecting the rainfall on a measured area with the result that the total combined nitrogen thus secured was estimated at 6 or 7 pounds per acre. Later, more exact determinations summarized by Russell and Richards (30) and covering the period from 1888 to 1916 showed an average acre content of ammoniacal and nitric nitrogen in the rainfall amounting to 3.97 pounds. To this may be added that recorded as being in organic forms and estimated at 1.35 pounds per acre, making a total of 5.32 pounds from an average rainfall of 28.8 inches.

A review of the literature on this phase of the subject by Wilson (34) shows the nitrogen content of rainwater has usually been found to be from 5 to 8 pounds per acre annually. Occasional reports have indicated much larger quantities amounting to as much as 15 to 20 pounds. In his investigations at Ithaca, New York, covering the period from 1915 to 1920, Wilson found an average of 12.51 pounds per acre of ammoniacal and nitric nitrogen with a rainfall of 29.3 inches. It is questionable as to how correctly this average figure may represent the nitrogen in the rainfall. It is possible