2C. REMOVAL OF PLANT NUTRIENTS IN DRAINAGE WATERS

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The removal of certain of the plant nutrients from the soil by drainage waters is of considerable economic importance. A large amount of information bearing on this subject has been published, but unfortunately a strict interpretation of the reported data does not lead to many definite conclusions. Satisfactory equipment for the quantitative determination of losses in drainage and the analytical work involved are expensive. The result has been that the number of strict and conclusive comparisons under a given set of soil and climatic conditions has been small. Again, there is some reasonable doubt as to the adequacy of the methods employed.

Two general methods have been followed. The first consists of the chemical analysis of waters from rivers, small streams, and tile drains. Since there seems to be no satisfactory way of measuring the total amount of drainage water, this method does not show us the total losses of plant nutrients by leaching. Reported data also indicate that generally river water contains much less soluble matter than does water issuing from tile drains or from drain gauges.

In the second method use is made of lysimeters or drain gauges—water tight vessels, containing soil so arranged that the water percolating through the soil can be collected, measured, and analyzed. The drain gauges at Rothamsted, England, and Aberdeen, Scotland, were built around a block of soil in situ. In other cases the lysimeters appear to have been filled after the soil was thoroughly

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