I discuss these problems from long experience in both agronomy and botany, and in editing journals. I have been an active agronomist and member and officer of our agronomic society throughout most of my career. I have been editor and/or on the editorial Board of our Journal, of Plant Physiology, and of Biological Abstracts, for nearly 30 years. In botany, I have published many new species, varieties, and combinations in Salix during this long period, but always in botanical journals. Let's be fair both to our members and to our colleagues in taxonomy.—CARLETON R. BALL, Extension Service, U. S. Dept. of Agriculture, Washington, D. C.

A METHOD FOR ESTIMATING THE WEIGHT OF ROOTS OF GREEN MANURE CROPS

The difficulties involved in securing the weight of roots of green manure crops are recognized by investigators of this type of research. The necessity of the inclusion of these data in a correct interpretation of the effects of green manure crops is also recognized, although in some case results are still published in which comparisons of various crops for green manuring are evaluated from the top growth alone, a procedure that could easily lead to inaccurate conclusions.

The usual procedure in obtaining root weights is to wash out the roots from a small measured area, usually from 2 to 4 square feet, with water, dry the roots, and calculate the weight per acre on these small areas. The amount of labor involved from a practical standpoint seriously limits the number or size of the harvested areas which in turn is reflected in the accuracy of the yield data.

The plan suggested here provides a rapid and reliable means of obtaining the yield of roots with a minimum expenditure of time and labor. The plan has as a basis the ratio of the top and root growth. The procedure is as follows:

1. Obtain the yield of the top growth by cutting out areas with suitable equipment. A mower, hedge shears, hand sickle, or scythe may be used, depending on the type of experiment, the condition of the ground, and the previous preparation of the seedbed, if any, for the green manure crop. A small garden tractor equipped with a mower cutting bar is ideal for obtaining yields of tops if the surface of the ground is smooth enough for its operation.

2. Carefully remove a number of entire plants, including the root system, from various portions of the plot so that a representative sample is obtained.

3. Carefully wash out the roots from this sample, dry, and calculate the root-top ratio. The yield of roots is then obtained by multiplying the weight of the tops from the harvested area by this root-top ratio. The sample of roots and tops used for calculating this ratio can then be used for chemical analyses if so desired.

The accuracy of the method depends on the care taken in securing an adequate and representative sample for obtaining the top and root relationship. A relatively large block of soil can be removed and

[The weight of roots referred to actually includes the crowns of the plant and a small portion of the tops that is not removed in obtaining the yield of the tops.]

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