

INTRODUCTION.

It has been customary among farmers to lay emphasis upon the importance of applying to their crops a balanced dressing of manures, rather than aiming at mixing the manures in such proportions as to ensure the proper balance of manures actually in the soil. To do this, it is first necessary to know the available amount of each manure present in the soil, and the amounts required by any one crop to give a satisfactory yield, so that by difference the appropriate quantities of each manure to be added may be found.

The difficulty of obtaining a reliable estimate of the nutrient content of a soil is well known, for not all is in an available form to the plant. Chemical and physico-chemical methods have been applied and found wanting in certain respects. Mitscherlich, working in Germany, developed a method whereby the plant itself could be used as an indicator of available soil nutrients, so that no longer should there be a need of approximation in the determination of an estimate of available nutrients. The method has been severely criticised on theoretical grounds, but its application has proved to be of practical value in Germany, Scotland and Hawaii. It requires modifications for use under tropical conditions, and Hawaii has been engaged in research on the matter for several years. In 1932-3 preliminary investigations were started at the Imperial College of Tropical Agriculture, and the following is an account of further work carried out in 1933-4.

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