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EDITORIAL NOTES.

Fertilizers.

IN New Guinea, where cattle are not kept in the same manner as in temperate regions, the lack of farmyard manure is especially felt and the need for substitutes becomes more urgent every year. When used as substitutes for dung, artificial fertilizers have the advantage that they are required only in relatively small quantities because of their high degree of concentration. This is a distinct advantage in New Guinea where transport costs are considerable.

The most important fertilizer constituents are nitrogen, potash and phosphoric acid and, in some parts of New Guinea, iron in the form of iron sulphate.

Nitrogen is a constituent of all vegetable matter, the most important nitrogenous substances in the plant being the proteins and amines. The nitrogen of the air is useless to the plant which is unable to avail itself of this element in the free state, but must find it in a combined form, generally as a nitrate. Even if combined nitrogen be present in the soil in other forms, for example, as organic nitrogen or ammonia, these forms by the action of so-called nitrifying bacteria, are usually first transformed to nitrates, before they are assimilated by the plant. Nitrogen is the element which forces the plant, producing a luxuriant growth of leaves to which it imparts a dark green colour.

Potash plays an essential part in the formation of the carbohydrates of the plant. Plants with a high percentage of sugar and starch, especially cassava and sweet potatoes, respond readily to dressings of a potash fertilizer. Furthermore, as a result of potash manuring, the sugar content of fruits rises considerably.

Phosphoric acid, like nitrogen, is of importance in the formation of proteins of which phosphorus is an essential constituent. It is taken up by the plant only as phosphates in easily soluble form. A good supply of such phosphates is essential for seed and fruit production in all flowering plants and is said to generally hasten ripening.

Although artificial fertilizers have been used in the tropics for years, their use in New Guinea has been very limited. As a result, many old plantations are now declining in yield and some have even been abandoned because of soil impoverishment coupled with other secondary causes.

On an intensively cultivated soil in New Guinea, the quantities of the above constituents removed in a year may reach—

	lb. per acre.
Nitrogen	6
Potash	3
Phosphoric acid	1½

For a single year these quantities may appear small, but over a number of years they are considerable, particularly when it is remembered that nitrogen, potash and phosphoric acid are present in the soil in relatively small quantities.

Many plantation soils have been under European cultivation for half a century or more and before this they had probably been subject to native cultivation. Because of heavy rainfalls and the loose texture of most New Guinea soils, soil impoverishment due to leaching is also considerable although it is difficult to determine, with any degree of accuracy, the extent to which our soils are impoverished by this means. However, the fact that comparatively young plantations are declining in yield because of soil impoverishment is a definite indication that no time should be lost in taking the regular application of fertilizers more seriously.

Fertilizers should be applied each year and although the expense involved in the year during which the work is done may not seem justified immediately, the effects will be more evident as time goes on. Perhaps the most satisfactory way of overcoming the difficulty would be the introduction of legislation enforcing the purchase of so many pounds of fertilizer for each ton of agricultural produce exported. But, no matter what arrangements are made, there should be no delay in putting them into operation.

ERRATUM.

In the May, 1941, issue of the *New Guinea Agricultural Gazette* (Vol. 7, No. 2), reference is made on page 116 to the tung oil tree, *Aleurites fordii*. The correct botanical designation of this tree is *Aleurites moluccana*.