

## I N T R O D U C T I O N .

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The use of Organic Manures has been a source of controversy in Agriculture for many years. Recent advances in the technique of field experimentation and the statistical reduction of results have enabled later workers to make a more critical examination of the problem. It is intended, in this paper, to review the present position and more recent contributions to the problem, special emphasis being laid on Pen Manure and Fish Manure. It is not intended to deal with Compost nor with the various types of Green Manuring used in the tropics.

Not only is it debatable whether there is any real value in organic manures apart from their mineral composition, but there exists much uncertainty with regard to the amounts of manure that should be applied under tropical conditions. It cannot be said that the indigenous agricultural practices of the tropics feature ~~in~~ a marked use of organic manures. In West Africa the inefficient system of shifting cultivation is widespread. In East Africa, cattle have no recognised place in agricultural systems and the kraal manure is leached and useless. Cattle dung is allowed to remain in heaps, indicative of wealth and dignity rather than as a source of fertility. In Malaya, there is no definite system of animal husbandry and little use is made of cattle manure.

It is possible, therefore, that the use of pen manure in these countries was introduced chiefly from Europe,

and the traditional beliefs of European farmers as to its value and the most advantageous dressings, became accepted for the tropics.

To-day, opinions of enlightened tropical agriculturists are divided as to its value. Turner (7) has shown for the Sugar Cane crop, that in the British West Indian Islands and Mauritius, great value is placed on pen manure, whereas in Cuba, Hawaii, Puerto Rico and the Philippines, it is never used. Agee (1) points out that in Hawaii the cane trash is burned and tractors are used entirely for cultivation purposes.

It should be borne in mind that the nature of the soil plays an important part in determining whether, or not, organic manures are of definite value, and it is likely that those workers who have obtained favourable results from its use, have exploited its less obvious properties which have satisfied some local limiting factor in the soil.

Treatment	Average yield of grain	
	1915	lbs./acre
Control	212.5	1
Pen Manure	372.2	2
Pen Manure	467.8	3
Pen Manure	503.2	4

Agee (1) describes similarly large increases in crop yield, resulting from small dressings of organic manure, in the Northern region of the Gold Coast.

The manure, a mixture of box dung and pen manure, was applied in amounts between 2 and 5 tons per acre.