CATTLE FOR MANURE

By R. SPENCER SCHRADER,

Wester Seaton Estate, Negombo.

Is it good or bad practice to keep cattle on coconut estates ?

CATTLE are usually used in Ceylon for manuring coconut palms under an inefficient and uneconomical system. Two head are tethered to a palm round which a shallow trench has been cut, for ten nights, after which period the trench is filled in. In the vast majority of cases, the cattle receive no food other than the scanty grazing on the land, and no straw or cut fodder is provided during the night. The dung and urine excreted in the trench is the only manure obtained under this system, euphemistically called " cattle manuring " : and, since the food eaten is generally neither large in quantity nor good in quality, the manure produced is both small in quantity and poor in quality. The number of palms manured in this fashion averages 18 per head, per annum.

Sometimes weeds and other vegetable refuse are buried in the shallow trench circle with the dung, and the belief is expressed that " compost is made at the foot of the palm." The principles of compost-making are well-known ; the burial of a thin layer of vegetable matter and dung under a covering of soil is not making compost in accordance with those principles.

The manufacture of " Pen Manure " is a system adopted on some estates. Although the writer has read something about it, he has had no personal experience with the method and does not propose to discuss it. On the other hand, he has had a number of years' experience in a method of manufacturing Farmyard Manure, a method which he has long advocated and which is in common use in Great Britain, where it is known as " Treading in Straw." It is simplicity itself, and the amount of labour involved is small, since the animals do practically all the work themselves.

The requirements are simple and inexpensive—a shed with a floor space allowing 30 to 40 square feet per animal, and an abundant supply of straw and water. If the land is high and the soil heavy, *e.g.*, laterite, a pit, about 18 inches deep, should be cut the full length and breadth of the shed ; it will be necessary to build a parapet, about 18 inches high, right round to prevent the breeding of black beetles. The floor need not be paved; beaten earth is quite sufficient even on sand. In the case of very young calves, the type of shed may be varied. It has been found that a light fence, made of bamboo slats placed about an inch apart, is quite effective, and neither pit nor parapet is required.

A layer of straw is spread over the floor and the animals are turned in. If they are docile and not given to butting each other, rails round the shed are sufficient to keep them in ; otherwise, it will be necessary to plant strong posts to which the animals are tethered with short ropes. Straw is dry feeding, and some water provided for the animals will encourage them to eat more of it than if it were withheld. Every morning, when the animals are taken out of the shed, the

dung is raked over, and a fresh layer of straw laid down. Straw is very absorbent and there is no likelihood of the urine percolating through to the floor of the shed. Nor will the quantity excreted be sufficient to convert the mass into a soggy mess. On the other hand, it will be found necessary to sprinkle water over the mass about twice a week to keep it moist and encourage rapid decomposition. This is essential to prevent the straw being pulverised into dust.

The animals will tread both the dung and the straw, which has been impregnated with urine, into a solid, compact cake which has to be cut for removal from the shed. In the writer's experience covering between ten and fifteen years, only eight rhinoceros beetles, and/or beetle grubs, have been found in the solid mass.

It must be emphasised that the sprinkling of water over the mass in order to keep it moist—not saturated—is essential. The mass must, in no circumstances, be permitted to become dry and dusty. If it does, decomposition will be retarded and the manure will not be very satisfactory. On the other hand, it must not be saturated ; a soggy mess is not good for the health of the cattle.

If the supply of straw is abundant, the quantity of manure, made by this method, can average as much as ten tons, per head, per annum. One advantage that this has over both Pen Manure and Compost is that the Farmyard Manure can be allowed to accumulate, without deterioration, until one is ready to apply it to the land. Compost deteriorates after a certain period, and Pen Manure must be removed when the pit is full.

The quality of farmyard manure will depend, to a great extent on the feeding stuffs used for the cattle. It will be necessary, therefore, to analyse a great many samples made by animals, fed with different rations, before any authoritative statement can be made regarding the feeding that will give the best manure. A single sample made by very young calves, some of them before they were weaned and some receiving only a very small quantity of coconut poonac and rice bran, was recently analysed by Dr. Salgado, Soil Chemist to the Coconut Research Scheme, who also very kindly supplied, for purposes of comparison, analyses of " Pen Compost " and " Cattle Manure." The results are as follows :—

Comparative Analyses of Various Cattle Manures

(As ready to be applied to the land)

	Per cent.		
	Farmyard	Pen	Cattle
Nitrogen	0·81	0·50	0·53
Phosphoric acid	0·71	0·21	0·21
Potash	1·12	0·54	0·33
Moisture	55·60	57·30	56·00

Comparison on Moisture-free basis

	Farmyard	Pen	Cattle
Nitrogen	1·83	1·17	1·20
Phosphoric acid	1·60	0·49	0·37
Potash	2·52	1·27	0·75

The superiority of this sample of farmyard manure over the others is self-evident.

Assuming that sufficient straw has been provided to enable the animals to produce ten tons of farmyard manure per head per annum, and that one cwt. is applied per palm, each animal will supply manure for 200 palms. The number of palms which can be directly manured by tethered cattle as previously stated is only 18.

A comparison with artificial fertilizers is equally interesting. Where seven lbs. of a mixture containing three parts sulphate of ammonia, two parts Saphos phosphate, and two parts muriate of potash (50%) are applied, the plant food amounts to 0·6 lbs. N., 0·6 lbs. P, and 1lb. K; whereas 1 cwt. of farmyard manure will provide 0·9 lbs. N., 0·8 lbs. P. and 1¼ lbs. K.

While it is a truism that "one swallow does not make summer," the first arrival is usually followed by many others, and all together prove that the summer has really come. A few statements in this article are based on the analysis of a single sample. It is not intended that the facts stated should be accepted as applicable to all farmyard manure generally. Rather, it is hoped that interest will be aroused and that the whole question of production and cost will receive thorough investigation. Some of the points to be considered are: method of manufacture; feedingstuffs that will produce the best manure; value of the manure; cost of manufacture.

It must be pointed out that, in calculating cost, there are a few factors that must be taken into account. If animals that do not belong to the estate are kept "for manure," (a common practice in Ceylon), it is possible that the cost will be higher than the price of artificial fertilizer of corresponding value in plant food. If, on the other hand, the animals belong to the estate, the products derived from them have a definite value, whether these products are milk, beef, draft animals or dairy stock. The entire cost of producing the manure should properly be set off against the income derived from these products. If the income from the herd is less than the cost of keeping them, then the cost of the manure is the amount of the loss; if the income is greater, then the manure has cost nothing and the herd has, in addition, given a profit.

A comparison of the effects on the soil and crop between the use, respectively of farmyard manure and artificial fertilizer over a period of years would be eminently desirable. These are matters of great importance, and they require the fullest and most careful investigation before any authoritative pronouncement on the value of farmyard manure may be made.

Another point that calls for investigation is the material to be used for treading in. Straw is not always available and is often very expensive. Grass and leafy weeds that are periodically cleared may be effective substitutes.

There are three factors that are worthy of consideration:—(1) the application of farmyard manure tends to increase the humus content in the soil and, therefore, to improve it; (2) the cost of farmyard manure is the difference between the cost of the feedingstuffs (including straw), plus the labour of cartage and application and minus the increase in value of the animal. It is conceivable that, under very good management, the increase in value will be equal to or even greater than the cost of material and labour; (3) the effect of good feeding and management will help to remove from our local cattle the exceedingly poor reputation they have undeservedly earned.

[*The opinions expressed are the views of the author; opinions are invited on this controversial issue.—Ed.*]