

ADVISORY WORK ON MANURING AND SOIL MANAGEMENT AND THE SMALL-HOLDER

By M. L. M. SALGADO,

Soil Chemist.

IN the course of my short address, I have decided not to indulge in any scientific exposition on the manuring and cultivation of coconut palms. We have already a mass of knowledge and experience on the coconut palm and its successful cultivation, which, if properly applied, should help us to increase crops. For some reason or other simple rules of good husbandry seem to be ignored by many a coconut grower. It is for you to find out the reason—whether it be sheer cussedness, or some economic or social factor, or a wrong method of approach in offering advice.

The Advisory Field Officer in the course of his duties comes into contact with two types of holdings :

- (a) Village Holdings, up to a maximum of two to three acres.
- (b) Small estates up to a maximum of 50 acres.

The problems of improving the condition of these two types of holdings are intimately connected with the corresponding types of proprietor and/or conductor or perhaps the so-called superintendent.

There is little purpose in asking the Village Holder or the small estate owner to carry out what you may consider scientific methods, without carefully appreciating what he can do and cannot do, what he will do and will not do.

The Village Holding

Let me first deal with a type of village holding on which your advice has rarely been sought—the small 1 and 2-acre allotments given to the villagers on 99-year leases. North and South of our Institute there are two such schemes, one at Kirimetiana and the other at Mawatagama (adjoining Mawatte Estate). Both these schemes represent jungle lands that were cleared for food production purposes during the last war on short term leases by villagers and subsequently reverted to scrub jungle. After the system of Chena cultivation to which these lands have been subject the land has not been sufficiently rested under secondary jungle to allow its fertility to be re-established. In both areas the soil is poor lateritic gravel and except in the lower slopes there is little top soil.

The permanent crop of all these lands is coconut, which is interplanted with a variety of catch crops, such as manioc, plantains and pineapples. We will now consider how you should approach an allottee of this nature and advise him how he should open up his holding to the best advantage within his limited resources.

First take the question of fencing his allotment. Barbed wire is out of the question to-day owing to its prohibitive cost. So do not suggest it. Instead, advise him to have a permanent live fence of *Gliricidia* which will provide him with the jungle sticks so necessary for various agricultural operations in future and also green manure for his growing crops. Interspersed along the fence he should plant a few Kapok and Drumstick plants—both these are of considerable economic value.

The secondary jungle has been cleared and burnt. You will now no doubt think of what soil conservation measures to recommend. In your scientific wisdom (or folly) do not recommend planting perennial cover crops such as *Centrosema* or *Pueraria*. They may suit the large estate owner, but not the small allottee of this type. He could profitably grow a leguminous annual which can be also used as a food crop, such as Bombay Cow-pea which gives good yields even on poor soils. It gives much better yields than green gram (mung).

Your personal assistance would be most valuable in tracing proper contour drains. A few widely spaced drains properly traced conserve the soil better than several closely spaced drains cut at random without the use of a road tracer.

On land of this nature, with a poor top soil and a yet poorer sub-soil, the preparation of the planting hole is a matter of supreme importance, unfortunately overlooked by such allottees. It is useless advising him to cut holes of the size of $4' \times 4' \times 4'$, however desirable on this type of land. With his inability to engage paid labour he will not dig such large holes, so advise him on a hole $3' \times 3' \times 3'$, but filled with top soil and at least one layer of coconut husks. Never give the small-holder counsels of perfection which he cannot and will not carry out.

There are, however, things that the small-holder of this type can do, but will not do out of sheer cussedness and that is to look after seedlings with care and diligence. Watering during the drought, particularly during the first year, weeding round the plant, manuring with a little kitchen ash if he cannot afford anything else, are things that he can do. Similarly the protection of the palm from the worst pest of the coconut holding—not black beetle or red weevil—but cattle.

Organised competitions and prizes developing a keen sense of healthy rivalry and a sense of pride in one's holding is one of the methods that may be tried to cure such shortcomings due to cussedness. You should co-operate with the Rural Development Societies in such endeavours.

You must now remember that on these small-holdings coconuts is not the only crop he has to consider. The allottee must make the most of his land and on a small unit your problem will be to harness his resources to this end. A crop like pineapples should be restricted to the drain bunds, manioc planted not too close to the palms, leaving at least six feet from the seedlings and plantains only at the centre of the square and thinned to carry not more than five plants to a bush.

We will now consider the village holding of 2 to 3 acres where the palms are in full bearing. In this connection you should particularly have in mind allottees under Village Expansion Schemes where estates have been acquired by Government and landless villagers settled on them in small allotments. There is little doubt that with proper organisation the productivity of these lands can be considerably enhanced. In this connection I would suggest the following "drives" or campaigns organised on the basis of each minor headman's division :—

(a) *Planting of Live Fences of Gliricidia*.—If properly organised what a colossal amount of green manure this can contribute towards the manuring of small-holdings.

(b) *Cattle Manuring*.—Most small-holders have unmanageable herds of cattle which graze on the roadside by day and have free roaming within the holding or somebody else's land at night. Systematic tethering to the palms in the evening will bring the fertility of the roadside to the palms.

(c) *Conservation of Ash*.—If only the kitchen ash that is dumped in the open to be leached by rain is kept in a covered thatched shed and added to the palms manured by cattle, what a balanced mixture the palms can be provided with.

(d) *Soil Turning*.—Is there a better method of soil cultivation than turning the soil with the mamoty? This is preferable to ploughing which the small-holder cannot afford to do.

The Small Estate

Small estates up to 50 acres form the backbone of the coconut industry. They form a very large proportion of the total acreage of coconuts in this country and in any programme of rehabilitation they have to play a very important part in increasing the production of coconuts.

In the Gampaha, Veyangoda and Negombo District acres and acres of such lands maintaining static crops, with little cultivation or manuring will be seen. It will be impossible to expect to manure an adequate acreage by tethering cattle and it is on these lands that a systematic drive for artificial manuring should be made, while at the same time making the most of locally available manures as suggested in Leaflet No. 9.

Much can be done through the Coconut Producers' Co-operative Societies which supply fertilisers on long-term credit, recovered in instalments in the form of crops and Advisory Officers by their personal approach and propaganda should assist such a campaign. The success of the Dunagaha Coconut Producers' Co-operative Society as recorded in their last annual report shows what can be done in this direction.

There are obvious exhibitions of bad husbandry which it should be your objective to correct by advice and persuasion. Many of you have seen water-logged lands where deep drains have been cut to lower the water-table, but soon filled with coir dust or husks, defeating the very purpose for which drainage was done. How many of you have stepped to these lands and shown the cultivators the simple folly of their bad husbandry?

At the same time there are many lands with fluctuating water-tables where the results of manuring are hardly realised. I refer in particular to sandy cinnamon soils overlying clay sub-soils which need adequate draining to remove excess water during rains. Whenever you advise manuring such lands, you should insist that manuring without draining would be money wasted. If properly drained the response to manuring on such lands can be amazing.

Overgrazing is yet another problem on the small estates which you as Advisory Officers should tackle. Particularly in areas of low rainfall such as the Puttalam District, it is necessary to have a plant cover to shade the soil from the desiccating effects of the sun. Those of you Advisory Officers who carried out the land utilisation survey in Kalpitiya know how scorching the mid-day sun can be on the bare exposed sands of this area.

On these lands one should always encourage the growth of Leguminous herbaceous plants such as *Tephrosia purpurea* (Pila) and *Crotolaria* species, which if they are not weeded, grow on these soils. There is an undesirable practice to weed these useful soil restoring crops. On the other hand, these plants should be allowed to go to seed, then ploughed in at the beginning of the rains (or harrowed), so that a second crop of these useful Leguminous plants regenerate and help to restore the fertility of these sterile structureless sandy soils.

The systematic night fires on coconut estates, the perennial burning of all debris which should be allowed to decay or used as a mulch round the palms is yet another example of bad husbandry, particularly on the small estates, which it should be your endeavour to stop.

A similar bad practice is to fill catch water drains with fronds, defeating the purpose for which these drains were cut. While butt ends should be burnt and the ash collected and added to palms where cattle have been tethered, or to young palms, the leafy ends should always be systematically used for mulching round the manure circles and the bases of palms.