THE UTILIZATION OF HUSKS ON COCONUT ESTATES*

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HUSKS form one of the important by-products of the Coconut Palm, the economic utilization of which plays an important part in the successful cultivation of coconut estates. When prices are attractive it is the practice to sell husks to the fibre mills, often without an adequate return when the manurial value and the moisture conserving properties of husks are considered. In districts where fibre mills are not available husks are often allowed to accumulate in heaps, the proper disposal of which forms a problem. It is the object of this leaflet to indicate the most profitable ways in which they can be utilized.

1. PROPERTIES OF HUSKS

First must be considered the manurial and other properties of husks on which their agricultural value should be assessed. The main manurial constituent in husks is potash, which forms nearly 30 to 35 per cent. of the ash. On an average, about 100,000 husks contain potash equivalent to 1 ton of muriate of potash, and on this basis alone, husks are worth about Re. 1·50 a thousand. The amount of phosphoric acid is small being only 2 per cent. of the ash.

The potash is present in husks in a form that is soluble and easily available to the roots when they are buried in the soil. Being soluble, potash of husks is leached out when open heaps are exposed to heavy rains.

When husks are buried in the soil, their moisture holding properties are extremely valuable in times of drought, and their spongy structure provides a good medium for root development.

2. HUSK ASH

On some estates husks are burnt to produce ash, which is used as manure.

As a rule the burning of husks cannot be recommended except when it is anticipated that more husks will accumulate than can be buried in trenches or otherwise utilized.

Ceylon Coconut Research Scheme, Leaflet No. 5.

The following points should be noted in the preparation and utilization of husk ash :—

(*a*) The husks should be from heaps that have not been exposed to heavy rains. Ash from so exposed husks will be of poor quality.

(*b*) The preparation of the ash should be carried out under a slow fire to obtain the maximum recovery of potash ; high temperature should be avoided as potash salts are likely to be lost by volatalization.

The pit or heap in which the husks are burnt should be continuously charged with fresh husks in order to maintain a slow smoky fire.

(*c*) High temperatures, especially when the husks are contaminated with sand, tend to produce hard masses of ash in contrast to the fine powder produced under a slow fire. Contamination with sand and stones should be avoided.

(*d*) Husk ash should be stored in a dry place as it absorbs moisture.

(*e*) Owing to the alkalinity of husk ash, it is not safe to mix it with ammoniacal manures such as sulphate of ammonia or nicifos, as these would react with loss of ammonia.

(*f*) Husk ash prepared on estates usually contains about 20 to 25 per cent. potash. Two pounds of such ash may be considered equivalent to 1 lb. of muriate of potash.

3. HUSK MULCHES

Coconut husks are used as a mulch for the conservation of soil moisture in two ways. (*a*) Mulch round the base of palms, (*b*) Broadcasting husks between palms.

(*a*) *Husk mulch round base of palms.*—This is the usual method of husk mulching adopted on coconut estates. One layer of husks is placed with the convex side facing upwards from about a foot from the base of the palm up to a distance of six to seven feet.

This method of mulching is particularly beneficial on gravely soils in conserving moisture during periods of drought. Further, husk mulches applied on the manure trenches round palms help to smother the heavy growth of weeds round the base of the palms that follow manuring.

(*b*) *Broadcasting husks between palms.*—Broadcasting husks in the fields between palms is as a rule not to be recommended, except when husks cannot be otherwise disposed of, and in any case not on sandy soils. It has given good results on gravelly and lateritic soils which usually suffer most during periods of drought ; on such soils it may be considered a cheap way of

utilizing husks to advantage when burying in trenches is not possible owing to the expense involved. On other soil types broadcasting husks should be done with caution.

Husks when broadcast seem to decay sooner than when buried though the reason for this is not apparent. After two years the husks are found to be partially decayed.

In order to avoid surface rooting it is essential that after a period of two years the partially decayed husks should be ploughed in.

The use of husks as a mulch either round the palms or by broadcasting should be avoided on sandy cinnamon soils on which this practice has a tendency to produce a surface mat of fine roots.

4. BURYING HUSK IN TRENCHES

The ideal method of utilizing husks is by burying in trenches. There is no better method of conserving soil moisture in the soil and reducing to a minimum the serious effects of droughts which most coconut estates in the North-Western Province have to anticipate. As one of the causes of immature nut-fall is considered to be deficiency of soil moisture, husk burying would help to reduce its incidence during periods of drought. It should therefore be the endeavour in all coconut estates to include a certain amount of husk burying in their cultivation programmes, as it forms a capital investment by improving the condition of the soil. All types of soils benefit by this practice, though as a rule gravelly soils and sandy cinnamon soils show the best results.

There are numerous methods of burying husks in trenches to some of which brief reference will be made, while the method recommended in this leaflet will be described in detail.

(*a*) *Burying husks in the centre of four palms.*—In this method husks are buried in a small pit 4 feet by 4 feet and 3 feet deep, or circular with a diameter of 6 feet and 1 foot deep (in this case called "saucer pits"). This system suffers from the disadvantage that the husks are concentrated at a great distance from the palms, and further that a husk pit at the centre interferes with the free use of cultivation implements such as ploughs and harrows.

(*b*) *Burying husks between the rows of palms.*—The second method usually adopted is to bury husks in long trenches between rows of palms ("long line trenches"). The trenches are about 8 to 10 feet broad and run along the whole length of the row. Where such trenches are adopted solely for husk burying a very large amount of husks have to be used and concentrated on one portion of the estate. Interference with the free movement of cultivation implements is a further disadvantage.

In this connection it should be mentioned that the practice of burying husks in narrow drains, barely 3 feet wide, is hardly to be recommended. Often catch-water drains are filled with husks, thereby defeating the purpose of these drains.

(*c*) *Burying husks in trenches along rows of palms.*—This method described below appears to be increasingly adopted in estates where husks are buried and is to be preferred to the two methods already mentioned.

This system of husk trenches is diagrammatically illustrated in Figure 1 and has the following advantages :—

(i.) A reasonable amount of husks are used so that, rather than concentrating on one field, the entire estate can benefit from husk burying.

(ii.) The husk trenches are not far removed from the palms and thus the roots of the palms on either side can quickly grow into the husk pit and make use of the potash and moisture conserved.

(iii.) There is little interference with the freedom of use of ploughs and harrows.

The trenches are alternately arranged along the rows against the slope of the land, the dimensions being 10 feet long, 4 feet broad, and 1½ feet deep. A depth of 1½ feet is considered sufficient, as the advantages of the use of deeper pits are not commensurate with the extra expense involved.

Husks are buried layer by layer, each layer of husks being covered by a layer of earth. It was formerly recommended that the husks should be arranged so that the spongy inner side faces upwards. Examination of husks buried in various ways has shown that there is no particular advantage in systematically arranging husks in this manner so long as each layer is covered by earth. The pit is filled so that the last layer is flush with the level of the ground and the balance of earth is mounded on top.

A pit of this size would take about 250 to 300 husks.

In the cycle of cultivation, when husks have to be buried again in the same field, trenches can be dug in the alternate position.

(*d*) *Addition of calcium cyanamide or lime to husk trenches.*—It is sometimes the practice to add Calcium cyanamide or lime to hasten the decay of husks buried in trenches. This appears superfluous. The potash in husks that forms the only manurial constituent of importance exists in soluble form and will be available even without the breakdown of the husks. On the other hand coconuts being a perennial crop there will be no advantage in husks decaying too soon. The moisture

holding properties of husks which are of particular value to the palms will continue to function without the husks breaking down, and rather than the rapid decomposition caused by cyanamide or lime being of value, it may be considered even disadvantageous.

(*e*) *Planting green manures on husk trenches.*—As mentioned in Leaflet No. 3, Cover Crops and erect green manures such as Boga or Crotolaria can be readily established on the top of husk trenches where other methods have failed.

When manuring has to be done in a field where husks have to be buried an excellent practice is to grow Boga about nine to ten months before manuring is due, so that loppings can be obtained for use with artificial manure in manure trenches.

(*f*) *Husk burying and the breeding of the coconut black beetle.*—. There seems to be an idea, particularly in the Southern Province, that the coconut black beetle breeds in trenches where husks have been buried. It may be definitely asserted here that where husks *alone* are buried this is not the case. It should also be mentioned that the butt-ends of fronds should never be buried with husks as the former favours the breeding of the black beetle.

5. HUSKS VS. COIR DUST

It is sometimes asked whether it is not a more economic proposition to sell husks to the mills and use the equivalent returned coir dust on the estate. This is based on a lack of understanding of the properties to which husks owe their agricultural values. Coir dust has little manurial value compared to husks, as all the potash has been leached in the process of retting. Further, coir dust should not be buried in trenches as it tends to get caked up and also favours the formation of a dense mat of fibrous roots.

6. HUSKS IN PLANTING HOLES

The use of husks in planting holes is described in Leaflet No. 4.

7. USE AND MISUSE OF HUSKS ON WATER-LOGGED LAND

It is a common sight to find water-logged land, particularly round Chilaw and Madampe, where the drains are filled with husks. As the object of the drains is to remove excess water and lower the watertable, refilling with husks would only defeat the purpose of draining.

On the other hand husks can be used with advantage on such lands to raise the ground level round the palms and thereby lower the water-table and increase the effective range for root development. This can be done by placing a layer of husks, with the convex sides facing upwards, and covering with silt

removed from the drains. In extreme cases of permanent water-logging drains are cut between all the rows leaving a raised platform round the palms. This method is no doubt expensive but produces excellent results.

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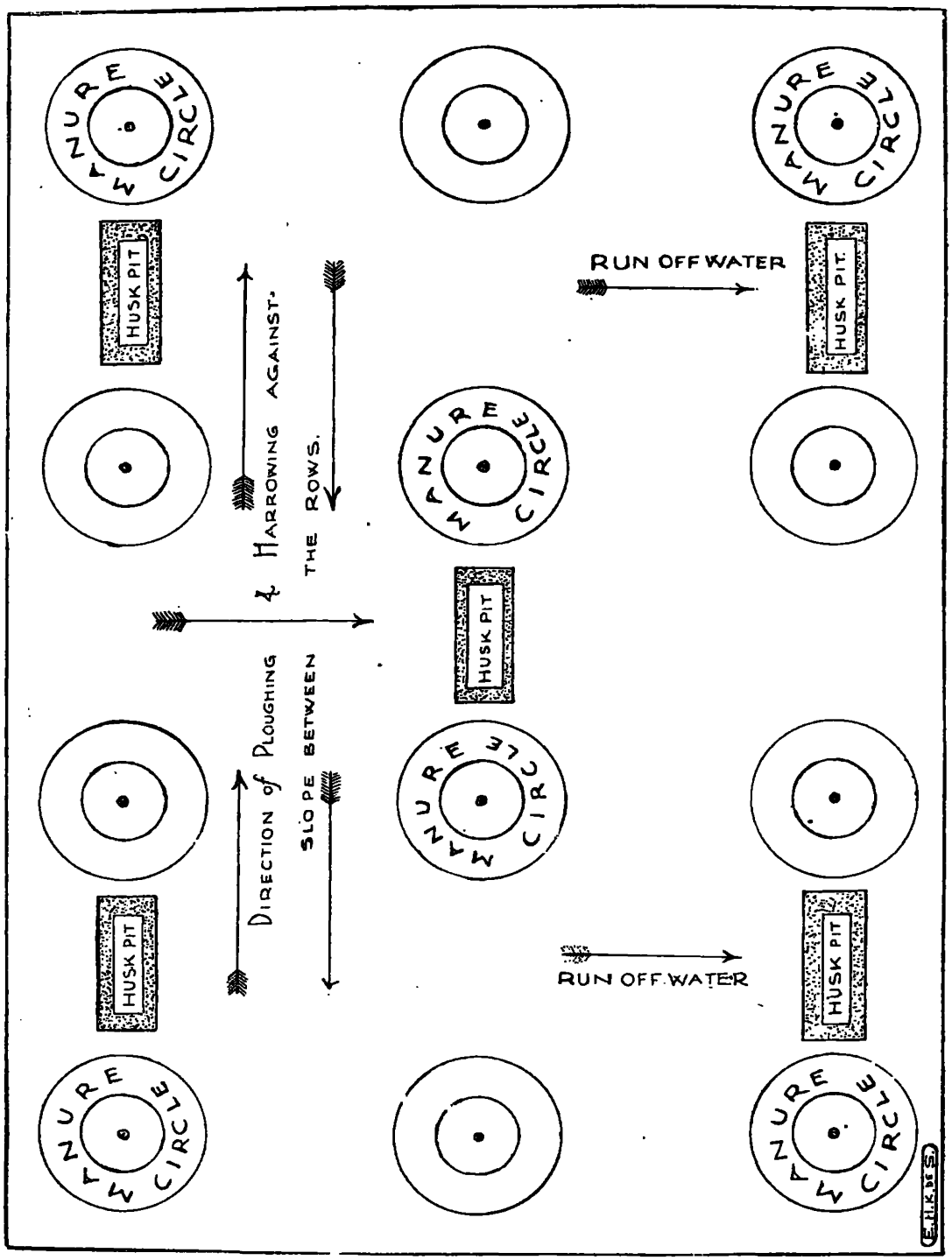

Diagram I.
Arrangement of Husk Pits.