

COPRA DRYING.

By F. O. Moody.

The observations made in this article are based on practical experience of copra curing extending over a period of more than twenty years. It is not intended that they should form a technical paper, but serve merely as a practical guide to those engaged in the preparation of copra and as a solution of the many worries involved in turning out a good quality product.

There are three methods of drying copra, hot air, sun and open fires (smoke).

Hot Air Driers.

There are at present several types of hot air driers in use in this Territory. The old type kiln with one large drying table or a number of shallow trays (one above the other) heated from beneath by a system of flues, generally spoken of as the New Guinea drier; the Chula, in which the copra is dried in bulk in a large steel box and into which hot air is forced by means of a fan; the Windsor Stove, in which the heating is from a central stove, the hot air being carried from the stove by means of flues through the drying chamber; steam driers, in which the heat is derived from steam pipes from a boiler, the pipes running under and over the trays in the drying chamber; and the Ceylon type drier, in which open fires by means of coco-nut shells only distribute heat through nuts in the half shell on an open bed.

The type of drier in general use is the New Guinea drier, although of late the Ceylon type is becoming very popular, no doubt on account of the small cost of erection and the good results which can be obtained from this system of curing.

When erecting a new drier of any type, firstly, particular attention should be paid to position on account of weather and drainage, secondly, to ventilation, as where these two factors have been overlooked it is impossible to turn out first-class copra, and thirdly, a good weather-proof, well ventilated drying out and bagging shed is essential.

Copra.

First-class copra must be clean, white and brittle, in large pieces, preferably half nuts, with a moisture content of not more than five per cent., that is to say, when a piece of copra is broken it should show no sign of moisture. Copra of this class will not deteriorate to any material extent when stowed in well ventilated sheds for long periods.

Faults Generally Observed in Copra in this Territory and Probable Causes.

SWEATING.

This may be due to several reasons. (1) No drying out shed, the copra being bagged too soon after taking out of drier. Copra should be left in the drying out shed for at least six days before bagging. (2) Underdried. (3) Copra cut in small pieces to hurry drying, taken out of drier when slightly undried and then bagged very tightly. (4) Copra drier situated on low lying ground with insufficient drainage, moisture rising from the ground under the flue pipes, or where there is a cement pit at the bottom of the drying chamber heavy rain causes water to get into the pit. The copra, instead of being dried, is steamed, and when bagged becomes hot and sweats the moisture out. The same condition arises when there

is insufficient ventilation, the hot air passing through the copra in the drying process collects the moisture, and if unable to get away settles back on the drying copra; or again, where there are a number of trays one above the other, the hot air as it passes through each tray collects the moisture until it reaches the top trays where we have the same result.

BURNT COPRA.

This is largely due to (1) the fire end of the flue pipes too near the tray of copra (2) uneven ventilation where a portion may dry while the remainder becomes scorched and burnt, and (3) overloading of copra drier and big fires. The copra nearest the flue pipes becomes burnt and we get a mixture of burnt, casehardened, honeycombed and rubbery copra—the honeycombed copra later dries out, leaving a fibrous dust and rotten pieces.

DISCOLOURED COPRA.

Where green coco-nut meat has been kept too long before putting in the drier a bacterial fermentation sets up giving the meat a slimy appearance, and when the drying process starts this meat becomes discoloured and has a scorched appearance, or where there is more than one tray above the other and insufficient ventilation overhead, the moisture settles back on the top trays with the same result.

When coco-nut meat is cut it should be placed in the drier and drying process commenced as soon as possible. It does happen at times that coco-nut meat cut during the day is left in the bags or baskets till the evening of the next day, especially is this so where natives cut their own coco-nuts and may bring in more than the drier will hold at one filling.

SMALL COPRA.

This fault is very prevalent, the idea being to ram as much copra into the bags as possible regardless of quality, in some cases bagging is between eleven and twelve bags to the ton. In order to do this a large percentage of the copra is broken to $\frac{1}{2}$ " pieces. Copra bagged at fifteen bags to the ton does not require heavy ramming and opens up in good condition.

GERMINATED NUTS.

Adverse reports have been received from London buyers regarding hot air dried copra containing a large percentage made from germinated nuts.

To improve the quality of hot air copra, germinated nuts should be dried separately and shipped as trade copra.

Ceylon Type Driers.

Copra from these driers is of fair quality, being well dried in half nuts, but at present a large percentage is either badly smoked or smoke stained. This may be caused by (1) too much draught through the coco-nut shells being forced to burn quickly, causing smoke, (2) shells not cleaned of all husk, or (3) damp shells.

To produce first-class hot air copra from the New Guinea Windsor stove or steam pipe type of drier the following is essential:—

- (1) Correct ventilation.
- (2) Coco-nut meat to be put in drier the day it is cut.
- (3) Tray or trays not to be overloaded (one bag of green meat weighing approximately 140 lb. to a surface area of 6 x 8 ft.).

- (4) Temperature of drier at commencement of drying process to be 110 degrees, rising slowly over a period of 10 hours to 130 degrees. This can be regulated by intake vents, the time taken to dry copra to a 5 per cent. moisture content will depend on the drier. Quick drying will not turn out good copra. After moving copra to drying out shed leave for at least six days with an occasional turn over before bagging.

SUN DRIED COPRA.

Weather conditions do not permit good sun drying throughout the Territory. The usual method of drying is to place the green coco-nut meat on movable trays in the sun, the trays being pushed into the drying shed at night or during rain. The period for drying is generally 5 to 6 days in good weather. Faults in sun drying are due to weather conditions, underdrying, or lack of supervision.

SMOKE DRIED COPRA.

A large percentage of this class of copra is of very inferior quality, the idea appearing to be "anything will do for smoke copra", from half rotten sun dried copra which has been put through a process of smoke drying, to copra which has been burnt to a cinder in the hot air drier.

On a number of plantations the method of drying is to overload the drying table or tray and dry as quickly as possible, with the result that in one bag or consignment will be found anything from roasted copra to green coco-nut meat discoloured by smoke. Another method would appear to be to smoke cure the copra with little or no heat, with the result that copra arrives at the depots in an undried sweating condition.

Smoke copra can be well dried and of good quality, the same as any other class of copra, by not overloading the drying space, having small fires giving off heat (smoke is not necessary but cannot be avoided), giving the copra time to dry, then moving to drying out shed and allowing it to cool off and dry out for 5 or 6 days before bagging.

In conclusion I would state it is noticed on some plantations that hot air copra driers built years ago which were able to cope with the production at that time, are to-day patched up and although having lost a lot of their efficiency are still expected to cope with an increased production.

On a large number of plantations the tendency at present is to produce copra which will just pass inspection.

Owing largely to the planter himself and the copra inspection, the copra from this Territory has been improved and maintained at a higher standard, with the result that Rabaul copra is known on the European market and is at present quoted at over a pound per ton higher than South Sea, but with a little money spent on copra driers and sheds and a little more supervision and care, there is no reason why Rabaul copra should not top the market.