



Figure 1

A general view of field No. 1 planted in December 1955. Age of palms—6½ years.

THE ISOLATED SEED GARDEN

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It is known that the yield of copra between coconut palms is highly variable and that a fair proportion of the variability is due to genetic causes. These variations are maintained under natural conditions as coconut palms are generally cross-pollinated, i.e. the pollen parent is not the same palm as the seed parent, so much so, that a bunch carrying ten coconuts may have been pollinated with pollen from ten separate palms. Naturally variations will be high. These variations could be reduced and a homogeneously high-yielding strain could be developed only by careful breeding and selection. A number of programmes of research are in progress and it is proposed to discuss only one project in this paper, *viz* The Isolated Seed Garden.

From previous investigations we find that open-pollinated progenies of certain coconut palms are uniformly high yielding, and that they give a mean yield of copra about 35 to 40 per-cent more than the population mean. Identification of such palms—described as *prepotent* palms — are laborious and time consuming, and relatively few palms will be proved to be prepotent from

a large number tested. Thus the quantity of seed that could be collected from the prepotent palms will be negligible in relation to the 2,000,000 seednuts required by the Industry yearly.

It is possible to assume that just as the progenies of a prepotent palm are high-yielding, progenies raised from artificial pollinations using the pollen of a prepotent palm as the male parent, will be equally high-yielding. But artificial pollination of coconut palms is a laborious process and it will be physically impossible to raise the large quantity of seed required by the Industry. It is proposed to overcome these difficulties by establishing an Isolated Seed Garden.

A 200-acre block of jungle land in the Ambannuhukalana Forest Reserve, Chilaw District, was alienated to the Coconut Research Institute. There was an isolation barrier of forest vegetation at least 40 chains wide all round the block. This barrier is considered to be sufficiently wide to prevent contamination of palms within the Seed Garden with pollen from coconut palms in the village gardens outside the barrier.

The first block was planted in December 1955, and progress made up to end of December 1961 is tabulated below. All the seedlings transplanted have been raised by hand pollinations between selected parents.

<i>Field No.</i>	<i>Date of planting</i>	<i>Acreage (approx)</i>	<i>No. of Palms</i>	<i>Percent in flower</i>	<i>Palms in bearing</i>
1	Dec. 1955	5	331	95.7	37.8
2	Nov. 1956	4	392	41.6	—
3	-do-	5	316	51.9	—
4	Nov. 1956 } May 1957 }	34	750 } 1812 }	14.7	—
5	Nov. 1959	5	750	1.0	—
6	Dec. 1960	20	1183	—	—
7	Nov. 1961	20	1415	—	—
	Total	93	6949		

It is interesting to record that in Field No. 1, planted in December 1955, 95.7 per cent palms were in flower and 37.8 per cent were in bearing by the sixth year. Palms in this field show vigorous growth and are exceptionally high-yielding (Figures 1 and 2).

This project is to be carried out in two stages: (a) planting of about 150 acres exclusively with Tall × Tall hand pollinated seedlings, and (b) identification of a sufficient number of palms within the Seed Garden that will give high-yielding progeny. The latter palms will be made the only source of pollen for natural pollination between selected palms within the Seed Garden.

Since there is an isolation barrier of forest vegetation 40 chains wide all round the Seed Garden, pollen from the palms in the village gardens will not be able to contaminate the Seed Garden. Thus the seednuts collected from the Seed Garden will be the result of natural crossing of selected female parents and proved male palms, and consequently seed will be of very high-quality.



Figure 2
One of the palms illustrated in Fig. 1. Age of palm — 6½ years.