

PLANTING SYSTEMS

An Inquiry ordered by the Board of Management of the Coconut Research Scheme

An important limiting factor to the growth of crops is the need for adequate room for their development. A given area cannot support an unlimited number of plants; there exists for every crop, depending on the conditions of soil and climate, a definite number of plants per acre which will give maximum productivity.

If the "stand" falls short of the optimum, production is diminished owing to the fact that full advantage is not being taken of the available area; if, on the other hand, the stand is excessive, the yield will be diminished owing to overcrowding and the consequent interference by each plant with its neighbours, resulting in intense competition for plant foods, moisture, light and air. This is why other food crops should not be grown in association with mature coconuts, when they are correctly spaced.

The optimum planting distance for coconuts is usually such that the circumference of the root system of one plant just reaches that of its neighbours; and, as a general rule, the extent of the roots may be taken as being roughly the same as that of the branches and leaves. Thus the tips of the leaves should meet, if the planting distance is correct.

There are several methods of planting coconut palms, e.g. square, oblong, triangular and quincunx. Square planting which is standard practice, both in Ceylon and in Malaya, does not give maximum coverage to the soil, as there are big light patches at the centre of each square. More plants can be obtained to the acre with better shade coverage of the land by using the system of triangular planting which is perhaps a little more difficult to lay down.

In Ceylon, in general the plants are usually set 26, 27 or 28 feet apart, depending on the conditions. The first gives 676 sq. feet to each palm and 64 palms to the acre; the third gives 784 sq. feet to each palm and 55 palms to the acre. The closer planting is generally on the poorer soils. Coconuts are also planted at 30 feet spacings, and quite often much closer than 26 feet.

In Malaya, where conditions are quite different and much more uniform, and where coconuts are planted in rich, alluvial clay with a water-table at about 3 feet, 30 ft. square planting is standard, except on one estate where the planting is 30 ft. equi-triangular. The first method gives 48 palms to the acre and the second gives 55 palms to the acre, with a proportional increase in crop.

Because conditions in Ceylon are so varied, it has been a subject of controversy for many years as to what should be the correct planting system and planting distance for coconuts to give optimum yields. It is obvious that variations in soil and climate necessitate variation in planting distances in different situations. A system of replicated and randomised plots, in various parts of the country to cover all conditions, systems, and planting distances would be a costly and elaborate experiment, and it would be more than 10 years before results would begin to be forthcoming.

The Board of Management of the Coconut Research Scheme accordingly invite information from planters who employ different systems of planting and have complete records of climate and crop. Information, so received, will be treated as confidential and the name of an estate will not be revealed. If sufficient and reliable information is received, it might then be possible to analyse and compare the results obtained with different systems of planting under similar conditions, and so settle this problem, once and for all.

The following descriptions of planting systems used in coconut planting are given as a guide to those who are able to fill in the attached questionnaire :—

Square.—The palms are set at fixed equal distances at the corner of each square on a chessboard pattern. (This is the standard system in Ceylon).

Oblong.—(Rectangular).—The planting lines are still at right angles to one another, but the planting distance is not the same in the N.S. as in the E.W. rows.

Triangular.—The palms are set at fixed distances at the corners of equilateral triangles, i.e. the planting lines are set at 60° to one another. (This is probably the best system).

Quincunx.—The palms are planted as in the square method, with the addition of one tree in the centre of each square. (This method is often used in replanting).

Number of Palms per Acre

PLANTING DISTANCE		PLANTING SYSTEM		
Feet.		Square	Triangular	Quincunx
20 × 20	.. ..	108	—	—
22 × 22	.. ..	90	103	—
23 × 23	.. ..	82	94	—
24 × 24	.. ..	75	86	—
25 × 25	.. ..	70	79	—
26 × 26	.. ..	64	72	113
28 × 28	.. ..	55	63	95
30 × 30	.. ..	48	55	83
35 × 35	.. ..	—	—	65
<i>Oblong</i>				
20 × 22	.. ..	..	98	
22 × 24	.. ..	..	81	
24 × 26	.. ..	..	69	
26 × 28	.. ..	..	59	
28 × 28	.. ..	..	51	

“Remarks” : Under this head, it should be stated whether the crop statistics are reliable. There may, for instance, be irregularities due to floods, plant disease or theft of nuts. If information is not available, a space may be left blank.