

## **Area, Output and Yield of Coconut Trees in Kerala\***

**A short note on available estimates and their reliability**

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This is not a subject in which I have specialized knowledge. My interest in it was stimulated recently by a project that is being initiated in the Centre for Development Studies at Trivandrum on the potentialities of local panchayat level planning in Kerala. As is well known, and would be obvious to anyone coming to the State, coconut trees are grown so densely throughout its territory (except along the eastern highland areas close to the Western Ghats) that a stranger, if arriving by air, may well wonder where a plane can possibly land. One would expect that, in these circumstances, there would be an abundance of statistical information on coconut cultivation and its contribution to the economy of the State. In reality the available information has been of a severely limited character until the middle of the 1970's, since, unlike most other states in India, Kerala did not have a reporting system based on the collection of land use data by patwaris in all units (i.e., survey numbers) falling within their respective jurisdictions.

In fact, land utilization surveys were begun in Kerala only in 1954. They too were only sample surveys conducted in two rounds during each agricultural year, with a total sample size slightly more than one per cent of the total number of plots in the State. Complete enumeration was introduced in 1975-76, though it was only by 1980-81 that all the villages in the State were covered and fairly reliable state-level estimates could be made.

In the case of coconuts, even such state-level estimates could be made of, not the area under coconut, but only the total number of trees, since coconut palms were generally interspersed with various other crops like mangoes, cashew and paddy and it was generally impossible to separate out the area under coconut. However, on the basis of an acceptable norm regarding the number of coconut trees that can be grown on a hectare of land devoted wholly to coconut cultivation - taken to be approximately 230 per hectare - estimates of area under coconut have been indirectly derived. Such are the estimates of area now available for the period from 1975-76 ( when complete enumeration

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was introduced). The estimates\* for the subsequent period covering 12 years are given below:

('000 hectares)			
1975-76 :	693	1981-82 :	667
1976-77 :	695	1982-83 :	674
1977-78 :	674	1983-84 :	682
1978-79 :	661	1984-85 :	688
1979-80 :	664	1985-86 :	705
1980-81 :	666	1986-87 :	706

Though the estimates available for earlier years are less reliable, they indicate clearly that, from the middle of the 1950's when land utilization surveys were adopted for estimation, there has been continuous expansion of the area under coconut. It increased from 460 thousand hectares in 1956-57 to 505 thousand hectares in 1961-62, 610 thousand hectares in 1966-67, to 730 thousand hectares in 1971-72 and 748 thousand hectares in 1974-75. The rather sharp drop in area from 1974-75 to 1975-76 (to 693 thousand hectares), and the slight decline thereafter (to 664 thousand hectares in 1979-80) was due to the change in method of estimation; however, from 666 thousand hectares in 1980-81 the expansion in area continued during the rest of the following decade, touching 706 thousand hectares in 1986-87 and 865 thousand hectares in 1987-88. Thus there has, in fact been more or less continuous expansion in the estimated area under coconuts for over three decades from 1955-56 to 1986-87.

Given the area estimates, the estimates of coconut output are based on estimated Yield per hectare. According to the available estimates of yield covering the period 1961-62 to 1987-88, it fell from 6432 nuts per hectare in 1961-62 to 5618 nuts per hectare in 1966-67, 5536 nuts in 1970-71, to 4964 nuts per hectare in 1975-76, and 4558 nuts per hectare in 1980-81, before rising slightly to 4792 nuts in 1985-86 and again falling to 4244 nuts per hectare in 1987-88. The growing incidence of disease in the form of root wilt is likely to have contributed to the decline in yield, but the decline has been observed even in regions free from root wilt. Since growth in the area under coconut has been faster in the regions free of root wilt, the recorded decline in yield may well have been due to the growth in area itself. It needs to be recalled that the estimates of area are not actually of area but based on the total number of trees divided by the norm adopted for this purpose. So estimates of growth in area may merely reflect the increasing number of trees per hectare in the

\* Source of data : H.L. Chandok and the Policy Group, *India Database : The Economy*, Vol. II (Published by Aroon Purie for Living Media India Limited., 1990) pp.774-77

territories covered by the sample surveys from 1955-56 to 1974-75 and through complete enumeration from 1975-76. If this inference is correct, the sharp decline in the estimated yield per hectare may have been largely due to the growing density of coconut trees in most (if not all) parts of the State.

It is a scientifically established fact that the space between the root spread of any two coconut trees should not be less than 22 feet, and that the yield will decline if the distance is any shorter. The most probable reason for the decline in yield that can be observed in the State, even after allowing for other factors such as the spread of root wilt disease, is the growing density of coconut trees.

Since area expansion has taken place mainly in the northern districts of the State, from Trichur upwards, and the central and southern districts have shown some loss of area under coconut, this may have been an additional factor in the yield decline. For, rainfall is available in the northern districts in only three or four months of the year (from June to September), unlike in the southern districts which have rainfall during the months from October to December as well.

Since there is now little scope left for extension of net sown area in Kerala, the actual area under coconut can be extended further only by substituting it for paddy or rubber. And, since growth in density of the coconut population has sharply reduced yields per hectare, the output of coconuts in the State can be significantly increased only if a strategy is adopted for raising yields through other means. The scope for raising yields is in fact considerable, as can be seen by comparing the average yield of nuts in Kerala with the average yield in countries like the Philippines and Malaysia - though it should be added that the higher yield levels in these countries could be due to distribution of rainfall spread through a greater part of the year. But this will require reducing significantly the density of the coconut trees grown, increasing sources of supply of water, extension of channels for distribution of such supplies to the area under coconut cultivation, and conservation as well as economy of use of water for it being available throughout most of the year. That the yield can thus be raised to between three and four times the present level has been demonstrated in private holdings in the State. Within the institutional frame work of village panchayats it should be possible to develop coconut cultivation in Kerala on such a highly productive and remunerative basis.