ECONOMIC PROSPECTS OF COCONUT SECTOR IN INDIA

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ABSTRACT

This paper covers three major aspects to trace the economic prospects of coconut sector in India. First aspect measures the growth in area, production and productivity in terms of compound growth rates. The relative contribution of area expansion and yield improvement to output growth is studied with the help of the Minhas-Vaidyanathan decomposition technique. In the second aspect, the nature and extent of price instabilities have been observed. Besides this, the seasonal influence on prices has been worked out by eliminating the trends and cyclic components. The third aspect relates to the yield expectations under different management levels and consequent economic returns.

INTRODUCTION

Coconut is cultivated in India since ages and fits very well into the socio-economic background. In many instances, it is the only source of income of the inhabitants of the major coconut growing areas. Though it is true that modern technologies are available in India for increasing the productivity of this crop, it is still managed to a great extent by the same way it was managed earlier. The increase in production of nuts from 3,448 million in 1949–50 to 9,283 million in 1989–90 was by and large through the area expansion rather than by the adoption of new technologies. In this context, it is worthwhile to examine all aspects of coconut economics.

MATERIALS AND METHODS

The data on area, production and productivity were collected from the Directorate of Economics and Statistics of the Ministry of Agriculture, Government of India. The data on wholesale prices of coconut, copra and coconut oil were

collected from the Coconut Development Board. Input-output data relating to the permanent observation plot of the Central Plantation Crops Research Institute, Kasaragod which consisted of the following three treatments, namely, (plot 1) cultivation and manuring; (plot 2) cultivation but no manuring; and (plot 3) no cultivation and no manuring were analysed to find out the economics of different management levels. The average yields relate to palms of 35 to 60 years age group. The 1990–91 prices were taken for studying the economics of coconut production under three different management levels.

The relative contribution of area expansion and yield improvement to output growth was studied with the help of Minhas-Vaidyanathan decomposition technique. To study the trend of wholesale prices of coconut and its products third degree polynomials were fitted by using the least square technique. For computing seasonal indices, standard time series technique was used by eliminating trend and cyclic components.

RESULTS AND DISCUSSION

In terms of coconut area (1.5 million ha), India ranks third in the world which is about 13.8 per cent of the total area under coconut in the world. Cultivation in India is mostly concentrated in the four southern states, namely, Kerala, Karnataka, Tamil Nadu and Andhra Pradesh which together account for about 91.8 per cent of area in the country. In terms of production (9,283 million nuts), India again ranks third among the coconut producing countries in the world. Four southern states account for nearly 8,510 million nuts which is about 91.7 per cent of total production. Kerala accounts for about 58 per cent of the total area, but contributes to 47 per cent of the total production in the country. The other three southern states, namely, Karnataka, Tamil Nadu and Andhra Pradesh together contribute to about 44 per cent of the production, though they account for only 36 per cent area under coconut.

Growth in Coconut Area

From the growth rates worked out for the four important coconut growing states, namely, Kerala, Tamil Nadu, Karnataka and Andhra Pradesh during different decades it is seen that for Andhra Pradesh and Karnataka the growth rate was positive during all the decades starting from the fifties with maximum during the eighties, showing that there has been a steady increase in area in these two states. For Kerala, however, during the seventies, there was a negative growth rate. But it was seen to reverse during the next decade.

In Tamil Nadu, in the initial period, there was a negative growth. But the trend reversed during other decades with the highest growth rate of 7.70 per cent being observed during the eighties. The trend of growth rate at the all India level was exactly similar to that of the Kerala showing the state's importance in the coconut sector (Table 97.1).

Growth in Productivity

In the case of productivity there was no clear trend in the growth rates. In the case of Andhra Pradesh, during the first three decades (1950–51 to 79–80) the growth rate was negative while during the eighties there was a high positive

growth rate of 7.47 per cent. For the other states the growth during the latest period (1980–81 to 89–90) was negative. In the case of Tamil Nadu particularly during the first three decades (1950–51 to 79–80) the growth was positive while during the latest decade (1980–81 to 89–90) it was negative. This may mainly be due to the big area expansion which took place during this period (Table 97.1).

When increase in production from 1950–51 to 1989–90 was considered at all India level, it was seen that the increase was mainly due to the area effect (89.7 per cent), while yield had a negligible contribution (4.3 per cent). The remaining 6 per cent was the interaction effect.

Table 97.1: Compound growth rate of coconut during 1950–51 to 1989–90

State		*Area*	*Production*	*Productivity*
Andhra Pradesh	1950–51 to 1959–60	0.59	−0.01	−0.06
	1960–61 to 1969–70	0.67	−2.68	−3.33
	1970–71 to 1979–80	0.80	0.24	−0.56
	1980–81 to 1989–90	2.96	15.72	7.47
	1950–51 to 1989–90	1.13	−0.55	−1.66
Karnataka	1950–51 to 1959–60	0.34	3.79	3.44
	1960–61 to 1969–70	2.38	2.19	−0.17
	1970–71 to 1979–80	2.92	3.09	0.16
	1980–81 to 1989–90	3.10	2.94	−0.15
	1950–51 to 1989–90	2.68	3.44	0.74
Kerala	1950–51 to 1959–60	1.96	5.42	3.39
	1960–61 to 1969–70	4.01	2.20	−1.73
	1970–71 to 1979–80	−1.72	−3.37	−2.07
	1980–81 to 1989–90	3.44	3.84	−0.24
	1950–51 to 1989–90	1.67	0.62	−1.05
Tamil Nadu	1950–51 to 1959–60	−2.22	−0.87	1.39
	1960–61 to 1969–70	6.01	4.96	0.79
	1970–71 to 1979–80	1.12	2.34	1.21
	1980–81 to 1989–90	7.70	7.79	−1.42
	1950–51 to 1989–90	3.51	4.14	0.59
All India	1950–51 to 1959–60	1.21	2.41	1.19
	1960–61 to 1969–70	4.07	2.56	−1.44
	1970–71 to 1979–80	−0.17	−1.04	−0.88
	1980–81 to 1989–90	3.80	5.27	1.42
	1950–51 to 1989–90	2.16	1.58	−0.57

Wholesale Price of Coconut, Copra and Coconut Oil

The average annual wholesale prices of coconut, copra and coconut oil in the eighties is presented in Table 97.2. Between 1980–81 and 1989–90, the price of coconuts ranged between Rs. 1137 and 2607 for 100 nuts and copra between Rs. 892 and Rs. 2182 for 100 kg and for coconut oil between Rs. 1319 and 3240 for 100 kg. Year to year fluctuation was of a high order (cv from 31 to 33 per cent showing the erratic behaviour of prices. The C.G.R. ranged between 7.6 for coconut and 8.42 per cent for coconut oil.

Table 97.2: Average annual wholesale prices of coconut, copra and coconut oil at Calicut (Kerala) market during the eighties

Year	*Wholesale prices of*					
	Coconut		*Copra*		*Coconut oil*	
	(Rs./1000 nuts)	*% var.*	*(Rs./100 kg)*	*% var.*	*(Rs./100 kg)*	*% var.*
1979–80	928	–	856	–	1219	–
1980–81	1158	24.78	1161	35.63	1577	29.37
1981–82	1137	−1.81	892	−23.17	1319	−16.36
1982–83	1271	11.79	1021	14.46	1542	16.91
1983–84	2493	96.14	1588	55.53	2384	54.60
1984–85	2602	4.37	2182	37.41	3240	35.91
1985–86	1215	−53.31	1152	−47.20	1710	−47.22
1986–87	1920	58.02	1700	47.57	2592	51.58
1987–88	2118	10.31	2057	21.00	3097	19.48
1988–89	2277	7.51	1923	−6.51	2873	−7.23
1989–90	1830	−19.63	1572	−18.25	2322	−19.18
Mean	1722.60		1464.00		2170.50	
SD	574.91		451.55		696.20	
CV (%)	33.37		30.84		32.08	
C.G.R. (%)	7.61		7.80		8.42	

Seasonal Behaviour of Prices

When a larger set of monthly data were subjected to analysis, the seasonal indices worked out showed that wholesale prices exhibited a distinct seasonal pattern. Coconut prices ruled high during October to February and low during April to September, whereas copra prices ruled high during October to February and low during April to September. Seasonality of coconut oil price was more or less on similar lines with copra for obvious reasons (Table 97.3).

Table 97.3: Seasonal indices of wholesale prices of coconut and its products at Calicut market (1970 to 1990)

Month	*Coconut*	*Copra*	*Coconut oil*
Jan	113.45	106.81	102.46
Feb	118.13	103.27	97.83
Mar	112.59	100.18	92.25
Apr	109.42	93.02	94.53
May	100.81	91.02	92.86
Jun	91.25	93.15	95.82
Jul	88.01	95.36	98.69
Aug	87.57	96.23	98.44
Sep	91.01	99.46	102.11
Oct	90.58	103.56	104.56
Nov	90.36	106.29	108.22
Dec	100.71	105.00	105.86

Note: Trend and cyclic components are eliminated.

An effort was made to see if the average wholesale prices of these commodities follow a pattern. It was seen that a third degree polynomial fits very well in the average wholesale prices of coconut, copra as well as coconut oil (Fig 97.1).

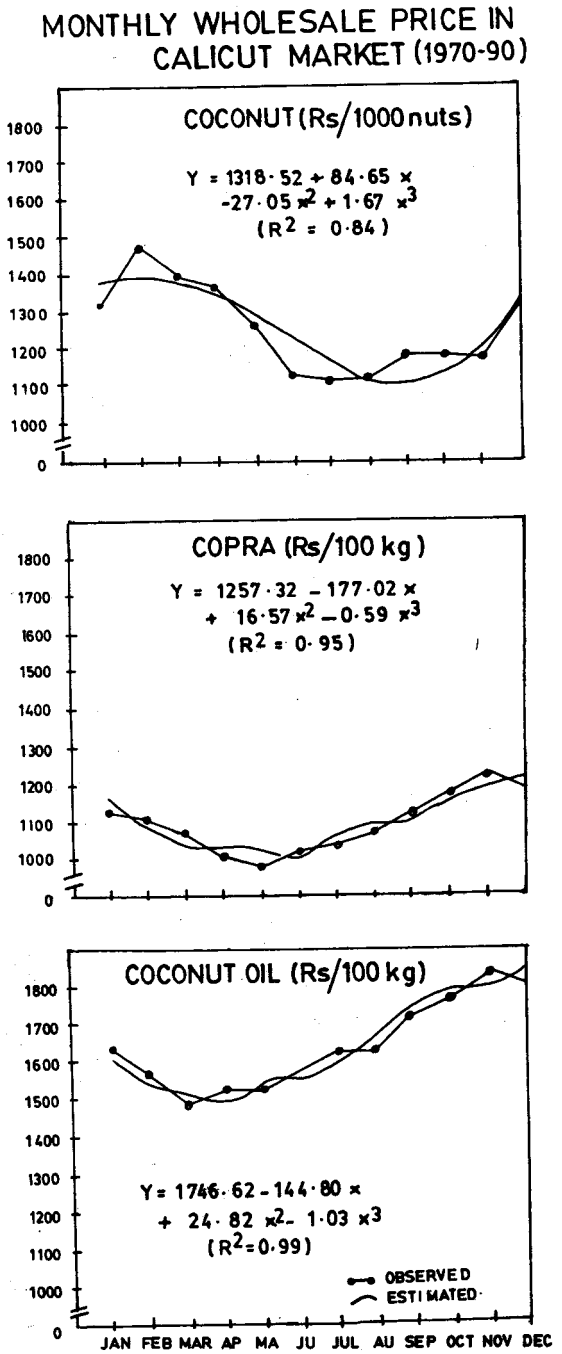

Fig. 97.1: Monthly wholesale price in Calicut market (1970–90).

The equations are as follows:

1) Wholesale price of coconut (Rs./1000 nuts)
   $Y = 1318.52 + 84.65\,X - 27.05\,X^2 + 1.67\,X^3$ ($R^2 = 0.84$)
2) Wholesale price of copra (Rs./100 kg)
   $Y = 1257.32 - 177.02\,X + 16.57\,X^2 - 0.59\,X^3$ ($R^2 = 0.95$)
3) Wholesale price of coconut oil (Rs./100 kg)
   $Y = 1746.63 - 144.80\,X + 24.82\,X^2 - 1.02\,X^3$ ($R^2 = 0.97$)

where Y is the predicted value and X = 1 for January; X = 2 for February; and X = 12 for December.

Since R^2 values for these equations are high the trend of prices of these commodities follows a pattern. It is suggested that in order to minimise the price instability, an appropriate supply management should receive priority in development strategy.

Profitability of Coconut Farming Under Different Managements

The yield data pertaining to the period 1933 to 1958 which corresponds to the age group of around 35 to 60 years of the palms were considered for the economic analysis under three different management levels. In other words, this study covered the yield during a stabilised period for a valid conclusion. It may be noted here that the management trials were carried out under rainfed conditions with monoculture. The average rainfall at Kasaragod for the period 1962 to 1981 was 3579 mm with 116 rainy days in a year. June to September accounts for 85 per cent of total rainfall in a year. The soil of this block is a well drained deep red sandy loam and is within 0.8 km from the sea coast. The water table is about 7 m below the surface level.

The average yield/ha for plot 1 was 10,080 nuts while for plot 2 and plot 3 it was 8,435 and 2,680 nuts, respectively. Thus per palm yields in these three levels of management were 57.6, 48.2 and 15.3 nuts, respectively (Table 97.4).

Table 97.4: Costs and returns of different management levels in permanent observation plots of CPCRI, Kasaragod (Rs./ha/year)

Plot	*Yield/ha (nuts)*	*When price per nut is Rs.*	*Annual cost*	*Gross return*	*Gross margin*
Plot 1 (cultivation and manuring)	10080	2.50	4420	25200	20780
		3.00	4420	30240	25820
		3.50	4420	35280	30860
Plot 2 (cultivation but no manuring)	8435	2.50	2220	21100	18880
		3.00	2220	25300	23080
		3.50	2220	29520	27300
Plot 3 (no cultivation and no manuring)	2680	2.50	1160	6700	5540
		3.00	1160	8040	6880
		3.50	1160	9380	8220

Input-output data relate to 1933 to 1958. Economic analysis is based on 1990–91 prices.

Since input data for the initial period of establishment of the palms were not available, it was not possible to work out the net returns. Hence the final analysis was limited to gross margin. Besides, under small land holdings situation it is the gross margin that matters in the economic decision.

According to the analysis, the estimated cost of maintenance for plot 1 at 1990–91 factor market prices was Rs. 4,420/ha for plot 2 Rs. 2220/ha and Rs. 1160/ha for plot 3. Returns with three levels of prices (Rs. 2.50, Rs. 3 and Rs. 3.50 per nut) were assumed based on the recent trends of coconut prices. It can be seen (Table 97.4) that when price per nut is Rs. 3.50 the gross return amounts to Rs. 35,280 and gross margin Rs. 30,860/ha in plot 1. Corresponding figures for plot 2 were Rs. 29,520 and Rs. 27,300/ha and for plot 3 Rs. 9,380 and Rs. 8,220/ha.

Hence, it is seen that by spending an additional amount of Rs. 3,260/ha in gardens which were regularly managed an additional return of Rs. 22,640/ha can be realised. Since the management packages referred to here are quite affordable by a small farmer, it is surprising to observe that most of our farmers have not put any effort to adopt good crop husbandry mostly due to their lack of understanding about economic prospect of this social crop. This study, therefore suggests that there is a need for small holder's attitudinal change towards coconut farming. It is also stressed that the developmental agencies should not only devote their energy and resources towards the area expansion programme, but also simultaneously make serious efforts to motivate the coconut farmers towards better management.