



A Comparative Analysis of Production and Prices of Coconut Oil with Other Major Vegetable Oils in India

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1. Introduction

India is the largest producer of coconut in the world in terms of nut equivalent. The country produces about 13.3 billion nuts per annum from an area of about 1.71 million ha. (94-95) Of the total production of coconut about 34 per cent is converted as milling copra which is used for the production of coconut oil, which contributes over six percent of the total vegetable oil output in the country. Of the total production of coconut oil, 20 percent is used for edible purpose, 60 percent for toiletry purpose and the remaining 20 percent for industrial purpose. In the recent past the annual domestic consumption of coconut oil in India had

almost remained constant around 2.8 lakh tonnes (APCC, 1994). However coconut oil continues to have a command of price premium over other vegetable oils. In this background, this study attempts (i) to study the trend in growth of production and price of coconut oil as compared to other major vegetable oils, (ii) to observe the relationships between prices of coconut oil and other major vegetable oils, and (iii) to observe the degree of association between production and prices of major vegetable oils.

2. Materials and Methods

For this study, the annual production figures and the average wholesale prices of four major edible oils *viz.*, coconut, groundnut, sesame and

rapeseed / mustard oils for the period 1970-71 to 1995-96 were collected from the publications of the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi. To observe the trend in production and prices of these vegetable oils, compound growth rates (CGR) were computed for the periods 1970-71 to 1982-83, 1983-84 to 1995-96 and 1970-71 to 1995-96. The wholesale price index was estimated, based on 1970-71 prices, while the relative price indices of different oils in relation to coconut oil were computed by dividing the index number of an individual oil with the corresponding year index number for coconut oil. Correlation coefficient was worked out to study the

Table 1. Production of major vegetable oils in India (in lakh tonnes)

| S. No. | Year | Coconut | Groundnut | Sesame | Mustard |
|--------|-------------|---------|-----------|--------|---------|
| 01 | 1970-71 | 173 | 1171 | 139 | 489 |
| 02 | 1976-77 | 172 | 1516 | 136 | 616 |
| 03 | 1982-83 | 166 | 1656 | 180 | 731 |
| | CGR between | | | | |
| | 1970-71 to | 0.43 | 1.12 | 1.40 | 2.04 |
| | 1982-83 | | | | |
| 04 | 1983-84 | 188 | 1201 | 170 | 675 |
| 05 | 1988-89 | 215 | 1347 | 181 | 1057 |
| 06 | 1994-95 | 291 | 1760 | 225 | 1650 |
| | CGR between | | | | |
| | 1983-84 to | 6.37* | 3.26 | 3.94* | 7.86* |
| | 1994-95 | | | | |
| | CGR between | | | | |
| | 1970-71 to | 2.58* | 1.66* | 2.06* | 4.96* |
| | 1994-95 | | | | |

*Significant at 5% level



Table 2. Wholesale prices of major vegetable oils in India (Rs. /qtl)

| S. No | Year | Wholesale Prices | | | Mustard |
|-------|--------------------------------------|------------------|----------------|----------------|-----------------|
| | | Coconut | Groundnut | Sesame | |
| 01 | 1970-71 | 700 | 422 (-278) | 479 (-221) | 518 (-182) |
| 02 | 1976-77 | 1055 | 821 (-234) | 921 (-134) | 707 (-348) |
| 03 | 1982-83 | 1545 | 1550 (+5) | 1434 (-111) | 1170 (-375) |
| | CGR between 1970-71 to 1982-83 | 8.17* | 7.98* | 8.33* | 8.64* |
| 04 | 1983-84 | 2385 | 1614 (-771) | 1603 (-782) | 1485 (-900) |
| 05 | 1989-90 | 2331 | 2412 (+81) | 2371 (+40) | 2164 (-167) |
| 06 | 1995-96 | 3044 | 3051 (+7) | 3624 (+580) | 4322 (+1278) |
| | CGR between 1983-84 to 1995-96 | 3.97 | 9.91* | 7.93* | 10.40* |
| | CGR between 1970-71 to 1995-96 | 8.08** | 9.04** | 7.86** | 8.79** |

* Significant at 5% level

** Significant at 1% level

Figures in parentheses indicates price premium over coconut oil
Figures for 1995-96 are provisional

relationships between prices of coconut oil and other oils under consideration and also between the wholesale prices and their one year lagged production.

3. Results and Discussions

The annual production of coconut oil, groundnut oil, sesame oil and mustard/rapeseed oil for different years are shown in *table 1*. Between 1970-71 and 1994-95, the annual production of coconut oil had increased from 173 lakh tonnes to 291 lakh tonnes (by 68 percent) and the increase was 50, 62 and 237 percent for groundnut oil, sesame oil and mustard oil respectively. The CGR estimated for the same period indicated an increase

of 2.6, 1.7, 2.1 and 4.9 percent per annum respectively for coconut, groundnut, sesame and mustard oils. Staggered estimation further revealed that the growth rate was significantly higher during the period 1983-84 to 1994-95 as compared to 1970-71 to 1982-83 especially for coconut and mustard oils (*Table 1*).

The average annual wholesale prices of coconut oil, groundnut oil, sesame oil and mustard oil for different years are shown in *table 2*. It is evident from the *table* that coconut oil had predominantly commanded a relatively higher price over other oils. The price premium (absolute differences of the average annual wholesale prices of

individual oils from that of coconut oil) was higher during early seventies and eighties. This sort of consistent behaviour of coconut oil could be explained by its distinct advantages over other oils in certain end uses. According to an estimate, while over 90 percent of the supplies of other oils are used for edible purposes, in the case of coconut oil only about 20 per cent of the supplies are being utilized in edible oil sector and the remaining 80 percent in non edible oil sector, mainly in household toiletry whose demand is highly inelastic (Das, 1985). However during early nineties the wholesale prices of other oils especially that of mustard and sesame oils were considerably higher than that of coconut oil which could be due to a reduction in demand for coconut oil in the industrial sector. Between the period 1970-71 to 1995-96, the CGR of wholesale prices were



Table 3. Wholesale Price Index (base year 1970-71) and Relative Price Index of major vegetable oils in India as compared to coconut oil

| S. No | Year | Coconut | Wholesale Prices Index | | | Relative Price Index | | |
|-------|---------|---------|------------------------|--------|---------|----------------------|--------|---------|
| | | | Groundnut | Sesame | Mustard | Groundnut | Sesame | Mustard |
| 01 | 1970-71 | 100 | 100 | 100 | 100 | 100.00 | 100.00 | 100.00 |
| 02 | 1976-77 | 151 | 195 | 192 | 136 | 129.09 | 127.58 | 90.56 |
| 03 | 1982-83 | 221 | 367 | 299 | 226 | 166.41 | 135.64 | 102.34 |
| 04 | 1983-84 | 341 | 382 | 335 | 287 | 112.25 | 98.22 | 84.14 |
| 05 | 1989-90 | 333 | 572 | 495 | 418 | 171.64 | 148.65 | 125.45 |
| 06 | 1995-96 | 435 | 723 | 757 | 834 | 166.26 | 173.98 | 191.87 |

8.08percent in the case of coconut oil, 9.04percent for ground nut oil, 7.86percent in sesame oil and 8.79percent in the case of mustard oil. Staggered analysis indicated that as compared to 1970-71 to 1982-83, the growth rate of the wholesale prices of mustard oil had increased appreciably, during the period 1983-84 to 1995-96. The increase was marginal for groundnut oil while the growth rate of sesame oil had marginally declined. In the case of coconut oil, the annual CGR which was 8.17 percent for the period 1970-71 to 1982-83, had decreased to 3.97 percent per

annum during the period 1983-84 to 1995-96. This was due to the inter year fluctuations of demand and supply of coconut oil in the domestic market.

The wholesale price index (WPI) and the relative price index of coconut oil and other major vegetable oils under consideration were worked out with 1970-71 as the base year (Table 3). It could be seen from the table that between 1970-71 to 1982-83, the wholesale price index had increased maximum in the case of groundnut oil followed by sesame and mustard oil and was the least for coconut oil and for

the period 1983-84 to 1993-94 it was maximum in the case of mustard oil, followed by sesame and groundnut oil. This indicates that between 1970-71 to 1995-96, though the prices of coconut oil had increased in absolute terms, the rate of increase was lesser for coconut oil as compared to other major vegetable oils. The relative price index which is a measure of increase in wholesale prices of individual oils as compared to coconut oil, indicated that the increase was maximum for groundnut oil as compared to sesame and mustard oil upto early nineties. Dur-

Table 4. Correlation coefficient between the wholesale prices of coconut and other major vegetable oils in India (1970-71 to 1993-94)

| Wholesale Prices | Coconut oil | Groundnut oil | Sesame oil | Mustard |
|------------------|-------------|---------------|------------|---------|
| Coconut oil | (0.733**) | 0.898** | 0.872** | 0.84 |
| Groundnut oil | 0.898** | (0.571*) | 0.977** | 0.95 |
| Sesame oil | 0.872** | 0.977** | (0.745**) | 0.98 |
| Mustard oil | 0.847** | 0.956** | 0.985** | (0.92) |

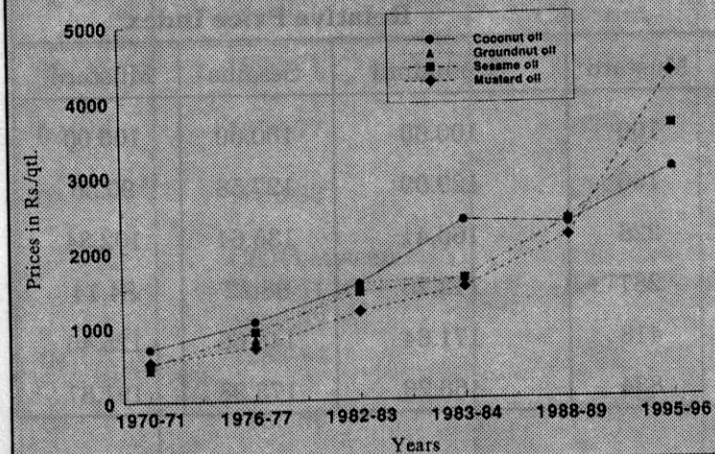
Note : Figures in parentheses indicate correlation coefficient between wholesale prices and their corresponding one year lagged production

* Significant at 1% level

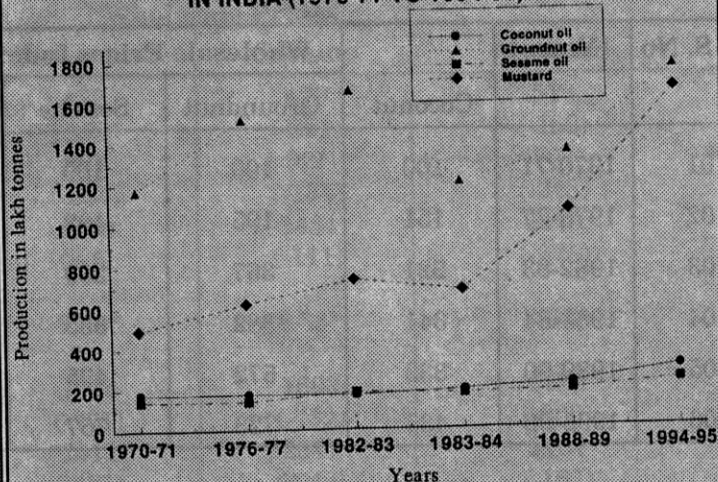
** Significant at 5% level



TREND IN WHOLESALE PRICES OF MAJOR VEGETABLE OILS IN INDIA (1970-71 TO 1995-96)



TREND IN PRODUCTION OF MAJOR VEGETABLE OILS IN INDIA (1970-71 TO 1994-95)



ing 1995-96, the relative price index was maximum for mustard oil, followed by sesame and groundnut oil.

Results of the correlation coefficient between the wholesale prices of coconut oil and other major vegetable oils and with their corresponding one year lagged production levels are given in table 4. It could be inferred from the table that the prices of all oils have high degree of positive correlation with the wholesale prices of coconut oil. This indicates that the rate of increase in the wholesale prices of groundnut, sesame and mustard oils was in the same direction as that of coconut oil. All the oils under consideration have high degree of positive correlation with their respective lagged production which could be due to higher degree of domestic demand. The same was maximum for mustard oil and minimum for groundnut oil.

4. Summary

Secondary data analysis of the coconut oil and other major vegetable oil production in India indicated that

between 1970-71 and 1994-95, the growth rate of production was maximum for mustard oil, followed by coconut, groundnut and sesame oils. The growth rate was more during the period 1983-84 to 1994-95 as compared to 1970-71 to 1981-82 for all the oils. A comparative analysis of wholesale prices of coconut oil and other major vegetable oils indicated that the prices of coconut oil were higher than other oils including groundnut oil for most of the periods. This could be mainly due to the fact that coconut oil has more price inelasticity of demand as compared to other oils as it is mainly used for toiletry / industrial purposes. However during the period 1970-71 to 1995-96, the growth rate of prices was maximum for groundnut oil, followed by mustard, coconut and sesame oils. The wholesale price index with 1970-71 as the base year indicated that, the price index was maximum for groundnut oil followed by sesame and mustard oil upto early nineties. During 1995-96, the same was maximum for mustard oil followed by sesame, groundnut and

coconut oil. This further indicates that though the prices of coconut oil had increased in absolute terms, the increase in price index was low for coconut oil as compared to other oils under consideration. The relative price index which is a measure of increase in wholesale prices of individual oils as compared to coconut oil indicated that the increase was maximum for groundnut oil followed by sesame oil.

Acknowledgement

The authors are very much grateful to Dr. K.U.K. Napoothiri, Director, Central Plantation Crops Research Institute for providing facilities to conduct this study.

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