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IMPACT OF RELATIVE CHANGES IN PRICES ON THE CROPPING PATTERN OF KERALA

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The object of this study is to examine the changes in price structure and acreage response to price in Kerala State during the decade of the first two Five-Year Plans. Although the First Five-Year Plan commenced in 1951-52, agricultural prices during that year were inflated under the impact of the Korean war. Hence the year 1952-53 is taken as one of the reference periods during which there had been stability of prices. Thus the price structure and relative changes in acreage under different crops during 1952-53 to 1961-62 are examined here. Assuming that a minimum of one year is necessary to bring about shift in crop production a one-year lag is allowed in relating prices and acreages under different crops. Thus changes in prices during 1952-53 to 1960-61 is related to changes in acreages between 1953-54 to 1961-62. Six commodities, *viz.*, paddy, coconut, sugarcane, tapioca, cashewnut and rubber which cover 73 per cent of the cropped area of Kerala are selected for this study. Farm harvest prices or the prices at which the producer sells his commodity at the farm site are considered here; as these are more relevant for the farmer in making decisions. In Table I is given the yearly averages of farm prices for selected commodities during 1952-60.

TABLE I—AVERAGE FARM PRICES OF SELECTED COMMODITIES FOR 1952-53 AND 1960-61

No.	Crop	Unit	1952-53 (Rs.)	1960-61 (Rs.)	Per cent change
1.	Paddy	Maund	10.95	15.12	138.1
2.	Sugarcane	Maund	1.09	1.46	133.9
3.	Coconut	1,000 nuts	161.66	215.05	133.0
4.	Cashewnut	1,000 nuts	24.63	28.86	117.2
5.	Rubber	Maund	110.57	124.10	112.2
6.	Tapioca	Maund	3.60	2.89	80.3

Except in the case of one crop, price levels in 1960-61 were generally higher than those in 1952-53. Among the selected crops, paddy records the highest rate of rise in prices and tapioca the lowest.

N.B. The sources of data are the following :

(1) Kerala State Season and Crop Report for the years 1952-53—1960-61, Director of Statistics, Trivandrum. (2) An Economic Review 1961 and 1962, Government of Kerala, Kerala. (3) Directorate of Economics and Statistics, *Quarterly Bulletin of Statistics*, December 1962, Trivandrum, 1963.

To study the relative price structure, the two-year average price of each commodity is related to two-year average prices of all other commodities. Thus the price relative of each commodity is derived as follows :

$$\text{Relative price of } x_1 = \frac{Px_1}{\sum_{i=1}^{n} (Px_i) - Px_1}$$

where Pxi is the two-year average price of commodity x. The change in relative price of each commodity in relation to the other is derived by comparing the average of the relative prices of each commodity in the second period to the corresponding average of the base period. It will however be noticed that all crops mentioned above do not compete for the same type of land. Hence we have classified these crops in the two non-competing groups, depending on the nature of land suitable for their cultivation. Thus paddy, sugarcane and coconut belong to one group while cashew, rubber and tapioca belong to another. Shift in crop acreage might be expected between crops in the same group, but never between crops in different groups. For instance, paddy lands in Kerala may be put under sugarcane or coconut but never under cashewnut or rubber. Therefore in estimating changes in relative prices and acreage only competing crops were considered. It can be seen from Table II that the relative prices of coconut and tapioca have registered a fall while that of paddy and sugarcane recorded a slight increase. Relating each commodity with the other in the same group, it is seen that cashew and rubber producers gained an advantage over all others during this period.

TABLE II—CHANGES IN RELATIVE PRICES OF SELECTED COMMODITIES

No.	Crop	Index of Relative Prices		Percentage change in relative price
		1952-53	1960-61	
1.	Paddy	.97	1.02	104.97
2.	Sugarcane	.97	0.99	102.54
3.	Coconut	1.06	0.98	93.02
4.	Rubber	0.80	1.16	145.00
5.	Cashewnut	0.94	1.22	129.80
6.	Tapioca	1.31	0.72	54.00

Changes in prices may now be related to changes in acreage. The average acreage under each crop is given in Table III for the two periods.

The maximum rate of rise in acreage is observed in the case of rubber, followed by sugarcane and cashewnut and the lowest rate is in the case of tapioca followed by paddy. It is significant to note that in the case of both food crops, paddy and tapioca, tne acreage as well as the proportion of the area under the crop to total area sown registered a decline, where as in the case of all cash crops the area has recorded an increase during this period both in absolute and in relative terms. It may also be noted that there is very little correspondence between percentage

TABLE III—DISTRIBUTION OF AREA UNDER SELECTED CROPS DURING 1953-54 AND 1961-62

No.	Crop	1953-54 (acres)	Per cent of total area sown	1961-62 (acres)	Per cent of total area sown	Percentage change
1.	Paddy	18,80,100	33.3	18,59,900	32.1	98.9
2.	Sugarcane	17,890	0.3	35,671	0.6	199.4
3.	Coconut	10,86,300	20.3	12,47.400	21.5	114.8
4.	Cashewnut	89,221	1.6	1,35,976	2.4	152.4
5.	Rubber	1,57,087	2.9	3,28,838	5.7	209.3
6.	Tapioca	5,99,104	11.2	5,84,837	10.11	97.6

change in absolute price and percentage change in acreage under different crops. As for paddy and coconut, which showed large increase in absolute prices, corresponding increase in acreages was small whereas for rubber and cashewnut moderate increase in absolute price was accompanied by large increase in the area under these crops.

The response of acreage to changes in relative prices may now be obtained by relating price changes to changes in relative acreages in respect of each crop. The ratio of acreage to total acreage under other crops and the relative change in acreage during the period 1953-54 to 1961-62 for the selected crops are given in Table IV.

TABLE IV—RELATIVE AREA UNDER DIFFERENT CROPS 1953-54 TO 1961-62

No.	Crop	Ratio of acreage to total of other crops		Relative change in acreage
		1953-54	1961-62	
1.	Paddy	1.70	1.45	85.16
2.	Sugarcane	0.06	0.10	190.38
3.	Coconut	0.57	0.65	114.95
4.	Cashewnut	0.12	0.15	125.00
5.	Rubber	0.23	0.46	200.00
6.	Tapioca	2.43	1.26	52.00

The highest relative increase in acreage was recorded for rubber and the lowest for tapioca. Among the competing crops in this group, the relative acreage under cashewnut also has increased. What is more remarkable is the shift in favour of rubber which came mainly from acreage under tapioca during the last one decade. In 1961-62 the total area under rubber in Kerala was 3,28,838 acres of which more than 90 per cent was accounted for by new planting.

Comparison of the changes in relative prices with changes in relative area, given in Table V shows that there is a close correspondence between the two. This is more real in the case of competing crops like rubber, cashewnut and tapioca in group B.

TABLE V—CHANGES IN RELATIVE PRICES AND ACREAGE UNDER SELECTED CROPS 1952-53—1961-62

	No.	Crop	Index of Relative Change in	
			Price	Area
Group A	1.	Paddy	104.97	85.16
	2.	Sugarcane	102.54	190.38
	3.	Coconut	93.02	114.95
Group B	4.	Rubber	145.00	200.00
	5.	Cashewnut	129.80	125.00
	6.	Tapioca	54.00	52.00

Among the crops in group A, paddy shows a different trend. Although the relative price of paddy has increased a little more than that of the other crops in the same group, the relative acreage has registered a slight fall. This may be partly explained by the physical limits to the expansion of acreage under paddy. A shift from coconut to paddy is almost impossible. Similarly a shift from sugarcane to paddy has not been favoured on account of the yearly variations in the price of paddy as against the relative stability of sugarcane prices during the last few years. (However, the relative increase in the price of paddy has brought about an increase in the input of other resources into paddy cultivation. This is evident from the increase in productivity of paddy which was about 40 per cent more than what it was 9 years ago). Another significant point to note is that acreage response to price is also related to stability of prices. Two crops, *i.e.*, rubber and sugarcane which recorded the highest relative increase in acreage enjoyed relatively stable prices through guaranteed minimum prices fixed from time to time. Whereas for tapioca which was characterised by wide fluctuations in prices, the relative acreage recorded considerable decline.

This study has revealed that the cropping pattern of Kerala has undergone a slight shift from food crops to cash crops during the last one decade and that the acreage response to price has been positive in the case of most crops. The increases in acreage under rubber and cashewnut are the result of relative increases in their price. Similarly the decline in the acreage under tapioca both in absolute and relative terms is due to fall in relative prices. Again what little evidence that we have, shows that it is the relative increase in prices and not the absolute increase, which brings about a favourable response in acreage under a particular crop. Hence a price policy designed to stimulate production of food crops in Kerala is not likely to succeed by merely fixing a floor price for those commodities. On the other hand, it should seek to stabilise the relative prices of food crops in terms of the other agricultural commodities produced in the State and maintain the same by constant vigilance and supervision.