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# ECONOMIC ANALYSIS OF PADDY PRODUCTION IN KERALA STATE

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## ABSTRACT

The study relates to change in area, production and yield of paddy over a period of years in Kerala State. The area under the crop had declined by 17.47% in state during the period 1975-76 to 1984-85. The State as a whole has got only 35.69% of the area under high yielding varieties. Compared to the year 1975-76, production in the state had declined by eight percent. There is a fall in production in all the districts except two where a marginal rise in production noticed. The mean yield of paddy had increased by only 10% during the period under reference. The disparity in yield is more conspicuous at taluk levels.


Paddy, the stable food crop of Kerala State was grown in about 6.9 lakh hectares during the period 1984-'85, covering 41.64 per cent of the area under food crops. Out of the total irrigated area under all crops during the year 1982-83, paddy alone occupied 72 per cent of the area. Considering the area under the crop and the use of water as an input, the crop assumes considerable economic significance. Paddy is grown in the State under varying agro climatic conditions which includes areas such as modern lands, water logged and flooded areas, lands coming under high altitudes and coastal saline regions mostly by small farmers. It is grown during three different seasons viz. First crop (Autumn) April - May to September - October, Second crop (winter) September - October to December - January and Third crop (Summer) December - January to March - April (Kerala Agricultural University, 1986) in a year, each season having its own influence on production. During the year 1984-85 the area under the crop was about 3.2 lakh hectares during autumn as well as winter seasons, but only 85 thousand hectares during summer. An attempt is made in the paper on how paddy production had undergone a change during the period 1980-'81 to 1984-'85.

## MATERIALS AND METHODS

The data concerning the study were collected from Bureau of Economics and Statistics (Government of Kerala, 1986). The figures related to area, production and yield of paddy for the concerned years are converted into index numbers with the figures related to 1975-'76 as the base for an easy and effective comparison over the period of years.

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## RESULTS AND DISCUSSION

### Area under paddy

Table 1 (Fig. 1) provides the change in the area under paddy for the periods 1980-'81 to 1984-'85 as compared to the base year 1975-'76. The area under the crop had declined in all the districts in the state except Ernakulam, the maximum decline being in the case of Kozhikode by 67 per cent followed by Cannanore, Idukki and Trivandrum with a decrease of 47%, 37% and 35% respectively. Trichur and Palghat districts have registered a fall of 5% and 10% respectively. During the period 1975-'76 to 1984-'85 the area under paddy had decreased by 17.47 per cent in Kerala State. This general decline in the area is due to the tendency of growing coconut in the place of paddy. Also, in urban areas, paddy fields are being used for constructing buildings. Because of the low profit there is a tendency on the part of farmers not to grow the crop during all the seasons. The above reasons may be attributed for the decrease in area under the crop in the case of different districts also.

### Spread of High Yielding Varieties

Considerable disparity is noticed regarding the spread of high yielding varieties (average of 3 seasons) in the different districts of the State. About 80 per cent of the area under the high yielding varieties is in Kottayam district followed by Pathanamthitta, Alleppey

**Table : 1 Index numbers of area under paddy - districtwise base: 1975-76 = 100**

| | District | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 |
|---|---|---|---|---|---|---|
| 1. | Trivandrum | 78.70 | 74.34 | 70.99 | 65.41 | 65.27 |
| 2. | Quilon | 97.33 | 98.01 | 96.00 | 93.00 | 73.00 |
| 3. | Pathanamthitta | NA | NA | NA | NA | NA |
| 4. | Alleppey | 85.00 | 92.00 | 87.00 | 82.00 | 76.00 |
| 5. | Kottayam | 72.00 | 78.00 | 78.00 | 79.00 | 72.00 |
| 6. | Idukki | 69.00 | 67.00 | 69.00 | 60.00 | 63.00 |
| 7. | Ernakulam | 115.00 | 113.00 | 108.00 | 98.00 | 100.00 |
| 8. | Trichur | 102.00 | 107.00 | 99.00 | 95.00 | 95.00 |
| 9. | Palghat | 99.00 | 98.00 | 94.00 | 91.00 | 90.00 |
| 10. | Malappuram | 86.00 | 85.00 | 84.00 | 80.00 | 79.00 |
| 11. | Kozhikode | 71.00 | 42.00 | 41.00 | 36.00 | 33.00 |
| 12. | Wynad | NA | NA | NA | NA | NA |
| 13. | Cannanore | 75.00 | 61.00 | 60.00 | 68.00 | 53.00 |
| | STATE | 91.00 | 91.00 | 88.00 | 84.00 | 84.00 |

Source : Statistics for Planning, 1986 page 26 Bureau of Economics & Statistics.

Table : 2 Area under high yielding varieties of paddy (%)

| | District | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 |
|---|---|---|---|---|---|---|
| 1. | Trivandrum | 19 | 26 | 26 | 28 | 29 |
| 2. | Quilon | 22 | 25 | 35 | 41 | 20 |
| 3. | Pathanamthitta | NA | NA | NA | NA | 72 |
| 4. | Alleppey | 51 | 41 | 24 | 53 | 44 |
| 5. | Kottayam | 79 | 73 | 54 | 86 | 80 |
| 6. | Idukki | 44 | 70 | 43 | 16 | 43 |
| 7. | Ernakulam | 22 | 22 | 18 | 15 | 29 |
| 8. | Trichur | 27 | 28 | 23 | 26 | 26 |
| 9. | Palghat | 64 | 46 | 42 | 35 | 28 |
| 10. | Malappuram | 15 | 28 | 25 | 24 | 21 |
| 11. | Kozhikode | 29 | 31 | 23 | 23 | 27 |
| 12. | Wynad | NA | NA | NA | NA | NA |
| 13. | Cannanore | 14 | 20 | 17 | 13 | 16 |
| | STATE | 39.02 | 42.83 | 28.45 | 35.14 | 35.69 |

Source: Statistics for Planning 1986 (page 57)

and Idukki having 72%, 44% and 43% respectively. Other districts lag far behind revealing the disparity in the acceptance of high yielding varieties. The State as a whole has got only 35.69 per cent of the area under high yielding varieties during the year 1984-'85 with no change to the situation during 1975-'76. The slow acceptance of the new technology deserves consideration.

## Production of paddy

Ernakulam and Trichur districts registered an increase in production by 25 per cent and 5 per cent respectively while in the case of other districts there is a fall in production during the period under reference (Table 3). The maximum decrease in production was in the case of Kozhikode district which was about 65 per cent followed by Cannanore district with a reduction of 47 per cent. The next is Trivandrum district with a decrease of 31 per cent. The fall in production of paddy is mainly due to the decline in area in the concerned districts. Compared to the year 1975-'76 production in the State had decreased by eight per cent. It may be noted that in the case of Ernakulam rise in production is mainly due to increase in productivity since the area under the crop had remained the same.

## Productivity of paddy

The mean yield of paddy had increased by 33 per cent by the year 1984-'85, since 1975-'76 in the case of Kottayam district followed by Ernakulam, Alleppey and Trichur where

*Fig I*

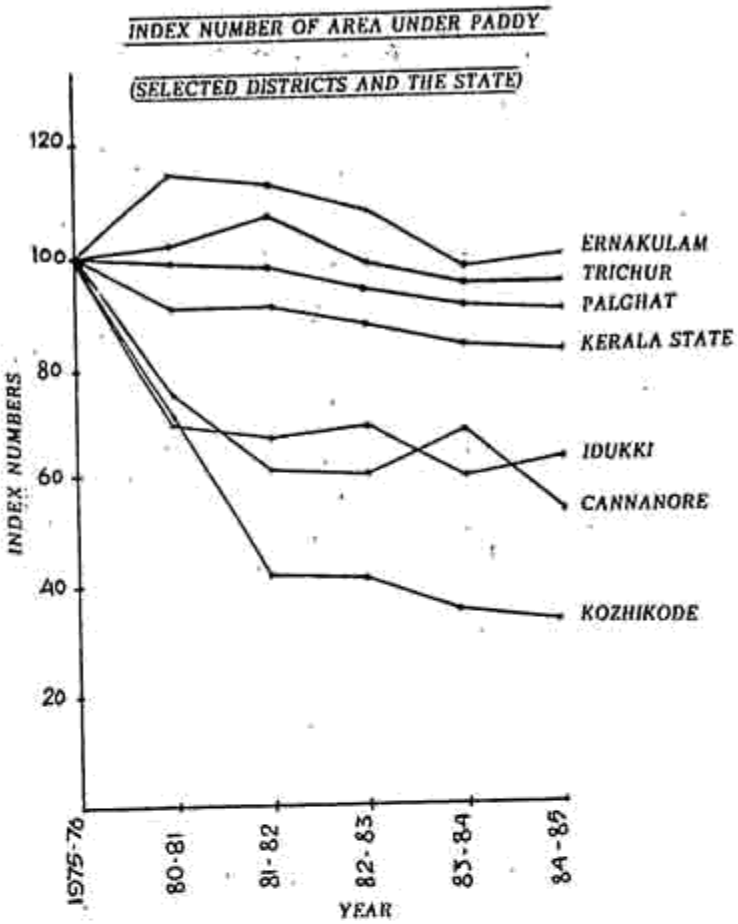
INDEX NUMBER OF AREA UNDER PADDY
(SELECTED DISTRICTS AND THE STATE)
120
100
80
60
40
20
INDEX NUMBERS
ERNAKULAM
TRICHUR
PALGHAT
KERALA STATE
IDUKKI
CANNANORE
KOZHIKODE
1975-76
80-81
81-82
82-83
83-84
84-85
YEAR

*Fig II*

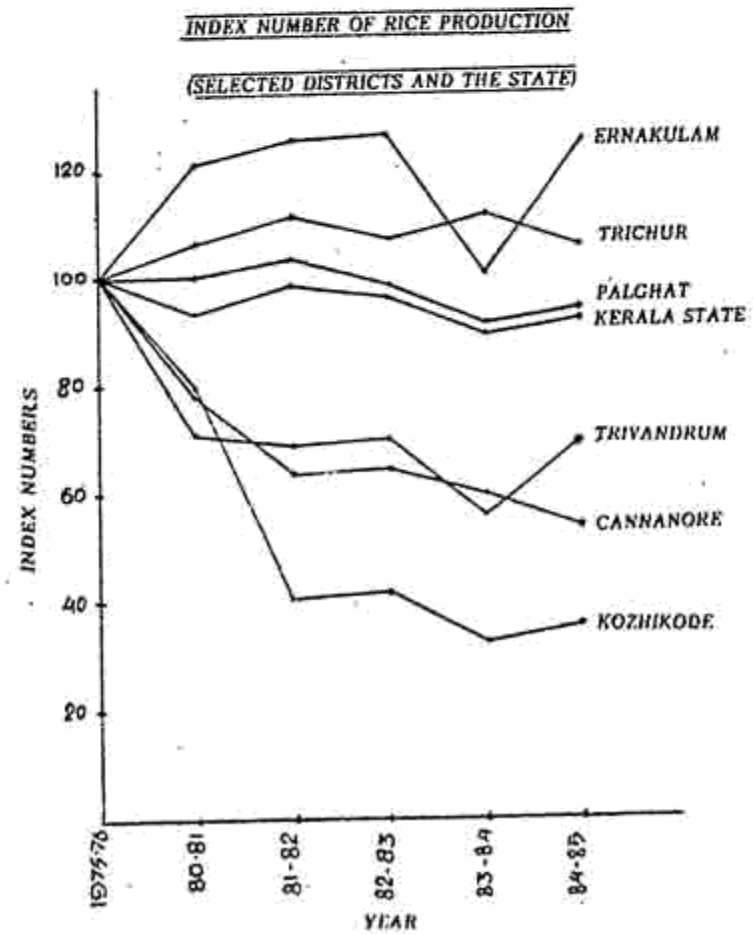
INDEX NUMBER OF RICE PRODUCTION
(SELECTED DISTRICTS AND THE STATE)
120
100
80
60
40
20
INDEX NUMBERS
ERNAKULAM
TRICHUR
PALGHAT
KERALA STATE
TRIVANDRUM
CANNANORE
KOZHIKODE
1975-76
80-81
81-82
82-83
83-84
84-85
YEAR

Table : 3 Index numbers of production of rice - Districtwise base year : 1975-76

| | District | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 |
|---|---|---|---|---|---|---|
| 1. | Trivandrum | 70 | 68 | 69 | 55 | 69 |
| 2. | Quilon | 102 | 103 | 106 | 87 | 73 |
| 3. | Pathanamthitta | NA | NA | NA | NA | NA |
| 4. | Alleppey | 91 | 108 | 93 | 95 | 87 |
| 5. | Kottayam | 75 | 83 | 108 | 90 | 86 |
| 6. | Idukki | 70 | 73 | 93 | 62 | 78 |
| 7. | Ernakulam | 121 | 125 | 126 | 100 | 125 |
| 8. | Trichur | 106 | 111 | 107 | 111 | 105 |
| 9. | Palghat | 100 | 103 | 98 | 91 | 94 |
| 10. | Malappuram | 82 | 81 | 76 | 72 | 77 |
| 11. | Kozhikode | 79 | 40 | 41 | 32 | 35 |
| 12. | Wynad | NA | NA | NA | NA | NA |
| 13. | Cannanore | 78 | 63 | 64 | 59 | 53 |
| | STATE | 93 | 98 | 96 | 89 | 92 |

Source: Statistics for Planning 1986 (page 18)

Table : 4 Index numbers of mean yield of paddy Base year: 1975-76

| | District | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 |
|---|---|---|---|---|---|---|
| 1. | Trivandrum | 87 | 95 | 102 | 87 | 101 |
| 2. | Quilon | 94 | 104 | 112 | 82 | 97 |
| 3. | Pathanamthitta | NA | NA | NA | NA | NA |
| 4. | Alleppey | 113 | 125 | 116 | 121 | 117 |
| 5. | Kottayam | 114 | 116 | 158 | 123 | 133 |
| 6. | Idukki | 82 | 88 | 105 | 85 | 119 |
| 7. | Ernakulam | 106 | 111 | 115 | 104 | 124 |
| 8. | Trichur | 107 | 103 | 108 | 116 | 112 |
| 9. | Palghat | 101 | 105 | 103 | 93 | 101 |
| 10. | Malappuram | 96 | 91 | 79 | 91 | 98 |
| 11. | Kozhikode | 99 | 93 | 88 | 78 | 100 |
| 12. | Wynad | NA | NA | NA | NA | NA |
| 13. | Cannanore | 97 | 96 | 93 | 94 | 93 |
| | STATE | 100 | 106 | 108 | 105 | 110 |

Source: Statistics for Planning, 1986 (page 45) (compiled from 3 seasons)

the increased was 25%, 17% and 12% respectively. The increase in productivity in Kottayam and Alleppey district is mainly due to the larger coverage under High Yielding Varieties. The State as a whole had registered an increase in yield

of only 10 per cent during the year 1984-'85. The average yield of paddy for the period of eight years, 1969-'70 to 1977-'78 comes to 2161 kg/ha$^{-1}$ during autumn, 2278 kg/ha$^{-1}$ during winter and 2748 kg/ha$^{-1}$ during summer (Govt. of Kerala, 1978).

The higher yield in summer is mainly because more sunlight is made available to the crop during the period.

## Productivity at the micro level

Yield disparity is more conspicuous at the taluk level. Table 5 provides the distribution of the taluks of the State at six different yield levels. Three taluks in the State namely, Sherthalai (Alleppey district), Cranganore (Trichur district) and Badagara (Kozhikode district) have a low yield ranging between 1000 kg to 1500 kg/ha$^{-1}$ and eight taluks viz., Changanacherry, Kanjirappally and Kottayam (Kottayam district), Alathur (Palghat district), Adoor and Triuvalla (Pathanamthitta district), Kuttanad (Alleppey district) and Chittur (Palghat district) have yields ranging between 3001kg and above 3500 kg/ha$^{-1}$. The rest of the taluks numbering fifty four come under the range 1501 to 3000 kg/ha$^{-1}$.

Considering the fact that paddy is grown under varied agro climatic conditions, the disparity in yield is understandable. As such the problems and possibilities of increasing, the productivity of the crop becomes more and more location specific. Compared to the yield of high yielding varieties in the neighbouring State the yield potential of these varieties in Kerala is not very attractive. However, the average yield that could be achieved for the high yielding varieties in the state is far less than in the national demonstration plots in the states (Govt. of Kerala, 1984).

## Conclusion and suggestions

The area under paddy in Kerala State had declined by about 17.47 per cent during the period 1975-'76 to 1984-'85. The fall in area varies from district to district. With regard to the spread of high yielding varieties, considerable disparity is noticed among the districts. But the area under high yielding

**Table-5** **Productivity at the taluk level (based on average yield for five years - 1980-81 to 1984-85)**

| Sl.No. | Yield per hectare (kg/ha) | No.of Taluks in the State |
|---|---|---|
| 1. | 1000 to 1500 | 3 |
| 2. | 1501 to 2000 | 14 |
| 3. | 2001 to 2500 | 26 |
| 4. | 2501 to 3000 | 14 |
| 5. | 3001 to 3500 | 4 |
| 6. | Above 3500 | 4 |
| | Total | 65 |

Source: Statistics for Planning (pages 50-51)

varieties had remained the same during 1984-'85 to what it was during 1975-'76. Consequent on the decrease in area under the crop production had come down to the extent of 8 per cent for the State as a whole. A 10 per cent increase in the productivity of the crop is noticed during the period 1975-'76 to 1984-'85 for the State. At present only a low percentage of area comes under high yielding varieties. Steps must be taken to bring more areas under high yielding varieties especially in those taluks where the yield is reasonably good. Any step to increase the productivity of the crop must be location oriented.

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# STUDIES ON CRITICAL LEVELS OF MAJOR NUTRIENTS FOR SOLANACEOUS VEGETABLE CROPS THROUGH MITCHERLICH MATHEMATICAL MODELS, DRIS AND INDUCTIVE APPROACHES

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## ABSTRACT

Field experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore to investigate the critical levels of N P K DRIS indices, fertilizer prescription for specified yield targets and for a cropping sequence in vegetable crop like brinjal (CO2) and tomato (CO3).

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