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Land Utilisation and Cropping Pattern in Tamil Nadu

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The level of farm incomes is the outcome of efficient utilisation of the existing resources among alternative production activities. An improper allocation of resource results in output being less than the potential minimum. Any mal-allocation automatically sets in motion the forces necessary to reallocate resources in such a way that output and efficiency of the economy are increased. Quite often the farmers are faced with the problem of judicious and efficient use of resources; particularly land, which is in acute short supply. In a state like Tamil Nadu where population pressure is very high and land resources are meager, proper exploitation of land resource is of strategic importance. The wider fluctuations in agricultural output experienced recently are generally attributed to the mal-utilisation of land. Therefore proper land utilisation is very important in planning for higher agricultural production.

The analysis in this paper is intended to focus attention on the need to study the land use pattern in Tamil Nadu and to explore the possibilities of increasing agricultural output. The objective of this analysis is to find out whether the existing crops involve a misuse of land resource and wastage of productivity resulting in lower yields and to measure the extent of possible enhancement of production through changes in cropping pattern.

The study covers eight major crops, paddy, cholam, cumbu, ragi, sugarcane, cotton, groundnut and tapioca, all of which constitute 61.89 per cent of the total cultivated area of 6.03 million hectares.¹ The data for 31 districts which have been formed from the original thirteen districts are available only for different time periods. Hence to compare the data on a uniform basis, the 31 districts have been regrouped into the original 13 districts. The grouping of these thirteen districts runs as follows (1) Chengalpattu (Chennai, Kancheepuram, Thiruvallur), (2) South Arcot (Cuddalore, Villupuram), (3) North Arcot (Thiruvannamalai, Vellore), (4) Salem (Namakkal), (5) Dharmapuri (Krishnagiri), (6) Coimbatore, (7) Erode, (8) Tiruchirapalli (Karur, Perambalur), (9) Pudukkottai, (10) Thanjavur (Thiruvavur, Nagapattinam), (11) Madurai (Dindigal, Theni), (12) Ramanathapuram (Kamarajar, Pasumpon Muthuramalingam, Sivagangai) and (13) Tirunelveli (Thoothukudi). Thus the study pertains to all 31 districts of the state but are grouped into 13 districts of the state.²

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The basic data for the cropping pattern of each district for each year are taken from Season and Crop Reports of Tamil Nadu. The extent of cultivation of different crops and their average yields³ have been worked out by averaging the respective data for 25 years from 1981-82 to 2005-06. Since the district has been taken as the basic area unit, the data for each crop relate to thirteen districts in the state. The first eight tables indicate two sets of figures relating to a particular crop namely, the extent of cultivation and average yield. The data for the extent of cultivation have been estimated for all the thirteen districts separately and for the state as a whole. They are in terms of percentage of total area under the specific crop to the total cropped area in each district and for the state figure to the total cropped area in Tamil Nadu. The figures for the average yield are calculated by taking an average of the actual yields for 25 years for the thirteen districts separately and for the state as a whole and they are in terms of kg per hectare. The average yield of sugarcane relates to cane and not to gur.

TABLE 1. DISTRICT WISE DATA FOR EXTENT OF CULTIVATION AND YIELD OF CROPS IN TAMILNADU

| Districts (1) | Paddy | | Cholam | | Cumbu | | Ragi | |
|------------------|---|------------------------------------|---|------------------------------------|---|------------------------------------|---|------------------------------------|
| | Extent of cultivation (per cent) (2) | Average yield (kg/ha) (3) | Extent of cultivation (per cent) (4) | Average yield (kg/ha) (5) | Extent of cultivation (per cent) (6) | Average yield (kg/ha) (7) | Extent of cultivation (per cent) (8) | Average yield (kg/ha) (9) |
| Chengalpattu | 66.18 | 2896 | 0.09 | 1259 | 0.50 | 1882 | 1.37 | 1799 |
| South Arcot | 35.61 | 3052 | 1.75 | 985 | 10.00 | 1323 | 0.89 | 1961 |
| North Arcot | 27.09 | 2865 | 4.54 | 1143 | 2.51 | 1079 | 2.43 | 1976 |
| Salem | 10.01 | 2900 | 10.38 | 1025 | 3.43 | 1375 | 3.49 | 2131 |
| Dharmapuri | 9.83 | 2935 | 7.91 | 1221 | 1.18 | 1510 | 15.5 | 1610 |
| Coimbatore | 5.96 | 3382 | 27.35 | 508 | 0.53 | 1565 | 0.28 | 1998 |
| Erode | 16.93 | 3859 | 10.03 | 500 | 2.38 | 1022 | 4.03 | 1195 |
| Trichy | 22.62 | 3068 | 20.33 | 777 | 7.54 | 635 | 0.21 | 1827 |
| Pudukottai | 51.92 | 2515 | 0.99 | 1073 | 0.39 | 1423 | 1.10 | 1473 |
| Thanjavur * | 67.36 | 2559 | - | - | 0.04 | 1597 | 0.03 | 2370 |
| Madurai | 21.36 | 3549 | 16.17 | 1254 | 2.69 | 1341 | 0.34 | 1970 |
| Ramanathapuram | 51.04 | 1940 | 2.21 | 945 | 2.71 | 1130 | 1.79 | 1728 |
| Tirunelveli | 26.96 | 3671 | 3.80 | 1510 | 7.26 | 1340 | 0.64 | 2416 |
| Tamil Nadu | 31.94 | 2855 | 7.72 | 910 | 3.31 | 1113 | 2.27 | 1750 |

TABLE 1. (CONCLD.)

| Districts (1) | Sugarcane | | Cotton | | Groundnut | | Tapioca | |
|------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Extent of cultivation (per cent) (10) | Average yield (kg/ha) (11) | Extent of cultivation (per cent) (12) | Average yield (kg/ha) (13) | Extent of cultivation (per cent) (14) | Average yield (kg/ha) (15) | Extent of cultivation (per cent) (16) | Average yield (kg/ha) (17) |
| Chengalpattu | 2.93 | 108 | 0.04 | 351 | 16.58 | 2190 | 0.05 | 32156 |
| South Arcot | 0.96 | 113 | 1.37 | 362 | 17.66 | 1601 | 2.03 | 32608 |
| North Arcot | 7.09 | 82 | 1.01 | 361 | 33.10 | 1333 | 0.08 | 32222 |
| Salem | 3.43 | 125 | 3.37 | 321 | 21.27 | 1417 | 6.01 | 37199 |
| Dharmapuri | 3.23 | 86 | 2.59 | 336 | 12.59 | 1392 | 2.24 | 32726 |
| Coimbatore | 3.66 | 105 | 4.41 | 383 | 10.87 | 1327 | 0.25 | 40915 |
| Erode | 6.50 | 119 | 2.29 | 385 | 17.09 | 1552 | 0.76 | 41670 |
| Trichy | 3.70 | 109 | 3.11 | 253 | 11.40 | 1398 | 1.01 | 38985 |
| Pudukottai | 1.70 | 108 | 0.31 | 339 | 21.60 | 1232 | 0.01 | 31012 |
| Thanjavur * | 2.29 | 101 | 0.63 | 397 | 3.23 | 1639 | 0.05 | 34124 |
| Madurai | 3.18 | 111 | 5.70 | 322 | 9.25 | 1524 | 0.05 | 35721 |
| Ramanathapuram | 1.07 | 102 | 7.71 | 209 | 5.41 | 1029 | 0.01 | 27575 |
| Tirunelveli | 0.77 | 104 | 10.71 | 216 | 2.61 | 1546 | 0.04 | 31286 |
| Tamil Nadu | 3.77 | 105 | 3.22 | 269 | 13.38 | 1455 | 1.21 | 33627 |

*Cholam cultivation is found to be absent in Thanjavur district.

The above table present the degree of relationship between the extent of cultivation and the yield of select crops in Tamil Nadu. To have a more accurate idea of degree of relationship between the extent of cultivation and average yields, the Karl Pearson's coefficient has been worked out as shown in Table 2.

TABLE 2. CORRELATION BETWEEN EXTENT OF CULTIVATION AND YIELDS FOR DIFFERENT CROPS

| Crops (1) | Karl Pearson's Correlation Coefficient (2) |
|--------------|---|
| Paddy | -0.586* |
| Cholam | -0.557 |
| Cumbu | -0.511 |
| Ragi | -0.369 |
| Sugarcane | -0.172 |
| Cotton | -0.739** |
| Groundnut | -0.200 |
| Tapioca | +0.229 |

Source: Compiled by the authors.

** and * Significant at 1 and 5 per cent level, respectively.

Table 2 reveals that in the case of tapioca there was a positive degree of correlation and hence the area was found to be more suitable for cultivating this crop. All the other crops show negative correlation, which means that the existing crops involve some degree of maladjustment. As these tests are based upon ranking the hectares of crops and yields, only structural changes could be brought out from these tests and these changes could not be expected to occur significantly over a long

period. Therefore in order to measure the exact degree of relationship between area and yield, an alternative approach was further attempted.

As a starting point, for each crop all the thirteen districts were classified into five groups⁴ at suitable class intervals.⁵ For the information on class intervals the average figure for the state as a whole (for each group) was taken as the base and five groups based on the degree and direction of departure from this base were formed. The following formula was adopted (Table 3).

TABLE 3. FORMATION OF GROUPS AND CLASS INTERVALS

| Groups (1) | Class Intervals (2) |
|---------------|------------------------|
| A | More than +15 |
| B | +5 to 15 |
| C | ±5 |
| D | -5 to -15 |
| E | Below -15 |

Source: Compiled by the authors.

By applying the above formula the exact class limits for five groups were calculated and also for each crop both with reference to the extent of cultivation and the average yield. The results are shown in Table 4.

TABLE 4. LIMITS DETERMINING THE GROUPS IN WHICH DIFFERENT DISTRICTS FALL ON THE BASIS OF DEGREE OF VARIATION IN THE EXTENT OF CULTIVATION OF CROPS AND THEIR YIELDS

| Crops (1) | Groups (2) | Limits | |
|--------------|---------------|-----------------------------------|------------------------------|
| | | Extent of cultivation (3) | Average yield (4) |
| Paddy | A | More than 36.72 per cent | More than 3283.25 |
| | B | More than 33.53 to 36.72 per cent | More than 2997.75 to 3283.25 |
| | C | From 33.53 to 30.34 per cent | From 2997.75 to 2712.25 |
| | D | Less than 30.34 to 27.15 per cent | Less than 2712.25 to 2426.75 |
| | E | Less than 27.15 per cent | Less than 2426.75 |
| Cholam | A | More than 8.87 per cent | More than 1046.5 |
| | B | More than 8.10 to 8.87 per cent | More than 955.5 to 1046.5 |
| | C | From 8.10 to 7.33 per cent | From 955.5 to 864.5 |
| | D | Less than 7.33 to 6.56 per cent | Less than 864.5 to 773.5 |
| | E | Less than 6.56 per cent | Less than 773.5 |
| Cumbu | A | More than 3.82 per cent | More than 1279.95 |
| | B | More than 3.49 to 3.82 per cent | More than 1168.5 to 1279.95 |
| | C | From 3.49 to 3.16 per cent | From 1168.5 to 1057 |
| | D | Less than 3.16 to 2.83 per cent | Less than 1057 to 9.0546 |
| | E | Less than 2.83 per cent | Less than 9.0546 |
| Ragi | A | More than 2.60 per cent | More than 2102.5 |
| | B | More than 2.38 to 2.60 per cent | More than 1837.5 to 2102.5 |
| | C | From 2.38 to 2.16 per cent | From 1837.5 to 1662 |
| | D | Less than 2.16 to 1.94 per cent | Less than 1662 to 1487.5 |
| | E | Less than 1.94 per cent | Less than 1487.5 |

(Contd.)

TABLE 4. (CONCLD.)

| Crops (1) | Groups (2) | Limits | |
|--------------|---------------|-----------------------------------|--------------------------------|
| | | Extent of cultivation (3) | Average yield (4) |
| Sugarcane | A | More than 4.33 per cent | More than 120.75 |
| | B | More than 3.96 to 4.33 per cent | More than 110.25 to 120.75 |
| | C | From 3.96 to 3.59 per cent | From 110.25 to 99.75 |
| | D | Less than 3.59 to 3.22 per cent | Less than 99.75 to 89.25 |
| | E | Less than 3.22 per cent | Less than 89.25 |
| Cotton | A | More than 3.70 per cent | More than 309.35 |
| | B | More than 3.38 to 3.70 per cent | More than 282.45 to 309.35 |
| | C | From 3.38 to 3.06 per cent | From 282.45 to 255.55 |
| | D | Less than 3.06 to 2.74 per cent | Less than 255.55 to 228.65 |
| | E | Less than 2.74 per cent | Less than 228.65 |
| Groundnut | A | More than 15.38 per cent | More than 1673.25 |
| | B | More than 14.05 to 15.38 per cent | More than 1527.75 to 1673.25 |
| | C | From 14.05 to 12.72 per cent | From 1527.75 to 1382.25 |
| | D | Less than 12.72 to 11.39 per cent | Less than 1382.25 to 1236.75 |
| | E | Less than 11.39 per cent | Less than 1236.75 |
| Tapioca | A | More than 1.39 per cent | More than 38671.05 |
| | B | More than 1.27 to 1.39 per cent | More than 35308.35 to 38671.05 |
| | C | From 1.27 to 1.15 per cent | From 35308.35 to 31945.65 |
| | D | Less than 1.15 to 1.03 per cent | Less than 31945.65 to 28582.95 |
| | E | Less than 1.03 per cent | Less than 28582.95 |

Source: Compiled by the authors.

On the basis of the class limits thus fixed, the extent of adjustment and maladjustment of each crop was studied. For determining the degree of adjustment between the extent of cultivation and yield per hectare, five adjustment categories were formed and the following procedure was adopted for classifying the district into a particular adjustment category.

TABLE 5. DETERMINATION OF DEGREE OF ADJUSTMENT BETWEEN EXTENT OF CULTIVATION AND YIELD PER HECTARE

| (1) | A (2) | B (3) | C (4) | D (5) | E (6) |
|-----|----------|----------|----------|----------|----------|
| A | AA | BA | CA | DA | EA |
| B | AB | BB | CB | DB | EB |
| C | AC | BC | CC | DC | EC |
| D | AD | BD | CD | DD | ED |
| E | AE | BE | CE | DE | EE |

By applying the above formula the following five 'adjustment categories' were formed.⁶

TABLE 6. CLASSIFICATION ACCORDING TO THE DEGREE OF ADJUSTMENT

| | | |
|-----|-----------------------|-------------------------------|
| I | Well adjusted | AA, BB, CC, DD, EE |
| II | Sufficiently adjusted | AB, BC, CD, DE BA, CB, DC, ED |
| III | Tolerably adjusted | AC, BD, CE, CA, DB, EC |
| IV | Maladjusted | AD, BE, DA, EB |
| V | Highly maladjusted | AE, EA |

The foregoing identification has enabled us to classify the adjustment category of each district for area and yield for all the eight crops separately and the results are as follows:

TABLE 7. CLASSIFICATION OF PADDY AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|---|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | South Arcot | 0.248 | 12.3 |
| II | ---- | -- | -- |
| III | Chengalpattu, North Arcot, Salem, Dharmapuri, Trichy | 0.496 | 24.4 |
| IV | Pudukottai, Thanjavur, Coimbatore, Erode | 0.717 | 35.3 |
| V | Madurai, Ramanathapuram, Tirunelveli | 0.569 | 28.0 |
| | Tamil Nadu | 2.030 | 100 |

Source: Compiled by the authors.

TABLE 8. CLASSIFICATION OF CHOLAM AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | Salem, Madurai | 0.151 | 30.1 |
| II | ---- | -- | -- |
| III | Ramanathapuram, Dharmapuri | 0.048 | 9.6 |
| IV | South Arcot, Trichy | 0.126 | 25.0 |
| V | Chengalpattu, North Arcot, Coimbatore, Erode, Pudukottai, Tirunelveli | 0.177 | 35.3 |
| | Tamil Nadu | 0.502 | 100 |

Source: Compiled by the authors.

TABLE 9. CLASSIFICATION OF CUMBU AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | South Arcot, Tirunelveli, North Arcot | 0.099 | 45 |
| II | Salem | 0.014 | 6 |
| III | Erode, Ramanathapuram | 0.041 | 18 |
| IV | -- | -- | -- |
| V | Chengalpet, Dharmapuri, Trichy, Coimbatore, Pudukotai, Tanjore, Madurai | 0.068 | 31 |
| | Tamil Nadu | 0.222 | 100 |

Source: Compiled by the authors.

TABLE 10. CLASSIFICATION OF RAGI AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|---------------------|
| | | Million hectares (3) | Per to Total (4) |
| I | North Arcot, Salem, Pudukottai | 0.034 | 23 |
| II | ---- | -- | -- |
| III | Chengalpet, Trichy, Ramanathapuram | 0.015 | 10 |
| IV | South Arcot, Dharmapuri, Coimbatore, Madurai | 0.082 | 55 |
| V | Erode, Thanjavur, Tirunelveli | 0.017 | 12 |
| | Tamil Nadu | 0.148 | 100 |

Source: Compiled by the Authors.

TABLE 11. CLASSIFICATION OF SUGARCANE AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|---|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | Erode, Coimbatore | 0.056 | 29 |
| II | Trichy, Dharmapuri, Chengalpattu, Pudukkottai | 0.015 | 8 |
| III | Thanjavur, Ramanathapuram, Tirunelveli, South Arcot | 0.041 | 21 |
| IV | Salem, Madurai | 0.044 | 22 |
| V | North Arcot | 0.040 | 20 |
| | Tamil Nadu | 0.196 | 100 |

Source: Compiled by the authors.

TABLE 12. CLASSIFICATION OF COTTON AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | Coimbatore, Madurai | 0.049 | 24 |
| II | Trichy | 0.017 | 8.0 |
| III | Salem | 0.019 | 9.0 |
| IV | ---- | -- | -- |
| V | Chengalpattu, South Arcot, North Arcot, Dharmapuri, Erode, Pudukkottai, Thanjavur, Ramanathapuram, Tirunelveli | 0.123 | 59.0 |
| | Tamil Nadu | 0.208 | 100 |

Source: Compiled by the authors.

TABLE 13. CLASSIFICATION OF GROUNDNUT AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | Chengalpattu, Ramanathapuram | 0.088 | 10.2 |
| II | South Arcot, Dharmapuri, Coimbatore | 0.344 | 39.9 |
| III | Erode, Trichy | 0.172 | 20.0 |
| IV | Salem, Madurai | 0.220 | 25.6 |
| V | North Arcot, Thanjavur, Tirunelveli, Pudukkottai | 0.037 | 4.3 |
| | Tamil Nadu | 0.861 | 100 |

Source: Compiled by the authors.

TABLE 14. CLASSIFICATION OF TAPIOCA AREA INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT

| Classes (1) | Districts (2) | Area | |
|----------------|--|-------------------------|--------------------------|
| | | Million hectares (3) | Per cent to total (4) |
| I | Ramanathapuram | 0.00003 | 0.04 |
| II | Salem, Pudukkottai, Tirunelveli | 0.03362 | 48.80 |
| III | Chengalpattu, South Arcot, North Arcot, Dharmapuri, Thanjavur | 0.02573 | 37.35 |
| IV | Madurai | 0.00030 | 0.44 |
| V | Coimbatore, Erode, Trichy | 0.00920 | 13.36 |
| | Tamil Nadu | 0.06888 | 100 |

Source: Compiled by the authors.

Referring to table numbers 7 to 14, taking the average yield as the basis, it was found that for paddy crop 12.3 per cent was well adjusted, 24.4 per cent tolerably adjusted, 35.5 per cent maladjusted and 28 per cent highly maladjusted area. In Cholan, it could be seen that, of the total cultivated area, 30.1 per cent was well adjusted, 9.6 per cent tolerably adjusted, 25 per cent maladjusted and 35.3 per cent highly maladjusted area.

In the case of Cumbu, 45 per cent was well adjusted, 6 per cent sufficiently adjusted, 18 per cent tolerably adjusted and 31 per cent highly maladjusted area.

Ragi shows 23 per cent as well adjusted area, 10 per cent tolerably adjusted, 55 per cent maladjusted and 12 per cent highly maladjusted area.

Sugarcane shows that 29 per cent was well adjusted, 8 per cent sufficiently adjusted, 21 per cent tolerably adjusted, 22 per cent maladjusted and 20 per cent highly maladjusted area.

In the case of cotton, it was found that 24 per cent was well adjusted, 8 per cent sufficiently adjusted, 9 per cent tolerably adjusted and 59 per cent highly maladjusted area.

In groundnut, 10.2 per cent was well adjusted, 39.9 per cent sufficiently adjusted, 20 per cent tolerably adjusted, 25.6 per cent maladjusted and 4.3 per cent highly maladjusted.

In tapioca, 0.04 per cent was well adjusted, 48.80 per cent sufficiently adjusted, 37.35 per cent tolerably adjusted, 0.44 per cent maladjusted and 13.36 per cent highly maladjusted area.

It is possible to draw inferences from these tables,⁸ where localisation has been according to the suitability of basic physical factors and where they are being grown because of other considerations, disregarding considerably the suitability of basic physical factors, the land resources are devoted to growing unsuitable crops and hence are considered misused. A consolidated view of the extent of adjustment of all the eight crops however could be studied by grouping all the eight crops as shown in Table 15.

TABLE 15. CLASSIFICATION OF AREA UNDER ALL CROPS INTO FIVE CLASSES ACCORDING TO THE DEGREE OF ADJUSTMENT (BASED ON AVERAGE YIELD)

| Adjustment category (1) | Area (million hectares) (2) | Per cent (3) | | |
|----------------------------|--------------------------------|-----------------|---|------|
| Well adjusted | 0.72 | 17.3 | } | 27.3 |
| Sufficiently adjusted | 0.42 | 10.0 | | |
| Tolerably adjusted | 0.85 | 20.1 | | |
| Maladjusted | 1.18 | 28.1 | } | 52.6 |
| Highly maladjusted | 1.04 | 24.5 | | |

Source: Compiled by the authors.

When all the eight crops were taken together it was found that, of the total area based on average yield, 17.3 per cent was well adjusted, 10 per cent was sufficiently adjusted, 20.1 per cent tolerably adjusted, 28.1 per cent maladjusted and 24.5 per cent was highly maladjusted.

In the final analysis, to have a broad picture of the extent of adjustment and maladjustment of different crops, the five adjustment categories were reduced to only two main classes, by taking the first three into one representing the extent of adjustment and the last two into another representing the extent of maladjustment. The results are indicated in Table 16.

TABLE 16. PERCENTAGE OF TOTAL AREA UNDER EACH CROP (BASED ON AVERAGE YIELD)

| Crops (1) | Adjusted (2) | Maladjusted (3) |
|---------------------|-----------------|--------------------|
| Paddy | 36.70 | 63.30 |
| Cholam | 39.70 | 60.30 |
| Cumbu | 69.40 | 30.60 |
| Ragi | 33.00 | 67.00 |
| Sugarcane | 58.00 | 42.00 |
| Cotton | 41.00 | 59.00 |
| Groundnut | 70.10 | 29.90 |
| Tapioca | 86.20 | 13.80 |
| All the eight crops | 47.40 | 52.60 |

Source: Compiled by the authors.

Of the total area under specific crops, taking the average yield into account, 36.7 per cent in the case of paddy, 39.7 per cent in cholam, 69.4 per cent in cumbu, 33 per cent in ragi, 58 per cent in sugarcane, 41 per cent in cotton, 70.1 per cent in groundnut and 86.2 per cent in tapioca were found to be adjusted and to this extent the localisation of these crops are according to suitability of basic physical factors.

The remaining area is 63.3 per cent in paddy, 60.3 per cent in cholam, 30.6 per cent in cumbu, 67 per cent in ragi, 42 per cent in sugarcane, 59 per cent in cotton,

29.9 per cent in groundnut and 13.8 per cent in tapioca were found to be maladjusted.

The foregoing analysis reveals that the cropping pattern in the state has a high degree for maladjustment for crops. Roughly 53 per cent of the cultivated area is being used for growing unsuitable crops.

Some broad and specific conclusions derived from the above analysis are (1) There is considerable misuse of the cultivated area based on crop yields and hence output is affected to a great extent. (2) Roughly 53 per cent of the cultivated area is being used for growing unsuitable crops. (3) There is a possibility of considerable enhancement of agricultural production through the adjustment of various crops in favour of relatively more suitable areas for their growth. (4) The extent of maladjustment was different in different crops in different districts and for the state. It is but natural that different districts of the state will differ in their response to change in conditions because of uneven distribution of gains of agricultural technology, heterogeneous topography of various geographic regions, climate, varying soil conditions within the regions, irrigation facilities and different levels of economic prosperity among the farm population.

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NOTES

1. Season and Crop Reports of Tamil Nadu.
2. Growth of select crops is very negligible in Nilgiris and Kanyakumari districts and hence these districts are not considered for the land use study.
3. Crop yields are taken to represent the degree of efficiency or inefficiency of use of cultivated area. They are the indicators of the quality of basic physical factors (soil and climate) for growing particular crops.
4. For this analysis groups can be fewer or more in number depending upon the existence of the extent of such variation and the accuracy in results aimed at. In this case five was taken as quite a good number to give sufficiently detailed information.
5. The class intervals could be formed in the following manner- upto 5 per cent, 5-15 per cent, 15-25 per cent, 25-35 per cent and above 35 per cent or with any other limits. For reasons of variation of the role of important crops in different regions the same scale cannot be applied in the case of all crops. Hence an alternative procedure is adopted as given in Table 3.
6. The criterion adopted by the authors is similar to the one adopted in a study published by D.S. Chauhan, in the Agra University Journal of Research (Letters) Vol.1x, Part I Jan 1961, pp. 85-135.
7. Table 1 pinpoint the location, the nature and the extent of maladjustment of select crops. In programme formulation this has got to be done. For a detailed study of different crops reference can be made to these tables. Detailed interpretations of these tables have been deliberately avoided at this place.