Kaveri River Water Dispute and Reduction in Crop Productivity in a Sample Village Depending on River Water for Irrigation

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Abstract  The essence of the Cauvery dispute is still a conflict of interest between a downstream state (Tamil Nadu) that has a long history of vast irrigated agriculture land and has in the process been making substantial use of Cauvery waters and an upstream state (Karnataka) that was a late starter in irrigation development. It has been making rapid progress and has the advantage of being an upper riparian with greater control over the waters. Frequent inadequate rainfall in Tamil Nadu every time to approach the Supreme Court asking for an immediate release of 30tmc feet by Karnataka to save the standing crops in Thanjavur delta. In keeping the above background of information about the two interstate problems, the Kaveri delta region is most affected during the past decades. Due to erratic monsoon season the delta which is solely depending on the Kaveri river water irrigation is another blow to the farmers. This has resulted the decrease in crop productivity and also majority of the land which was put to use for agricultural activities, now let on as uncultivated lands due to Kaveri river water for irrigation. The delta farmers and the agriculture worker are rendered without any agricultural activities and some of them who are exclusively depending on agriculture, like small farmers, have been suffered drastically for their day to day bread. The present research would highlight the loss of agricultural productivity from the past to the present, and how it has affected the granary of Tamil Nadu. For the purpose of the sample study a village namely Eachankottai, which is solely depending on the Kaveri river water for the irrigation purpose has been selected for the present study.

Keywords: river water dispute, Kavery delta, erratic monsoon, small farmers, agricultural labourers, upper riparian

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1. Introduction

Tamil Nadu, Karnataka has been a late starter in irrigation development in the basin, and therefore, with increased infrastructure development for water supply augmentation, it brought more land under agriculture. As a comparatively late-starter, Karnataka argues that its farmers have historically been denied justice, unable to claim their rightful share in the use of the Cauvery waters; whereas Tamil Nadu had no such limitation on it in terms of expanding its irrigation facilities from 1990. The position of Tamil Nadu was that its early irrigation development was purely due to natural advantage: flat terrain leading to the natural creation of a delta. Therefore, scholars such as Guhan (1993) agree to the fact that irrigation development brought more land under agriculture [1].

1.1. Background of the Study

In Tamil Nadu, which has been stalked by drought for three consecutive years, farmers in the Cauvery delta have lost four paddy crops in a row since June 2002, including the short-term kuruvai crop (June-September) which should have been harvested by now. And they have no hope of raising the main samba crop for which sowing operations should be well under way. Things have reached this stage because there is no water in the Mettur reservoir that irrigates the Cauvery delta in Tamil Nadu. And, the northeast monsoons remain unpredictable [2].

As of October 3, there was only 31 thousand million cubic feet (tmc ft) of water in the Mettur reservoir, against a full capacity of 93.4 tmc ft. A minimum of 55 tmc ft is required to open the sluices of the dam to irrigate farmlands. In a normal year, water is released from the Mettur dam, starting June 12, to enable farmers to raise...
the kuruvai and samba crops. But this has not happened since 2001. This year, the dam sluices remained closed because of insufficient water. Consequently, 20 lakh landless peasants have been jobless, in the Cauvery delta districts of Thanjavur, Tiruvur, Nagapattinam and Tiruchy, since September 2001 [2].

The overall loss in terms of crop production is estimated at Rs 3,000 crore. The state government has declared 28 districts drought-affected [3]. Against an annual target of 20 lakh hectares for the entire state, up to September 29, paddy was cultivated only on 2.7 lakh hectares (13%). During the corresponding period in 2002, it was 2.5 lakh hectares (11.6%), out of a target of 22 lakh hectares [12]. Farmers and political parties in Tamil Nadu put the blame squarely on the neighboring state of Karnataka. A bandh was organized on September 11 to pressure Karnataka to release water from the Cauvery to Tamil Nadu.

However, Karnataka, the upper riparian state, has refused to share water from the Cauvery with Tamil Nadu, as per an interim order by the Cauvery Water Disputes Tribunal. The interim order stipulates that Karnataka should release 137 tmc ft of water, from June to September, at Mettur. But Mettur received only 24 tmc ft. Karnataka has also refused to accept the ‘comprehensive’ distress-sharing formula worked out by the Cauvery Monitoring Committee (CMC) on September 1, 2003. This, despite other riparian states like Tamil Nadu, Kerala and Pondicherry accepting the formula. The CMC plans to put its formula before the Cauvery River Authority (CRA), the apex body dealing with the Cauvery water issue. The CRA is chaired by the prime minister; its members include the chief ministers of Tamil Nadu, Karnataka, Kerala and Pondicherry [4].

Karnataka’s outright refusal to accept the CMC’s distress-sharing formula has angered farmers and political parties in Tamil Nadu [4]. According to highly placed Tamil Nadu officials, the formula worked out a ratio between stipulated inflow into Mettur and the average recorded inflow over 29 years, at Mettur. In an assessment made by officials, the situation in the Cauvery basin in Karnataka has been described as “not bad”. Canals were opened for irrigation and farmers were cultivating their crops. However, the situation in Tamil Nadu was stated to be “grim,” according to S Ranganathan, secretary of the Cauvery Delta Farmers’ Association. In 2001-2002, farmers lost their entire samba crop. In 2002-2003, they lost both kuruvai and samba crops as Karnataka did not release water as per the interim order [2].

In a normal year, when the Mettur dam is opened on June 12, kuruvai is cultivated on about three to four lakh acres in the four Cauvery delta districts. This year, farmers cultivated kuruvai only where groundwater was available [10]. This covered an area of just 50,000 acres in the villages around Tiruvaiyaru, Mayiladuthurai, Kumbakonam, Sirkazhi, Mannargudi, Needamangalam and Ammapettai [5].

The dispute over the sharing of cauvery water has a long history and goes back to the 19th century [2]. The parties then were the Madras Presidency in British India and the princely state of Mysore.

| Key facts                  | Karnataka | Tamil Nadu and Pondicherry | Kerala |
|---------------------------|-----------|----------------------------|--------|
| Drainage Area             | 34,273 sq.km | 44,016 sq.km             | 2886 sq.km |
| No. of districts covered  | 8         | 11                        | 3      |
| Net irrigated area in Kaveri basin | 11.2 lakh acres | 28 lakh acres          | 39.2 lakh acres |
| Ratio of net sown area to drainage area | 42.2 Per cent | 47.3 Per cent          | 39.6 Per cent |

Source: Chronicle Magazine Nov. 2002.

After prolonged discussions an agreement was signed in 1924. The details of that agreement and the question whether it still subsists and binds the present Karnataka and Tamil Nadu, which cannot be wholly identified with the old Mysore and Madras, need not be dealt here. For the last three decades there has been a dispute between the two states which requires a fresh solution; and Kerala and Pondicherry which were not parties to the 1924 agreement, are involved in the present dispute [6].

1.2. Problem Statement

The essence of the Cauvery dispute is a conflict of interest between a downstream state (Tamil Nadu) that has a long history of irrigated agriculture and has in the process been making substantial use of Cauvery waters and an upstream state (Karnataka) that was a late starter in irrigation development but has been making rapid progress and has the advantage of being an upper riparian with greater control over the waters [12]. Today Karnataka feels that its late start on irrigation development should not mean any curtailment of its right of make the fullest possible use of Cauvery waters for agricultural and other development. It has a hoary grievance that the interest of Mysore, a princely state, were subordinated to those of Madras, a part of British India and that the 1924 agreement was an unfair one. Tamil Nadu, as the lower riparian state feels threatened because its long-established irrigated agriculture based on substantial use of Cauvery water is now vulnerably dependent on diminished and diminishing flows as a result of upstream development [2].

The talk between Karnataka and Tamil Nadu went on intermittently for over two decades from the 1970s but produced no result. The government of India made unsuccessful efforts to bring about an agreement. Based on a report in 1972 by a fact-finding committee appointed by the Govt. of India, an agreement was worked out in August 1976 [7]. The Cauvery Water Disputes Tribunal (CWDT) then calculated the water inflow to Tamil Nadu between 1980 and 1990. In 1991, the tribunal in its interim order directed Karnataka to ensure that 205 tmc ft of water reach Tamil Nadu per annum. The CWDT also ordered Karnataka to stop its plan to increase irrigated land area. The tribunal’s decision was not received well and riots erupted in both the states. Karnataka rejected the tribunal’s award and sought for an annulment in the Supreme Court. The SC struck down the state’s ordinance attempting to nullify the award and went on to uphold the tribunal’s order [8].
The Agreement of 1892 was entitled “Rules Defining the Limits within which No New Irrigation Works are to be constructed by the Mysore State without Previous Reference to the Madras Government”. The Schedule A of the Agreement presented the list of tributaries that were under the purview of this Agreement. With a host of restrictions placed on Mysore over irrigation works, the agreement presented itself as a moral victory for the Madras Presidency, Conflict over Cauvery Waters: Imperatives for Innovative Policy Options 14 which was the lower riparian [11]. The agreement of 1892 provided the first framework between two riparian States for the management of water in the basin by consultation for dispute settlement. The rules under this agreement came to be known as “Irrigation Works in Mysore State – the Madras-Mysore Agreement of 1892” [11,12,13].

In 1995-96 due to inadequate rainfall Tamil Nadu once again went to the Supreme Court asking for an immediate release of 30tmc feet by Karnataka to save the standing crops in Thanjavur. In keeping the above background of information about the two interstate problems, the Kaveri delta region is most affected during the past years. Due to erratic monsoon season the delta which is solely depending on the Kaveri river water irrigation is another blow to the farmers. This has result the decrease in crop productivity two questionnaire sample method was devised and the data have been gathered from the field by selecting each 100 samples. The collected information was then converted into geographic data matrix and simple correlation with level of significance about the attitudes among the agriculturists and agricultural laborers were also studied.

1.5. Study Area Profile: Eachankottai Village

Eachankottai is one of the villages in the Orathanadu Taluk, Thanjavur district (Figure 1). It is the fourth largest village in the taluk. Historically it was known as Eahwarankottai and for the past three decades it is named as Eachankottai. Exotic cattle breeding form is present in this village and it is one of the best dairy form in Tamil Nadu. This form adds more reputation to this village.

1.5.1. Location

Eachankottai is situated in the Northwestern part of Orathanadu taluk. It extends latitudinally from 10°32’N to 11°13’N and longitudinally from 78°15’E to 79°10’E. It is 13 km away from Orathanadu in the Northwestern side. It is bordered by Vadakkur village in the south Alivoikal village in the Southeast. Karukakottai village in Northeast, Samipatti village in Southwest and Nadur village from North to Northwestern part. In the Eastern part of Eachankottai village there is Pudharu River (Kallanaikalvai) that flows south wards, and in the Western part of this village there is dairy form as border.

1.5.2. Administrative Setup

The total area of Eachankottai village is 755.38.5 hectares. Total population of this village is 2271. Eachankottai panchayat consists of three villages namely Veeramundarkudikadu. Eachankottai and Samipatti. There are four streets in this village, namely, south street, north street, Nadu street, and Muduku street while comparing with the villages Samipatti and Veeramundarkudikadu, Eachankottai village has high population with larger area.
1.5.3. Temperature

The mean annual temperature of Eachankottai village is 37.97°C. The maximum temperature is high during the summer month of April and May. With a maximum of 39.52°C January and February are the coolest months with a temperature of 30.02°C.

1.5.4. Rainfall

The maximum amount of rainfall received by the village is 210.1mm. The village receives more rainfall during the Northeast monsoon month, from October to December. The rainfall of the Northeast monsoon this year is very low in comparison to the previous year rainfall. As a result of this cultivation is worsened in this village. It is clear that low seasonal rainfall is the only season for the worsening state of agriculture.

| S. No | Months | Temperature (in C) | Rainfall (in mm) |
|-------|--------|--------------------|-----------------|
| 1     | January | 30.02              | 44.4            |
| 2     | February | 30.67              | 15.0            |
| 3     | March   | 35.26              | 18.2            |
| 4     | April   | 37.47              | 40.4            |
| 5     | May     | 39.52              | 55.5            |
| 6     | June    | 37.97              | 39.3            |
| 7     | July    | 36.64              | 61.1            |
| 8     | August  | 35.93              | 113.9           |
| 9     | September | 34.70              | 106.6           |
| 10    | October | 32.46              | 185.5           |
| 11    | November | 30.30              | 210.1           |
| 12    | December | 28.38              | 126.5           |

Source: Statistical office, Thanjavur.

1.5.5. Irrigation

River Pudharu is the only source for agriculture in this area. It passes Thanjavur and reaches Kayakudi. Eachankottai is situated between Thanjavur and Kayakudi. This village has one big channel and three small channels. River Pudhar has a branch named Rajamadam flows from west to east. Vent size of Pudharu river is 1.83 m breath and 18.3 m length capacity of the river is 1899 c/s. Apart from Eachankottai village the total cultivation of the area is 127,196 acres by the river. Vent size of Rajamadam branch of Pudharur is 183 m length and 1.20 m breath capacity of the river is 357 c/s. The total cultivation area of the river is 26061 acres. Cultivation is done by bore well also in this village. But the cultivation is done mostly by river water. While comparing the cultivated area in the current years by river water with the previous years it is very low. Table 3 shows the cultivated land in hectares. The main reason for this is, water was not received in time and the received water also was not enough for cultivation first period alone could be cultivating yield is also very low.

1.5.6. Soil

The major soil types are loam soil. Red soil and Garden soil, Red and Garden soil occupies the major part of the village. The cultivated areas use in Garden soil. All types of crop cultivation are doing rein this soil.

1.5.7. Crops

Paddy, millets, Pulses, Sugarcane, Banana, Ground nut are being cultivated in this year. Among them Paddy is an important cultivated crop in this area. Eachankottai village also takes an important role in cultivating and yielding
more paddy in Orathanadu taluk. Paddy is cultivated twice in every year namely Kuruvai and Thaladi or Samba. But for this last year only Thaladi is cultivated. Next important crops are Blackgram and Gingili. These are cultivated in a small amount of area. Paddy, Blackgram and Gingili are cultivated by river water. While other crops are cultivated by bore well water. In the current year Paddy was cultivated in a small amount of area while comparing the previous years it is very low.

Table 3. Cultivated Area in 1995 - 2003

| S. No | Year    | 1995-1996 | 1996-1997 | 1997-1998 | 1998-1999 | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003 |
|-------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1     | Paddy Hectares | 210.77.0  | 213.96.5  | 223.16.5  | 237.25.0  | 241.96.0  | 246.92.5  | 249.38.5  | 121.16.0  |
| 2     | Black gram | 23.75.0   | 24.65.5   | 26.48.0   | 27.17.0   | 26.48.0   | 25.15.5   | 26.38.5   |           |
| 3     | Gingili   | 2.85.5    | 2.49.5    | 2.74.5    | 2.99.5    | 2.85.5    | 2.99.5    | 4.81.0    | 8.92.5    |

Table 4. Land use Pattern in 2003

| S.No | Class | Hectares |
|------|-------|----------|
| 1    | Cultivable land | 121      |
| 2    | Un cultivable land | 186      |
| 3    | Forest land | 195      |
| 4    | Current fallow | 113      |
| 5    | Others | 140      |

1.5.8. Land Use

Land use refers to the utilization of land under different categories. There are cultivable land, uncultivable land, forest land, fallow land and residential land. In these most of them are used for agriculture. Agriculture is done mostly by river water and some people are using water from bore well residential areas are found nearby the agricultural areas. Fallow lands are found rarely in one or two places educational land is situated in the middle of the village.

1.5.11. Other Facilities

Other important facilities of the village are schools, temples, ponds, Co-operative society and post office. Schools are situated around the central part of the village. One higher secondary school and two elementary schools are situated. Temples like Arungulanayaki temple, Ayyanar temple, Marimman temple and Ganesha temple are also found in this village. An important dairy farm of Tamil Nadu namely exotic cattle breeding farm is also situated in this village. A large number of cows are imported from other countries to the dairy farm and milk production is done in a large scale in this farm.

2. Crop Productivity in Echankottai Village: Kuruvai, Thaladi, 1995-96 / 2002-2003

The primary crop of Echankottai village is Paddy. This village is exclusively depending on Kaveri river water for produce. Table 7 and the resulting Figure 2 shows the lands that were put to agriculture use for the year 1995-96. During this period vast area were allotted for agriculture use due to the release of Kaveri water, what was required at that time, which is during undisputed time period.

Source: Village Administrative Office Eachankottai Village.

Table 6. Categories of Population in 2001

|               | Male | Female | Total |
|---------------|------|--------|-------|
| Population    | 1188 | 1083   | 2771  |
| Literacy      | 721  | 535    | 1256  |
| Illiteracy    | 467  | 548    | 1015  |
| Agriculture farmers | 366  |        |       |
| Agriculture Laborers | 362  |        |       |
| Others        | 32   |        |       |

Source: Village Administrative Office Eachankottai Village.
Figure 2.

Table 8. Eachankottai Village Land under Cultivation 1995-1996

| S. No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|--------|------------|----------------|--------------------|---------------|
| 1      | 144-B      | 2.065          | 15.375             | 7.44          |
| 2      | 118        | 0.560          | 3.976              | 7.00          |
| 3      | 143-A      | 2.895          | 21.121             | 7.29          |
| 4      | 143-B      | 1.965          | 12.562             | 6.39          |
| 5      | 176        | 0.510          | 3.052              | 5.98          |
| 6      | 139        | 1.795          | 13.065             | 7.27          |
| 7      | 179        | 0.625          | 3.975              | 6.36          |
| 8      | 138        | 0.540          | 4.012              | 7.42          |
| 9      | 136        | 1.670          | 12.706             | 7.60          |
| 10     | 142        | 0.305          | 2.541              | 8.33          |
| 11     | 120-B      | 0.945          | 4.256              | 4.05          |
| 12     | 135        | 0.405          | 3.256              | 8.00          |
| 13     | 132        | 2.055          | 14.502             | 7.05          |
| 14     | 130        | 1.910          | 14.024             | 7.34          |
| 15     | 131        | 2.505          | 17.563             | 7.01          |
| 16     | 126-A      | 1.700          | 13.732             | 8.07          |
| 17     | 126-B      | 1.610          | 12.054             | 7.48          |
| 18     | 74-AA      | 1.305          | 9.542              | 7.31          |
| 19     | 180        | 0.280          | 2.486              | 8.87          |
| 20     | 74-AB      | 0.310          | 2.348              | 7.57          |
| 21     | 73-A       | 2.065          | 15.945             | 7.22          |
| 22     | 152        | 1.080          | 7.084              | 6.55          |
| 23     | 117-B      | 0.965          | 6.145              | 6.36          |
| 24     | 116-B      | 0.740          | 7.145              | 7.60          |
| 25     | 119-BA     | 0.760          | 5.021              | 6.60          |
| 26     | 119-BB     | 0.265          | 2.231              | 8.41          |
| 27     | 155        | 1.455          | 9.544              | 6.55          |
| 28     | 121-B      | 0.530          | 4.005              | 7.55          |
| S. No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|-------------------|--------------|
| 58    | 57         | 2.325          | 16.420            | 7.06         |
| 59    | 63-B       | 2.355          | 17.468            | 7.41         |
| 60    | 63-A       | 2.305          | 18.540            | 8.04         |
| 61    | 83         | 2.630          | 19.540            | 7.42         |
| 62    | 56-AB      | 0.645          | 4.543             | 7.04         |
| 63    | 84-B       | 2.240          | 15.957            | 7.12         |
| 64    | 162        | 1.605          | 11.542            | 7.19         |
| 65    | 56-B       | 1.595          | 12.430            | 7.79         |
| 66    | 55-A       | 1.530          | 10.955            | 7.16         |
| 67    | 170        | 1.110          | 8.044             | 7.24         |
| 68    | 54-AB      | 0.030          | 0.153             | 5.01         |
| 69    | 51-A       | 2.225          | 16.240            | 7.29         |
| 70    | 171        | 1.715          | 12.454            | 7.26         |
| 71    | 81-A       | 0.075          | 0.254             | 3.62         |
| 72    | 163        | 1.225          | 7.714             | 6.29         |
| 73    | 22-B       | 0.145          | 0.498             | 3.43         |
| 74    | 21-BA      | 0.305          | 2.034             | 6.66         |
| 75    | 33-A       | 1.175          | 7.503             | 6.38         |
| 76    | 169        | 0.860          | 6.243             | 7.25         |
| 77    | 34-AB      | 0.420          | 2.956             | 7.03         |
| 78    | 164        | 0.820          | 4.143             | 5.05         |
| 79    | 26-BB      | 0.405          | 2.095             | 5.17         |
| 80    | 55-B       | 0.015          | 0.072             | 4.08         |
| 81    | 54-AA      | 2.460          | 16.054            | 6.52         |
| 82    | 51-B       | 2.635          | 17.954            | 6.65         |
| 83    | 54-B       | 2.360          | 17.542            | 7.43         |
| 84    | 35-B       | 1.815          | 10.342            | 5.69         |
| 85    | 35-AB      | 0.975          | 6.782             | 6.95         |
| 86    | 36         | 2.315          | 16.421            | 7.09         |
| 87    | 38         | 1.650          | 10.745            | 6.51         |

| S. No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|-------------------|--------------|
| 88    | 39-A       | 1.880          | 12.945            | 6.88         |
| 89    | 39-B       | 0.625          | 4.048             | 6.47         |
| 90    | 26-BB      | 0.140          | 0.450             | 3.21         |
| 91    | 27         | 4.515          | 32.742            | 7.25         |
| 92    | 28         | 1.380          | 10.142            | 7.34         |
| 93    | 29         | 1.800          | 13.159            | 7.31         |
| 94    | 30         | 3.290          | 16.452            | 5.00         |
| 95    | 40         | 2.440          | 17.549            | 7.19         |
| 96    | 53         | 4.265          | 32.456            | 7.20         |
| 97    | 41-B       | 2.580          | 18.561            | 7.19         |
| 98    | 41-A       | 3.280          | 22.540            | 6.87         |
| 99    | 185        | 2.155          | 16.072            | 7.45         |
| 100   | 184        | 0.840          | 5.615             | 6.68         |
| 101   | 50         | 0.925          | 4.112             | 4.44         |
| 102   | 183        | 1.750          | 11.840            | 6.76         |
| 103   | 48-A       | 1.530          | 10.192            | 6.66         |
| 104   | 45-B       | 2.345          | 15.542            | 6.62         |
| 105   | 42         | 6.345          | 47.242            | 7.44         |
| 106   | 45-A       | 1.355          | 9.942             | 7.33         |
| 107   | 44         | 0.540          | 3.678             | 6.81         |
| 108   | 43-A       | 2.425          | 14.072            | 5.80         |
| 109   | 174        | 1.740          | 13.678            | 7.86         |
| 110   | 43-B       | 0.730          | 5.244             | 7.18         |
| 111   | 46         | 0.680          | 4.134             | 6.07         |
| 112   | 173        | 2.405          | 16.345            | 6.79         |
| 113   | 33-B       | 0.520          | 3.540             | 6.80         |
| 114   | 34-B       | 1.840          | 15.105            | 8.20         |
| 115   | 172        | 2.405          | 17.281            | 7.18         |
| 116   | 186        | 2.580          | 17.340            | 6.72         |

Source: Village Administrative Office, Eachankottai village.

Figure 3.
Table 9 and Figure 4 shows the paddy cultivated in Echankottai village during the year 2001-2002. When compared to the previous time period, excess areas were put to use for agriculture produce.

![Figure 4: Echankottai Village: Paddy Cultivated Area 2001-2002](image)

Table 9. Eachankottai Village Paddy Cultivated Area 2001-2002

| S. No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|-------------------|---------------|
| 1     | 63-A       | 2.305          | 16.803            | 7.28          |
| 2     | 63-B       | 2.355          | 17.309            | 7.34          |
| 3     | 64-A       | 1.720          | 12.435            | 7.22          |
| 4     | 64-B       | 3.720          | 28.123            | 7.55          |
| 5     | 83         | 2.630          | 19.514            | 7.41          |
| 6     | 65-B       | 1.530          | 11.337            | 7.40          |
| 7     | 84-B       | 2.240          | 16.688            | 7.45          |
| 8     | 81-B       | 4.735          | 34.470            | 7.27          |
| 9     | 36         | 2.315          | 17.015            | 7.34          |
| 10    | 39-B       | 0.520          | 3.759             | 7.22          |
| 11    | 33         | 4.265          | 31.091            | 7.28          |
| 12    | 34-B       | 1.320          | 9.596             | 7.26          |
| 13    | 33-B       | 0.520          | 3.837             | 7.37          |

Source: Village Administrative Office, Eachankottai village.

2.1. Changing Pattern of Agricultural Productivity in Echankottai Village before and after Kaveri River Water Dispute

To find the changing pattern of Agricultural productivity during and after the Kaveri river water dispute data relating to all the land according to the survey numbers in the Echankottai village have been gathered for three different time periods, that is for 1995-96 / 2000-2001 / 2002-2003. Table 11 and Figure 6 shows the land that were put to use for agriculture by survey number, and the land in hectares, agriculture production in tones and the total yield by individual land as per the survey records.

The Figure 6 depicts the productivity data according to the survey number wise. The choropleth map has five categories of yield classes and they are: below 5, 5-6, 6-7, 7-8 and above 8, all in metric tones. The map has seven units of land has gained below 5 metric tones; equally the second category also have seven units within the category of 5-6; there are 32 survey lands have between 6-7; 63 survey units falls between 7-8 category; there are 7 land category falls above the category of 8. From the map it is evident that due to uninterrupted Kaveri river water (during undisputed period) has gained a larger unit of productivity.
Table 10. Eachankottai Village: Land under Cultivation during Kaveri Water Dispute Period 2002 – 2003

| S No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|--------------------|---------------|
| 1     | 27         | 4.51           | 29.661             | 6.56          |
| 2     | 28         | 1.38           | 8.804              | 6.37          |
| 3     | 29         | 1.80           | 11.556             | 6.42          |
| 4     | 30         | 3.29           | 21.450             | 6.51          |
| 5     | 39-A       | 1.88           | 10.659             | 6.66          |
| 6     | 35-AB      | 0.97           | 5.148              | 5.28          |
| 7     | 33-B       | 0.52           | 5.640              | 7.00          |
| 8     | 34-B       | 1.32           | 7.444              | 5.63          |
| 9     | 35-B       | 1.81           | 11.162             | 6.14          |
| 10    | 36         | 2.31           | 14.562             | 6.28          |
| 11    | 55-B       | 0.01           | 0.075              | 5.00          |
| 12    | 54-AA      | 2.46           | 17.613             | 7.15          |
| 13    | 54-B       | 2.36           | 14.419             | 6.10          |
| 14    | 38         | 1.65           | 10.098             | 6.12          |
| 15    | 53         | 4.26           | 26.826             | 6.28          |
| 16    | 40         | 2.44           | 15.396             | 6.30          |
| 17    | 186        | 2.58           | 15.789             | 6.11          |
| 18    | 41-B       | 2.58           | 18.124             | 7.02          |
| 19    | 41-A       | 3.28           | 21.090             | 6.42          |
| 20    | 185        | 2.15           | 15.408             | 7.14          |
| 21    | 184        | 0.84           | 4.250              | 5.05          |
| 22    | 50         | 0.95           | 4.793              | 5.20          |
| 23    | 51-B       | 2.63           | 18.945             | 7.19          |
| 24    | 183        | 1.75           | 11.427             | 6.52          |
| 25    | 42         | 6.34           | 45.176             | 7.11          |
| 26    | 45-B       | 2.34           | 12.287             | 6.23          |

Source: Village Administrative Office, Eachankottai village.

Figure 5.
Table 11. Eachankottai Village Paddy Yield 1995 -1996

| S.No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|--------------------|--------------|
| 1     | 144-B      | 2.065          | 15.375             | 7.44         |
| 2     | 118        | 0.560          | 3.976              | 7.00         |
| 3     | 143-A      | 2.895          | 21.121             | 7.29         |
| 4     | 143-B      | 1.965          | 12.562             | 6.39         |
| 5     | 176        | 0.510          | 3.052              | 5.98         |
| 6     | 139        | 1.795          | 13.065             | 7.27         |
| 7     | 179        | 0.625          | 3.975              | 6.36         |
| 8     | 138        | 0.540          | 4.012              | 7.42         |
| 9     | 136        | 1.670          | 12.706             | 7.60         |
| 10    | 142        | 0.305          | 2.541              | 8.33         |
| 11    | 120-B      | 0.945          | 4.256              | 4.05         |
| 12    | 135        | 0.405          | 3.256              | 8.00         |
| 13    | 132        | 2.055          | 14.502             | 7.05         |
| 14    | 130        | 1.910          | 14.024             | 7.34         |
| 15    | 131        | 2.505          | 17.563             | 7.01         |
| 16    | 126-A      | 1.700          | 13.732             | 8.07         |
| 17    | 126-B      | 1.610          | 12.054             | 7.48         |
| 18    | 74-AA      | 1.305          | 9.542              | 7.31         |
| 19    | 180        | 0.280          | 2.486              | 8.87         |
| 20    | 74-AB      | 0.310          | 2.348              | 7.57         |
| 21    | 73-A       | 2.065          | 15.945             | 7.22         |
| 22    | 152        | 1.080          | 7.084              | 6.55         |
| 23    | 117-B      | 0.965          | 6.145              | 6.36         |
| 24    | 116-B      | 0.740          | 7.145              | 7.60         |
| 25    | 119-BA     | 0.760          | 5.021              | 6.60         |
| 26    | 119-BB     | 0.265          | 2.231              | 8.41         |
| 27    | 155        | 1.455          | 9.544              | 6.55         |
| 28    | 121-B      | 0.530          | 4.005              | 7.55         |
| 29    | 123-B      | 1.430          | 10.961             | 7.66         |

Figure 6.
| S.No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|-------------------|---------------|
| 60    | 63-A       | 2.305          | 18.540            | 8.04          |
| 61    | 83         | 2.630          | 19.540            | 7.42          |
| 62    | 56-AB      | 0.645          | 4.543             | 7.04          |
| 63    | 84-B       | 2.240          | 15.957            | 7.12          |
| 64    | 162        | 1.605          | 11.542            | 7.19          |
| 65    | 56-B       | 1.595          | 12.430            | 7.79          |
| 66    | 55-A       | 1.530          | 10.955            | 7.16          |
| 67    | 170        | 1.110          | 8.044             | 7.24          |
| 68    | 54-AB      | 0.030          | 0.153             | 5.01          |
| 69    | 51-A       | 2.225          | 16.240            | 7.29          |
| 70    | 171        | 1.715          | 12.454            | 7.26          |
| 71    | 81-A       | 0.075          | 0.254             | 3.62          |
| 72    | 163        | 1.225          | 7.714             | 6.29          |
| 73    | 22-B       | 0.145          | 0.498             | 3.43          |
| 74    | 21-BA      | 0.305          | 2.034             | 6.66          |
| 75    | 33-A       | 1.175          | 7.503             | 6.38          |
| 76    | 169        | 0.860          | 6.243             | 7.25          |
| 77    | 34-AB      | 0.420          | 2.936             | 7.03          |
| 78    | 164        | 0.820          | 4.143             | 5.05          |
| 79    | 20-AB      | 0.405          | 2.095             | 5.17          |
| 80    | 55-B       | 0.015          | 0.072             | 4.08          |
| 81    | 54-AA      | 2.460          | 16.054            | 6.52          |
| 82    | 51-B       | 2.635          | 17.954            | 6.65          |
| 83    | 54-B       | 2.360          | 17.542            | 7.43          |
| 84    | 35-B       | 1.815          | 10.342            | 5.69          |
| 85    | 35-AB      | 0.975          | 6.782             | 6.95          |
| 86    | 36         | 2.315          | 16.421            | 7.09          |
| 87    | 38         | 1.650          | 10.745            | 6.51          |
| 88    | 39-A       | 1.880          | 12.945            | 6.88          |
| 89    | 39-B       | 0.625          | 4.048             | 6.47          |
| 90    | 26-BA      | 0.140          | 0.450             | 3.21          |
| 91    | 27         | 4.515          | 32.742            | 7.25          |
| 92    | 28         | 1.380          | 10.142            | 7.34          |
| 93    | 29         | 1.800          | 13.159            | 7.31          |
| 94    | 30         | 3.290          | 16.452            | 5.00          |
| 95    | 40         | 2.440          | 17.549            | 7.19          |
| 96    | 53         | 4.265          | 32.456            | 7.20          |
| 97    | 41-B       | 2.580          | 18.561            | 7.19          |
| 98    | 41-A       | 3.280          | 22.540            | 6.87          |
| 99    | 185        | 2.155          | 16.072            | 7.45          |
| 100   | 184        | 0.840          | 5.615             | 6.68          |
| 101   | 50         | 0.925          | 4.112             | 4.44          |
| 102   | 183        | 1.750          | 11.840            | 6.76          |
| 103   | 48-A       | 1.530          | 10.192            | 6.66          |
| 104   | 45-B       | 2.345          | 15.542            | 6.62          |
| 105   | 42         | 6.345          | 47.242            | 7.44          |
| 106   | 45-A       | 1.355          | 9.942             | 7.33          |
| 107   | 44         | 0.540          | 3.678             | 6.81          |
| 108   | 43-A       | 2.425          | 14.072            | 5.80          |
| 109   | 174        | 1.740          | 13.678            | 7.86          |
| 110   | 43-B       | 0.730          | 5.244             | 7.18          |
| 111   | 46         | 0.680          | 4.134             | 6.07          |
| 112   | 173        | 2.405          | 16.345            | 6.79          |
| 113   | 33-B       | 0.520          | 3.540             | 6.80          |
| 114   | 34-B       | 1.840          | 15.105            | 8.20          |
| 115   | 172        | 2.405          | 17.281            | 7.18          |
| 116   | 186        | 2.580          | 17.340            | 6.72          |

Source: Village Administrative Office, Eachankottai village.
| S.No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|------------|----------------|-------------------|--------------|
| 66    | 65-B       | 1.53.0         | 11.672            | 7.62         |
| 67    | 189        | 1.37.5         | 10.051            | 7.30         |
| 68    | 188        | 1.29.5         | 9.401             | 7.25         |
| 69    | 58         | 4.38.5         | 32.127            | 7.32         |
| 70    | 64-B       | 3.72.5         | 28.252            | 7.58         |
| 71    | 190        | 2.84.5         | 20.755            | 7.29         |
| 72    | 57         | 2.32.5         | 16.536            | 7.11         |
| 73    | 63-B       | 2.35.5         | 16.342            | 6.93         |
| 74    | 63-A       | 2.30.5         | 16.450            | 7.13         |
| 75    | 64-A       | 1.72.0         | 12.374            | 7.19         |
| 76    | 83         | 2.63.0         | 18.954            | 7.20         |
| 77    | 56-AB      | 0.64.5         | 4.058             | 6.29         |
| 78    | 84-B       | 2.24.0         | 17.124            | 7.64         |
| 79    | 162        | 1.60.5         | 11.248            | 7.00         |
| 80    | 56-B       | 1.59.5         | 11.785            | 7.38         |
| 81    | 55-A       | 1.53.5         | 11.470            | 7.49         |
| 82    | 179        | 1.11.0         | 9.034             | 8.13         |
| 83    | 54-AB      | 0.03.0         | 0.158             | 5.26         |
| 84    | 51-A       | 2.22.5         | 15.346            | 6.89         |
| 85    | 171        | 1.71.5         | 13.078            | 7.62         |
| 86    | 81-A       | 0.07.0         | 0.251             | 3.58         |
| 87    | 163        | 1.22.5         | 9.742             | 7.95         |
| 88    | 22-B       | 0.14.5         | 1.032             | 7.11         |
| 89    | 21-BA      | 0.30.5         | 2.264             | 7.42         |
| 90    | 33-A       | 1.17.5         | 6.789             | 5.77         |
| 91    | 169        | 0.86.0         | 6.734             | 7.83         |
| 92    | 34-AB      | 0.42.0         | 3.062             | 7.29         |
| 93    | 164        | 0.82.0         | 7.345             | 8.95         |
| 94    | 20-BB      | 0.40.5         | 3.125             | 7.71         |
| 95    | 55-B       | 0.01.5         | 0.054             | 3.06         |
| 96    | 54-AA      | 2.46.0         | 17.747            | 7.21         |
| 97    | 51-B       | 2.63.5         | 18.954            | 7.19         |
| 98    | 54-B       | 2.36.0         | 14.355            | 8.08         |

**EACHANKOTTAI VILLAGE : PADDY YIELD 2000 - 2001**

![Eachankottai Village Paddy Yield Map](image)

Source: Village Administrative Office, Eachankottai village.

Figure 7.
Table 13. Eachankottai Village Paddy Yield 2002 – 2003

| S.No. | Survey No. | Hectare (area) | Production (Tones) | Yield (Tones) |
|-------|-------------|----------------|-------------------|---------------|
| 1     | 27          | 4.515          | 29.663            | 6.56          |
| 2     | 28          | 1.380          | 8.804             | 6.37          |
| 3     | 29          | 1.800          | 11.556            | 6.42          |
| 4     | 30          | 3.290          | 21.450            | 6.51          |
| 5     | 39-A        | 1.880          | 10.659            | 5.66          |
| 6     | 35-AB       | 0.970          | 5.148             | 5.28          |
| 7     | 33-B        | 0.520          | 3.640             | 7.00          |
| 8     | 34-B        | 1.320          | 7.444             | 5.63          |
| 9     | 35-B        | 1.815          | 11.162            | 6.14          |
| 10    | 36          | 2.315          | 14.561            | 6.28          |
| 11    | 55-B        | 0.015          | 0.075             | 5.00          |
| 12    | 54-AA       | 2.465          | 17.613            | 7.15          |
| 13    | 54-B        | 2.360          | 14.419            | 6.10          |
| 14    | 38          | 1.650          | 10.098            | 6.12          |
| 15    | 53          | 4.265          | 26.826            | 6.28          |
| 16    | 40          | 2.440          | 15.396            | 6.31          |
| 17    | 186         | 2.580          | 15.789            | 6.11          |
| 18    | 41-B        | 2.580          | 18.124            | 7.02          |
| 19    | 41-A        | 3.280          | 21.090            | 6.42          |
| 20    | 185         | 2.155          | 15.408            | 7.14          |
| 21    | 184         | 0.840          | 4.250             | 5.05          |
| 22    | 50          | 0.925          | 4.793             | 5.20          |
| 23    | 51-B        | 2.635          | 18.945            | 7.19          |
| 24    | 183         | 1.750          | 11.427            | 6.52          |
| 25    | 42          | 6.345          | 45.176            | 7.11          |
| 26    | 45-B        | 2.345          | 12.287            | 5.23          |
| 27    | 48-A        | 1.530          | 9.470             | 6.18          |

Source: Village Administrative Office Eachankottai village.
Persistence and continued supply of Kaveri river water the yield for the year 2000-2001 has considerably increased when compared to the previous time period. It is quiet clear from the increased land that were used for agriculture productivity is higher, that in addition to the previous year 36.15 hectares were used for additional cultivation due to the conducive atmosphere between the two states. The yield was also on higher side when compared to the previous year. A close look on the figure: 7 shows that among the five categories, below 5 metric tones of yield have in 6 survey units; 5-6 have in 5 survey units, there are 23 survey units have the yield between 6-7 metric tons; there are 83 survey land units fall within the category of 7-8; and the final category of above 8 has 12 land units with higher productivity.

During the Kaveri dispute period, that is during 2002-2003 the land that were put to use for agriculture use as well as the productivity have also gone down remarkably when compared to the previous two different time periods. The data presented in Table 13 and the Figure 8 depicts the reduced land used for agricultural practice and yield also has come down due the non-release of the Kaveri river water. During this period majority of the crop which was expecting the monsoon. After failure of the monsoon and the dispute between the two states regarding the Kaveri river water, the farmers who were expecting the river water have drastically affected. Majority of the lands that were put to use for agriculture produce were destroyed or there has been a reduction in the yield. When compared to the previous year’s 1995-96 (210.77 hectares) and 2000-01(246.92 hectares) the yield category for the year 2002-2003 is 121.16 hectares, which shows, loss in productivity due to non-availability of Kaveri river water. As far as the production in metric tones are concerned for the year 1995-96 (1305.08 tones), 2002-03 (1636.95) and 2002-2003 (707.09) in the Eachankotti village, there has nearly been 50 per cent of reduction / loss in the productivity.

$\text{XS} = \text{Ys (initial year 1995-96)}$

$\text{YS} = \text{Ys (2002-2003)}$

$\text{Shift} = \frac{\text{Ys (2002-03)} - \text{Ys (2002-03)}}{\text{Ys (2002-03)}}$

$\text{4.2. Changing Pattern of Agricultural Productivity: Shift and Share Index Method: 1995-96 / 2002-03}$

In Geographical analysis gains or losses can be defined in a number of ways of much value added that are the most commonly used measures. Both terms are self-explanatory valued added refers to the amount by which a product has increased in value by the process of manufacture, and the employment refers to the number of persons working in manufacturing Industries. In this section changing pattern of telephone subscriber in wards wise (or) decline between 1995-96 and 2002-03 has been measured by using value-added data. Fuch's (1962) uses the value added data to calculate the gain or loss of manufacturing (GS) and the similar method has been applied to the present problem in the following manner.

$Gs = Ys - Hs$

and

$Hs = \frac{Xs \ast Ys}{X}$

where

$Xs$: Yield in the initial year (1995-96) indicates in the Survey unit

$Ys$: Yield in the initial year (2002-03) indicates in the Village

$X$: Yield in the initial year (1995-96) indicates in the Survey unit

$H$: Value in the initial year (2002-03) indicates in the Village

This $Hs$ is an abstract number representing the value in the state of telephone subscribers in the town. The difference between the actual value $Ys$ and $Hs$ can then be converted into a percentage gain or loss or shift and share index by the following:

$\frac{100(\text{Ys} - \text{Hs})}{\text{Ys (or) Hs}}$
The larger of the two terms in the numerator is always used in the denominator, and as a consequence, the large is limited from +100 to -100 percent. Thus Fuchs further refines it for the influence of the pre-existing indicates and structure in the state. Indicates established during the past two years have been high-growth indicates. When as indicates established prior to this time have grown comparatively, slowly and some have declined. Therefore in order to take into account the pre-existing indicates structure of the state the percentage in manufacturing is adjusted by weighting.

Table 14 presents, results of the shift and share index analysis calculated for agricultural productivity in Eachankottai village to find the change from 1995-96 to 2002-2003. The table shows the shift values in both positive and negative values. Among the 53 sample survey units in the village there has been 27 positive changes and the rest of 26 are towards negative change from the above time period. Figure 9 has been drawn to show the changing pattern of productivity from one time period to another and its positive and negative changes due to river water dispute that had enabled the failure in the productivity. In the figure the positive and negative changes have been shown in four class intervals each. In positive cases: below 5 there are 6 categories; 6 – 10 there are 10 categories; 11 –15 falls in the category of 4; and above 15 there are 7 classes found. Similarly in the negative cases: below 5 there are 12 classes; 6 – 10 there are only 3 cases; 11 – 15 there are only 2 cases and above 15 has the classes of 9. From the analysis and the figure it is evident that the positive and negative cases are equally represented by the classes among the category varies according to the productivity recorded for the above two time periods. The lands that were not used for agriculture due to want of river water have been shown in yellow colour in the map.

2.3. Relationship about the Attitudes among the Farmers and Agriculture Laborers Regarding the River Water Dispute

To find the existing relationship about the different attitude measures among the farmers and agriculture laborers in Eachankottai village, a primary survey was conducted and it is appended in Appendix-I. Each category 100 samples were collected among the farmers and the agricultural laborers in Eachankottai village. The attitude about the farmers consisting of: apart from their name, age socio-economic status the following questions were asked and recorded. They are the possession of land in hectares, agriculture was performed during previous years and the quantum of land that were put to use for agricultural activities, the yield categories, other categories other than rice cultivation, land put to agriculture use for the present year and number of times put to agriculture use, total years for rice cultivation, type of fertilizers used, labor charges to feed the land, quality of soil, equipment used for agriculture, methods to be adopted due to loss of food grains, expectations from the government and so on. Similarly 100 samples were also collected from the agricultural laborers and the questions relating to: day income, is the income sufficient to maintain the family, the attitude about the laborers during the past six years that is from the beginning of the river water dispute as well as monsoon failure and the income they obtained during this period, the present year income and its sufficiency, due to river water dispute and monsoon failure at present what works you have under taken and the income, your attitude towards this problem and decreasing agriculture productivity in the state and so on.
Table 15 shows the inter-correlation matrix for the 26 variables. The shaded boxes indicate the 99 and 95 per cent of significance and the relationship is high between the variables under consideration. From the table there are 2 variables have inter-correlation values of more than 0.80; the $R^{2}$ value indicate that they have more than 64 per cent of relationship among them. They are the age of agricultural labor and the number of years they work; during un-season the work undertaken and its implications towards agricultural labor work. Three variables have correlation more than 0.70 and they are: the income received by the laborers are sufficient to cater the needs and if the income is insufficient what are the reasons that the laborer considers; income received from this year as well as last year; the present day labor work engaged and the last year earnings through agricultural laborers. The rest of the variables have shown less than 70 and some of the variables have shown insignificant relationships.

Table 16 displays the results of inter-correlation matrix towards the attitudes among the Agriculturists. The attitudes which have been measured through the variables have shown high significant correlations among the variable. From the results there are 6 pairs of variables have indicated more than 0.90 correlations which indicates that they are related at 81 per cent level. The most important are: the land that is in possession at present (in hectares) and the irrigated land during the last year; the yield during the last year and the number of hectares that were put to use for productivity; the labor expenses incurred and the last year land that are used for productivity; agricultural land versus fertilizer cost; There are 4 variable pairs have shown high correlation value of greater than 0.80 and the rest of them have shown significant as well insignificant loadings.
3. Conclusion

In the above study it has been established that the impact of Kaveri river water is very much necessary for the agricultural productivity in the Kaveri delta region. There was uninterrupted water supply during the past years and the problem at present has emanated from the shortage of rainfall in the catchment’s areas of Kaveri river. In the present study the land that were put to use for agricultural use prior to the river water dispute as well as after the dispute the quantum of land used for agricultural productivity were highlighted. It is evident that the agricultural activities are worst affected in this region due to the non-release of Kaveri water for delta farmers in time.

From the study the following conclusions have been derived:

a. There has been decrease in agricultural productivity in this region for the year 2003 when compared to the year 1995 (undisputed time period) and the maps that have been drawn to show the land that were put to use for agricultural use as well as the yield map drawn for three years. During 1995 the total agricultural production as per the records show that 1305.08 tons and for the same kind of production for the year 2003 is 707.09 tons. This one sample village in the delta region shows the loss of nearly half of the production that was recorded during the year 1995 (undisputed time period) and the maps that have been drawn to show the land that were put to use for agricultural use as well as the yield map drawn for three years.

b. The shift and share index analysis calculated for the two different time periods for the year 1995-96 //

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Table 16. Correlation Matrix: Relationship about the attitudes among the Agriculturalists

| Variable No. | V1   | V2   | V3   | V4   | V5   | V6   | V7   | V8   | V9   | V10  | V11  | V12  | V13  |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| V1           | 1.00 | .164 | .815 | -.067| -.025| -.054| -.070| -.004| -.020| .124 | .035 | -.219| .141 |
| V2           | 1.00 | .175 | .071 | -.109| -.069| -.050| .151 | .234 | .320 | -.109| .073 | .043 |      |
| V3           | 1.00 | .200 | .059 | .055 | .011 | .093 | .023 | .220 | .001 | -.140| .293 |      |      |
| V4           | 1.00 | .986 | .127 | .126 | .917 | .644 | .409 | -.030| -.076| .159 |      |      |      |
| V5           | 1.00 | .134 | .944 | .645 | .409 | -.034| -.085| .166 |      |      |      |      |      |
| V6           | 1.00 | .813 | .185 | .059 | .095 | .098 | .094 | .101 | .076 | .022 |      |      |      |
| V7           | 1.00 | .201 | .065 | .049 | .101 | .076 | .151 |      |      |      |      |      |      |
| V8           | 1.00 | .662 | .364 | -.049| -.090| .133 |      |      |      |      |      |      |      |
| V9           | 1.00 | .537 | .008 | .100 | .151 |      |      |      |      |      |      |      |      |
| V10          |      | 1.00 | .028 | .040 | .247 |      |      |      |      |      |      |      |      |
| V11          |      |      | .070 | .076 |      |      |      |      |      |      |      |      |      |
| V12          |      |      |      | 1.00 | .045 |      |      |      |      |      |      |      |      |
| V13          |      |      |      |      | 1.00 |      |      |      |      |      |      |      |      |

Variable No. V14 V15 V16 V17 V18 V19 V20 V21 V22 V23 V24 V25 V26
V1 .046 .013 .042 -.026 .059 .098 -.200 .123 -.012 .037 .078 -.207 .092
V2 .035 .005 .100 .079 -.251 .243 -.161 .134 -.168 .007 .212 -.050 .009
V3 -.094 -.025 .096 .040 .085 .215 -.222 .110 .133 -.014 .071 -.273 -.021
V4 -.096 .175 .873 .908 -.418 -.195 -.654 .228 -.194 .020 .397 .103 .067
V5 -.112 .241 .900 .921 -.466 -.223 -.376 .249 -.219 .023 .429 .093 .084
V6 -.112 .093 .126 .106 -.025 -.101 -.002 -.035 .101 -.016 -.033 -.112 .055
V7 -.086 .155 .134 .104 -.094 -.156 -.053 .031 .049 .050 -.119 -.072 .061
V8 -.138 .180 .895 .881 -.560 -.321 .409 .308 .301 .019 .486 .125 .152
V9 -.049 .095 .543 .599 -.516 -.153 -.459 .262 -.361 .166 .497 .148 .095
V10 .056 -.068 .294 .298 -.276 .009 -.440 .173 -.179 .039 .353 -.003 -.116
V11 -.129 -.019 -.046 -.044 -.065 -.110 -.009 -.098 .006 .087 .078 -.129 -.116
V12 -.072 -.034 -.078 -.072 -.133 -.084 -.037 -.094 -.109 -.090 -.076 -.072 -.124
V13 -.490 .126 .139 .142 -.048 .072 -.258 .002 .269 .016 .118 -.345 -.210
V14 1.000 -.168 -.061 -.061 .035 -.005 .127 -.147 .097 .056 -.017 .111 .113
V15 1.000 .210 .235 -.119 .043 -.053 .101 .040 -.023 -.074 -.077 -.075
V16 1.000 .927 -.444 -.217 -.360 .288 -.255 -.049 .414 .102 .115
V17 1.000 -.415 -.192 -.323 .233 -.194 .002 .397 .096 .110
V18 1.000 .672 .481 -.317 .435 -.057 -.575 -.179 -.131
V19 1.000 .190 -.267 .339 -.034 -.384 -.295 -.166
V20 1.000 -.256 .263 -.175 -.390 .046 .076
V21 1.000 -.616 -.034 .236 .155 .113
V22 1.000 -.024 -.287 -.346 -.218
V23 1.000 .138 -.038 .056
V24 1.000 .127 .150
V25 1.000 .239
V26 1.000
2002-2003 justifies the above same results. The measure of attitudes among the agriculturists/agricultural laborers have indicated their displeasure over the Kaveri river water dispute that has resulted their future in danger.

References

[1] Guhan, S. The Cauvery Disputes: Towards Conciliation, Madras: Frontline, 1993.
[2] Leading Disputes between Inter-State of India (yourarticlelibrary.com).
[3] Explained: What the Cauvery water dispute between Karnataka and TN is all about | The News Minute
[4] https://frontline.thehindu.com/profile/author/T-S-SUBRAMANIAN/.
[5] https://frontline.thehindu.com/other/article30219503.ece.
[6] The continuing Cauvery river waters dispute between.
[7] https://www.jstor.org/stable/44419276.
[8] agri_e pn_2020_21.pdf (tn.gov.in).
[9] Ramaswamy R Iyer, 2003 Water: Perspectives, Issues, Concerns. SAGE Publication, New Delhi, Thousand Oaks, London. Water - Google Books.
[10] https://frontline.thehindu.com/other/article30219503.ece.
[11] Gebert, R. I. The Cauvery River Dispute: Hydrological Politics in Indian Federalism, Vancouver: Department of Political Science of The University of British Columbia, 1983.
[12] Guhan, S. The Cauvery Disputes: Towards Conciliation, Madras: Frontline, 1993.
[13] Husain, B. M. The Cauvery River Dispute: An Analysis of Mysore's Case, Mysore: Rao and Raghavan, 1972.

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