

Irrigation Trend in Madras State

by

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Introduction : Irrigation may be defined as an artificial means for supplying water in the cultivation of crops. Certain crops such as millet, oilseed and cotton are cultivated in Madras State without provision for irrigation, though, however, these may produce better yields under conditions of irrigation. The need to assess irrigation potential, therefore, is of considerable importance. There are four main types of irrigation in Madras State viz., (i) Canals (ii) Tanks (iii) Wells and (iv) Springs.

Materials and Methods : "Season and Crop Report" published by the Madras Government was consulted for calculating data on area, and sources of irrigation for the period 1906 to 1966. Quinquennial means were computed district-wise. The District of Madras was reckoned as non-agricultural while that of the Nilgiris as lying under rainfed conditions. Kanyakumari District was omitted for want of figures.

Results and Discussion : (a) *Canals:* Canals are maintained by government and by private agencies and are classified as such. Regarding government canals, the decrease in area was characteristic of Chingleput and North Arcot, while very little increase was noticed in Madurai with a fair constancy in Ramanathapuram. In the rest of the districts there has been quite a considerable increase in area. The area at start and at the end with maximum and minimum obtained district-wise along side the particular years ending quinquennium are presented in Table 1.

TABLE 1. *Canals*

District	Area commanded (lakh acres)					
	Quin. 1906-10	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
South Arcot	1.34	1.61	1.93	56	1.28	25
Salem	0.30	0.60	0.60	66	0.21	15 & 30
Coimbatore	0.78	2.42	2.42	66	0.64	15
Tiruchy	1.08	2.17	2.17	66	1.05	20
Thanjavur	8.29	11.66	11.66	66	8.13	20
Madurai	1.38	1.61	1.81	50	1.32	15
Tirunelveli	0.47	0.52	0.52	15, 56, 61 & 66	0.45	25
Chingleput	0.22	0.12	0.31	20	0.07	56
North Arcot	0.57	0.37	0.57	10	0.23	56
Ramanathapuram	0.007	0.002	0.015	25, 35	0.002	66

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The State lends itself for division with three sectors incidentally representing agro-climatic zones. Chingleput and North Arcot had suffered neglect since 1920 with the lowest figure in 1956. Other central districts of South Arcot, Salem, Coimbatore, Tiruchy and Thanjavur and the two southern districts of Madurai and Tirunelveli which suffered neglect till 1930 were phenominally benefitted in the quinquennium ending 1966. Ramanathapuram district is conspicuous in its low potentialities.

As regards private canals, in general, the area commanded is rather low, a mere 4000 acres in North Arcot, Salem and Chingleput and hardly a thousand acres in South Arcot, Coimbatore, Madurai and Tirunelveli. In Tiruchy, Thanjavur and Ramanathapuram the area may be considered negligible. The private canals may be said to be efficient in North Arcot, Coimbatore, Thanjavur, Madurai and Tirunelveli. In Thanjavur, government canals far outstrip private canals. In other districts, a parallelism is maintained though the area commanded is consistantly low. Ramanathapuram is again conspicuous by the absence of private canals.

The canal system of irrigation consists of a reservoir with distributaries. The run-off water flowing into the reservoirs are silt-laden and affect their efficiency. Modern design for sediment shortage does not altogether alleviate the problem of sedimentation, since the deposit takes place in places for live storage as well. This problem apart, water loss due to seepage and evaporation, estimated at seventeen and twenty five per-cent, in the main lines, distributaries and cultivators water sources respectively, constitutes an additional problem. Yet another problem of water logging and alkalinity arises in low lying areas. As such, appropriate soil and water conservation measures for silt, lining the canals for seepage, drainage for water logging and soil ameliorative measures for alkalinity are urgently called for.

(b) *Tanks*: Tanks include all works for the storage of water for irrigation. The magnitude of irrigation potential can be appreciated as the area commanded by these almost equal that of government canals. The data on area commanded by tanks are given in Table 2.

TABLE 2. *Tanks*

District	Area commanded (lakh acres)					
	Quin 1906-10	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Chingleput	3.88	4.83	4.83	66	3.21	56
South Arcot	3.03	3.30	3.31	45	2.63	56
North Arcot	2.67	3.03	2.90	15	2.37	30 & 50
Salem	0.77	0.71	0.81	56	0.54	30

WELLS

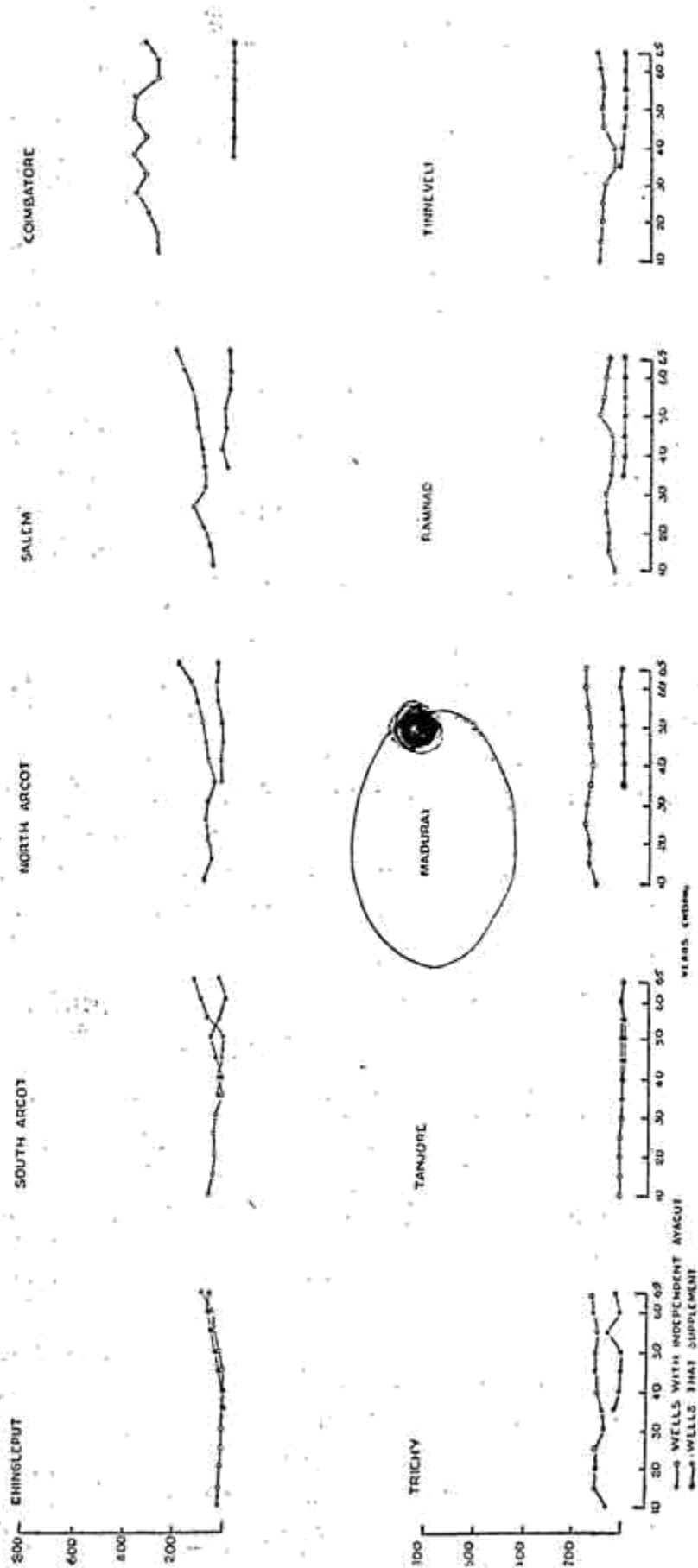


TABLE 2. Tanks (contd.)

District	Area commanded (lakh acres)					
	Quin. 1906-10	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Coimbatore	0.21	0.16	0.22	20 & 25	0.16	66
Tiruchy	0.63	1.83	1.83	66	0.57	30
Thanjavur	1.29	0.68	1.44	25	0.48	50
Madurai	2.11	1.23	2.11	10	1.04	40
Ramanathapuram	1.46	5.00	5.07	61	1.46	10
Tirunelveli	1.84	2.12	2.12	66	1.51	40

Chingleput, North Arcot, South Arcot and Ramanathapuram command a large area by tank irrigation and there is a steady increase in area except Ramanathapuram where there is a wide fluctuation. In the last three quinquennia coinciding with the three plan periods, there is a remarkable increase. In the other districts the extent of tank irrigation is low.

Tanks function as storage basins for the surplus run-off, the size and *ayacut* depending upon the rainfall of the area, catchment drained and the nature of the watershed. Here again, the erosion in the catchment area resulting in silting-up of the tanks constitutes a problem. Soil and water conservation measures for the control of erosion and run-off of the watershed and a planned desilting-cum-reclamation programme are to be followed up. This will help to increase the area under tank irrigation. Minor losses of water due to seepage, evaporation and wastage may also be advantageously prevented as in the case of canals.

(c) *Wells*: Wells are classified as those with independent *ayacuts* and those supplementing recognised sources of irrigation (Table 3(a)).

TABLE 3-(a). Wells with Independent Ayacut

District	Area commanded (lakh acres)					
	Quin. 1931-35	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Coimbatore	4.06	3.63	4.06	35	3.17	56
Salem	1.10	2.27	2.27	66	1.10	35
North Arcot	0.67	2.06	2.06	66	0.67	35
Madurai	1.39	1.63	1.63	66	1.29	40
South Arcot	0.27	1.36	1.36	66	0.22	50
Tiruchy	0.73	1.22	1.22	66	0.73	35
Tirunelveli	0.39	1.16	1.16	66	0.39	35
Chingleput	0.09	0.93	0.93	66	0.09	35 & 45
Ramanathapuram	0.52	0.63	1.03	50	0.48	40
Thanjavur	Nil	0.12	0.13	50	—	35 & 40

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The trend in the area commanded by wells with independent *ayacuts* is on the increase in Chingleput, South Arcot, North Arcot, Salem and Tirunelveli. Coimbatore is quite characteristic with the largest area commanded by this source. In all these districts during the last three quinquennia coinciding with the three plan periods, notable increases are recorded. In the rest of the districts the area commanded is low and the trend is uniformly maintained.

Wells that supplement recognised sources of irrigation show increase in area in Chingleput District [vide Table 3 (b)].

TABLE 3-(b) *Wells Supplementing other Sources of Irrigation*

District	Area commanded (lakh acres)					
	Quin. 1931-35	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Chingleput	0.19	0.69	0.69	66	0.19	35
North Arcot	0.40	0.54	0.57	61	0.39	45 & 50
South Arcot	0.46	0.49	0.49	45 & 66	0.10	61
Tiruchy	0.25	0.28	0.28	66	0.02	50
Salem	0.28	0.22	0.59	66	0.12	35, 45 & 50
Madurai	0.08	0.17	0.21	56 & 61	0.05	45
Coimbatore	0.03	0.07	0.07	66	Nil	56
Ramanathapuram	0.17	0.02	0.17	35	0.02	45 & 66
Tirunelveli	0.27	0.02	0.27	35	0.02	50, 56, 61 & 66
Thanjavur	0.10	0.01	0.12	40 & 61	0.01	66

Wells cover a wide spectrum of sizes ranging from mere holes in the ground to elaborate structures of considerable dimensions. Also their water level from the land surface varies any where from "nil" to a hundred feet or more. The general experience all over the state is that the ground water table sinks at about one foot per annum. Nevertheless, in the context of rain water percolating the soil and the control of run-off water, the under ground aquifers can be expected to be recharged. Experts are of the view that against the utilisable ground water potential of seven billion cubic feet, hardly 0.1 billion cubic feet have been actually tapped. It is also common knowledge that ground water are plentiful in all river basins. Sinking of tube wells and filter points have already been rewarding and this needs active exploitation.

(d) *Springs*: Spring irrigation has some importance in all the districts. The districts of South Arcot and Salem registered an increase, while Madurai and Tirunelveli registered a decrease in the area commanded by this source. In Coimbatore the acreage has been steady (Table 4).

TABLE 4. Springs

District	Area commanded (lakh acres)					
	Quin. 1906-10	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Chingleput	0.18	0.14	0.38	35	0.07	46 to 50 & 52 to 56
South Arcot	0.16	0.22	0.26	35 & 61	0.06	56
North Arcot	0.64	0.22	0.64	10	0.07	56
Salem	0.10	0.14	0.24	35	0.07	15 & 30
Coimbatore	0.06	0.06	0.35	50	0.06	10 & 66
Tiruchy	0.04	0.11	0.19	25	0.04	10 & 30
Thanjavur	0.03	Nil	0.03	10	Nil	56 to 66
Madurai	0.18	0.06	0.19	20	0.02	50
Ramanathapuram	Negligible	0.01	0.38	15	—	31 to 45 & 61
Tirunelveli	0.04	0.02	0.08	30	0.02	31 to 40 & 52 to 66

The presence of woodlands and the quantum of precipitation are the twin factors that enrich the water supply of springs. Destruction of woodlands affects precipitation and consequently the springs. This shows the need for woodlands.

Total net area irrigated: The total net area irrigated in the State has increased by 39% in the course of six decades under study. Notable increases have occurred in the districts of Thanjavur and Ramanathapuram and to a less extent in all other districts. Madurai is a solitary instance with a slight decrease (vide Table 5).

TABLE 5. Total net area irrigated

District	Area commanded (lakh acres)					
	Quin. 1906-10	Quin. 1962-66	Maximum area recorded	Quin.	Minimum area recorded	Quin.
Thanjavur	9.77	12.49	12.49	66	9.71	20 & 35
South Arcot	5.34	6.64	6.64	66	4.76	20 & 35
Coimbatore	4.15	6.30	6.30	66	4.07	15
Chingleput	4.58	6.03	6.03	66	3.07	56
North Arcot	5.02	5.69	5.69	66	3.63	30
Ramanathapuram	1.91	5.65	5.78	61	1.91	10
Tiruchy	2.31	5.35	5.35	66	2.31	10
Madurai	4.84	4.54	4.84	10	3.84	40
Tirunelveli	3.40	3.83	3.83	66	2.55	40
Salem	2.00	3.74	3.74	66	1.94	15

Viewed in association with the trend of rainfall certain interesting features are brought out. While a wide fluctuation is often met with in the annual precipitation, the quinquennial mean even out in quite a few instances, when plotted district-wise. A comparison between the area irrigated and the quinquennial means of rainfall indicate the absence of any association. While North Arcot, Salem and Madurai exhibit a parallel, Tiruchy and Thanjavur show even a reciprocal trend. Therefore, it would seem that the total area that can be brought under irrigation is more a function of tapping the different sources of irrigation rather than that of the actual rainfall. Indeed, it does not clearly bring out the individual association of different sources.

With all the development programmes, only 42% of the net area sown in the State can possibly be provided with irrigation. The rest 58% necessarily depends upon the fluctuating fortunes of moonsson. Naturally, therefore, adoption of dry farming practices forms the only way out.

Conclusion: With a limitation on the scope of expansion of canal and tank as irrigation sources, the future progress of irrigation rests largely on the efficient maintenance of the various sources rather than attempting at further expansion. As indicated earlier, an economic and effective conservation, storage and distribution of water sources are called for. Also the scope of exploitation of ground-water potential holds promise. In this direction an intensive survey of land and water resources with an accent on proper planning is bound to be helpful.

ANNOUNCEMENT

The Annual subscription for the Madras Agricultural Journal (including postage) has been enhanced from Rs. 10/- to Rs. 15/- per annum (Foreign from \$ 2-00 to \$3-00) from January, 1969 (Vol. 56) due to increased cost of printing and Stationery. All the subscribers are requested to extend their kind patronage and co-operation.
