

Summer cropping experiment in the Cauvery Mettur Project area*

by

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Synopsis: The results of an experiment conducted to find out the feasibility of raising crops like groundnut, cotton, redgram, blackgram and sesbania alone and in combination, in the rice fallows in the Cauvery Mettur Project area during February to June are presented in this paper.

Introduction: It is only after the advent of the Cauvery Mettur Project in the early nineteen thirties, that the cultivation of paddy under irrigated condition, as in the old Cauvery delta of Tanjore district, was taken up. The Cauvery Mettur Project area, consists of portions of Tanjore, Orathanadu, Pattukottai, Aranthangi and Mannargudi taluks of Tanjore district. In the early stages, enormous persuasion, by way of propaganda and demonstrations, was needed to make the people take up paddy cultivation in the area commanded by the Cauvery Mettur Project system. The opening of Agricultural Research Station at Pattukottai in 1935, was one of the means of effective demonstration to convince and teach the ryots of the erstwhile rainfed area. After nearly a quarter of century, the cultivation of paddy, as an irrigated crop in two well defined seasons — July to October and October to February — similar to the practice prevailing in the old delta of Tanjore district, has come to stay.

Now the paddy cultivation in the whole of the Cauvery Mettur Project area, extending over an area of about three lakhs of acres, depends upon the Cauvery irrigation system. Water for irrigation, normally and as a rule, is let into the Cauvery and its various branches, from the Mettur reservoir, by about the middle of June and stopped by the middle of February every year. So, the irrigation system will be closed and water will not be available for four months in the year (middle of February to middle of June). The system of irrigation from wells has not been developed to any extent in the district and the combined effect of two factors, closure of the irrigation system and the absence of irrigation wells in any appreciable number, makes it necessary to keep extensive areas fallow for nearly a third of the year. This condition, we can ill afford to put up with at a time when the whole country has to face a shortage in food grains and other raw materials of a commercial nature.

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Under these circumstances, to explore the possibilities of raising a crop other than paddy, during these four months (February to June), a period otherwise called "Rice Fallow", an experiment for examining the feasibility of growing various other crops during this period was started in 1956 summer and repeated in the summers of 1957 and 1958.

Materials and Method: The crops that were tried in this experiment were groundnut, cotton, blackgram, sesbania for green leaf and redgram. Groundnut, cotton and blackgram were tried as pure crops and as mixed crops. Redgram was tried as a mixed crop only with groundnut. The lay out of the experiment was in the randomised replicated design, in four contiguous fields of the same size (0.25 acre), treating each field as one replication. The experiment was repeated in double crop lands, where the fallow period will be between February and July and in single crop lands where the fallow period will be between January to August. The nine treatments tried in the experiment were :

1. Groundnut (TMV. 2).
2. Cotton (P.216-F),
3. Blackgram (local),
4. Sesbania,
5. Groundnut and cotton,
6. Groundnut and redgram (Tenkasi short duration),
7. Groundnut and blackgram,
8. Cotton and blackgram and
9. Fallow.

Results obtained and Discussion: The soil in the Agricultural Research Station, Pattukottai, which can be taken as representative of the soil in the Cauvery Mettur Project area, is red loam with a preponderance of sand, with very low water retaining capacity. The locality cannot be considered very fortunate in the matter of subsoil springs. The water available in the few wells existing in the tract is only from the superficial, lateral and diffused springs in those wells, and it is really the percolation water from the various branches of the irrigation system. So much so, water level in the wells rapidly rise and fall with the receipt and stopping of water in the irrigation system.

In all the treatments compared in these experiments, splash irrigation was done at the time of sowing and also at varying intervals subsequently. The source of such irrigation was a shallow open well. In all the treatments, seeds were sown broadcast or dibbled in lines, in the stubbles of the previous paddy crop, without any preparatory cultivation and irrigated by splash watering. Subsequent irrigations were

given as and when required, consistent with the availability of water in the well, without any fixed interval between successive irrigations. Besides the performance of the various crops raised, the money value of the produce obtained and the residual effects of these crops upon the following paddy crop were also recorded in three seasons in single crop lands and two seasons in double crop lands. The data gathered in respect of these experiments are presented in tables I to IV. Due to very severe drought in 1956 summer, no data could be gathered in double crop area.

TABLE I
Yield and value of the produce: 1956, 1957, 1958 summers

	Year	Yield lb.	Value Rs.	Yield lb.	Value Rs.	Total value Rs.
1. Groundnut	1956	889	160.68	...	...	160.62
	1957	1128	203.04	...	...	203.04
	1958	1187	213.66	...	...	213.66
2. Cotton	1956	208	74.16	...	...	74.16
	1957	571	205.56	...	...	205.56
	1958	390	141.40	...	...	141.40
3. Blackgram	1956	45	11.25	...	...	11.25
	1957	94	23.50	...	...	23.50
	1958	58	14.50	...	...	14.50
4. Sesbania	1956	18610	62.00	...	...	62.00
	1957	19340	64.47	...	...	64.47
	1958	10380	34.60	...	...	34.60
5. Groundnut & Cotton		Groundnut		Cotton		
	1956	933	167.94	7	2.52	170.56
	1957	972	174.96	26	9.36	184.32
6. Groundnut & Redgram		Groundnut		Redgram		
	1956	829	149.22	9	2.25	151.47
	1957	981	176.58	58	14.50	191.08
7. Groundnut & Blackgram		Groundnut		Blackgram		
	1956	449	80.88	29	7.25	88.07
	1957	761	136.08	130	32.50	169.48
8. Cotton & Blackgram		Cotton		Blackgram		
	1956	154	55.44	52	13.00	68.44
	1957	292	101.52	102	25.50	127.02
	1958	322	125.92	69	17.25	143.17

Groundnut pods valued at Re. 0.18 per pound,
 Cotton kapas valued at Re. 0.36 per pound,
 Redgram valued at Re. 0.25 per pound,
 Blackgram valued at Re. 0.25 per pound and
 Sesbania valued at Re. 1.00 for 300 pounds.

TABLE II
Residual effects upon the succeeding Samba paddy single crop lands
1956, 1957, 1958 summers

	Grain yield expressed pounds per acre			Grain yield expressed as % on control			Grain yield expressed as % on mean		
	1956	1957	1958	1956	1957	1958	1956	1957	1958
1. Groundnut	2447	2447	2138	108.5	107.5	102.2	102.6	103.6	98.3
2. Cotton	2434	2512	2379	107.9	110.4	113.7	102.1	106.3	109.3
3. Blackgram	2337	2210	2240	103.6	97.1	107.0	98.0	93.5	102.9
4. Sesbania	2424	2343	2037	107.5	102.9	97.4	101.6	99.2	93.7
5. Groundnut & Cotton	2392	2406	2138	106.0	105.8	102.2	100.3	101.9	98.3
6. Groundnut & Redgram	2315	2297	2168	102.7	100.9	106.0	97.2	97.2	99.7
7. Groundnut & Blackgram	2434	2523	2157	107.9	110.9	103.0	102.1	106.8	99.2
8. Cotton & Blackgram	2424	2251	2232	107.5	98.9	106.7	101.6	95.3	102.6
9. Fallow	2255	2276	2092	100.0	100.0	100.0	94.6	96.3	96.2
Mean	2385	2362	2175	105.8	103.9	104.0	100.0	100.0	100.0
"F" test	not satisfied.			not satisfied.			not satisfied.		
Standard error	94	135	86	4.17	5.92	4.08	3.95	5.70	3.94

Yield differences are not statistically significant.

TABLE III
Yield and value of the produce 1957, 1958 summers

	Yield	Yield	Value	Yield	Value	Total value
		lb.	Rs.	lb.	Rs.	Rs.
1. Groundnut	1957	2583	464.94	...	...	464.94
	1958	968	174.24	...	...	174.24
2. Cotton	1957	110	39.60	...	...	39.60
	1958	169	60.84	...	...	60.84
3. Blackgram	1957	54	13.50	...	...	13.50
	1958	25	6.25	...	...	6.25
4. Sesbania	1957	13630	45.43	...	...	45.43
	1958	9877	32.92	...	...	32.92
5. Groundnut & Cotton	1957	Groundnut 2407	433.26	Cotton 12	4.32	437.58
	1958	1084	196.12	37	13.32	208.44
6. Groundnut & Redgram	1957	Groundnut 2157	388.26	Redgram 7	1.75	390.01
	1958	1319	237.42	...	...	237.42
7. Groundnut & Blackgram...	1957	Groundnut 1391	250.38	Blackgram 23	5.75	256.13
	1958	569	102.42	22	5.50	107.92
8. Cotton & Blackgram	1957	Cotton 25	9.00	Blackgram 46	11.50	20.50
	1958	76	27.36	12	3.50	20.86

Groundnut pods valued at Re. 0.18 per pound,
Cotton kapas valued at Re. 0.36 per pound,
Redgram valued at Re. 0.25 per pound,
Blackgram valued at Re. 0.25 per pound and
Sesbania valued at Re. 1.00 for 300 pounds.

TABLE IV

*Residual effects upon the succeeding Kuruwai paddy double crop lands
1957, 1958 summers*

	Grain yield expressed as pounds per acre		Grain yield expressed as % on control		Grain yield expressed as % on mean	
	1957	1958	1957	1958	1957	1958
1. Groundnut	1308	1161	80.7	97.7	96.5	103.1
2. Cotton	1182	1126	73.0	94.7	87.3	100.0
3. Blackgram	1303	887	84.1	74.7	100.6	78.8
4. Sesbania	1237	1019	76.4	85.7	91.3	90.5
5. Groundnut & Cotton	1374	1313	84.8	108.5	101.4	114.6
6. Groundnut & Redgram	1325	1188	81.8	100.0	97.8	105.5
7. Groundnut & Blackgram	1330	1104	82.1	92.9	98.2	98.0
8. Cotton & Blackgram	1450	1111	89.8	98.6	107.4	104.1
9. Fallow	1021	1188	100.0	100.0	119.6	105.5
Mean	1355	1126	83.6	94.8	100.0	100.0
"F" test	not satisfied		not satisfied		not satisfied	
Std. Error	122	118	7.52	9.93	8.99	10.48

Yield differences are not statistically significant.

The trend of results was practically identical in the single crop and double crop lands. Redgram was practically a complete failure. Sesbania came up well in the initial stages, but later on, its performance was not as good as was expected. In the case of cotton, blackgram and sesbania there were indications that with better irrigation facilities their performance would have been better, as was seen in the case of plants near the irrigation channels from which water was splashed into the plots. Groundnut was found to be the best among the crops tried and cotton and cotton-groundnut mixture were the next best.

Coming to the residual effects of these crops upon the following paddy crop, statistically significant difference were not noticed in the yields of paddy raised in the plots grown to the various crops though the yields from the plots grown to cotton and groundnut appeared better. In the single crop lands, in one year the groundnut plot gave the maximum yield followed by cotton plot and in two years cotton plot gave the maximum followed by groundnut or blackgram. In the double crop lands, the fallow plot gave the maximum yield followed by cotton and blackgram in one year and in the other year groundnut cotton mixture gave the maximum yield followed by fallowing and groundnut redgram mixture.

When the remunerative aspect of the problem is considered, groundnut has proved itself most paying in all the seasons the trial was conducted in, closely followed by cotton. But, as observed earlier in this note, cotton crop could do better if the facilities for irrigation could be improved upon, the obvious reason being the fact that the cotton plants get their nourishment from a greater depth than groundnut, which is a surface feeder. Blackgram, redgram and sesbania have proved themselves to be more or less complete failures.

Summary and Conclusions: The possibilities of taking crops like groundnut, cotton, redgram, blackgram and sesbania, alone or in combination, in the rice fallows, which extend over four months in the year, were studied. Of the various crops tried, groundnut and cotton, as pure crops as well as mixtures, were the best. Under the conditions prevalent in the area, groundnut was the better of the two. Indications were there to the effect that with a little better irrigation facility, the cotton crop would do better. Blackgram and redgram were not suitable for the conditions prevailing in the tract. Better performance of sesbania could be had with better irrigation facilities.

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