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EMPLOYMENT EFFECT OF CROP PRODUCTION -A CASE STUDY IN THANJAVUR DISTRICT, TAMIL NADU[1]

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ABSTRACT

The study attempts to evaluate the impact of different cropping patterns on men and women employment by farm size in Thanjavur district of Tamil Nadu. The study is based on primary data collected from 50 small farms and 10 big farms and the data relate to the period 1989-90. The study showed that the rice-rice-pulse cropping pattern used the maximum labour, both men and women, followed by sugarcane and rice-pulse-fallow. The results imply that increasing irrigation facility, consolidation of holdings and selection of cropping pattern and crop production practices will brighten employment prospects of both men and women in agriculture.

With increasing population, employment opportunities should increase rapidly, particularly outside agriculture, which is most unlikely atleast in the short/medium run. The agricultural sector also should somehow find ways and means to provide more employment to the teeming millions. It has been observed that agriculture is the mainstay of women employment and their dependency on agriculture is higher than that of males (Mukherjee, 1984). Any plan to increase the employment opportunities in agriculture should keep this fact in mind. To what extent agriculture can provide more employment to men and women is examined in the present study. Specifically the present study attempts to evaluate the impact of different cropping patterns on men and women employment, by farm size, in one of the agriculturally important districts of Tamil Nadu.

Methodology

The study pertains to the agricultural year 1989-90. Thanjavur, the study district, is a coastal district in Tamil Nadu, lying in the Cauvery deltaic region, with 84 per cent of the net sown area benefitting from assured irrigation. The

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data for the study were collected by survey method from a sample of 60 farms. The sampling procedure consisted of three stage stratified sampling with taluk as primary unit, Panchayat union as secondary unit and operational holding as tertiary unit. Thus, the villages Thirunageswaram and Sannapuram of Thiruvidaimaruthur taluk were selected. The sample consisted of 50 small farms (<2 ha) and 10 big farms (>2ha).

The cropping pattern of this district is decided by the water level and release from Mettur Dam which in turn is decided by south-west monsoon rains. The predominant cropping pattern in the study year was (i) rice-rice-pulse (June to April), (ii) rice-pulse-fallow (August to March) and (iii) sugarcane (February to February).

Results and Discussion

Pattern of labour use in different crops

The average labour utilisation per hectare under the different cropping patterns by farm size was computed. The labour use was expressed in person days which indicate male or female labour days. Rice cultivation was taken up in two seasons namely *kuruvai* (June-August) and *thaladi/sambha* (August/ September-December/January). *Kuruvai rice* was taken up on farms which had access to tubewell irrigation. Of recent, a shift from rice to sugarcane cultivation on farms with tubewell irrigation is reported. The pattern of labour use in different crops is presented in Table 1.

Kuruvai rice.

It can be seen from Table 1 that labour use per hectare of *kuruvai* rice was 168 person days on small farms and 185 person days on big farms. Of this, the female employment was 91 person days (54 per cent) on small farms and 103 person days on big farms (55 per cent). It was observed that land preparation and irrigation were done exclusively by male workers, while transplanting and weeding were done exclusively by female workers. Manuring, harvesting and threshing employed both male and female labourers though the share of male workers in these operations was higher. Harvesting was done on contractual basis, that is, one-tenth of the produce was given as wages in both farm size groups.

Thus it may be concluded that the big farms utilised more labour per hectare than small farms in all operations, the difference being statistically significant at 1 per cent level.

Thaladi rice

The total labour utilization per hectare of *Thaladi* crop was 141 person days of which the male workers' share was 62 person days (44 per cent) and

female workers' share was 79 person days (56 per cent) on the small farms. The big farms used 64 person days (43 per cent) of male workers and 83 person days (57 per cent) of female workers amounting to a total labour use of 147 person days. Though a medium duration crop, *Thaladi* rice used less men labour than *Kuruvai* mainly because of substitution of tubewell by canal irrigation and weedicide use instead of women labour use due to peak demand for women labour. Since harvesting was on contractual basis, the labour employment was about 10 person days lesser than that in *Kuruvai* rice. The average *Kuruvai* yield was 68 quintals per hectare while *Thaladi* yield was only 51 quintals per hectare mainly on account of the season and variety.

Sambha rice

The total labour use per hectare of *Sambha* rice was 143 person days on the small farms and 149 person days on the big farms. Small farms employed 72 person days (50 per cent) of men and 75 person days (50 per cent) of women. Thus, in *Sambha* rice both men and women labour participation was almost equal on both the farm size groups. Men labour displacement due to canal irrigation and women labour displacement due to weedicide use was observed in *Sambha* rice. In addition, the women labour employment in transplantation was less due to the spacing adopted (33 hills/m^2 in *Sambha* in contrast to 50 hills/m^2 in *Kuruvai* and *Thaladi*).

The total labour utilisation in rice in Thanjavur observed in this study was in conformation with observations made in other sutdies. Gangwar (1978) observed that more than 150 labourdays per hectare was utilised in rice production in Tamil Nadu. Aiyasamy *et al.* (1975) reported 136 mandays per hectare of labour utilisation in rice in Thanjavur. A study by Marothia and Sharma (1985) in the rice farming systems of Chattisgarh region of M.P. reported that labour utilisation was higher on the big farms than on the small farms. The plausible reason could be the greater labour efficiency on the small farms because of the family labour participation and close supervision in crop production. It was observed in the study that the number of family members working for the farm was, on an average, 2.5 on small farms and only 1 on big farms which suggests greater participation of family members in crop production on small farms. The family labour use efficiency measured as family labour income was higher on small farms in all the situations (Table 2). For instance, the percentage increase in family labour efficency on small farms over big farms was the highest in *Thaladi* rice (36 per cent) and the lowest in sugarcane (6 per cent).

Table 1: Composition of Male and Female Labour Used for Crop Production on Sample Farms (1989-90)

(Persondays per hectare)

Task/Labour	Kuruvai Rice				Thaladi Rice				Sambha Rice				Sugarcane			
	Small Farm		Big Farm		Small Farm		Big Farm		Small Farm		Big Farm		Small Farm		Big Farm	
Source	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%
Land preparation	16.50		15.86		19.68		19.92		19.25		20.07		13.12		8.86	
Male	27.75	100.00	29.33	100.00	27.75	100.00	29.33	100.00	27.44	100.00	29.85	100.00	40.14	100.00	25.94	100.00
Female	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	27.75	100.00	29.33	100.00	27.75	100.00	29.33	100.00	27.44	100.00	29.85	100.00	40.14	100.00	25.94	100.00
Planting	26.38		27.05		31.46		33.96		26.24		29.06		7.79		8.78	
Male	-	-	-	-	-	-	-	-	-	-	-	-	4.94	20.72	4.94	19.22
Female	44.36	100.00	50.02	100.00	44.36	100.00	50.02	100.00	37.40	100.00	42.23	100.00	18.90	79.28	20.75	80.78
Total	44.36	100.00	50.02	100.00	44.36	100.00	50.02	100.00	37.40	100.00	42.23	100.00	23.83	100.00	25.69	100.00
Irrigation	4.55		5.34										8.07		8.44	
Male	7.66	100.00	9.88	100.00	-	-	-	-	-	-	-	-	24.70	100.00	24.70	100.00
Female	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	7.66	100.00	9.88	100.00	-	-	-	-	-	-	-	-	24.70	100.00	24.70	100.00

Manuring		4.38		6.01		3.50		3.35		3.47		3.32		4.04		4.22
Male	4.57	60.69	6.18	55.58	4.94	100.00	4.94	100.00	4.94	100.00	4.94	100.00	7.41	60.00	7.41	60.00
Female	2.96	39.31	4.94	44.42	-	-	-	-	-	-	-	-	4.94	40.00	4.94	40.00
Total	7.53	100.00	11.12	100.00	4.94	100.00	4.94	100.00	4.94	100.00	4.94	100.00	12.35	100.00	12.35	100.00
Weeding		20.19		20.38		19.09		17.60		16.46		14.40		11.95		14.68
Male	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	33.96	100.00	37.67	100.00	26.92	100.00	25.93	100.00	23.47	100.00	21.42	100.00	36.56	100.00	42.98	100.00
Total	33.96	100.00	37.67	100.00	26.92	100.00	25.93	100.00	23.47	100.00	21.42	100.00	36.56	100.00	42.98	100.00
Interculture*														11.38		13.00
Male	-	-	-	-	-	-	-	-	-	-	-	-	34.83	100.00	38.04	13.00
Female	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.00
Total	-	-	-	-	-	-	-	-	-	-	-	-	34.83	100.00	38.04	100.00
Harvesting		27.90		25.37		26.27		25.16		34.58		33.15		43.65		50.47
Male	37.05	78.95	37.05	78.95	29.64	80.00	29.64	80.00	39.42	79.96	39.42	79.96	34.46	25.80	41.50	28.10
Female	9.88	21.05	9.88	21.05	7.41	20.00	7.41	20.00	9.88	20.04	9.88	20.04	99.12	74.20	106.20	71.90
Total	46.93	100.00	46.93	100.00	37.05	100.00	37.05	100.00	49.30	100.00	49.30	100.00	133.58	100.00	147.71	100.00
Total labour used		100.00		100.00		100.00		100.00		100.00		100.00		100.00		100.00
Male	77.03	45.80	82.44	44.57	62.33	44.20	63.91	43.40	71.80	50.37	74.21	49.88	146.46	47.87	117.83	40.26
Female	91.16	54.20	102.51	55.43	78.69	55.80	83.36	56.60	70.75	49.63	74.53	50.12	159.52	52.13	174.87	59.74
Total	168.19	100.00	184.95	100.00	141.02	100.00	147.27	100.00	142.55	100.00	148.74	100.00	306.00	100.00	292.70	100.00

* Ridge maintenance and cane tying.

Table 2: Family Labour Income* on Sample Farms, Thanjavur District, Tamil Nadu

(Rs. /ha)

Particulars	Farm size	
	Small	Big
Kuruvai	6194	5418
Thaladi	5122	3759
Sambha	5596	4814
Sugarcane	14038	13191

*Family labour income = Gross Income - Cost B

Labour use in different cropping patterns

Utilising the labour use data for individual crops, the labour use in different cropping patterns (one year cycle) adopted by the farms was computed and the results are presented in Table 3.

Rice-rice-pulse (Kuruvai-Thaladi-Pulse)

The total labour use per hectare under this cropping pattern was 334 person days on the small farms and 357 person days on the big farms. The small farms used 154 person days of men and 180 person days of women while the big farms used 161 person days of men and 196 person days of women.

Rice-Pulse-Fallow (Sambha-Pulse-Fallow)

The total labour utilisation in this cropping pattern was 168 person days on small farms of which male employment was 87 person days. The big farms used 175 person days of which men labour utilisation was 90 person days. Under this cropping pattern, the participation of women was lesser than that of men on both the farm size groups.

Sugarcane

The total labour utilisation per hectare of sugarcane was 306 person days on small farms and 293 person days on big farms. Men were employed for 146 person days and women for 160 person days on the small farms while the big farms employed 118 person days of men and 175 person days of women and the difference in the labour utilization per hectare was statistically significant at 1 per cent level. Land preparation used 40 person days of men on the small

farms while the big farms used only 26 person days. The t-test showed that the difference in the mean labour use was significant at 1 per cent level. This was mainly because of the mechanisation of the land preparation activity on the big farms. Men were employed mostly in land preparation, interculture and irrigation while women were employed mostly in planting, weeding and harvesting.

It was interesting to note that though women labour participation in rice harvesting was low, it was significant in sugarcane harvesting. Sugarcane is a recently introduced crop in this district which is fast replacing the traditional rice crops and the women had no inhibition in taking up the harvesting of sugarcane unlike rice cultivation which was practiced from times immemorial.

Conclusions

The present study shows that the rice-rice-pulse cropping pattern used the maximum labour, both men and women, followed by sugarcane and rice-pulse-fallow. It was observed that those farms which had access to tubewell irrigation as a supplement to canal irrigation adopted the rice-rice-pulse and sugarcane cropping patterns. Thus enhancement of irrigation facilities have resulted in the shift to labour intensive cropping patterns. The canal irrigated and weedicide used *Thaladi/Sambha* rice crops used less labour per hectare than *Kuruvai* rice which was irrigated by lift irrigation and weeded manually. In sugarcane production, the small farms used more labour per hectare because of the manual ridge formation for planting instead of mechanised ridge formation as on big farms. Thus selection of practices in crop production has a significant bearing on the labour employment. In rice and sugarcane production, the per hectare women labour employment was more than that of the men labour employment on both the farm size groups. The labour use per hectare on the big farms was higher than on the small farms for rice crops. However, family labour income per hectare was higher on small farms. This supports the hypothesis that farms employing family labour use labour more intensively than farms based exclusively on hired labour. However, the hypothesis was not tested in this study.

The results thus imply that increasing irrigation facilities, consolidation of holdings and selection of proper cropping pattern and crop production practices will brighten employment prospects for both men and women in agriculture.

Table 3: Composition of Male and Female Labour Used in Different Cropping Patterns (1989-90)

(Persondays per hectare)

Task/Labour source	Kuruvai-Thaladi-Pulse				Sambha-Pulse				Sugarcane			
	Small farm		Big farm		Small farm		Big farm		Small farm		Big farm	
	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%
Land preparation		16.61		16.42		16.38		17.08		13.12		8.86
Male	55.50	100.00	58.66	100.00	27.44	100.00	29.85	100.00	40.14	100.00	26.94	100.00
Female	-	-	-	-	-	-	-	-	-	-	-	-
Total	55.50	100.00	58.66	100.00	27.44	100.00	29.85	100.00	40.14	100.00	26.94	100.00
Sowing/Planting		26.85		28.29		22.92		25.31		7.79		8.78
Male	1.00	1.11	1.00	0.99	1.00	2.60	1.00	2.26	4.94	20.72	4.94	20.72
Female	88.72	98.89	100.04	99.01	37.40	97.40	43.23	97.74	18.90	79.28	20.75	80.78
Total	89.72	100.00	101.04	100.00	38.40	100.00	44.23	100.00	23.83	100.00	25.69	100.00
Irrigation		2.29		2.77						8.07		8.44
Male	7.66	100.00	9.88	100.00	-	-	-	-	24.70	100.00	24.70	100.00
Female	-	-	-	-	-	-	-	-	--	-	-	-
Total	7.66	100.00	9.88	100.00	-	-	-	-	24.70	100.00	24.70	100.00
Manuring		4.93		5.62		5.34		5.12		4.04		4.22
Male	13.51	82.03	15.12	75.37	8.94	100.00	8.94	100.00	7.41	60.00	7.41	60.00
Female	2.96	17.97	4.94	24.63	-	-	-	-	4.94	40.00	4.94	40.00
Total	16.47	100.00	20.06	100.00	8.94	100.00	8.94	100.00	12.35	100.00	12.35	100.00
Weeding		18.22		17.80		14.00		12.26		11.95		14.68
Male	-	-	-	-	-	-	-	-	-	-	-	-
Female	60.88	100.00	63.60	100.00	23.47	100.00	21.42	100.00	36.56	100.00	42.98	100.00
Total	60.88	100.00	63.60	100.00	23.47	100.00	21.42	100.00	36.56	100.00	42.98	100.00

Interculture*												
Male	-	-	-	-	-	-	-			11.38		13.00
Female	-	-	-	-	-	-			34.83	100.00	38.04	100.00
Total	-	-	-	-	-	-		-	-	-	-	-
							-		34.83	100.00	38.04	100.00
Harvesting		31.11		29.10		35.99		34.51		43.65		50.47
Male	76.69	73.76	76.69	73.76	49.42	81.96	49.42	81.96	34.46	25.80	41.50	28.10
Female	27.29	26.24	27.29	26.24	10.88	18.40	10.88	18.40	99.12	74.20	106.20	71.90
Total	103.98	100.00	103.98	100.00	60.30	100.00	60.30	100.00	133.58	100.00	147.71	100.00
Total labour used		100.00		100.00		100.00		100.00		100.00		100.00
Male	154.36	46.17	161.35	45.17	86.80	51.81	90.21	51.63	146.48	47.87	117.83	40.26
Female	179.89	53.83	195.87	54.83	80.75	48.19	84.53	48.37	159.52	52.13	174.87	59.74
Total	334.21	100.00	357.22	100.00	167.55	100.00	174.74	100.00	306.00	100.00	292.70	100.00

*Ridge maintenance and cane tying.

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