variables viz. community housing, farm size, population change, population density and soil quality did not show any significant impact on crop land price. The study further showed that the above variables explained 82 percent change in farmland price.

The most important policy options emanated from the present study are furnished hereunder.

i. As the soil characteristics viz. soil quality, soil depth, soil wetness etc. are significantly influencing the farmland prices, the outcome of the research findings can be used in deciding the level of subsidies [based on the extent of soil erosion damage and changes in the soil characteristics] be extended by the Government for conservation projects to make the farmers convinced about the conservation farming.

ii. Promulgating legislative measures and regulatory control to check the over exploitation and misuse of land resource will ease the problem of pressure on land, besides protecting the original and indestructive properties of the parent soil resource.

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INCOME AND EMPLOYMENT OF AGRICULTURAL LABOURERS IN TUTICORIN DISTRICT

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ABSTRACT

A study was conducted in Tuticorin district to analyse the income and employment pattern of agricultural labourers. The study indicated that the average annual employment per family was 494.25 mandays for males and 335.45 for females. Agriculture contributed a major share of 53.78 per cent of employment for males and 58.21 percent for females. The annual per capita employment for males in the study area was 268.83 mandays and for females it was 247.97 mandays. The average annual income per family was Rs. 22965.41, of which wage income accounted for 68.73 percent and non-farm income 22.78 percent. The mean annual per capita income was Rs. 7319.56.

KEY WORDS : Employment, mandays, per capita, respondents.

Farm productivity could be improved through optimum allocation of existing farm resources as well as through adoption of modern technologies. Among the various crucial inputs in agriculture, labour is an important one. The total workers in India has increased from 139.5 million in 1951 to 285.4 million in 1991, of which around 65 percent are agricultural labourers and cultivators, and they depends on agriculture. one of the biggest problem of agriculture labour has been their inability to organise themselves to bargain for their welfare (Barnala, 1977). In Tamil Nadu, the agricultural labour and cultivators constitute 69.4 percent of the total workers (13.6 million).

Labour markets in rural areas are narrow and often imperfect and exhibit inter and intra-regional

differences in employment, income and wages (Chandramohan, 1974). Labour scarcity at harvesting, sowing and other operations during peak seasons or intense farming activities and at the same time underemployment and unemployment of labourers during lean/off season is very common in rural areas (Padmanaban, 1983). The population explosion results in addition of more and more labour force to the labour market in one hand, at the same time there is widespread unemployment and underemployment both in agricultural and other sectors in the rural areas (Goyal, 1990).

MATERIALS AND METHODS

For the present study, Tuticorin district was selected purposively. In the first stage, based on the area under wetlands, one block namely Srivaikuntam was selected. Similarly, based on area under garden land, Kayathar block was selected. Again based on area under dry lands, Pudur block was selected. Thus totally three blocks representing three different production environments were selected. In the second stage, four villages were selected in each block having maximum area under the particular production environment. In the third stage, in each village, ten respondents were selected at random. Totally 120 respondents were selected through multi-stage random sampling technique.

The data for this study related to the agricultural year 1992- 93 and the study was conducted during April - May, 1993.

RESULTS AND DISCUSSION

EMPLOYMENT :

The annual employment per family in the study area is presented in Table 1. The average annual employment per family was 494.25 mandays for males and 335.45 mandays for females. Agriculture contributed 53.78 percent of employment to males, whereas for females it was 58.21 percent. allied activities of agriculture like dairy, poultry contributed 20.24 percent of male employment and 20.17 percent of female employment. Non-agricultural sectors contributed 25.98 percent of employment for males and 21.62 percent for females. The annual employment per family was highest in Pudur block with 509 mandays and 373.25 mandays for males and females and in Srivaikundam block the figures were 467.63 mandays for males and 292.88 mandays for females. The employment was highest in Pudur and Kayathar blocks becuase of higher

Table 1. Annual employment per family in the study area (mandays)

Name of the Village	Agriculture		Allied activity		Non-agriculture		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
Srivaikuntam block (wet)								
Pudukudi	370.50	150.00	75.00	45.50	31.00	55.00	476.50	250.50
Thirupuliangudi	305.00	200.00	95.00	50.00	50.00	25.00	450.00	275.50
Tholappanpannai	298.00	239.50	82.00	74.00	45.00	36.00	425.00	349.50
Ponnankuruchi	334.50	172.50	91.50	83.00	73.00	41.00	519.00	296.50
Mean	332.00	190.50	85.88	63.13	49.75	39.25	467.63	292.88
Kayathar block (Garden)								
Chettikuruchi	236.50	213.00	44.00	54.00	275.00	108.50	555.50	375.50
Therkukonarkottai	142.00	232.00	112.00	33.00	251.00	95.50	505.00	360.50
Rajapudukudi	208.00	241.50	83.00	23.00	218.00	85.50	509.00	350 00
Sannathapudukudi	216.00	187.00	66.00	37.00	173.00	51.00	455.00	275.00
Mean	200.63	218.38	76.25	36.75	229.25	85.13	506.13	340.25
Pudur block (dry)								
Kamarasithanpatti	308.00	119.50	120.50	105.50	152.00	125.00	580.50	350.00
Madharajapuram	277.00	194.00	175.50	85.00	123.00	96.00	575.50	375.00
Sethupuram	203.50	188.50	105.50	96.50	96.00	65.00	405.00	350.00
Pudur	264.75	176.88	138.00	103.13	106.25	93.25	509.00	373.25
Mean								
Overall mean	265.79	195.25	100.04	67.66	128.42	72.54	494.25	335.45
	(53.78)	(58.21)	(20.24)	(20.17)	(25.98)	(21.62)	(100 00)	(100 00)

Figures in parenthesis are percentages

non-farm activities and allied activities. Specifically, match industries, cutting fuelwood, making charcoal etc. offer more employment particularly to agricultural labourers and poor people.

Employment in agriculture was found to be highest in wet lands of Srivaikuntam block with 332 mandays for males and 190.50 mandays for females, obviously because of higher intensity of cropping due to assured irrigation. Agriculture employment was found to be lowest in Kayathar block (garden land areas) probably due to lower working population when compared to the Pudur block (dry areas). Allied activities provided highest employment in dry land areas of Pudur block with 138 mandays for males and 103.13 mandays for females. Non-agricultural activities offered greatest employment to the sample respondents in Kayathar block with 229.25 mandays for males and 85.13 mandays for females, followed by Pudur (106.25 mandays for males and 93.25 mandays for females) and Srivaikuntam blocks (49.75 mandays for males and 39.25 mandays for females).

The annual per capita employment in the sample households is presented in Table 2. The annual average per capita employment for males in the study area was 268.83 mandays and 247.97 mandays for females. For males, agriculture contributed 146.53 mandays (54.51 percent), allied activities 54.10 mandays (20.12 per cent) and non-farm sector provided 68.20 mandays (25.37 percent). Similarly, for females, share of agri culture was 58.85 percent (145.91 mandays), allied activities, 20.06 per cent (49.75 mandays) and non-farm activities 21.09 per cent (52.30 mandays). The per capita employment was highest in Pudur block with 257.44 mandays for males and 257.62 mandays for females followed by Srivaikuntam block with 278.88 mandays for males and 239.35 mandays for females.

Among the villages, Pudur has the highest employment with 548.57 mandays and the lowest employment was observed in Kumarasithanpatti with 482.31 mandays. Agricultural employment was found to be highest in wet land areas of Pudukudi (367.94 mandays), whereas the lowest was found in Kumarasithanpatti (216.95 mandays) probably due to lesser cropping activity.

Employment in allied activities was highest in Pudur with 168.85 mandays and lowest in Rajapudukudi with 62.54 mandays. Allied activities like dairy, poultry, digging wells etc.,

Table 2. Annual per capita employment in the study area (mandays)

Name of the Village	Agriculture		Allied activity		Non-agriculture		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
Srivaikuntam block (Wet)								
Pudukudi	217.94	150.00	44.12	45.50	18.24	55.00	280.30	250.50
Thirupuliangudi	190.63	166.66	59.38	41.66	31.25	20.83	281.25	229.17
Tholappanpannai	186.94	132.69	50.83	63.85	40.56	31.54	288.33	228.08
Ponnankuruchi	196.94	132.69	50.83	63.85	40.56	31.54	288.33	228.08
Mean	197.94	155.11	51.40	50.97	29.55	33.27	278.88	239.35
Kayathar block (Garden)								
Chettikuruchi	112.62	152.14	20.95	38.57	130.95	77.50	264.52	268.21
Therkukonarkottai	74.74	145.66	58.95	22.00	132.11	63.66	265.79	240.33
Rajapudukudi	115.55	172.50	46.11	16.43	121.11	61.07	282.77	250.00
Sannathapudukudi	127.06	155.83	38.82	30.83	101.76	42.50	267.65	229.16
Mean	107.49	158.78	41.21	26.96	121.48	64.18	270.18	246.93
Pudur block (Dry)								
Kamarasithanpatti	146.66	70.29	57.38	62.06	72.38	73.53	276.43	205.88
Madharajapuram	120.43	121.25	76.30	53.13	53.48	60.00	250.21	234.38
Sethupuram	127.19	157.08	65.94	80.42	60.00	54.16	253.13	291.66
Pudur	142.36	146.78	79.21	89.64	28.42	62.14	250.00	298.57
Mean	134.16	123.85	69.71	71.31	53.57	62.46	257.44	257.62
Overall mean	146.53	145.91	54.10	49.75	68.20	52.30	268.83	247.97
	(54.51)	(58.85)	(20.12)	(20.06)	(25.37)	(21.09)	(100.00)	(100.00)

Figures in parenthesis are percentages

were comparatively higher in Pudur block and it was lower in Kayathar block. Non farm employment was apparantely higher in Kayathar block (182.66 mandays) because of concentration of match works. Among the villages, chettikuruchi has the highest non farm employment with 208.45 mandays. The study indicated that agricultural employment was comparatively higher in wetland areas of Srivaikuntam block and employment in allied activities was higher in rainfed areas of Pudur block, while non farm employment was higher in Kayathar block.

INCOME

Annual income of the family in the study area is presented in Table 3. On an average, the total annual income per family was found to be Rs. 22965.41, of which the wage income accounted for Rs. 15783.75 (68.73 percent) followed by non-agricultural income Rs. 5231.66 (22.78 percent) and livestock income Rs. 1950.00 (8.49 percent). Among the blocks, the average total income per family was highest in Srivaikuntam block (Rs. 23537.50). Among the villages, the total income was highest in Pudukudi with Rs. 26325, whereas the lowest income was observed in Sethupuram (Rs. 18905). Regarding wage income, it was highest in Srivaikuntam (Rs. 18826.25) and among the villages it was highest in Ponnankuruchi with Rs. 20645, while the lowest was found in Therkukonarkottain with Rs. 10875.

The livestock income, was higher in Kayathar block (Rs. 2231.25). Among the villages, the livestock income was higher in Madharajapuram (Rs. 4050) and the lowest was in Sethupuram Rs. 725. With regard to non agricultural income it was higher in Kayathar block with Rs. 7762.50, mainly due to concentration of match works and non farm employment. The lowest income was recorded in the Srivaikuntam block. Among the villages the highest non farm income was found in Chettikuruchi (Rs. 9435) and the lowest in Thirupuliangudi (Rs.2225).

The Table 4 showes that the average per capita income was Rs. 7319.56 of which wage income share was 69.41 percent (Rs. 5080.85) followed by non farm income with 22.30 percent (Rs. 1631.95) and livestock income with 8.29 percent (Rs. 606.76). The total per capita income was highest in Srivaikuntam (Rs. 8140.07). Among the villages, the highest was in Pudukudi (Rs. 9750.01) and the lowest was in Madharajapuram (Rs. 6102.56).

Regarding wage income, the highest was observed in Srivaikuntam (Rs. 6489.68). Among the villages, highest wage income was observed in Pudukudi (Rs. 6796.30) and the lowest in Therkukonarkottai (Rs. 3198.53). With respect to

Table 3. Details on annual income per family in the study area

(Rs.)

Name of the Village	Wage Income	Livestock Income	Non-Agri Income	Total Income
Srivaikuntam block (wet)				
Pudukudi	18350.00	3425.00	4550.00	26325.00
Thirupuliangudi	16775.00	885.00	2225.00	19785.00
Tholappanpannai	19535.00	1215.00	2260.00	23010.00
Ponnankuruchi	20645.00	945.00	3440.00	25030.00
Mean	18826.25	1617.50	3118.75	23537.50
Kayathar block (Garden)				
Chettikuruchi	13625.00	2965.00	9435.00	26025.00
Therkukonarkottai	10875.00	2435.00	8640.00	21950.00
Rajapudukudi	14250.00	2115.00	7475.00	23840.00
Sannathapudukudi	12125.00	1410.00	5500.00	19035.00
Mean	12718.75	2231.25	7762.50	22712.50
Pudur block (dry)				
Kamarasithanpatti	15415.00	1275.00	6925.00	23650.00
Madharajapuram	14400.00	4050.00	5350.00	23800.00
Sethupuram	14750.00	725.00	3430.00	18905.00
Pudur	18625.00	1955.00	3550.00	24130.00
Mean	15806.25	2001.25	4813.75	22621.25
Overall mean	15783.75	1950.00	5231.66	22965.41
	(68.73)	(8.49)	(22.78)	(100.00)

Figures in parenthesis are percentages to total

Table 4. Annual per capita income details of workers (Rs.)

Name of the Village	Wage Income	Livestock Income	Non-Agri Income	Total Income
Srivaikuntam block (wet)				
Pudukudi	6796.30	1268.52	1685.19	9750.01
Thirupuliangudi	5991.07	316.07	794.64	7066.08
Tholappanpannai	6511.66	405.00	753.33	7670.00
Ponnankuruchi	6659.68	304.84	1109.77	8074.19
Mean	6489.68	573.61	1085.73	8140.07
Kayathar block (Garden)				
Chettikuruchi	3892.86	847.14	2695.71	7435.71
Therkukonarkottai	3198.53	716.18	2541.18	6455.88
Rajapudukudi	4453.13	660.94	2335.94	7450.00
Sannathapudukudi	3931.39	677.62	2367.35	6976.35
Mean	3931.39	677.62	2367.35	6976.35
Pudur block (dry)				
Kamarasithanpatti	4681.82	386.36	2098.48	7166.66
Madharajapuram	3692.31	1038.46	1371.79	6102.56
Sethupuram	5267.86	258.93	1225.00	6751.79
Pudur	5643.94	592.42	1075.76	7312.12
Mean	4821.48	569.04	1442.76	6833.28
Overall mean	5080.85	606.76	1631.95	7319.56
	(69.41)	(8.29)	(22.30)	(100.00)

Figures in parenthesis are percentages to total

livestock income, Kayathar block tops the list (Rs. 677.62). Among the villages, it was highest in Pudukudi with Rs. 1268.52 and the lowest was in Sethupuram with Rs. 258.93. The non agricultural income was highest in Kayathar block (Rs. 2367.35) due to more non farm activity and the lowest income was found in Srivaikuntam block (Rs. 1085.73). Among the villages, it was higher in Chettikuruchi (Rs. 2695.71) because of higher non farm activities like match works etc., and the lowest was found in Tholappanpannai (Rs. 753.33). The analysis on annual per capita income in the study area indicated that the non agricultural income was comparatively higher in Kayathar block due to more non-farm activities like match works.

CONCLUSION

The average annual employment per family was 494.25 mandays for males and 335.45 mandays for females. Agriculture contributed 53.78 percent of employment to males 58.21 percent for females, where as non- agricultural sector's contribution was 25.98 per cent for males and 21.62 percent for females. Agricultural employment was highest in Srivaikuntam block with 332 mandays for males and 190.50 mandays for females. Allied activities provided highest employment in Pudur with 138 mandays for males and 103.13 mandays for females. Non- agricultural sector employment was highest in Kayathar with 229.25 mandays for males and 85.13 mandays for females. The annual per capita employment for males in the study area was 268.83 mandays and it was 247.97 mandays for females.

On an average, the total annual income per family was found to be Rs. 22965.41 of which the wage income accounted for 68.73 percent, non-agricultural income 22.78 percent and livestock income 8.49 percent. The average total income was highest in Srivaikuntam block. Among the villages, the total income was highest in Pudukudi with Rs. 26325 and the lowest income was in Sethupuram with Rs. 18905. The livestock income was highest in Kayathar block (Rs. 2231.25).

The average annual per capita income of the sample respondents in the study area was found to be Rs. 7319.56 of which the share of agricultural income was 69.41 percent, non farm income 22.30 percent and livestock income 8.27 percent. Annual per capita income was highest in Pudukudi with Rs. 9750.01 and lowest in Madharajapuram with Rs. 6102.56. The wage income was highest in Srivaikuntam and livestock income was highest in Kayathar block. This analysis on income showed that non-agricultural income was highest in Kayathar which was due to concentration of match works.

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INPUT USE EFFICIENCY IN PADDY WITH SPECIAL REFERENCE TO WATER - A TRANSLOG PRODUCTION FUNCTION APPROACH

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ABSTRACT

A study conducted in Krishnagiri Reservoir Project (KRP) in Tamil Nadu indicated that the water use efficiency in Navarai paddy was the highest in tail region with 32.85 kg/ha cm of water, followed by middle and head regions. Translog production functions were employed for each region to analyse the input use efficiency. The results clearly showed that labour and irrigation water were overused in the ayacut area whereas the inorganic fertilizers were underutilised and there is scope for increasing the productivity of navarai paddy through rational use of these scarce resources.

KEY WORDS : Translog, marginal product, elasticity, efficiency

Water is one of the crucial input in agriculture which is tending to become more scarce and costlier. The availability of water resource is getting fastly depleted, so conservation and efficient use of water have assumed greater importance. Evaluation of public irrigation system have shown that the benefits have declined due to many reasons like neglected maintenance and inefficient operation. (Anagol, 1969). Mitra (1984) observed that the factors contributing for the low efficiency of irrigation projects are inadequate project planning, excessive use of water, wastage of water, lack of conjuctive use of surface and ground water, inefficient distribution system and lack of infrastructural facilities.

The national average production of foodgrains per ha of irrigated land is around 1.7 tonnes as against 0.7 tonnes per ha of unirrigated rainfed land. The rate of food production could be increased by about 2.5 times, if modernisation of the existing irrigation projects, improvement of on-farm development works, adoption of improved agronomic practice, followed by optimum water-land management techniques are undertaken (Mistry, 1987). To attain the increased production level, one specific area is increasing the productivity through efficient utilisation of critical inputs like fertilizer, water, etc. In this context, a study was conducted in Krishnagiri Reservoir Project (KRP) in Dharmapuri district, Tamil Nadu, with the specific objective to analyse the water use efficiency of Navarai Paddy (Nov-Apr) in the ayacut area.

MATERIALS AND METHODS

Multi stage sampling procedure was adopted for the study. In the first stage the ayacut area served by two main canals namely Right Main Canal (RMC) and Left Main Canal (LMC) were selected. At the second stage, based on the discussion with the KRP authorities, and total length of these canals, three regions namely head, middle and tail were selected. In the third stage, two revenue villages in each of the three regions in each canal were selected. At the fourth stage, the farmer-respondents in each village were listed out from the ayacut register / revenue records available, and ten respondents were selected in each village and thus a total sample of 120 respondents were selected at random and interviewed during 1991.

The collected data were subjected to percentage analysis and translog production