GLOBALISATION AND LOSS OF EMPLOYMENT OF WOMEN: A CASE STUDY OF NELLORE DISTRICT, ANDHRA PRADESH

(Final Report Submitted to Dept. of Women & Child Development, Ministry of HRD, Govt. of India, New Delhi)

December 2004

DR. ALEX GEORGE PH. D

Centre for Health and Social Sector Studies

6/8, Shiv Arun Colony, West Marredpally, Secunderabad- 500 026, AP, India

Tel. 91 - 40 – 27702411, Fax 27709290, Email: alxgeorge@yahoo.com

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DR. ALEX GEORGE PH. D

Assisted by:

K.C. JAYMON

M.MOHAMMED RAFI

Centre for Health and Social Sector Studies

6/8, Shiv Arun Colony, West Marredpally, Secunderabad- 500 026, AP, India

Tel. 91 - 40 – 27702411, Fax 27709290, Email: alxgeorge@yahoo.com

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EXECUTIVE SUMMARY

A shift from the cultivation of rice and cereals to commercial crops and aquaculture aimed at the global market and to some extent the internal market, is taking place in various parts of Andhra Pradesh (AP). Nellore district presents a typical case where all these different but related shifts can be studied. The mandals of Indukurpeta, T.P. Gudur, Kovur, Buchireddypalem, Venkatachalam, Vidavalur, Allur and Kodavalur show strong presence of Aquaculture, where large tracts of land, which were previously under rice cultivation, have been converted into prawn farms, leading to serious ecological problems as well. In the mandals of Vinjamur, Kaligiri, Jaladanki and Balayapalle, horticulture has come up in the place of rice and millets, which were cultivated before. Similarly in Buchireddypalem mandal there is a shift to floriculture, which is also aimed at wider markets. These shifts in cultivation from rice and other cereals, which are more labour intensive to other less labour absorbing forms of cultivation such as prawn farming, mango cultivation and Floriculture, are robbing women of their traditional occupation.

Cereal cultivation particularly that of rice consumed considerable amount of female labour for activities such as transplanting, weeding and harvesting. However, the extent of this loss of employment of women have not been documented and analysed systematically, though several activists from Nellore and other districts in A.P had noticed this phenomenon. The present study aims at documenting the extent of the shift to aquaculture, horticulture and floriculture in terms of number of days of employment lost to women in systematically selected mandals of Nellore district. Nellore being quite typical of this shift and the consequent reduction in employment to women will serve as a valid sample for the state of A.P, to study the impact of commercial cultivation for the global market on women.

This survey-based study is conducted in six mandals of Nellore district, where the shift in cultivation from paddy to aquaculture, horticulture and floriculture is being experienced. Three mandals were selected from the area where aquaculture was increasingly replacing paddy cultivation, two mandals from areas where horticulture was becoming prominent and one mandal where floriculture was considerable. From each selected mandal, one village with maximum shift to aquaculture, horticulture or floriculture respectively and one village with minimum shift were taken for the survey.

The study covered 100 women labourers in 12 villages in six mandals; thus 1200 women labourers in total. The sample mandals and villages were selected based on discussions with activists in Nellore district during a preparatory visit to the district. Women labourers interviewed for the study were identified using the data of labour households collected as part of a survey of Below Poverty Line (BPL) households conducted by the District Poverty Initiative Project (DPIP), popularly known in Telugu as *Velugu (Light)* project.

A questionnaire with sections on Socio-economic Profile of Households, Employment situation before and after the shift in cultivation and Social, economic and environmental impacts of the shift was formulated. The last seven days prior to the interview was taken as one of the two reference periods, because it was a short recall period, which would help the respondents to recollect and give relatively accurate information. We refer to these seven days in this report as

the *reference week*. This part of our methodology is an adaptation of the current weekly status approach used in the *Rural Labour Enquiry* of *NSS 50th Round 1993-94 (Labour Bureau 1999)*. Information on number of days worked during last 30 days was also collected, which is referred to in this report as the reference month. The number of days worked during a one month period in the same season before the shift in cultivation started was also collected. This gave us an idea about the magnitude of employment loss. Here we did not resort to weekly comparison with the pre-shift period as it would not have been possible for people to recollect on the number days employment for the exactly comparable week before the shift took place.

The questionnaire was translated to Telugu. Investigators were trained by the researchers, and the activists from Nellore, who were aware of the problems caused by shift in cultivation. A detailed interview guideline was prepared and distributed among the investigators. Before starting data collection for the study, each investigator conducted at least 5 interviews in villages, which were not part of the sample. There were all together 13 investigators; among them 10 women and three men. CHSSS researchers were continuously on the field during the fieldwork, accompanying the investigators, doing sample checking and ensuring the quality of data.

Background Characteristics of Women Labourers

Women labourers from 15-30 age group constituted 58% of the sample, while 37% of respondents were women of 31-45 age group. Five percent of respondents were from 46-60 years age group. The mean age of the respondents was 31.29 years, very much on the younger and more productive side. Forty five percent of the sample consisted of Scheduled Castes (SC). Backward Castes (BC) constituted 29%, while Scheduled Tribes (ST) was 24% of the sample. The correspondence between caste and class is obvious here as 74% of the labouring class, which this study is concerned with, does belong to either Scheduled Castes or Backward Castes. Another quarter of the sample belongs to the equally poor Scheduled Tribes also. The low percentage of Other Castes (OC) i.e. 2% in the sample denotes the generally higher economic status of these castes because of which most of them do not belong to the labouring class, who are covered in this study. The literacy rate among interviewed women labourers was very low. Out of 1200 respondents 75% (901) were illiterates. Ten percent of them had middle school education, and another 8% had primary education.

Shift in Area of Crops Cultivated and Period of Shift

The major shift to aquaculture and the new crops have taken place in the 1990s. Shift to aqua farming started in early nineties and continued on a large scale in the mid nineties as well. Crops like Lime, Sapota, Guava and Mango were prevalent in villages before 1980, but large scale shift to horticulture had taken place during 1990-1994 and 1995-99. These years also matches with the land utilisation figures with the district administration.

The total area of decline in rice cultivation under Kharif in the six mandals was 34620 acres**.** In Rabi it was 16141 acres. This amounts to a percentage decline to the tune of 85% in Kharif, and 28% in Rabi. There is an increase in area under aquaculture in the four mandals of Indukurpeta, TP Gudur, Venkatachalam and Buchireddypalem. The total area brought under aquaculture in the study area in 1994-95 was only 5541 acres. In 2003-04 it rose to 20933 acres. This amounts to a percentage increase of 73.5% by 2003-04.

Loss of Women's Employment

Considering that the estimation of employment by women respondents for a period several years before is prone with problems of recall and a possible overestimation to present the severity of their present condition, the figures of employment stated by women before the shift cannot be accepted at its face value. But the figures given for rice of 22 days employment a month may be closer to reality as it is given by as high as 1067 of the 1200 respondents. On the basis of the number of days employment in rice cultivation before and after the shift given by the overwhelming majority of respondents, and considering the fact that rice was the principal crop before the shift, it can be estimated that there is a total employment loss of around 12.95 days in rice cultivation alone. On the whole there is an employment loss of 10.89 days a month, which is not compensated by aquaculture and floriculture.

There are several labour requiring processes in rice cultivation, which are not present in other crops and aquaculture. While a very high 71%, 69% and 58% of respondents mentioned that they engaged in weeding, transplanting and harvesting in rice fields, there fewer labour absorbing processes in aquaculture, horticulture and floriculture and their level of absorption was also far less compared to rice.

Present Status of Women's Employment in Various Crops

Women on an average got only 3.29 days of work in a week and 10.85 days of work in a month. The fieldwork was conducted during March – April, 2004. As the monthly days they worked is less than the four week multiple of the weekly days they worked, it shows the irregularity in their employment.

With 53% of the women working in the reference month having worked as rice labourers, rice continues to be the major labour providing crop. But the number of days they worked as rice labourers is only 9.05% considering that according to women rice used to give as high as 22 days of employment before the shift in cultivation to aquaculture, horticulture and floriculture.

Only 13% of women worked in aqua farms during the reference week. Though this increased slightly to 15 % for the longer reference period of the month, it is clear that in terms of number of women employed and in terms of number of days employment they get; aquaculture has not provided any improvement over paddy. The number of days women were employed in aqua-farms in the reference week was only 3.58 and just 9.67 during the reference month.

Horticulture also gave employment to only 15% of women during the reference week and 18.5% in the reference month. The mean number of days women worked in the reference week was 3.36 and in the reference month 8.26.

Floriculture is a minor employment provider, which employed only 6% of women in the reference week and eight percent in the reference month. It is concentrated only in a few villages.

In addition to the shift in cultivation from paddy to aquaculture, horticulture and floriculture, the introduction of harvesting machines in some villages has virtually replaced human hands from harvesting. Women are the main sufferers here also.

Women's Wages in Various Crops

It is important to note that the wages of women in rice, aquaculture and horticulture do not show any major difference. The daily wage for women in rice cultivation was Rs. 30.27, in aqua-culture a slightly less Rs. 28.92 and Rs. 26.49 in horticulture. The mean daily wage in floriculture was extremely low at just Rs. 18.43. This indicates that the new crops have not only reduced employment but has in no way helped in pushing up the wages.

Social, Economic, Environmental Impacts of Shift in Cultivation

In addition to loss of employment indebtedness also appears to have increased due to the shift in cultivation. Sixty percent of respondents are indebted now as compared to only 28% before the shift.

We don't seem to have got full information on families sending children for work. This could partly be due to family prestige and the state Government's campaign against the practice. However of the 51 women who said children from their families were working as high as 69% mentioned that it was due to poverty that they were doing so.

Majority of respondents have observed that drinking water has been affected due to the seepage of saline water from the aqua farms to the drinking water tanks and wells. Part of the respondents have also mentioned health problems such as skin diseases, frequent cold, cough & fever, swelling and pain on the legs as being caused by their exposure to aqua farms.

A section of the respondents are also aware that cultivation in the paddy fields near those converted as aqua farms are also affected due to salination.

Recommendations

A series of advocacy and awareness building programme for the various stakeholders related to the issue of loss of employment of women and other related adverse effects of the massive shift in cultivation, should be undertaken so that a consensus solution to reverse the present trends in this regard can be evolved.

The state and district level workshops of the officials from Department of Rural Development, Women and Child Development, Labour, Agriculture and Environment, network NGO's/ CBOs, Environmental activists, Farmers, Labour Union leaders, Labourers, Human rights activists, Members of Women's Groups, literary writers and media persons should be conducted as part of the advocacy effort in this direction.

At the village level, awareness building programes should be conducted for labourers as well as farmers to exert pressure from below and evolve an innovative consensus. Modern as well as traditional media should be utilised in this awareness building activity.

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I- INTRODUCTION & METHODOLOGY

1.1 Background of the Study

A shift from the cultivation of rice and cereals to commercial crops and aquaculture aimed at the global market and to some extent the internal market, is taking place in various parts of Andhra Pradesh (AP). Nellore district presents a typical case where all these different but related shifts can be studied. The mandals of Indukurpeta, T.P. Gudur, Kovur, Buchireddypalem, Venkatachalam, Vidavalur, Allur and Kodavalur show strong presence of Aquaculture, where large tracts of land, which were previously under rice cultivation, have been converted into prawn farms, leading to serious ecological problems as well. In the mandals of Vinjamur, Kaligiri, Jaladanki and Balayapalle, horticulture has come up in the place of rice and millets, which were cultivated before. Similarly in Buchireddypalem mandal there is a shift to floriculture, which is also aimed at wider markets. These shifts in cultivation from rice and other cereals, which are more labour intensive to other less labour absorbing forms of cultivation such as prawn farming, mango cultivation and Floriculture, are robbing women of their traditional occupation.

Cereal cultivation particularly that of rice consumed considerable amount of female labour for activities such as transplanting, weeding and harvesting. In addition women also used to get paid in kind for harvesting, thus providing a certain amount of rice to protect themselves and their families from buying rice in the open market. On the contrary prawn farming, horticulture and floriculture require much less of labour particularly female labour. There are fewer labour consuming processes in these forms of cultivation, thus eroding the employment opportunities of women in a big way. In addition the hedge, which women used to get for the lean period in terms of payment in kind for the harvesting was also lost to them. However, the extent of this loss of employment of women have not been documented and analysed systematically, though several activists from Nellore and other districts in A.P had noticed this phenomenon. The present study aims at documenting the extent of the shift to aquaculture, horticulture and floriculture in terms of number of days of employment lost to women in systematically selected mandals of Nellore district. Nellore being quite typical of this shift and

the consequent reduction in employment to women will serve as a valid sample for the state of A.P, to study the impact of commercial cultivation for the global market on women.

According to **"*Census of India 2001,*** the percentage of **Female Main Workers** in the rural area of Nellore district, decreased **from 33.9 in 1991 to 25.3 in 2001 Census,** which is nearly 9%. Details of this decrease in female main workers at the *mandal* level are shown in Table 1 below. Among the mandals already mentioned where aquaculture, horticulture, floriculture had shown considerable presence, only two mandals showed any increase in the percentage of female main workers.

Table 1: Percentage of Rural Female Main Workers in Rural Female Population in the Mandals of Nellore District where Aquaculture, Horticulture and Floriculture is substantial

District/Sandals	Main Workers in Rural Area (Females)	
	1991	2001
District- Nellore	**33.9**	**25.3**
Jaladanki	41.3	32.1
Kaligiri	34.7	44.1
Vinjamur	26.9	34.3
Allur	43.8	35.9
Vidavalur	44.9	27.6
Kodavalur	36.7	33.6
Buchireddypalem	32.3	22.7
Kovur	36.0	23.3
Indukurpet	39.2	25.7
Thotapalligudur	43.9	30.2
Venkatachalam	41.4	23.2
Balayapalle	28.3	28.6

Source: *Census of India 1991- Andhra Pradesh, District Census Handbook- Nellore, pp 160-177 and Census of India 2001, Provisional Population Totals- Distribution of Workers and Non- workers, pp 324-332.*

The ***Season & Crop Report of Andhra Pradesh 2000 - 2001***, published by Directorate of Economics & Statistics**,** Govt. of Andhra Pradesh, gives information on the area of rice fields converted to produce commercial crops for the global and national markets. According to this report the average area under rice cultivation in Nellore district during the last five years was 61.1 percentage, which has reduced to 57.4 in 2000-2001. It is also possible that the major shift in the area of cultivation due to aquaculture is not getting adequately reported.

1.2 Selection of Mandals, Villages and Women Labourers

This survey-based study was conducted in six mandals of Nellore district, where the shift in cultivation from paddy to aquaculture, horticulture and floriculture is being experienced. Three mandals were selected from the area where aquaculture was increasingly replacing paddy cultivation, two mandals from areas where horticulture had become prominent and one mandal from where floriculture was considerable. From each selected mandal, one village with maximum shift to aquaculture, horticulture or floriculture respectively and one village with minimum shift were taken for the survey. Thus the study covered 12 villages in six mandals (Table 2). These sample mandals and villages were selected based on discussions with activists in Nellore district during a preparatory visit to the district.

Table 2: Name of the Selected Mandals, Villages and Number of Respondents Interviewed

Sr. No.	Name of the selected Mandals	Name of the selected villages with High (H) and Low (L) shift	No. of women labourers interviewed
Mandals with shift to Aquaculture			
1	Indukurpet	Kuditapalem (H)	100
		Ramudupalem (L)	100
2	Thotapally Gudur	Thotapalli (H)	100
		Kodur II (L)	100
3	Venkatachalam	Epur II (H)	100
		Kanupur I (L)	100
Mandals with shift to Horticulture			
1	Vinjamur	Vinjamur (H)	100
		Katepalli (L)	100
2	Balayapally	Nindali (H)	100
		Votlapalli (L)	100
Mandals with shift to Floriculture			
1	Buchireddy palem	Rebala (H)	100
		Srirangarajapuram (L)	100
Total	**6**	**12**	**1200**

All together 1200 women labourers in the 15-60 age group, which corresponds to the working age group, were selected and interviewed for the study using an interview schedule. This sample was divided equally in all the sample villages. Thus 100 women of the above mentioned age group were interviewed in every village. Women labourers were identified using the data of labour households collected and maintained as part of a survey of Below Poverty Line (BPL) households conducted by the District Poverty Initiative Project (DPIP), popularly known

in Telugu as *Velugu (Light)*. The DPIP data of labour households for each selected village was divided by 100, which is the quota for a sample village and the 'Nth' household was selected for interview. Only one woman was interviewed in each such household.

1.3 Interview Schedule

Interview schedule was prepared in English and translated in to Telugu. The schedule consists of questions on socio-economic profile of women labourers, type of employment: current and before the shift in cultivation, information on types of crops cultivated currently and before the shift in cultivation, number of days now working in a week and a month and number of days worked before the shift in cultivation took place. It also contains questions on the economic, social, environmental and familial impact of loss of employment on women.

The last seven days prior to the interview was taken as one of the two reference periods, because it was a short recall period, which would help the respondents to recollect and give relatively accurate information. We refer to these seven days in this report as the *reference week*. This part of our methodology is an adaptation of the current weekly status approach used in the *Rural Labour Enquiry* of *NSS 50th Round 1993-94 (Labour Bureau 1999)*. Information on number of days worked during last 30 days was also collected, which is referred to in this report as the reference month. The number of days worked during a one month period in the same season before the shift in cultivation started was also collected. This gave us an idea about the magnitude of employment loss. Here we did not resort to weekly comparison with the pre-shift period as it would not have been possible for people to recollect on the number days employment for the exactly comparable week before the shift took place.

1.4 Recruitment, Training of Investigators and Organisation of Fieldwork

The fieldwork of the survey was conducted from 21st March to 7th April 2004. Researchers from CHSSS and senior activists of JVV trained the investigators properly with in house and on field methods. A detailed interview guideline was prepared and distributed among the investigators. Before starting data collection for the study, each investigator conducted at least 5 interviews in villages, which were not part of the sample. There were all together 13 investigators; among them 10 women and three men. All of them were activists of the Community Based Organisation (CBO) called Jana Vignana Vedika (JVV), which became

famous due to their involvement in the Total Literacy Campaign (TLC). CHSSS researchers were continuously on the field during the fieldwork, accompanying the investigators, doing sample checking and ensuring the quality of data. The commitment of the investigators from JVV itself has gone a long way in ensuring data quality.

1.5 Data Processing and Report Writing

After a thorough checking and editing of the data, it was coded for electronic data processing. The edited and coded data was entered in MS Excel Worksheet and subsequently converted into SPSS format (Statistical Package for Social Sciences) for analysis. Frequency distribution of few variables was taken to find out the pattern of distribution. Later an analytical format was prepared and data analysis was done in SPSS.

II - DEMOGRAPHIC INFORMATION ON WOMEN LABOURERS

2.1 Background Characteristics of Women Labourers

This section gives a brief description of the selected characteristics of the sample population, which has a bearing on various aspects of this study. These socio economic variables bring out the representation of our sample among the various social groups in the project area.

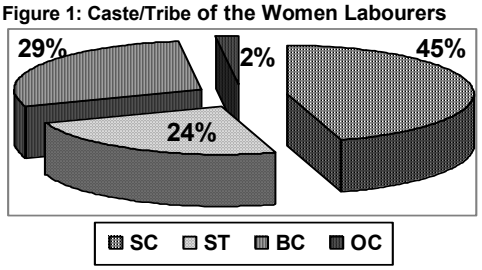
2.1.1 Age and Marital Status of the Women Labourers

Women labourers from 15-30 age group constituted 58% of the sample, while 37% of respondents were women of 31-45 age group. Five percent of respondents were from 46-60 years age group. The mean age of the respondents was 31.29 years, very much on the younger and more productive side (Table3). As high as 89% of the women labourers were married, while 2.5% were unmarried. Around 8% of the women labourers were widows and 0.8% had either divorced or separated (Table 4).

2.1.2 Tribe/Caste and Religion of Women Labourers

Forty five percent of the sample consisted of Scheduled Castes (SC). Backward Castes (BC) constituted 29%, while Scheduled Tribes (ST) was 24% of the sample. The correspondence between caste and class is obvious here as 74% of the labouring class, which this study is concerned with, does belong to either Scheduled Castes or Backward Castes. Another quarter of the sample belongs to the equally poor Scheduled Tribes also. The low percentage of Other Castes (OC) i.e. 2% in the sample denotes the generally higher economic status of these castes because of which most of them do not belong to the labouring class, who are covered in this study (Table 5 & Figure 1).

Figure 1: Caste/Tribe of the Women Labourers



Out of 1200 women labourers Hindus constituted 93% of the sample, which reflects their very high presence in the general population. Muslims and Christians constituted 4.4% and 2.8% of the sample respectively (Table 6).

2.1.3 Education of Women Labourers and Education of the Highest Educated Person in Family

The literacy rate among interviewed women labourers was very low. Out of 1200 respondents 75% (901) were illiterates. Ten percent of them had middle school education, and another 8% had primary education (Table 7).

Data on the educational status of highest educated person from the women labourers' families was collected to know the level of education of families. Out of 1200 women labourer families 18.3% reported that the highest educated person in their families were educated between I-IV classes, while 28% and 22% of women labourers mentioned between V-VII and VIII-X classes respectively. In 68.5% of families highest educated person had school education at various levels. A section of 5.3% families had members who studied up to Intermediate or ITI. Only 2.2% of members' families had members who had Graduation. A very small 0.4% had Post Graduates and professionals. A little over 23% were completely illiterate with no educated person (Table 8).

2.1.4 Type of House Ownership

Among the 1200 women labourers 97% were living in their own houses. Rest 3% of respondents were living in rented houses. More than half i.e. 54.2% of respondents had palm leaves for their house roofs. Palm leaves are readily available in Nellore and it is the traditional roofing material, which is used by poor people in the area. A section of 40.8% respondents had concrete slab, some of these houses were constructed under various Government schemes. Another 4.2% were living in asbestos roofed houses. A very small 0.6% and 0.3% of respondents had tiles and bamboo stick roofs respectively (Tables 9 & 10).

Table 3: Mean Age of the Women Labourers

Age of the women labourers	N= 1200	
Mean Age of the Respondents Mean in Years	31.29	
Range in Years	15-60	
Distribution of Age in class interval	**N = 1200**	**%**
15-30	699	58.3%
31-45	442	36.8%
46-60	59	4.9%
Total	1200	100%

Table 4: Marital Status of the Women Labourers

Marital status	N=1200	%
Single	30	2.5%
Married	1068	89.0%
Widow	92	7.7%
Divorce/separated	10	.8%
Total	1200	100.0%

Table 5: Caste/Tribe of the Women Labourers

Caste/ Tribe	N=1200	%
Scheduled Castes	542	45.2%
Schedules Tribes	291	24.3%
Backward Castes	343	28.6%
Other Castes	24	2.0%
Total	1200	100.0%

Table 6: Religion of the Women Labourers

Religion	N=1200	%
Hindu	1114	92.8%
Muslim	53	4.4%
Christian	33	2.8%
Total	1200	100.0%

Table 7: Education of the Women Labourers

Educational level	N=1200	%
I –IV classes	96	8.0%
V – VII classes	123	10.3%
VIII – X classes	32	2.7%
Intermediate or ITI	3	.3%
Graduation	1	.1%
Aksharadeepam/ Sankranthi	44	3.7%
Illiterate	901	75.1%
Total	1200	100.0%

Table 8: Educational Status of Highest Educated Person in Respondent's Family

	N=1200	Col %
Between I – IV classes	220	18.3%
Between V – VII classes	337	28.1%
Between VIII – X classes	265	22.1%
Intermediate or ITI	63	5.3%
Graduation	26	2.2%
Post Graduation	5	.4%
Professional	2	.2%
Akshra deepam/sankranti	6	.5%
Illiterate	276	23.0%
Total	1200	100.0%

Table 9: Type of House Ownership

	N-1200	%
Own house	1163	96.9%
Rented house	37	3.1%
Total	1200	100.0%

Table 10: Type of House Roof of Women Labourers

	N=1200	%
Asbestos	50	4.2%
Concrete slab	490	40.8%
Tiles	7	.6%
Leaves	650	54.2%
Bamboo Sticks	3	.3%
Total	1200	100.0%

III- SHIFT IN CROPS CULTIVATED AND ITS IMPACT ON WOMEN' S EMPLOYMENT

3.1 Area Under Various Crops

We have taken 1994-95 as cut off point to calculate the shift from rice cultivation to aquaculture and other crops. This year was also expressed as the year of beginning of major shift by our respondents (Table 21). When we looked into the available records on land utilization we could find that this was the earliest year in the near past for which the State Government was having data for land utilization. This data was maintained for each individual crop. As that list is too long and therefore not amenable for analysis we have grouped that data on land utilisation into the following heads, viz., Rice, Non Rice Cereals (which include, Bajara, Maize, Ragi and Jowar), Aquaculture, Horticulture (including, Red gram, Green gram, Sesamum, Groundnut, Turmeric, Blackgram, Chillies, Vegetables, Onion, Bengal gram, Horse gram, Cow gram, Sa flower and Fruits), Floriculture (consisting of flowers and aromatic plants) and other Commercial Crops (comprising Sunflower, Cotton, Sugarcane, Tobacco, Coconut, Betal leaf, Eucalyptus, Fodder crops and Survi.)

This analysis revealed that there is a major decline in the area of rice cultivation between 1994-95 and 2003-2004 in all the six mandals where we conducted the study. The only exception is Venjamur where there is a small increase of 452 acres in rice cultivation that too only in the Kharif season. In Rabi season the decline in area is found in this mandal also. *The total area of decline in rice cultivation under Kharif in the six mandals was 34620 acres. In Rabi it was 16141 acres*. This amounts to a percentage *decline to the tune of 85% in Kharif, and 28% in Rabi.* There is an increase in area under aquaculture in the four mandals of Indukurpeta, TP Gudur, Venkatachalam and Buchireddypalem. The total area brought under aquaculture in the study area in 1994-95 was only 5541 acres. In 2003-04 it rose to 20933 acres. *This amounts to a percentage increase of 73.5% by 2003-04.* In the case of aquaculture even though the data is maintained by the Govt. by the two seasons, it does not really mean much as once a paddy field is converted into an aqua farm it cannot be shifted back to rice or other crops on a seasonal basis (Tables 11, 12, 13 and Figures 2, 3 and 4).

Figure 2: Land Utilisation in Nellore Under Various Crops During 1994-95(In acres)

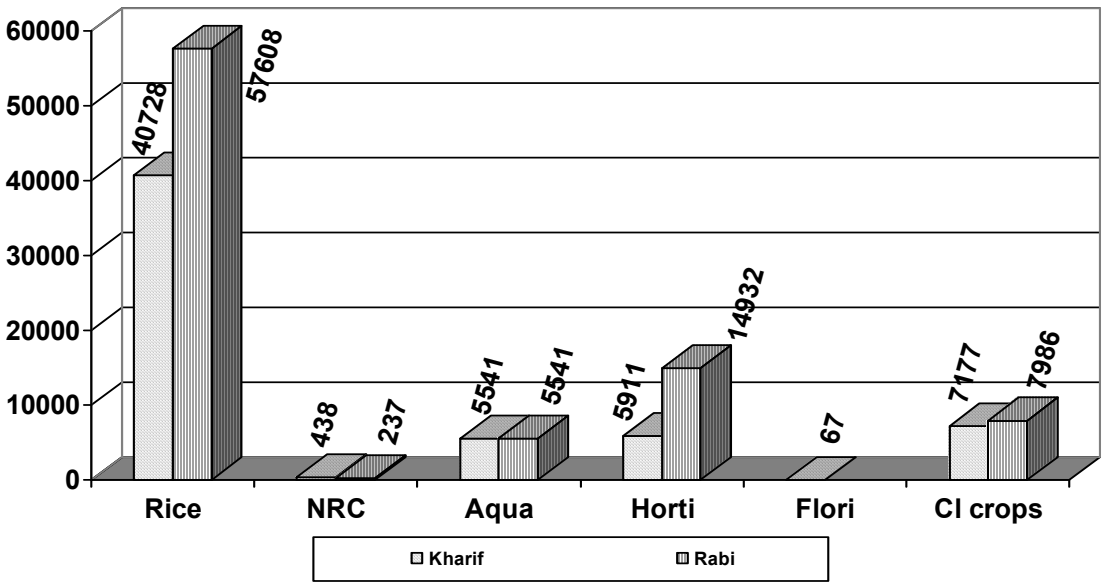
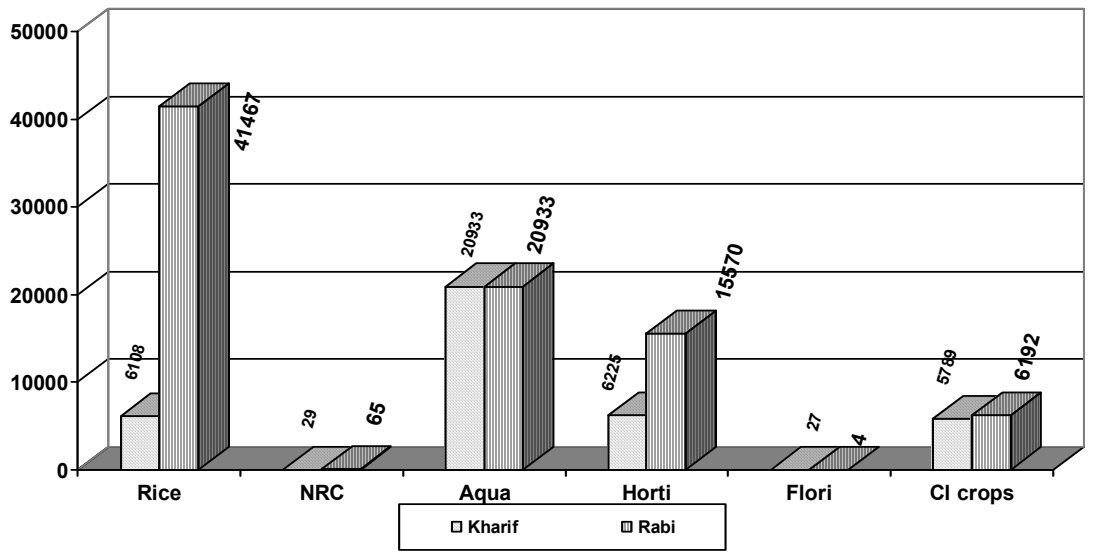


Figure 3: Land Utilisation in Nellore Under Various Crops During 2003-04 (in acres)



The shift in acreage from non rice cereals to other lucrative crops is minimal as the total area under these crops in the study area itself is not considerable. In Venkatachalam Mandal in the Kharif season there is a decline in area under horticulture to the extent of 532 acres. From the experience of this mandal it appears that conversion to aquaculture seems to have occurred on horticulture lands also as there is an increase of 1933 acres under aquaculture in this mandal. However there is a large decline of rice cultivation also in this mandal. In Buchireddypalem there is a decline in area under horticulture and commercial crops, which is partly explained by a shift to aquaculture in this mandal. But here a large decrease in rice cultivation is also observed. It needs to be noted from Table 13 & Figure 4 that there is an overall decline in area under rice cultivation. This entire decline is not getting explained by the shift to aquaculture / other crops. At the same time a significant part of the decline is answered by the increase in area under aquaculture and other lucrative crops. It could be that the extent of shift is not being captured in the statistics available with the authorities in district and mandal levels. There is a decline in the area under horticulture and commercial crops also in some mandals. Since this is not found in all mandals, it could be due to specific local conditions in those mandals or seasonal preferences in cultivation of various crops (Tables 11, 12, 13 and Figures 2, 3 and 4).

Figure 4: Shift in Area Under Various Crops and Aquaculture in Nellore from 1994-95 to 2003-04 (in acres)

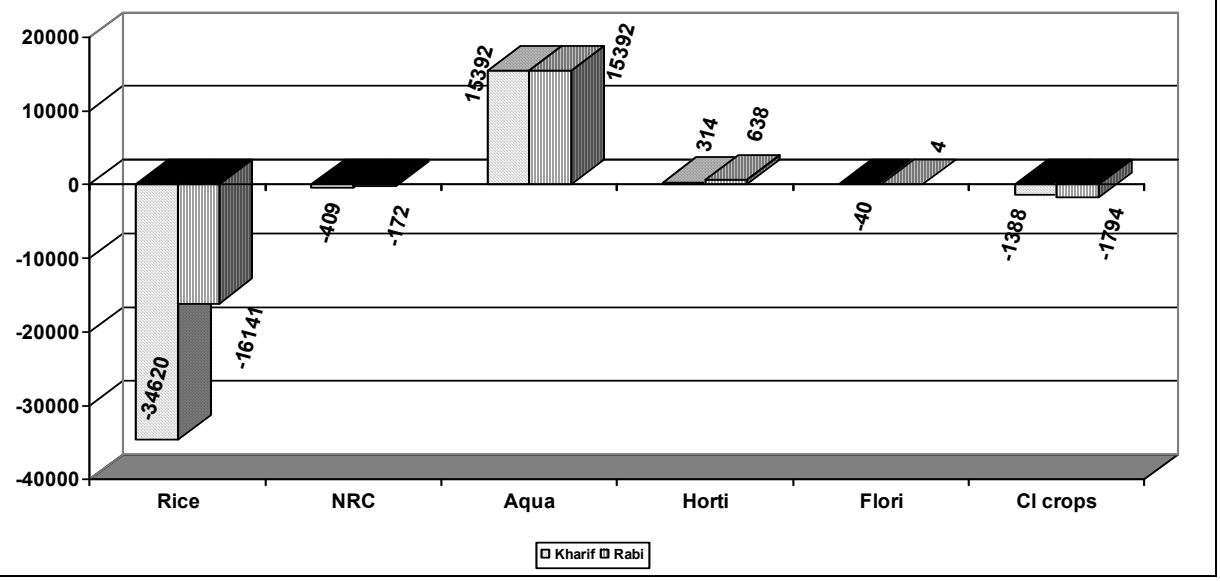


Table 11: Land Utilization in Nellore under Various Crops During 1994-95 (in acres)

Name of the Mandals	Kharif 1994-95(Land in Acres)						Rabi 1994-95(Land in Acres)					
	Rice	Non Rice Cereals	Aqua Culture	Horti Culture	Flori Culture	Comml Crops	Rice	Non Rice Cereals	Aqua culture	Horti Culture	Fori Culture	Comml Crops
1. Indukurpet	13274	---	3278	930	4	986	8354	---	3278	4250	---	845
2. T.P. Gudur	13748	5	1887	146	---	384	12572	5	1887	3952	---	1217
3. Venkatachalam	7910	---	376	1097	---	62	19103	---	376	1832	---	45
4. Vinjamur	115	317	---	3283	---	1401	4319	215	---	2227	---	3611
5. Balayapalli**	NA	NA	NA	NA	NA	NA	6390	17	---	1967	---	185
6. Bucchireddypalem	5681	116	---	455	63	4344	6870	---	---	704	---	2083
Total	**40728**	**438**	**5541**	**5911**	**67**	**7177**	**57608**	**237**	**5541**	**14932**	**---**	**7986**

*(Source: Chief Planning Officer, Nellore) ** Data for Kharif season in Balayapally Mandal is not available (NA)*

Table 12: Land Utilization in Nellore under Various Crops During 2003-04 (in acres)

Name of the Mandals.	Kharif 2003-2004(Land in Acres)						Rabi 2003-04(Land in Acres)					
	Rice	Non Rice Cereals	Aqua Culture	Horti Culture	Flori Culture	Comml Crops	Rice	Non Rice Cereals	Aqua culture	Horti Culture	Fori Culture	Comml Crops
1. Indukurpet	2876	4	7995	1266	---	1063	4857	---	7995	1303	---	178
2. T.P. Gudur	1193	---	7674	148	---	---	9406	---	7674	3236	---	48
3. Venkatachalam	63	---	2309	565	---	262	18018	---	2309	1075	---	---
4. Vinjamur	567	25	---	4042	---	3871	2228	25	---	7465	4	5859
5. Balayapalli****	*NI***	*NI*	---	*NI*	--	*NI*	2117	40	---	2407	---	45
6. Bucchireddypalem	1409	---	2955	204	27	593	4841	---	2955	84	---	62
Total	**6108**	**29**	**20933**	**6225**	**27**	**5789**	**41467**	**65**	**20933**	**15570**	**4**	**6192**

(Source: Chief Planning Officer, Nellore)

*****The data for 1994-95 Kharif season in Balayapalli Mandal was not available. Therefore the 2003-04 data for the corresponding season is not included in the table as it would affect the calculation of the shift in area of cultivation. The 2003-04 Kharif acreage figures for Balayapalli are rice (77), Non rice Cereals (15), Aquaculture (nil), Horticulture (5549), Floriculture (nil) and commercial crops (60)*

***NI- Not Included*

Table 13: Shift in Area under Various Crops and Aquaculture in Nellore from 1994-95 to 2003-04 (in acres)

Name of the Mandals	Kharif (Land in Acres)						Rabi (Land in Acres)					
	Rice	Non Rice Cereals	Aqua culture	Horti Culture	Flori Culture	Comml Crops	Rice	Non Rice Cereals	Aqua culture	Horti Culture	Flori Culture	Comml Crops
1. Indukurpet	-10398	+4	+4717	+336	-4	+77	-3497	---	+4717	-2947	---	-667
2. T.P. Gudur	-12555	-5	+5787	+2	---	-384	-3166	-5	+5787	-716	---	-1169
3. Venkatachalam	-7847	---	+1933	-532	---	+200	-1085	---	+1933	-757	--	-45
4. Vinjamur	+452	-292	---	+759	---	+2470	-2091	-190	---	+5238	+4	+2248
5. Balayapalli**	NA	NA	NA	NA	NA	NA	-4273	+23	---	+440	---	-140
6. Bucchireddypalem	-4272	-116	+2955	-251	-36	-3751	-2029	---	+2955	-620	---	-2021
Total	**-34620**	**-409**	**+15392**	**+314**	**-40**	**-1388**	**-16141**	**-172**	**+15392**	**+638**	**+4**	**-1794**
% of Shift	**-85%**	**-93.4%**	**+73.5%**	**+5.3%**	**-59.7%**	**-19.3%**	**-28%**	**-72.6%**	**+73.5%**	**4.3%**	**+100%**	**-22.5%**

(Source: Chief Planning Officer, Nellore)

*** Data not available*

3.2 Employment Position of Women in Reference Week & Reference Month

Out of 1200 respondents interviewed 79% (943) got employment in the last 7 days prior to the interview date, which is the *reference week* for this study. Mean number of days they worked in the reference week was 3.29 days. Percentage of respondents who did not get any work in the reference week was a substantial 21% (257). Among these 257 respondents, who did not get employment during the last seven days, 81% said work was not available, while 19% attributed it to introduction of harvesting machines in their villages. The former probably is due to the cultivation of commercial crops and aquaculture, which need less labour (Tables 14 & 15).

As compared to the reference week, in which only 79% of women got work, 93% (1120) of the respondents got work in the last 30 days prior to the interview date, which is the *reference month* of this study. Their mean days of work were 10.85 days during the reference month (Tables 14 & 17). Thus we find that women are not getting a regular employment of 3.29 days every week as is reported for our enquiry on number days worked in the reference week. In that case they should have got a minimum of 13.16 days of employment for the previous four weeks, which can roughly be taken as a month. A month being a longer period, those who did not get any work has declined from 21% during the reference week, to 7% (80) during the reference month (Table 17). Among these respondents 60% (48) did not get work mainly due to the introduction of harvesting machines, and 40% (32) did not work due to non-availability of work (Table 18). Part of the respondents who did not get work due to non-availability of work in the last 7 days seems to have been employed in the last 30 days, because it is a longer period and thus provided some work to those who could not find work in the reference week. But most of the respondents from the villages where harvesting machines were introduced could not find work in the last 30 days either. Harvesting machines had swept away their employment.

Box 1

Corporate Aquaculture in Nellore

The information presented here is based on interviews with managements of two companies which are involved in aquaculture business.

One of them is ***The Water Base Ltd. (TWL)***[1]**.** This company is an export oriented unit and do not involve in domestic business. It has 80 prawn ponds, ie., paddy fields converted to aquafarms, in which it cultivates prawns twice a year. It has 450 acres of land under aquafarming. Its operational activities include Shrimp Hatchery, Shrimp Farm, Shrimp feed, mill, Seafood processing plant and Soft shell crab project. The manager mentioned that the hatchery was currently closed, but they would revive it. TWL produces tiger prawns only, which are bigger than the ordinary prawns; using seawater and shrimp feed. The company's labourers were mainly migrants. The manager also expressed some of his concerns. He mentioned that the cost of production was high in India. The same quality of prawns were available at a cheaper rate from other countries. The Government he said was not giving any crop loans/insurance for losses suffered when prawns are affected by viruses. Banks were also not helpful in this regard.

We also interviewed the manager of ***STAR Agro Marine Exports Pvt. Ltd.***[2] He told that the company purchased prawns through suppliers and mediators in Nellore. He added that few farmers who got shrimp feed from the company directly brought prawns to it under the 'buy back policy'. All the prawn farmers did not come to the company, especially Scampi prawns farmers, as they specialised in black tiger prawns. Scampi prawns are cultivated in fresh water and required longer period to mature than other prawns. The black tiger prawns were cultivated in brackish (salt) water. The company had tiger prawns hatchery also on the sea coast. It takes four months to culture tiger prawns. Scampi prawns take 8 to 9 months for culture. He explained that the raw materials used by all companies were the same. Once they purchased the prawns the main processing was done in factories in Chennai, the nearest port town, around three and a half hours journey by road/ rail. The manager mentioned that in tiger prawns they faced competition from Bangladesh, Pakistan, Thailand and China. He observed that the prawn production in India per hectare was 2 tonnes only due to semi-intensive farming, but it was up to 7 tonnes in Thailand as they did intensive farming with close monitoring of ponds.

The manager of this company said that it employed 50 unskilled labourers from Nellore for removing eggs and heads of the prawns, packing and loading them to Chennai for processing. He added that on an average of 2 tonnes was purchased daily. Bigger the size of the prawn higher was its price. Rs. 650 was the rate for 20 prawns weighing 1 kg, whereas 30 prawns weighing 1 kg was paid Rs. 550.

[1] The information is based on interview with the Mr. Sampath Kumar, Manager, The Water Base Ltd. (TWL), Anatavaram, T. P Gudur, Nellore, A.P on 20th November 2004.

[2] The information is based on interview with Mr. Shaik Azaz, Manager STAR Agro Marine Exports Pvt. Ltd, Nellore on 21st November 2004.

In the *reference week* 37% (439) of respondents worked as rice labourers. The mean number of days they worked in the reference week was 3.27 with a mean wage of Rs.30.27 per day (Tables 14 & 16). More respondents worked in rice cultivation, because generally the paddy crop gave more employment to women labourers compared to other commercial crops and aquaculture. Interviews were conducted in March- April, which is the harvesting season of paddy in this area.

Table 14: Mean and Range of Days Women Labourers Worked in Various Occupations in the 7 Days Prior to Interview Date

No. & % of women who worked in 7 days prior to the interview	**N=1200**	**Mean in Days**	**Range in days**
Respondents who got work in the last 7 days prior to the interview date	78.6% (943)	*(N=943)* 3.29 days	1-7
Respondents who did not get work in the Last 7 days	21.4% (257)	--	--
Mean and Range of days women labourers worked in various occupations	**Number of Respondents & % ***	**Mean in Days**	**Range in days**
Mean and range of days worked as rice labourer	439 (36.58)	3.27	1-7
Mean number of days worked as aqua- labourer	(157) 13.08	3.58	1-7
Mean number of days worked as horticulture labourer	(178) 14.83	3.36	1-7
Mean number of days worked as floriculture labourer	(74) 6.17	5.04	1-7
Mean number of days worked as other agricultural labourer	(109) 9.08	2.87	1-7
Mean number of days worked as non-agricultural labourer	(22) 1.83	4.73	1-7
Mean number of days worked in cereals other than rice	(11) 0.91	2.09	1-4

**Total will not add up to 1200 due to multiple answers. Figures in parentheses are %.*

Table 15: Reasons for Not Getting Work in the Last Seven Days

Reasons	**N=257**	**%**
Did not get work due to introduction of harvesting Machines	48	18.7%
Work was not available	209	81.3%
Total	257	100.0%

As compared to the *reference week*, in which only 37% of women got work as rice labourers, 53% of respondents (639) worked in rice cultivation during the reference month. The average number of working days available in rice cultivation during the *reference month* was 9.05 (Table 17). Thus it is well below 13.08 days, the four week multiple of the days of

employment in paddy during reference week. This again indicates irregularity of employment within the weeks even in a month. In contrast with the present, 89% (1067) of respondents informed that they got an average of 22 days of employment in rice cultivation in a month in the corresponding crop season prior to the shift in cultivation (Table 19). This shows not only that in women's estimation, paddy was the main source of employment before the shift in cultivation, but also that it did provide many more days of employment. Before money wages began to be paid, women used to get wages in kind which also ensured them some amount of food security.

Table 16: Mean and Range of Daily Wages for Women Labourers in Various Occupations

Mean & Range of Wages	Number of Respondents	Mean in Rs	Range in Rs.
Wage as rice labourer	439	30.27	20-40
Wage as Aquaculture labourer	157	28.92	25-50
Wages as Horticulture labourer	178	26.49	10-40
Wages as Floriculture labourer	74	18.43	4-40
Wages as Other agricultural labourer	109	28.44	25-50
Wages as Non-agricultural labourer	22	30.45	15-45
Wages as labourer in cereals cultivation other than rice	11	28.64	25-30

Thirteen percent (157) of respondents got employment in aquafarms, with an average of 3.58 days work in the reference week. The average daily wage earned by an aqua labourer was Rs.28.92, even less than the wages in rice cultivation (Tables 14 & 16). Generally in aqua-farms women were employed to remove moss from the aqua fields and to separate prawns of different sizes and varieties. Seventeen percent of respondents worked as aqua-farm labourers in the last 30 days, as against 13% during the reference week. This increase in percentage of women who got work in the reference month compared to the reference week was observed in the case of women who worked in rice fields also. As mentioned already this is on account of the fact that a month is a longer recall period, in which more women could have got work. In tune with other crops, irregularity in availability of employment within the weeks of the reference month is found among those who worked in aquafarms also. While in the reference week they worked for 3.58 days in aquafarms, the number of days they worked in the reference month is only 9.67 (Table 17), which is less than the 4 week multiple of number of days worked in the reference week i.e. 14.32 days.

Only 15% (178) of respondents got employment in horticulture during the *reference week*. The mean number of working days available was 3.36 with an average wage of Rs. 26.49 per day (Tables 14 & 16). Horticulture included Lemon, Chilly, Groundnut, Mango, Sapota and Vegetables, which are crops of a commercial nature. Lemon crop gives employment for some days during four months in a year. It needs irrigation once in a week. Women pluck the lemon from the trees. Employment in chilly cultivation is also during a four months period but not on a continuous basis.

Sapota, Mango, Guava crops also gave few days employment to the women labourers. During mid summer women labourers used to work in the farms of these fruit trees from morning 6 a.m. to after noon 2 p.m.

As in the case of other crops, a higher 18.5% of women worked in horticulture during the reference month as compared to 15% in the reference week. The average number of days work available during the *reference month* in horticulture was 8.26 days, while the corresponding days of work in the reference week was 3.36 (Tables 17 & 14). Again the number of days worked in reference month is less than the four week multiple which could be derived from number of days worked in the reference week.

Only 6% (74) of respondents got work in floriculture, during the reference week. The mean number of work days available to them in the reference week was 5.04. These 74 labourers were from one village where floriculture was very prominent and jasmine plucking was on during the reference week. The mean wage reported was Rs.18.43 per day, far less than the wage rate in other crops (Tables 14 & 16). Floriculture gave employment to the women labourers during four months in a year. The wages in floriculture is paid on a piece-meal basis. A labourer would get Rs. 2 per litre of jasmine she plucked. Jasmine plucking is done by almost all people in the village. Even school going children also do this as a part time work. A woman labourer could get a maximum of Rs.30 per day even if she did both weeding in between the plants and plucked jasmine. Some inhabitants of *Rebala* village from *Bucchireddypalem* mandal, where the fieldwork was done in this connection, told that jasmine crop was started in the area 60 years before. Women, who did not work at floriculture farm, purchased jasmine flowers, tied them on

threads and sold it at the village market. In some villages jasmine plants were removed from the fields to start more profitable aqua farming.

Labourers who engaged in other agricultural work in the reference week constituted 9% (109). They got an average of 2.87 days of work in the week with an average wage of Rs. 28.44 per day. Other agricultural work included work in Cotton, Tobacco, Sugarcane and Sunflower farms (Tables 14 & 16). Cotton is a six month crop. Transplanting and taking cotton out of the plant were the two activities done by women in cotton farms. This gave employment to women labourers on an irregular basis for 3 to 4 months. But women cannot work continuously in this crop because it heats the body too much. It was mentioned that sometimes blood comes out of the women's nose because of overheat. In Tobacco, women labourers do the grading work i.e. separating the spoiled leaves from the good ones. This task lasted for one month. Sunflower crop gave only one-week employment to women labourers in this area.

Twenty two (1.8%) respondents worked as non agricultural labourers in the reference week. They had an average of 4.73 days work in the week. Their mean daily wage was Rs.30.45. Non agricultural work included construction, tailoring, driving, painting etc (Tables 14 & 16).

Eleven (0.9%) respondents worked as labourers in cereals other than rice. They got an average of 2.09 days of work in the reference week with an average daily wage of Rs.28.64. These included Bajra and Jowar. Black gram and Green gram are also included here (Tables 14 & 16).

Eight percent of respondents worked in floriculture during the reference month as against 6% in the reference week. The mean number of days work available to them was 10.93 as against 5.04 days in the reference week (Tables 14 & 17). This indicates that there was intensity of employment in floriculture in the sample area during the reference week. Other agricultural labourers and non agricultural labourers who got work in the reference month were 10.8% and 2.2% respectively. The corresponding percentage for the reference week was 9% and 1.8% respectively (Tables 14 & 17). These workers got an average of 8.73 and 11.35 days work in the reference month respectively (Table 17). This was in comparison with 2.87 days and 4.73 days these categories of workers got employment during the reference week (Table 14).

Table 17: Mean and Range of Days Women Labourers Worked 30 Days Prior to Interview Date

No. of women who worked in 30 days prior to interview	N=1200	Mean in Days (*N=1120*)	Range in days
Respondents who got work in the last 30 days prior to the interview date	93.3% (1120)	10.85	1-30
Respondents who did not get work in the last 30 days	6.7% (80)	--	--
Mean and Range of days respondents worked in various occupations in the last 30 days prior to the interview	**Number & % of Respondents***	**Mean in Days**	**Range in days**
Number of days worked as Rice labourer	639 (53.25)	9.05	1-30
Number of days worked as Aquaculture labourer	208 (17.33)	9.67	1-30
Number of days worked as Horticulture labourer	222 (18.5)	8.26	1-21
Number of days worked as Floriculture labourer	94 (7.83)	10.93	2-20
Number of days worked as other agricultural labourer	130 (10.83)	8.73	1-30
Number of days worked as Non Agricultural labourer	26 (2.17)	11.35	2-30
Number of days worked as labourer for other cereal farms	16 (1.33)	3.75	1-10

* Figures in parentheses are %.

Table 18: Reasons for not Working During 30 Days Prior to the Interview Date

Reasons	N= 80	%
Did not get work due to introduction of harvesting machines	48	60.0%
Work was not available	32	40.0%
Total	80	100.0%

Table 19: Occupation of Women Labourers During 30 Days in the Corresponding Season Prior to the Shift in Cultivation

Women Who Worked in the corresponding 30 days before shift	N=1200	Mean in days N=1194	Range
Respondents who worked during last 30 days in the corresponding crop season prior to the shift in cultivation	99.5% (1194)	21.74	2-30
Not working earlier	0.3% (4)	-	-
No Response	0.2% (2)	-	-
Mean and Range of days Women labourers worked in their main occupations during last 30 days in the corresponding crop season prior to the shift in cultivation	**No. & % of Respondents**	**Mean in Days**	**Range in Days**
Worked in Rice cultivation	(1067) 88.9%	22	2-30
Worked in Horticulture (lemon, chilly, groundnut, vegetables)	(31) 2.6%	22.32	10-30
Worked in Floriculture (jasmine)	(51) 4.3%	21	8-30
Worked as other agricultural labourer (tobacco)	(8) 0.7%	19	10-30
Worked as non agricultural labourer	(9) 0.8%	18.22	8-30
Worked in other cereals farms (bajra, jowar)	(28) 2.3%	13	6-25

Note: *Due to multiple responses total will not add up to 1200*

Table 20: A combined table of occupation of women labourers during last 30 days prior to the interview date and during the last 30 days in the corresponding crop season prior to the shift in cultivation and Mean and Range of days worked

	BEFORE SHIFT			AFTER SHIFT		
Women who worked in the reference periods	**N=1200**	**Mean in days N=1194**	**Range**	**N= 1200**	**Mean in days N=1120**	**Rage In days**
Women who worked in the two reference periods	99.5% (1194)	21.74	2-30	93.3% (1120)	10.85	1-30
Not working earlier	0.3% (4)	-	-	6.7% (80)	--	--
No Response	0.2% (2)	-	-	-	-	
Mean and Range of days women labourers worked in their main occupations during reference month	**No. & % of Respondents**	**Mean in Days**	**Range in Days**	**No. & % of Resp-ondents**	**Mean in Days**	**Range in Days**
Worked in Rice field	88.9% (1067)	22	2-30	(639) 53.3%	9.05	1-30
Worked in Aquaculture	-	-	-	(208) 17.3%	9.67	1-30
Worked in Horticulture	2.6% (31)	22	10-30	(222) 18.5%	8.26	1-21
Worked in Floriculture	4.3% (51)	21	8-30	(94) 7.8%	10.93	2-20
Worked as other agricultural labourer	0.7% (8)	19	10-30	(130) 10.8%	8.73	1-30
Worked as non-agricultural labourer	0.8% (9)	18	8-30	(26) 2.2%	11.35	2-30
Worked in Cereals farms	2.3% (28)	13	6-25	(16) 1.3%	3.75	1-10

Note: *Due to Multiple Responses Total will not add up to 1200*

Computing the magnitude of employment loss suffered by women will add weight to our argument in this regard. However this is possible only by comparing the number of days employment women get presently, with the corresponding period before the shift started. Considering that the estimation of employment by women respondents for a period several years before is prone with problems of recall and a possible overestimation to present the severity of their present condition, the figures of employment stated by women before the shift cannot be totally accepted at its face value (Tables 19 & 20). But the figures given for rice of 22 days employment a month may be closer to reality as it is given by as high as 1067 of the 1200 respondents. The equally high figures given for other crops are stated by only a miniscule number of respondents and therefore they cannot be used for analysis. On the basis of the number of days employment in rice cultivation before and after the shift given by the overwhelming majority of respondents, and considering the fact that rice was the principal crop before the shift, it can be estimated that there is a total employment loss of around 12.95 days in

rice cultivation alone. On the whole there is an employment loss of 10.89 days a month, which is not offset by aquaculture and floriculture (Tables 19 & 20).

3.3 Year of Major Shift in Cultivation

Thirty three percent of respondents mentioned that during 1995-99 large scale aqua farming was started in their villages, while 20% reported that it was during 1990-94. It brings out that a major shift to aqua farming started in early nineties and the trend continued into the mid nineties as well. Crops like Lime, Sapota, Guava and Mango were prevalent in villages before 1980, but according to the respondents large scale shift to horticulture had taken place during 1990-1994 and 1995-99. Further details are presented in Table 21.

Of late some prawn farmers had given up prawn farming since prawns were affected by certain viruses. But the cultivation of any other crop in the farms once used for aquaculture would require a long time gap to desalinate the farms, thereby affecting employment generation.

3.4 Tasks Undertaken by Women Labourers in Various Crops & Aquaculture

In Rice Cultivation

The data presented in Table 22 shows the labour intensiveness of rice cultivation quite clearly. There are several labour requiring processes in rice cultivation, which are not present in other crops and aquaculture. A very high 71% of respondents mentioned that they engaged in weeding in rice fields. Similarly 69.3% reported they engaged in transplanting of rice. Another 58.3% got involved in harvesting of paddy. A small section of 12.9% engaged in sowing. Only 1% mentioned that they watered the rice cultivation. The intensity of labour consumption in rice cultivation is evident from the above stated data (Table 22).

In Aquaculture

A section of 13.8% respondents mentioned that they worked in aqua farm for cleaning the moss. Another 7.5% of women labourers reported that they separated different types of prawns. A small 6.3% mentioned that they caught prawns. A very small 0.3% of respondents said that they applied antibiotics to protect prawns from certain viruses. Another 1.3% of respondents reported that they removed grass from the aqua farm (Table 23).

Table 21: Respondents' Estimation of Year of Major Shift to Cultivation of New Crops/ Aquaculture

	<1979	1980- 84	1985-89	1990-94	1995-99	=>2000	Total**
Aquaculture	-	6	3	234	395	128	766
Lime	6	26	8	38	28	53	159
Sapota	1	3	1	36	16	-	57
Guava	1	3	1	29	16	-	50
Mango	1	3	4	57	62	3	130
Chilli	-	-	-	10	17	4	31
Tobacco	-	-	-	-	4	2	6
Cotton	-	-	-	18	48	50	116
Sugarcane	-	-	-	-	28	15	43
Sunflower	-	-	3	13	14	3	33
Jasmine	-	-	-	-	-	5	5
Minumu	-	-	-	-	5	3	8
No Response	-	-	-	-	-	-	92 cases

*** Due to multiple answers total will not add up to 1200*

In Horticulture

The low availability of work to women labourers in horticulture was high compared to other cultivations. Only 9% of women labourers mentioned that they involved in plucking or collecting fruits in horticulture farms. Another 4.5% said that they engaged in planting. Only 0.5% did manuring, while 0.2% applied pesticides (Table 24).

Table 22: Tasks Undertaken by Women Labourers in Rice Cultivation

	N=1200*	%
Sowing	155	12.9%
Transplanting	832	69.3%
Providing water	12	1.0%
Weeding	851	70.9%
Harvesting	699	58.3%

** Total is not given due to multiple answers*

Table 23: Tasks Undertaken by Women Labourers in Aquaculture

	N 1200*	%
Removing the moss/ cleaning	166	13.8%
Separating different types of prawns	90	7.5%
Removing grass	15	1.3%
Applying antibiotics	3	.3%
Catching prawns	75	6.3%

- *Total is not given due to multiple answers*

Box 2

Nellore's Labouring Women and Children

Women labourers of rural areas were upset about the loss of their employment opportunities due to the invasion of new crops and aquaculture in their villages. ***Daily wages in all these new crops and systems were either at about the same level as paddy or sometimes even less; only around Rs.30.*** In floriculture it is much less at Rs.18 only. Due to lack of adequate employment, women were ready to work in any occupation, regardless of the days of work available or the wages paid. It was also noticed during the fieldwork that ***wages for grown up children around 14-15 years and women were the same in Aqua farming, Chilly, Tobacco and Cotton cultivation. Equal wage was now being given to both children and women even for harvesting paddy,*** which was mostly done by women traditionally. Farmers' need for labour has reduced considerably, and therefore only those who maintain good contact with them get work.

Farmers have also introduced ***harvesting machines*** in some parts of the district. These machines were virtually taking away the employment that could have been available in harvesting. The machines took less time to harvest and cost less, compared to wages paid to labourers. It was mentioned by a farmer during the fieldwork that, in an hour the machine could cut 1 acre of crop and it cost only Rs.900 for it. If women labourers were employed, it would cost around Rs. 1600 per acre or even more. The grains, which fell down during manual harvesting, could also be avoided in machine harvesting. The losers in this process are women labourers who did the harvesting.

Families were also resorting to other ***survival activities*** like collecting shells from the sea and from the nearby *Pennar* River, making limestone from the shells etc. A hardworking person could get up to 2 kg of meat from the shells s/he collected on a day. They sold this mussel, which is used as feed in aquafarms, for Rs.20 per kg. In addition the labourers also made limestone powder by treating these shells. This powder is sold to aqua-farm owners for Rs. 2 per Kg. This is used to remove moss from the aqua farm.

Farmers of horticulture farms took labourers in jeeps or tractors to farms and dropped them back in the evening. They took ***children and women for plucking chillies, paying the same wage to both.*** Women labourers left their small kids at home when they left for work. Their elder brothers or sisters looked after these kids. Those ***young children gave up their school to take care of their brothers and sisters***. Sometimes this situation led them to drop out of school and become child labourers; as they gradually lost interest in going to school.

In Floriculture

Only 6.9% of women labourers said that their main activity was plucking flowers. One percent said that they removed grass and 0.6% did weeding while 0.8% grafted/budded. Around 2% women labourers mentioned that they tied flowers in garlands as they had no other work (Table 25).

The low labour absorption in crops other than rice is evident from the low percentage of women who undertook tasks related to aquaculture, horticulture and floriculture in comparison to the tasks involved in rice cultivation (Tables 22-25).

Table 24: Tasks Undertaken by Women Labourers in Horticulture

	N – 1200*	%
Plucking/collecting fruits	109	9.1%
Applying pesticides	2	.2%
Planting	50	4.2%
Mannuring	6	.5%

** Total is not given due to multiple answers*

Table 25: Tasks Undertaken by Women Labourers in Floriculture

	N – 1200*	%
Plucking flowers	83	6.9%
Weeding	7	.6%
Grafting/budding	10	.8%
Tying flowers	23	1.9%
Removing grass	12	1.0%

Total is not given due to multiple answers

IV- OTHER IMPACTS OF AQUAFARMING

4.1 Impact on the Quality and Availability of Drinking Water

Drinking water scarcity has increased due to the aquafarms in the rural areas of Nellore district. Among 1200 respondents 53% (632) reported that their drinking water is affected due to aqua farms. Among these 632 respondents, 40% reported that the water in open wells and bore wells got salinated due to salt water introduced to the nearby aquafarms. Eight percent respondents complained that ground water level had declined considerably due to large number of bore wells made for aqua-farming. Thirty six percent mentioned that water problem had increased because of aqua-farming. Respondents who mentioned that they had to travel a lot to get water were 10% (Table 26).

Table 26: Impact on the Quality and Availability of Drinking Water due to the Salination of Paddy Fields for Aquaculture

Impact on the Quality of Drinking Water	N=1200	%
Respondents who reported their drinking water is affected	632	52.7%
Types of impact on drinking water	**N=632**	**%**
Drinking water (open wells/bore wells) changed into salt water	250	39.6%
Ground water level has declined	48	7.6%
Required to bring water from river	3	0.5%
Required to bring from neighbouring village	4	0.6%
Water problem increased	*228*	36.1%
Required to go 1km for water	64	10.1%
Water is not available regularly	14	2.2%
Water supplied through tractors	8	1.3%
Only 1 or 2 pots of water is provided	2	0.3%
Water is available only 1 hour daily	6	0.9%
Water is available once in two days	5	0.8%
Total	632	100.0%

4.2 Impact on Nearby Paddy Fields due to Aquafarming

Two hundred and nineteen respondents i.e. 18% informed that nearby paddy fields were affected due to salination of aqua farms. Out of 219 respondents 84% reported that due to salination from aqua-farms no crops were cultivated in the nearby paddy fields, which became unfit for cultivation. A small 1.4% of respondents mentioned that the colour of soil changed to red as a result of aqua farming, while 7% pointed out that the soil got degraded because of salination (See Table 27).

Table 27: Respondents Perception on Impact on Nearby Paddy Fields due to Saline Water in Aquafarm

Respondents perception	N=1200	%
Respondents who reported that paddy fields are affected due to salination in the aqua farms	219	18.3%
Types of impact on paddy fields	**N=219**	**%**
Crops are not cultivated due to salination	*185*	*84.5%*
Cultivable land spoiled	*5*	*2.3%*
Paddy is not cultivated	*10*	*4.6%*
Colour of soil is changed in to reddish	*3*	*1.4%*
Soil degradation	*16*	*7.3%*
Total	*219*	*100.0%*

4.3 Health Problems Perceived as Caused by Aquaculture

Health problems due to aquafarming were reported by 12% (139) of respondents. Among these 139 respondents 35% mentioned that their families suffered with skin diseases due to work in aqua farms, while 34% said that they had frequent cough, cold, fever because of aquafarming in their villages. Respondents who suffered from swelling and pain on legs because of working in aqua-farms for long hours were 12%. Five percent of respondents mentioned that they suffered from burning sensation and body allergy due to pollution caused by aqua farms while 8% and 6% mentioned that they suffered from frequent cough and fever respectively (See Table 28).

Table 28: Health Problems in Villages Perceived as Caused by Aquaculture

Health Problems	N=1200	%
Respondents who reported health problems	139	11.6%
Types of health problems	**N=139**	**%**
Frequent Cough	11	7.9%
Frequent Fever	8	5.8%
Frequent Cough, cold and fever	47	33.8%
Skin diseases due to the work in aqua farm	49	35.3%
Swelling and pain on legs because of working In aquafarm for long hours	17	12.2%
Burning sensation and body allergy due to pollution caused by aqua	7	5.0%
Total	139	100.0%

4.4 Child Labour

Among 1200 women labourers 4.3% (51) respondents mentioned that their less than 15 year old children were working as child labourers. Mean daily wage of the 51 child labourers was Rs.26.33. Among 51 child labourers, for 47% mean daily wage was between Rs.21-Rs.30

and for 21.6% of them, daily mean wage was between Rs.31-Rs.40. For 17.6% of child labourers the daily mean wage was just less than or equal to Rs.10 (Table 29).

Among the families who had sent children for work, a section of 69% respondents mentioned that poverty was the main reason behind sending their children for work. Around 6% women labourers mentioned that their children disliked school and went to work themselves while 26% of women labourers did not respond to the question.

Table 29: Labouring Children of Women Labourers

	N=1200	%
Respondents who mentioned their below 15 year children are working	51	4.3%
Mean and distribution of wage in class intervals	**N= 51**	**%**
Mean amount and range of daily wage for child labourers as reported by respondents	26.33 (2-50)	-
< = Rs. 10	9	17.6
Rs. 11-20	6	11.8%
Rs. 21-30	24	47.1%
Rs. 31-40	11	21.6%
Rs. 41-50	1	1.9%
Total	51	100%
Reasons for sending children to work	**N=51**	**%**
Due to poverty	35	68.6%
Dislikes school	3	5.9%
No Response	13	25.5%
Total	51	100%

4.5 Migration of Family Members

Fourteen respondents i.e 1.2% of women labourers mentioned that their family members had migrated. Among them 43% (6) women labourers reported that their sons had migrated. Another 21.4% (3) reported that their husbands had migrated, while 14.3% (2) mentioned that it was their father in law who migrated. Among the migrants, a high 78.6% (11) respondents mentioned that their relatives had migrated in search of jobs while 21.4% (3) reported that poverty was the reason for migration (Table 30).

4.6 Indebtedness Before and After Shift in Cultivation

Indebtedness seems to have increased due to the shift in cultivation. Twenty eight percent of respondents reported indebtedness before the shift, while 60% of respondents mentioned that

they got indebted after the shift. The mean debt amount of respondents before the shift was Rs.17309.00, while the mean debt amount of respondents after shift was Rs.23454, an obvious increase of Rs. 6145 (See Table 31).

Table 30: Respondents Who Reported Migration of Family Members

	N=1200	%
Respondents who reported the Migration of their family members	14	1.2%
Relationship with respondent who migrated	N= 14	**%**
Husband	3	21.4%
Son	6	42.8%
Brother	2	14.3%
Father in law	2	14.3%
Grand daughter	1	7.2%
Total	14	100.0%
Reasons for migration as reported by respondents	N= 14	**%**
In search of jobs	11	78.6%
Poverty	3	21.4%
Total	14	100.0%

Thirteen respondents i.e. 1% mentioned that there were loan recovery cases against their family. Around 9% (104) respondents reported that their families faced physical aggression from the money lenders (See Table 32).

Table 31: Indebtedness Before and After Shift in Cultivation

Indebtedness	Before shift		After shift	
	N=1200	%	N=1200	%
Respondents who reported Indebtedness	333	27.8%	717	59.8%
Respondents who do not have Indebtedness	867	72.2%	483	40.2%
Mean amount of debt	N= 333 Rs. 17309	-	N= 717 23453.97	-
Range in Rupees	(400- 200000)	-	(200-300000)	-

Table 32: Respondents Who Reported Loan Recovery Case Against them

	N=1200	%
Respondents who reported loan recovery cases	13	1.1%
No cases were reported	1187	98.9%
Physical Aggression from Money Lenders		
Respondents reported physical aggression from money lenders	104	8.7%
No Physical aggression	1096	91.3%

V- CONCLUSION & RECOMMENDATIONS

Shift in Area of Crops Cultivated and Period of Shift

❖ The major shift to aquaculture and the new crops have taken place in the 1990s. Shift to aqua farming started in early nineties and continued on a large scale in the mid nineties as well. Crops like Lime, Sapota, Guava and Mango were prevalent in villages before 1980, but large scale shift to horticulture had taken place during 1990-1994 and 1995-99. These years also matches with the land utilisation figures with the district administration.

❖ The total area of decline in rice cultivation under Kharif in the six mandals was 34620 acres**.** In Rabi it was 16141 acres. This amounts to a percentage decline to the tune of 85% in Kharif, and 28% in Rabi. There is an increase in area under aquaculture in the four mandals of Indukurpeta, TP Gudur, Venkatachalam and Buchireddypalem. The total area brought under aquaculture in the study area in 1994-95 was only 5541 acres. In 2003-04 it rose to 20933 acres. This amounts to a percentage increase of 73.5% by 2003-04 (Tables 11, 12, 13 and Figures 2, 3 and 4).

Loss of Women's Employment

❖ Considering that the estimation of employment by women respondents for a period several years before is prone with problems of recall and a possible overestimation to present the severity of their present condition, the figures of employment stated by women before the shift cannot be accepted at its face value (Tables 19 & 20). But the figures given for rice of 22 days employment a month may be closer to reality as it is given by as high as 1067 of the 1200 respondents. On the basis of the number of days employment in rice cultivation before and after the shift given by the overwhelming majority of respondents, and considering the fact that rice was the principal crop before the shift, it can be estimated that there is a total employment loss of around 12.95 days in rice cultivation alone. On the whole there is an employment loss of 10.89 days a month, which is not compensated by aquaculture and floriculture (Tables 19 & 20).

❖ There are several labour requiring processes in rice cultivation, which are not present in other crops and aquaculture. While a very high 71%, 69% and 58% of respondents mentioned that they engaged in weeding, transplanting and harvesting in rice fields, there fewer labour absorbing processes in aquaculture, horticulture and floriculture and their level of absorption was also far less compared to rice. (Tables 22-25).

Present Status of Women's Employment in Various Crops

❖ Women on an average got only 3.29 days of work in a week and 10.85 days of work in a month. The fieldwork was conducted during March – April, 2004. As the monthly days they worked is less than the four week multiple of the weekly days they worked, it shows the irregularity in their employment.

❖ With 53% of the women working in the reference month having worked as rice labourers, rice continues to be the major labour providing crop. But the number of days they worked as rice labourers is only 9.05% considering that according to women rice used to give as high as 22 days of employment before the shift in cultivation to aquaculture, horticulture and floriculture.

❖ Only 13% of women worked in aqua farms during the reference week. Though this increased slightly to 15 % for the longer reference period of the month, it is clear that in terms of number of women employed and in terms of number of days employment they get; aquaculture has not provided any improvement over paddy. The number of days women were employed in aqua-farms in the reference week was only 3.58 and just 9.67 during the reference month.

❖ Horticulture also gave employment to only 15% of women during the reference week and 18.5% in the reference month. The mean number of days women worked in the reference week was 3.36 and in the reference month 8.26.

❖ Floriculture is a minor employment provider, which employed only 6% of women in the reference week and eight percent in the reference month. It is concentrated only in a few villages.

❖ In addition to the shift in cultivation from paddy to aquaculture, horticulture and floriculture, the introduction of harvesting machines in some villages has virtually replaced human hands from harvesting. Women are the main sufferers here also.

Women's Wages in Various Crops

❖ It is important to note that the wages of women in rice, aquaculture and horticulture do not show any major difference. The daily wage for women in rice cultivation was Rs. 30.27, in aqua-culture a slightly less Rs. 28.92 and Rs. 26.49 in horticulture. The mean daily wage in floriculture was extremely low at just Rs. 18.43. This indicates that the new crops have not only reduced employment but has in no way helped in pushing up the wages.

Social, Economic, Environmental Impacts of Shift in Cultivation

❖ In addition to loss of employment indebtedness also appears to have increased due to the shift in cultivation. Sixty percent of respondents are indebted now as compared to only 28% before the shift.

❖ We don't seem to have got full information on families sending children for work. This could partly be due to family prestige and the state Government's campaign against the practice. However of the 51 women who said children from their families were working as high as 69% mentioned that it was due to poverty that they were doing so.

❖ Majority of respondents have observed that drinking water has been affected due to the seepage of saline water from the aqua farms to the drinking water tanks and wells. Part of the respondents have also mentioned health problems such as skin diseases, frequent cold, cough & fever, swelling and pain on the legs as being caused by their exposure to aqua farms.

❖ A section of the respondents are also aware that cultivation in the paddy fields near those converted as aqua farms are also affected due to salination.

Recommendations

❖ A series of advocacy and awareness building programmes for the various stakeholders related to the issue of loss of employment of women and other related adverse effects of the massive shift in cultivation, should be undertaken so that a consensus solution to reverse the present trends in this regard can be evolved.

❖ The state and district level workshops of the officials from Department of Rural Development, Women and Child Development, Labour, Agriculture and Environment, network NGO's/ CBOs, Environmental activists, Farmers, Labour Union leaders, Labourers, Human rights activists, Members of Women's Groups, literary writers and media persons should be conducted as part of the advocacy effort in this direction.

❖ At the village level, awareness building programes should be conducted for labourers as well as farmers to exert pressure from below and evolve an innovative consensus.

❖ Modern as well as traditional media should be utilised in this awareness building activity.

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