

Post Tsunami Technical and Social Interventions in Rice Tract of Tamil Nadu and Puducherry

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ABSTRACT

A study was conducted among 120 Tsunami affected rice farmers belonging to 16 villages of Nagapattinam and Cuddalore districts of Tamil Nadu and Karaikal region of Union Territory of Puducherry. 23 agencies were involved in post tsunami rice cultivation practices. Twenty eight activities categorized under four heads ,namely, Reclamation of Agricultural lands, Improving Paddy cultivation, Facilitative activities and Promoting group activities were being implemented by different agencies. It is seen that eight activities viz., Daincha distribution, Gypsum distribution, Group formation, Cash relief to farmers, Demonstrations in farmers field, Providing crop loan, Canal desilting and Animal Health Care were performed by agencies which benefited more than 50.00 per cent of the farmers. 17.50 per cent of farmers in the study area have expressed that their lands have been completely mitigated. Technological interventions made by different agencies paved way for reclamation of Tsunami affected Agricultural lands.

Key words: *Tsunami; Intervention; Rice farmers;*

On December 26, 2004 for the first time in half of a century, India experienced the devastating effects of Tsunami, caused by a series of earthquakes. The Tsunami waves caused extensive damage to three states (Andhra Pradesh, Tamil Nadu and Kerala) and two Union Territories (Puducherry and Andaman and Nicobar Islands) in India. According to Reinsurance Company 'Munich Re (2001), costs associated with natural disasters has gone up 14 fold since the 1950. Every year from 1991 to 2001, an average of 211 million people in the world were killed or affected by natural disaster. The most visible impact of the Tsunami was in the fisheries and shelter sectors and the responses of the government, and the individual and institutional donors were also slanted towards these sectors. There was relatively less attention given to agriculture. At the state level in Tamil Nadu the Tamil Nadu Tsunami Resource Centre (TNTRC) played a key role in information dissemination, knowledge networking and providing a platform for sharing of issues and good practices. At the district level in Nagapattinam district the NGOs Co-ordination Resource Centre (NCRC) played a major role in co-ordinating with all the stake holders involved

in post-Tsunami agricultural development. Agriculture is a dominant sector in the economy of Tsunami affected states and the union territory. It is seen that Rice is the most important crop of India and about 4159.32 ha of paddy area has been damaged due to the occurrence of Tsunami in Tamil Nadu (*Status report on reclamation of tsunami affected agricultural lands* (ROTAAL), 2006). It is also seen that the stakeholders recommend rice as the first crop to be grown in the Tsunami affected land. No other crop is adapted as rice, to varying agro-climatic conditions and farming situations (*Mohapatra, 2005*). Keeping the above factors in mind, the present research was designed with the specific objective to study the interventions followed by different agencies in the affected rice fields and their level of mitigation.

METHODOLOGY

Tamil Nadu State and Union Territory of Puducherry were selected purposively for the study. In Tamil Nadu the extent of crop area affected was severe in Nagapattinam district followed by Cuddalore district. Hence the two districts were selected .Out of the two

affected regions in Puducherry, ie., Puducherry (80ha) and Karaikal (712 ha) the extent of crop area damage was severe in Karaikal region. Hence it was selected.

The criteria set for selection of Taluks in Nagapattinam district include the selection of first three Taluks having maximum damage of paddy area. Accordingly, Vedarnayam, Tharangampadi and Sirkali were selected for the study. Based on the same criteria set for Nagapattinam district, Cuddalore taluk was selected for the study. Karaikal region is geographically a small area and hence the selection based on taluk does not arise. The same criteria adopted for selection of taluk was followed in the selection of villages also. As the extent of paddy area affected was very less (21 ha) the selection of villages was made at random in Cuddalore taluk (Cuddalore district). In Karaikal region about 11 villages were affected due to Tsunami. Out of the 11 villages, four villages were selected at random.

Finally 16 villages were selected. A sample size of 120 paddy affected farmers was considered as optimum.

RESULTS AND DISCUSSION

The interventions followed by different agencies in farmers field were collected and the results are presented below.

Interventions followed by different agencies: The result presented shows that 28 major activities categorized under four heads ,namely, Reclamation of Agricultural lands, Improving Paddy cultivation, Facilitative activities and Promoting group activities were included by the different agencies for reclamation in the Tsunami affected farmers field. Twenty three agencies which include both Government and Non-Governmental organizations were seen implementing the reclamation activities in the study area. The details of Agencies involved in Tsunami Rehabilitation for the

Table 1. Reclamation of Agricultural lands

| S. No. | Interventions/ Activities | No. of agencies* | Agencies and their Intervention/activity | Farmers benefited | | | | |
|---------------------------------|---------------------------|------------------|--|-------------------|---------------|------------------------------------|----|-------|
| | | | | No. | % | | | |
| 1 | Immediate land | 10 (43.48) | PREPARE & PEDDA-Leaching of salt affected soil and forming trenches Rs.600/ac | 14 | 11.97 | | | |
| | | | CCD-Removal of thorns and debris from field | 20 | 17.09 | | | |
| | | | CASA-Scrapping and removal of silt | 4 | 3.42 | | | |
| | | | ISED-Harvesting of affected crop and removal of silt | 8 | 6.84 | | | |
| | | | DHAN- Scrapping and removal of silt | 3 | 2.56 | | | |
| | | | CEE- Removal of thorns debris from the field and scrapping and removal of silt | 26 | 22.22 | | | |
| | | | TOFM- Scrapping and removal of silt | 11 | 9.40 | | | |
| | | | Venture Trust- Scrapping and removal of silt | 8 | 6.84 | | | |
| | | | TMSSS- removal of silt | 12 | 10.26 | | | |
| | | | Bhrathi – Scrapping and removal of silt | 11 | 9.40 | | | |
| | | | <i>Sub total</i> | <i>117</i> | <i>100.00</i> | | | |
| | | | 2 | Ploughing | 12 (52.17) | PREPARE&PEDDA-Providing Rs. 800/ac | 18 | 19.57 |
| | | | | | | SEVALAYA-Providing Rs 350/ac | 6 | 6.52 |
| Govt of TN-Providing Rs.1500/ac | 3 | 3.26 | | | | | | |
| CCD | 19 | 20.65 | | | | | | |
| RIM | 2 | 2.17 | | | | | | |
| Kudumbam - Providing Rs. 350/ac | 6 | 6.52 | | | | | | |
| CEE- Providing Rs300/ac | 18 | 19.57 | | | | | | |
| TOFM | 9 | 9.78 | | | | | | |
| TMSSS | 7 | 7.61 | | | | | | |
| Bhrathi- | 1 | 1.09 | | | | | | |
| RECO-Disc ploughing | 1 | 1.09 | | | | | | |
| VBDS | 2 | 2.17 | | | | | | |
| <i>Sub total</i> | <i>92</i> | <i>100.00</i> | | | | | | |

* Figures in Parentheses indicates percentages

Table 2. Improving Paddy cultivation

| S. No. | Interventions/ Activities | No. of agencies* | Agencies and their Intervention/activity | Farmers benefited | |
|--------|---|------------------|---|-------------------|--------|
| | | | | No. | % |
| 1 | Trimming and bund formation | 5 (21.74) | PREPARE & PEDA –Providing labour | 16 | 33.33 |
| | | | SEVALAYA - Providing labour | 3 | 6.25 |
| | | | CCD- Providing labour | 18 | 37.50 |
| | | | TOFM | 9 | 18.75 |
| | | | VBDS | 2 | 4.17 |
| | | | <i>Sub total</i> | 48 | 100.00 |
| 2 | Soil testing | 7 (30.43) | PREPARE & PEDA | 5 | 8.93 |
| | | | Govt of TN | 6 | 10.71 |
| | | | CCD | 9 | 16.07 |
| | | | Kudumbam | 3 | 5.36 |
| | | | CEE | 8 | 14.28 |
| | | | PAJANCOA &RI | 20 | 35.72 |
| | | | Government of Puducherry | 5 | 8.93 |
| | | | <i>Sub total</i> | 56 | 100.00 |
| 3 | Water testing | 1 (4.35) | Govt of TN | 2 | 100.00 |
| 4 | Distribution of paddy seeds | 10 (43.48) | PREPARE & PEDA-Providing paddy seeds @60 Kg /ac | 16 | 9.52 |
| | | | SEVALAYA-Providing paddy seeds @20 Kg/ac | 4 | 2.38 |
| | | | Govt of TN-Providing paddy seeds @30 Kg/ac | 71 | 42.26 |
| | | | CCD- Providing paddy seeds @40Kg ac | 27 | 16.07 |
| | | | RIM | 2 | 1.19 |
| | | | CASA | 2 | 1.19 |
| | | | Kudumbam- Providing paddy seeds @20Kg/ac | 5 | 2.98 |
| | | | CEE | 21 | 12.51 |
| | | | VBDS | 4 | 2.38 |
| | | | Government of Puducherry | 16 | 9.52 |
| | | | <i>Sub total</i> | 168 | 100.00 |
| 5 | Weeding in paddy fields | 1 (4.35) | PREPARE&PEDA- Providing labour @18 labour/ac for Rs. 1440 | 15 | 100.00 |
| 6 | Providing paddy straw as feed to cattle keeping farmers | 1 (4.35) | SEVALAYA | 3 | 100.00 |
| 7 | Providing assistance for rice fallow crops | 3 (13.04) | Govt of TN-Black gram @10 Kg/ac | 9 | 39.13 |
| | | | CCD-Distribution of Ragi, Bhendi Sunflower and Cotton seed | 6 | 26.09 |
| | | | ISED-Distribution of cotton seed and Providing weeding cost | 8 | 34.78 |
| | | | <i>Sub total</i> | 23 | 100.00 |
| 8 | Providing crop loan | 3 (13.04) | CCD- Providing Rs 1500/ac | 12 | 54.54 |
| | | | DHAN | 4 | 18.18 |
| | | | VBDS | 6 | 27.28 |
| | | | <i>Sub total</i> | 22 | 100.00 |

* Figures in Parentheses indicates percentages

Agriculture sector in the study area are as:- 1. Church's auxiliary for social action (CASA), 2. Covenant Centre for Development (CCD), 3. Development of Human

Action (DHAN), 4. Thanjavur Multipurpose Social Service Society (TMSSS), 5.Rejenovate India Movement (RIM), 6. Tamil Nadu Organic Farmers

Table 3. Facilitative activities

| S. No. | Interventions/ Activities | No. of agencies* | Agencies and their Intervention/activity | Farmers benefited | |
|--------|---|------------------|--|-------------------|--------|
| | | | | No. | % |
| 1 | Distribution of Inorganic fertilizers | 4 (17.39) | VENTURE TRUST | 8 | 23.53 |
| | | | PREPARE | 16 | 47.06 |
| | | | Bhrathi-Urea –6bags;Pottash-6bags; Neem cake-4 bags | 6 | 17.65 |
| | | | VBDS-DAP 2 bags;Pottash 2 bags ; Neem cake-2 bag | 4 | 11.76 |
| | | | <i>Sub total</i> | 34 | 100.0 |
| 2 | Distribution of Organic fertilizers | 5 (21.74) | Govt of TN-Azospirillum @ 4 packet/ac | 12 | 21.43 |
| | | | CCD- Vermicompost @300Kg/ac and neem cake @5Kg/ac | 18 | 32.14 |
| | | | Kudumbam-Azospirillum 2Kg/ac;Phosp | 5 | 8.93 |
| | | | hobacteria-2Kg/ac and Pseudomonas 2Kg/ac | | |
| | | | CEE- Azospirillum and Phosphobacteria-16packets/ac @ Neem cake 5 Kg/ac | 17 | 30.36 |
| | | | VBDS-Vermicompost 50 Kg | 4 | 7.14 |
| | <i>Sub total</i> | 56 | 100.0 | | |
| 3 | Distribution of Micro nutrient | 1 (4.35) | CCD-Zinc Sulphate 3Kg/ac | 03 | 100.00 |
| 4. | Canal desilting | 6 (26.09) | SEVALAYA | 1 | 3.33 |
| | | | CCD | 17 | 56.67 |
| | | | ISED | 4 | 13.33 |
| | | | DHAN | 2 | 6.67 |
| | | | AVVAI | 4 | 13.33 |
| | | | VBDS | 2 | 6.67 |
| | | | <i>Sub total</i> | 30 | 100.0 |
| 5 | Pond desilting | 7 (30.43) | CCD | 8 | 20.00 |
| | | | DHAN | 9 | 22.50 |
| | | | AVVAI | 2 | 5.00 |
| | | | MSSRF | 1 | 2.50 |
| | | | CEE | 3 | 7.50 |
| | | | TOFM | 9 | 22.50 |
| | | | TMSS | 8 | 20.00 |
| | | | <i>Sub total</i> | 40 | 100.0 |
| 6 | Daincha seed distribution | 5 (21.74) | PREPARE & PEDDA | 10 | 7.69 |
| | | | Govt of TN- 26Kg/ac | 75 | 57.69 |
| | | | CCD-42 Kg/ac | 18 | 13.85 |
| | | | CEE-12.5Kg/ac | 16 | 12.31 |
| | | | Government of Puducherry | 11 | 8.46 |
| | <i>Sub total</i> | 130 | 100.0 | | |
| 7 | Casurina seedling distribution | 1 (4.35) | MSSRF | 1 | 100.00 |
| 8 | Gypsum distribution | 4 (17.39) | Govt of TN- 3 bags/ac | 76 | 69.72 |
| | | | CCD-4bags/ac | 8 | 7.34 |
| | | | CEE-4 bags /ac | 20 | 18.35 |
| | | | Government of Puducherry | 5 | 4.59 |
| | | | <i>Sub total</i> | 109 | 100.0 |
| 9 | Providing cash relief | 3 (13.04) | Govt of TN-Rs 2000/ac for flood | 17 | 38.64 |
| | | | DHAN | 3 | 6.82 |
| | | | Govt of Puducherry- Rs60,000/ha for crop loss; flood relief Rs1500/ac | 24 | 54.54 |
| | | | <i>Sub total</i> | 44 | 100.0 |
| 10 | Implementation of cash for work programme | 3 (13.04) | EFICOR | 2 | 21.22 |
| | | | ISED | 4 | 44.44 |
| | | | VBDS | 3 | 33.34 |
| | | | <i>Sub total</i> | 9 | 100.0 |
| 11 | Hiring of farm implements | 1 (4.35) | VBDS-Tiller hiring | 3 | 100.00 |
| 12 | Facilitating for land on lease | 1 (4.35) | ISED-Providing money for taking land on lease @Rs3000/ac | 3 | 100.00 |
| 13 | Animal health care | 2 (8.69) | ISED- Consulted Veterinary doctor | 2 | 25.00 |
| | | | DHAN- Distribution of poultry birds | 6 | 75.00 |
| | | | <i>Sub total</i> | 8 | 100.0 |

* Figures in Parentheses indicates percentages

Movement (TOFM), 7. Kudumbam - Leisa Network, 8. Institute for Social Education and Development (ISED), 9. People Education for Development Association (PEDA), 10. Sevalaya, 11. Evangelical Fellowship of India Commission on Relief (EFICOR), 12. Centre for Indian Knowledge Systems (CIKS), 13. Bharathi Women and Child Development Society, 14. Centre for Environment Education (CEE), 15. Avvai village welfare society (AVWS), 16. Government of Tamil Nadu (GoTN), 17. Government of Pondicherry (GoP), 18. Pandit Jawaharlal Nehru College of Agriculture and Research Institute (PAJANCOA & RI), 19. PREPARE-India Rural Reconstruction and Disaster Response Service, 20. Venture trust, 21. MS Swaminathan Foundation (MSSRF), 22. Village Development Society (VDS), 23. Restoration of Eastern Common Wealth Organisation (RECO).

The details of activities falling under four sub heads, namely, Reclamation of Agricultural lands, Improving Paddy cultivation, Facilitative activities and Promoting group activities are discussed below:

Reclamation of Agricultural lands : Table 1 reveals that Under the Immediate land reclamation activity, it is seen that 22.22 per cent of farmers were benefited by CEE followed by CCD (17.09%) and PREPARE & PEDA (11.97%). Other agencies like TMSS, Bharathi, TOFM, ISED, Venture trust, CASA and DHAN have also extended their support to the farmers. The percentage of beneficiaries ranged from 2.56 per cent to 10.26 per cent. The Ploughing activity revealed that an almost equal proportion of farmers were benefited by CCD (20.65%), CEE (19.57%) and PREPARE & PEDA (19.57%). Other agencies like SEVALAYA, RIM, Kudumbam, TOFM, TMSS, Bharathi, RECO, VBDS and Government of Tamil Nadu have also facilitated this activity to some extent. The percentage of beneficiaries ranged from 1.09 per cent to 9.78 per cent.

Improving Paddy cultivation : From Table 2 it is seen that Under Trimming and Bund formation activity 37.50 per cent of farmers were benefited by CCD and one-third of the respondents (33.33%) were benefited by

Table 4. Promoting group activities

| S. No. | Interventions/ Activities | No. of agencies* | Agencies and their Intervention/activity | Farmers benefited (No.) | Per cent (%) |
|--------|--------------------------------|------------------|--|-------------------------|--------------|
| 1 | Formation of groups | 4 (17.39) | Govt of TN @30 members /group | 48 | 52.17 |
| | | | CCD | 25 | 27.17 |
| | | | ISED | 4 | 4.35 |
| | | | DHAN | 15 | 16.31 |
| | | | <i>Sub total</i> | <i>92</i> | <i>100.0</i> |
| 2 | Training of farmers | 5 (21.74) | Govt of TN | 41 | 37.96 |
| | | | CCD | 22 | 20.37 |
| | | | AVVAI | 3 | 2.78 |
| | | | CIKS | 4 | 3.70 |
| | | | CEE | 10 | 9.26 |
| | | | TOFM | 20 | 18.52 |
| | | | PREPARE&PEDA | 8 | 7.41 |
| | | | <i>Sub total</i> | <i>108</i> | <i>100.0</i> |
| 3 | Health care of farmers | 1 (4.35) | CCD | 4 | 100.0 |
| 4 | Demonstration in farmers field | 2 (8.69) | CEE | 8 | 80.00 |
| | | | PAJANCOA & RI | 2 | 20.00 |
| | | | <i>Sub total</i> | <i>10</i> | <i>100.0</i> |
| 5 | Study tour programme | 2 (8.69) | VBDS | 4 | 40.00 |
| | | | CCD | 6 | 60.00 |
| | | | <i>Sub total</i> | <i>10</i> | <i>100.0</i> |

* Figures in Parentheses indicates percentages

PREPARE&PEDA. The other agencies like Sevalaya, TOFM and VBDS have also implemented this activity for the farmers. The percentage of beneficiaries ranged from 4.17 per cent to 18.75 per cent. Table 3 also reveals that 35.72 per cent of the farmers were benefited by the soil testing activity conducted by PAJANCOA&RI. The other agencies like CCD, CEE, PREPARE & PED A, Government of Tamil Nadu, Kudumbum and Government of Puducherry were also involved in soil testing activity. The percentage of beneficiaries ranged from 5.36 per cent to 16.07 per cent. In the distribution of salt tolerant paddy seeds it is seen that 42.26 per cent of the respondents were benefited by Government of Tamil Nadu followed by CCD(16.07%) and CEE (12.51%).

Facilitative activities : From Table 3 it is seen that 32.14 per cent of the farmers were benefited by Distribution of Organic fertilizers by CCD followed by CEE (30.36%) and Government of Tamil Nadu (21.43%).In “Canal desilting activity”, 56.67 per cent of the farmers were benefited by CCD followed by an

equal proportion of farmers (13.33%) getting benefit from ISED and AVVAI. Table 3 reveals that 22.50 per cent of farmers were benefited by “Pond desilting activity” through DHAN and TOFM followed by TMSS (20.00%) and CCD (20.00%).The “Daincha seed distribution activity” revealed that 57.69 per cent of the farmers were benefited by Government of Tamil Nadu followed by interventions by CCD (13.85%) and CEE (12.31%).The Distribution of Organic fertilizers showed that 32.14 per cent of the farmers were benefited by

Table 5. Abstract of Major Activities

| Name of the agency | Name of the activity in which more than 50.00 per cent of the farmers were benefited | Per cent |
|--------------------|--|----------|
| GoTN | Daincha seed distribution | 57.69 |
| | Gypsum distribution | 69.72 |
| | Group formation | 52.17 |
| GoP | Cash relief to farmers | 54.54 |
| CEE | Demonstration in farmers field | 80.00 |
| CCD | Providing crop loan | 54.54 |
| | Canal desilting | 56.67 |
| DHAN | Animal health care | 75.00 |

Table 6. Farmers perception on the Extent of Mitigation

| S. No. | Name of the District | Extent of Mitigation (Nos) | | | |
|--------|-----------------------|----------------------------|--------------|--------------|---------------|
| | | At 25% level | At 50% level | At 75% level | At 100% level |
| 1 | Nagapattinam District | 24 (29.63) | 28 (34.57) | 24 (29.63) | 05 (6.17) |
| 2 | Karaikal region | 09 (37.5) | 09 (37.5) | 06 (25.00) | |
| 3 | Cuddalore district | 00 | 00 | 05 (33.33) | 10 (66.67) |
| 4 | Overall | 24 (20.00) | 37 (30.83) | 38 (31.67) | 21 (17.50) |

Figures in Parentheses indicates percentages

CCD followed by CEE (30.36%) and Government of Tamil Nadu (21.43%).In “Canal desilting activity”, 56.67 per cent of the farmers were benefited by CCD followed by an equal proportion of farmers (13.33%) getting benefit from ISED and AVVAI. Table 3 also reveal that 22.50 per cent of farmers were benefited by “Pond desilting activity” through DHAN and TOFM followed by TMSS (20.00%) and CCD (20.00%).The “Daincha seed distribution activity” revealed that 57.69 per cent of the farmers were benefited by Government of Tamil Nadu followed by interventions by CCD (13.85%) and CEE (12.31%).

Promoting group activities : Table 4 reveals that under the training component 37.96 per cent of farmers were benefited by Government of Tamil Nadu followed by

CCD (20.37%) and TOFM (18.52%).The other activities like distribution of inorganic fertilizers, micro nutrients, casurina seedlings and gypsum, providing paddy straw for cattle keeping farmers, crop loans, cash relief, assistance for rice fallow crops, crop loan, water testing, assistance for weeding in paddy fields, health care for farmers, implementation of cash for work programme, demonstration in farmers field, hiring of farm implements, study tour, facilitation for land on lease, animal health care and formation of groups were being implemented by different agencies. The involvement of the agencies for the activities mentioned above ranged from 4.35 per cent to 17.39 per cent.

In a nut shell, it is seen that 23 agencies were involved in post tsunami rice cultivation practices.

Twenty eight activities were being implemented by different agencies. It is seen that some of the activities were performed by agencies which benefited more than 50.00 per cent of the farmers. The abstract of major activities is given in Table 5.

Table 6 shows that in Nagapattinam district of Tamil Nadu only 6.17 per cent of the farmers have expressed that their lands have been completely mitigated due to the interventions made by different agencies. In Karaikal region of Puducherry, 25 per cent of the farmers have expressed that their lands have been completely mitigated due to the interventions made by different agencies. In Cuddalore district of Tamil Nadu 66.67 per cent of the farmers have expressed that their lands have been completely mitigated due to the interventions made by different agencies. The Overall figure shows that only 17.50 per cent of farmers have expressed that their lands have been completely mitigated.

CONCLUSION

About 28 Interventions were made by different agencies for the tsunami affected rice farmers. About 23 agencies were involved in the implementation of post tsunami activity in the study area. Eight activities viz., Daincha distribution, Gypsum distribution, Group formation, Cash relief to farmers, Demonstrations in farmers field, Providing crop loan, Canal desilting and Animal Health Care were performed by agencies which benefited more than 50.00 per cent of the farmers. Only 17.50 per cent of farmers in the study area have expressed that their lands have been completely mitigated which means the mitigation efforts have to be continued for some more time. Agriculture in the affected region got a fillip only due to motivation and support given by NGOs largely to restart agriculture otherwise chances were there wherein a farmer had the only option to discontinue agriculture.

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