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# The Impact Of Gaja Cyclone On Paddy And Rural Infrastructure In Thettanviduthi Village, (Pudukkottai District) Tamil Nadu, India

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## Abstract

The present study was carried out about the effect of Gaja Cyclone on the Thettanviduthy village located in Karambakudi Taluk, Pudukkottai District. About 80% destruction of agricultural crops were occurred during the gaja cyclone in this area. The major crops affected were Pulses, Rice, Ground nuts, Brinjal, Banana and Casuarina plants. The economic losses suffered by the cultivators were very pathetic. Of these, pulses (60%), Paddy (70-85%), Vegetables (40-60%), Banana (100%), Casuarina (60-80%) were vanished during the Gaja. It was observed that after one month 40% of cultivation was restored in the cyclone effected area. Effect of Gaja was very worst among the farmers of this village and their rehabilitation work was still lagging.

**Keywords:** Gaja cyclone, 80% destruction, 40% reconstruction, re-habitation.

## Introduction:

A cyclone is a rapidly rotating storms system characterized by a low-pressure center, a closed low-level atmospheric circulation, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain. Most of the cyclone have wind speed less than 110 miles per hour (177 km/h), and approximately 250 feet (80 m) across, and travel a few miles (several kilometers) before dissipating. The most extreme cyclone can attain wind speeds of more than 300 mph (480 km/h), stretch more than two miles (3 km) across, and stay on the ground for dozens of miles (perhaps more than 100 km). Cyclones are mostly formed over the South Pacific and Indian Ocean due to pressure variations<sup>1</sup>. Hurricanes are tropical storms that form over the North Atlantic Ocean and Northeast Pacific. Typhoons are cyclic monsoon winds formed over the Northwest Pacific Ocean<sup>2</sup>.

A severe cyclonic storm hit the Andhra Coast on May 8th, 1990. The wind speed was around 250 km/hr and the storm waves surged to a height of 5-6 m. The storm was accompanied by gales and heavy rainfall. It caused extensive damage over the coasts of river Krishna in the Guntur district. The rainfall also affected the neighbouring districts as flood water flowed into them. About 6000 villages were affected. There were over 900

human casualties besides around 24,000 cattle. Around 569,000 houses were completely destroyed by the storm. Another 827,100 were partially damaged. The total damage to property was estimated at Rs 125 million. The above news item can give you some idea of the damage that is caused by cyclonic storms. Indian Ocean is a highly cyclone prone region. The depth of the ocean bed and the shape of the coast both contribute to Indian Ocean being one of the six Cyclone-prone regions.

### **Why Cyclones Occurs?**

A cyclone is a swirling atmospheric disturbance in regions of low pressure. It occurs in hot oceans and is accompanied by powerful winds. The direction of spiraling is counter clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

The centre of the cyclone is called the eye of the cyclone. Clouds gather around the centre. Worst conditions with devastating winds prevail in the wall of the eye in a radius of 20-30 km. As the eye of the cyclone crosses an area, the wind drops. The speed of the wind rises again and the calm in between is not the end of the cyclone. A cyclone may have a diameter that may extend to hundreds of kilometers.

### **Gaja cyclone in 2018:**

Severe Cyclonic Storm Gaja was the fifth named cyclone of the 2018 North Indian Ocean cyclone season, after cyclones Sagar, Mekunu, Luban and Titli. On November 5, a low pressure system formed over the Gulf of Thailand. The system crossed through Southern Thailand and the Malay Peninsula on November 8. The next day, it crossed into the Andaman Sea and lingered there throughout the day and intensified into a depression over the Bay of Bengal on November 10.

The highest wind speed was 150km/h and lowest pressure 975 mbar. Thailand, Sumatra, Malaysia, Andaman and Nicobar Islands, Sri Lanka, South India, Somalia were affected in Gaja. At 12:00 AM on November 11, a deep depression strengthened into a cyclonic storm, and the name was coined in Thailand as "GAJA". After tracking west-southwestward for a number of days, it made landfall near Nagapattinam. Gajapasses through the Vedaranyam and eye passes through Thagattur, Voimedu, Thiruuthurai poondi, Muthupet, Pattukotai, Adirampattinam and Mallipattinam on 12th November.

At the time of landfall of the cyclone, heavy winds of about 140-160 kmph speed were experienced. The highest wind speed were recorded in Adhirampattinam at 162 kmph and secondly Muthupet recorded 160 kmph. Regions of Karaikal and Nagapattinam also experienced 100 kmph winds. The affected areas were the districts of Nagapattinam, Thanjavur, Thiruvarur, Pudukottai, Karaikal, Cuddalore, Trichy and Ramanathapuram. As on November 22, 63 people were killed by the storm. Tamil Nadu Government seeks Rs 15,000 crore from Centre to rebuild after cyclone Gaja. About 1 lakh electric poles, 1000 transformers, 201 electricity substations and 5000 boats were

destroyed by the cyclone. Thousands of cattle, birds died due to the cyclone. 63 people died mostly in the districts of Thiruvavur, Thanjavur and Pudukottai. About 18000 hectares of Coconut trees were damaged and mostly uprooted. Totally 56,000 hectares of crops and trees were destroyed due to the cyclone.

### **Gaja cyclone: profile of damage / loss:**

In India, tropical cyclones are one of the common hydro meteorological hazards. Owing to its long coastline, high density of population and large number of urban centers along the coast, tropical cyclones over the time are having a greater impact on the community and damage the infrastructure. Secondly, the climate change is warming up oceans to increase both the intensity and frequency of cyclones. Hence, it is important to garner all the information and critically assess the impact and management of the cyclones. Gaja was one of the major cyclones to hit the Tamil Nadu coast in November 2018. It left a devastating tale of destruction on the cyclone path damaging houses, critical infrastructure for essential services, uprooting trees, affecting livelihoods etc., in its trail. However, the loss of life was limited. This has been achieved over time with targeted mitigation, better preparedness, swift response and community awareness. This report documents the Rehabilitation support provided through CSR Project funded by Emphasis, partnering with United Way and Implemented by Caritas India, in order to cap the efforts put in place for faster restoration of essential services and infrastructure. Finally, it draws upon the best practices and lessons learnt to suggest the future course of action. We acknowledge the support and co-operation extended by Emphasis, in our efforts to document the support provided post Cyclone Gaja. We are hopeful that this study will help upcoming CSR projects in cyclone mitigation, preparedness and response.

### **History of Gaja cyclone:**

Tamil Nadu is historically one of the most vulnerable States to tropical cyclone. The total geographical area of Tamil Nadu is 13 Million hectares and it has a coastline of 1,076 km which is about 15% of the coastline of India. The State is multi-hazard prone, the major natural hazards being Cyclonic storms, Urban and Rural floods, and periodic Droughts. Some of the tropical cyclones that hit Tamil Nadu are Gaja (2018), Ockhi (2017), Vardha (2016), Nilam (2012), Thane(2011), Jal(2010) and Nisha (2008). Severe Cyclonic Storm Gaja originated as a low-pressure system over the Gulf of Thailand. The weak system intensified into a depression over the Bay of Bengal on November 10, 2018 and further intensified to a cyclonic storm on November 11 2018, being classified 'Gaja'. Cyclone Gaja made landfall in South India, at Vedaranyam, Tamil Nadu. At the time of landfall of the cyclone, 100-120 kmph speed was experienced. The highest sustained speed was recorded in Adhirampattinam at 165 kmph and 160 kmph at Muthupet. The cyclone Gaja affected 08 districts of Tamil Nadu, namely, Nagapattinam, Thanjavur, Thiruvavur, Pudukottai, Karaikal, Cuddalore, Trichy and Ramanathapuram. Based on the incidents of the cyclones, the strength of wind speed, probable maximum storm Surge (PMSS), Probable Maximum Precipitation (PMP), the proneness of cyclones in various districts of

India has been categorized (Mohapatra, 2015). Pic.3 clearly shows that Nagapattinam District of Tamil Nadu falls under category P2, whereas, Thanjavur strict falls under category P3. These two districts were the worst affected by Cyclone Gaja.

### **Profile of damage & loss**

When Cyclone Gaja made landfall on November 16, 2018, between Nagapattinam and Vedaranyam in Tamil Nadu, it left a trail of destruction, uprooting nearly 50 lakh coconut trees, more than a lakh electricity poles, besides other fruit trees. Farmers in seven coastal districts bore the brunt, losing their crops. Nagapattinam district was the worst affected, as the cyclone made landfall there. A few coastal villages in Nagapattinam district suffered a double whammy of the cyclone and the storm surge that it caused. Storm surge is an abnormal sea level rise caused by atmospheric weather systems such as tropical cyclones and hurricanes. In November 2018, Cyclone Gaja caused a rise in sea level, bringing the brine into the coastal villages. While seawater entered the villages of Vellapallam, Pushpavanam and Vettaikaraniruppu, Kovilpathu was the most affected. Kovilpathu village, where most of the residents are farmers, not only lost their standing crops and trees, the storm surge made the groundwater and soil saline. Indian National Centre for Ocean Services, places the Nagapattinam – Pamban stretch of the Bay of Bengal coast, where the village is situated, in a high-risk zone, with 3 to 5 m surge height. The village is about a kilometer from the shore. The storm surge resulted in loss of crops and livestock, besides prawn and fish farms that a few villagers owned. The youth of the village, who hold professional and science degrees, yet continue farming, are aware of the climate crisis and fear increasing vulnerability and its impact on their livelihood.

### **Major Affected Areas:**

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### **Damage due to Gaja Cyclone:**

The damages caused by Super Cyclonic Storm can be broadly classified under three categories:

- Loss of human life and loss of livestock
- Devastation caused to public and private properties including private buildings, public buildings, power supply system, communication system, and water supply system.
- Loss caused to agricultural and plantation crops, dislocation of agricultural operations, impact on the livelihood of farmers, agriculture labourers, village artisans, and weaver

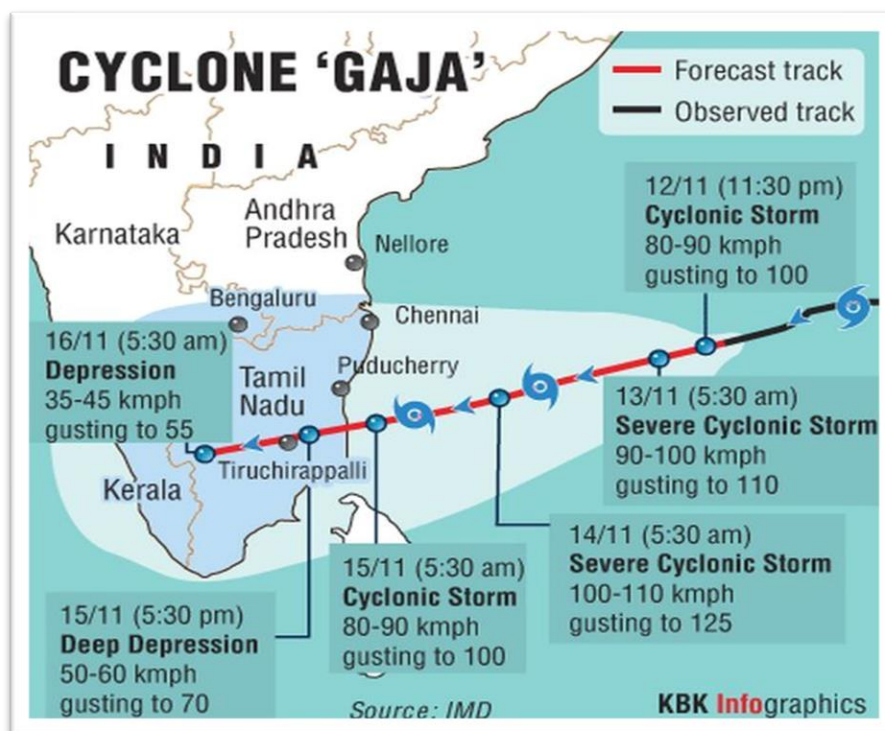
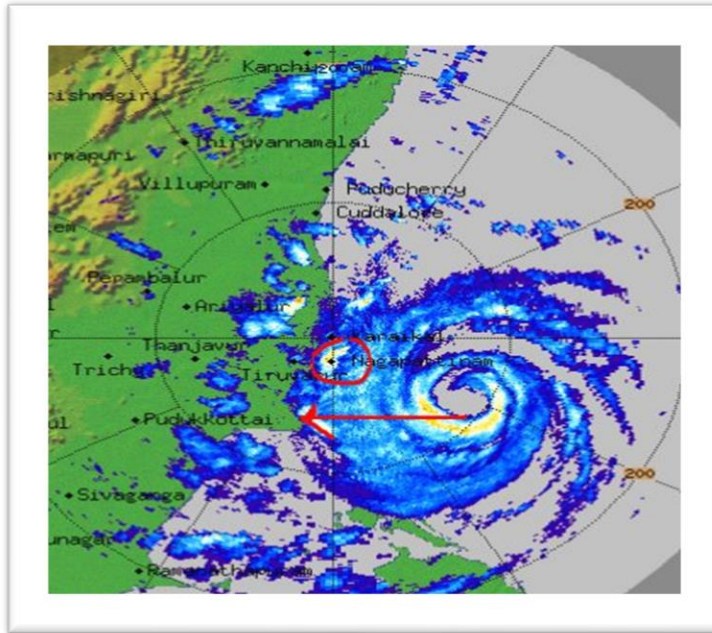


Fig 1.1 Track Gaja cyclone



**Fig.1.2 Gaja Cyclone live updates**

### **Scope of the study:**

To build upon the learning of Cyclone “Gaja” and to document the lessons learnt and best practices, the present study was undertaken with the following objectives. This study focuses on climate extremes that Pudukkottai repeatedly affected by—namely Gaja cyclone. The study would also concentrate on socio economic effects of disaster on the coastal farmers. The result would be useful for researchers and policy makers in development of future plans for adapting new technology to help coastal farmers to overcome the disaster events. Also the study explores current knowledge regarding factors that can increase a region's vulnerability to disaster; and assesses how disaster mitigation and reduction might best be achieved through sound agricultural development and environmental practices the purpose of this study also is to examine natural disasters up on the coastal farmers in the agricultural sector.

### **Objectives:**

- To critically analyze the role of disaster managers in the management of Cyclone Gaja with special reference to early warning, preparedness, impact, response, and community preparedness.
- To evaluate the impact of Cyclone Gaja on the infrastructure, services, and communities.
- To study the measures undertaken by the Central Government, State Governments and District Administrations to reduce the mortality and impact of cyclones in the State of Tamil Nadu.
- To document the best practices undertaken during the management of Cyclone Gaja.

- Suggest evidence-based recommendations for better management of Cyclones in the future.
- To identify the areas of strength and weaknesses in performing the tasks.
- To assess the present condition of the victims of the Cyclone and
- To derive lessons for meeting such challenges in future.

### **Study Area:**

On 14 January 1975, Pudukkottai was organised as a separate district comprising the former Pudukkottai Division of Tiruchirappalli district with some additions from Thanjavur district. At present, this district is composed of three revenue divisions, namely, Pudukkottai, Aranthangi and Illupur and eleven taluks, namely, Kulathur, Illuppur, Alangudi, Pudukkottai, Gandarvakottai, Thirumayam, Aranthangi, Ponnamaravathi, Karambakudi, Avudaiyarkoil and Manamelkudi.

Pudukkottai has a familiar Historical background and it was formerly Princely State with the title of "SAMASTHANAM" ruled by the "H.H. The Rajah's of THONDAIMANS". The present Pudukkottai district is encompassing the entire Princely State of Pudukkottai and parts of Tiruchirappalli and Thanjavur districts. Pudukkottai district came into existence on 14.1.1974. The erstwhile "Pudukkottai State" has been justly famous for its efficient and stable administration through the years with its season administrative system, operating with well understood concepts of hierarchy line of command and discreet adherences to principles and procedures. Really this credit goes to the initial author and as well as the founder of the system of "District Office Manual", by "Sir Alexander Loftus Tottenham", the Agent of the British Emperor/ Administrator of erstwhile "Pudukkottai State" for his aim of trim and efficient administration. Pudukkottai District is bounded on the North East and East by Thanjavur District, on the South East by Bay of Bengal, on the South West by Ramanathapuram and Sivaganga districts and on the West and North East by Thiruchirappalli District.

Tamil Nadu, with an area of 1, 30,058 sq.km is situated in the South East part of the Indian peninsula between Latitudes 11.1271 and longitudes 78.6569. It is bounded in the east by the Bay of Bengal, in the south by Indian Ocean, in the west by the Kerala state and Arabian Sea while in the north by Karnataka and Andhra Pradesh. The climate of the state is tropical monsoon type. In the plains, the temperature during winter seldom goes below 18°C while in peak summer it rises to 43° C. Tamil Nadu and Puduchery receive rains from both the northeast and southwest monsoons.

Pudukkottai district was carved out of Tiruchirappalli and Thanjavur districts in January 1974. The district has an area of 4663 sq.km with a coast line of 42.8 km. The district lies between 78.25' and 79.15" of the Eastern Longitude and between 9.50' and 10.40" of the Northern Latitude. It is bounded by Tiruchirappalli district in the North and West, Sivaganga district in the South, Bay of Bengal in the East and Thanjavur district in the North East. It has a coastline of about 39-km. The average rainfall in Pudukkottai is 821 mm. During northeast monsoon this district receives the highest rainfall of 397 mm

followed by, South west monsoon with 303 mm of rainfall. The summer and winter rainfalls are 81 mm and 40 mm respectively.

Karambakudi is a Taluk located in Pudukkottai district of Tamil Nadu. It is one of 11th Taluk of Pudukkottai district. The village was on the latitude of 10.458°N and on 79.135° E with an average elevation of 36 meters (118 feet). There are 48 villages and 1 town in Karambakudi Taluk. Thettanviduthy is a large village located in Karambakudi Taluk of Pudukkottai district. The location map of the study area is given below. The study area is experiencing two monsoon climates. These are Southwest monsoon climate – (June, July, August, and September) and Northeast monsoon climate – (October, November, December). “Gaja” cyclone was formed by northeast monsoon period of the November 11 in the year.

**GAJA Cyclone Crop damage Report**

District : Pudukkottai Date: 11.12.2018

(unit in Ha.)

Sl. No.	Name of the Crop	Area Reconciled (Ha)	Area affected as on 17.11.2018	Area enumerated so far 11.12.2018	No. of farmers			
					SF	MF	Others	Total
1	Coconut	10014	5158	9947	9874	7321	566	17761
2	Sugarcane	2478	1336	1366	712	434	107	1253
3	Maize	1583	946	951	480	332	30	842
4	Paddy	55787	810	1169	1369	886	89	2344
5	Pulses	1091	65	111	116	39	2	157
<b>Total</b>		<b>70953</b>	<b>8315</b>	<b>13544</b>	<b>12551</b>	<b>9012</b>	<b>794</b>	<b>22357</b>

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**Fig 1.3 crop damage report**

**Data collection:**

Data Collection Note Book, Questionnaire, Measuring Tape, Camera and GPS. Survey method of data collection was used in this study. The objective of this paper is to assess post-cyclone conditions of farmers, identify major livelihood groups, adversity and crisis, and evaluate the livelihood strategies of coastal households. The data was collected from about 50 Gaja victims (point sources of information) through simple random sampling method and personal interview. This study comprises of spatial and non-spatial data. Questionnaire was developed by expert advice for collecting data from the cyclone affected area. Simple statistics and descriptive diagnostic approach for the study has done. Geographical information system was used to demarcate the study area and mapping of cyclone affected area<sup>3</sup>. The damages caused by the cyclone is described and given in tabular form.



An assessment framework was developed to learn the impact and response of the Cyclone Gaja in Tamil Nadu. The present study was conducted from 12 to 15 February 2019 in consultation with Government of Tamil Nadu and District Administration of affected Districts. Two worst affected districts of Nagapattinam and Thanjavur were also visited during the period. An interview schedule was prepared in advance (Annexure I) for different stakeholders namely government officials, civil society and local communities. In-depth interviews were held with government officials at the state and district level like Additional Chief Secretary/ State Relief Commissioner, Officials of line Departments like Electricity, Animal Husbandry, Agriculture, PWD, etc. A number of focused group discussions were held with civil society organizations and affected communities. Also, two of the districts affected were visited by team of NDMA for direct observation in the field.

Thus, the data used in this study includes both primary and secondary data. Primary data was generated from the field through direct observation and in-depth focused discussions. The secondary data was sourced from a memorandum issued by the state government, government reports and articles from the newspaper, journals, etc.

#### **A. Direct Method:**

Direct observed method also followed in this work. For my survey directly went to Pudukottai then observe the Gaja affected area and surveyed the damaged, uprooted trees, defoliate trees. I started my first visit to Pudukottai on 17.03.2022, Second, Third visit on 02.04.2022 and 03.04.2022 continuous made the visit in regular interval to observe the affected area.

#### **B. Questionnaire method:**

For my study, questionnaires method used to collect the data from the people of Pudukottai. In Gaja affected area of this village there are 50 suitable questions were framed and it was asked to the Pudukottai people, through these collection of information like trees affected by Gaja, total number of trees affected by Gaja, number of trees uprooted, resistant variety were calculated using this method. Questions were asked to the people who lived in Pudukottai.

#### **Sampling technique:**

In order to the researcher evaluate the problem and Prospects of Gaja cyclone affected area in Pudukottai district, 13 blocks were selected by adopting stratified random sampling method. A total of two blocks are affected area 50 sample was selected randomly for Primary data collection.

#### **Result and Discussion**

Particulars	Options	No. of Respondents	Percentage (%)
Land Ownership	LANDLESS	2	4
	BELOW 1.0	11	22
	1.0-2	37	74
	ABOVE 2	0	0
	<b>TOTAL</b>	50	100
Land Affected During Cyclone in Acres	1-10 ACRES	2	4
	10-20 ACRES	48	96
	20-30 ACRES	0	0
	30-40 ACRES	0	0
	<b>TOTAL</b>	50	100
Total Value of Paddy Get Affected During Cyclone	BELOW 4-5	27	54
	5-6	23	46
	6-5	0	0
	ABOVE 6-5	0	0
	<b>TOTAL</b>	50	100
Cyclone Relief Fund is Provided by Government	YES	42	84
	NO	8	16
	<b>TOTAL</b>	50	100
Insurance Taken for Paddy	BELOW RS.465/-	0	0
	RS.465/-	50	100
	RS.500/-	0	0
	ABOVE RS.500/-	0	0
	<b>TOTAL</b>	50	100

## Findings

This research work is an empirical study based on the Primary data collected from the Gaja cyclone affected areas in Pudukottai District. Empirical study has been made after adequate theoretical analysis. The lead findings of empirical analysis have been given below.

- Out of the 50 respondent ,0 percent of the respondent are belong to up to 25 ,86 percent of the respondent are belong to 26-35,14 percent of the respondent are belong to 35-50,0 percent of the respondent are belong to Above 50.
- Out of 50 respondent,30 percent of the respondent are belong to financial related issues,70percent of the respondent are belong to marketing related issues,0 percent of the respondent are belong to quality related issues, 0 percent of the respondent are belong to transportation relate dissues.

- Out of 50 respondent, 24 percent of the respondent are belong to short duration,74percent of the respondent are belong to medium duration, 2 percent of the respondent are belong to long duration.
- Out of 50 respondent,4 percentage of the respondent are belong to 1-10 acres,96 percent of the respondent are belong to 10-20 acres,0 percent of the respondent are belong to 20-30acres,0 percent of the respondent are belong to 30 -40 acres.
- Out of 50 respondent ,54 percent of the respondent are belong to below 4-5,46 percent of the respondent are belong to 5 to 6,0 percent of the respondent are belong to 6 to 5,0 percent of the respondent are belong to Above 6-5.
- Out of the 50 respondent,84 percent of the respondent are belong to yes,16 percent of the respondent are belong to no.
- Out of 50 respondent,0 percent of the respondent are belong to below Rs 465/- ,100 percent of the respondent are belong to Rs 465/-,0 percent of the respondent are belong to Rs 500/-,0percent of the respondent are belong to Above Rs 500/-.

### **Suggesstion**

Thettanviduthywas a large village located in, Karambakudi Taluk for Pudukkottai District, Tamil Nadu. It was affected by the cyclone of Gaja during the month of November 2018.The total population of this village was 2447 with 557 families and 350 houses. The male population was 1205while female was 1242. The gaja disturbed the Out of 50 respondents, 32 percent of the respondent are belong to post office,64 percent of the respondent are belong to Banks,2 percent of the respondent are belong to private institutions ,2 percent of the respondent are belong to No savings. Agricultural lands, Crop production, Trees, and live stock. Two peoples were killed by gaja. More than 25 acres of land was disturbed by gaja. It also damaged the Houses, Transformers and Electric post. The living population was totally affected asthe main source of income was agriculture. Most of them were farmers and using their own land for cultivation. Following table show the details for destruction caused by Gaja. Ground nut, Paddy, Banana, Casuarina and teak were the mostly affected crops in Gajacyclone. Casurina, Groundnut and Banana are the most economic cultivars of the people. Ground nutwas another main income sources from Agricultural production in Thettanviduthi. They cover more than 80% of the total ground nut production in Pudukottai District. After Gaja, the Groundnut crop production was stopped for one month asthe condition for cultivation was worse. The harvesting stage of Banana crop and Casuarina woody plants were totally affected by Gaja cyclone. The Cereals, Pulses, Oil seeds, Condiments, Fibers, fruiting plants, Vegetables and leafy vegetables were totally affected by Gaja. The economic losses suffered by the farmers were very pathetic and they were not in a condition to payback the loans.

Black soil was the soil type in the village and was used for agriculture. The Bore water and well water sources are used for the cultivation in agricultural land. Crop rotation, mixed farming and Intercropping were the methods followed by the farmers for crop production. Legumes and vegetables were used for intercropping. Coconut tree and

Neem were the barrier tree used around the agricultural land to control grazing animals, and to control weeds, mechanical weeding practices were done. Nitrogen fixation, wind control and Soil enrichment were the benefits of keeping barrier plants along the edges of their fields. The farmers utilize only the organic fertilizers (Livestock manure, Green manure etc.). Biological and Organic control method was used to control the pests and diseases. Chemical fertilizers were not using for the Agriculture purpose as the people had awareness on health defects that chemical fertilizers brought. Livestock and poultry inventories were practiced along with agriculture. The crop yields were sold through exporters and agencies in market.

The farmers of the village were well conscious about the schemes, Government plans and funds providing for agriculture. But the people were not receiving any timely compensation or payment for their agricultural losses. Immediate clearing and rehabilitation measures have to be taken from the government officials in the cyclone affected area<sup>4</sup>. But the people were not getting immediate relief and support from the authorities. Most of the people were illiterate and being exploited by others as in the case of most of the underdeveloped countries<sup>5</sup>.

The local groups and relatives of the farmers only helped them to clear out the gaja wastes from their land. From the diagnostic chart prepared using the personal interview with gaja victims, about 83% of Banana, 71% of Paddy, 76% of Groundnut, 39% of Casuarina and 91% of green Leafy vegetables were affected by Gaja Cyclone.

- ✓ Leave early before your way to high ground or shelter gets flooded
- ✓ Do not delay and run the risk of being marooned
- ✓ If your house is securely built on high ground take shelter in the safe part of the However, if asked to evacuate do not hesitate to leave the place.
- ✓ Board up glass windows or put storm shutters in place.
- ✓ Provide strong suitable support for outside doors.
- ✓ If you do not have wooden boards handy, paste paper strips on glasses to prevent splinters. However, this may not avoid breaking windows.
- ✓ Get extra food, which can be eaten without cooking. Store extra drinking water in suitably covered vessels.
- ✓ If you have to evacuate the house move your valuable articles to upper floors to minimize flood damage.
- ✓ Ensure that your hurricane lantern, torches or other emergency lights are in working condition and keep them handy.
- ✓ Small and loose things, which can fly in strong winds, should be stored safely in a room.
- ✓ Be sure that a window and door can be opened only on the side opposite to the one facing the wind.

## **Conclusion**

The present study has been carried out in order to identify the effect of the 'Gaja' cyclone especially agriculture damages, settlement damages, transport damages, communication damages and biological damages due to cyclone affected places of the Thettanviduthy village located in Karambakudi Taluk, Pudukottai District. About 80% destruction occurred during the major crops and the affected Pulses, Grams, Rice, Ground nuts, Brinjal, Banana and Casuarina plants. The economic losses suffered by the cultivators were very pathetic. Of these, pulses (60%), rice (70-85%), Vegetables (40-60%), Banana (100%), Casuarina (60-80%) were totally vanished during the Gaja. After one month 40% of cultivation was restored in the cyclone effected area. The current was carried out the impact of the Gaja cyclone, 2018 in karambakudi taluk, pudukottai, Tamil Nadu damaged the Agriculture as 80% and remaining 20% is live stock, houses, electric poles and transformers. The damaged trees affected by Gaja in Thee than viduthy. The people joined together and cleared the affected trees in the village. As for this survey tree mortality rate was 40%, damaged, defoliation of trees were calculated. Through this study I give the suggestion to the people who lived in Thee than viduthy advised to plant the more resistant varieties of trees for their cultivation and farmers preplan to protect the trees from natural disaster.

## **Mitigation:**

- ❖ The cyclone prone areas of Tamilnadu the researcher found majority of the respondents agreed that the Early warning system was effective and assesses the potential threat and also responded to the disaster in their areas before its occurrence.
- ❖ The study revealed that majority of the respondents agreed about information and communication technology on consequences of emergency. The fact shows that it was not only reassured the people about disaster also confirmed that they were directed to appropriate sources of information in the target areas.
- ❖ Majority of the respondents had agreed about coordination and dissemination through mobilization of partners and volunteers and information on requirement for mitigation being coordinated, also noted that the volunteers from outside had coordinated well during the crisis.

## **.Preparedness:**

- ❖ It is essential to provide the vulnerable people with information they need to prepare and respond to cyclone at a community and individual level. An appropriate method of communication is crucial to the success of conveying such information. The maximum number of the respondents agreed that the public awareness through community based disaster management programs of World vision India helped them to know Do's & Don't during the disaster.
- ❖ The researcher observed through the survey that radio and television played a vital role in the phase or preparedness. It is eminent that some people are not aware of the poster. Leaflets and booklets, which have been distributed and only to the

moderate respondents agreed about staging skits during preparedness phase in disaster management of World Vision India.

### **.Relief and Response :**

- ❖ Majority of the respondent agreed about Response Team been organized by WV India. Moderate respondents agreed that affected people were evacuated to the safety places and relief centers during the disaster strike and mobilization of partners and volunteers for relief and rescue operation.
- ❖ The researcher learned from community interviews that the identification of the most urgent problems of the victims, public health and medical services. Special care to vulnerable especially to aged people. Women and children has been given I m portance during the relief and rescue operations.
- ❖ The researcher observed that the betterment of infrastructure. Debris clearance. De-watering the inundated areas and agricultural fields in the cyclone affected areas were given significance.

### **Reconstruction :**

- ❖ It is observed that wv has provided rebuilding and restoring livelihood of the affected people. Victims have been encouraged by work. Economic opportunity and finance.
- ❖ Also the researcher found that the ADPs of WV participated in upgrading infrastructure facilities to the community like roads facilities, electricity, water supply, disaster resistance houses and education facilities to the affected children.
- ❖ Majority of the respondents agreed about school and hospital safety provided by WV in the cyclone prone areas. Also they appreciated WV awareness programs related to social and economical measures like innovation of agricultural practices ,water harversting and drought proofing.

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