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## THANE CYCLONE AND REHABILITATION COST OF CASHEW CULTIVATION IN PANRUTI BLOCK, CUDDALORE DISTRICT, TAMIL NADU

Dr. K. Damodaran\*

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**Abstract:** *The present study makes an attempt to assess the rehabilitation cost of cashew crop loss of thane cyclone in Panruti block, Cuddalore district. The severe cyclonic storm 'thane' has created huge damages in Tamil Nadu in month of December 2011. Besides Cuddalore, deaths have been reported from Villupuram, Tiruvallur, Kancheepuram, Chennai and Theni. Seven people died in Puducherry. The cyclone has resulted in extensive damage with the loss being estimated at over Rs 2,000 crore. The farmers report that irrigation cost is high among all the rehabilitation costs. The Government and panchyat has to invest more on creating new water tanks near to the cashew lands. Besides, the government has to give subsidies for the farmers those are ready to erect deep bore well for irrigation purpose.*

Keywords: rehabilitation, damage, loss, irrigation, subsidy

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\*Assistant Professor, Department of Economics, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India



## **INTRODUCTION**

The present study makes an attempt to assess the rehabilitation cost of cashew crop loss of thane cyclone in Panruti block, Cuddalore district. The severe cyclonic storm 'thane' has created huge damages in Tamil Nadu in month of December 2011. Besides Cuddalore, deaths have been reported from Villupuram, Tiruvallur, Kancheepuram, Chennai and Theni. Seven people died in Puducherry. The cyclone has resulted in extensive damage with the loss being estimated at over Rs 2,000 crore. Based on the District website reports, the following has happened due to thane:

- Rainfall continued for more than 48 hours in Cuddalore and Puducherry.
- The speed of the wind was in between 125 to 140 kmph that causes tidal waves is inundating the low lying coastal villages.
- More than 50% electric poles uprooted resulting in disruption of mobile networks
- Normal life of the people living in Cuddalore district mostly affected and disturbed
- Train and Bus services from southern Tamil Nadu were hit as many of them ran very late or were stopped in the nearby station/bus station.
- Cuddalore is the most affected with damaged roads rendering difficult for rescue Team including those from National Disaster Response Force/Fire and Rescue Services.
- More than 40 people died in Cuddalore due to incidents of wall collapse and electrocution.
- More than 60,000 trees were uprooted.
- Electric poles were also uprooted cutting of vehicular traffic/power supply suspended since last night as a precautionary measure.
- More than 20,000 Houses were damaged /destroyed.
- Drinking water supply in most part of Cuddalore district has been affected.
- Fishing Boats have been damaged in the Coastal villages of Cuddalore District.
- Essential commodities/utensils/electric appliances/household materials have been damaged.
- Health and wellbeing of the people in the costal and interior villages in Cuddalore district have been deteriorated.



- The continuous rainfall inundated the low lying areas/and many part of the coastal villages that may be resulted in the outbreak of infectious diseases.

Cyclone Thane had not only a severe impact on population with all the modes of communication had cut off, trees were uprooted. The cyclone has resulted in extensive damage with the loss being estimated at over Rs 2,000 crore (CCFID, 2012). The major Cashew trees (23,500 ha) in the blocks of Panruti, Annagramam, Vridhachalam, Cuddalore and Kurinjipdai were either completely uprooted or partially uprooted. In addition, the branches were also damaged with complete leaf shedding. Given this backdrop, a fresh study has been taken up to analyze the cashew crop loss in Panruti block of Cuddalore district.

### **REHABILITATION COST**

The rehabilitation costs are under three heads. Since most of the cashew trees are uprooted, the farmers have to remove those trees, which involve huge cost at the initial stage itself. The farmers are unable to meet out the labour expenses even after selling the woodlots. At the next stage, the farmers have to plant new saplings and protect them with fencing, which is the second cost. Thirdly, the sapling has to be irrigated continuously for three years. If growth of the saplings is weak, then irrigation has to be extended for two more years. This may require huge labour cost where the farmers have to travel long distance to collect water and irrigate them. Therefore, the study raises the question “What will be the rehabilitation cost to regain the cashew cultivation that prevailed in the pre Thane cyclone? Given this, the present study analyses the cashew crop loss and rehabilitation cost of cashew cultivation in Panruti block of Cuddalore district.

### **METHODOLOGY**

In order to measure the cashew crop loss due to thane cyclone, Panruti block is selected from the Cuddalore district. Since cashew cultivation is high in the Panruti block of the surveyed district, the villages are selected from the block where cashew cultivation is high. For selecting the villages, the researcher has approached the Block Development Office and villages viz., Kadampuliyar and Marangur where cashew cultivation is high are selected as per the instructions given by the officials. From each village, 60 households are selected and 120 respondents are chosen for the study. Since the productivity of cashew crop varies between the farm sizes, the loss may be also in the same pattern. Thus, the researcher has



chosen the sample farmers from four categories, viz., Marginal, Small, Medium and Large farmers. Secondary data is collected from the records of the village Panchayat, Block Development Office and District website. The primary data is collected in month of January 2013.

## **TOOLS OF DATA COLLECTION**

A structured household interview schedule was employed to collect primary data from the sample households. The schedule was prepared after conducting an intensive pilot study in the study villages. The structured interview schedule was pretested and finalised. The pilot study helped the researcher to understand the various losses incurred due to Thane cyclone in the study villages. The schedule was administered through personal interviews with most knowledgeable person of the household chosen. The primary data were collected through field survey with structured interview schedule. Statistical Package for Social Science (SPSS) was used in addition to Ms Excel for data processing, analysis and tabulation. Multiple Linear Regression model is used to analyse the cashew crop loss and rehabilitation costs. Besides, simple statistical measures such as averages and percentages are also used extensively for analysis.

## **PER ACRE REHABILITATION COST OF CASHEW CULTIVATION**

Cashew crop takes five years of tenure to attain mature yield. For this, the farmers have to take care of the cashew saplings. The table 1 gives the details of the rehabilitation cost of cashew cultivation for an acre. After a huge disaster of Thane cyclone, the farmers have to clear the trees from the cashew farms. For clearing the trees labour cost is involved and transportation is also required. Thereafter, cost is required for new saplings, fencing and irrigation.

Of the various rehabilitation costs mentioned, clearing trees involves huge cost and other costs requires comparatively lesser amounts. Among the farm size, the rehabilitation cost per acre is high among the marginal and small farmers towards the medium and large farmers. Since the medium and large farmers have more land and tractors; the rehabilitation cost is less on an average where it is not the case of marginal and small farmers. As a result, there is variation in the rehabilitation cost among the farms groups.



**Table 1 Rehabilitation Cost of Cashew Cultivation (per acre) due to  
Thane Cyclone in the Surveyed Villages**

Details (in Rs.)	Farm Size				
	Marginal	Small	Medium	Large	Total
	(n=30)	(n=30)	(n=30)	(n=30)	(N=120)
Clearing Trees	4524 (58.1)	4147 (56.1)	4016 (56.1)	3826 (57.5)	4128 (57.0)
Transportation	231 (3.0)	211 (2.9)	194 (2.7)	173 (2.6)	202 (2.8)
Sapling	976 (12.5)	947 (12.8)	833 (11.6)	791 (11.9)	887 (12.2)
Fencing	1044 (13.4)	957 (12.9)	905 (12.7)	830 (12.5)	934 (12.9)
Irrigation	644 (8.3)	602 (8.1)	587 (8.2)	512 (7.7)	586 (8.1)
<b>Total</b>	7780 (100.0)	7397 (100.0)	7154 (100.0)	6658 (100.0)	7247 (100.0)

Source: Computed Note: Figures in parentheses denotes percentages to total

### CASHEW REHABILITATION COST FOR FIVE YEARS

For rehabilitation of cashew cultivation, farmers have to spend for five years. Thereafter the farmer can harvest the yield from the cashew cultivation.

**Table 2 Rehabilitation Cost Estimation (for Five Years) of Cashew Cultivation  
due to Thane Cyclone in the Surveyed Villages**

Details (in Rs.)	Farm Size				
	Marginal	Small	Medium	Large	Total
	(n=30)	(n=30)	(n=30)	(n=30)	(N=120)
2012	14938 (44.5)	26333 (46.2)	42137 (47.2)	55328 (47.0)	35656 (47.3)
2013	5760 (17.2)	9256 (16.3)	14136 (15.8)	18282 (15.5)	11859 (15.7)
2014	4800 (14.3)	7832 (13.8)	12369 (13.9)	16620 (14.1)	10405 (13.8)
2015	4224 (12.6)	7120 (12.5)	11191 (12.5)	14958 (12.7)	9373 (12.4)
2016	3840 (11.4)	6408 (11.3)	9424 (10.6)	12465 (10.6)	8034 (10.7)
<b>Total</b>	33562 (100)	56949 (100)	89257 (100)	117653 (100)	75327 (100)

Source: Computed Note: Figures in parentheses denotes percentages to total

The table 2 gives the details of rehabilitation cost for the period of 2012-2016. On an average, the total rehabilitation cost is Rs. 75,327 and the cost is high in the initial stage (Rs.



35,656) and comes down to Rs. 8034. Since clearing of trees is a huge expense after the cyclone; the cost is high in the initial stage. Among the farm size, it is Rs. 18,624 for the marginal farmers while it is Rs. 62,325. Obviously, there is wide variation among the farm groups and the rehabilitation cost is based on the farm size. As a whole, the farmers have to face the current loss from the cashew cultivation and have to invest more for rehabilitating the cashew lands. Since the cashew is long term, the loss will be long term where this huge amount has to be beard by the farmers. In particular, the problem will be severe among the marginal and medium farmers.

### REHABILITATION COST, GOVERNMENT FUNDS AND ACTUAL LOSS

The table 3 gives the summary of actual loss created by the Thane cyclone. Rehabilitation cost, rehabilitation fund from Government and actual loss of cashew cultivation is computed. On an average, Rs. 3, 62, 676 is the crop loss and rehabilitation cost, the Government has given Rs. 13,426 as rehabilitation fund and the actual loss the farmers have to forego is Rs. 3, 49, 249, which varies according to the farm size. From this, it is evident that the cyclone has created huge loss irrespective of farm size. The rehabilitation fund given by the government is too less, which is Rs. 3000 per acre. The loss is more than Rs. 30,000 per acre where 90 per cent of the loss has to be beard by the farmers.

**Table 3 Estimation of Cashew Crop Loss due to Thane Cyclone in the Surveyed Villages**

Sl. No.	Details (in Rs.)	Farm Size				
		Marginal	Small	Medium	Large	Total
		(n=30)	(n=30)	(n=30)	(n=30)	(N=120)
1.	Cashew Crop Loss (2012-2016)	130358	224483	353641	440912	287349
2.	Cashew Rehabilitation Cost (2012-2016)	18624	30616	47120	62325	39671.25
3.	Total (1+2)	148982	255099	400761	503237	327020
4.	Government Rehabilitation Fund	5760	10680	16492	20775	13426.75
5.	Actual Loss to the Farmers (3-4)	143222	244419	384269	482462	313593

Source: Computed

### FITTED MULTIPLE LINEAR MODEL FOR REHABILITATION COST

The various rehabilitation costs are irrigation, clearing trees, transportation, sapling and fencing. The rehabilitation costs are computed in Rupees and those are the explanatory variables where farm size is dependent variable. The farm size is classified as marginal,



small, medium and large farmers. The hypothesis reads as “The rehabilitation cost due to Thane cyclone is high for irrigation of new cashew saplings as compared to other costs (Clearing trees, Transportation, New Sapling and Fencing).” The hypothesis highlights the rehabilitation costs that have to be invested to cultivate cashew crops. The nature and extent of the cost are tested individually for each farm groups by using Multiple Linear Regression Model (MLRM). The table 4 shows that the fitted regression model is found to be fit. The F ratio is significant at 5 per cent level in all the farm groups. The adjusted R square, the coefficient of determination, shows variation among the various losses. Of this, the cost is high for irrigation compared to other costs. Thus, the second hypothesis that rehabilitation cost due to Thane cyclone is high for irrigation of new cashew saplings as compared to other costs (Clearing trees, Transportation, New Sapling and Fencing) is proved. From the above results, the tree loss is high as compared to other losses. The rehabilitation cost is high for irrigation since the study villages are dry. Thus, it is evident that the thane has created a huge loss to the farmers and the marginal and small farmers suffer to recover from the loss. Based on this, the next chapter would give conclusion and policy suggestions to safeguard the livelihood of the cashew farmers in the Panruti Block of Cuddalore district.

**Table 4 Rehabilitation Cost in Cashew Cultivation due: Multiple Linear Regression**

Sl. No.	Cost	Estimated Marginal Effects ( $\beta$ Value)				
		Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	All
1.	Irrigation	0.68 * (16.80)	1.07 * (21.57)	0.86 * (9.55)	0.81 * (35.48)	0.57 * (341.19)
2.	Clearing Trees	0.54 * (8.44)	0.83* (11.44)	0.76 * (7.17)	0.57 * (17.08)	0.10 * (228.58)
3.	Transportation	0.004 (0.09)	0.06 * (5.07)	0.08 (1.15)	0.15 * (9.31)	0.07 * (25.82)
4.	Sapling	0.25 * (2.27)	0.61* (6.87)	0.62 * (5.11)	0.57 * (16.19)	0.15 * (49.00)
5.	Fencing	0.45 * (5.11)	0.32 * (3.34)	0.34 * (4.55)	0.23* (7.50 )	0.11 * (23.94)
Adjusted R <sup>2</sup>		0.93	0.87	0.92	0.79	0.83
F- value		3.21 *	1.65 *	2.70 *	2.04 *	7.63 *

Source: Computed Note: Figures in parentheses are t statistic,

\* significant at 5 per cent level



## **CONCLUSION AND POLICY SUGGESTIONS**

After a huge disaster of Thane cyclone, the farmers have to clear the trees from the cashew farms. For clearing the trees labour cost is involved and transportation is also required. Thereafter, cost is required for new saplings, fencing and irrigation. Clearing trees involves huge cost and other costs require comparatively lesser amounts. Among the farm size, the rehabilitation cost per acre is high among the marginal and small farmers towards the medium and large farmers. Since the medium and large farmers have more land and tractors; the rehabilitation cost is less on an average where it is not the case of marginal and small farmers. As a result, there is variation in the rehabilitation cost among the farms groups. Rehabilitation cost for the period of 2012-2016 is analysed and there is wide variation among the farm groups and the rehabilitation cost is based on the farm size. As a whole, the farmers have to face the current loss from the cashew cultivation and have to invest more for rehabilitating the cashew lands. Since the cashew is long term, the loss will be long term where this huge amount has to be beard by the farmers. In particular, the problem will be severe among the marginal and medium farmers.

The rehabilitation fund given by the government is too less, which is Rs. 3000 per acre. The loss is more than Rs. 30,000 per acre where 90 per cent of the loss has to be beard by the farmers. The farmers report that irrigation cost is high among all the rehabilitation costs. The Government and panchyat has to invest more on creating new water tanks near to the cashew lands. Besides, the government has to give subsidies for the farmers those are ready to erect deep bore well for irrigation purpose.

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