# CYCLONE DISASTER PREPAREDNESS OF PRAWN GROWERS IN ANDHRA PRADESH

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## Introduction

Now-a-days aquaculture has been recognized as a part of agricultural activity in many coastal districts of Andhra Pradesh. Since the arable land for crop production is on the decline, mainly due to population pressure, aquaculture has gained momentum. Since the gestation period is short, technology is easy to operate and returns are higher, most of the coastal farmers are now switching over to prawn culture. Asia alone is accounts for about 90 per cent of the world's aquaculture production, while South America and Africa contribute a meager 1.4 and 0.3 per cent, respectively. India, by virtue of its 8.5 per cent contribution to the world aquaculture production, ranks second in the world.

Aquaculture in India has sustained an average annual growth rate of 17 per cent during 1985-'94. India's seafood production has increased by 300 per cent in the last four years and the annual export earnings exceeded 1.107 billion dollars (US$) in the four consecutive years since 1996, according to MPEDA. In India, out of 1.2 million hectares of total coastal land available for brackish water aquaculture, only 70,700 hectares are under prawn farming at present, out of which Andhra Pradesh ranks third in area and second in production. There is still a vast potential to expand aquaculture and thereby increase production. But, aquaculture development, especially in coastal belts of Andhra Pradesh is severely constrained due to recurrent exposures to cyclones, which causes irreparable losses.

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As cyclones have become an annual feature, prawn farmers along the 1,030 km of Andhra coast are facing heavy losses. Among the cyclone-affected states, Andhra Pradesh ranks second in terms of average monetary losses.

In this scenario it is therefore, essential to reorient the extension and developmental efforts by integrating the scientific disaster management principles. This would not only ensure minimizing losses due to disasters, but also give a boost to gainful economic activities like prawn farming. In doing so, it is desirable to understand the level of preparedness of prawn farmers towards cyclone disaster and also the factors influencing it. With this background, the present study was carried out with the objective of knowing the disaster preparedness level of prawn farmers and the influencing characteristics.

## Methodology

Ex-post facto research designs reinforced with a few case lets was used since the variables, socio economic status, educational status, prawn farming experience, prawn farm size, mass media exposure, innovativeness, risk orientation, scientific orientation, economic orientation market orientation and cyclone disaster management had already occurred.

A case let in an extension part of case study is to explore and analyze the life of a social unit, be that a person, family, institution, cultural group or an entire community. In the study, the prawn growers were purposively selected based on their successfulness in cyclone disaster management in tackling different specific cyclonic adversaries. A prawn grower who has previous experience of cyclone disasters was selected to study the different management practices after cyclone disasters and lessons learnt which includes coping mechanism and preparedness, the second and third prawn growers are selected depending on the small and large size of prawn farm considering the cyclone disaster managerial abilities. These cases are conducted to reinforce the findings drawn out of ex-post facto by following major steps like location, data collection in relation to factors associated with the selected phenomena, identification of relevant points on diagnosis, interpretation and determination of the out come of the study.

## Results and Discussion

It can be seen from Table 1 that a majority (58.34%) of the prawn growers had high cyclone disaster preparedness followed by low and medium levels of cyclone disaster preparedness.

**Table.1: Distribution of prawn growers according to their cyclone disaster preparedness**

| S.No | Category | Prawn growers frequency | Percentage |
|---|---|---|---|
| 1 | Low | 29 | 24.16 |
| 2 | Medium | 21 | 17.50 |
| 3 | High | 70 | 58.34 |
| | Total | 120 | 100.00 |
| Mean = 15.77 | | Standard Deviation =2.46 | |

The reason may be that the prawn growers with lower cyclone preparedness were of the opinion that cyclones will definitely sweep away all their preparedness efforts, so whatever remained was due to their luck and God's grace. They felt that they couldn't manage the cyclones with preparedness efforts alone. Even though they used to take some measures such as strengthening of the bunds around prawn ponds, decreasing the level of water in their ponds, keeping coconut leaves around the ponds (inside) to prevent the escape of prawns, keeping the nets at inlets and outlets etc., suitable production technology in prawn culture at times of cyclonic conditions should be developed in order to tackle the cyclone disasters. So far, the Agricultural University, fisheries departments, government agencies like MPEDA and CMFRI had not paid much attention to the captive prawn cultivation. Till today very meager amount was spent on the development of the cyclone disaster preparedness technology on prawn cultivation.

Dissemination of early warnings plays a crucial role in taking preparedness measures. Mass media sources should be strengthened.

Relationship between the selected independent variables and cyclone disaster preparedness of the prawn growers:

It is clear from table 2 that the variables, socio-economic status, mass media exposure, innovativeness, risk orientation, economic orientation and market orientation were contributing significantly towards cyclone disaster preparedness of the prawn growers.

**Table 2: Regression co-efficients of selected independent variables with the cyclone disaster preparedness of the prawn growers**

| Variable | Regression co-efficient | Standard error | T-value |
|---|---|---|---|
| $X_1$ - Socio-economic status | 0.11942** | 0.058031 | 2.058 |
| $X_2$ - Educational status | -0.77423** | 0.15597 | -4.964 |
| $X_3$ Prawn farming experience | -0.13439 | 0.17109 | -0.786 |
| $X_4$ - Prawn farm size | 0.51427 | 0.29421 | 1.748 |
| $X_5$ - Mass media exposure | 0.51656** | 0.13923 | 3.710 |
| $X_6$ - Innovativeness | 0.35921** | 0.081347 | 4.416 |
| $X_7$ - Risk orientation | 0.34652* | 0.13632 | 2.542 |
| $X_8$ - Economic orientation | 0.13526** | 0.071117 | 2.902 |
| $X_9$ - Scientific orientation | -0.10803 | 0.06670 | -1.618 |
| $X_{10}$ - Market orientation | 0.47694* | 0.18338 | 2.602 |

$R^2 = 0.677$ F - Value = 22.90

* Significant at 0.05 probability level

** Significant at 0.01 probability level

The prawn growers with high socio-economic status had more exposure to various mass media sources and can take preparedness measures in anticipation to reduce the losses. Since they had more exposure to various mass media, the prawn growers were becoming more innovative to take much risk to avoid losses and to maximize their profits (economic orientation). They generally had much curiosity about the market trends and market information.

The other variables like educational status, prawn farming experience, prawn farm size and scientific orientation were found significant with the cyclone disaster preparedness of the prawn growers. The reasons may be due to lack of proper education with special reference to bunds formation along with drainage system and ponds treatment with latest prawn growing technology.

## Summary and Conclusions

1. The study clearly advocates that there is an urgent need for an integration of research and extension system to work hand in hand to develop and popularize the cyclone disaster management technology.
2. The extension agencies of state department of fisheries and other agencies like MPEDA, CMFRI, CIFE, ANGRAU, etc., should come forward to convince and educate the prawn growers for the adoption of new technology.
3. Fisheries research should be more emphasized on disease resistant strains.
4. Insurance agencies should come forward to extend insurance facilities for prawn culture, which was previously present.
5. Government agencies like MPEDA should came forward to purchase the damaged produce and should pay the compensation to the prawn growers.
6. Fisheries extension should be strengthened to focus on coastal development and should facilitate proper training programmes to the prawn growers about cyclone disaster management practices.
7. Non-governmental organizations should come forward to bring changes in prawn growers attitude towards cyclone disaster management.
8. In order to take up large-scale cyclone disaster management activities, the banks, MPEDA and other financing agencies should provide loans to the prawn grower and the repayment period should be extended at times of cyclones.
9. The cyclone monitoring system and cyclone information dissemination system (cyclone warning system) should be strengthened to take up immediate preparedness activities.
10. The broadcast media such as radio and television and the print media like newspapers should be improved to disseminate the authentic cyclone warnings.
11. The remote sensing agency and department of space can be integrated into research system in cyclone disaster management with various agencies, universities.

Mishra (1998) in a valedictory address at the four-day workshop on "Disaster preparedness", organized by the state unit of Red Cross and International Federation of Red cross crescent societies disclosed that a computer based optical fibre underground cable network, linking the districts with the state headquarters will be ready by the end of this year which is helpful to warn the people well in advance as a preparedness measure to reduce the loss of life and property.

Fisheries extension should be strengthened for coastal development and should facilitate proper training programmes to the prawn growers about cyclone disaster management practices, Government agencies like MPEDA should came forward to purchase the damaged produce and should pay compensation to the prawn growers and non-governmental organizations should initiate measures to bring changes in prawn growers attitude towards cyclone disaster management and improvement of institutional credit support and introduction of insurance facilities will also help the prawn farmers to tackle the cyclones and floods.

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