

## RESEARCH NOTE

## Crisis Management by the Farmers Exposed to Drought – A Case Study

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### ABSTRACT

*The findings revealed that majority of the respondents exposed to the crisis of drought fell in medium category with respect to recommended crisis management practices. As far as farmers practices are concerned, majority of the respondents adopted techniques like using of water from nearby sources if available to irrigate the crop, reduced the area under irrigation, deepened existing wells or dug new wells, rationalized fodder, sending the livestock to gosalas, borrowing money, selling agricultural implements, and finally disposed the land and migrated to potential areas. The respondents adopted the management practices depending on the resource availability and investment capacity. Developing appropriate forecasting techniques followed by drought tolerant varieties were the preferences from research scientists whereas encouraging construction of farm ponds involving NGO's and paying compensation losses in time were the preferences from extension personnel.*

**Key words:** Crisis; Drought management; Preferences;

In India, agriculture sector is often threatened by one or the other forms of crises as a consequence of either natural or manmade disasters affecting the agricultural economy substantially. Among the various natural calamities that occur frequently, drought ranks first followed by floods, cyclones and earthquakes. Recurrence of drought is a persistent phenomenon in the country wherein rainfed agriculture accounts for 70 per cent of net cultivated area. Akin to this, the state of Andhra Pradesh though gifted with the longest coastline (1030 km) compared to other states, it experienced drought 20 times in the past 40 years. In Andhra Pradesh, drought is a regular feature in the districts of Chittoor, Kadapa, Anantapur, Prakasam, Mehaboobnagar, Medak, Rangareddy and Nalgonda. In terms of losses, these eight districts contributed to 70 per cent decline in agriculture production in the state during the drought years. Imbalance between the environmental resource demands and performance capacities is the precondition for the genesis of crisis.

The crisis of drought besides causing crop losses is also responsible for other serious consequences such as poverty, malnutrition and social problems. Though

crises are inevitable in agriculture, the emerging trends have opened new scope and a large number of allied opportunities. Some of the opportunities include availability of adequate scientific and technological resources for forewarning and skills to reduce the risks. Hence, in the present study, an attempt was made to study the mitigation and management practices adopted by the crisis affected respondents to cope up with the losses due to recurrent drought in the selected districts of Andhra Pradesh with the following objectives.

- i. To analyse the different management practices adopted by farmers to overcome the crisis of drought.
- ii. To study the preferences and expectations of farmers from research and extension scientists to overcome the crisis effectively.

### METHODOLOGY

Two districts of Ananthapur and Kadapa that fall under scarce rainfall zone of Andhra Pradesh state and experience recurrent droughts formed the study area. Among the selected crisis prone districts, one mandal from each district and one village from each mandal

were selected depending on vulnerability of the crisis. A sample of 30 respondents from each of the districts was selected using simple random sampling technique thus constituting a sample size of 60 respondents. The study was conducted in 2009 by following the case study method of research design. The data were collected with well structured and pre tested interview schedule. Crisis management included both scientific techniques as well as farmers’ practices adopted by the respondents to reduce the severity of losses due to crisis. Scientific techniques were the practices recommended by research scientists and farmers’ practices were the practices other than recommended practices generally followed by the respondents to minimize the losses due to crisis. For the information on scientific techniques, a schedule consisting of a set of statements indicating the mitigation as well as management practices recommended by researchers was prepared in consultation with subject matter specialists. The scores for all the statements were summed up for each respondent and the adoption score was arrived at. Then the adoption index for each individual was worked out using the formula.

The respondents were classified into low, medium and high groups based on the mean and standard deviation.

## RESULTS AND DISCUSSION

*Management techniques adopted by farmers to overcome the crisis of drought:* Management techniques referred to those techniques which enabled efficient use of resources by the farmers to avoid or minimize the losses before, during and after the occurrence of the crisis of drought. It included both scientific techniques and farmers’ practices.

*Scientific practices:* The adoption level of the respondents with regard to crisis management practices was indicated in Table 1. From the data, it was clear that half of the respondents had medium adoption level

**Table 1: Adoption of scientific practices by the respondents to Manage the crisis of drought (N= 60)**

| Adoption category | No.       | %     |
|-------------------|-----------|-------|
| Low               | 17        | 28.33 |
| Medium            | 30        | 50.00 |
| High              | 13        | 21.67 |
| Mean = 50.68      | SD = 20.0 |       |

(50%), 28.33 per cent had low adoption level and 21.67 per cent had high level of adoption with respect to scientific practices of crisis management of drought. The most commonly adopted scientific practices by the respondents were contour bunding, providing channels across the slope, raising intercrops or mixed cropping, addition of organic manure by sheep pending. The other practices like provision of farm ponds to store water, adoption of micro irrigation techniques, planting forest species in arable land, partial diversification to horticultural crops, raising drought tolerant varieties and crop insurance were adopted by only a few respondents. The respondents adopted the management practices depending on the resource availability and investment capacity and this was the reason for grouping of majority of respondents under medium category. *Choudhary et al. (2002)* and *Mishra, (2007)* also reported that majority of the farmers of Gujarat had medium level of crisis management with respect to drought.

*Farmers’ practices:* The practices other than scientific techniques adopted by the respondents to manage the losses due to crisis situation were summarized according to rank order in Table 2. Majority of the respondents took loans from banks (83.33%) either for land development or improving the water sources followed by rational use of fodder (78.33%), left a portion of land fallow (71.66%) to minimize the water and other inputs requirement, sold agricultural implements (66.67%), borrowed money from money lenders for family expenditure (61.66%), sent livestock to gosala

**Table 2: Adoption of farmers’ practices by the respondents to manage the crisis of drought**

| Management practices (farmers practices )   | No. | %     | Rank |
|---|-----|-------|------|
| Sent livestock to gosala.   | 28  | 46.66 | VI   |
| Conserved fodder by rationalized use  | 47  | 78.33 | II   |
| Left a portion of land fallow   | 43  | 71.66 | III  |
| Took loan from bank for land development or water sources                           | 50  | 83.33 | I    |
| Migrated to nearby town to earn wages from non agricultural works                   | 16  | 26.67 | VIII |
| Borrowed money from money lenders/micro finance institutions for family expenditure | 36  | 61.66 | V    |
| Sold agricultural implements.   | 40  | 66.66 | IV   |
| Sold the land to meet the expenses and repay loans                                  | 13  | 21.67 | IX   |
| Minimized household consumption   | 22  | 36.67 | VII  |

(46.67%), minimized household consumption (36.67%), migrated to nearby towns to earn wages (26.67%), sold land to meet expenses and repayment of loans (21.67%). During a crisis situation, the farmers were subjected to economic disequilibrium and naturally deprived of investing further on inputs. Hence, the farmers generally searched for alternate measures for capital investment and approached the money lenders who were easily accessible. Taking loans from institutional sources involved lot of procedures and generally banks do not lend money till the clearance of loans taken previously. This was the reason for many of the respondents to borrow from money lenders. Unable to repay, the farmers ultimately sold their valuables, land and finally choose to migrate to potential areas.

*Preferences and expectations of the respondents from research scientists and extension officers to overcome the crisis of drought:* The preferences and expectations of the respondents from research scientists and extension officers in the rank order were listed out in Table 3.

*Preferences of respondents from research scientists:* Development of appropriate forecasting techniques was the first priority indicated by majority of the respondents (76.67%) so that the farmers can take up contingent measures to avoid the crop losses well ahead of the drought season. The next preference was development of drought tolerant groundnut varieties (71.66%) with high yield potential and moderate spreading habit. Though drought tolerant groundnut varieties were released, the respondents revealed that the availability of good quality seed of improved varieties was a limitation due to which the adoption rate was slow. As weeds were a major problem in dry lands which not only compete for water but also host diseases & pests, a considerable per cent of the respondents (68.33%) suggested that low cost intercultivation implements suitable for dry land agriculture must be developed.

*Preferences of respondents from extension officers:* Majority of the respondents (71.6%) suggested that the extension personnel should encourage the construction of farm ponds and water harvesting structures by the voluntary organizations by involving farmers groups followed by payment of compensation losses (66.66%) in time. It was revealed by the respondents that

**Table 3: Preferences/expectations of respondents from research scientists and extension officers to overcome drought**

| Preferences/expectations  | No. | %     | Rank |
|---|-----|-------|------|
| <i>Research</i>   |     |       |      |
| To develop varieties that could tolerate drought  | 43  | 73.33 | II   |
| Appropriate and accurate forecasting / forewarning techniques   | 46  | 76.67 | I    |
| Timely visits of the scientists/extension workers for rendering timely advisory on the agronomic practices    | 38  | 63.33 | VI   |
| To develop low cost inter cultivation implements suitable for dry lands                                       | 41  | 68.33 | IV   |
| Formulation of contingency plans well in advance to cope with the crisis and creating awareness among farmers | 36  | 60.00 | VII  |
| <i>Extension</i>  |     |       |      |
| Voluntary organizations should take initiation to construct farm ponds and water harvesting structures        | 44  | 71.66 | III  |
| Awareness and guidance on relief programmes   | 26  | 43.33 | VIII |
| Timely financial support from the Govt. bodies to face the crisis the losses                                  | 40  | 66.66 | V    |
| Utilizing mass media for dissemination of ameliorative measures to save the crop                              | 23  | 38.33 | IX   |

estimating the damage and paying the compensation for the losses involved lot of procedures. Moreover, the compensation losses were paid in the form of cheques which were issued on the name of the owner and sometimes the owner refused to pay the compensation losses to the tenant farmer who actually incurred crop losses. As such, the respondents suggested that the procedural norms for providing financial support and input supply should be streamlined and see that the tenant farmers were benefited. The respondents also suggested that the scientists as well as extension personnel should conduct field visits to monitor the crop and give need based suggestions especially during the crisis situations. The scientists could not make frequent field visits due to the availability of limited scientific staff. The extension personnel were also short of strength than the actual requirement. Moreover they were entrusted with additional responsibilities and so they were finding difficult to cover all the villages in their jurisdiction, regularly. So, the concerned authorities

should take necessary action to relieve the extension officers from additional responsibilities. The other preferences from extension officers by the crisis affected respondents included development of contingency plans in advance and supplying the inputs in time (63.33%), utilizing mass media like TV and radio for quick dissemination (43.33%) of the mitigation/management practices and providing guidance on relief programmes (38.33%).

## CONCLUSION

From the findings of the study, it can be concluded that farmers usually adopted the management techniques depending upon the resource availability and also those practices that needed less investment to overcome the

crisis of drought. Further, the findings indicated that there is a need to develop accurate forecast models so that the contingency cropping systems in the event of aberrant rainfall can be planned in advance and the farmers can overcome the crisis of drought to a great extent. As water is a major constraint in drought prone areas, measures have to be taken up by the extension agencies in encouraging the construction of farm ponds and water harvesting structures involving Non Government Organisations. Further, research studies have to be intensified on viability of combination of different enterprise suitable for drought prone areas for different categories of farmers.

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