

CRISIS MITIGATION MECHANISM AND TRAINING NEED OF SUGARCANE GROWERS- AN EMPIRICAL STUDY

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ABSTRACT

A study was conducted to find out the Crisis Mitigation Mechanisms and Training needs of Sugarcane growers in Southern Karnataka during 2022-23. Mandya and Mysore district of Karnataka were selected purposively for the study. Mandya and Maddur blocks in Mandya district and Nanjanagud and Narasipura blocks in Mysore district were selected randomly. Eight villages, two from each block and 120 sugarcane growers, 15 from each village, with minimum five years of experience in sugarcane cultivation were selected as respondents randomly. Blocks, villages and respondents are selected through multistage simple random sampling. Data were collected with structured interview schedule through physical interview method. Statistical tools like frequency, percentage, SD, CV, RBO, equidistant method was used for data analysis. Food grains, fuel storage followed by fodder storage and relocating to safer places are usually adopted as mitigation measures. They are less aware about various crisis mitigation mechanism to be taken at individual level like contingency crop planning, crop insurance etc. 50 per cent of the sugarcane growers belongs to medium crisis mitigation mechanism adoption category. It was found that they were in need of trainings on IPM, INM, organic farming, entrepreneurship and community disaster management. Training about individual approaches like contingency crop plannings, crop insurance and community approaches of disaster for crisis management to be provided. 43.33 per cent of the sugarcane growers were in high need of training for crisis management. Price crisis was the major crisis faced by farmers followed by labour and finance crisis. Provision of strict law from government to stop delayed payment by factories and maintaining uniform price for sugarcane farmers to be introduced.

Keywords : crisis, price crisis, mitigation mechanism, sugarcane, training need

INTRODUCTION

Sugarcane is an important commercial crop cultivated mostly in tropical countries. India holds the second position globally in both area and production and Karnataka ranks third in both area under cultivation and production. In Karnataka, Belagavi leads sugarcane producing district, followed by Bagalkot, Mandya (28,847 hectares, 14.47 lakh tonnes, productivity 110.30 tonnes per hectare) and Vijayapur (Anonymous, 2020). Sugarcane productivity of Karnataka has been declined from 2006-07 (105-110 tonnes/ha) to 2020- 21 (90-95 tonnes/ha) (Mutteppa 2022).

In sugarcane growing states, farmers are facing various crisis, including floods, droughts, rising input costs, pest and disease outbreaks, excessive use of chemical fertilizers, and prolonged irrigation, all of which have led to a decrease in sugarcane yields. Crisis is an uncertain situation

possessing latent risks and opportunities that must be resolved within a given time frame (Deon Canyon 2020). To highlight the severity of these crises, there has been a higher incidence of farmer suicides in sugarcane-growing areas like Belagavi and Mandya (Anonymous, 2019). India faces susceptibility to a range of crisis scenarios, including floods, droughts, cyclones, landslides, earthquakes, avalanches, and forest fires. Among these, floods accounting for 52% of total disasters, followed by cyclones (30%), landslides (10%), earthquakes (5%), and droughts (2%) (Parida and Goel, 2020). On average, at least one-third of total annual losses can be attributed to these crises (Charanjith Singh, 2019). Adoption of crisis management in crops is important to increase its production. (Vinaya and Shivamurthy, 2018; Tavethiya *et al.* 2021; Raval *et al.* 2023).

Adoption of crisis mitigation mechanisms is defined as the extent to which a sugarcane grower is able to cope

up with the crisis situations to reduce immediate effects by adopting short-term strategies (Mutteppa, 2022). Crisis management training refers to the areas in which respondents needed and willing to enhance their capacity for management of crisis situations in effective and efficient way (Mutteppa et al., 2022).

OBJECTIVES

- (1) To identify the crisis mitigation mechanisms adopted by the sugarcane growers in effective crisis management
- (2) To find the training need requirement for the sugarcane growers to mitigate crisis.

METHODOLOGY

The present study was conducted in Mandya and Mysore District of Karnataka purposively due to the sufficient source of irrigation from the K.R. Sagar reservoir, there is substantially marked transformation in sugarcane cropping, higher yield level, ultimately leading to better economic conditions of the people. Mandya and Maddur blocks in Mandya district and Nanjanagud and Narasipura blocks in Mysore district were selected for the study. Eight villages, two from each block and 15 farmers from each village making a sample of 120, with minimum five years of experience in sugarcane cultivation were selected as respondents. Blocks, villages and respondents are selected through multistage simple random sampling. Ex-post facto research design was employed in the present investigation by keeping the objectives in the mind. An interview schedule that had been pretested was utilized for data collection with suitable modifications. Data was collected through personal interviews, involving farm and home visits, conducted during the months of October, November 2022, and January, February 2023. In addition to primary data, secondary data for the study were gathered from reference books, research papers, and postgraduate theses related to sugarcane. To analyse the collected data, MS Excel and SPSS software were used for data entry and the application of various statistical techniques. Statistical tools like frequency, percentage, mean, standard deviation, coefficient of variation, ranking based quotient, equidistant method was used for data analysis. Pre tested schedule for adoption of crisis mitigation mechanism and Training need for crisis management of Mutteppa et al. (2022) was used in the study with suitable modifications.

RESULTS AND DISCUSSION

Table 1 depicts the major crisis faced by sugarcane growers while cultivating sugarcane. Majority of them identified and first ranked price as major crisis faced in

sugarcane cultivation followed by labour crisis (rank II), finance crisis (rank III), production crisis (rank IV), input crisis (rank V), flood (VI), drought (VII) and other crisis like wild animal attacks, hailstorm, cyclone (rank VIII) as major crisis faced during sugarcane cultivation.

Table 1: Ranking of major crisis perceived by sugarcane growers using Rank Based Quotient method

Crisis	RBQ Value	Rank
Production	71.67	IV
Drought	25.52	VII
Flood	46.88	VI
Price	80.00	I
Input	55.94	V
Labour	78.54	II
Finance	72.60	III
Other	19.27	VIII

The main reason for price crisis as per the sugarcane farmers is delayed payment by the sugar factories to the sugarcane growers, increased cost of inputs in recent days and the fair and remunerative prices fixed by the government is insufficient. Labour crisis due to unavailability of labour during pick harvesting stage might be due to the fact that pandemic the skilled labours for harvesting sugarcane were migrated back to their native places and some of them have changed their profession to labour at construction site, carpenters etc. The available labours having higher demand for higher payment for harvesting. Most of the respondents are small and marginal farmers, so mechanization for sugarcane cannot be possible due to fragmented lands and high cost of mechanization. Finance crisis is due to the complex procedures of credit institutions for credit availability and high interest rate charged by the money lenders in non-formal institutions.

Table 2: Overall adoption of crisis mitigation mechanisms by sugarcane growers (n=120)

Category	Range	Frequency	Per cent (%)	Mean = 5.65
Low	<4	28	23.33	SD = 1.41 CV=24.99 %
Medium	≥4 to <8	60	50.00	
High	≥8	32	26.67	

The results revealed that 50.00 per cent sugarcane growers have medium crisis mitigation mechanisms adoption level followed by high (26.67 %) and low (23.33 %) crisis mitigation mechanisms adoption level.

Table 3: Statement wise adoption of crisis mitigation mechanisms by sugarcane growers

(n=120)

Statement	Frequency	Mean	Per cent (%)	Rank
Shifting to safe places	81	0.68	67.50	III
Receive temporary reliefs (food, water, clothes)	54	0.45	45.00	VII
Saving the input seed	73	0.61	60.83	IV
Storing the food grains and fuel	105	0.88	87.50	I
Storing fodder	99	0.83	82.50	II
Mixed farming	65	0.54	54.17	V
Adjusting cropping pattern	56	0.47	46.67	VI
Soil test-based application of fertilizers to crop	31	0.26	25.83	IX
Health and sanitation measures	39	0.33	32.50	VIII
Crop insurance	24	0.20	20.00	XI
Cattle insurance	21	0.18	17.50	XII
Building insurance	30	0.25	25.00	X

The table 3 illustrates how sugarcane growers have adopted various crisis mitigation mechanisms. The majority of respondents identified and ranked “storing food grains and fuel” as their top choice for crisis mitigation (rank I), followed by “storing fodder” (rank II), and “shifting to safer locations” (rank III).

It is revealed that sugarcane farmers tend to proactively store food grains, fuel, and fodder for livestock when faced with a crisis situation which ensures immediate survival. In the event of a severe crisis, they often resort to shifting to safer areas for survival and additionally, they adopt mixed cropping, adjusting cropping patterns, and using soil test-based fertilizer application as mitigation measures. However, it is found that they are less aware about various crisis mitigation mechanism to be taken at individual level like contingency crop planning, crop insurance etc. Farmers are less inclined to adopt insurance for their crops, cattle, and buildings. This reluctance is attributed to the perceived complexity of the insurance procedures. Since crises are unpredictable, and the extent of damage to crops, cattle, and buildings is also uncertain, farmers are hesitant to invest in insurance and navigate the associated complexities.

Furthermore, the results indicate that farmers display minimal interest in soil testing for fertilizer application, both before and after a crisis occurs. They feel difficulty of traveling to soil testing laboratories, Krishi Vigyan Kendras (KVKs), or Raitha Samparka Kendras for soil and water testing. They also perceive the process as time-consuming, leading to the limited adoption of this management practice.

The results revealed that 43.33 per cent sugarcane growers have high crisis management training need followed

by growers with low (32.50 %) and medium (24.17 %) crisis management training need.

Table 4: Overall training need for crisis management by sugarcane growers.

(n=120)

Category	Range	Frequency (n=120)	Per cent (%)
Low	≤18	39	32.50
Medium	≥19 to ≤26	29	24.17
High	≥28	52	43.33
Mean = 29.3 SD = 2.30 CV = 7.87			

The majority of respondents ranked the statement integrated pest management as their top priority in training need followed by integrated nutrient management (rank II) and organic farming (rank III). Sugarcane farmers exhibit a noticeable lack of knowledge regarding plant protection chemicals and pest management. It highlights a significant training requirement in integrated pest management, as sugarcane, being a long-duration crop, is susceptible to various pests throughout its growth cycle, from planting to harvesting.

Additionally, there is a considerable need for training in nutrient management. Given that sugarcane is a long duration crop, proper fertilization is critical during this extended period. Thus, farmers require training to effectively manage nutrients. Farmers have expressed interest in organic farming and entrepreneurship, indicating the potential for entrepreneurial development among sugarcane growers. Organic farming is increasingly necessary due to soil degradation and decreasing fertility. Given this growing interest, relevant departments should address the training needs for organic farming.

Table 5: Statement wise training need for crisis management by sugarcane growers (n=120)

Training need	Wt. Mean	Mean	Per cent (%)	Rank
Integrated pest management	232	2.02	10.78	I
Integrated nutrient management	240	2.00	10.69	II
Community disaster management	208	1.73	9.27	V
Minor irrigation	188	1.57	8.37	VII
Jaggery Production	175	1.46	7.80	XI
Jaggery marketing	177	1.48	7.88	X
Jaggery certification	182	1.52	8.11	IX
Soil reclamation measures	201	1.68	8.95	VI
Organic farming	219	1.83	9.76	III
Entrepreneurship	217	1.81	9.67	IV
Others (IFS, Mixed farming)	183	1.53	8.15	VIII

Sugarcane farming alone does not provide sufficient income, as the crop has extended lean periods and delayed payments from sugar factories, so farmers require training in entrepreneurship during lean periods. Farmers display minimal interest in jaggery production and marketing because they perceive these activities as requiring additional infrastructure and carrying a higher level of risk. On the other hand, farmers express a positive interest in alternative activities such as mushroom, azolla cultivation, integrated farming, agroforestry and mushroom spawn production to fill the non-working periods effectively.

CONCLUSION

Majority of the farmers ranked price crisis as major crisis faced in sugarcane cultivation followed by labour crisis, finance crisis, Production crisis. Survival strategies like storing food, fuel, fodder and shifting to safer places are majorly adopted mitigation mechanisms by sugarcane growers. Insurance on crop, building, cattle was less adopted due to lack of knowledge and complexities in insurance and soil test-based application of fertilizers to the crop was least adopted. Crisis mitigation mechanisms were moderately adopted by fifty per cent of the sugarcane growers. Training need in IPM, INM, organic farming, entrepreneurship and community disaster management were identified. Farmers were less interested in training need for jaggery production, jaggery making and certification 43.33 per cent of the sugarcane growers were in high need of training for crisis

management.

SUGGESTIONS

Timely payment by factories, strict laws framed by government to take actions against factories and maintain to curb price crisis may be included. Providing mechanization in sugarcane fields at feasible cost for farmers and providing training for farmers for improving the harvesting skills.

Creating awareness about financial literacy in understanding the loan terms, interest rates, repayment. Facilitating easy access to loans from banks to rescue farmers from the clutches of moneylenders and access to perceived complexities in insurance procedure as easily. Soil health testing assistance at door steps through Krishi Sanjeevini for soil test-based fertilizer application to the crops. Orientation about contingency crop plannings and community approaches for effectively managing the crisis.

Integrated Pest and Nutrient Management training may be offered through the KVK, SAU and progressive farmers for the duration of at least a week. Farmers have expressed a need for organic farming training, which is a positive sign for sustainable agriculture which may be mainly provided by the Organic Farming Research Station, KVK, SAU etc to cater to the growing interest among farmers. A more in-depth evaluation is required to address the issues related to jaggery production and marketing. Popularize value added jaggery production and marketing for better price and enterprise development and in-depth evaluation to address the issues.

CONFLICT OF INTEREST

There is no conflict of interest among any authors regarding publication of the research paper in the journal as well as in the content

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