Mysore J. Agric. Sci., 55 (3) : 142-152 (2021)

Awareness of Crisis Management Among the Sugarcane Growers of Northern Karnataka

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ABSTRACT

The present study was conducted in Belagavi and Bagalkot districts of Karnataka during 2020-21 to know the awareness of sugarcane growers about crisis and crisis management. Data was elicited from 80 head reach, 80 mid reach and 80 tail end sugarcane growers constituting to a total sample size of 240. The results revealed that 47.50 per cent of head reach sugarcane growers belongs to good awareness category followed by poor (30.00 %) and better (22.50 %) awareness categories. Similarly, 38.75 per cent of mid reach sugarcane growers belongs to good awareness category followed by poor (33.75 %) and better (27.50 %). 36.25 per cent of tail end sugarcane growers belongs to good awareness category followed by poor (33.75 %) and better (30.00 %) awareness category. With respect to overall sugarcane growers' awareness, significant percentage of sugarcane growers belongs to good awareness category with 40.83 per cent followed by poor (30.42 %) and better (28.75 %) awareness categories. With respect to statement wise awareness of sugarcane growers about crisis and its management the results revealed that crisis management means aftermath rehabilitation (32.92 %), crisis management was a concern of government (38.75 %), Television was major source of crisis information (25.83 %), agricultural crisis management is concerned with providing relief by government agencies (25.83 %), storing adequate fodder for livestock crisis management (28.33 %) and creating awareness and providing technical help is role of government in crisis management (30.00 %). Floods was major crisis faced (40.00 %), delay in payments was cause of price crisis (34.17 %), planned planting of cane as flood management in sugarcane (27.92 %), acute water shortage was cause of lower sugarcane productivity (27.50 %) and governments role is to take actions against factories for delayed payments (40.00 %).

Keywords : Crisis, Crisis management, Awareness, Head reach, Mid reach and Tail end sugarcane growers

CRISIS is extremely harmful to people whose survival solely depends on agriculture and cause considerable loss to national economies. It is a highly familiar fact that today's crisis and disasters are often due to human activities (Anonymous, 2011) causing to change the natural balance of the universe. Agriculture is one of the sectors that was most affected by crisis. In agriculture, crisis is defined as an unforeseen situation that endangers the viability of agricultural holdings, in the form of low crop prices and low farm income, either at localized level/ whole sector of production / wider geographical level (Anonymous, 2005). It may be caused by natural disasters like floods, drought, diseases and pests, economic factors and unforeseeable disruption of market access caused. Agriculture underpins the livelihoods of over 2.5 billion people worldwide (Anonymous, 2021). With agriculture sector's innate interactions with the environment. Disasters and crisis don't just have immediate, short-term effects, they diminish livelihoods and national development gains that took years to build (Anonymous, 2016). In coastal area, shift in the timing of rainfall season is due to crisis of climate change (Vinaykumar and Shvamurthy, 2015). Crisis and disasters disrupt livelihoods and add risk, damage and stress of crisis to farmers' livelihoods (Anonymous, 2018). India's geo-climatic conditions as well as its high degree of socio-economic vulnerability, makes it one of the most crisis prone country in the world (Anonymous, 2011).

Sugarcane is an important commercial crop cultivated in around seventy-nine countries. Today sugarcane cultivation and sugar industry stand as supporting pillars

of Indian agriculture economy. India holds second position in both area and production of sugarcane with an area of 5.06 lakh hectare and 341.20 million tonnes of production with the productivity of 70 to 75 tonnes/ ha, only after Brazil followed by China, Pakistan and Thailand. Among 20 sugarcane cultivating states, Karnataka stands third position in both area and production with 3.70 lakh ha under sugarcane and 299.02 lakh tonnes of production with productivity of 95 tonnes/ha, only after Uttar Pradesh and Maharashtra (Anonymous, 2020). Belagavi is the leading producer of sugarcane in Karnataka with an area of 1,20,762 hectares and 90.67 lakh tonnes of production with productivity of 75.08 tonnes/ha followed by Bagalkot (58,913 ha; 45.90 lakh tonnes; 78.08 tonnes/ha), Mandya (28,847 ha: 14.47 lakh tonnes 110.30 tonnes/ha) and Vijayapur (22,734 lakh ha; 14.47 lakh tonnes; 63.60 tonnes/ha). Lack of awareness of farmers about environment friendly practice like carbon sequestration was also indirectly contributing to crisis (Suresh and Shivamurthy, 2017).

When we compare the productivity of Karnataka, it is observed that there was a decline in the productivity of the state from 105-110 tonnes/ha (2006-07) to 90-95 tonnes/ha (2020). In recent years, country has witnessed the price crisis across sugarcane growing states of India. Along with price crisis, sugarcane farmers are facing various crisis like floods, droughts, hike in input cost, pest and disease outbreak, severe usage of chemical fertilizers & other inputs, prolonged irrigation led to the decrease in cane yield, problems in export policy which have affected the farming community mentally, financially, socially and their coping capacities. As a testimony to these farmers suicides were more in the sugarcane growing areas like Belagavi and Mandya (Anonymous, 2019). By definition, crisis is unforeseen and may exceed individual coping capacity and significant negative impact on economic viability and livelihood security of whole communities. The growing frequency and intensity of crisis are jeopardizing production system. Thus, in order to reduce the vulnerability and negative effects of crisis on sugarcane growers' lives, understanding and awareness about crisis and crisis management in general agriculture and specifically in sugarcane farming is of utmost importance. Awareness about crisis and crisis management helps in improving crisis preparedness, mitigation, response and recovery through formulation of location specific and suitable strategies (Anonymous, 2021).Integrating agriculture, livelihoods and environmental issues into crisis management efforts and risk reduction strategies is particularly important for poor farming communities, which are at greatest risk of natural crisis. Therefore, it is imperative to know the awareness level of sugarcane growers. Keeping all this in view, the present study was planned to assess the awareness of sugarcane growers about crisis and crisis management in agriculture and sugarcane farming.

METHODOLOGY

The study was carried out in two purposively selected districts of northern Karnataka region namely Belagavi and Bagalkot districts as these two districts are major sugarcane growing districts in Karnataka with contribution of 45.67 per cent to total Karnataka's sugarcane production and 48.56 per cent of Karnataka's total sugarcane area. Further, more yield gap of nearly 21 per cent in sugarcane production was observed in Belagavi and Bagalkot districts. Ex-post facto research design was used in the present study as crises like drought, flood, price, production, financial, pest and disease outbreak and livestock were already experienced by farmers *i.e.,* the event has already happened. Simple random sampling technique was used in the study. From each district, two blocks were selected based on maximum area under sugarcane and crisis prevalence. From each block two head reach (0-4 km), two mid reach (4-8 km) and two tail end (8-12 km) villages were selected based on their distance from river basin as followed by Somashekhar (2010). From each village ten sugarcane growing farmers were randomly selected thus constituting a total sample of 240. A set of statements reflecting crisis and crisis management in agriculture and sugarcane farming were identified and developed into a structured schedule through thorough review of the literatures available. The sugarcane growing farmers' responses to the crisis management statements in sugarcane cultivation were documented through

The Mysore Journal of Agricultural Sciences

personal interview method using the structured pre-tested interview schedule. The collected data were analyzed with descriptive statistics, percentage, frequency, mean and standard deviation.

Results and Discussion

Statement Wise Awareness of Head Reach, Mid Reach and Tail End Sugarcane Growers about Crisis and Crisis Management in Agriculture

Table 1 represents the statement wise awareness of head reach, mid reach and tail end sugarcane growers about crisis and crisis management in agriculture. The results of head reach sugarcane growers revealed that more than one-third of respondents expressed that crisis management means activities taken during crisis occurrence followed by 30.00 per cent of them opined that crisis management means prior planning along with activities taken during crisis occurrence and aftermath rehabilitation measures. The probable reason is that their exposure to crisis was comparatively more mainly to floods and further they believed that activities carried out during floods as the crisis management activity. Two-fifth of the respondents opined that crisis management is an activity of concern of government followed by less than one-fourth of them (23.75 %) expressed that it is a concern of community. The probable reason as expressed by respondents was that the effects of crisis cannot be overcome by individuals alone and it requires government's involvement to

Table 1

Statement wise awareness of crisis and crisis management in agriculture among head reach, mid reach and tail end sugarcane growers.

Statements	Head rich (n=80)		Mid rich (n=80)		Tail end (n=80)	
	F	%	F	%	F	%
Crisis management means						
Prior planning	12	15.00	08	10.00	15	18.75
Activities during crisis occurrence	27	33.75	21	26.25	12	15.00
Aftermath rehabilitation measures	17	21.25	35	43.75	27	33.75
All the above	24	30.00	16	20.00	26	32.50
Crisis management is an activity of concern to						
Individual	11	13.75	08	10.00	09	11.25
Community	19	23.75	14	17.50	21	26.25
Government	32	40.00	34	42.50	27	33.75
NGOs	06	07.50	06	07.50	07	08.75
All of them	12	15.00	18	22.50	16	20.00
Major source of information about crisis is						
Radio	0	0	0	0	00	00.00
Television	23	28.75	21	26.25	18	22.50
Newspapers	06	7.50	08	10.00	10	12.50
Government agencies	15	18.75	16	20.00	14	17.50
NGOs	08	10.00	05	06.25	08	10.00
Neighbours and friends	18	22.50	19	23.75	16	20.00
Others (Mobiles & social media)	10	12.50	11	13.75	14	17.50
Crisis management in agriculture according to your opinion is						
Contingency crop planning	13	16.25	22	27.50	12	15.00
Relief by government agencies	21	26.25	19	23.75	22	27.50
Insuring crops	16	20.00	04	05.00	21	26.25
Compensation for crop loss	09	11.25	15	18.75	12	15.00
All the above	21	26.25	20	25.00	13	16.25
Crisis management measures in livestock according to your opinion is,						
Shifting cattle to safe and food accessible places immediately	26	32.50	16	20.00	18	22.50
Keeping buffer stock of medicines & concentrated feeds	08	10.00	09	11.25	11	13.75
Storing adequate fodder	15	18.75	25	31.25	28	35.00
Insuring cattle	03	03.75	09	11.25	04	05.00
All the above	28	35.00	21	26.25	19	23.75
The role of government in crisis management in agriculture is						
Kept stock of all inputs for sowing post crisis	13	16.25	09	11.25	07	08.75
Prior planning of farming systems	21	26.25	18	22.50	11	11.25
Creating awareness & providing technical assistance	23	28.75	23	28.75	26	32.50
Providing timely relief measures	18	22.5	19	22.50	27	33.75
Training farmers about crisis management activities	05	6.25	11	13.75	09	11.25

recover quickly. More than one-fourth of the respondents (28.75 %) expressed that television (TV) was major sources of information about crisis followed by neighbours and friends (22.50 %). The probable reason is that respondents have habit of regularly watching TV to get information about crisis and the same is disseminated to other fellow farmers. Critical notice has showed that NGOs are the major sources than newspaper because very few / none of the farmers (in some villages) had access and subscribed to newspapers and NGOs are providing information about crisis management. With the penetration of smart phones in to rural areas, sugarcane growers have no idea about how to access the crisis related information as most of them are using them for entertainment purpose due to their poor awareness about the sources providing information. More than one-fourth of the respondents (26.25 %) equally opined that providing relief by government agencies and insuring crops, contingency crop planning, relief and compensation for crop losses are major measures to manage crisis effectively in agriculture followed by insuring crops (20.00 %). This might be due to the reason that farmers expect relief measures from government as they invested more in crop production which includes investments for critical inputs and expect government to carry out rehabilitation measures as well as contigency crop planning. Nearly one-third of the respondents (32.50 %) expressed that shifting cattle to safer and food accessible places, keeping buffer stocks of medicines & concentrated feed, storing adequate fodder and insuring cattle are major livestock management measures during crisis period followed by shifting cattle to safer and food accessible places (18.75 %) and storing adequate fodder (18.00 %). As per the discussion with farmers it was found that based on their previous experiences, they take precautions to protect livestock during crisis period.Further, significant percentage of respondents irrespective of head reach, mid reach and tail end are not aware about crisis management measures with respect to livestock enterprises. More than one-fourth of respondents expressed that creating awareness and providing technical assistance (28.75 %) followed by prior planning of farming systems (26.25 %) are the major roles of government to manage crisis effectively. The reasons quoted by farmers were that they will be deprived of government compensations because of poor awareness and lack of knowledge about taking situation specific measures immediately to save crop.

With respect to mid reach sugarcane growers from Table 1, it can be observed that more than two-fifth of respondents (43.75 %) opined that crisis management means taking aftermath rehabilitation measures followed by more than one-fourth of them (26.25 %) expressed that it is an activity taken during crisis occurrence. The probable reason is that the severity of crisis faced by them is relatively low and as a result, they believe that crisis management means aftermath rehabilitation measures. More than two-fifth of respondents (42.50 %) are aware about crisis management is a concern of government followed by all stakeholders like government, community, individual and NGOs (22.50 %). This might be due to reasons that government involvement in crisis management along with local communities enhances their coping capacity to crisis and take appropriate measures more effectively. More than one-fourth of the respondents (26.25 %) opined that television is the major source of crisis information followed by neighbours & friends (23.75 %). This is due to the fact that they watch the television regularly related to weather and rainfall updates along with entertainment and disseminate the same among peer farmers to take activities and also consult their neighbours and friends to get crisis information. More than one-fourth of respondents (27.50 %) were aware that contingency crop planning is the major agriculture crisis management measure followed by relief by government agencies (23.75 %). The reason is that the cropping intensity of these farmers was more compared to head reach farmers and they are conscious about the planning for crops based on prevailing situation. Less than one-third (31.25 %) of respondents opined that storing of adequate fodder is the livestock management measure during crisis followed by more than one-fourth of them (26.25 %) expressed that shifting cattle to safer and food accessible places, keeping buffer stocks of medicines & concentrated feed, storing adequate

fodder and insuring cattle are livestock management measures during crisis period. This might be due to fact that they traditionally store dry fodder of maize and brought chaffed fodder from Yadavad factory to use during crisis. With respect to role of government in agriculture crisis management, more than one-fourth of respondents (28.75 %) opined that government should create awareness & provide technical help during crisis period followed by timely relief measures and prior planning of farming systems equally (22.50 %). This is due to their poor awareness and they were deprived of government facilities. With respect to mid reach farmers, awareness about meaning of crisis, major source of information and crisis management measures significant farmers are not aware about this. Hence efforts should be made by concerned organizations to create awareness among sugarcane growers. With respect to major source of information about crisis and its management, none of the respondents indicated radio as major source of information about crisis irrespective of head reach, mid reach and tail end sugarcane growers. The possible reason for non-use of radio could be the easy accessibility to the television, smart phones and web-based platforms penetration into the rural areas. Apart from this interesting thing is that majority of farmers opined that they don't know about the crop and livestock insurances. This was mainly due to the fact that the farmers are even not aware about the cattle insurance except very few and the people who know about the crop insurance are mainly due to their loans in the banks where farmers have been informed about that by bank officials.

With respect to tail end sugarcane growers, from Table 1, it is observed that more than one-third of respondents (33.75 %) opined that crisis management means aftermath rehabilitation and nearly one-third of them (32.50 %) expressed it as prior planning, activities during crisis occurrences & post crisis rehabilitation activities collectively. This might be due to their less exposure to crisis, good literacy and good extension contacts. In general, significant proportion of them do not possesses adequate knowledge about crisis and its management along with roles to be played by government agencies. More than one-third of respondents (33.75 %) expressed that crisis management is an activity of concern of government followed by community (26.25 %). This might be due to their poor exposure to natural crisis and if any damage occurs, the government came forward to help the farmers and some saints in the area inspired locals to provide basic facilities to the flood victims which initiated community action. Less than one-fourth of respondents (22.50 %) expressed that television was major source of crisis information followed by neighbours and friends (20.00 %) and local government agencies (17.50 %) & other sources like mobiles, social media (17.50 %). More than one-fourth of respondents (27.50 %) opined that providing relief by government agencies is a crisis management strategy in agriculture followed by insuring crops (26.25 %). This might be due to reason that the farmers believe strongly that whatever assistance provided was the governments' duty and further literate farmers contacted the extension personnel to grow alternate crops in case the earlier crop failed due to crisis. More than one-third (35.00 %) of respondents expressed that storing of adequate fodder was livestock crisis management measure followed by shifting cattle to safe and food accessible places, keeping stocks of medicines, storing adequate fodder and insuring cattle (23.75 %). This might be due to the reasons that most of the tail end farmers grow maize as livestock feed after turmeric harvest and they store it as dry fodder to use in crisis and rainy seasons. More than one-third of respondents (33.75 %) opined that government's role is to provide timely relief measures followed by creating awareness & providing technical help (32.50 %). This might be due to the fact that government relief amount was released lately to victims and few victims could not get government assistance due to their poor knowledge about submitting documents in time and use of crop survey app at appropriate time and difficulty of its operation.

Statement wise Awareness of Overall Sugarcane Growers about Crisis and Crisis Management in Agriculture

Fig. 1 indicates the statement wise awareness of overall sugarcane growers about crisis and crisis

management in agriculture. Nearly one-third of respondents opined that crisis management means aftermath rehabilitation activities followed by more than one-fourth of them (27.50 %) expressed that crisis management includes prior planning, activities during crisis occurrences & post crisis rehabilitation activities. Nearly two-fifth of respondents (38.75 %) expressed that crisis management is the concern of government followed by community (22.50 %) and nearly one-fifth of them expressed as it is a concern of individual, community, NGOs and government (19.17%). More than one-fourth of respondents expressed television as major source of crisis information followed by neighbours and friends (22.08 %) and local government bodies (18.75 %). Interestingly nobody has identified radio as source of crisis information because almost no farmer has been using radio now days with the penetration of electronic gadgets like smart phones/ cell phones with vast options of entertainment along with memory cards. More than one-fourth of respondents (25.83 %) expressed that crisis management in agriculture is providing relief by government agencies followed by 22.50 per cent of them expressed it as insuring crops, contingency crop planning, relief and compensation to crop losses.

More than one-fourth of respondents were equally aware about storing adequate fodder and shifting cattle to safe and food accessible places, keeping stocks of medicines, storing adequate fodder & insuring cattle as major crisis management measures in livestock. With respect to role of government during agriculture crisis period, less than one-third of respondents (30.00 %) expressed that government should provide timely relief measures followed by creating awareness and providing technical help (26.67 %) and prior planning of farming systems (20.83 %). The overall sugarcane growers awareness about crisis and its management in agriculture are in congruence with the findings of Aravind (2011) and Meludu (2011).

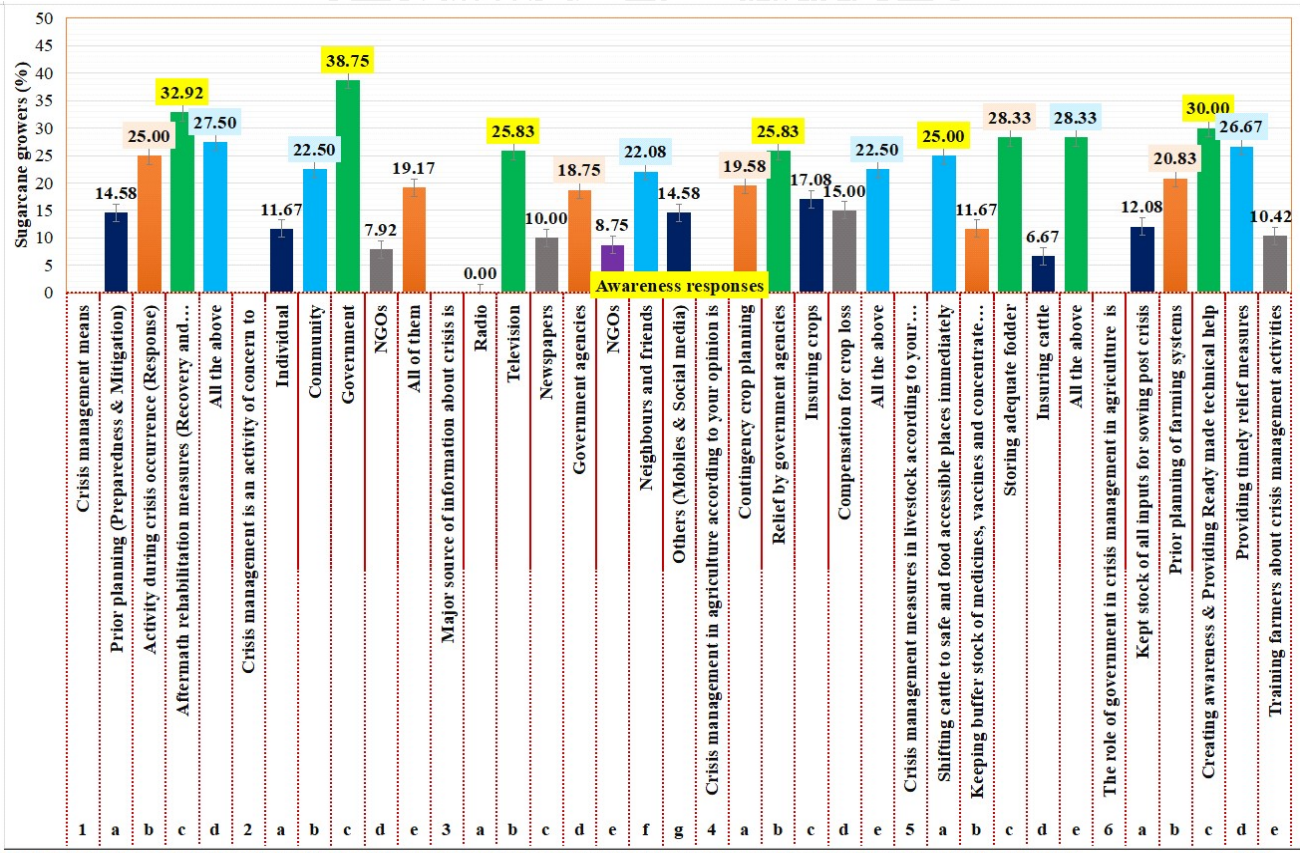

Fig. 1: Graphical representation of distribution of sugarcane growers based on their awareness about crisis and crisis management in agriculture (n=240)

Statement wise Awareness of Head Reach, Mid Reach and Tail end Sugarcane Growers about Crisis and Crisis Management in Sugarcane

Table 2 represents the statement wise awareness of head reach, mid reach and tail end sugarcane growers about crisis and its management in sugarcane farming. With respect to head reach sugarcane growers, more than half of the head reach sugarcane growers expressed that flood is the major type of crisis faced in sugarcane farming followed by price crisis (28.75 %). This is mainly because of the reasons that sugarcane growers are the frequent victims of floods and sugarcane arrears in the area. Two-fifth of respondents opined that delayed in payment is the major reason for price crisis in sugarcane farming followed by one-fifth of them expressed that they are not getting fixed prices for sugarcane. This was due to the fact that farmers were not receiving their payments for years from factories which in turn made the farmers to be in debt at bank as well as money lenders to carry out their farm activities. More than one-third of respondents (36.25 %) expressed that planned planting to reach advanced growth stage before flood occurrence is the major flood management strategy in sugarcane farming followed by draining out water from field to avoid crop loss (22.50 %). Based on their previous experiences about floods and droughts most of the farmers prefer to plant in October/November so that by monsoon season crop will be six to eight months old which can tolerate water stagnation as well as drought condition. With respect to reasons for lower productivity of sugarcane crop nearly one-third of growers (32.50 %) opined that acute shortage of water at critical stages is the main reason followed by imbalanced use of fertilizers (21.25 %) and improper selection of inter crops (16.25 %). This was mainly because of reason that drying up off rivers during summer as river was their major sources of irrigation. If they get good monsoons also it has led to floods and in-turn it reduced the yield. In order to balance yield, farmers are using more than recommended fertilizers. With respect to role of government in sugarcane crisis period, less than half of respondents (45.00 %) expressed that government should fix uniform prices for sugarcane like minimum support price instead of

TABLE 2
Distribution of respondents based on their awareness about crisis and crisis management in sugarcane

Statements	Head rich (n=80)		Mid rich (n=80)		Tail end (n=80)	
	F	%	F	%	F	%
Major type of crisis in sugarcane faced by you is						
Price crisis	23	28.75	33	41.25	31	38.75
Drought	06	7.50	09	11.25	19	23.75
Floods	43	53.75	31	38.75	22	27.50
Pest and disease outbreak	03	3.75	04	5.00	08	10.00
Others (Salinity, wetlands formation)	05	6.25	03	3.75	00	0.00
Price crisis in sugarcane is due to						
Over production	09	11.25	13	16.25	10	12.50
Delay in payments	32	40.00	21	26.25	29	36.25
No fixed prices	16	20.00	04	05.00	17	21.25
Fluctuations in weighing at factory	11	13.75	19	23.75	13	16.25
All the above	12	15.00	23	28.75	11	13.75
Flood management in sugarcane is mainly concerned with						
Conserving the soil from erosion	09	11.25	11	13.75	21	26.25
Drain out water from field to avoid crop loss	18	22.50	15	18.75	27	33.75
Slashed the crop to allow ratooning if damage was severe	11	13.75	05	6.25	3	3.75
Taking actions based on severity of floods	13	16.25	23	28.75	17	21.25
Planned planting to reach advanced growth stage before flood occurrence	29	36.25	26	32.5	12	15.00
Lower productivity of sugarcane is caused by						
Acute shortage of water	26	32.50	23	28.75	17	21.25
Frequent &faulty irrigation scheduling	12	15.00	10	12.50	08	10.00
Imbalanced application of fertilizers	17	21.25	21	26.25	27	33.75
Improper selection of inter-crops	13	16.25	16	20.00	15	18.75
All the above	12	15.00	10	12.50	13	16.25
The role of government in crisis management in sugarcane is to						
Take strict actions against factory for delayed payments	27	33.75	36	45.00	33	41.25
Fixing uniform prices for sugarcane like MSP instead of FRP	36	45.00	26	32.50	22	27.50
Framing of proper policies for sugarcane (Export, import etc)	13	16.25	16	20.00	21	26.25
All the above	04	05.00	02	2.50	04	5.00

fair and remunerative prices followed by taking strict actions against factory for delayed payments (33.75 %).

With respect to mid reach sugarcane growers, from Table 2 it is observed that more than two-fifth of respondents (41.25 %) expressed that price crisis is the major crisis faced by tail end sugarcane growers followed by floods (38.75 %) and drought (11.25 %). Most of these farmers dependent mainly on factories and they were also exposed to floods. With respect to price crisis in sugarcane farming, more than one-fourth of mid reach farmers (28.75 %) opined that over production, delayed payments, no fixed prices & weighing fluctuations were major reasons for price crisis in sugarcane farming followed by delay in payments (26.25 %). Nearly one third of respondents (32.50 %) expressed that planned planting to reach advanced growth stage before flood occurrence was the major flood management strategy in sugarcane farming followed by taking actions based on severity of floods (28.75 %). This might be due to their previous experiences of gambling with monsoons farmers prefer to take actions based on severity otherwise it will be burden for farmers. More than one-fourth of respondents expressed that acute shortage of water during critical stages (28.75 %) and imbalanced use of fertilizers (26.25 %) are the major causes for lower productivity in sugarcane farming. With respect to role of government during sugarcane crisis period, less than half of respondents (45.00 %) expressed that government should take strict actions against factory for delayed payments followed by fixing uniform prices for sugarcane (32.50 %) to manage sugarcane crisis effectively. This might be due to the burden they faced because of delayed payments and farmers observed price fluctuations in factories where farmers get better prices in cooperative factories compared to private factories of same taluk.

With respect to tail end sugarcane growers, from Table 2 it is observed that less than two-fifth of respondents (38.75 %) expressed that price crisis is the major crisis faced in sugarcane farming followed by floods and drought equally with 23.75 per cent. Because of their high dependency on sugarcane and political attachment to leaders made them to send their cane to private factories owned by politicians. As a result they are not getting good prices for their produce. More than one-third of respondents (36.25 %) expressed that delay in payments is the major reason for price crisis in sugarcane farming followed by 21.25 per cent of them opined that they are not getting fixed prices for sugarcane. More than one-third of respondents (33.75 %) expressed that draining out flooded water from field was the major flood management measure in sugarcane farming followed by conserving soil from erosion (26.25 %). This might be due to their experience in farming and least exposure to severe floods. Based on their experience due to heavy rains / overflow of stream into field, the water accumulated was drained out to avoid crop damage. With respect to lower productivity of sugarcane, more than one-third of growers (33.75 %) expressed that imbalanced use of fertilizers is the reason for lower sugarcane productivity followed by acute shortage of water during critical growth stages (21.25 %). The main reason is that most of the farmers extensively use fertilizers to get higher yield as they were cultivating more than three crops at a time believing that it requires more inputs. Further, they also use micro irrigation especially drip which reduced their water shortage in tail end areas. With respect to governments role during crisis period, more than two-fifth of tail end sugarcane growers (41.25 %) were opined that government should take strict actions against factory for delayed payments followed by fixing uniform prices for sugarcane (27.50 %) and should frame proper policies for sugarcane (26.25 %) production.

Statement Wise Awareness of Overall Sugarcane Growers about Crisis and Crisis Management in Sugarcane

Fig. 2 indicates the distribution of overall sugarcane growers based on their awareness about crisis and crisis management in sugarcane. It is observed that two-fifth of respondents (40.00 %) expressed that flood was major crisis faced in sugarcane farming followed by price crisis (36.25 %). With respect to price crisis in sugarcane, more than one-third of the

The Mysore Journal of Agricultural Sciences

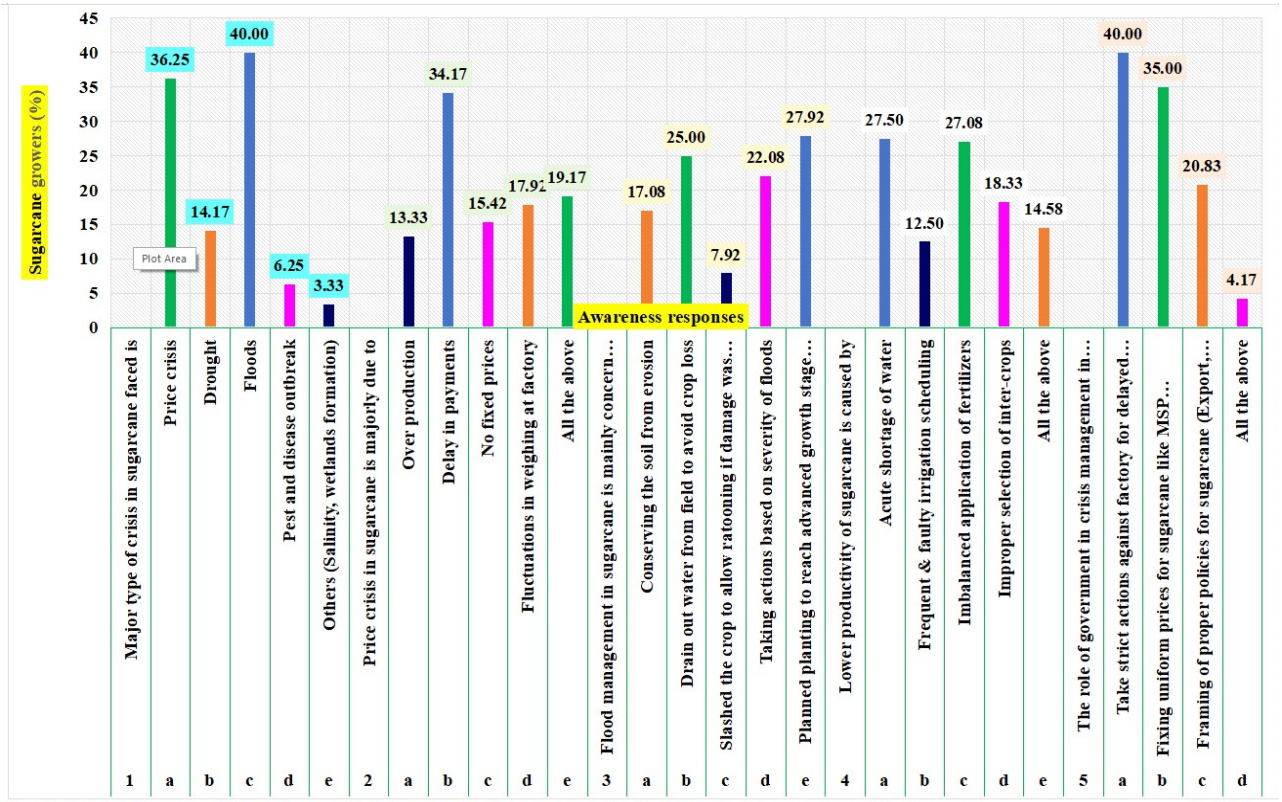

Fig. 2: Graphical representation of respondents based on their awareness about crisis and crisis management in sugarcane (n=240)

respondents (34.17 %) expressed that price crisis in sugarcane is due to delay in payments followed by over production, no fixed prices and fluctuations in weighing at factories (19.17%). More than one-fourth of sugarcane growers opined that flood management in sugarcane farming involves planned planting to reach advanced growth stage before flood occurrence (27.92 %) followed by drain out flooded water from field (25.00 %). With respect to lower productivity, more than one-fourth of the respondents expressed that acute shortage of water (27.50 %) and imbalanced use of fertilizers (27.08 %) were the major causes for lower productivity in sugarcane farming followed by improper selection of inter crops (18.33 %). With respect to role of government in sugarcane crisis management, two-fifth of the respondents expressed that government should take strict actions against factory for delayed payments and more than two-third of them expressed to fix uniform prices for sugarcane like minimum support price instead of fair and remunerative prices (35.00 %).

Overall Awareness of Sugarcane Growers about Crisis and Crisis Management

Table 3 represents the overall awareness of sugarcane growers about the crisis and its management in sugarcane farming. With respect to head reach sugarcane growers less than half of the respondents (47.50 %) belongs to average awareness category followed by poor (30.00 %) and better (22.50 %) awareness categories. Similarly, among mid reach sugarcane growers it was noticed that less than two-fifth of respondents (38.75 %) belongs to average awareness category followed by poor and better awareness categories with 33.75 per cent and 27.50 per cent, respectively. Among tail end sugarcane growers, 36.25 per cent of sugarcane growers belongs to the good awareness category followed by poor and better awareness category with 33.75 per cent and 30.00 per cent respectively. More tail end sugarcane growers belong to the better awareness category compared to head reach sugarcane growers because

TABLE 3

Overall awareness of sugarcane growers about crisis and crisis management

Statements	Head rich (n=80)		Mid rich (n=80)		Tail end (n=80)		Overall (n=240)	
	F	%	F	%	F	%	F	%
Poor (<13.92)	24	30.00	22	27.50	27	33.75	73	30.42
Average (13.92 to 18.50)	38	47.50	31	38.75	29	36.25	98	40.83
Better (>18.50)	18	22.50	27	33.75	24	30.00	69	28.75

Mean = 16.20833 SD : 4.5845

of the fact that tail end sugarcane growers possessed the good contacts with extension professionals and there was surety of getting returns if taken crisis management activities properly. Head reach farmers were mostly affected by the floods which cannot be prevented which in turn reduced their information seeking about the crisis management leading to poor awareness. In total, significant percentage of sugarcane growers belongs to the average awareness category with 40.83 per cent followed by poor and better awareness category with 30.42 per cent and 28.75 per cent respectively. The results are in congruence with the findings of Aravind (2011).

From the results it can be interpreted that most of the sugarcane growers belongs to average to better awareness category (69.58 %) and more than one fourth of them had poor awareness about crisis management which was mainly due to the fact that farmers what they know and take the crisis management actions based on their exposure, severity and frequency of crisis in their condition. Crisis cannot be controlled / prevented but it can be managed effectively if sugarcane growers aware about the crisis and its management. Hence, there is a need for improving the awareness level of sugarcane growers about crisis management by adopting suitable extension strategies during crisis period. It is imperative to devise suitable extension interventions like awareness campaigns, training to enhance coping capacities of sugarcane growers, planning farming systems, demonstrations, simulation exercises, etc., for updating their knowledge and create awareness about crisis management activities to facilitate better and holistic management of crisis to reduce its impact and faster recovery from its losses, rather than taking measures after crisis occurrence.

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(*Received :* August 2021 *Accepted :* September 2021)