https://doi.org/10.56572/gjoee.2023.36.2.0021 Gujarat Journal of Extension Education Vol. 36 : Issue 2 : December 23

CRISIS MANAGEMENT PRACTICES ADOPTED BY CUMIN GROWERS

K. N. Raval[1], J. K. Patel[2] and K. V. Chaudhary[3]

1&3 Ph.D. Scholar, Dept. of Agril. Ext. & communication, C.P.College of Agricu;ture, SDAU Sardarkrushinagar - 385506
2 Assistant Professor and Head, Dept. of Social Science, College of Horticulture, SDAU, Jagudan, Dist: Mehsana - 385506
Email : pateljashvant080@gmail.com

ABSTRACT

Cumin is important cash crop. However, its production is most uncertain and fluctuates violently from year to year due to various crisis like the extreme variations in the climatic conditions, occurrence of number of disease mainly powdery mildew, blight and wilt as well as man-made factors. The present study was confined to "ex-post-facto" research design. The multistage sampling technique was used for selection of respondents. From each of three selected district viz.;Banaskantha, Patan and Kutch of North-West Agro-Climatic Zone two talukas having highest cumin area and production were selected. Three villages from each taluka and from each village, fifteen cumin growers were selected randomly. Thus, total 270 cumin growers were selected for the study. The result of the study revealed that majority (83.33%) of the cumin growers had medium to low level of knowledge about crisis management practices, while great majority (87.04%) of cumin growers had medium to low level of adoption about crisis management practices. Majority of the cumin growers had knowledge as well as adoption of practices viz., seed is safe from spuriousness and adulteration, deep ploughing before sowing, safe from soil erosion and postpone the irrigation during cloudy weather, unseasonal rainfall or when the sign of disease appear.

Keywords : *crises, crises management, cumin growers, cloudy weather, unseasonal rainfall*

INTRODUCTION

Seed spices are known as an integral part of Indian culture that's why seed spices crop occupy prominent place in the total basket of spices of the country and play a significant role in our country national economy. The practice of crisis management involves attempts to eliminate technological failure to avoid or to manage crisis situations. Crisis management consists of skills and techniques required to assess, understand and cope with any serious situations, especially from the moment it first occurs to the point that recovery producer start. Systematic knowledge, planning and adoption of some of the important crisis management practices can help farmers to find out suitable ways to survive during crisis situations in farming. The crisis management in farming is activities or practices adopted by the farmers to stand against the crisis induced by concentrated period of natural calamities, whether and other men created factors. The low level of knowledge and adoption of crisis management practices in cumin can be resulted in low production. Thus, to understand actual position at grass root level, there is a need to make systematic study on the crisis management practices adopted by the cumin farmers to understand existing pattern to manage high risk and crisis involved in cumin farming.

OBJECTIVE

To study the crisis management practices adopted by the cumin growers in cumin cultivation

METHODOLOGY

The present study was confined to "Ex-post-facto" research design and multistage sampling technique was used for select a representative sample of respondents for present investigation. The study was undertaken in Banaskantha, Patan and Kutch districts which comes under North-West Agro-Climatic Zone as well as in jurisdiction of Sardarkrushinagar Dantiwada Agricultural University. From each selected district two talukas were purposively selected for study based on highest area and production of cumin. Hence, total six talukas were selected. From each selected taluka, five villages and from each village fifteen cumin growers were selected randomly. Thus, total 270 cumin growers were selected as sample size.

The developed crisis management index of crisis management practices was distributed among the cumin growers and they were asked to mark a (√) in any one of the points of rating scale viz., 'fully adopted', 'partially adopted' and 'not adopted' given against each crisis management

practices. The responses on three point rating scale was quantified with scores 2, 1 and 0 for 'fully adopted' 'partially adopted' and 'not adopted', respectively. The maximum and minimum scores obtainable by respondents for each practice were 2 to 0, respectively. The adoption quotient of each cumin grower was calculated. Then, the cumin growers were grouped in to three categories viz., low, medium and high on the basis of mean and standard deviation. Further, the practice-wise extent of adoption of crisis management practices among cumin growers was also measured. The practice-wise mean adoption score was calculated for each crisis management practice which further converted in per cent.

RESULTS AND DISCUSSION

(A) Adoption of the crisis management practices by the cumin growers

Adoption process is the mental process through which an individual passes from first hearing about an innovation to final adoption. To measure adoption of the cumin growers were categorized into three categories. The data in this respect are presented in Table 1.

Table 1: Distribution of the cumin growers according to their adoption about crisis management practices (n=270)

Sr. No.	Adoption	Frequency	Per cent
1	**Low** (Up to 42.17 score)	51	18.89
2	**Medium** (42.17 to 56.51 score)	184	68.15
3	**High** (56.51and above score)	35	12.96

Mean = 49.34 S.D. = 7.17

Looking to the data presented in Table 1shown that more than two-thirds (68.15%) of cumin growers had medium level of adoption about crisis management practices, whereas, 18.89 and 12.96 per cent of them had low and high level of adoption about crisis management practices.

Thus, it can be inferred that majority (87.04%) of the cumin growers had medium to low level of adoption about crisis management practices. This indicates that the cumin growers had taken reasonable effort to stand with difficult and uncertain situations effectively.

This finding is in line with finding of Chigadolli *et al* (2020), Gohil (2010), Jadeja *et al* (2017), Kumar et al (2014), More *et al* (2015), Tavethiya et al. (2021), Prajapati et al. (2020), Vinaya and Shivamurthy (2021) and Naruka *et al* (2020)

(B) Practices-wise adoption of cumin growers about crisis management in cumin crop

The practice vise adoption of the cumin growers about crisis management in cumin crop discussed below.

(1) Adoption of the seed and soil testing related crisis management practices

Table 2: Adoption of the seed and soil testing related crisis management practices by cumin growers

(n=270)

Sr. No.	Practices	Mean Score	Per cent
I	**Seed**		
1	Seed is safe from spuriousness and adulteration	1.79	89.81
2	Purchased seed of government or standard companies from reliable seed traders	1.54	77.03
3	Adopt wilt resistant varieties	1.50	75.37
II	**Soil testing**		
4	Follow nutrient management as per the soil testing report	0.09	04.44

The result exposed in Table 2 reflect that majority (89.81%) of the cumin growers had adopted seed which were safe from spuriousness and adulteration followed by purchased seed of government or standard companies from reliable seed traders (77.03%) and adopt wilt resistance varieties (75.37%).While in case of soil testing,only 04.44 per cent of the cumin growers had followed nutrient management as per the soil testing report.

(2) Adoption of the soil preparation related crisis management practices

Table 3: Adoption of the soil preparation related crisis management practices by cumin growers (n=270)

Sr. No.	Soil preparation practices	Mean Score	Per Cent
1.	Deep ploughing done before sowing	1.92	96.29
2.	Safe from soil erosion	1.93	96.85
3.	Prepare small bed for irrigation to escape wilt and blight	1.69	84.44

The data presented in Table 3 regarding adoption of soil preparation related crisis management practices indicate that vast majority (96.85%) of the cumin growers had adopted practice to be safe from soil erosion followed by deep ploughing before sowing(96.29%) and prepared small bed for irrigation to escape wilt and blight (84.44%).

(3) Adoption of the sowing related crisis management practices

Table 4: Adoption of the sowing related crisis management practices by cumin growers (n=270)

Sr. No.	Sowing practices	Mean Score	Per cent
1	Follow timely sowing of cumin in first week of November when day temperature around 30°C	1.52	76.48
2	Do not grow high water demanding crops *viz.;* wheat, castor, mustard and alfalfa around the cumin	0.25	12.77
3	Follow proper depth of sowing	1.60	80.37
4	Adopt appropriate distance between two lines	0.20	10.18
5	Adopt recommended seed rate	1.14	57.40
6	Follow recommended seed treatment	0.54	27.40

It is apparent from Table 4 that the majority (80.37%) cumin growers had adopted proper depth of sowingfollowed bytimely sowing of cumin in first week of November when day temperature around 30°C (76.48%), recommended seed rate (57.40%) and recommended seed treatment (27.40%).

Further, only 12.77 per cent of the cumin growers did not grow high water demanding crops *viz.;* wheat, castor, mustard and alfalfa around the cumin and 10.18 per cent had adopted appropriate distance between two lines.

(4) Adoption of the fertilizer management related crisis management practices

Table 5: Adoption of the fertilizer management related crisis management practices by cumin growers

(n=270)

Sr. No.	Fertilizer management practices	Mean Score	Per cent
1	Adopt recommended dose of fertilizers	0.61	30.74
2	Timely application of fertilizers	1.43	71.66
3	Apply split nitrogenous fertilizers during proper moist condition in soil after irrigation	0.58	29.07
4	Follow recommended dose of micro-nutrients	0.57	28.70

In case of adoption of fertilizer management related crisis management practices as presented in Table 5, less than three-fourths (71.66%) of cumin growers had adoptedtimelyapplication of fertilizers and 30.74 per cent of them had adopted recommended dose of fertilizers.

While 29.07 and 28.70 per cent of cumin growers had adopted split application of nitrogenous fertilizers during proper moist condition in soil after irrigation and recommended dose of micro-nutrients, respectively.

(5) Adoption of the water management related crisis management practices

Table 6: Adoption of the water management related crisis management practices by cumin growers

(n=270)

Sr. No.	Water management practices	Mean Score	Per cent
1	Apply recommended irrigations at critical stages of crop	1.63	81.66
2	Provide irrigation at 10 DAS for better germination	1.42	71.48
3	To postpone the irrigation during cloudy weather, unseasonal rainfall or when the sign of diseases appear	1.91	95.92

It is apparent from Table 6 that the vast majority (95.92%) of cumin growers had adopted the practices about to postpone the irrigation during cloudy weather, unseasonal rainfall or when the sign of diseases appear, while 81.66 and 71.48 per cent of the cumin growers had applied recommended irrigations atcritical stages of crop and provide irrigation at 10 DAS for better germination, respectively.

(6) Adoption of theinterculturingand crop rotation related crisis management practices

Table 7: Adoption of the interculturing and crop rotation related crisis management practices by cumin growers (n=270)

I	**Interculturing**		
1	Adopt interculturing after the third, fourth and fifth irrigations for cumin blight	0.27	13.88
II	**Crop rotation**		
2	*Kharif* crops like groundnut, maize, sesamum, mungbeen, blackgram and fodder sorghum sown before cumin for soil and disease management, higher seed yield andnitrogen savings	1.81	90.92

Table 7 brings to light that the only 13.88 per cent of the cumin growers had adopted interculturing after the third, fourth and fifth irrigations for cumin blight;whereas, in case of crop rotation related crisis management practices, vast majority (90.92%) of the cumin growers had sown the *kharif* crops like groundnut, maize, sesamum, mungbeen, blackgram and fodder sorghum before cumin for soil and disease management as well as produce higher seed yield and nitrogen saving

(7). Adoptionof the plant protection related crisis management practices

Table 8: Adoption of the plant protection related crisis management practices by cumin growers (n=270)

Sr. No.	Plant protection practices	Mean Score	Per cent
1	Adopt different control measures other than chemical control for sucking pests like aphid, thrips	1.10	55.37
2	Use recommended insecticides with proper dose	0.92	46.29
3	Adopt larval infestation control measures	0.71	35.55
4	Adopt different control measures other than chemical control for diseases management	1.53	76.85
5	Apply four spray of mancozeb @0.25% at 10 days of interval after 35-40 days of sowing for cumin blight	1.01	50.37
6	Apply the sulphur dust 300 mesh in the morning for powdery mildew	1.05	52.77
7	Adopt proper method of application of pesticides/fungicides	1.45	72.96
8	Timely application of pesticides/fungicides	1.08	54.44

The data regarding plant protection related crisis management practices as presented in Table 8 revealed that more than three-fourths (76.85%) of the cumin growers had adopted different control measures other than chemical control for diseases management followed by proper method of application of pesticides/fungicide (72.96%),different control measures other than chemical control for sucking pests like aphid, thrips (55.37%) and timely application of pesticides/fungicides (54.44%).

Further, more than half (52.77%) of cumin growers had applied the sulphur dust 300 mesh in the morning for powdery mildew followed by applied four spray of mancozeb @0.25% at 10 days of interval after 35-40 days of sowing for cumin blight (50.37%), used recommended insecticides with proper dose (46.29%) and adopted larval infestation control measures (35.55%)

(8). Adoptionof the weed and labourer scarcity management related crisis management Practices

The data presented in Table 9 regarding adoption of weed management related crisis management practices revealed that majority (89.44%) of the cumin growers had adopted hand weeding to remove weeds followed by use of herbicide with proper method of application (75.74%), maintain the field free from the weed at least 45 days from sowing for good growth (74.81%) and timely application of herbicides (74.07%). Only 47.59 per cent of the cumin growers had adopted recommended herbicides with proper dose. While, in case of labour scarcity management, majority (93.14%) of the cumin growers had followed various field operations timely against labourer scarcity.

Table 9: Adoption of the weed and labourer scarcity management related crisis management practices by cumin growers (n=270)

Sr. No.	Practices	Mean Score	Per cent
I	**Weed management**		
1	Remove weeds by hand weeding	1.78	89.44
2	Maintain the field free from the weed at least 45 days from sowing for good growth	1.49	74.81
3	Use recommended herbicide with proper dose	0.95	47.59
4	Use herbicide with proper method of application	1.51	75.74
5	Timely application of the herbicides	1.48	74.07
II	**Labourer scarcity management**		
6	Follow various field operations timely against labour scarcity	1.86	93.14

(9) Adoptionof the harvesting and storage related crisis management practices

Table 10: Adoption of the harvesting and storage related crisis management practices by cumin growers (n=270)

Sr. No.	Harvesting and storage practices	Mean Score	Per cent
1	Harvest crop when seed attain grey colour for maintain volatile oil and shattering effect	1.76	88.33
2	Harvesting should be done during morning	1.29	64.81
3	Follow proper method of post-harvest management	0.92	46.11
4	Dry seeds up to 10 percent of moisture for storage	0.61	30.74
5	Adopt proper protection measures in storage	0.64	32.03

It is apparent from Table 10 showed that the majority (88.33%) of the cumin growers harvested crop when seed attain grey colour for maintain volatile oil and shattering effect, while 64.81 and 46.11 per cent of the cumin growers had adopted harvesting during the morning and proper method of post-harvest management.

Further, only 32.03 per cent cumin growers had followed proper protection measures in storage and 30.74 per cent had dried the seeds up to 10 percent of moisture for storage.

CONCLUSION

It can be concluded that more than two-thirds (68.15%) of cumin growers had medium level of adoption about crisis management practices, whereas, 18.89 and 12.96 per cent of them had low and high level of adoption about crisis management practices, respectively.

While, in case of practices wise adoption of crisis management practices by cumin growers; majority of cumin growers had adopted seed which were safe from spuriousness and adulteration, safe from soil erosion, proper depth of sowing, timely application of fertilizers, to postpone the irrigation during cloudy weather, unseasonal rainfall or when the sign of diseases appear, had sown the kharif crops like groundnut, maize, sesamum, mungbeen, blackgram and fodder sorghum before cumin for soil and disease management as well as produce higher seed yield and nitrogen saving, different control measures other than chemical control for diseases management, hand weeding to remove weeds, followed various field operations timely against labourer scarcity and harvested crop when seed attain grey colour for maintain volatile oil and shattering effect.

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest

REFERENCES

Chigadolli, M.; Krishnamurthy, B. and Shivalingaiah, Y. N. (2020). Relationship and extent of contribution of profile characteristics of turmeric growers towards their knowledge about improved cultivation practices in Belagavi, Karnataka. *International Journal of Chemical Studies*.8 (2): 1513-1517.

Chigadolli, Mutteppa, Shivalingaiah, Y. N. and Lalitha, B. S. (2022) A scale to quantify the crisis management behaviour of sugarcane growers. *Guj. J. Ext. Edu.* 34(2):140-149.

Gohil, G. R. (2010). Crisis management adopted by cotton growers of South Saurashtra agro-climatic zone. Ph.D. Thesis (Unpublished), Junagadh Agricultural University, Junagadh.

Jadeja, M. K.; Kanani, P. R. and Jadeja, K. M. (2017). Adoption of crisis management in groundnut crop by groundnut growers of South Saurashtra agro-climatic zone. *Gujarat Journal of Extension Education*. 28 (1): 67-69.

Kumar, S.; Lal, H. and Bunkar, H. S. (2014). Extent of adoption of recommended coriander production technology by the farmers. *Indian Journal of Extension Education*.22**:** 177-179.

More, G. B.; Mokhale, S. U. and Chikhale, N. J. (2015). Knowledge and adoption of production technology by ajwain growers. *Agricultural Update*.**10** (1): 6-11.

Naruka, P. S.; Verma, S; Sarangdevot, S. S.; Kerketta, S.; Pachauri, C. P. and Singh, J. P. (2020). Adoption of ajwain (*Trachyspermum amni)* production technology in Neemch district of Madhya Pradesh. *Journal of Krishi Vigyan*. 9 (1): 1-5.

Prajapati, R. C., Prajapati, R. R. and Patel, K. S. (2020) Training need assessment of cumin growers. *Guj. J. Ext. Edu.* 31(1):131-132.

Tavethiya, B. H., Savaliya, V. J. and Kumbhani, S. R. (2021) Adoption level of crisis management practices of castor growers. *Guj. J. Ext. Edu.* 32(2):85-90.

Vinaya Kumar H. M., and Shivamurthy, M. (2021) Factor influencing fishery-based farmers' perception and their response to climate-induced crisis management. Environ. Dev. Sustain., 23, 11766–11791. Springer, https://doi.org/10.1007/s10668-020-01141-x

Received : October 2023 : Accepted : December 2023