RESEARCH ARTICLE :

Knowledge and awareness of farmers with respect to climate change on cropping pattern of vegetable crops in Sehore district of Madhya Pradesh

■ **Vikram Singh and Hansraj Jatav**

SUMMARY : The present study was confined to Sehore district of Madhya Pradesh. Sehore district which is situated in the west part of the Madhya Pradesh lies between latitudes 30º33' and 23º54' North and longitudes 76º11' and 78º02' East. It is surrounded by Dewas and Shajapur districts in the west, Rajgarh district in the North-West and Vidisha district in the North-East. The hill region constitutes about 14 per cent in the Malwa plateau. were selected as a sample of the study with the help of proportionate random sampling method. The Sehore district comprises of 5 blocks namely Sehore, Ashta, Ichhawar, Nasriullaganj and Budhani. Out of these blocks Sehore block was selected due to maximum area covered under vegetable cultivated area. These are 304 villages in Sehore block, out of these 10 villages were selected purposively on the basis of maximum area covered under vegetable cultivation for the study. 12 vegetable growers were selected from each village. Thus, the total 120 vegetable growers were selected as a sample of the study with the help of proportionate random sampling method.

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BACKGROUND AND OBJECTIVES

Agriculture plays a dominant role in the Indian economy and supplements the socio economic fabric of the country. It captures around 14 per cent of the total GDP and is a source of employment to approximately 55 per cent of the Indian population barring caste, creed, gender and origin. The performance of the agriculture sector has always had a huge impact on the trend of India's GDP.

Presently, the primary sector employs nearly 58 per cent of the rural population of the country. According to FAO, (2010), India is a leading producer of fruits, vegetables, milk, spices and several other food grains and second biggest producer of rice and wheat. Indian agriculture not only serves the nation with food grains but also contributes heavily towards the exports. It is the seventh largest agricultural exporter and delivers processed food to more than 120 countries across the

globe. Tea, sugar, oilseeds, tobacco and spices are some of the major export commodities. All sectors in India are significantly contingent on the agricultural sector and thus, constant improvement in this sector is important for the betterment of overall growth of the economy. Agriculture is a major supplier of raw materials for industry. Examples include cotton and jute for textiles, sugar and vegetable oil. Almost half of the total manufacturing sector is dependent on agriculture directly or indirectly.

The Inter-Governmental Panel on Climate Change (IPCC) defined climate change as "a change which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

Truly, the present changes in the Earth's climate cannot be explained alone by the natural processes that explain Earth's previous warm periods. There is a broad scientific consensus that most of the warming in the recent decades can be attributed to human activities. If humanity is, in large part, responsible for this change, then whatever choices we make today, will have a significant bearing on the climate of the future. This makes climate change a formidable concern. Agriculture is highly sensitive to climate variability and weather extremes, such as high temperature, drought, floods and severe storms.

In Madhya Pradesh, agriculture supports nearly 60 per cent of the rural population. With 70 per cent area under rainfed cultivation and predominance of small holders with low adaptive capacity, agriculture sector is highly vulnerable and faces major challenges related to climate change and climate variability. Besides, general problems related to decline in soil fertility and ground water levels, climate related factors like droughts, excess rainfall, frost and hailstorm are causing significant year to year variation in production and productivity.

A lower agricultural production and productivity due to climate change has implication for food prices, which in turn affect the livelihood and food security status of household in a country. Under the circumstances improved and sustainable agriculture technology according to forecast based, agro advisories and full information about factor effecting of climate change are more useful to reduce vulnerability and improve adoptability of agriculture to climate change. In a vegetable growing area of a Sehore many factor are available which directly connected with climate change and like average temperature increase, change in rainfall amount and pattern, change in climatic variability and extreme events, weed, pest and pathogen.

Keeping in view of the above points, the present study entitled, "Knowledge and awareness of farmers with respect to climate change on cropping pattern of vegetable crops in Sehore district of Madhya Pradesh" was designed and undertaken with the following specific objectives :

Objectives of the study:

– To know the socio-economic profile of vegetable growers.

– To study knowledge of climate change on cropping pattern of vegetable crops.

– To study awareness of climate change on cropping pattern of vegetable crops.

– To find out the relationship between socio-economic profile and awareness of climate change on cropping pattern of vegetable crops.

– To identify the various problems faced by vegetable growers.

RESOURCES AND METHODS

The present study was confined to Sehore district of Madhya Pradesh. Sehore district which is situated in the west part of the Madhya Pradesh lies between latitudes 30°33' and 23°54' North and longitudes 76°11' and 78°02' East. It is surrounded by Dewas and Shajapur districts in the west, Rajgarh district in the North-West and Vidisha district in the North-East. Bhopal and Raisen districts lie in the East and Hoshangabad district in the South. The hill region constitutes about 14 per cent in the Malwa plateau. were selected as a sample of the study with the help of proportionate random sampling method. The Sehore district comprises of 5 blocks namely Sehore, Ashta, Ichhawar, Nasriullaganj and Budhani. Out of these blocks Sehore block was selected due to maximum area covered under vegetable cultivated area. These are 304 villages in Sehore block, out of these 10 villages were selected purposively on the basis of maximum area covered under vegetable cultivation for the study. 12 vegetable growers were selected from each village. Thus, the total 120 vegetable growers were selected as a sample of the study with the help of proportionate random sampling method.

OBSERVATIONS AND ANALYSIS

The findings of the present study as well as relevant discussion have been summerized under following heads:

Socio-economic profile of vegetable growers :

The profile of selected vegetable growers of Sehore block of Sehore district of Madhya Pradesh has been studied in terms of socio - economic variables.

Age:

The data in Table 1 reveals that out of total vegetable growers, 25.83 per cent were found in young age group, 40.83 per cent farmers were of middle age group and 33.34 per cent belonged to old age.

Thus, it may be inferred that majority 40.83 per cent of farmers were of middle age group.

Table 1: Distribution of vegetable growers according to their age

Sr. No.	Categories	Frequency	Percentage
1.	Young	31	25.83
2.	Middle	49	40.83
3.	Old	40	33.34
	Total	120	100.00

Education:

The data in Table 2 reveals that out of total vegetable growers, 48.33 per cent were found in illiterate and formal education group, 38.33 per cent farmers were of primary and middle education group and 13.34 per cent belonged to H.S.S.C and college education group.

Thus, it may be inferred that majority 48.33 per cent of farmers were of illiterate and formal education group.

Table 2 : Distribution of vegetable growers according to their education

Sr. No.	Categories	Frequency	Percentage
1.	Illiterate and formal education	58	48.33
2.	Primary + Middle	46	38.33
3.	H.S.S.C and college	16	13.34
	Total	120	100.00

Family size:

The data in Table 3 reveals that out of total vegetable growers, 27.50 per cent were found in small family size group, 46.66 per cent farmers were of medium size of family group and 25.84 per cent belonged to large size of family group.

Thus, it may be inferred that majority 46.66 per cent

Table 3 : Distribution of vegetable growers according to their family size

Sr. No.	Categories	Frequency	Percentage
1.	Small	33	27.50
2.	Medium	56	46.66
3.	Large	31	25.84
	Total	120	100.00

of farmers were of medium size of family group.

Family type:

The data in Table 4 reveals that out of total vegetable growers, 54.16 per cent were found in nuclear family type group and 45.84 per cent farmers were of belonged to joint family group.

Thus, it may be inferred that majority 54.16 per cent of farmers were of nuclear family type group.

Table 4 : Distribution of the vegetable growers according to their family type

Sr. No.	Categories	Frequency	Percentage
1.	Nuclear family	65	54.16
2.	Joint family	55	45.84
	Total	120	100.00

Size of land holding:

The data in Table 5 reveals that out of total vegetable growers, 19.16 per cent were found in small size of land holding group, 44.17 per cent farmers were of medium size of land holding group and 36.67 per cent belonged to large size of land holding group.

Thus, it may be inferred that majority 44.17 per cent of farmers were of medium size of land holding group.

Table 5 : Distribution of vegetable growers according to their size of land holding

Sr. No.	Categories	Frequency	Percentage
1.	Small	23	19.16
2.	Medium	53	44.17
3.	Large	44	36.67
	Total	120	100.00

Annual income:

The data in Table 6 reveals that out of total vegetable growers, 37.50 per cent were found in low annual income group, 40.00 per cent farmers were of medium annual income group and 22.50 per cent belonged to high annual income group.

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Table 6 : Distribution of vegetable growers according to their annual income

Sr. No.	Categories	Frequency	Percentage
1.	Low	45	37.50
2.	Medium	48	40.00
3.	High	27	22.50
	Total	120	100.00

Thus, it may be inferred that majority 40.00 per cent of farmers were of medium annual income group.

The data in Table 7 reveals that out of total vegetable growers, 24.16 per cent were found in low farming experience group, 49.17 per cent farmers were of medium farming experience group and 26.67 per cent belonged to high farming experience group.

Thus, it may be inferred from the data that majority 49.17per cent of farmers were of medium farming experience group.

Table 7: Distribution of vegetable growers according to their farming experience

Sr. No.	Categories	Frequency	Percentage
1.	Low	29	24.16
2.	Medium	59	49.17
3.	High	32	26.67
	Total	120	100.00

Annual production of vegetable crops:

The data in Table 8 reveals that out of total vegetable growers, 15.00 per cent were found in low annual production of vegetable group, 60.00 per cent farmers were of medium annual production of vegetable group and 25.00 per cent belonged to high annual production of vegetable group.

Thus, it may be inferred that majority 60.00 per cent of farmers were of medium annual production of vegetable group.

Table 8: Distribution of vegetable growers according to their annual production of vegetable crops

Sr. No.	Categories	Frequency	Percentage
1.	Low	18	15.00
2.	Medium	72	60.00
3.	High	30	25.00
	Total	120	100.00

Scientific orientation:

The data in Table 9 reveals that out of total vegetable growers, 24.16 per cent were found in low scientific orientation group, 47.50 per cent farmers were of medium scientific orientation group and 27.34 per cent belonged to high scientific orientation group.

Thus, it may be inferred that majority 47.50 per cent of farmers were of medium scientific orientation group.

Table 9: Distribution of vegetable growers according to their scientific orientation

Sr.No.	Categories	Frequency	Percentage
1.	Low	29	24.16
2.	Medium	57	47.50
3.	High	34	28.34
	Total	120	100.00

Economic motivation:

The data in Table 10 reveals that out of total vegetable growers, 19.16 per cent were found in low economic motivation group, 55.84 per cent farmers were of medium economic motivation group and 25.00 per cent belonged to high economic motivation group.

Thus, it may be inferred that majority 55.84 per cent of farmers were of medium economic motivation group.

Table 10: Distribution of vegetable growers according to their economic motivation

Sr. No.	Categories	Frequency	Percentage
1.	Low	23	19.16
2.	Medium	67	55.84
3.	High	30	25.00
	Total	120	100.00

Knowledge of climate change on cropping pattern of vegetable crops:

Knowledge is generally understood as an intimate acquaintance of an individual with facts. The data in table 11 presented the detail about level of knowledge of respondents regarding level of climate change.

The perusal of data presented in Table 11 revealed that the vegetable grower's knowledge level of climate change found to variation.

In "Selection of proper cropping pattern of vegetable according to changing climate" 26.66 per cent were found in no knowledge group, 35.00 per cent farmers were of partial knowledge group and 38.24 per cent belonged to full knowledge group.

Thus, it may be inferred from that majority 38.24

Table 11 : Distribution of vegetable growers according to their knowledge level of climate change

Sr. No.	Characteristics	No knowledge	Partial knowledge	Full knowledge
1.	Selection of proper cropping pattern of vegetable according to changing climate	32 (26.66)	42 (35.00)	46 (38.34)
2.	Selection of early maturing variety of vegetables due to climate change	35 (29.16)	45 (37.50)	40 (33.34)
3.	Proper drainage management during heavy rains	28 (23.33)	55 (45.83)	37 (30.84)
4.	Avoid use of fertilizers during heavy rains	34 (28.33)	40 (33.33)	46 (38.34)
5.	Irrigation should be done at stress moisture condition	46 (38.33)	54 (45.00)	20 (16.67)
6.	Better weed management practices according to changing climate	23 (19.17)	38 (31.66)	59 (49.17)
7.	Better insect pest and disease management according to changing climate	30 (25.00)	42 (35.00)	48 (40.00)
8.	Use of smoke during heavy fog	30 (35.00)	43 (35.83)	47 (39.16)
9.	Use of mulching to conserve moisture	10 (8.33)	58 (48.33)	52 (43.34)
10.	Prevention of rain, summer heat and cooling effect during harvesting	36 (30.00)	58 (48.33)	26 (21.67)

per cent of farmers were of full knowledge group.

In "Selection of early maturing variety of vegetables due to climate change" 29.16 per cent were found in no knowledge group, 37.50 per cent farmers were of partial knowledge group and 33.34 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 37.50 per cent of farmers were of partial knowledge group.

In "Proper drainage management during heavy rains" 23.33 per cent were found in no knowledge group, 45.83 per cent farmers were of partial knowledge group and 30.84 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 45.83per cent of farmers were of partial knowledge group.

In "Avoid use of fertilizers during heavy rains" 28.33 per cent were found in no knowledge group, 33.33 per cent farmers were of partial knowledge group and 38.34 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 38.34per cent of farmers were of full knowledge group.

In "Irrigation should be done at stress moisture condition" 38.33 per cent were found in no knowledge group, 45.00 per cent farmers were of partial knowledge group and 16.67 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 45.00per cent of farmers were of partial knowledge group.

In "Better weed management practices according to changing climate" 19.17 per cent were found in no knowledge group, 31.66 per cent farmers were of partial knowledge group and 49.17 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 49.17 per cent

of farmers were of full knowledge group.

In "Better insect pest and disease management according to changing climate" 25.00 per cent were found in no knowledge group, 35.00 per cent farmers were of partial knowledge group and 40.00 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 40.00 per cent of farmers were of full knowledge group.

In "Use of smoke during heavy fog" 35.00 per cent were found in no knowledge group, 35.83 per cent farmers were of partial knowledge group and 39.16 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 39.16per cent of farmers were of full knowledge group.

In "Use of mulching to conserve moisture" 8.33 per cent was found in no knowledge group, 48.33 per cent farmers were of partial knowledge group and 43.34 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 48.33 per cent of farmers were of partial knowledge group.

In "Prevention of rain, summer heat and cooling effect during harvesting" 30.00 per cent was found in no knowledge group, 48.33 per cent farmers were of partial knowledge group and 21.67 per cent belonged to full knowledge group.

Thus, it may be inferred that majority 48.33per cent of farmers were of partial knowledge group.

Overall knowledge level of vegetable growers in respect to climate change:

Detail the overall knowledge level of vegetable growers in respect to climate change was presented in Table 12.

The data presented in Table 12 showed that majority of the vegetable growers 40.00 per cent performed overall partial knowledge followed by full knowledge 35.00 per cent and no knowledge 25.00 per cent respectively.

Thus, it can be concluded that in study area, most of the vegetable growers were performed overall partial knowledge about climate change followed by full and no knowledge.

Table 12: Distribution of vegetable growers according to their over all knowledge level of climate change

Sr. No.	Categories	Frequency	Percentage
1.	No knowledge	30	25.00
2.	Partial knowledge	48	40.00
3.	Full knowledge	42	35.00
	Total	120	100.00

Awareness of climate change on cropping pattern of vegetable crops:

Awareness as "A body of understood information possessed by an individual or by a culture" It has been further stated that awareness is the part of a person's information which is in accordance with established facts. The awareness for the purpose of the present study was operationalized as amount of understood information held by farmer with respect to useful information about climate change.

The data in Table 13 presented the detail about level of awareness of vegetable growers regarding level of climate change.

The perusal of data presented in Table 13 revealed that the vegetable grower's awareness level of climate change.

In "Selection of proper cropping pattern of vegetable according to changing climate" 19.16 per cent were found in no awareness group, 34.17 per cent farmers were of partial awareness group and 46.67 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 46.67 per cent of farmers were of full awareness group.

In "Selection of early maturing variety of vegetables due to climate change" 23.37 per cent were found in no awareness group, 44.16 per cent farmers were of partial awareness group and 32.50 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 44.16 per cent of farmers were of partial awareness group.

In "Proper drainage management during heavy rains" 46.67 per cent were found in no awareness group, 36.66 per cent farmers were of partial awareness group and 16.67 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 46.67 per cent of farmers were of no awareness group.

In "Avoid use of fertilizers during heavy rains" 25.00 per cent were found in no awareness group, 36.67 per cent farmers were of partial awareness group and 38.34 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 38.34 per cent of farmers were of full awareness group.

In "Irrigation should be done at stress moisture condition" 30.00 per cent were found in no awareness group, 41.67 per cent farmers were of partial awareness group and 28.33 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 41.67 per cent of farmers were of partial awareness

Table 13 : Distribution of vegetable growers according to their awareness level of climate change

Sr.No.	Characteristics	No aware	Partial aware	Full aware
1.	Selection of proper cropping pattern of vegetable according to changing climate	23 (19.16)	41 (34.17)	56 (46.67)
2.	Selection of early maturing variety of vegetables due to climate change	28 (23.37)	53 (44.16)	39 (32.50)
3.	Proper drainage management during heavy rains	56 (46.67)	44 (36.66)	20 (16.67)
4.	Avoid use of fertilizers during heavy rains	30 (25.00)	44 (36.67)	46 (38.34)
5.	Irrigation should be done at stress moisture condition	36 (30.00)	50 (41.67)	34 (28.33)
6.	Better weed management practices according to changing climate	38 (31.67)	43 (35.83)	39 (32.50)
7.	Better insect pest and disease management according to changing climate	26 (21.67)	50 (41.67)	44 (36.66)
8.	Use of smoke during heavy fog	26 (21.67)	52 (43.33)	42 (35.00)
9.	Use of mulching to conserve moisture	34 (28.33)	39 (32.50)	47 (39.17)
10.	Prevention of rain, summer heat and cooling effect during harvesting	31 (25.83)	41 (34.17)	48 (40.00)

group.

In "Better weed management practices according to changing climate" 31.67 per cent were found in no awareness group, 35.83 per cent farmers were of partial awareness group and 32.50 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 35.83 per cent of farmers were of partial awareness group.

In "Better insect pest and disease management according to changing climate" 21.67 per cent were found in no awareness group, 41.67 per cent farmers were of partial awareness group and 36.66 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 41.67 per cent of farmers were of full awareness group.

In "Use of smoke during heavy fog" 21.67 per cent were found in no awareness group, 43.33 per cent farmers were of partial awareness group and 35.00 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 43.33 per cent of farmers were of partial awareness group.

In "Use of mulching to conserve moisture" 28.33 per cent was found in no awareness group, 32.50 per cent farmers were of partial awareness group and 39.17 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 39.17 per cent of farmers were of full awareness group.

In "Prevention of rain, summer heat and cooling effect during harvesting" 25.83 per cent was found in no awareness group, 34.17 per cent farmers were of partial awareness group and 40.00 per cent belonged to full awareness group.

Thus, it may be inferred from the data that majority 40.00 per cent of farmers were of full awareness group.

Overall awareness level of vegetable growers in respect to climate change:

Detail the overall awareness level of vegetable growers in respect to climate change was presented in Table 14.

The data presented in Table 14 showed that majority of the vegetable growers 38.33 per cent performed overall partial awareness followed by full awareness 34.17 per cent and no awareness 27.50 per cent, respectively.

Thus, it can be concluded that in study area, most

Table 14 : Distribution of vegetable growers according to their over all awareness level of climate change

Sr. No.	Categories	Frequency	Percentage
1.	No awareness	33	27.50
2.	Partial awareness	46	38.33
3.	Full awareness	41	34.17
	Total	120	100.00

of the vegetable growers were performed overall partial awareness about climate change followed by full and no awareness.

Relationship between socio-economic profile and awareness of climate change on cropping pattern of vegetable crops:

To find out the relationship between socio–economic profile of the farmers and their awareness of climate change on cropping pattern of vegetable crops, correlation co-efficient of independent and dependent variables was analyzed. Correlation co-efficient between socio–economic characteristics of the farmers and their awareness of climate change were estimated and has been presented in Table 15.

Table 15 : Relationship between socio–economic and psychological characteristics of the vegetable growers and awareness of climate change on cropping pattern of vegetable crops

Sr. No.	Characteristics	'r' value
1.	Age	0.158*
2.	Education	0.237*
3.	Family size	0.267**
4.	Family type	0.179*
5.	Land holding	0.147*
6.	Annual income	0.280**
7.	Farming experience	0.143*
8.	Annual production of vegetable crops	0.244*
9.	Scientific orientation	0.587**
10.	Economic motivation	0.159*

*and ** indicate significance of values at P=0.05 and 0.01, respectively
NS = Non-significant

Problems faced by vegetable growers:

During investigation, the farmers were confronted so many problems in climate change on cropping pattern of vegetable crops. These problems were termed as constraints in this study and have been expressed in Table 16.

The data illustrated in Table 16 revealed the various

Sr.No.	Constraints	Low	Medium	High	Mean score	Rank
1.	Excess of rainfall	15	32	73	2.5	I
2.	Drainage management	50	32	38	1.9	VI
3.	Losses because of frost	23	57	40	2.1	IV
4.	Problem of drought	34	36	50	2.1	IV
5.	Insect pest incidence	25	62	33	2.1	IV
6.	Problem of storage facility	17	40	63	2.4	II
7.	Problem of season shifts	40	37	43	2.0	V
8	Yield loss	55	34	31	1.8	VII
9.	Low market price of vegetables	32	50	38	2.1	IV
10.	Perishable nature of vegetables	22	45	53	2.3	III

Table 16 : Problems perceived by vegetable growers (n=120)

constraints perceived by farmers in climate change on cropping pattern of vegetable crops. Among these parts the important problems was "Excess of Rainfall" (ranked I with mean score 2.5) followed by "Problem of Storage Facility"(ranked II with mean score 2.4), "Perishable nature of vegetables" (ranked III with mean score 2. "Losses Because of Frost, Problem of Draught, Insect Pest Incidence, Low Market Price of Vegetables" (ranked IV with mean score 2.1), "Problem of Season Shifts" (ranked V with mean score 2.0) "Drainage Management" (ranked VI with mean score 1.9) and "Yield Loss" (ranked VII with mean score 1.8), respectively.

Conclusion:

Study showed that majority of the vegetable growers 40.00 per cent performed overall partial knowledge followed by full knowledge 35.00 per cent and no knowledge 25.00 per cent, respectively. The analysis of data as statement wise regarding about awareness of climate change on cropping pattern of vegetable crops denoted that the maximum farmers had performed overall 38.33 per cent partial awareness followed by full awareness 34.17 per cent and no awareness 27.50 per cent, respectively. The co-efficient of correlation was found to be high relationship between age (0.158*), education (0.237*), family type (0.179*), land holding (0.147*), farming experience (0.143*), annual production of vegetable crops (0.244*) and economic motivation (0.159*). The co-efficient of correlation was found to be highly relationship between family size (0.263**), annual income (0.280**) and scientific orientation (0.587**).

Among these parts the important constraint was "Excess of Rainfall" (ranked I with mean score 2.5) followed by "Problem of Storage Facility"(ranked II with mean score 2.4), "Perishable nature of vegetables" (ranked III with mean score 2. "Losses Because of Frost, Problem of Draught, Insect Pest Incidence, Low Market Price of Vegetables" (ranked IV with mean score 2.1), "Problem of Season Shifts" (ranked V with mean score 2.0) "Drainage Management" (ranked VI with mean score 1.9) and "Yield Loss" (ranked VII with mean score 1.8), respectively.

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REFERENCES

Chandershekar, T.C. (2013). Scenario of technology in the Agricultural practices of India- issues and dimensions – A study. *Asian J. Research in Business Economics & Management,* **3** (2) : 207.

Howlader, M.S. and Akanda, M. G. R. (2016). Problems in adaptation to climate change effects on coastal agriculture by the farmers of patuakhali district of Bangladesh. *American J. Rural Development*, **4** (1) : 10-14.

Kumar, S., Kumar, A. and Kumar, M. (2014). Intercropping of onion with autumn planting sugarcane is a viable option to enhance the productivity of sugarcane based cropping system. *Annals of Horticulture*; **7** (2) : 176-179.

Padaria, R.N. and Sarkar, Sujit (2015). Measuring farmers' awareness and knowledge level about climate change and formulating future extension strategies. Indian Research J. Extension Education, 15 (1) : 107-111.

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