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MSEE

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Editorial

Maharashtra Society of Extension Education (MSEE) registered in 1982, has the foremost objective to publish the research journal. Accordingly, the society was publishing the journal entitled Maharashtra Journal of Extension Education. Since the year 2004 this journal has been renamed as Asian Journal of Extension Education.

The journal includes research articles form the researchers and extension workers in the field of extension education from various faculties of various institutes in the country. Extension education plays an important role not only in transfer of innovative technologies but also in developing appropriate methodology in the field of extension more suited for field application. The innovative research methods can be very well communicated for its application and use in further research by the extension fraternity. This can be achieved by publishing research articles.

Asian Journal of Extension Education is a very humble attempt to provide platform towards this goal of networking with the all extension professionals who could kindle the minds of their peers and young scientists through their research articles.
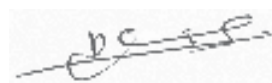
I have immense pleasure to present this 33rd issue of Asian Journal of Extension Education for the year 2015. The Journal has received an encouraging response from all corners of the country. We have made an effort to encompass the best articles for the issue. Thanks are due to all the authors who have contributed for this issue.

I extend sincere thanks to Dr. A. G. Sawant, Hon'ble President, Maharashtra Society of Extension Education, Dr. K. D. Kokate, Hon'ble DEE, MPKV, Rahuri and Former DDG (Agril. Extn.) ICAR, New Delhi and Dr. R. R. Sinha, Vice President, MSEE for their constant inspiration, valuable guidance and concrete suggestions to maintain the quality of the journal.

I appreciate the tireless contribution of my colleagues and Joint-Secretary Dr. H. P. Sonawane and Shri. S. S. Neware for their endless efforts in publishing this issue.

I am confident that this issue of the Journal will be appreciated by the extension scientists, researchers, students and readers for its usefulness and contents. I solicit their suggestions for further enhancement of quality of the Journal.

V. S. Shirke
Editor

College of Agriculture, Pune
Date: 31, December 2015

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CONTENT

RESEARCH ARTICLE

Awareness about Climate Change and its Effect on Agriculture as Perceived by Extension personnel in Northern Kordfan state, Sudan - Africa

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ABSTRACT

Climate change is an area where agricultural extension has little involvement but where needs now and expectation for future are great. Broad scientific agreement now exists that continued accumulation of heat-trapping "greenhouse" gases in the atmosphere will eventually Leaded To changes in the global climate of regions around the world. Also, the scientists agree reasonably that the impact of climate change on agricultural production in less developed countries (LDCs) such as African countries compared with developed countries (DCs) is likely to be more negative in LDCs, because developed countries have much economic resources that can be devoted to help farmers adjust to climate change, also institutional structures of the DCs is more efficient than those in LDCs to adjustment to climate change. Awareness is an indispensable tool to enable farmers to mitigate, adapt and cope with climate change. Awareness is the perception of an individual, conscious about climate changes. The awareness taken more, as a cognitive behavior has been operational as the respondent's consciousness, i.e. being aware or not aware about climate change and its effect on agriculture and raising farmers and rural people awareness is primary role of extension functionaries. Hence, this study was undertaken to know awareness about climate change and its effect on agriculture as perceived by extension personnel in Sudan (Northern Kordfan state. The required data and information were collected through direct interview and processed into some statistical analysis. The results indicated that 38.37 per cent of the respondent had high level of general information about climate change and 55.00 per cent had medium level of awareness regarding the climate change and its effect on agriculture.

Keywords: *Awareness, climate change, Extension personnel, mitigation, Sustainable and Organic agricultural system (SOAS).*

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MATERIALS AND METHODS

The present was conducted in Northern Kordfan state (Western part of Sudan country) to assess the awareness about climate change and its effect on agriculture generally and especially on rainfed sectors perceived by extension personnel. Participant from northern Kordfan state who attended training programmes conducted by ministry of agriculture and NGOs during 2014-2015 were randomly selected for study. Hence, 120 respondents were selected from different training programmes conducted by MoA & NGOs .The data were collected with the help of structured interview schedule through personnel interview method. The collected data were processed into some descriptive statistics and correlation technique. And data analyzed by using statistical package for social science (SPSS technique) to draw conclusion.

RESULTS AND DISCUSSION

Out of total 120respondents' 31.66 percent belonged to above 50 years of age group followed by 21 to 30 years of age group (25.84percent), 22.50 percent and 20.00 percent of respondents were in 31 to 40 years of age

group and 41 to 50 years of age group respectively. The data presented in above table showed that great majority (89.13 percent)of the respondents were male and only 10.83 percent of them was female respondents respectively. The great majority of the extension personnel 71.67 percent had class –II level of position followed by 25.00percent and only 3.33percent of the respondents had class-III and class –I level of position respectively.

Table:1 Distribution of the respondents according to their profile (n=120)

Sr. No	Profile of the participants	Frequency	Percent %
Age			
1	21 years to 30	31	25.84%
2	31 years to 40	27	22.50%
3	41 years to 50	24	20.00%
4	Above 50	38	31.66%
	Total	120	100%
Gender			
1	male	107	89.13%
2	female	13	10.83%
	Total	120	100%
Designation			
1	Class-1	04	03.33
2	Class-2	86	71.67
3	Class-3	30	25.00
	Total	120	100%
Department			
1	Agriculture	107	89.16%
2	livestock	10	08.34%
3	Fisheries	03	02.50%
	Total	120	100%
Qualification status			
1	Graduate(Bsc)	55	45.83%
2	Post graduate (Msc)	48	40.00%
3	Doctorate (Ph.D)	17	14.17%
	Total	120	100%
Experience(in Years)			
1	0 to 15 years	62	51.67%
2	16 to 25 years	18	15.00
3	Above 25 years	40	33.33
	Total	120	100%

The data indicated that out of total respondents' vast majority (89.16 percent) were from agricultural department followed by 8.34 was belonged to animal husbandry department and only 2.50 percent of them belonged to fishery department respectively. Regarding respondents qualification 45.83 percent were having education up to graduate level followed by 40.00 percent and 14.17percent of respondents had post graduate (Msc) and doctorate level of education respectively In terms of respondents' experience 51.67 percent of them had up to 15 years of experience whereas,33.33 percent and 15.00 percent of them had above 25 years of experience and 16 to 25 years of experience of working in various departments.

Table-2 Distribution of the respondents according to their general information about climate change. (n=120)

Sr. No	Category	Frequency	percent
1	**Low** (Up to 16.29 score)	38	31.66
2	**Medium** (16.29 to 19.27 score)	36	30.00
3	**High** (more than 19.27 score)	46	38.37
	Total	**120**	**100%**

The table- 2 showed that slightly more than one third (38.37 percent)of the respondents had high level of general information about climate change while, 31.66 percent and 30 percent of them had low and medium range of general information about climate change for agriculture, respectively.

Table:3 Distribution of the respondents according to their awareness about climate change and its effect on agriculture. (n=120)

Sr. No	Category	Frequency	percent
1	**Low** (less than 16.20 score)	25	20.8
2	**Medium** (16.20 to 19.30 score)	66	55.00
3	**High** (more than 19.30 score)	29	24.17
	Total	**120**	**100%**

The above table No 3 portrayed that nearly half the respondents (55.00percent) had medium level of awareness regarding the climate change for agriculture, followed by 24.17percent and 20.83 had high and low level of awareness regarding the climate change for agriculture.

Table: 4 Relationship between profile of participants and their general information about climate change.(n=120).

Sr.No	Characteristics	r-value
1	Age	-0.01946 NS
2	Gender	0.01630 NS
3	Designation	-0.00458 NS
4	Department	0.00658 NS
5	Qualification status	-0.00781 NS
6	Experience	0.0848 NS

The above table No 4 concluded that the selected independent variables For the present study like: gender, department and experience indicated positive and non-significant relationship with general information about climate change possessed by participants. Hence variables like: age, designation and education had negative and non-significant relationship with general information about climate change possessed by participants. The above results revealed that, general information on climate change was not influenced by their characteristics.

Table-5 Relationship between profile of participants and their awareness about climate change.(n=120).

Sr. No	Characteristics	r-value
1	Age	-0.12828 NS
2	Gender	0.01023 NS
3	Designation	-0.00458 NS
4	Department	0.01676 NS
5	Qualification status	-0.02386 NS
6	Experience	0.19114 NS

The above table No 5 concluded that independent variables as: gender and department showed positive and non-significant relationship with awareness of participants about climate change. Whereas variables like age, designation, education and experience had negative and non significant relationship with awareness of participants about climate change. The above results reflected that, awareness of participants of this study about climate change were not influenced by their characteristics.

The results of The above table No 6 cleared that the top five basic suggestions offered by extension functionaries were: Awareness on negative effects of climate change problems should be addressed at district and village levels, followed by Technologies addressing and solving

climate change problems should be demonstrated, Regular planting of trees /plants should be organized on farmers' field, Using of plastic package material should be restricted and also Regular extensional visit /tours of extension functionaries should be organized at the centre /location where ecofriendly activities are demonstrated.

Table: 6 Suggestions to create awareness among the extension functionaries about climate and its effect on agriculture. (n=20).

Sr No	Suggestions	Mean score	Rank
1	Awareness on negative effects of climate change problems should be addressed at district and village levels respectively	2.79	I
2	Technologies addressing and solving climate change problems should be demonstrated.	2.66	II
3	Regular planting of trees /plants should be organized on farmers' field.	2.63	III
4	Using of plastic package material should be restricted.	2.61	IV
5	Regular extensional visit /tours of extension functionaries should be organized at the centre /location where eco-friendly activities are demonstrated.	2.56	V
6	Live demonstration on the use of renewable energy should be organized in the field.	2.51	VI
7	Award should be given for best extension work done by extension functionaries on climate change issues.	2.49	VII
8	All extension centers should established nature club to create awareness and activities oriented to address and minimize climate change problems.	2.45	VIII
9	Rally to protest climate change problems should be organized.	2.43	IX
10	Energy saving day should be organized.	2.41	X

And the other minor suggestions offered by respondents were: Live demonstration on the use of renewable energy should be organized in the field, Award should be given for best extension work done by extension functionaries on climate change issues, All extension centers should established nature club to create awareness and activities oriented to minimize climate change problems, Rally to protest climate change problems should be organized and the last suggestion was Energy saving day should be organized.

CONCLUSION

It can be sum up that, slightly more than one third (31.66 percent) of the respondents belonged to the age group of 50 and above years. Majority of the respondents (89.13 percent) were male and the remaining (10.83percent) were female. Slightly three fourth (71.67 percent) of the respondents had class-II designation .Over whelming (89.16 percent) of the respondents belonged to agriculture department. And 45.83 percent of the respondents had graduated Bsc level and slightly more than half (51.67 per cent) had 0 to 15 years of experience. Slightly more than one third (38.37 percent) of the respondents had high level of general information about climate change, while, 31.66 percent of them had low and medium general information about climate change for agriculture, respectively. nearly half of the (55.00 percent) had medium level of awareness regarding the climate change for agriculture, followed by 24.17 percent and 20.83 percent had high and low level of awareness regarding the climate change effects for agriculture, respectively. While the independent variables like age, designation, education and experience had negative and non-significant relationship with awareness of participants about climate change. Whereas, variables like: gender and department indicated positive and non-significant relationship with general information about climate change possessed by participants.

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RESEARCH ARTICLE

Constraints in Practicing Organic Farming among Farmers of Khammam District in Andhra Pradesh

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ABSTRACT

Organic farming is one of the widely used methods, which is thought of as the best alternative to avoid the ill effects of chemical farming. The growth of organic farming is found to be losing ground in spite of the efforts being made by the well wishers of people and environment, Government and State Agriculture Universities. In this context this study was conducted in Khammam district of Andhra pradesh . Out of 42 mandals of the district three mandals namely Pinapaka , Wyra , Mudigonda were selected for the purpose. From each selected mandal 40 farmers were selected randomly as respondents who are aware of organic farming and practicing organic farming. The constraints in adoption of organic farming observed in the study were identified as follows :cent per cent of respondents encountered problem of organic products certification .While 83 per cent faced reduced yields in the initial years of organic farming. It is therefore suggested to provide more and more training in respect of recommended organic farming practices and also on how to fulfill certification requirements, basic standards, documentation and other important issues.

Key words: Organic farming, Training, Constraints.

MATERIALS AND METHODS

This study was conducted in Khammam district of Andhra pradesh . Out of 42 mandals of the district three mandals namely Pinapaka , Wyra , Mudigonda were selected for the purpose. From each selected mandal 40 farmers were selected randomly as respondents who are aware of organic farming and practicing organic farming. In the present study, constraints are defined as problems / difficulties for organic farming that exists and as foreseen in adopting organic crop production practices. Data collection was done by using schedules which consists of open ended questions .For the collected constraints frequency and percentages were calculated .RBQ was adopted to analyse the order of constraints thus given by the respondents was converted in RBQ value by using the formula .The constraints were classified into constraints encountered in organic farming and constraints of using organic fertilizers.

RESULTS AND DISCUSSION

from the results in the table I it was observed that problems in organic products certification was ranked highest by the organic farmers .The other constraints identified by them in the descending order were; reduced yields in the initial years of organic farming ,increased weed cover ,marketing problem ,lack of consumers understanding about organic products , labour shortage ,no financial help from government, no training programme to promote organic farming, lack of knowledge in some of the concepts of organic farming ,lack of domestic market information . From the table 2 it was evident that majority (75%) of the organic

farmers faced problem of low availability of certified organic inputs followed by unavailability of organic inputs ,low effectiveness of organically allowable inputs &methods, lack of skills regarding preparation of organic inputs ,high cost of handling bulky organic manures etc. It was also evident that majority (75%) of the organic farmers

faced problem of low availability of certified organic inputs followed by unavailability of organic inputs ,low effectiveness of organically allowable inputs &methods, lack of skills regarding preparation of organic inputs ,high cost of handling bulky organic manures etc.

TABLE- 1 : Ranking Of Constraints Encountered In Organic Farming Based on Rbq Method Of Ranking

Sr. No	Problems encountered	RBQ	Rank
1.	Lack of domestic market information	48.01	X
2.	Problem in organic products certification	19.92	I
3.	Lack of knowledge in organic farming	40.91	IX
4.	Reduced yields in the initial years of organic farming	24.83	II
5.	Lack of Training programmes for promoting organic farming	48.08	VIII
6.	No financial help from government	47.72	VII
7.	Labour shortage &high labour cost	46.17	VI
8.	Increased weed cover	30.41	III
9.	Marketing problem of organic products	37.17	IV
10.	Lack of consumer understanding about organic farming	42.08	V

TABLE 2 : Ranking Of Problems In Using Organic Fertilizers Based On Rbq Method (n=120)

Sr. No	Problems encountered	RBQ	Rank
1.	Low availability of certified organic inputs	85.60	I
2.	Slow decomposition of compost	39.17	VII
3.	High cost of handling bulky organic manures	58.44	V
4.	Un availability of organic inputs	83.57	II
5.	Limitation in availability of green leafy manures	46.91	VI
6.	Lack of skills regarding the preparation &application of organic inputs	64.29	IV
7.	Low effectiveness of organically allowable inputs &methods	75.84	III

CONCLUSION

Generally, the returns from organic farming should also be quantified for easy comparison with returns from conventional crops. To counteract the problem of shortage of organic material, the application of organic fertilizers by foliar methods could reduce the quantities required per unit area, especially during the vegetative phase. More research is also required on the application rates and amounts to be soaked in water for foliar application. Success in the implementation of organic farming techniques in the smallholder sector would be a great step towards making agricultural production sustainable.

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RESEARCH ARTICLE

Content Analysis and satisfaction level of viewers of television programme "*Mera Pind Mere Khet*" of Doordarshan Kendra Jalandhar

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ABSTRACT

The present study entitled "Content Analysis and satisfaction level of viewers of Television programme Mera Pind Mere Khet Programme (MPMK) of Doordarshan Kendra Jalandhar" was under taken with the objectives to study the respondent's reactions toward content of the MPMK and their satisfaction level about MPMK. Adult male member of each of the ten selected MPMK viewing farming family from eighteen villages of six blocks of three Districts were selected randomly as the respondent for the study. Thus the total sample comprised of 180 farmers for the present study. The findings of the study revealed that majority (67.22 %) of the respondents had fully satisfied from timing of MPMK programme, majority (79.11 %) of the respondents had expressed that the content of the programme is always correct. Majority (65.56 %) of the respondents expressed that language used in MPMK programme was completely understandable, Almost all (95.56%) of the respondents said that MPMK programme was completely balanced and was providing both practical and theoretical knowledge. Majority of the respondents expressed that speaker had up to date knowledge about subject matter, have confidence, good voice impression, speed, flow of information and clarity of contents. Majority of the respondents expressed that subject matter areas covered were very useful. It is suggested that information should be provided in lively conditions and wrapped with traditionally embedded folk media.

Keywords *: Content analysis, reaction, satisfaction level, viewing behaviour, MPMK*

MATERIALS AND METHODS

Three districts namely Muktsar, Gurdaspur and Ludhiana representing Southern, Sub-mountainous and Central zone of the Punjab state were selected purposely. From each district 2 blocks were selected randomly and from each block three villages were selected purposely. From each village 10 MPMK viewing farming families were selected randomly. Adult male member of the selected family, who were engaged in farming and viewing the farm TV programme of Jalandhar doordarshan were selected as respondents for the study. Thus the total sample size comprised of 180 farmers. The data were collected personally by the researcher by visiting the study area and interviewing the respondents. For receiving the response of respondents, the investigator contacted them personally in their villages. Proper precautions were taken to ensure unbiased response of the respondents by providing them necessary instructions after explaining the objectives of study. The responses of the respondents were analysed and were tabulated according to objectives of the study. The data were analyzed with the help of appropriate statistical tools such as frequency, percentage, coefficient of correlation, etc.

RESULTS AND DISCUSSION

The results in Table 1 referred to the response of MPMK viewers about various aspects of content and is categorized into seven categories. In case of

coordination during the broadcasting of the programme, 83.89 per cent respondents expresses that there was coordination of comperer with others and 16.11 per cent had responded that there was no coordination, 81.11 per cent had responded that there was coordination of speaker with others and 18.89 per cent had responded that there was no coordination, 57.78 per cent had responded that there was coordination of artist with others and 42.22 per cent had responded that there was no coordination.

Table-1. Distribution of respondents according to various aspects of delivery of MPMK programme (n = 180)

Sr. No.	Aspects	Comperer				Speaker				Artist			
		Yes		No		Yes		No		Yes		No	
		f	%	f	%	f	%	f	%	f	%	f	%
1	Coordination	151	83.89	29	16.11	146	81.11	34	18.89	104	57.78	76	42.22
2	Up to Date Knowledge	103	57.22	77	42.78	155	86.11	25	13.89	109	60.56	71	39.44
3	Confidence	170	94.44	10	5.56	120	66.67	60	33.33	113	62.78	67	37.22
4	Voice Impression	143	79.44	37	20.56	126	70.00	54	30.00	120	66.67	60	33.33
5	Speed and Flow of Presentation	170	94.44	10	5.56	117	65.00	63	35.00	109	60.56	71	39.44
6	Clarity of Contents	121	67.22	59	32.78	155	86.11	25	13.89	117	65.00	63	35.00
7	Stress on important Points	109	60.56	71	39.44	160	88.89	20	11.11	104	57.78	76	42.22

In case of up to date knowledge 57.22 per cent had responded that comperer had up to date knowledge about subject matter and 42.78 per cent had responded that there was no up to date knowledge of comperer about subject matter, 86.11 per cent had responded that speaker had up to date knowledge about subject matter and 13.89 per cent had responded that speaker did not have up to date knowledge about subject matter, 60.56 per cent had responded that artist had up to date knowledge about subject matter and 39.44 per cent had responded that artist did not have up to date knowledge about subject matter. In case of confidence 94.44 per cent had responded that comperer had confidence and 5.56 per cent had responded that comperer did not have confidence, 66.67 per cent had responded that speaker had confidence and 33.33 per cent had responded that speaker did not have confidence, 62.78 per cent had responded that artist had good confidence and 37.22 per cent responded that artist had no confidence. In case of Voice Impression 79.44 per cent had responded that comperer had good Voice Impression and 20.56 per cent had responded that comperer did not have confidence in Voice Impression, 70.00 per cent had responded that speaker had confidence and 30.00 per cent had responded that speaker had no confidence in voice impression, 66.67 per cent had responded that the voice impression of artist was good and 33.33 per cent had responded that the Voice Impression of the artist was not good. In case of speed and flow of presentation 94.44 per cent had responded that comperer had good speed and flow of presentation and 5.56 per cent had responded that comperer had not good speed and flow of presentation, 65.00 per cent had responded that speaker had good speed and flow of presentation and 35.00 per cent had responded that speaker had not good speed and flow of presentation, 60.56 per cent had responded that artist had good speed and flow of presentation and 39.44 per cent had responded that artist had not good speed and flow of presentation. In case of clarity of contents 67.22 per cent had responded that comperer had good clarity of contents and 32.78 per cent had responded that comperer had no clarity of contents, 86.11 per cent had responded that

speaker had good clarity of contents and 13.89 per cent had responded that speaker had no clarity of contents, 65.00 per cent had responded that artist had good clarity of contents and 35.00 per cent had responded that artist had not good clarity of contents. In case of stress on important points 60.56 per cent had responded that comparer had made stress on important points and 39.44 per cent had responded that comparer did not put

stress on important points, 88.89 per cent had responded that speaker had made stress on important points and 11.11 per cent had responded that speaker had not made stress on important points, 57.78 per cent had responded that artist had made stress on important points and 42.22 per cent had responded that artist had not made stress on important points.

Table2. Distribution of respondents according to usefulness of content in different subject matter areas

Sr. No	Subject Matter areas	n	Number of Respondents					
			Very Useful		Useful		Not Useful	
			f	%	f	%	F	%
1	Crop Cultivation	164	134	81.70	30	18.29	0	0.00
2	Farm Machinery and Maintenance	147	123	83.67	24	16.32	0	0.00
3	Animal Husbandry	164	85	59.03	59	40.97	20	11.11
4	Vegetable Cultivation	168	108	64.29	52	30.95	8	4.76
5	Fruit Cultivation	163	120	72.73	36	21.82	9	5.45
6	Flower Cultivation	163	97	59.51	62	38.04	4	2.45
7	Fertilizers Application	167	102	60.00	60	35.29	8	4.71
8	Weather Report	180	64	35.56	82	45.56	34	18.89
9	Farm Credit and loans	167	102	61.08	54	32.33	11	6.59
10	Health and Nutrition	154	67	43.51	82	53.25	5	3.25
11	Bee-keeping	155	80	51.61	56	36.13	19	12.26
12	Mushroom Cultivation	155	83	56.46	46	31.29	18	12.45
13	Nursery raising	149	125	83.89	24	16.11	0	0.00
14	Processing of farm products	132	99	75.00	19	14.39	14	10.61
15	Plant Protection	171	110	64.33	57	33.33	4	2.34
16	Marketing	152	112	73.68	32	21.05	8	5.26
17	Seed Treatment	166	129	77.71	32	19.28	5	3.01

Respondents were categorized into three categories based on usefulness of different subject matter areas of MPMK programme. It is clear from the results in Table 2 that out of 164 respondents 81.70 per cent of the respondents considered that programme on crop production was very useful, 18.29 per cent considered that programme was useful and 0.00 per cent considered that programme was not useful. In case of farm machinery and maintenance out of 147 respondents 83.67 per cent considered that programme was very useful, 16.32 per cent considered that programme was useful and none

of the respondent considered that programme was not useful. In case of animal husbandry out of 164 respondents 59.03 per cent considered that programme was very useful, 40.97 per cent considered that programme was useful and remaining 11.11 per cent considered that there is not any use of this programme. In case of vegetable cultivation out of 168 respondents 64.29 per cent respondents considered that programme was very useful, 30.95 per cent respondents considered that there is use of this programme and 4.76 per cent consider that there is not any use of this vegetable cultivation. In case of fruit cultivation out of 163 respondents 72.73 per cent

had responded that the fruit cultivation was very useful, 21.82 per cent respondents had responded that the cultivation is useful and remaining 5.45 per cent respondents considered that there was no any use of this progremme. In case of health and nutrition out of 154 respondents 43.51, 53.25 and 3.25 per cent respondents considered that programme was very useful, useful and not useful, respectively. In case of bee keeping out of 155 respondents 44.44, 45.00 and 10.56 per cent respondents considered that programme was very useful, useful and not useful, respectively. In case of mushroom cultivation 51.61, 36.13 and 12.26 per cent respondents considered that programme was very useful, useful and not useful, respectively. In case of nursery raising out of 149 respondents 83.89, 16.11 and 0.00 per cent

respondents considered that programme was very useful, useful and not useful, respectively. In case of processing of farm products out of 132 respondents 75.00, 14.39 and 10.61 per cent respondents considered that programme was very useful, useful and not useful, respectively.

Reaction and satisfaction level of the respondents- It is clear from the data in Table 3, that 67.22 per cent of the respondents had fully satisfied from timing of MPMK programme, 31.11 per cent of the respondents had partially satisfied from timing of programme and 1.67 per cent had not satisfied from timing of MPMK programme. Respondents were categorized into four categories based on their satisfaction level about accuracy of content of MPMK programme.

Table-3. Distribution of respondents according to reactions and satisfaction level

Sr. No.	Reactions and Satisfaction level	Category	Number of Respondents	Percentage
1	**Time of broadcasting**	Fully satisfied	121	67.22
		Rarely satisfied	56	31.11
		Not satisfied	3	1.67
2	**Accuracy of the content**	Always correct	143	79.44
		Mostly correct	11	6.11
		Sometime correct	15	8.33
		Rarely correct	11	6.11
3	**Speed of presentation**	Very fast	29	16.11
		Fast	55	30.56
		Normal	74	41.11
		Slow	11	6.11
4	**Utility of programme**	Very much useful	66	36.67
		Much useful	75	41.67
		Somewhat useful	28	15.56
		Not at all	11	6.11
5	**Language used in programme**	Completely understandable	118	65.56
		Partially understandable	54	30.00
		Not at all understandable	8	4.44
6	**Balanced status of programme**	Yes	172	95.56
		No	8	4.44

It is clear from the Table 3 that 79.11 per cent of the respondents had always satisfied from the accuracy of content of MPMK programme, 6.11

per cent of the respondents had mostly satisfied , 8.33 percent had sometime satisfied, 6.11 per cent rarely satisfied from accuracy of content of

MPMK programme. Respondents were categorized into four categories based on reaction of viewers about speed content of presentation of MPMK programme. Respondents were categorized into four categories based on reaction of viewers about utility of MPMK programme. It is clear from the data that 36.67 per cent of the respondents said that MPMK programme was very much useful, 41.67 per cent of the respondents said that programme was much useful , 15.56 per cent said that programme was somewhat useful, 6.11 per cent said that MPMK programme was not useful. Respondents were categorized into three categories based on reaction of viewers about language used in MPMK programme. It is clear from the data that 65.56 per cent of the respondents said that language used in MPMK programme was completely understandable, 30.00 per cent of the respondents said that it was partially understandable , 4.44 per cent said that language was not at all understandable. Respondents were categorized into two categories based on reaction of respondents about balanced status of programme. It is clear from the data that 95.56 per cent of the respondents said that MPMK programme was completely balanced i.e. programme provide both practical and theoretical knowledge, 4.44 per cent of the respondents said that programme was not balanced.

CONCLUSION

In this study we concluded that Mera Pind Mere Khet show effective results on farmers. About 80 per cent of the respondents had high level of satisfaction. The information provided in the programme found important and practical for the different Agriculture practices. Majority of the farmers found that relevant and effective information is provided on all the aspects of agriculture and allied enterprise through this programme. It was found that the age of the farmer play significant role in utilizing the information provided by MPMK

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RESEARCH ARTICLE

Learning Style of Agricultural Technology School Students

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ABSTRACT

Agriculture educators and students are constantly facing a growing body of complex information, knowledge and skill. The rate of growth of the information, knowledge and skills is so rapid, that many students becoming agriculturally absolute. What is not known, however, is the extent to which agriculture students are able to process the increasing amounts of information, knowledge and skills. Various studies also have pointed out that understanding the learning process is a cardinal step towards making improvements in teaching. An important factor affecting the learning process is learning style of the students. Learning style refers to manner in which the learner sorts out and processes information. Learning style refers to "the different approaches followed by person in absorbing, retaining and processing information and/or skills". It indicates a person's "consistent way of responding and using stimuli in the context of learning". Thus, learning style refers to the individual differences between students in how they perceive, think, solve problems and relate to others. Lower agricultural education is independent education branch working separately in agricultural universities. For implementation of lower agriculture educational programme, agricultural schools and rural institutes are established under Agriculture University. The Agriculture school recently renounced as Agricultural Technology School are offering two years diploma course in agriculture. Boys and girls from rural farm families are seeking admission to this course on large scale. This course provides agricultural education to the gross root level farming community of country which is expected to results in an increased farm production. After completing this course they are supposed to apply their knowledge to agriculture and improve the farm situation.

Keywords: *Learning style, Lower agricultural education*

MATERIALS AND METHODS

The study was undertaken at the Agricultural Technology Schools of Akola and Buldana districts under the jurisdiction of Dr. PDKV, Akola. The emphasis the study was given on learning style of agriculture technology school students. Hence, the use of one shot case study under the ex-post facto research approach was used for the present investigation. Preferably the sample of 30 students was selected from one university school and non-granted school from one district. Accordingly from two districts viz. Akola and Buldana. The total sample of 120 students was selected for the present study. The data were collected from them with help of structured interview schedule.

Learning style of agricultural technology school students- Learning style of students was measured with the help of Reichmann learning style scale (GRLSS) developed by Grasha and Sheryl Reichmann in 1974. The GRLSS contains 60 questions. There was no right or wrong answer to question. A rating scale was given to answers of these questions as 1 for strongly disagree, 2 for moderately disagree, 3 for undecided, 4 for

moderately agree and 5 for strongly agree with the statement then totaled the ratings for each column. Divided the total score for each column by 10 and placed the answers at the end where the names of learning style associated with each column. Finally checked whether the score represents relatively low, moderate or high based on the norms for each learning style scale shown below, It was proposed that six learning styles can be

Learning style	Low	Moderate	High
Independent	1.0 – 2.7	2.8 – 3.8	3.9 – 5.0
Avoidant	1.0 – 1.8	1.9 – 3.1	3.2 – 5.0
Collaborative	1.0 – 2.7	2.8 – 3.4	3.5 – 5.0
Dependent	1.0 – 2.9	3.0 - 4.0	4.1 – 5.0
Competitive	1.0 – 1.7	1.8 – 2.8	2.9 – 5.0
Participant	1.0 – 3.0	3.1 – 4.1	4.2 – 5.0

changed by consistent use of one teaching method for adopting teaching style based on the learning style of the students. The obtained learning style was checked against the following considered the names of scale.

Independent learning style: Independent student prefers to work alone and required little direction from the teacher.

Avoidant learning style: Avoidant student tend to be lower end of percentage distribution. They tend to have higher absenteeism; they organized their work poorly and take little responsibility for their learning.

Collaborative learning style: Collaborative student enjoy working harmoniously with their peers.

Dependent learning style: Dependent students typically become frustrated when facing new challenges not directly addressed in the class room.

Competitive learning style: The competitive students are described as suspicious of their peers leading to competition for rewards and recognition.

Participant learning style: Participatory students are characterized as willing to accept responsibility for self learning and relate well to their.

RESULTS AND DISCUSSION

Distribution of student respondents according to their profile-It is observed More than half (54.17%) of the students were boys while, 45.83 per cent students were girls. Majority of the students (90.83%) were from rural background, whereas only 9.17 per cent students had urban background. Maximum number of students (41.66%) had family education upto secondary level, followed by 23.33 per cent and 15.84 per cent having high school and primary level of education respectively. It is also seen that, that half of the students (50%) had family income upto Rs. 20,000 followed by 40 per cent with income between Rs. 20,000 to 50,000.

Majority (75.00%) of students parental occupation was farming, followed by 7.5 per cent students parental occupation was various services, while 3.34 per cent students parental occupation was trade and business. It is evident from Table 1 that 53.34 per cent of students had secured first class, followed by 35 per cent students secured distinction class, while 7.5 per cent and 4.16 per cent students had secured second class and passed class respectively. It is found that more than half of the students (55.83%) had participated in 1 to 2 co-curricular and extra-curricular activities followed by 21.66 per cent students in 3 to 4 co-curricular and extra-curricular activities. It is also observed from Table 1 that 38.34 per cent of the students were studying 3 hrs/day, followed by 31.66 per cent and 11.66 per cent students were studying 2 hrs/day, 4 hrs/day respectively. It is concluded, the majority of the respondents (65.83%) had medium level of use of learning sources, followed by 18.33 per cent and 15.84 per cent respondents used low level and high level use of learning sources respectively.

Learning Style-The percentage of respondents in each learning style categories are given as below. The different learning styles in this context were independent, avoidant, collaborate, dependent, competitive and participant type of learning.

Table-1.Distribution of student respondents according to their learning style.

Sr. No.	Category	Respondents (n=120)	
		Number	Per cent
A	**Independent learning style**		
1	Low (1.0 - 2.7)	02	01.66
2	Moderate (2.8 to 3.8)	63	52.50
3	High (3.9 to 5.0)	55	45.84
B	**Avoidant learning style**		
1	Low (1.0 - 1.8)	01	00.84
2	Moderate (1.9 to 3.1)	44	36.66
3	High (3.2 to 5.0)	75	62.50
C	**Collaborate learning style**		
1	Low (1.0 - 2.7)	02	01.66
2	Moderate (2.7 to 3.4)	10	08.34
3	High (3.5 to 5.0)	108	90.00
D	**Dependent learning style**		
1	Low (1.0 - 2.9)	09	07.50
2	Moderate (3 to 4)	37	30.84
3	High (4.1 to 5.0)	74	61.66
E	**Competitive learning style**		
1	Low (1.0 - 1.7)	00	00.00
2	Moderate (1.8 to 2.8)	11	09.16
3	High (2.9 to 5.0)	109	90.84
F	**Participant learning style**		
1	Low (1.0 - 3)	03	02.50
2	Moderate (3.1 to 4.1)	61	50.83
3	High (4.1 to 5.0)	56	46.67

It is clear from Table that more than half of respondents (52.50%) comes under moderate independent learning style, followed by 45.84 per cent comes under high, while only 1.66 per cent respondents comes under low independent learning style. More than half of the respondents (62.5%) fall under high avoidant learning style followed by 36.66 per cent respondent comes under moderate level and avoidant learning style, while only 0.84 per cent respondents comes under low avoidant. More than half of respondents students comes under (61.66) high dependent learning style followed by 30.84 per cent comes under moderate dependent learning style, while only 7.5 per cent respondents comes under low category. It is concluded from Table that 90.84 per cent respondent comes under high competitive learning style followed by 9.16 per cent respondents comes under moderate, while no body comes under low competitive learning style. It is reported from Table that majority of respondents (50.83%) fall under moderate participants learning style, followed by 46.67 per cent come sunder high, while 2.5 per cent comes under low participant learning style.

CONCLUSION

It is concluded from present investigation, 54.17 per cent respondents were boys while, 45.83 per cent respondents were girls. Majority of the respondents (90.83%) were from rural background. In case of learning style, it can be concluded that, majority of the agricultural technology school students used high collaborative learning style, high competitive learning style and high avoidant learning style.

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RESEARCH ARTICLE

Extent of Adoption of *Charsutri* (Four Point) Rice Cultivation Technology by the farmers from Pune District of Maharashtra

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ABSTRACT

Rice is the most important and extensively grown food crop in India and it is the staple food for more than half of the world population. In India, Maharashtra ranks 12th in terms of production (2014). The scope for expanding rice production lies in enhancing productivity. Several studies have indicated that the adoption of recommended rice technology gives high yields and income to the farmers. The yield level of rice, which is comparatively low at present need to be increased substantially. Higher rice production can be achieved by adoption of all the recommended technologies by large number of farmers. In general, recommended rice technologies are not accepted by all the farmers at a time and also to full extent. In this context the study was conducted with the objective to ascertain adoption level of recommended charsutri (four point) rice technology by the farmers, The study was conducted during 2014-15 at Bhor and Velhe tehsils of Pune district in Maharashtra. A sample of 120 rice growing farmers information on paddy cultivation by the respondents were studied.

Key words: Adoption, Charsutri (Four Point) Rice Cultivation Technology, Recommended practices

MATERIALS AND METHODS

The study was conducted during 2014-15 at Bhor and Velhe tehsils of Pune district in Maharashtra. A sample of 120 rice growing farmers was drawn using proportionate random sampling technique. The ex-post facto research design was employed for the study. Data were collected by personal interviews were conducted using a pre tested structured interview schedule with respondents in their farm and home. The target population was farmers practicing *Charsutri* (four point) method of paddy cultivation. The data collected were analyzed with the help of statistical tools such as percentage analysis, cumulative frequency, mean and standard deviation were the statistical tools employed.

RESULTS AND DISCUSSION

More than half (56.67 per cent) of the respondents were found in the old age category, whereas remaining respondents found in young and middle age categories., followed by 30.00 per cent fell under middle- age category and only

13.33 per cent of the respondents in young age group. In the study area, majority of the young and middle age respondents doing job in companies and factories than in farm field. The younger generations considered farming as a laborious job and they wanted to earn more money with less labour and pain. This would be the possible reasons for the involvement young and middle age people had involved less in farming. Majority (94.17 per cent) of the respondents were literates and their educational level varied from primary to secondary and higher secondary to college educational level. Secondary level education (50.00 per cent) followed by higher secondary education (19.17 per cent) and primary and college educational level (12.50 per cent) was identified as the predominant educational status of the respondents. Thus, it is concluded that, a majority of the paddy growers had received secondary and higher secondary education followed by College and primary education.

Majority (65.83 per cent) of the respondent farmers had medium farming experience, while 18.33 per cent and 15.83 per cent respondents had high and low farming experience, respectively. The average experience of rice grower was 22 years.

It can be inferred from these findings that, the sampled rice growers were having satisfactory experience in farming, which might have helped them in taking the decisions about agriculture in general and rice cultivation in specific.

Table- 1 Socio-economic characteristics of respondent paddy farmers

Particulars	Categories	Total (n=120)	
		Frequency	Percentage
Age	Young (up to 35 years)	16	13.33
	Middle (36 to 55 years)	36	30.00
	Old (Above 56 years)	**68**	**56.67**
Education	Illiterate (No formal schooling)	7	5.83
	Primary (1st to 7th std)	15	12.50
	Secondary (8th and 10th std)	**60**	**50.00**
	Higher secondary (11th and 12th std)	23	19.17
	Graduate & Post Graduate (Above 12th std)	15	12.50
Farming Experience	Low (Up to 11 yrs.)	19	15.83
	Medium (12 to 34 yrs.)	**79**	**65.84**
	High (Above 35 yrs.)	22	18.33
Size of Land Holding	**Marginal (Up to 1.00 ha.)**	**83**	**69.17**
	Small (1.01 to 2.00 ha.)	23	19.17
	Semi-medium (2.01 to 4.00 ha.)	12	10.00
	Medium (4.01 to 10.00 ha.)	2	1.66
	Big (Above 10.01 ha.)	0	0.00
Area Under Paddy	**Low (Upto 1.00 ha)**	**94**	**78.33**
	Medium (1.01 – 3.00 ha)	22	18.33
	High (Above 3.01 ha)	4	3.34
Annual Income	Low (Upto Rs.50,000)	27	22.50
	Medium (Rs.50,001 to 100,000)	**74**	**61.67**
	High (Above Rs.100,001)	19	15.83

Majority (69.17 per cent) had marginal land holding (up to 1.00 ha.) followed by (19.17 per cent) of the paddy farmers belonged to category of small land holding (1.01 to 2.00 ha.) A meager proportion (10.00 per cent) of respondents belonging to category of semi-medium land holding possessing land (2.01 to 4.00 ha.) followed by (1.66 per cent) of the respondents belonging to medium land holding (4.01 to 10.00 ha.). It is concluded that maximum percentage of the paddy farmers were found in marginal land holding category.Almost (78.33 per cent) of the respondents had less than 1.00 hectare of area under paddy cultivation followed by (18.33 per cent) who had more than 1.00 hectare under paddy cultivation and very negligible (3.34 per cent) of the respondents had above 3.00 hectare of land under paddy cultivation. Since most of the farmers had less land holdings, they had preferred to cultivate paddy as the main crop

extensively. Nearly two third of the respondents (61.67 per cent) belonged to medium income group followed by low (22.50 per cent) and high group of income (15.83 per cent).Cultivating *charsutri* in less than 2.5 ha by most of the respondents contributed for the low and medium annual income.

Socio-economic characteristics and Information source utilization

From table-2, it is observed that, about three fourth (68.33 per cent) of the respondents had medium use of sources of information, followed by (22.50 per cent) with low and (9.67 per cent) with high use of sources of information. The reason behind medium use of sources of information might be due to the need for technical guidance to understand the risky and complex nature of technologies. Majority (67.50 per cent) of the respondent farmers had medium level of social participation and (23.33 per cent)

respondents have high level of social participation. Very few (9.17 per cent) had low level of social participation. The membership of respondent farmers in farmers' association, self-help groups, co-operative milk society, agricultural credit society and panchayat contributed for the high level of social participation.

Table- 2. Socio-economic characteristics and Information source utilization

Particulars	Categories	Total (n=120)	
		Frequency	**Percentage**
Sources of Information	Low (Up to 25 score)	27	22.50
	Medium (26 to 35 score)	**82**	**68.33**
	High (Above 36 score)	11	09.67
Social Participation	Low (Upto 1 score)	11	9.17
	Medium (2 to 3 score)	**81**	**67.50**
	High (Above 4 score)	28	23.33
Risk Orientation	Low (Upto 15 score)	21	17.50
	Medium (16 to 24 score)	**66**	**55.00**
	High(Above 25 score)	33	27.50
Economic Motivation	Low (Upto 15 score)	15	12.50
	Medium (16 to 24 score)	**77**	**64.20**
	High (Above 25 score)	28	23.30
Knowledge Level	Low (Upto 70 score)	09	07.50
	Medium (71 to 90 score)	**93**	**77.50**
	High (Above 91 score)	18	15.00
Adoption Level	Low (Up to 60 score)	13	08.33
	Medium (61 to 75 score)	**83**	**69.17**
	High (Above 76 score)	24	20.00

The multiple roles of farmers in farm and home activities, lack of leisure time available to participate in organizational activities, might be the reasons for the low level of social participation. Fifty five per cent of the respondent farmers had medium level of risk orientation behaviour, followed by (27.50 per cent) of the respondent farmers with high level of risk orientation behaviour and the rest (17.50 per cent) of the respondent farmers had low level of risk orientation behaviour.

In this study the risk orientation behaviour of the respondent farmers were found to be in medium to high level. The interest of the vast farming experience of the old and middle and educated respondents' scientific innovations, better social participation and medium level of social orientation would have made them to face the risk while adopting the *charsutri* technique. Majority of the respondent farmers (87.50 per cent) had medium to high level of economic motivation behaviour and the remaining 12.50 percent of the respondent farmers had low level of economic motivation behaviour. Majority (77.50 per cent) of the respondents had medium level of knowledge followed by (15.00 per cent) and (7.50 per cent) who had high and with low levels of knowledge about *Charsutri* cultivation method respectively.

This might be due to secondary level of education and medium level of sources of information of the respondents.In general it could be concluded that, there exists medium to high level of knowledge with majority (92.50 per cent) of the respondents. The respondents' ambition to increase their farm income; would have motivated them to gain more knowledge on *charsutri* cultivation practices. Further, the agricultural scientists also played an important role in the dissemination of knowledge on *charsutri* method. This would have contributed for the medium level of knowledge among majority of the respondents.

In general it could be inferred that, majority of the respondents (89.17 per cent) had medium to high level of adoption in the cultivation of paddy under *charsutri* method and only (8.33 per cent) had low level of adoption.It could be understood that, a vast majority of the respondents possessed medium to higher level of adoption. This might be due to their higher knowledge level on the recommended practices, better sources of information, medium risk orientation, and medium economic motivation. Those who avail subsidy facilities understood the efficiency of that implement through demonstrations and invariably adopted the technologies in their field.

CONCLUSION

It can be concluded that, the adoption of technologies depends on the perception of farmers about the characteristics of technology such as simplicity, cost, profitability, physical and cultural compatibility which are indicators of the appropriateness of technology. This has great importance whether the technologies recommended and transferred by the scientists and developmental personnel are as per the needs of the farmers or not. So, the perception of scientists, extension personnel and farmers towards the appropriateness of recommended technologies can be ascertained and matched. They should form a common forum to assess, refine and modify the technologies so that they may find an appropriate place in the farming community.

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RESEARCH ARTICLE

Association between Training Needs and Independent Variables of Vegetable Growers in Vegetables Cultivation Technology

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ABSTRACT

In state of Haryana vegetables cultivation play an important role in agricultural operations dueto several unique factors like options for diversification to rice-wheat cropping system and high market potential in the state itself as well as metropolitan market Delhi and Chandigarh. The present study was undertaken in four districts of Haryana to assessthe training needs of vegetable growers in vegetable cultivation technology and find the association between independent variables and training needs. From four selected districts total 160 vegetable growers were interviewed with the help of well structured interview schedule. It was assessed that vegetable growers most needed training in areas like disease and IPM, knowledge of improved varieties, seed treatment, spacing, and weed control, marketing, package of practices, management of fertilizers, quality improvement and nursery raising. The study further indicated that age, education, occupation, social participation, extension agency contact, mass media exposure, locus of control, risk taking willingness, attitude towards vegetable cultivation and adoption propensity significantly correlated with the training needs of vegetable growers about improved vegetable production technology.

Key words: *Training needs, vegetable protection technology, quality improvement*

MATERIALS AND METHODS

The present study was conducted in four districts of Haryana vegetable cultivation. Four districts of Haryana namely, Sonipat, Faridabad, Rewari and Jhajjar, were selected and two blocks each from these districts were selected randomly. Two villages from each block were randomly selected, making a total of 16 villages. From this selected villages 10 vegetable growers were randomly selected for the study. As the study was aimed to measure level of training needs and association between independent variable i.e. training needs. The tool consisted of 16 statements on training needs of vegetable growers in vegetable cultivation covering various aspects The responses of vegetable growers were recorded on 3 point continuum i.e. most needed, somewhat needed and least needed with weight-age of 3, 2 and 1, respectively. The association between independent variables and training needs was analyzed with correlation and regression with the help of SPSS software.

RESULTS AND DISCUSSION

Training needs of Vegetable growers: The training needs of vegetable growers in various aspects of vegetable cultivation technology were assessed with the scale of 3 point continuum i.e. most needed, somewhat needed and least needed with weight-age of 3, 2 and 1, respectively. Mean score of the training needs obtained for different aspects are presented in Table-1. Most of the vegetable growers felt that they needed training in the area of diseases and IPM with the mean score of (2.31) followed by improved varieties, seed treatment, transplanting and spacing, weed control, marketing, package of practices, management of fertilizers, quality improvement, and nursery raising with the mean score of 2.28, 2.19, 2.11, 2.04, 1.90, 1.80, 1.86, 1.82and 1.75 respectively. The least training needs preferred practices were sowing time (1.42), harvesting (1.57), seed rate (1.54), intercultural operations (1.60), irrigation (1.61) and use of organic manures (1.70).

Table 1.Training needs of Vegetable growers in vegetable cultivation technology.

Sr. No.	Vegetable cultivation practices	Training needs			Total obtained (Scores)	Knowledge gap percentage	Ranks
		Most needed	Some-what needed	Least needed			
1.	Improved/Hybrid variety	81	41	40	365	2.28	II
2.	Seed treatment	75	41	44	351	2.19	III
3.	Seed rate	20	47	93	247	1.54	XIV
4.	Sowing time	16	36	108	228	1.42	XVI
5.	Nursery raising	40	40	80	280	1.75	X
6.	Transplanting & Spacing	71	37	74	339	2.11	IV
7.	Use of organic manures	32	48	80	272	1.7	XI
8.	Management of fertilizers	55	31	72	299	1.86	VIII
9.	Irrigation	28	43	89	259	1.61	XII
10.	Intercultural operation	24	48	88	286	1.60	XIII
11.	Weed control	67	33	60	327	2.04	V
12.	Diseases and IPM	83	45	32	371	2.31	I
13.	Harvesting	16	44	100	236	1.47	XV
14.	Quality improvement	48	36	76	292	1.82	IX
15.	Package of practices	52	36	72	300	1.8	VII
16.	Marketing	63	29	68	315	1.9	VI

Relationship of socio-economic and socio-psychological variables with training needs of vegetable growers:

Table 2.Relationship of socio-economic and socio-psychological variables with training needs of vegetable growers in vegetable cultivation technology

S.No.	Independent variables	r value
1.	Age	-.226**
2.	Caste	0.480
3.	Education	0.468**
4.	Family type	-0.110
5.	Family size	-0.850
6.	Family income	0.134
7.	Occupation	0.280**
8.	Economic status	0.570
9.	Resources mobilization potentiality	0.760
10.	Social participation	0.204**
11.	Extension agency contact	0.443**
12.	Mass media exposure	0.504**
13.	Achievement motivation	0.840
14.	Locus of control	-0.241**
15.	Risk taking willingness	-0.375**
16.	Adoption propensity	0.371**
17.	Attitude towards vegetable farming	0.492**

** Correlation is significant at 0.01 level.

The correlation coefficient was computed to know the existence of relationship between the various characteristics of Vegetable growers and their training needs in vegetable cultivation. The data depicted in Table 2 show that, among 17 characteristics studied 10 characteristics, namely, age, education, occupation, social participation, extension agency contact, mass media exposure, locus of control, risk taking willingness, attitude towards vegetable cultivation and adoption propensity were found to have positive and significant correlation with training needs at 0.01 level of probability. Whereas, family income, economic status and achievement motivation showed positive and non-significant relationship.

Age had a negative and significant relationship with training needs at 0.01 level of probability. While the family type, family size and caste were negative and non-significantly related with training needs. Education had a positive and significant relationship with training needs. It means, as the education level of the farmers increased, the training needs also increased. It is due to the fact that more educated farmers are aware about the importance of training and they want to learn skills involved in advanced vegetable cultivation.

Multiple linear regression analysis of the characteristics of vegetable growers with training needs in vegetable cultivation technology: The method of multiple linear regression analysis (Table 3) were used for predicting the relative contribution of

independent variables to influence the dependent variables i.e. training needs. All the selected socio-economic and socio-psychological variables were subjected to multiple linear regression analysis. The coefficient of determination (R^2) revealed that 44.40 per cent of the variation in the training need was explained by the variables.Out of all the selected variables, three variables were found to be significant. Age showed negative but significant relationship at 0.01 level of probability.

Table 3.Multiple linear regression analysis of selected independent variables with training needs in vegetable cultivation technology.

S. No.	Independent Variables	Regression coefficient
1.	Age	-0.194**
2.	Education	-0.010
3.	Occupation	0.086
4.	Economic status	0.085
5.	Resources mobilization potentiality	-0.030
6.	Social participation	-0.019
7.	Extension contact	0.004
8.	Mass media exposure	0.150
9.	Achievement motivation	0.093
10.	Locus of control	-0.067
11.	Risk taking willingness	0.099
12.	Adoption propensity	0.152*
13.	Attitude towards vegetable farming	0.138*

Significant at $*P = 0.05$ and $**P = 0.01$ levels respectively.

$R^2 = 0.444$

That means respondents with lower age were highly oriented towards training in advanced vegetable cultivation. Similarly, the adoption propensity and attitude towards vegetable cultivation were also found to be significant at 0.05 level of probability. Vegetable growers had favourable attitude and hence showed high interest in training needs for advance vegetable cultivation technology. Similarly, vegetable growers young in age had high adoption propensity and better attitude were more active and better motivated to learn new skills in order to improve their living conditions.

CONCLUSION

It can be concluded that majority of vegetable growers gave highest emphasis of training needs on diseases and IPM, seed treatment, transplanting and spacing, weed control, marketing, package of practices and management of fertilizers in order, respectively. So, while preparing training programmes for vegetable growers aspects identified in the study should be focused on priority basis. Such type of need based training programmes will help them to increase the production and productivity of vegetable crops in sustainable way. Further, extension agencies and change agents should also concentrate on major areas, identified in this study. From multiple linear regression analysis of independent variables like age (negative but significant relationship), adoption propensity and attitude towards vegetable cultivation showed significant relationship which, gives the better understanding of background variables affecting the training needs of vegetable growers.

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RESEARCH ARTICLE

Impact of farmers characteristics on their marketing behavior Khartoum state Sudan, Africa

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ABSTRACT

Marketing behavior of the farmers' it refers to all the activities performed by the participant farmers in relation to operations including planning production till the sale of produce in the market. Scientists observed that till now agricultural extension programs emphasize tackling problems related to agricultural production and introducing innovations and new technologies to increase the yield. But farmers are seldom provided with advices and information in areas of agricultural marketing and agribusiness. This has lead to prevalence of conventional agricultural marketing systems, with relatively subsistence agriculture or low prices to farm produce affecting agricultural development negatively in spite of availability of resources. And in majority farmers are poor in spite of their high production, because they are lacking market and agribusiness information. And now the challenge is that agricultural extension agencies must play their role efficiently and sufficiently in providing farmers with marketing and agribusiness information for sustainable and profitable agricultural production. This traditional paradigm had led to farmers with low marketing behavior. Which enhances the necessity and significance of adopting alternative extension approaches such as Market – led extension which has emerged as the need of the day to upgrade farmers' marketing behavior. Hence, this study was undertaken to know the impact of farmers' characteristics (independent variables) on the marketing behavior of Khartoum state farmers in Sudan country (the dependent variable of this study). Random representative sample (suitable size & suitable number of respondents) were selected by stratified random sampling method (200 farmers and 20 from farmers' organization.) The desirable data was collected in line with the objectives set forth. The required data and information were collected through direct interview and collected data were processed into suitable required statistical methods to fulfill the study objectives. The results indicated that the farmer organization sample with all selected independent variables had high mean and low standard deviation and vice versa with non farmer organization sample except age the farmer organization sample had slightly low mean and standard deviation than non farmer organization. also the study revealed that there was a significant difference in marketing behavior between FO sample and Non FO sample. Also the study indicated that the contribution of selected independent variable on marketing behavior of farmers' organization sample was high (R2 = 81.56 percent) than on marketing behavior of non farmer organization sample (R2 = 41.38 percent).

Keywords: Marketing behavior, market-led extension, agribusiness, upgrade

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MATERIALS AND METHODS

The present was conducted in Khartoum state (Sudan country-Africa) to know the effect of selected independent variables (socio-economic Characteristics) on farmers' marketing behavior. By using stratified random sampling a representative sample was selected from non organized farmers(200 farmers) and 20 farmersfrom organized farmers. Hence, the total220 respondents were selected and the data were collected with the help of structured interview schedule through personnel interview method.

RESULTS AND DISCUSSION

The table No.1 showed that overwhelming of selected socio economic characteristics like: education, social participation ,occupation and marketable surplus the (means) for farmer organization sample were high comparing with (means) for non-farmer organization sample and

vice versa with standard deviation the (S.D) for   with (S.D) for non-farmer organization group . farmer organization group were low comparing

Table No1: Distribution of respondents according to their selected socio economic characteristics.(200 Non FO & 20 FO) overall 220 respondents.

Characteristics	Category	Respondents					
		Non-farmer organization (Non FO)		Farmer organization (FO)		overall	
		N	%	N	%	N	%
Age(years)	young (up to 35 years)	15	7.5	1	5.0	16	7.3
	middle (36 to 55)	96	48.0	13	65.0	109	49.5
	old (56 and above)	89	44.5	6	30.0	95	43.2
	Total	200	100.0	20	100.0	220	100
	Mean	1.37		1.25			
	S.D	.621		.550			
	Z critical value = 1.6448	Z cal = .91883 NS					
Education	Illiterate	25	12.5	0	0	25	11.4
	Can read only	8	4.0	0	0	8	3.6
	Can read and write	38	19.0	0	0	38	17.3
	primary	30	15.0	2	10.0	32	14.5
	Middle	19	9.5	2	10.0	21	9.5
	High School	42	21.0	9	45.0	51	23.2
	Graduate	38	19.0	7	35.0	45	20.5
	Total	200	100	2	100	220	100
	Mean	3.44		5.05			
	S.D.	1.986		.945			
	Z critical value = 1.6448	Z cal= -6.34745**					
Social participation	Member of one organization	84	42.0	0	0	84	38.2
	Member of more than one organization	49	24.5	7	35.0	56	25.5
	Office Holder	48	24.0	11	55.0	59	26.8
	Wider Public Leader	19	9.5	2	10.0	21	9.5
	Total	200	100	20	100	220	100
	Mean	1.01		1.75			
	S.D.	1.022		.639			
	Z critical value = 1.6448	Z cal= -4.6232**					
Occupation	landless labor	10	5	0	0	10	4.5
	agriculture and labor	85	42.5	1	5	86	39.1
	agriculture	20	10	6	30	26	11.8
	Agriculture and allied occupation	45	22.5	5	25	50	22.7
	agriculture+ business	27	13.5	7	35	34	15.5
	Agriculture and service	13	6.5	1	5	14	6.4
	Total	200	100	20	100	220	100
	Mean	2.08		3.95			
	S.D.	1.315		.945			
	Z critical value = 1.6448	Z cal= -8.1257**					
Marketable Surplus Type	Low	153	76.5	20	100	173	78.6
	Medium	27	13.5	0	0	27	12.3
	High	20	10	0	0	20	9.1
	Total	200	100	20	100	220	100
	Mean	14.54		289.75			
	S.D.	18.342		364.462			
	Z critical value = 1.6448	Z cal= -3.3765**					

NS= Non significant at 5% * = significant at 5% ** = highly significant at 5% level of Sig

But in case of age the mean and standard deviation for farmer organization were slightly less than the mean and standard deviation of non farmer organization. Also the table clearly indicated that the Z values were highly significant at the level of significant 5 percent for all characteristics like: Education, Social participation, Occupation and Marketable surplus except age the Z value was not significant at level of significant 5 percent and we sum up that there was a significant difference between farmer organization and non farmer organization in education , social participation , occupation and marketable surplus but there was not a significant difference between them in age.

The table No.1 showed that overwhelming of selected socio economic characteristics like: education, social participation ,occupation and marketable surplus the (means) for farmer organization sample were high comparing with (means) for non-farmer organization sample and vice versa with standard deviation the (S.D) for farmer organization group were low comparing with (S.D) for non-farmer organization group . But in case of age the mean and standard deviation for farmer organization were slightly less than the mean and standard deviation of non farmer organization. Also the table clearly indicated that the Z values were highly significant at the level of significant 5 percent for all characteristics like: Education, Social participation, Occupation and Marketable surplus except age the Z value was not significant at level of significant 5 percent and we sum up that there was a significant difference between farmer organization and non farmer organization in education , social participation , occupation and marketable surplus but there was not a significant difference between them in age.

Table No2: Distribution of respondents according to Regression coefficient of selected characteristics.(200 Non FO & 20 FO) overall 220

Sl. No	variables	Non farmer organization(NonFO) N=200			farmer organization(FO) N = 20		
		Co-efficient of regression(b)	SE of b	T value of (b)	Coefficient of regression(b)	SE of (b)	T value of (b)
1.	Age X1	-5.4248**	1.679	-3.230	-1.404	1.02	-1.376
2.	Education X2	-0.944	.6549	-1.44	-1.0122	.526	-1.922
3.	Social participation X3	-1.894	1.100	-1.721	1.691*	.8247	2.0505
4.	Occupation X4	.9705	.7847	1.2368	.8202	.5585	1.468
5.	Marketable Surplus Type X5	-1.9589	1.239	-1.581	4.987**	.9449	5.277
	F value	**14.904**			**4.915**		
	R2	**0.4138**			**.8156**		

          * = significant at 5%   ** = highly significant at 5% level of Sig
Y=a+b1X1 +b2X2 +……bn Xn (Where: Y=dependent variable, x1 ,x2 ……are independent variables / b1 , b2 …..are partial regression coefficient /a= constant/ n= total number of independent variables)

From the table No 2 above it was observed that R2 value in non-farmer organization sample was 0.4138 indicated that the contribution of selected independent variables on dependent variable (farmers' marketing behavior) was 41.38% , whereas R2 in farmer organization sample was .8156 which indicated that the contribution of selected independent variables on farmers' marketing behavior was (81.56 percent) hence the above table in this study reflected that the contribution of independent variables on farmers' marketing behavior in the farmer organization sample was high(81.56%) than the contribution of selected independent variables on farmers' marketing behavior in the non-farmer organization sample(41.38 percent).

CONCLUSION

This study clearly revealed that there is a significant difference in marketing behavior between farmers' organization and non-farmer organization therefore extension functionaries should encourage and help farmers to organize themselves into groups (FIGs. Cooperatives etc) strengthening their negotiating power, collective production and collective marketing and benefiting from economics of scale. Production and marketing are twins and they are highly correlated, hence to upscale and upgrade production we should upscale and upgrade marketing through planning production, design innovative action plans, precise implementation and regular review to keep pace with changeable market to adapt and mitigate unpredictable marketing risks.

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.

RESEARCH ARTICLE

Status of Precision Farming in Tamilnadu - Approaches for Sustainable Livelihood

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ABSTRACT

Precision Farming is facilitating the prospects and scope for switching over to modern agriculture leaving the traditional one by utilizing right resources in right time and management, which results an environment friendly sustainable agriculture. Precision farming provides a new solution using a systems approach for today's agricultural issues such as the need to balance productivity with environmental concerns. It is based on the implementation of advanced information technologies. It includes describing and modelling variation in soils and plant species, and integrating agricultural practices to meet site-specific requirements. It aims at increased economic returns, as well as at reducing the energy input and the environmental impact of agriculture. Precision farming requires some degree of competence in the use of software and hardware on the part of growers and/or crop consultants. Indeed the success of precision farming largely depends on creation of management systems, which will involve some combination of computerized decision support systems and the wisdom of farmers. Growers will adopt information technologies only if they are reliable and easy to use, offer some competitive advantage and can be introduced into farming without too much difficulty or expense. An attempt has been made to analyse the extent of support of precision farming in improving the socio-economic status of the precision farming practitioners through the intervention of stake holders. Based on this, some approaches have been designed to strengthen the Precision Farming which will definitely uplift the status of the precision farm practitioners to the remarkable level.

Key Words: *Precision Farming, Environment friendly Sustainable agriculture, Degree of competence*

MATERIAL AND METHODS

Among the seven agro climatic zones in Tamil Nadu two zones viz., Northern Zone and North western Zones were purposively selected for conducting the study. In the North western zones the districts Dharmapuri, Krishnagiri and in western zone Coimbatore and Erode were the study areas. Two blocks from each district in which the Precision Farming cultivation is intensive were selected. Thus the study covers eight blocks in four districts. Simple random sampling procedure was followed to arrive 200 precision farming practisioners totally @ 25 from each block and 50 Stakeholders viz, Researchers/ Extension personnel, Input dealers, Drip marketers, Produce marketing personnel and Agri clinics personnel @ 25 from each zone. **Dimensions of the study-** The study was carried out in the said study areas to assess the technological utilization pattern, perceived effectiveness, market associated activities of the precision farm practitioners, intervention of stakeholders in Precision Farming and the SWOC on Precision Farming as perceived by farmers and stakeholders.

RESULTS AND DISCUSSION

STATUS OF PRECISION FARMING IN TAMILNADU

Profile of Precision Farm Practitioners

• More than two –thirds (68.50 percent) of the sample had more than 4 years of experience in precision farming.

• More than half of the sample were getting the income of upto 5 lakhs from Precision farming, whereas 24 per cent and 22 per cent respectively were found under low and high income category.

• Majority (83.00 per cent) had medium level of extension participation followed by 16 per cent in the low category. Majority (83.50 percent) of the sample had moderate to high level of economic motivation followed by low level (16.50 per cent).

• Information seeking pattern of 58.00 per cent of the sample was moderate level, followed by low and high levels (42.00 per cent).

• Joint decision was taken regarding association activities (56.50 per cent) and for obtaining credit (43.50 per cent) in consultation with the members of Precision Farmers Association as stated by more than two-fifths of the sample. Joint decisions with stakeholders were taken by 53.50 per cent each of the sample while planning and initiating the Precision Farming activities.

TECHNOLOGICAL UTILIZATION PATTERN- Except Remote Sensing Technology, the rest eight technologies viz., Chisel plough, Hi-tech Community Nurseries, Drip and Fertigation System, Application of Water Soluble Fertilizers, Grading, Sorting, Packing and Market tie up were adopted by the sample. Among them three technologies viz., Drip and Fertigation System, Application of Water Soluble Fertilizers, Grading were followed by cent per cent of the sample.

INTERVENTION OF STAKEHOLDERS AS PERCEIVED BY THE FARMERS

Among the five categories of stakeholders studied, Researchers, Extension personnel, Officials of State Department of Agriculture, Horticulture were frequently intervened in the PF activities as stated by 76 per cent of the sample. Input dealers, Produce marketing personnel were perceived as occasionally intervened sources as stated by more than 60 per cent. The intervention of drip marketers was rare (48 per cent) and occasionally (43.50 per cent).

MARKET ASSOCIATED ACTIVITIES
Market Assessment and Assistance

• Moderate level market assistance was expressed by half of the sample.

• Assured price and sale of the produce (43.00 per cent) were also indicated as moderate to good level.

Activities of Precision Farmers Association

• Status of establishment of community nursery was at poor level (61.50 per cent), followed by price fixation (47 per cent), eliminating middle men (46.50 per cent) and relationship building with stakeholders (45.00 per cent).

• The association activities were good in the bulk Purchase of inputs (42.50 per cent), Sharing of farm related information and Sharing of responsibilities to the tune of 38.00 per cent and 31.00 per cent.

• Activities of PFA enabled the sample in sharing the farm related information and Sharing of responsibilities, bulk Purchase of inputs, availing financial assistance, fixing price for the produce and bulk disposal of produce.

Commodity Transportation

• Small truck was the major mode of transport for 82 per cent of the sample, followed by personally carrying the commodities (52 per cent).

• Transport of commodity was made through trucks in tar topped roads, by hiring vehicles and expressed that the conveyance used were much reliable.

• Moderate to high level commodity transportation was indicated by 84 percent of the sample and the rest 16 percent found under low level

Market Infrastructure

• Commercial markets (66.00 per cent) were the major source of disposal of farm produce. Traditional market (45.00 per cent), to a certain extent mobile markets were also exploited by the sample for marketing their produce.

• The cost for market infrastructure was said to be reasonable by two –thirds of the sample and 32.00 per cent opined as expensive. About 40.00 to 50.00 per cent of the sample expressed that, they were marketing their produce directly, without involving middlemen.

SWOC on Precision Farming as perceived by farmers

• Surface and ground water conservation, Uniform water distribution, Economised use of

water and decreased human health risks were perceived as major strengths in adopting precision farming techniques by more than 90 per cent of the sample.

- Among the twelve weaknesses in precision farming, expressed by the sample, selectivity in the usage of PF technologies (72.50per cent) occupied the first position.

- High cost of water soluble fertilizer was the foremost (89.00 per cent) followed by underdeveloped market infrastructure (87.50 per cent).

Assessment on Skills of Stakeholders- Stakeholders possessed high level of strategic skills closely followed by Implementation skill, Influencing Skill and Leadership Skill whereas the personal factors was observed to be low among the stakeholders. The stakeholders' skill on presentation and relationship were high and they were on par in those skills whereas the skills on learning environment management and continuous learning attitude were almost in the same level.

SWOC on Precision Farming as perceived by Stakeholders- High cost of water soluble fertilisers, Under developed market infrastructure, Unstableness of government policies were the challenges articulated by the stakeholders. The Approaches have been designed based on the outcome of the study to strengthen the Precision Farming further.

Approaches to strengthen for sustainable livelihood- Joint Decision making with members of Precision Farm practitioners Association (PFA) and peer group was observed in the study, it has to be fortified by the intervention of stakeholders so that the thorough flow of information could be possible among the PFA members.

The sample was found with moderate to high level **extension participation**, Orientation with Research station and its activities. If the stakeholder has more contact with Precision Farmers with frequent intervals, it could be lifted up.

It was noted that a **portion of land** was allotted by the farmers for Precision Farming from their total

area under cultivation. The size of Precision Farming was semi medium to medium size, despite they could earn Rs. 5 lakh as annual income. If the area under Precision farming is increased that will have the positive reflection on the livelihood status of the farmers.

Though there is ample scope for **sharing the farm information** through PFA, moderate level of sharing pattern was observed. The monitoring team motivates the PFA members to share and discuss every aspect in their areas.

Among the core technologies recommended for Precision farming, **Remote Sensing** the prime technology was not at all aware by the sample. The infield variation could be assessed based on remote sensing only. Without considering such in field variation, the other technologies even if followed as recommended will not bring the anticipated output. The Precision Farming Development Centres (PFDC) established at National level have not yet initiated this process. The effectiveness of remote sensing in this regard has been utilized in the developed countries. Such attempt may be taken up by the Regional Remote Sensing Service Centres (RRSSC) located across the country, established by National Natural Resources management System (NNRMS). The stakeholders especially the service providers of public sectors could obtain the results and adopt the same as a trial in every Precision Farming area. The performance of such approach will enable the farmers to **develop awareness** and the importance of the use of remote sensing, incidentally it will diffuse into the system.

The use of quality seed and seedlings is the important component of Precision Farming for producing quality farm produces. The supply of seedlings through Hi-tech community nursery is one of the technologies which was not up to the expected level in the study area. As that of Self Help Groups (SHGs) farm women groups may be organized by the stakeholders in the Precision Farming areas and be involved in the production of seedlings through **Hi-tech community nurseries**. In order to overcome the initial hurdle, in establishing the nursery, the groups may be

provided with a reasonable budget as a **seed money** from the government as **revolving fund**. Those groups may be linked with PFA for the supply of seedlings. All these activities will be assisted and monitored by the stakeholders of the public sectors. Through this attempt, in addition to the supply of quality seedlings, **entrepreneurial development** could also be achieved.**The Precision Farmers Association (PFA)** operating in the Precision Farming areas need to be strengthened. It is ensured as a mandate that every Precision Farm practitioner is to be enrolled as a member. A team may be constituted by the administrators which includes the stakeholders, the progressive farmers of the region and also the office bearers of PFA. PFA activities are to be monitored with fixed time interval by any of the stakeholders alternatively. This will facilitate the following aspects.

✓ collective decisions about the choice of crops on demand base
✓ Supply of agricultural inputs at lesser price with assured quality by developing direct contact with the manufacturing companies
✓ Eliminating middlemen by developing direct contact with exporters.
✓ Availing common transport.

❖ In order to lessen the burden of Precision Farmers, the state level administrators may take the initiative to **build tie-up** with **the input production** companies to supply **Water Soluble Fertilizers** and other required agro inputs with high quality on concessional rate to the Precision Farmers Association. Also through this mode the actual demand could be assessed by the units so that the bulk transport could be materialized. Moreover assured return is also possible for the production companies.

❖ As reported in the study the **intervention of stakeholders** especially Researchers and Extension functionaries was more frequent than the others. As far as the drip marketers, input agents are concerned they restricted their intervention with the initial establishment. The stakeholders should not work in isolation as observed during data collection. In every activity of the Precision Farming their roles to be made as complementary. The implementing agency of Precision Farming should work out a strategy of involving every one's role by interlinking their activities throughout the process. This will further strengthening and sustaining the Precision Farming activities at all levels.

✓ The success and experiences of the precision farming activities need to be regularly and continuously shared among the stakeholders through publications, websites, newsletter , CDs and other media.

✓ **Stakeholders meet on Precision Farming** during crop seasons may be taken up at various levels and their services or technological intervention in time without missing the season make the precision success.

▪ Such programmes will help in developing **OCTAPACE** culture which stands for **O**penness**, C**ollaboration**, T**rust**, A**uthentication**, P**ro action**, A**utonomy**, C**onfrontation with Problems and **E**xperimentation among the stakeholders.

▪ If the said culture is developed among the stakeholders, naturally they will discharge their tasks effectively without lapses.

❖ The scope of Precision Farming in all its dimensions could be strengthened by involving **multidisciplinary team** of Researchers in various fields including Agricultural Engineers, Manufacturers, Economists etc., Such a team may be constituted by the planners at state and district level.

● The forecast on Demand of the **market** will definitely influence the choice of the crops and production. This could be attended by the PFA and the monitoring team.

● Warehousing centres, Cold Storage facilities and Ripening chambers are need to be established at district level in the major production centres so as to reduce the post harvest losses. These infrastructures may be established jointly in coordination with the drip marketers, NGOs and other agencies working in that zone. This will support the Precision farmers **to store** the farm produces for a reasonable period to fetch the reasonable price.Buffer **storage** through precision platform ensure the produce available throughout the year in the market so as to get premium price

and gaining the confidence of customers with the assurance of its availability.

• The possibility of establishing **Fruits and Vegetables Processing** centres and value addition centres at Zonal level may be explored to exploit the surplus produces when the market price is low.

• Creating a **logo** and having brand name was found with only very few of the PFA in Krishnagiri and Dharmapuri districts. It should be encouraged by the stakeholders so that labeled and packed produce leads to traceability and winning the confidence level of the buyers which will improve the cost of the produces on par with **branded goods.**

• The administrators may assess the possibility of establishing **mobile markets, farmers own mega markets, Farmers retailers markets**, so that the farm produces could reach the local customers at The administrators may assess the possibility of establishing **mobile markets, farmers own mega markets, Farmers retailers markets**, so that the farm produces could reach the local customers at their door steps without the middle men intrusions.

• In order to meet the demand for spare parts, **Custom service centres** may be established at block level. This centres will also attend the repairs and maintenance of farm machineries and tools. **Identified potential rural youths, unemployed agricultural diploma holders** may be trained on these areas and encouraged to open such centres. Ultimately this will curtail the migration of farm/rural youth. Also it helps for entrepreneurial development among the rural youth.

CONCLUSION

The approaches have been formulated based on the major outcome of the study. The approaches are focused to further strengthen the activities of PFA, insisting the need for assessing the in field variation through remote sensing, supply of seedlings through hi-tech community nursery, intervention of stakeholders at all levels of Precision farming, establishment of processing centres, mobile and farmers markets and custom service centres to retain farm youth. The comprehensive approach of attending the approaches by the public sector agencies especially the state government will certainly strengthen the Precision Farming process in the state, ultimately increase the livelihood status of the farmers.

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RESEARCH ARTICLE

Constraints faced by the Extension Personnel in Transfer of Technologies

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ABSTRACT

Agricultural Assistants are the grass root level functionaries under the Department of Agriculture. In the process of communication of agricultural technologies, the position of these village level functionaries are very crucial. Each Assistant has a jurisdiction of three to four villages and should carried out the activities of Agriculture, Soil and Water conservation and Horticulture, for average of 1000 farm families or 1500 ha area under cultivation. It may be clear that there will be some constraints which are preventing the extension personnel in performing their job with full efficiency. Constraints are the reasons, causes or circumstances which ultimately result in the poor performance of the extension personnel. Since Agricultural Assistants are extension personnel having direct contact with farmers, constraints faced by them are very significant. The information on the constraints faced by the Agricultural Assistants in discharging their duties and the suggestions to overcome those constraints will be helpful to the planners and administrators in general to provide a suitable environment for increasing the performance and satisfaction of Agricultural Assistants, thereby, contributing for agriculture development. In this background the present study was undertaken with the objectives to know the constraints faced by the extension personnel in transfer of technologies and to know the suggestions for the improvement of their work performance.

Key words: Process of communication, Agricultural technologies, Agriculture development

MATERIALS AND METHODS

The research was conducted in Kolhapur district of Maharashtra State. Total sanctioned posts of Agricultural Assistants in Kolhapur district are 360. From this 25% Agricultural Assistants were selected randomly for the study. The 8 Agricultural Assistants were selected from each Tahsil. So the total sample size of the study was 96. Ex-post facto design of social research was used. The data were collected with help of interview schedule from the selected Agricultural Assistants. Constraints were measured by taking into consideration all the possible difficulties.

RESULT AND DISCUSSION

Specific constraints faced by the Agricultural Assistants- The information on constraints faced by extension personnel in transfer of technologies were collected and analyzed. It can be observed that Agricultural Assistants were faced most severe constraints in Input supply, Administrative aspects, Social constraints and General constraints. **Extension and training -** As regards to the extension and training aspects non supply of training literature (63.54 per cent) followed by lack of farmers problem oriented researches (62.50 per cent) were found to be more severe. **Management aspects -** In case of management aspects the constraint interfere of the local leaders was found as most severe by 43.75 per cent of Agricultural Assistants. **Technical aspects -** Among technical aspects the constraint lack of information on improved technologies within time were stated by 68.75 per cent of Agricultural Assistants. **Input supply -** In the set of constraints regarding the input supply aspects the constraint risk in input supply was reported by majority (70.83 per cent). **Administrative aspects -** As regards to the administrative aspects, the constraint no separate facility of office were reported by 62.50 per cent of Agricultural Assistants as most severe one. **Financial aspects -** In case of financial aspects

the constraint which was reported as most severe by majority (62.50 per cent) of Agricultural Assistants was no compensation or incentives for additional work. **Communication and human relations -** About the communication and human relations lack of communication skills were faced by 65.63 per cent of the Agricultural Assistants.

Feedback mechanism - As regards to the feedback mechanism 67.71 per cent of Agricultural Assistants encountered the constraint lack of response from farmers as medium severe. **Social constraints -** About the social constraints, majority (72.92 per cent) of the Agricultural Assistants reported "non availability of residential quarters" as most severe one. **Physiological constraints -** As regards to the physiological constraints more farm and home visits was found to be as most severe constraint as reported by 48.96 per cent of Agricultural Assistants. **General constraints -** Among the general constraints extra or additional work load which affect the routine work during natural calamities was reported by 70.83 per cent of Agricultural Assistants as most severe.

Overall constraints faced by the Agricultural Assistants- The information about the overall constraints faced by the respondents were presented in Table-1.

Table-1. Classification of the Agricultural Assistants according to their overall constraints

Sl. No.	Category	Respondents (N = 96)	
		Number	**Percentage**
1	Less (Up to 125 scores)	14	14.58
2	Medium (126 to 164 scores)	65	67.71
3	Severe (165 and above)	17	17.71
	Total	**96**	**100.00**

Mean = 145   **SD = 20 1**

Results revealed that slightly more than two-third (67.71 per cent) of the respondents were having medium level of constraints, while 17.71 and 14.58 per cent of them had severe and low level of constraints respectively. It can be inferred that majority of Agricultural Assistants were facing medium level of constraints.

The suggestions for the improvement of their work performance

For the better job performance of Agricultural Assistants suggestions were obtained and presented in Table- 2.

Table- 2. Suggestions made by the Agricultural Assistants

Sl. No.	Suggestions	Respondents (N = 96)	
		Number	**Percentage**
1	Pre-seasonal and need based training	75	78.13
2	Training on advanced technologies	80	83.33
3	Training on ICT in agriculture	75	78.13
4	Interference of local leaders should be minimised	56	58.33
5	Number of meetings should be limited	53	55.21
6	Planning should be in time	46	47.92
7	Timely availability of new technologies	65	67.71
8	Availability of laptop	68	70.83
9	Recognition as technical grade	55	57.29
10	Timely and adequate availability of inputs	68	70.83
11	Designation should be Assistant Agricultural Officer	54	56.25
12	Involvement of young farmers	47	48.95
13	Evaluation as per work performance	50	52.08
14	Instead of Krishi Sevak they should be appointed as Agricultural Assistant from beginning	54	56.25
15	Timely promotion	65	67.71
16	Provision of the compensation or incentives for additional work	72	75.00

The suggestions like availability of laptop and availability of inputs were given by nearly 71.00 per cent of respondents. Equal number (67.71 per cent each) of Agricultural Assistants suggested

that timely availability of new technologies and timely promotion should be ensured. It is followed by the suggestion interference of local leaders should be minimized by 58.33 per cent of respondents. About 57.29 per cent suggested about the recognition as technical grade followed by the suggestion designation should be Assistant Agricultural Officer by 56.25 per cent of respondents.

CONCLUSION

It may be clear that there will be some constraints which are preventing the extension personnel in performing their job with full efficiency. Constraints are the reasons, causes or circumstances which ultimately result in the poor performance of the extension personnel. Since

Agricultural Assistants are extension personnel having direct contact with farmers, constraints faced by them are very significant. The information on the constraints faced by the Agricultural Assistants in discharging their duties and the suggestions to overcome those constraints will be helpful to the planners and administrators in general to provide a suitable environment for increasing the performance and satisfaction of Agricultural Assistants, thereby, contributing for agriculture development. In this background the present study was undertaken with the objectives to know the constraints faced by the extension personnel in transfer of technologies and to know the suggestions for the improvement of their work performance.

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RESEARCH ARTICLE

Extent of Employment Generation through KVK Activities among Tribal Beneficiaries

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ABSTRACT

This study was attempt to get the response regarding extent of employment generated among tribal beneficiaries and constraints faced by the tribal farmers in taking up employment generation activities organised by KVK in Dungarpur district of Rajasthan. A complete list of vocational training beneficiaries of KVK Dungarpur was prepared and 100 respondents were selected randomly in the sample of the study. The study revealed that change to a great extent was reported by majority of respondents in the aspects like 'employment generated by dairy management', 'income generated by poultry rearing', 'income generated through nursery management', 'income generated by goat rearing' and 'income generation through artificial insemination' whereas majority of respondents reported the change to some extent in aspects like 'off season vegetable production generated income', 'employment through organic farming/vermiculture', 'employment generated by propagation of plants', 'preservation of products generated employment', 'employment generated through mushroom cultivation' and 'generation of income through stitching for women'. It was found that family size of the respondents was significantly associated with employment generation activities, whereas, age, education, annual income, occupation, size of land holding and social participation were not significantly associated with employment generation activities.

Keywords: KVK, Tribal, association, extent of employment.

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MATERIALS AND METHODS

The present study was conducted in the purposely selected Dungarpur and Simalwara tehsils of Dungarpur district of Rajasthan. Five villages from each selected tehsil were taken on the basis of maximum tribal population. Thus, in all 100 farmers were included in the sample of the study. Data were collected through tailor made interview schedule. To study the extent of employment generated, the information related to employment generation was recorded on a three point continuum scale *viz.* 'Great extent', 'to some extent' and 'not at all' by assigning score 2, 1 and 0, respectively. Frequency and percentage were calculated to work out extent of employment generated. To calculate association of selected personal traits with employment generation activities among respondents Chi-square test was applied.

RESULTS AND DISCUSSION

To measure the employment generation among the tribal beneficiaries through KVK, frequency and percentage was calculated for all relative aspects *viz.* income generation by dairy management, poultry rearing, off season vegetable production, organic farming, propagation of plants, nursery management, goat rearing, preservation of products, mushroom cultivation, stitching for women and artificial insemination.

The Table 1 intends to depict the data related to employment generation in tribal beneficiaries through KVK. The data evidently shows that dairy management increased the employment generation to a great extent as it was reported by 62.00 per cent beneficiary respondents. On the

other hand, 25.00 per cent respondents reported the increase to some extent by dairy management after becoming KVK beneficiaries. A small number of respondents (13.00 %) reported no change in their income by dairy management. Further analysis of table shows that 55.00 per cent tribal beneficiaries reported a remarkable change in income generated by poultry rearing after becoming KVK beneficiaries, whereas only 22.00 per cent respondents reported no change at all in this aspect and 23.00 per cent respondent viewed change to some extent due to profit earned from poultry after becoming KVK beneficiaries. Likewise, majority of tribal beneficiaries (43.00 %) agreed that off season

vegetable production improved their employment to some extent due to KVK, whereas 34.00 per cent tribal beneficiaries reported remarkable improvement in their income by off season vegetable production after becoming KVK beneficiaries. About 23.00 per cent tribal beneficiary respondents reported no change in their income through off season vegetable production after becoming KVK beneficiaries. Above results implies that KVK had a direct impact on increasing the income generation from dairy management, poultry rearing and off season vegetable production of the majority of tribal beneficiary from moderate to remarkable extent.

Table 1: Extent of employment generation among tribal beneficiaries under selected activities of KVK n=100

Sr. Nn.	Aspects	Extent of employment generated					
		Great Extent		Some Extent		Not at all	
		F	%	F	%	F	%
1.	Employment generated by dairy management	62	62	25	25	13	13
2.	Income generated by poultry rearing	55	55	23	23	22	22
3.	Off season vegetable production generated income	34	34	43	43	23	23
4.	Employment through organic farming/vermiculture	16	16	65	65	19	19
5.	Employment generated by propagation of plants	38	38	46	46	16	16
6.	Income generated through nursery management	52	52	26	26	22	22
7.	Income generated by goat rearing	50	50	23	23	27	27
8.	Preservation of products generated employment	38	38	54	54	8	8
9.	Employment generated through mushroom cultivation	23	23	60	60	17	17
10.	Generation of income through stitching for women	29	29	58	58	13	13
11.	Income generation through artificial insemination	41	41	18	18	41	41

F = frequency, % = percentage

Regarding employment generation through organic farming/vermiculture, it was found that 65.00 per cent tribal beneficiaries agreed the change to some extent, whereas only 16.00 per cent tribal beneficiaries agreed the change to a great extent after becoming KVK beneficiaries and only 19.00 per cent tribal beneficiaries found no change in income through organic farming/vermiculture. The employment generated by propagation of plant improved to some extent as reported by majority of respondents (46.00 %), whereas 38.00 per cent and 16.00 per cent tribal

beneficiaries reported the change to remarkable extent and no change at all, respectively in the employment generated through propagation of plants. The change to a great extent was reported by 52.00 per cent tribal beneficiaries with respect to nuRs.ery management after becoming KVK beneficiaries, while 26.00 per cent and 22.00 per cent tribal beneficiaries reported the change to some extent and no change at all about this aspect, respectively after participation in KVK activities.The data incorporated in Table 1 further shows that the majority of respondents

(50.00 %) found that income generated by goat rearing improved to great extent, whereas 23.00 per cent of respondents reported improvement to some extent in their income generation through goat rearing and 27.00 per cent tribal beneficiary respondents reported no change in their income through this activity after becoming KVK beneficiaries. Regarding employment generation through preservation of products, 54.00 per cent tribal beneficiaries reported it to some extent, whereas 38.00 per cent tribal beneficiaries expressed that preservation of products had improved income to a remarkable extent and only 8.00 per cent tribal beneficiary respondents reported no change at all through this aspect after becoming KVK beneficiaries. Likewise, employment generated through mushroom cultivation to remarkable extent was viewed by 23.00 per cent tribal beneficiaries, whereas an improvement to some extent in this aspect was reported by 60.00 per cent tribal beneficiaries and 17.00 per cent respondents reported no change at all in employment generation through mushroom cultivation after becoming KVK beneficiaries.

The data in Table 1 apparently reveals that the majority of tribal beneficiaries (58.00 %) reported the generation of income through stitching for women to some extent, whereas 23.00 per cent tribal beneficiaries reported the change to great extent and only 17.00 per cent

respondents reported that no change occurred in generation of income through stitching for women after affiliation with KVK. Similarly, income generation through artificial insemination to great extent was viewed by majority of respondents i.e. 41.00 per cent tribal beneficiaries, while change to some extent about this aspect was reported by 18.00 per cent respondent and 41.00 per cent tribal beneficiaries reported no change in income generation through artificial insemination after affiliation with KVK. Majority of beneficiary respondents have observed improvement in their employment due to KVK activities.

Association of selected personal traits with employment generation activities

This section deals with the association between employment generation activities and selected personal variables *viz.* age, education, occupation, annual income, size of land holding, family type and social participation. To find out the association between these personal characteristics and employment generation activities, chi-square test was applied. The score of employment generation through KVK activities was categorized into three categories on the basis of mean score and standard deviation of the scores obtained by the respondents. The results of association have been presented in subsequent Tables.

Table 2:Association between selected personal traits and employment generation activities n=100

Family size	Employment generation activities			Total	X^2 value
	Low	**Medium**	**High**		
Nuclear	20 (48.78)[1] (62.50)[2]	11 (26.83) (24.44)	10 (24.39) (43.48)	41 (100) (41.00)	
Joint	12 (20.34) (37.50)	34 (57.63) (75.56)	13 (22.03) (56.52)	59 (100) (59.00)	**11.714**[*]
Total	32 (32.00) (100)	45 (45.00) (100)	23 (23.00) (100)	100 (100)	
Age					
< 28 years	7 (31.82)[1] (21.87)[2]	9 (40.91) (20.00)	6 (27.27) (26.08)	22 (100) (22.0)	
28-52 years	19 (35.84) (59.37)	26 (49.05) (57.78)	8 (15.09) (34.78)	53 (100) (53.00)	
Above 52 years	6 (24.00) (18.75)	10 (40.00) (22.22)	9 (23.33) (35)	25 (100) (25.00)	**4.60**[NS]
Total	32 (32.00) (100)	45 (42.00) (100)	23 (23.00) (100)	100 (100)	

Family size	Employment generation activities			Total	X² value
	Low	Medium	High		
Education level					
Illiterate	7(25.00)[1] (21.88)[2]	16(57.14) (35.56)	5(17.86) (21.74)	28(100) (28.00)	
Up to Primary	12(37.50) (37.50)	13(40.63) (28.89)	7(21.88) (30.43)	32(100) (32.00)	
Up to higher secondary	7(31.81) (21.88)	9(40.91) (20.00)	6(27.27) (26.09)	22(100) (22.00)	**2.479 NS**
Graduate or above	6(33.33) (18.75)	7(38.89) (15.56)	5(27.78) (21.74)	18(100) (18.00)	
Total	32(32.00) (100)	45(45) (100)	23(23) (100)	100(100)	
Occupation level					
Labour	11 (34.38)[1] (34.38)[2]	14 (43.75) (31.11)	7 (21.87) (30.43)	32 (100) (32.00)	
Agriculture	9 (33.33) (28.12)	13 (48.15) (28.88)	5 (18.52) (21.73)	27 (100) (27.00)	
Business	6 (27.27) (18.75)	10 (45.45) (22.22)	6 (27.27) (26.08)	22 (100) (22.00)	**1.969NS**
Service	6 (31.58) (18.75)	8 (42.10) (17.78)	5 (27.25) (21.74)	19 (100) (19.00)	
Total	32 (32.00) (100)	45 (45.00) (100)	23 (23.00) (100)	100(100)	
Income level					
₹ 10,000 to 1.0 lakh per annum	11 (33.33)[1] (34.38)[2]	15 (45.46) (33.33)	7 (21.21) (30.44)	33 (100) (33.00)	
₹ 1.0 lakh to 2.5 lakh per annum	8 (32.00) (25.00)	12 (48.00) (26.67)	5 (18.52) (21.73)	25 (100) (25.00)	
₹ 2.5 to 5.0 lakh per annum	6 (27.27) (18.75)	10 (45.46) (22.22)	6 (27.27) (26.08)	22 (100) (22.00)	**0.74NS**
Above ₹ 5.0 lakh per annum	7 (35.00) (21.88)	8 (40.00) (17.78)	5 (27.25) (21.74)	20 (100) (20.00)	
Total	32 (32.00) (100)	45 (45.00) (100)	23 (23.00) (100)	100 (100)	
Land holding					
Landless	8 (26.67)[1] (25.00)[2]	15 (50.00) (33.33)	7 (23.33) (30.43)	30 (100) (30.00)	
Less than 1 ha.	11 (39.29) (34.38)	12 (42.86) (26.67)	5 (17.86) (21.74)	28 (100) (28.00)	
1 – 2 ha	7 (31.81) (21.88)	10 (45.46) (22.22)	5 (22.72) (21.74)	22 (100) (22.00)	**1.781NS**
More than 2 ha.	6 (30.58) (18.75)	8 (40.00) (17.78)	6 (30.00) (26.09)	20 (100) (20.00)	
Total	32 (32.00) (100)	45 (45.00) (100)	23 (23.00) (100)	100 (100)	
Social participation					
No participation	10 (37.04)[1] (31.25)[2]	12 (44.44) (26.67)	5 (18.52) (21.74)	27 (100) (27.00)	
Member of one organization	9 (31.02) (28.13)	13 (44.83) (28.89)	7 (24.14) (30.43)	29 (100) (29.00)	
Member of more than one organizations	8 (32.00) (25.00)	11 (44.00) (24.44)	6 (24.00) (26.08)	25 (100) (25.00)	**0.793NS**
Member of local committees	5 (30.58) (18.75)	9 (47.37) (20.00)	5 (26.32) (21.74)	29 (100) (29.00)	
Total	32 (32.00) (100)	45 (45.00) (100)	23 (23.00) (100)	100 (100)	

The results in Table 2 indicates that out of total 41 respondents in nuclear family group, 48.78 per cent, 26.83 per cent and 24.39 per cent were in low , medium and high category of employment generation activities, respectively. In joint family group, out of 59 respondents, 57.63 per cent, 22.03 per cent and 20.34 per cent respondents were in medium, high and low category of employment generation activities, respectively. Further observation of Table 2 clearly shows that calculated chi-square value (11.71) was higher than tabulated value at 1% level of significance. Therefore, the null hypothesis (NH_0) was rejected and research hypothesis (RH_0) was accepted. This means that there is a significant association between family size of respondents and employment generation activities, whereas, age, education, occupation, income, size of land holding and social participation were not significantly associated with employment generation activities. Other personal attributes *viz.* age, education, occupation, land holding, annual income and social participation were not significantly associated with employment generation activities.

CONCLUSION

It can be concluded that change to a great extent was reported by majority of respondents in the aspects like 'employment generated by dairy management, income generated by poultry rearing, income generated through nursery management, income generated through goat rearing and income generation through artificial insemination. Regarding other aspects like the 'off season vegetable production generated income, employment generated through organic farming/vermiculture, employment generated through propagation of plants, preservation of products generated employment, employment generated through mushroom cultivation and generation of income through stitching for women' the majority of tribal beneficiary respondents had reported a moderate change i.e. to some extent which implies that majority of beneficiary respondents have observed improvement in their employment due to KVK activities.

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RESEARCH ARTICLE

Utilization of Extension Education Methods and its Relationship with Knowledge and Utilization of Farm Implements

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ABSTRACT

The most available and frequently used information sources by the farmers to gain latest information related to farm mechanization are personal localite, personal cosmopolite, mass media and extension education methods. Every year different SAU's, ICAR institutes and other agencies generate new crop varieties, agriculture technological recommendations, new farm implements related to agriculture and allied fields for the farming community. Extension education methods are one of the sources of information that helps the farmers to get acquainted with these agriculture technological innovations. Therefore, it is very important to know the utilization of extension education methods by the farmers and its relationship with knowledge and utilization of farm implements.

Keywords: *Information sources*, *personal localite*, *technological recommendations*.

MATERIALS AND METHODS

In this study, the term utilization of extension education methods was operationalized as the frequency of contact or exposure of the respondent to extension education methods such as, meetings, group discussion, demonstration, trial, field day, field visit, farmers rally, farmer's tour, workshop etc. for obtaining the information on farm mechanization. The information on the frequency of seeking information from these sources was collected from 288 representative farmers from irrigated, as well as, rainfed area of Ahmednagar and Solapur districts.

RESULTS AND DISCUSSION

Different sources of information and extension education methods have their own contribution and role in the transfer of information related to farm mechanization. Amongst these sources, extension education methods play an important role for obtaining the information on farm mechanization.

I. Extent of utilization of extension education methods by the farmers

Farmers were using, extension education methods to different extents as per their availability and feasibility.   The distribution of the respondents according to their extent of use of extension education methods is given in Table 1.

Table-1. Distribution of the respondents according to their extent of use of extension education methods

Sl. No.	Extension education methods	Respondents		
		Irrigated (n=144)	Rainfed (n=144)	Overall (N=288)
1.	Low (up to 6)	74 (51.39)	87 (60.42)	161 (55.90)
2.	Medium (7 to 12)	61 (42.36)	48 (33.33)	109 (37.85)
3.	High (above 12)	9 (6.25)	9 (6.25)	18 (6.25)
	Total	**144**	**144**	**288**
	Mean	**6.81**	**5.80**	**6.31**

(Figures in the parentheses indicate percentages)

The data from the Table 1 revealed that in irrigated area, more than one half of the respondents (51.39 per cent) had used extension

education methods as source of information to low extent, followed by medium extent (42.36 per cent) and high extent (6.25 per cent). Similarly in rainfed area, more than three fifth of the respondents (60.42 per cent) had used extension education methodsas sources of information to low extent, followed by medium extent (33.33 per cent) and high extent (6.25 per cent). Overall, 55.90 per cent the respondents had used extension education methodsas sources of information to low extent, followed by medium extent (37.85 per cent) and high extent (6.25 per cent).

From above it can be concluded that, frequency of contact or exposure of the respondent to the extension education methods is more in irrigated area. Therefore, there is need to give more focus on the different extension activities.

1. Utilization of different extension education methods by the farmers

Farmers were using, extension education methods such as, meetings, group discussion, demonstration, trial, field day, field visit, farmers rally, farmer's tour, workshop etc. The distribution of respondents as per their use of different extension education methods is given in Table 2. Overall, it is apparent from the data

presented in Table 2 that, 25.69 per cent of the respondents attended group discussion 'once in a month', while 28.47 per cent were participated in demonstrations 'once in a season' followed by 35.42 per cent who were participated in *Shivar pheri* 'once in a season'. Majority (61.11 per cent) of the respondents participated and attended farmers' rallies in every season, 71.18 per cent were visited agricultural exhibitions every year and 37.85 per cent were took benefit of study tour and visited different locations every year.

Relationship of extension education methods with knowledge levels and utilization of farm implements

Correlation coefficient gives an idea of positive or negative relationship between two variables. Efforts were made to work out the relationship of extension education methods used by farmers for obtaining the information on farm mechanization with their knowledge level and utilization of farm mechanization.

The correlation coefficient between extension education methods used by the farmers with knowledge level and utilization index of the farm implements is presented in Table 2.

Table 2: Correlation coefficient between extension education methods used by the farmers with knowledge level and utilization of the farm implements

Sl. No.	Variables	With Knowledge level			With Utilization index		
		'r' value's in Irrigated area	'r' value's in Rainfed area	'r' value's Overall	'r' value's in Irrigated area	'r' value's in Rainfed area	'r' value's Overall
1.	Extension methods	0.26**	0.157*	0.209*	0.113*	0.155*	0.154*

Note: ** Significant at 1 %, and * Significant at 5 % level

It is evident from Table 3 that, there is significant positive relationship between 'extension education methods' and 'knowledge level' of respondent farmers in irrigated area (r = 0.260**), rainfed area (r = 0.157*) and overall (r = 0.209*). The study also revealed that there was positively significant relationship between 'extension education methods'and utilization of farm implements in irrigated area (r = 0.113*), rainfed area (r = 0.155*) and overall (r = 0.154*).

CONCLUSION

Findings help to conclude that overall, more than one half of the respondents had used extension education methodsas sources of information to low extent. Therefore, there is need to focus the different extension activities for farmers especially in the rainfed area. Overall, it was observed that about one third of the farmers were participated in group discussion 'once in a month' while, in demonstrations and *Shivar pheri 'once* in

a season'. Majority respondents participated and attended farmers' rallies in every season, and visited agricultural exhibitions every year. This suggests that it is necessary to organize special exhibitions on farm implements and encourage farmers to participate in group discussion, demonstrations and *Shivar pheri*.

From the study it is also concluded that there was a positively significant relationship between 'extension education methods' with 'knowledge level' and 'utilization' of farm implements. This indicates that as the use of extension education methods increased there was increase in knowledge and utilization of farm implements by the respondents. In other words more exposure and participation in extension education methods helps the farmers in creating awareness and finally purchase of farm implements. This suggests that it is necessary to organize special exhibitions on farm implements and give emphasis on extension education methods.

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RESEARCH ARTICLE

Field Demonstrations of Improved Production Technology for Wheat (*c.v. Trimbak*) in Nashik District of Maharashtra

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ABSTRACT

Technology transfer refers to the spread of new ideas from originating sources to ultimate users (Prasad et. al. 1987). Conducting of field demonstrations on farmer's field help to identify the constraints and potential of the wheat in specific area as well as it helps in improving the economic and social status of the farmers. In view of the importance of demonstrations in crop productivity and continuously getting feedback of constraints faced by the farmers, various field demonstrations on different aspects of wheat were conducted in the district Nasik (Maharashtra) by the scientists of Agricultural Research Station, Niphad to prove the advantages of a recommended practice. Field Demonstration is an important tool for transfer of latest package of practices to the farmers. The Field Demonstrations and trainings on improved production technology recommended by Mahatma PhuleKrishiVidyapeeth, Rahuri (Maharashtra) of wheat, were organized by Agricultural Research Station,Niphad in selected villages of Nasik district for two years(2012-13 and 2013-14) with the objectives of maximizing the crop yield. The present study was undertaken, to find out the response of field demonstrations and trainings on crop productivity.

MATERIAL AND METHODS

Seven villages were selected for conduct of field demonstrations of wheat during *rabi* seasons of 2012-13 and 2013-14 on farmers field in Nasik district. The cluster villages Kurudgaon and Jalgaon from Niphad tahsil covered 34 demonstrations on 34 acres area during the year 2012-13, while another cluster villages of Golakhal, Abhona, Vanjari, Dahyane and Bhagurdi from Kalwan tahsil covered 100 demonstrations on 100 acres area during the year 2013-14. Total 134 farmers were associated with wheat demonstrations during two years. Farmers were made aware of recommended package of practices through training, field visits and by providing good quality seed of wheat *c.v. Trimbak* and other critical inputs. The sowing was done during first fortnight of November and harvesting was done during third week of March to first week of April. Details of the field demonstrations are given in Table-1.The data on average seed yield were recorded and compared with that obtained by farmers practices. The technology and extension gaps were calculated as suggested by Samui *et. al.* (2000).

Technology gap = Potential yield- Demonstration yield
Extension gap = Demonstration yield- Farmers yield

RESULT AND DISCUSSION

The yield of wheat obtained during 2012-13 and 2013-14 under improved technology and farmers practice are presented in Table -2. The results are in favor to field demonstrations as compared to farmers practice during both the years. The average yield of wheat was maximum (42.75 q/ha) under improved production technology as against 33.92 q/ha under farmers practice. This was due to the use of high yielding variety, timely sowing of the crop, proper seed rate, recommended seed

treatment, recommended dose of fertilizer, bio-fertilizers and pesticides etc. Similar results have been reported by Mhaske *et. al.* (2015). The realized and estimated yield gaps are presented in Table-3. Thus, the cultivation of wheat with improved technology was found to be more productive as compared to farmers practice.

Table-1: Comparison between improved production technology and farmers practice of demonstrations.

Sr	Particulars	Improved Production Technology	Farmer practice
1	Farming situation	Irrigated	Irrigated
2	Variety	Trimbak (NIAW - 301)	Lok-1, Nirmal-144, Mohan Wonder, Ajit-102
3	Time of sowing	Timely sown : 1-15 November	October to November
4	Method of sowing	Seed drill	Seed drill /broadcasting
5	Seed treatment	Capton/Thirum, 2-3 g/kg of seed and Azotobactor + PSB 250 gm each/ 10 kg of seed.	Without seed treatment
6	Seed rate	Timely sown :100 kg/ha	130-140 kg/ha
7	Fertilizer dose	Timely sown: 120:60:40 kg NPK/ha	NPK (100-80-00)
8	Plant protection	i) Spraying of Thiamethoxam 25 WG @50g in 500 litres of water/ha to control the aphids. ii) Two sprays of Dithane M-45 (0.3%) @ 1500 g in 500 litres of water/ha to control of wheat rust. iii) Two sprays of Copper Oxychloride + Mankozeb @ 1000g each in 500 lit. of water/ha at an interval of 15 days to control of wheat blight syndrome.	Injudicious use of pesticides and fungicides
9	Weed management	Mechanical – One hoeing and two hand weeding as per intensity of weeds. Chemical- Spraying of Metsulphuron Methyl (20%), 20 gm per hectare in 800 lit water at 35 DAS.	No proper weed management

Table-2: Grain yield of wheat under improved production technology and farmers practice

Particulars	2012-13 (Average of 34 demonstrations)		2013-14 (Average of 100 demonstrations)		Pooled Mean	
	Improved production technology	Farmers practice	Improved production technology	Farmers practice	Improved production technology	Farmers practice
Yield (q/ha)	45.97	38.24	41.65	32.45	42.75	33.92

Table-3: Yield gap identified in wheat production

Particulars	Grain yield (q/ha)
Potential yield	50.00
Demonstration yield	42.75
Farmers practice yield	33.92
Technology gap (yield gap-I)	7.25
Extension gap (yield gap-II)	8.83
Total yield gap	16.08

CONCLUSION

On the basis of the result obtained in present study, it can be concluded that use of improved methods of wheat cultivation can reduced the technology gap to a considerable extent and thus leading to increase productivity of wheat in the Nasik district. Extension gap is 8.83 q/ha emphasis the need to educate the farmers through various means like village level trainings, on campus trainings, method demonstrations, front line demonstrations, etc.

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RESEARCH ARTICLE

Factors Influencing Adoption of Beekeeping Management Practices in Osun State, Nigeria

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ABSTRACT

Beekeeping (Apiculture) is the practice and management of bees in the hives (Ojeleye, 1999; Shu'aib, et al., 2009) which leads to the production of valuable materials such as honey, beeswax, propolis, bee pollen, bee venom and royal jelly. Beekeeping is a rewarding livelihood activity for many farming communities globally (Adejare, 1991). Worldwide, significant livelihood improvements have resulted from small scale beekeeping initiatives and rural people can be economically empowered through the various benefits derivable from beekeeping (Oluwole, 1999). Beekeeping offers opportunities for empowering and developing the rural populace by making them self-reliant and depend less on the government. The importance of beekeeping to the society is enormous. Ojo (2004) describes the enterprise as a means of empowering youth economically because of its many advantages over other types of agricultural enterprises. Beekeeping for honey and its allied products is a profitable agricultural enterprise nowadays in all parts of the world including Nigeria. It encourages self- reliance so as to reduce the hardship of unemployment and other social vices associated with it. It is an important foreign exchange earner for countries that export honey and beeswax. But unfortunately, beekeeping as a commercial venture is still largely unexplored in Nigeria and the country meets domestic demand for honey mostly by importation from more producer countries (Ayansola, 2009). However, with the current growth in domestic consumption of honey in Nigeria coupled with mechanized agriculture in every part of Nigeria the future of apicultural enterprise is very bright as the demand for honey and pollinators is bound to increase.

Key words: Beekeeping, management, enterprise, self-reliant, empowering

MATERIALS AND METHODS

The study was conducted in Osun State, Nigeria. The state is situated in the tropical rain forest zone. It covers an area of approximately 14.875 sq km and lies between latitude 7° 30' 0" N and longitude 4° 30' 0" E. It is blessed with presence of vast honey bee forages, many rivers and streams which serves the water needs of both human and animals respectively. There are over 200 major towns and several villages in the state.

The population for the study was mainly the practicing beekeepers which sourced for through the Beekeepers Association of Nigeria, Osun State Chapter. The state was purposively selected for this study because of its immense contribution to honey production in Nigeria. Multistage random sampling technique was used to select 40 respondents from each of the 5 beekeepers zones (Iwo, Osogbo, Ikirun, Ilesha and Ife) in the state. A total sample of 200 respondents was used for the study. A well-structured interview schedule and Focus Group Discussion checklists (FGD) were used as instruments for collection of primary data. A closer visit in and around the apiary sites of selected households was made in order to obtain first-hand observation on all aspects of beekeeping coupled with photographs of events.

Measurement and calculation of Adoption Index

The selected beekeeping management practices were used in calculating adoption index by means of adoption index developed by Mujuni et al., 2012 with a slight modification. These are; Hive location, Hive inspection, Use of modern equipment, Apiary sanitation, and Honey bee pest and disease management with 37 standardized statements by experts. The scoring of each statement was done on a scale with three-point continuum (fully doing the practice, partially doing the practice and not doing the practice). A score of 2 was allotted to every beekeeping practice being fully carried out, 1 for partially carried out and 0 to every practice that was not being carried out. Thus, every respondent was capable of obtaining scores ranging from 0 to 74 for their responses. The total score of each respondent was arrived at by adding the scores obtained on the different practices. These total scores were later converted to a standardized score of adoption index using the stated formula below;

Adoption Index (A.I.) =

$$\frac{\text{Total adoption score obtain by a farmer}}{\text{Maximum score one farmer can obtain}} \times 100$$

However, Adoption Index is expected to change by a certain factor, β (coefficient) if any of the above variables increase by one unit at 5% level of significance.

RESULTS AND DISCUSSION

Table 1 reveals that 70% of the beekeepers are within the age category of 30 – 50 years which is in line with Farinde et al., (2005) that 73.8% of the beekeepers were aged 30 years and above. This means that both young and old can get involved in beekeeping activities considering this age bracket. Almost all the beekeepers were educated with the significant percentage (64%) attained post-secondary education while only 18% were secondary school holders.

Table-1. Personal and socio – economic characteristics of respondents

Variables	Frequency (N = 200)	Percentages
Age		
< 30	35	17.50
30 – 50	140	70.00
>50	25	12.50
Education level		
Non formal education	4	2.00
Non-formal / Quranic	7	3.50
Primary	25	12.50
Secondary	36	18.00
Post secondary	128	64.00
Gender		
Male	157	78.50
Female	43	21.50
Experience in beekeeping		
< 5	42	21.00
5 – 8	39	19.50
8 – 12	73	36.50
12 – 15	36	18.00
>15	10	5.00
Income (Naira)		
< 50,000	154	77.00
50,000 – 100,000	40	20.00
>100,000	6	3.00
Household size		
< 3	42	21.00
3 – 5	58	29.00
5 – 7	77	38.50
>7	23	11.50
Farm size (Ha)		
< 1	62	31.00
1 – 2	69	34.50
2 – 5	61	30.50
>5	8	4.00
Source of capital		
Cooperative society	44	22.00
Personal savings	108	54.00
Friends	30	15.00
Financial institutions	18	9.00

This indicates that beekeeping activities is being handled by the educated people which may drive their acceptance of modern beekeeping

management practices as education gingers farmers adoption of agricultural innovations.

Most of the beekeepers (36.50%) had beekeeping experience of 8 – 12 years while only 19.50 had experience of 5 – 8 years with majority having annual income of between N50,000 to N100,000 / annum. The major source of capital for beekeeping was from their personal savings (54%), only 44% of the beekeepers got money from cooperative societies with very few (18%) sourced their capital from financial institutions because of higher interest rates. Cooperative society would have been a source of relieve for the beekeepers in terms of finance but they did not have cooperative society of their own which the researcher encouraged them to do in the course of this investigation.

Ownership of honey bee hives- Table 2 shows that more than average of the beekeepers (65.50%) owned 5 – 30 Kenya top bar bee hives in the study area with only 25% had above 30 hives, this is because the hives were very cheap. Unlike the Langstroth type, significant percentage (44.50%) was not in possession of the hives while 23.50% owned between 4 – 10 hives. Some of the beekeepers complained that Langstroth hives were too expensive for them to afford (N38,500 per

hive) compare to Kenya top bar (N5,000) in the study area.

Table 2. Ownership of honey bee hives

Variable	Frequency (N=200)	Percentage
Types of hives		
Kenya top bar		
< 5	44	22.00
5 – 10	58	29.00
10 – 20	49	24.50
20 – 30	24	12.00
>30	25	12.50
Langstroth		
Not in possession	89	44.50
< 4	38	19.00
4 – 10	47	23.50
>10	26	13.00

Table-3. Adoption level of beekeepers on standardized beekeeping management practices

Category	Frequency	%	Mean	S.D.
Low	2	1	96.12	5.15
Medium	30	15		
High	168	84		

Table-3 reveals that the level of adoption of beekeeping management practices in the study area is very high. This might be connected to their high level of education as 64% of the beekeepers had post secondary education.

Table-4. Distribution of beekeepers based on their level of adoption of beekeeping management practices.

Sr. No.	Practices	Responses (yes)	
		Frequency	%
A.	**Hive Location**		
1.	Set the bee hive in an area free from environmental and water pollution	195	97.5
2.	Site bee hive in an area free from pest / predators infestation	197	98.5
3.	Bee hives should be placed near sources of food and water	199	99.5
4.	Site bee hive in an area that are not directly affected by heavy wind or direct sun rays	197	98.5
5.	Place the bee hive away from mobile towers	182	91
6.	Site bee hive in an area that is free from bush burning	200	100
7.	Site bee hive in an area where the apiary will be accessible	196	98
B.	**Hive Inspection**		
8.	Get properly dressed by wearing protective clothing	200	100
9.	Light the smoker to produce enough cool soothing smoke	199	99.5
10.	Puff some smoke gently around the hive, then puff continuously through the main entrance for about one minute	182	91
11.	Lift the hive cover slightly, puff the smoke for about 30 seconds	194	97

Sr. No.	Practices	Responses (yes)	
		Frequency	%
12.	Remove the hive cover completely, if propolised try to open by using knife or hive tool	198	99
13.	Always work at the side or back of the hive entrance	193	96.5
14.	Keep the combs vertical to prevent honey or nectar from dripping	198	99
15.	Replace each bar after inspection and repeat the operation until all the combs have been inspected	197	98.5
16.	Cover the hive and puff little smoke	172	86
C.	**Use of Modern Equipment**		
17.	Protective clothing and veil to avoid bees sting around the body and face	198	99
18.	Rain boots to avoid bees stinging unprotected feet and ankles	199	99.5
19.	Disposable plastic gloves to avoid bees sting in the hand and spread of diseases	176	88
20.	Smoker to disperse the bees before opening the hive	197	98.5
21.	Hive tools for separating hive parts and lifting frames during inspection	200	100
22.	Bee brush to gently brush bees out of the way	199	99.5
23.	Beeswax extractor for removing the beeswax from the honey	193	96.5
24.	Swarm catcher box is used to collect swarm of honey bees	194	97
D.	**Apiary Sanitation**		
25.	Remove any unwanted materials from apiary	200	100
26.	Use anti-ants to protect the hive from pest's invasion	195	97.5
27.	Clean the hives during inspection to avoid disease and pest infestation	198	99
28.	Apiary hygiene is necessary to ensure that honey production is clean and suitable for human consumption	185	92.5
29.	Carry a bucket or carrier bag to dispose of all hive waste such as wax and wood scrapings or even dead bees and take away from hives after inspection	179	89.5
30.	Waste should be burned or disposed appropriately	187	93.5
31.	Cut the surrounding bush that may harbour reptiles	200	100
E.	**Honey Bee Pest and Disease Management**		
32.	Monitoring of hives regularly is required	199	99.5
33.	Reporting disease outbreak to bee expert / entomologist	192	96
34.	Conduct random sampling of hives	188	94
35.	Collect live or fresh dead bees from the hive entrance or top bars of the frame	162	81
36.	Clean the comb regularly during inspection	181	90.5
37.	Clean or replace contaminated equipment	196	98

Table 4 indicates that all the beekeepers (100%) adopted the practice on sitting the apiary in the area that is free from bush burning; that protective clothing should be put on during hive inspection, the use of hive tool as modern equipment for separating hive parts and frames, removal of unwanted materials from apiary was strongly adopted as part of apiary sanitation measure, also the practice on cutting surrounding bush that might harbour reptiles / pests in the apiary was adopted by the beekeepers.

CONCLUSION

The investigation revealed that the majority of the beekeepers were male and in their youthful age with high years of experience in beekeeping. Kenya top bar was the most common hive employed in the study area because of its popularity and less cost. Beekeeping management

practices received high adoption rate by the majority of the beekeepers and the factors that influenced the rate of adoption were; age, education level, farm size, years of experience, number of hives in the apiary, household size, gender and income. The results of the findings therefore, indicated positive and significant relationship between these factors and the adoption index. This is in congruent with the findings of Cramb (2003) that different demographic and socioeconomic characteristics of farm-household such as age, education, household size, farm size, income etc. are associated with technology adoption.

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RESEARCH ARTICLE

A Scale for Measuring the Attitude of Bank Agricultural Officers towards their Job

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ABSTRACT

The experiment was conducted to study the attitude of bank agricultural officers towards their job. Bank agricultural officer is a key factor in banking industry who is concerned with the rural development. He is meant to appraise farm loan proposals and act as an intermediary between farmers and banks. Attitude of bank agricultural officer towards his job is a vital factor which may significantly influence the performance. Hence, present investigation was contemplated to develop and standardize the scale for measuring the attitude of bank agricultural officers towards their job. Out of total statements 15 statements were retained in the final scale.

Key words: Attitude scale, Bank agricultural officers, Likert's summated rating

MATERIAL AND METHODS

According to Thurstone (1946) attitude is the degree of positive or negative effect associated with some psychological object like symbol, person, institution and idea towards which people can differ in varying degrees. For the present study attitude of bank agricultural officers towards their job is operationalised as the degree of positive or negative reactions given by respondent bank agricultural officers towards their job. Scale was developed for measuring the attitude of bank agricultural officers towards their job by following the method of summated rating suggested by Likert (1932). The following steps were considered for measuring the attitude of bank agricultural officers towards their job.

1. Item Collection - The first step in evolving attitude scale was to collect number of items, each expressing the attitude of bank agricultural officers towards their job. The items were collected from relevant literature and experts in the field and informal interviews with bank agricultural officers. From all these sources a battery of 94 attitude items were collected.

2. Editing and pres-selection of items- The statements selected in previous stage were examined in the light of criteria suggested by Edwards (1957) for screening the items. After vigorous culling, the items which are factual, ambiguous, difficult etc. were eliminated. After screening 73 items were retained which satisfied the criterion.

3. Classification of items -The statements selected after editing were subjected to panel of judges for scrutiny to determine their relevancy. These statements were arranged in a random sequence and given to panel of judges in various universities by mail as well as by post. These judges comprised of experts in the field of Extension Education and Agricultural Economics from various Agricultural Universities. They were asked to check the statements carefully for their relevancy to measure the attitude of bank agricultural officers towards their job. They were requested to give their responses on a three continuum viz. most relevant, relevant and not relevant with scores 3,2 and 1. Out of 192 judges, responses were received from 82 judges which were considered for further processing. The relevancy score of each statement was ascertained by adding the scores on rating scale for all 82 judges' responses. From this data relevancy

percentage, relevancy weightage and mean relevancy scores were worked out for all the statements.

i. Relevancy Percentage (RP)- It is the summation of the scores of most relevant and relevant and not relevant which is converted into percentage. Relevancy percentage was calculated by using the following formula:

$$RP = \frac{\text{Sum of scores of MR + R + NR}}{\text{Number of judges responded}}$$

ii. Relevancy weightage (RW)

It is the ratio of actual score obtained to the maximum possible sore obtained by   and calculated with the formula as below:

$$RW = \frac{\text{MRR x 2 + RR x1 + NRR x 0}}{\text{Maximum possible score}}$$

Where,

MRR = Most relevant response
RR   = Relevant response
NRR = Not relevant response

$$t = \sqrt{\frac{X_H - X_L}{\frac{\sum (X_H - X_H)^2 + \sum (X_L - X_L)}{n(n-1)}}}$$

where :

$$\sum (X_H - X_H)^2 = \sum X_H{}^2 - (\sum X_H)^2$$
$$\sum (X_L - X_L)^2 = \sum X_L{}^2 - (\sum X_L)^2$$

iii. Mean Relevancy Score (MRS)- It is the ratio of actual score obtained for each item to the number of judges and MRS was measured by formula given below:

$$MRS = \frac{\text{MRR x 2 + RR x1 + NRR x 0}}{\text{No. of judges (82)}}$$

Where,

MRR = Most relevant response
RR   = Relevant response
NRR = Not relevant response

On the basis of above three criteria the statements having relevancy percentage more than 70 per cent, relevancy weightage more than 0.70 and mean relevancy score more than 1.4 were retained for final selection of statements. At this stage 23 items were selected.

iv. Item selection - At this stage, 23 items selected in the previous stage were subjected to item analysis to delineate the statements based on the extent to which they can differentiate the respondent with high attitude towards job than the respondents with low attitude towards job. For item selection, the selected 23 items were first administered to a random sample of 20 bank agricultural officers from other banks than the selected for present study. They were asked to indicate their agreement or disagreement to each statement on the five points continuum ranging from "strongly agree" to "strongly disagree". For positive items, 'strongly agree' was given the numerical value of 5.0 and for 'strongly disagree' the numerical value of 1.0 was given and for negative statements, the scoring pattern was reversed. Based on the total scores obtained, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total score were considered as high group and the bottom 25 per cent were taken as the low group. These two groups provide criterion groups in terms of which to evaluate the individual statements as suggested by Edwards (1957). Thus for item analysis, 5 bank agricultural officers with highest and 5 with lowest scores were used as criterion group for evaluating individual statements. A critical ratio was worked out by using the following formula by Edward (1957).

X_H = The mean score on given statement of high group
X_L = The mean score on given statement of low group
$\sum X_H$ = Mean score of given statements for high group.
$\sum X_L$ = Mean score of given statements for low group.
$\sum X_H{}^2$ = Sum of the squares of the individual scores in high group.
$\sum X_L{}^2$ = Sum of the squares of the individual scores in low group.
N = Number of respondents in each group.

As a crude and approximate rule of thumb, any statement which obtains 't' value equal to or greater than 1.75 is considered good and is retained in the final scale and those which did not obtain this required limit were eliminated. In the present scale, fifteen statements obtained 't' value equal to or greater than 1.75 which were retained in the final attitude scale.

v. Standardization of scale- The scale which is constructed was hither to standardization by establishing its reliability and validity.

vi. Reliability of the scale - In the present study test-retest reliability was employed. The final scale was administered to 20 respondents which were not included in the actual sample. The score of each respondent for fifteen items scale was calculated. The second administration of the scale on the same sample was conducted about 15 days after the first administration to give a sufficient time gap. The responses were obtained on five continuum as strongly agree, agree, undecided, disagree and strongly disagree with a score of 5,4,3,2 and 1 for positive statements and 1,2, 3,4 and 5 for negative statements respectively. In this manner from the two administrations of the same test, two independent sets of scores were obtained. The retest correlation coefficient was computed for both the sets. The value of retest correlation coefficient 'r' was 0.94 which was found to be significant at 0.01 level of probability indicating the suitability of scale for administration.

6. Validity of the scale- Content validity: In the present investigation content validity of the scale was tested. The content validity of the present scale is borne out by all efforts and exhaustive steps used for collection of items. The universe of the content as evident from the method employed in item collection was covered widely. Before collecting the items for attitude scale, wide ranging sources such as books, journals, experts in the field of extension education and banking sector were consulted. This process acted as measures of check.

7. Administering the attitude scale- The final scale consists of 15 statements. Each item in the scale has to be scored against the response category of 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The scoring pattern for positive items was 5, 4,3,2,1 and 1,2,3,4 and 5 for negative items. The total scores of each bank agricultural officer was calculated and taken as an indicator of his attitude.

Table 1. The final attitude scale statements

Sr. No.	Statements
1.	The job has provided me an opportunity of serving rural people
2.	The job has provided me prestige and credibility in the society.
3.	My work is very exhausting
4.	Repayment of loans from the farmers is one of the hard job.
5.	There is no creativity in my work and I had to do the target oriented work.
6.	This job is an opportunity for me for the upliftment of rural women through formation of SHGs
7.	Visiting the farmers in villages is a cumbersome job.
8.	My job is monotonous
9.	The smile on farmers face due to my job is greatest reward to me.
10.	Motivating farmers for adoption of different schemes implemented by banks is a tedious job
11.	This job has given me the vital opportunity of financing to agriculture sector.
12.	This job does not provide opportunities to improve my skills
13.	Economic condition of the farmers can be improved by financing agriculture through this job.
14.	There is freedom and respect in this job.
15.	This job allows me to arrange my work schedule to meet my personal /or family needs.

CONCLUSION

The scale was found to be reliable and valid. Hence, it can be used to measure the attitude of bank agricultural officers towards their job. By measuring the attitude of bank agricultural officers towards their job, it will be possible for the bank organization to decide appropriate strategies to develop positive attitude among bank officers. It will also be useful to identify the bank agricultural officers with positive attitude who can assist in improving the attitude of other bank agricultural officers.

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RESEARCH ARTICLE

Farmers Training Needs About Use of Bio-Pesticide

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ABSTRACT

The present study was carried out in the ten villages from Chandurrly & Tiosa blocks of Amravati District of Maharashtra state to know the knowledge level and the training needs of the farmers regarding use of bio-pesticides & its mass multiplication on agriculture wastage. The results revealed that the most of the farmers did not have the knowledge about use of bio-pesticides & its mass multiplication on agriculture wastage. Majority of the farmers reported that the training aspects Seed treatment and Diseases of crop & their control, Insect of crop & their control, Use of Bio-fertilizers, Importance of Bio-pesticides & its benefits, Effect of chemical pesticides & fertilizers in human health, soil health, Multiplication of Trichoderma in Sorghum grains, Management of diseases by use of Trichoderma and Indigenous mass production technology of Bio-pesticide etc. should be given more importance in training. The duration of training programme should be before sowing of crop, having two days duration and should be conducted both on and off campus. The future training programme in the study area on use of bio-pesticides & its mass multiplication on agriculture wastage should be focus on all these aspects for more effective and successful programmes.

Key Words: Farmer Training needs, Bio-pesticide, Bio-fertilizer, Mass multiplication, Agriculture wastage

MATERIAL AND METHODS

The present investigation was carried out in the operational area of Krishi Vigyan Kendra Ghatkhed where the DBT, New Delhi funded project entitled, "Enhancement of rural economy of weaker sections of Amravati District through popularization, training and field demonstration of bio-pesticides production technology" is implementing by KVK. In 2012 -13 ten villages from Chandur rly & Tiosa blocks of Amravati District were selected. Simple random sampling method was used to draw a study sample of 100 respondent farmers, who were actively engaged in farming. Personal interview technique by using a pre –tested schedule was used for collection of data. The training needs of the farmers regarding use of bio-pesticides & its mass multiplication on agriculture wastage were quantified at three point continuum viz. most needed (score 2), needed (score 1) and not needed (score 0).

RESULTS AND DISCUSSION

A. Distribution of respondents according to their Knowledge regarding use of bio-pesticides & its mass multiplication on agriculture wastage

Table -1 Distribution of respondents according to their Knowledge regarding use of bio-pesticides & its mass multiplication on agriculture wastage

Knowledge	Freq.	Per-cent
Low Level Knowledge (0-7)	84	84
Medium Level Knowledge (8-15)	16	16
High Knowledge (16 and above)	0	0

Table 1 indicates that majority of the respondents, (84%) were having low level knowledge while only few (16%) were having medium knowledge and no respondents was having high knowledge level regarding use of bio-pesticides & its mass multiplication on agriculture wastage. Thus it can be concluded that the most of the farmers did not have the knowledge regarding use of bio-pesticides and its mass multiplication on agriculture wastage.

B. Training needs of the farmers about use of bio-pesticides & its mass multiplication on agriculture wastage- The data presented in table 2 shows that the training aspect i.e. Seed treatment and Diseases of crop & their control ranked (1st and Mean score1.43) for which maximum 48 percent respondents expressed that training in this aspect was most needed and 46 percent felt that training is needed in seed treatment aspect. Where as in aspect of Diseases of crop & their control maximum 63 percent respondents expressed that training in this aspect was most needed and 33 percent felt that training was needed in this aspect.

It was followed by aspect of Insect of crop & their control (ranked 2nd with Mean score 1.35) Use of Bio-fertilizers (ranked 3rd with Mean score 1.26) Importance of Bio-pesticides & its benefits (ranked 4th with Mean score 1.04) Effect of chemical pesticides & fertilizers in human health, soil health (ranked 5th with Mean score 1.02) Multiplication of Trichoderma in Sorghum grains (ranked 6th with Mean score 1.00) Care in use of chemical pesticides (ranked 7th with Mean score0.93) Management of diseases by use of Trichoderma and Indigenous mass production technology of Bio-pesticide (ranked 8th with Mean score 0.85)

Table 2 Distribution of respondents according to their felt training needs in use of bio-pesticides & its mass multiplication on agriculture wastage   (N= 100)

Training Aspects	Most Needed	Needed	Not Needed	Mean Score	Rank
	f (%)	*f (%)*	*f (%)*	*f (%)*	
Land Preparation	0 (0.00)	26 (26.00)	74 (74.00)	0.26	X
Importance of Bio-pesticides & its benefits	15 (15.00)	74 (74.00)	11 (11.00)	1.04	IV
Use of Bio-fertilizers	31 (31.00)	65 (65.00)	4 (4.00)	1.26	III
Seed treatment	48 (48.00)	46 (46.00)	6 (6.00)	1.43	I
Insect of crop & their control	54 (54.00)	35 (35.00)	11 (11.00)	1.35	II
Diseases of crop & their control	63 (63.00)	33 (33.00)	4 (4.00)	1.43	I
Management of diseases by use of *Trichoderma*	6 (6.00)	77 (77.00)	17 (17.00)	0.85	VIII
Care in use of chemical pesticides	9 (9.00)	76 (76.00)	15 (15.00)	0.93	VII
Effect of chemical pesticides & fertilizers in human health, soil health	9 (9.00)	85 (85.00)	6 (6.00)	1.02	V
Use of FYM	4 (4.00)	68 (68.00)	28 (28.00)	0.76	IX
Indigenous mass production technology of Bio-pesticide	5 (5.00)	77 (76.00)	19 (19.00)	0.85	VIII
Multiplication of Trichoderma in Sorghum grains	9 (9.00)	83 (83.00)	8 (8.00)	1.00	VI

The aspects where training need was least felt or not needed was led by land preparation (ranked 10th with Mean score 0.26) fallowed by Use of FYM (ranked 9th with Mean score 0.76.) The above findings clearly indicates that farmers mostly needed training in those aspects which were related to use of modern inputs and required skill and how to do knowledge for optimum and effective use of inputs for higher production. It also shows that farmers understand the importance of insect pest & diseases for high yield and quality produce. Outcome of the study also presage that farmers are ready to learn the complex skill of plant protection practices.

B. Opinion of the farmers about time, duration and place of the training programme to be organized 1. Time of organizing a training programme- Data in Table 3 depicts that a majority (62%) of the farmers opined that the training programme should be organized before sowing of the crop. About one forth (24%) farmers opined that the training programmes should be organized both before sowing of crop and during standing crop. A significant fraction (8%) of the farmers opined that it should be organized during standing crop. Only a meager (4%) fraction of respondents opined that training could be organized any time and a few (2%) had no opinion about it.

1. Duration of a training programme- Majority of the farmers (42%) wanted a two day duration

training programme, followed by those who opined for a one day (18%) training programme. 16 percent of the farmers wanted a one and two days training programme, where as 13 percent of the farmers opined the two to three days training programme. A few (2%) wanted training programme for one and more than three days and 5 percent respondents expressed no opinion.

2. Opinion about the place of training programme- The maximum (44%) farmers wanted that training should be on campus as well as off campus, 41 percent preferred off-campus at farmers field. Only 11 percent farmers' preferred on-campus training programme (Table-3). Every farmer could not come to a campus for training and at field they will feet at home were the reasons for preferring.

Table 3 Distribution of respondents according to opinion about different aspects of training programmes

(N= 100)

SN	Different aspects of training programmes	Frequency	Percentage	Rank
A	**Time of organizing a training programme**			
1	Before sowing season	62	62.00	I
2	During standing crop	08	8.00	III
3	Both before sowing and during standing crop	24	24.00	II
4	After harvest of crop	0	0.00	VII
5	Any time	04	4.00	IV
6	No opinion	02	2.00	V
	Total	**100**	**100.00**	
B	**Training programme duration (in days)**			
1	One	18	18.00	II
2	Two	42	42.00	I
3	Three	02	02.00	V
4	One & Two	16	16.00	III
5	Two and Three	13	13.00	III
6	One and more than three	02	2.00	V
7	More than three	02	2.00	V
8	No opinion	05	5.00	IV
	Total	**100**	**100.00**	
C	**Place of training**			
1	On Campus	11	11.00	III
2	Off Campus	41	41.00	II
3	Both on & off campus	44	44.00	I
4	Any where	2	2.00	IV
5	No opinion	2	2.00	IV
	Total	**100**	**100.00**	

CONCLUSION

It can be concluded from above findings that, most of the respondents i.e. 84 percent having low level of knowledge regarding use of bio-pesticides & its mass multiplication on agriculture wastage. In the training aspects Seed treatment and Diseases of crop & their control, Insect of crop & their control, Use of Bio-fertilizers, Importance of Bio-pesticides & its benefits, Effect of chemical pesticides & fertilizers in human health, soil health, Multiplication of *Trichoderma* in Sorghum grains, Management of diseases by use of *Trichoderma* and Indigenous mass production technology of Bio-pesticide etc should be given more importance in training. The duration of training programme should be before sowing of crop, having two days duration and should be conducted both on and off campus. The future training programme in the study area on use of bio-pesticides & its mass multiplication on agriculture wastage should be focus on all these aspects for more effective and successful programmes.

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RESEARCH ARTICLE

Impact of *Rashtriya Krishi Vikas Yojana* on Ratoon Sugarcane Beneficiaries

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ABSTRACT

Sugarcane is one of the important crops fulfilling 60 per cent of the sucrose requirement. It is considered as a cash crop and plays the main role in the rural economy of the Maharashtra. In Maharashtra, it is an important commercial crop occupying 0.896 mill. ha. of area with production of 54,046 lakh tonnes. Maharashtra ranks second next to Uttar Pradesh in area and productivity (Anonymous, 2010). The ratoon sugarcane is also being taken on a large area. Research-Extension-Farmer and market linkages are being undertaken in a routine manner. This area demands greater focus, as technology generation has to take into account the farmer's needs, context and opportunity available. The Transfer of technology project under Rashtriya Krishi Vikas Yojana was implemented in Mahatma Phule Krishi Vidyapeeth, Rahuri since 2011-12 in its jurisdiction of ten districts through cluster approach. It was implemented in coordination with the State Department of Agriculture. Total package of crops along with recommended technologies were demonstrated in cluster approach. For this purpose specific crops and their technologies had been identified for demonstrations. The agro-climatic conditions, farmer's needs and solution to their problems are the base for identifying these demonstrations. Finally the villages and farmers were selected through cluster approach. The objectives of this project on transfer of technology were to demonstrate the recommended technologies on farmers' fields, capacity building of farmers and extension workers, to organize farmers rallies for transfer of technologies, to collect feedback from farmers and extension workers, to motivate the nearby farmers on improved technologies and transfer them in farmers field schools and to minimize the gap between yield potential of major crops and their yield on farmers' fields.

Keywords: Rashtriya Krishi Vikas Yojana, Transfer of technology, Farmer and market linkages, package of crops.
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MATERIALS AND METHODS

The present study was conducted in Rahuri and Rahata tahsils of Ahmednagar district of Maharashtra state. This district was purposively selected since the *Rashtriya Krishi Vikas Yojana* project on Transfer of technology has been implemented in this district including the ratoon sugarcane demonstrations. In all 120 respondents from 9 villages were randomly selected for the study. Keeping in view the objective of the study, an interview schedule was prepared and data were collected. Appropriate statistical methods were used for analysis of data and interpretation of the results.

RESULTS AND DISCUSSION

In the present study the impact of RKVY project on the productivity of ratoon sugarcane crop measured in terms of
1. Additional gain in yield
2. Additional gain in income

Impact of RKVY project on respondents

The assessment of the impact of RKVY project was made by comparing per ha. yield of ratoon sugarcane of base year (2010-11) with the per ha. yield obtained after three years in the RKVY project (2011-12 to 2013-14). The data is presented in Table 1.

Table 1. Impact of RKVY project on respondents

Sr. No.	Particulars	Base year (2010-11))	2011-12	2012-13	2013-14
1.	Average gain in yield (t/ha.)	67.50	70.00	77.50	100.00
2.	Average income from ratoon sugarcane *(Rs./ha.)*	1,08,000	1,22,500	1,39,500	1,85,000

The data from Table 1 indicated that the average per hectare yield of ratoon sugarcane during the base year (2010-11) of the RKVY project was 67.50 t/ha., while, the average per ha. yield of ratoon sugarcane during the RKVY project demonstrations for succeeding three years was 70.00 t/ha.(2011-12), 77.50 t/ha.(2012-13) and 100.00 t/ha.(2013-14). The data indicated an increase of 22.21 per cent in the average yield of ratoon sugarcane. These results may be attributed to fact that the beneficiary or participatory respondents in the demonstrations are adopting the recommended technologies of university. This has certainly boosted their yield.

The data in Table 1 revealed that there was significant increase in the average income of the respondents from ratoon sugarcane to the extent of 37.96 per cent. The average income of base year of Rs.1,08,000/- increased to Rs.1,85,000/- in third year of demonstrations under this RKVY project. The data, thus, indicated that there was a significant impact of RKVY project on beneficiary respondents.

Impact of RKVY in terms of additional gain in yield

Further data on the impact of RKVY project in terms of level of additional gain in yield is presented in Table 2.

Table 2. Distribution of respondents according to their level of additional gain in yield

Sr. No.	Level of additional gain in yield (t/ha.)	Respondents (N=120)	
		Frequency	Per cent
1	Low (Upto 5)	25	20.83
2	Medium (6 to 11)	63	52.50
3	Moderate(11 to15)	20	16.67
4	High (16 and above)	12	10.00
	Total	**120**	**100.00**

The data from Table 2 revealed that more than half i.e. 52.50 per cent of the respondents had medium level of additional gain in yield, while, 20.83 of the respondents had low level of additional gain in yield, whereas, 16.67 per cent and 10.00 per cent of the respondents had moderate and high level of additional gain in yield, respectively. From the above findings it can be concluded that majority of the respondents were found in medium level (5 to 10 t/ha.) of additional gain in yield. This finding is in line with the findings of Dhere (2009) and Solanki *et al*. (2004).

Impact of RKVY in terms of additional gain in income

The data on additional gain in income level of respondents from ratoon sugarcane is presented in Table 3.

Table 3. Distribution of the respondents according to their additional annual income from ratoon sugarcane

Sr. No.	Level of additional gain annual income (Rs/ha.)	Respondents (N=120)	
		Frequency	Per cent
1	Low (Upto Rs 87,500)	20	16.67
2	Medium (Rs 87501 to 1,65,000)	65	54.16
3	Moderate (Rs 1,65,001 to 2,42,500)	19	15.84
4	High (Rs 2,42,501 and above)	16	13.33
	Total	**120**	**100.00**

The data in Table 3 revealed that 54.16 per cent of the respondents achieved medium level of additional gain in income from yield of ratoon sugarcane, while, 16.67 per cent of the respondents achieved low level of additional gain in income. Further, it was found that 15.84 per cent and 13.33 per cent of the respondents possessed moderate and high additional gain in income, respectively. From the findings it can be concluded that majority of the respondents were found in medium level (Rs 87501 to 1,65,000 Rs/ha) of income from ratoon sugarcane.

CONCLUSION

The results of the present study revealed that there was a considerable impact of demonstrations conducted under the RKVY project. The farmers who participated in this project had an additional gain in their yield as well as their income. Thus, the study implies that more number of such demonstrations needs to be taken in cluster approach. This type of project need to be replicated in other sugarcane area of the state for wider dissemination of recommended technologies.

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RESEARCH ARTICLE

Dry land Technologies followed in Western Maharashtra

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ABSTRACT

In Maharashtra, the fortune of agriculture on a large chunk of area depends on temporal and spatial distribution of South-West monsoon rains. Out of 22.61 million hectares gross cropped area in Maharashtra only 4.05 million hectares (17.90 per cent) have irrigated and remaining 82.10 per cent area comes under dryland agriculture (Economic Survey of Maharashtra 2012-13). This year During the South West Monsoon season (1st June-23rd September) of 2015, the cumulative rainfall has been 12 per cent below normal. The actual rainfall received during the Monsoon season 2015, as on 23.09.2015, has been 747.9 mm as against the normal at 853.9 mm. Out of 613 districts, 244 districts (40%) received deficient and 26 districts (4%) received scanty rainfall during 1st June to 26th August, 2015. (Anonymous, 2015). In such a critical condition dryland technology is needed for maintaining food security for growing population, narrowing regional imbalance and creating rural employment in the country. Keeping this in mind; the present study was undertaken; to know the overall knowledge and adoption level of dryland agricultural technologies by the respondents, to know the technology wise knowledge and adoption of dryland agricultural technologies of respondent and to know the constraints and suggestion made by the respondents.

Key words: Adoption Dry land agricultural technologies Scarcity Zones,

MATERIALS AND METHODS

The study was conducted in Ahmednagar and Solapur districts of western Maharashtra. These districts were purposively selected for conducting research because these districts come under Scarcity Zones of Maharashtra and it covers large dryland agriculture area. Two tahsils each of these districts Karjat and Pathardi from Ahmednagar, Karmala and Mohol from Solapur were selected as per total geographical and rainfed area of tahsils. Four villages from each tahsil were selected by simple random sampling method and 18 respondents from each village were selected by using random sampling method. Thus, total 288 representative respondents were selected from all sixteen selected villages of Ahmednagar and Solapur districts. The data collected through a well-structured and pre-tested interview schedule.

RESULTS AND DISCUSSION

A. Overall knowledge of dryland agricultural technologies

The overall knowledge of respondents about the various dry land agricultural technologies is presented in Table 1.

Table- 1. Overall knowledge level of respondents about dryland agricultural technologies

Sr No	Category	Respondents(N = 288)	
		Number	Per cent
1.	Low (Score Upto 59.25)	50	17.36
2.	Medium (Score 59.26 to 89.31)	171	59.38
3.	High (Score above 89.31)	67	23.26
	Total	**288**	**100.00**

From Table-1 it is observed that about two third (59.38 per cent) of the respondents possessed 'medium' knowledge level about dry land agricultural technologies. About one fourth

(23.26 per cent) of the respondents had 'high' knowledge and 17.36 per cent respondents had 'low' knowledge level about dryland agricultural technologies. The findings are similar to the findings of Vermali et al. (2004) and Chopade (2013).

B. Overall adoption of dryland agricultural technologies

The overall adoption of respondents about the various dryland agricultural technologies is presented in Table 2. The results regarding overall adoption level of various dryland agricultural technologies from Table 2 revealed that, about two third of the respondents (64.24 per cent) had 'low' adoption level, followed by 22.92 per cent respondents having medium level of adoption and 12.85 per cent of them were having 'high' adoption level.

Table- 2: Overall adoption level of the respondents about dry land agricultural technologies

Sr. No	Category	Respondents (N = 288)	
		Number	Per cent
1.	Low (Score Upto 30.59)	185	64.24
2.	Medium (30.60 to 56.65 score)	66	22.92
3.	High (Above 56.66 score)	37	12.85
	Total	288	100.00

C. Technology wise knowledge and adoption of dry land agricultural technologies

The technology wise distribution of the knowledge and adoption of various dryland agricultural technologies by respondents is presented in Table 3.

Table-3: Technology wise knowledge and adoption of dry land agricultural technologies

Sr. No.	Improved technologies	Knowledge (n=288)			Adoption (n=288)		
		Complete	Partial	No	Complete	Partial	No
I	**Soil and water conservation technologies**						
1	Contour bunding	92 (31.95)	123 (42.70)	73 (25.35)	15 (5.21)	77 (26.74)	196 (68.05)
2	Graded bunding	177 (61.46)	65 (22.57)	46 (15.97)	104 (36.11)	73 (25.35)	111 (38.54)
3	Compartmental bunding	283 (98.27)	5 (1.73)	0 (0.00)	124 (43.06)	159 (55.20)	5 (1.74)
4	Contour cultivation	189 (65.62)	80 (27.78)	19 (6.60)	33 (11.45)	156 (54.17)	99 (34.38)
5	Mulching	149 (51.74)	69 (23.96)	70 24.30)	80 (27.78)	62 (21.53)	146 (50.69)
6	Organic recycling and addition of organic manures	76 (26.39)	121 (42.01)	91 (31.60)	0 (0.00)	0 (0.00)	288 (100.00)
7	Ridges and furrows	237 (82.29)	30 (10.42)	21 (7.29)	61 (21.18)	52 (18.06)	175 (60.76)
8	Farm pond	165 (57.29)	84 (29.17)	39 (13.54)	5 (1.74)	0 (0.00)	283 (98.26)
II	**Cropping systems**						
9	Sequence cropping	273 (94.79)	10 (3.47)	5 (1.74)	264 (91.67)	9 (3.13)	15 (5.20)
10	Inter cropping	238 (82.64)	32 (11.11)	18 (6.25)	155 (53.82)	84 (29.17)	49 (17.01)
11	Crop rotation	285 (98.96)	3 (1.04)	0 (0.00)	186 (64.58)	99 (34.38)	3 (1.04)
12	Double cropping	280 (92.23)	8 (2.77)	0 (0.00)	276 (95.84)	4 (1.38)	8 (2.78)
13	Strip cropping	230 (79.86)	33 (11.46)	25 (8.68)	55 (19.10)	175 (60.76)	58 (20.14)
III	**Alternate land use systems/agro forestry**						
14	Agri -horticultural systems	112 (38.89)	107 (37.15)	69 23.96)	0 (0.00)	0 (0.00)	288 (100.00)
15	Agri -silviculture system	93	139	56	0	0	288

Sr. No.	Improved technologies	Knowledge (n=288)			Adoption (n=288)		
		Complete	Partial	No	Complete	Partial	No
		(32.29)	(48.26)	(19.44)	(0.00)	(0.00)	(100.00)
16	Silvi- pastural systems	39 (13.54)	170 (59.02)	79 (27.44)	0 (0.00)	0 (0.00)	288 (100.00)
17	Horti- pastural system	76 (26.39)	162 (56.25)	50 (17.36)	0 (0.00)	0 (0.00)	288 (100.00)
18	Alley cropping system	84 (29.17)	117 (40.63)	87 (30.21)	0 (0.00)	0 (0.00)	288 (100.00)
IV	Crop management technologies						
19	Crop planning according to soil depth	216 (74.94)	48 (16.80)	24 (8.26)	136 (47.22)	53 (18.40)	99 (34.38)
20	Use improved recommended varieties of *kharif* and *rabi* crops	224 (77.77)	45 (15.63)	19 (6.60)	151 (52.43)	73 (25.35)	64 (22.22)
21	Package of practices adopted for *kharif* and *rabi*crops	176 (61.12)	74 (25.69)	38 (13.19)	127 (44.10)	44 (15.28)	117 (40.62)
22	Time of sowing	275 (95.49)	9 (3.12)	4 (1.39)	188 (65.28)	87 (30.21)	13 (4.51)
23	Seed treatment	157 (54.51)	89 (30.91)	42 (14.58)	10 (3.47)	53 (18.40)	225 (78.13)
24	Weed management	279 (96.88)	9 (3.12)	0 (0.00)	221 (76.74)	58 (20.14)	9 (3.12)
25	Interculturing	269 (93.41)	19 (6.59)	0 (0.00)	131 (45.49)	138 (47.91)	19 (6.60)
26	Mid-season correction	68 (23.61)	147 (51.04)	73 (25.35)	10 (3.47)	58 (20.14)	220 (76.39)
27	Anti transpirants	98 (34.03)	132 (45.83)	58 (20.14)	0 (0.00)	8 (2.78)	280 (97.22)
28	Protective irrigation	149 (51.74)	84 (29.16)	55 (19.10)	57 (19.79)	95 (33.00)	136 (47.21)
29	Integrated nutrient management	117 (40.63)	87 (30.21)	84 (29.16)	24 (8.33)	27 (9.38)	237 (82.29)
V	Use of agricultural implements						
30	Two bowl ferti-seed drill	268 (93.06)	20 (6.94)	0 (0.00)	244 (84.73)	24 (8.33)	20 (6.94)
31	Jyoti planter	144 (50.00)	74 (25.69)	70 (24.31)	0 (0.00)	0 (0.00)	288 (100.00)

Table-3 revealed that the large majority of the respondents had the complete knowledge and adoption of the recommended cropping systems like crop rotation (98.96), sequence cropping (94.79), double cropping (92.23) and inter cropping (82.64). Regarding the use of improved agricultural implements large majority (93.06) respondents used the two bowl ferti-seed drill for sowing of fertilizers and seed at a time. As regards crop management technologies majority of the respondents having knowledge and adoption about package of practices adopted for *kharif* and rabi crops, time of sowing, weed management, and use improved varieties seed for sowing. Nearly all most all respondents having complete knowledge about soil water conservation technologies like compartment bunding, contour cultivation, ridges and furrows, graded bunding, farm pond, and mulching. But all most all respondents not adopt practices like, Organic recycling and addition of organic manures, farm pond, and alternate land use systems/agro forestry, anti-transparent and use of Jyoti planter for sowing.

D. Constraints in knowledge and adoption of dry land agricultural technologies

The Constraints and Suggestions in knowledge and adoption of dry land agricultural technologies by respondents are also given here.

Most severe constraints reported by the respondents regarding adoption of dry land technologies were; smaller sized bunds particularly on arable land, not suitable treatments and design for the local area, difficult to sow and cultivate crops exactly on contour across the slope, non-availability of sufficient mulching material, unorganized market for organically grown produce, preparation of ridges and furrows, is expensive and labour intensive in heavy soil and erratic nature of rainfall in the rainy season. Lack of technical knowledge about crop planning according to soil type, mid-season correction, High yielding varieties and package of practices of dryland crops, proper method of weed control, use of anti-transpirants, critical stages of crops for irrigation. Shortage of green manuring crop seeds and inorganic fertilizers during the growing season. inability to purchase agricultural implements and modern equipments. Maintaining various types of agricultural machineries for various crops is not possible.

E. Suggestions in knowledge and adoption of dry land agricultural technologies

The respondents also expressed their suggestions to constraints in knowledge and adoption of dry land agricultural technologies. All most all respondents recorded the suggestion that; there is need for creation of irrigation facilities through construction of dam, well, watershed structures like nala bund, percolation tanks, KT wears and farm ponds through Govt. schemes. Special training should be given to the respondents on cropping and farming systems and suitability and requirement of soil, climate for rising of different fruit crops. Agricultural Universities should develop multipurpose self-propelled low cost agricultural implements and machineries for reducing labour requirement and expenditure on it by increasing accurately and efficiency of field work.

CONCLUSION

From the study it is concluded that there is moderate level of knowledge about different dryland agricultural technologies amongst the respondents. But, when focused on the adoption the picture is not so good. Majority of dryland agricultural technologies are not adopted or meagerly adopted by the respondents. This may be due to, not suitable technologies or treatments and design for the particular area, some technologies are expensive and labour intensive, lack of technical knowledge and inability to purchase agricultural implements and modern equipment's. Therefore on the basis of these findings it is suggested that there is need of user friendly and low cost dry land agricultural technologies which are suitable for particular area. There is need to strengthen the extension services also.

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RESEARCH ARTICLE

Impact of Frontline Demonstrations of Soybean Production Technology on Farmer's Field

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ABSTRACT

A study was undertaken to assess the performance of the frontline demonstrations under Operational Research Project on soybean crop in Rahuri Tahsil of Ahmednagar district. Soybean is an important oilseed crop that is widely grown as a valuable source of protein and oil for human nutrition in the world. However, its productivity is very low, due to non-adoption of improved technologies. Frontline demonstrations on soybean were conducted on an area of 0.20 ha. each from kharif season 2011-12 to 2013-14 at various farmer's fields. The mean of three years in demonstration plots of improved technologies gave higher yields (21.70 q ha^{-1}) over farmer's practice (17.69 q ha^{-1}) and overall per cent increase in yield was to the tune of 18.52. The water use efficiency was highest in demonstration plots (53.20 kg ha^{-1}cm) as compared to the farmer's practice (39.37 kg ha^{-1}cm) and the per cent saving of water was upto 12.89. Highest net monetary returns of Rs. 32789 ha^{-1}with B:C ratio of 2.12 were obtained in demonstration plots as compared to farmer's practice Rs. 24493 ha^{-1} and 1.96, respectively. There was a larger impact of the technology over the farmer's practice. By conducting front line demonstrations of proven technologies yield, water use efficiency and net income of soybean can be enhanced to a great extent. This also saved the water as well as the soil health could be maintained due to judicious use of water.

Key words: *Front line demonstration, water use efficiency Benefit cost ratio, soybean.*

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MATERIALS AND METHODS

This study was conducted in the Rahuri Tahsil of Ahmednagar district in Mula Command Area during the year 2011-12 to 2013-14 soils of the region are medium blacks. The farmers selected are mainly of irrigated situation. The FLD's improved package of practices for productions technologies under irrigated conditions on soybean were conducted on an area of 0.20 ha each from *kharif* season 2011 to 2013 at various farmer's fields. The improved packages viz, new varieties (JS-335) recommended dose of fertilizer (50:75:00 N:P:K kg ha^{-1}), irrigation scheduling as per critical growth stages, i.e. branching, flowering and pod filling stage with new agronomic practices.

RESULTS AND DISCUSSION

The findings in respect of the yield performance of soybean are depicted in Table-1. The average yield for three years was 21.70 q ha^{-1} and 17.69 q ha^{-1} recorded in demonstration plots and farmer's practice respectively. The percent increase in yield was 18.52 over the farmer's practice which might be attributed to the use of newer technologies involving judicious and timely use of fertilizers and irrigation water. Timely sowing of improved varieties and adopting improved production management has helped in increasing the yield of soybean similar results were also obtained by Raj *et.al.*(2014) and Tiwari*et.al.* (2014).

The average water use efficiency for three years was 53.20 kg ha^{-1} cm in demonstration plot which was higher than that of farmer's practice 39.37 kg ha^{-1} cm. The saving in water was upto 12.89 percent over farmer's practice. The saving in water upto 12.89 percent just by giving water at critical growth stages is a typical example of adoption of improved technologies.

Table-1: Average yield and WUE of Soybean in Front Line Demonstration of improved production technologies.

Crop and season	No. of farmers	Average yield (q ha⁻¹)		Percent Increase in Yield	WUE kg ha⁻¹ cm		Percent Saving in water
		Demonstration of improved technologies	Farmer's practice		Demonstration of improved technologies	Farmer's practice	
Kharif 2011	2	21.75	18.75	13.75	57.83	45.06	10.66
Kharif 2012	2	20.58	15.95	22.46	46.75	32.84	9.22
Kharif 2013	2	22.78	18.38	19.34	55.01	40.22	18.80
Mean		**21.70**	**17.69**	**18.52**	**53.20**	**39.37**	**12.89**

Economics of frontline demonstrations

A critical look at the figures presented in Table-2 indicates good sign of economic probability of the demonstrations than the farmer's practice. Economic analysis of yield performance of *kharif* demonstrations revealed that on an average for three years under study, gross returns Rs. 61539 ha⁻¹ and Rs. 49819 ha⁻¹ recorded in demonstration and farmer's practice respectively. Further, an average for the period under study, net monetary returns of Rs. 32789 ha⁻¹ and Rs. 24493 ha⁻¹ were recorded with relatively higher benefit cost ratio of 2.12 and 1.96 in demonstration and farmer's practice respectively.

Table 2: Cost Economics of Front Line Demonstration of Soybean through improved production technologies.

Crop and season	No. of farmers	Gross Returns Rs. ha⁻¹		Cost of cultivation Rs. ha⁻¹		Net Returns Rs. ha⁻¹		B.C. Ratio	
		Demonstration of improved technologies	Farmer's practice	Demonstration of improved technologies	Farmer's practice	Demonstration of improved technologies	Farmer's practice	Demonstration of improved technologies	Farmer's practice
Kharif 2011	2	45675	39375	24115	21925	21560	17450	1.90	1.80
Kharif 2012	2	63783	49445	29410	25650	34373	23750	2.17	1.93
Kharif 2013	2	75158	60638	32723	28360	42435	32278	2.30	2.14
Mean		**61539**	**49819**	**28749**	**25312**	**32789**	**24493**	**2.12**	**1.96**

CONCLUSION

Over all previews of data signified satisfaction of farmer's about the services given by scientists through frontline demonstrations. Ultimately by conducting frontline demonstrations of proven technologies lead to increase the yield potential as well as water use efficiency. This will substantially increase the income as well as livelihood of the farming community. Therefore, it can be concluded that frontline demonstrations conducted under the close supervision of scientists is one of the most important tools of extension to demonstrate newly released crop production technologies and its management practices in farmer's field.

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RESEARCH ARTICLE

A Study of the Members of Krishi Vigyan Kendra Farmers Club

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ABSTRACT

A number of transfer of technology projects have been sponsored by the ICAR in the reorganized system, the major mandates of the KVK are to conduct the need based activates viz., Training programmes, Front line demonstration, on farm trials and Extension activities. The priority for establishing KVK is given to Hilly areas ,drought prone areas, forest areas, coastal areas, flood prone areas and areas dominated by tribal farmers, weaker section, small farmers and landless laborers. The Krishi Vigyan Kendra is meant for bridging the gap between inducing the technology and its actual application on the field by the farmers. Now the forty years period has passed by functioning of these KVKs but some problems.

Key words: Krishi Vigyan Kendra, Training programmes, Front line demonstration, on farm trials and Extension activities

MATERIAL AND METHODS

Training programme was organized by krishi vigyan Kendra Baramati .The purpose of the study special evaluation schedule was prepared which comprised series of questions related to objectives of the study. The data thus collected personally by interviewing all trainees (115) was analyzed with the help of frequency and percentage.

RESULT AND DISCUSSION

Constraints perceived by the trainee farmers of KVK- The information pertaining to the constraints faced by the beneficiaries in the impact of KVK trainings is presented in table-1.In the present study it is observed that, majority of the KVK trainees faced constraints related to the inability to purchase inputs recommended by

KVK (60.86 percent), written materials was not provided at the time of training (43.47 percent), 23.47 percent of KVK trainees had no any constraints in KVK trainings, KVK staff/ scientist is untrained (19.13percent), KVK trainees states that the training programme is not need based (13.04 percent), the terms / concepts used in training are scientific or not understandable (12.17percent), They are satisfied with the trainings organized by KVK. The further whole details of the major subjects' i.e. Dairy technology, Vegetable production showed in theTable1. Regarding constraints in KVK. It is therefore deduced that the KVK trainees of subjects had perceived constraints with similar intensity.

Table1. Constraints faced by farmers in training programme

Sr. No.	Constraints	Dairy technology (n=60)	Vegetable growers (n=55)	Grand Total (N=115)
1	Inability to purchase input Recommended by KVK due to higher cost	38 (63.33)	32 (58.18)	70 (60.86)
2.	The written material was not Provided at the time of training	28 (46.67)	22 (40.00)	50 (43.47)
3.	No constraints	15 (25.00)	12 (21.82)	27 (23.47)
4.	The KVK staff/scientist is Untrained	13 (21.66)	9 (16.36)	22 (19.13)
5.	The training programme is not Need based	8 (13.33)	7 (12.72)	15 (13.04)
6.	The terms/concepts used in Training are scientific hence difficult to understand	9 (15.00)	5 (9.09)	14 (12.17)

Suggestions made by the trainee farmers of KVK- The suggestions made by the KVK trainees are presented in the table 2. Among the suggestion made by KVK trainees majority (63.47 percent) suggested that availability of recommended low cost inputs followed by wide publicity of the KVK trainings should be made among people (49.56percent), soil and water testing campaigns should be organized in the village (46.09 percent), extension activities should be organized frequently in the village (45.22 percent), language of trainings should be simple to understand by trainees (41.74 per cent), proper written materials should be provided at the time of trainings (40.87 percent) and KVK staff should be made frequent visits to the farm/village (35.65percent), Cold storage / Warehouse facilities should be available at KVK(27.83 per cent).

Suggestions for organizing effective trainings by KVK

Sr. No.	Suggestions	Dairy technology (N=60)	Vegetable growers (N=55)	Grand Total (n=115)
1.	Availability of low cost inputs	33 (55.00)	40 (72.72)	73 (63.47)
2.	Wide publicity of the KVK trainings should be made among the people	28 (46.67)	29 (52.72)	57 (49.56)
3.	Soil & water testing campaigns should be organized in the villages	25 (41.67)	28 (50.91)	53 (46.09)
4.	Extension activities should be organized frequently in the villages	28 (46.67)	24 (43.64)	52 (45.22)
5.	Training language should be simple to understand by the trainees	27 (45.00)	21 (38.18)	48 (41.74)
6.	Proper written material should be provided at the time of training	26 (43.33)	21 (38.18)	47 (40.87)
7.	KVK staff should made frequent visits to the farm/village	24 (40.00)	17 (30.91)	41 (35.65)
8.	Cold storage/Warehouse facilities should be available at KVK	18 (30.00)	14 (25.45)	32 (27.83)

CONCLUSION

It can be concluded that a majority of the trainees of KVK faced some social, situational, economic and intuitional constraints. They also made certain suggestions for effective functioning of the KVK programmes. According to them the benefit of KVK activities goes towards only resourceful and elite farmers rather deserving rural peoples. Hence, more coverage needs to be given to the various categories of farmers and rural peoples by following ICAR norms. Further they suggested that operational areas of KVK should be changed for every three year so that maximum numbers of farmers will be enables to harvest the advantage of KVK programmes. The trainees also suggested that the KVK personnel should organized their activities on the basis of felt need of the respondents.

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RESEARCH ARTICLE

Attitude of Farmers towards Capsicum Cultivation

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ABSTRACT

Capsicum is one of the major commercial spices crops occupying a dominant place in the economy of Gujarat cultivars. The average area for the years 2011-2012 in Gujarat under capsicum cultivation was 43,395 hectares with average annual production of about 262011 metric tones green production. There is a great scope for increasing it's export by increasing its production and quality through adoption of modern cultivation technology of capsicum crop and attitude of farmers' plays as important role in adoption of capsicum cultivation. Hence the study was conducted on 50 respondent farmers from randomly selected 10 villages of Anand taluka of Anand district of Gujarat to know the attitude of farmers towards capsicum cultivation with the help of reliable valid developed scale. Majority (72.00 per cent) of the farmers had more to moderately favorable attitude towards capsicum cultivation. The level of attitude of farmers towards capsicum cultivation was observed positively significant with their education, experience of capsicum cultivation, extension contact, mass media exposure, scientific orientation and achievement motivation.

Key Words: capsicum cultivation, attitude of farmers, extension contact, mass media exposure, scientific orientation and achievement motivation.

MATERIALS AND METHODS

The present investigation was purposively carried out in Anand district of Gujarat state. Anand district comprises of eight talukas and Anand taluka has the highest area under capsicum cultivation. Hence, Anand taluka was purposively selected for the study. To select villages from Anand taluka the names of villages were arranged in descending order according to total area under capsicum cultivation and first ten villages were selected. Thereafter, five capsicum growers from each village were selected by random sampling method. Thus, total 50 capsicum growers were selected as respondents for the study. The data were collected through the personal interview. The reliable and valid attitude scale with 14 statements was administered on the selected sample farmers and the responses were collected in five continuum viz. strongly agree, agree, undecided, disagree and strongly disagree with weight of 5,4,3,2 and, respectively for positive statements and reverse scoring for negative statements. The total attitude score for each respondent was obtained by adding the scores of their responses of all the statements and arbitrary classification of the respondents was made into five categories viz., least favorable, less favorable, moderately favorable, more favorable, most favorable.

RESULT AND DISCUSSION

Table-1 Distribution of the respondents according to their attitude towards capsicum cultivation (n=50)

Sr. No.	Level of Attitude	Frequency	Per cent
1.	Least Favorable (Up to 25 score)	00	00.00
2.	Less Favorable (26 to 36 score)	02	04.00
3.	Moderately Favorable (37 to 47 score)	14	28.00
4.	More Favorable (48 to 58 score)	22	44.00
5.	Most Favorable (Above 58 score)	12	24.00
	Total	**50**	**100.00**

The data given in Table-1 revealed that slightly more than two-fifth (44.00 per cent) of the capsicum growers had more favorable attitude towards capsicum cultivation, followed by 28.00 per cent and 24.00 per cent of them had moderately favorable and most favorable attitude towards capsicum cultivation, respectively. Only 04.00 per cent of them had less favorable attitude towards capsicum cultivation. From the foregoing discussion, it can be concluded that majority (72.00 per cent) of the respondents had moderately favorable to more favorable attitude towards capsicum cultivation The realization on part of farmers that capsicum cultivation is the only major resort to sustain their lives and families might have made them more inclined towards capsicum cultivation to earn more. This might be the reason for higher level of favorable attitude among farmers towards capsicum cultivation

Relationship between Profile of the Farmers and Their Attitude towards Capsicum Cultivation

To ascertain the relationship between profile of the farmers and their attitude towards capsicum cultivation, the co-efficient of correlation was worked out. Total twelve personal - social,

CONCLUSION

The finding of this study revealed that majority (72.00 per cent) of the farmers had more favourable to moderately favourable attitude towards capsicum cultivation. Out of twelve variables select for the study, six variable ad

economical, communicational and psychological characteristics of the farmers were studied.

Table-2 Relationship between profile of the farmers and their attitude towards capsicum cultivation.

Sr. No.	Independent Variables	Correlation-Coefficient ('r' value)
I.	**Personal-social variables:**	
1.	Age	-0.0157 NS
2.	Education	0.6078 **
3.	Experience in capsicum cultivation	0.2841 *
4.	Social participation	0.1050 NS
II.	**Economic variables:**	
5.	Land holding	0.2328 NS
6.	Occupation	0.0670 NS
7.	Annual income	0.2335 NS
III	**Communicational variables:**	
8.	Extension contact	0.5079 **
9.	Mass media exposure	0.6844 **
IV	**Psychological variables:**	
10	Economic motivation	0.2473 NS
11	Scientific orientation	0.8335 **
12	Achievement motivation	0.4091 **

positive and significant and age had negative and non-significant relationship with attitude of farmers towards capsicum cultivation and social participation, land holding, occupation, annual income and economic motivation were found to be non-significantly correlated with the level of attitude of farmers towards capsicum cultivation.

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RESEARCH ARTICLE

Consequences Analysis in Relation to Socio-Techno-Economic Change among Marigold Growers of Dahod District

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ABSTRACT

The study was carried out in Dahod District of Gujarat state with specific objective to study the Consequences analysis in relation to socio-techno-economic change among marigold growers of Dahod district. The findings revealed that exactly three-fifth (60.000 per cent) of the marigold growers was found in the middle age group, slightly more than two-fifth (41.00 per cent) of the marigold growers found to be illiterate, nearly half (49.00 per cent) of them had membership in one organization, nearly two-fifth (37.00 per cent) of them possessed marginal size of land holding, more than half (52.00 per cent) of them were engaged in farming along with animal husbandry, slightly more than one third (35.00 per cent) of them had annual income ranging from ₹ 1,00,001 to ₹ 1,50,000, whereas, exactly two fifth (40.00 per cent) of them had medium level of extension contact while nearly half (46.00 per cent) of the them had medium economic motivation, more than two fifth (43.00 per cent) of them had medium level of scientific orientation while exactly two-third (66.00 per cent) of them had medium risk orientation and exactly half (50.00 per cent) of the marigold growers had medium level of market orientation

Key words: *Consequences, Socio-Techno- Economic Change, Marigold Growers*

MATERIALS AND METHODS

The present study was conducted in Dahod district of Gujarat state. Ten villages from two talukas of Dahod district with higher potentiality of Marigold cultivation were selected for the study. Ten respondents from each selected villages were selected randomly and thus total 100 Marigold Growers were selected for the study. The data were collected through personal interview and then after it is compiled, tabulated and analyzed to get proper answer for the specific objectives of the study with the help of various appropriate statistical tools like mean, frequency, percentage, coefficient of correlation were used.

RESULTS AND DISCUSSION

Consequences analysis in relation to socio-techno-economic change among marigold growers is shown in following tables.

(I) Aspect wise distribution of respondents according to their socio-techno-economic change among marigold growers

1) Extent of change in modern technology based farm machinery/ implements: It can be seen from the data presented in Table 1 that more than two-fifth (46.00 per cent) the marigold growers were having medium level of change in modern technology based farm machinery/ implements followed by low (33.00 per cent), very high (11.00 per cent), high (06.00 per cent) and very low (04.00 per cent) level of change in modern technology based farm machinery/ implements. It can be concluded that majority of the marigold growers (79.00 per cent) had medium to low level of change in modern technology based machinery/ implements. Average annual income and small to marginal size of land holding

might be possible explanation of this result. **2) Extent of change in house hold items:**The data in Table 1 show that nearly half (49.00) of the marigold growers had medium level of change in house hold item followed by 24.00,10.00, 09.00and 08.00 per cent marigold growers had low, high, very high and very low level of change in house hold item, respectively. It can be concluded that majority (63.00 per cent) of the

marigold growers had medium to low level of change pertaining to house hold item.

3) Extent of change in saving and investment: It is seen from the Table 1 that more than half (53.00 per cent) of the marigold growers had medium level of change in saving and investments followed by 29.00, 08.00, 08.00 and 02.00 per cent marigold growers had low, high, very high and very low level of change in saving and investments, respectively.

Table 1: Aspect wise distribution of respondents according to their socio-techno-economic change among marigold growers   **n=100**

Sr. No.	Aspect	Level of change				
		Very low	**Low**	**Medium**	**High**	**Very high**
1	Modern technology based farm machinery / implements	04 (04.00)	33 (33.00)	46 (46.00)	06 (06.00)	11 (11.00)
2	House hold items	08 (08.00)	24 (24.00)	49 (49.000)	10 (10.00)	09 (09.00)
3	Saving and investments	02 (02.00)	29 (29.00)	53 (53.00)	08 (08.00)	08 (08.00)
4	Food habit	03 (03.00)	25 (25.00)	58 (58.00)	10 (10.00)	04 (04.00)
5	Clothing pattern	02 (02.00)	13 (13.00)	66 (66.00)	10 (10.00)	09 (09.00)
6.	Housing pattern	07 (07.00)	17 (17.00)	59 (59.00)	10 (10.00)	07 (07.00)
7	Situational factors	09 (09.00)	14 (14.00)	63 (63.00)	12 (12.00)	02 (02.00)
8	Social status	05 (05.00)	22 (22.00)	60 (60.00)	05 (05.00)	08 (08.00)
9	Self sufficiency	05 (05.00)	15 (15.00)	45 (45.00)	25 (25.00)	10 (10.00)
10	Change in improved technologies	08 (08.00)	11 (11.00)	51 (51.00)	26 (26.00)	04 (04.00)
11	Knowledge	09 (9.00)	20 (20.00)	49 (49.00)	13 (13.00)	09 (9.00)
12	Adoption	05 (5.00)	10 (10.00)	31 (31.00)	44 (44.00)	10 (10.00)

Data in parenthesis indicate percentage.

4) Extent of change in food habit: The data presented in Table 1 showed that less than three fifth of the marigold growers (58.00 per cent) had medium level of change in food habit followed by low, high, very high, and very low level of change in food habit with 25.00, 10.00, 04.00 and 03.00 per cent of the marigold growers, respectively. Concluding the findings extent of change in food

habit of marigold growers was medium. During filed work it was observed that earlier they are taking skim milk along with loaf of banti and traditional vegetables. Now-a-days, they are taking milk along with loaf of bajra and maize as well as vegetables and beans.

5) Extent of change in clothing pattern: The data depicted in Table 1 revealed that exactly two

third (66.00) of the marigold growers had medium level of change in clothing pattern followed by 13.00, 10.00, 09.00 and 02.00 per cent of the marigold growers had low, high, very high and very low level of change in clothing pattern, respectively. Summarizing the results, it can be said that majority (79.00) of the marigold growers had medium to low level of change in their clothing pattern as they have put-off their traditional dress like Kurti, Dhoti and Topi. Only old aged marigold growers wear their traditional dresses and young and middle age wear Khamis and Jarsy.

6) Extent of change in housing pattern: Figures given in the Table 1 indicated that nearly three-fifth (59.00 per cent) of the marigold growers had medium level of change in housing pattern followed by 17.00, 10.00, 07.00 and 7.00 per cent of the marigold growers had low, high, very high and very low level of change in housing pattern, respectively. It is concluded from above table that majority (76.00) of the marigold growers were found in medium to low level of change in their housing pattern. **7) Extent of change in situational factors:** It is seen from the Table 1 that more than three fifth (63.00) of the marigold growers had medium level of change in situational factor followed by 14.00, 12.00, 09.00, and 02.00 per cent of the marigold growers had low, high, very low and very high level of change in situational factor, respectively. It can be concluded that majority (77.00 per cent) of the marigold growers had medium to low level of change in their situation.

8) Extent of change in social status: Perusal of the Table 1 indicated that exactly three fifth (60.00) of the marigold growers had medium level of change in social status followed by 22.00, 08.00, 05.00 and 05.00 per cent of the marigold growers had low, very high, very low and high level of change in social status, respectively. As per findings, it is revealed that vast majority (82.00 per cent) of the marigold growers had medium to low level of change in their social status.

9) Extent of change in self-sufficiency: The data presented in Table 17 that more than two fifth (45.00) of the marigold growers had medium level of change in self-sufficiency followed by 25.00, 15.00, 10.00 and 05.00 per cent of the marigold growers had high, low, very high and very low level of change in self-sufficiency, respectively. It could be seen in Table majority (70.00 per cent) of the marigold growers had medium to high level of change in self- sufficiency.

10) Extent of change in improved technology: It is obvious from the Table 1 that more than half (51.00) of the marigold growers had medium level of change in improved technology followed by 26.00, 11.00, 08.00 and 04.00 per cent of the marigold growers had high, low, very low and very high level of change in improved technology, respectively.

11) Knowledge about improved practices of marigold cultivation: It is clear from table 1 that nearly half (49.00 per cent) of the marigold growers had medium level of knowledge about improved practices of marigold cultivation followed by 20.00, 13.00, 9.00 and9.00 per cent of the marigold growers had low, high, very low and very high level of knowledge about improved practices of marigold cultivation, respectively. From the above result it can be concluded that majority (69.00 per cent) of marigold growers had medium to low level of knowledge regarding marigold production technology.

12) Adoption about improved practices of marigold crop: It is clear from table 1 that more than two fifth (44.00 per cent) (44.00 per cent) of the marigold growers had medium level of adoption about improved practices of marigold crop followed by 31.00, 10.00, 10.00 and 5.00 per cent of the marigold growers had medium, low, very high and very low level of adoption about

improved practices of marigold crop, respectively. **Overall socio-techno-economic change:** For the present study the resultant change in terms of consequences occurred due to cultivation of marigold in terms of socio-techno-economic changes in last five years have been taken into account as consequences. The information were classified into five groups as shown in Table 2.

Table 2:   Distribution of marigold growers according to their socio-techno-economic change under marigold cultivation n=100

Sr. No.	Level of socio-techno-economic change	Number	Per cent
1.	Very low(up to 58score)	05	05.00
2.	Low (59 to 116score)	21	21.00
3.	Medium (117 to 174score)	51	51.00
4.		14	14.00
5.	High (175 to 232score) Very high (233 to 290score)	09	09.00
	Total	**100**	**100.00**

The data in Table 2 indicate that more than half (51.00 per cent) of the respondents had medium level of socio-techno-economic change followed by 21.00 per cent, 14.00 per cent and 9.00 per cent had with low level, very high, and high   level of socio-techno-economic change, whereas, 5.00 per

cent of the respondents were found to have very low level of socio-techno-economic change. Thus, it can be concluded that majority (72.00 per cent) of the marigold growers had medium to low level of socio-techno-economic change due to marigold cultivation, majority of marigold growers possessed marginal and small land holding, annual income up to1.5 lakh, and medium to low scientific orientation as well as market orientation, risk orientation.

CONCLUSION

As regards, aspect wise degree of change, the majority of the marigold growers had medium to low level of change in modern technology based farm machinery / implements, house hold items, saving and investment, food habit, clothing pattern, housing pattern, situational factor, social status, and knowledge about improved practices of marigold cultivation. While majority of the marigold growers had medium to high level of change in self-sufficiency and improved technology whereas, majority of the marigold growers had high to medium level of adoption of improved practices of marigold cultivation.

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RESEARCH ARTICLE

A Study of Improved Dairy Management Practices followed by the Farmers

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ABSTRACT

India occupies the foremost position among the countries of the world in respect of livestock strength. India contribute nearly about one fourth of worlds total bovine population however, though there is large population, the milk production is very low as compare to the other countries like Denmark, U.S.A., Canada, U.K., Israel, etc. India has attained first position in term of milk production, but still exist an ample scope for further increase in milk production by adopting recommended dairy management practices such as housing management, breeding management, feeding management, management of animals in gestation period, management at the time of parturition, care and management of calves, health management, marketing management, vaccination, urea treatment of roughages, feeding of mineral mixture, use of high yielding fodder seed, concentrate feeding and artificial insemination etc. It is observed that all (100.00 per cent) and majority (81.82 per cent) of the respondents had complete knowledge about milch purpose hybrid breeds of cattle i.e. Jersey and Holstein Friesian, respectively. All the dairy farmers (100.00 per cent) had complete knowledge about elevated place high, ample aeration with adequate sunlight for housing of the animal, manger should be durable and built with concrete and requirement of gutter.

Keywords: knowledge of dairy farmers, improved dairy management practices.

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MATERIALS AND METHODS

The present study was conducted in Pune district of Maharashtra state. Pune district was purposively selected for the study as it is having large cattle population and convenience to the researcher. On the basis of population of dairy animals and milk production in the tahsils of Pune district, the major tahsilsviz, Ambegaon, Junnar and Shirur were selected as the area of present research study. There were 17 villages amongst 3 tahsils of Pune district were selected according to the highest number of dairy animals and dairy units at the village level.A list of farmers who possess cattle as well as buffalo from each selected village was prepared with the help of Agriculture Assistant and Sarpanch. Thus a total sample of 110 farmers was selected from seventeen villages of three tahsils. The data from dairy farmers were collected through personal interview schedule. The qualitative data were converted into quantitative form. The frequencies and percentage were worked out to describe the characteristics of dairy farmers.

RESULTS AND DISCUSSION
Overall knowledge of dairy farmers about improved dairy management practices.

The data revealed that, majority 67.27 per cent of the dairy farmers was observed in medium level of knowledge category followed by 18.18 per cent dairy farmers in high and 14.55 per cent dairy farmers in low level of knowledge category of improved dairy management practices regarding knowledge level of improved dairy management practices of the respondents

Practice wise knowledge of the dairy farmers about improved dairy management practices

1. Knowledge about breeds of cattle and buffalo

It is observed that all (100.00 per cent) and majority (81.82 per cent) of the respondents had complete knowledge about milch purpose hybrid breeds of cattle i.e. Jersey and Holstein Friesian, respectively. Only 30.91 per cent dairy farmers had complete knowledge about PhuleTriveni, majority 85.45 per cent of the dairy farmers knew about milch purpose indigenous breed Gir and only 11.82 per cent dairy farmers had complete knowledge about milch purpose indigenous breed Sahiwal.

Most of the 96.36 per cent, 92.73 per cent, majority 65.55 and 55.45 percent respondent had complete knowledge about Murha, Pandharpuri, Surti and Jafrabadi breeds of buffalo, respectively. Only 39.09 per cent respondent had complete knowledge about Mehsana breed.

Almost all 100.00 per cent, 98.18 per cent and 81.82 per cent of the dairy farmers had complete knowledge about A.I. for Jersey, Khilar, Holstein Friesian, respectively and majority of them knew about A.I. for breeding of buffalo and judging of milch animals.

2. Knowledge about care and management of breeds

All the dairy farmers (100.00 per cent) had complete knowledge about elevated place high, ample aeration with adequate sunlight for housing of the animal, manger should be durable and built with concrete and requirement of gutter. while majority 81.82 per cent and 62.73 per cent of the dairy farmers had complete knowledge about height of barn and space require per animal respectively. Only 26.36 per cent and 48.18 per cent farmers had complete knowledge about application of lime to wall and adequate facilities in byre.

All the farmers (100.00 per cent) had complete knowledge about rearing systems of animals viz. loose housing, close housing. While almost all 98.18 per cent knew about open grazing system. All the 100.00 per cent and 61.82 per cent respondents had complete knowledge about daily removing of dung, urine and use of phenyl to clean the byre, respectively.

3. Knowledge about feeding management

Majority of the respondents knew about the practice of feeding, 90.91 per cent dairy farmers had complete knowledge of requirement of additional ration for nourishment and most of the dairy farmers (71.82 per cent) had partial knowledge about additional ration about 40 and 50 percent to their milk production of cattle and buffalo.

Majority (85.45 per cent) of the dairy farmers had complete knowledge about requirement of green fodder for animal, while 90.91 per cent dairy farmers had knowledge about requirement of dry fodder for animal and 67.27 per cent dairy farmers knew about daily requirement of mineral mixture. All (100.00 per cent) the farmers knew about requirement of water for animal.

4. Knowledge about breeding management

All the dairy farmers (100.00 per cent) had complete knowledge about heat symptoms viz, frequent urination, cow become restless and bellowing, mounting on another animals, mucus like white discharge from vulva, and 98.18 per cent dairy farmers knew about cow comes in heat at 21 days interval, most of the 92.73 per cent and 94.55 per cent dairy farmers had complete knowledge about period of insemination 10 to 18 hrs after heat and insemination should be done at 60 days after calving, respectively. While 54.55 per cent and 59.09 per cent dairy farmers knowing about age of indigenous, exotic breeds of cattle and buffalo for first calving, respectively.

All the respondents (100.00 per cent) had knowledge about artificial insemination and natural insemination.

5. Management of animals in gestation period

All the dairy farmers (100.00 per cent) had complete knowledge about requirement of concentrates 1.5 kg in addition to maintenance ration for the nourishment of the foetus and provide succulent feed and adequate water to pregnant animal.

Most of the 95.45 per cent, 98.18 per cent, 96.36 per cent and 92.73 per cent dairy farmers had complete knowledge about isolation of pregnant animal from heard, regular exercise, separate house for pregnant animal and drying of animal at least before 60 days of calving, respectively.

6. Care and management before and at the time of parturition

All the respondents (100.00 per cent) were complete knowing about seeking help of veterinarians in case of complication, feeding of cooked wheat or bajara after parturition and milking of animal after ½ hours of parturition. Most of the 98.18 per cent and 90.00 per cent dairy farmers had complete knowledge about parturition completed after expulsion of placenta-in 12 hours after parturition and separate calving pen for animals. Only 27.27 per cent respondents knew about washing of hind quarter after parturition with potassium per magnet added warm water.

7. Care and management of calves

All the respondents (100.00 per cent) had complete knowledge about removal of mucus from openings of newly born calves, allow licking of breed to calf. Majority 76.36 per cent, 80.00 per cent, 65.45 per cent, 69.09 per cent and 89.09 per cent of the dairy farmers possessed knowledge about cutting tender hoops of calves, artificial respiration to calf, cutting naval cord 2 to 3 inches away from stomach, feeding of colostrum within half hour to calf up to ten per cent of body weight and giving identification marks to calf, respectively.

All (100.00 per cent) of the dairy farmers had complete knowledge about rearing methods of calf viz. sucking method and weaning methods, dehorning of calves within 7 to 10 days and vaccinating the calf for Foot and Mouth (F.M.D) disease at age of 3 and 6 month. Only 33.64 per cent of the dairy farmers had knowledge about deworming in first month and every six month.

8. Clean and hygienic milk production

All the (100.00 per cent) respondents had complete knowledge about byre should be clean and hygienic, separate place for milking, cleaning of udder before milking to avoid infection and Store the milk in clean, dry steel utensils.

Most of the 98.18 per cent and 87.27 per cent of respondent had complete knowledge about milker should be healthy and hygienic and animal should be groomed before milking, respectively. About 98.18 per cent, and 96.36 per cent respondents were knowing about time between two milking should be 10 to 12 hours, milking period 7 to 8 minutes and during milking not to give dry fodder or silage to animal, respectively, All the dairy farmers (100.00 per cent) had complete knowledge about milking methods viz, knuckling method, full hand method, tripping method, and machine milking methods.

9. Care and management of animal health

All the respondents (100.00 per cent) had complete knowledge about clean and hygienic condition around animals, provide clean water, while only 10.00 per cent of the respondents had knowledge about de worming of animals twice in a year with copper sulphate and nicotine sulphate to control internal parasites. Only 33.66 per cent and 17.27 per cent dairy farmers had complete knowledge about use of BHC powder, Melathion or Butax and dusting of Folidol in byre, respectively. While all the respondents (100.00 per cent) had complete knowledge about grooming of animals to control external parasites.

10. Control measures of diseases

All (100.00 per cent) of the dairy farmers had complete knowledge about management practices like vaccination of animal for F.M.D two times in year (Sept and March) to control Foot and mouth disease, Infusion with antibiotics to control mastitis, vaccination against Rinder pest, avoid feeding immature fodder to animals and isolate infected animals from heard. Most of the 89.09 per cent and 98.18 per cent respondents had complete knowledge about Hemorrhagic Septicemia and their control measure and dead diseased animal buried in the soil apart from byre, respectively. Only 42.73 per cent dairy farmers knew about Black Quarter, Milk fever and their control measure, about 31.82 per cent respondents had knowledge about Anthrax disease.

11. Care and management of poisoning in animals

All the respondents (100.00 per cent) knew about care and management of poisoning in animals, from seedlings of jowar, care taken at the time of spraying the insecticides, care should be take that Parthenium not comes in contact of animals and taking care from snake bite.

12. Value added feeds

Majority 55.45 per cent of the respondents possessed knowledge about Silage making. Only 7.27 per cent respondent possessed knowledge about Uromil, while 6.36 per cent respondent had knowledge about Chatan.

13. Milk utilization technology

All of the dairy farmers (100.00 per cent) had complete knowledge about transfer of milk to chilling plant within 4 hours after milking, milk selling methods i.e. selling milk to co-operative or private milk societies and selling of value added milk product. All of the dairy farmers (100.00 per cent) had possessed knowledge about preparation of value added milk product i.e. *Khoa, Curd, Ghee, Shrikhand* etc.

14. Other

Majority 84.55 per cent of the dairy farmers had complete knowledge of insurance of animal, 71.82 per cent dairy farmers knew about post mortem of dead animal and 73.64 per cent dairy farmers were knowing that record keeping of animals i.e. birth, mortality, milk production etc.

CONCLUSION

The findings of the study indicated that majority of dairy farmers possessed medium level of knowledge about improved dairy management practices, while about one third of the respondents lacking complete knowledge about improved dairy management practices like management of pest and disease, preparation of value added feeds and some farmers were unknown about breed of cattle like *PhuleTriveni* and breed of buffalo like *Mehasana.*

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RESEARCH ARTICLE

Utility Perception of Deoni and Non-descriptive Cattles by the Cattle Rearers

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ABSTRACT

The present study was conducted purposively in Latur district of the Marathwada region of Maharashtra state. From this district six tahsils were selected. Four villages from each taluka were selected purposively. The total villages for the study were 24. Ten respondents from each village were selected purposively for the study. Comprising 120 respondents of Deoni cattle and 120 respondents of Non-descriptive cattle from Latur district were selected. Thus, there were a total of 240 respondents selected for the research study. Ex-post facto research design was adopted in this study. The data were collected with the help of pretested interview schedule. The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation, multiple regressions, Z test and path analysis were used for the analysis of data. It was observed that nearly two third (68.32 %) of deoni cattle rearers had medium level of perception regarding overall utility of cattle, while equal percentage i.e. 15.84 of them were having high and low level of perception about overall utility perception of cattle. Two third (66.67 %) of non-descriptive cattle rearers were having medium level of perception about overall utility perception of cattle whereas, 19.17 per cent had low level and 14.17 per cent had high level of perception regarding overall utility of cattle. It was found that more than three fourth (70.00 %) of deoni cattle rearers and two third (66.66 %) of non-descriptive cattle rearers had medium level of overall adoption of different cattle management practices for cattle rearing.

Key words: *Utility perception, Deoni cattle, Non-descriptive cattle, cattle rearers*

MATERIAL AND METHODS

The present study was conducted in Latur district of the Marathwada region of Maharashtra state which was purposively selected for the research study. From this district six tahsils were selected for the study. Four villages from each taluka were selected purposively for the study. The total villages for the study were 24. Ten respondents from each village (Five respondents of Deoni cattle and five respondents of Non-descriptive cattle) were selected purposively for the study. Comprising 120 respondents of Deoni cattle and 120 respondents of Non-descriptive cattle from Latur district were selected for the study. Thus, there were a total of 240 respondents selected for the research study. Ex-post facto research design was adopted in this study. The data were collected with the help of pretested interview schedule from the respondents as per their convenience at their home or farms. The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation, multiple regressions, Z test and path analysis were used for the analysis of data. Scale to measure the utility perception of cattle by the rearers was constructed by using Normalized Rank Approach Method as suggested by Guilford (1978). On the basis of their relevancy given by the judges, forty eight items were included in the final scale. These forty eight statements were categorized into six subcategories viz, general utility, social utility, physical utility, economic utility, management utility and health utility of the cattle. There are 05 statements under general utility, 04 statements under social utility, 08 statements under physical utility and 14 statements under economic utility of the cattle. Whereas, 05 and 12 statements under the management utility and health utility, respectively. By using constructed utility

perception of cattle scale, utility perception index was calculated by following formula.

$$UPI = \frac{\Sigma \text{ Score obtained for component x scale value of component}}{\Sigma \text{ Maximum score for component x scale value of component}} \times 100$$

RESULTS AND DISCUSSION

1. Personal, socio-economical and psychological characteristics of Deoni cattle rearers and Non-descriptive cattle rearers.

It was revealed that, most of the deoni cattle rearers were middle aged (59.17 %), educated up to higher secondary level (27.50 %), small family size (58.33 %) and having farming with cattle rearing as their major occupation (74.74 %). It was observed that majority of them having semi medium land holding (48.33 %), medium annual income (70.00 %), medium experience of cattle rearing (64.17 %), small herd size (39.17 %), medium social participation (75.00 %), medium level of overall use of sources of information (55.83 %), medium level of extension contact (55.00 %), medium level of market orientation (63.33 %), medium risk orientation (59.17 %) and most of (65.83 %) deoni cattle rearers had medium level of overall knowledge about management practices of cattle rearing. In case of non-descriptive cattle rearers it was observed from Table 1 that, majority of them were middle aged (67.50 %), educated up to primary school level (26.66 %), small family size (50.00 %) and having farming with cattle rearing as their major occupation (68.33 %). It was observed that majority of them having semi medium land holding (39.16 %), medium annual income (66.67 %), medium experience of cattle rearing (52.50 %), medium herd size (68.33 %), medium social participation (76.67 %), medium level of overall use of sources of information (61.67 %), medium level of extension contact (50.00 %), high level of market orientation (37.50 %), medium risk orientation (57.50 %) and most of (64.17 %) deoni cattle rearers had medium level of overall knowledge about management practices of cattle rearing.

Further, the calculated 'Z' values of variables namely, annual income, experience in cattle rearing, social participation, overall use of sources of information, extension contact, market orientation and overall knowledge of the respondents were highly significant which indicates that there was a significant difference in these variables of deoni cattle rearers and nn-descriptive cattle rearers. While the calculated 'Z' values of variables variables namely, age, education, family size, occupation, land holding, herd size and risk orientation of the respondents were non-significant, which indicates there was no significance difference in these variables of deoni cattle rearers and non-descriptive cattle rearers.

From the Table 1 it was revealed that, in relation to the deoni cattle rearers, it was found that majority (58.33 %) of them were having high utility perception regarding general utility of cattle followed by 55.83 per cent of them had medium level of perception about social utility of cattle. Majority of them had medium level of perception regarding physical utility of cattle (54.17 %), medium level of perception about economic utility of cattle (65.83 %), medium level of perception regarding management utility of cattle (45.00 %) and medium perception regarding health utility of cattle (49.17 %). It was observed that nearly two third (68.32 %) of deoni cattle rearers had medium level of perception regarding overall utility of cattle, while equal percentage i.e. 15.84 of them were having high and low level of perception about overall utility perception of cattle. As far as non-descriptive cattle rearers were concerned, it was found that majority (45.00 %) of them were having low utility perception regarding general utility of cattle followed by 41.67 per cent of them had medium level of perception about social utility of cattle. Majority (45.83 %) of them had medium level of perception regarding physical utility of cattle, medium level of perception about economic utility of cattle (64.17 %), medium level management utility of cattle (55.00 %) and medium perception regarding health utility of cattle (65.83 %). Two third (66.67 %) of non-descriptive cattle rearers were having medium level of perception whereas, 19.17 per cent had low level and 14.17 per cent had high level of perception regarding overall utility of cattle.

2. Utility perception of Deoni cattle and Non- descriptive cattle by the rearers.

Table-1 Distribution of the respondents according to their utility perception

Sr. No.	Category	Deoni Cattle rearers (n=120)			Non-Descriptive Cattle rearers (n=120)			'Z' values
		Score	F	%	Score	F	%	
A)	**General utility**							
1.	Low	Up to 8	37	30.83	Up to 8	54	45.00	02.74**
2.	Medium	9.00	13	10.84	9.00	33	27.50	
3.	High	10 & above	70	58.33	10 & above	33	27.50	
		Total	120	100	Total	120	100	
		Mean	09.11		Mean	08.70		
		SD	01.24		SD	01.07		
B)	**Social utility**							
1.	Low	Up to 5	25	20.83	Up to 5	24	20.00	-01.49[NS]
2.	Medium	6 to 7	67	55.83	6 to 7	50	41.67	
3.	High	8 & above	28	23.34	8 & above	46	38.33	
		Total	120	100	Total	120	100	
		Mean	06.45		Mean	06.72		
		SD	01.46		SD	01.34		
C)	**Physical utility**							
1.	Low	Up to 10	30	25.00	Up to 10	45	37.50	03.07**
2.	Medium	11 to 13	65	54.17	11 to 12	55	45.83	
3.	High	14 & above	25	20.83	13 & above	20	16.67	
		Total	120	100	Total	120	100	
		Mean	12.26		Mean	11.58		
		SD	01.87		SD	01.54		
D)	**Economic utility**							00.38[NS]
1.	Low	Up to 19	13	10.83	Up to 19	16	13.33	
2.	Medium	20 to 24	79	65.83	20 to 24	77	64.17	
3.	High	25 & above	28	23.34	25 & above	27	22.50	
		Total	120	100	Total	120	100	
		Mean	22.28		Mean	22.13		
		SD	02.91		SD	03.14		
E)	**Management utility**							02.37*
1.	Low	Up to 5	25	20.83	Up to 4	24	20.00	
2.	Medium	6 to 7	54	45.00	5 to 7	66	55.00	
3.	High	8 & above	41	34.17	8 & above	30	25.00	
		Total	120	100	Total	120	100	
		Mean	06.63		Mean	06.05		
		SD	01.61		SD	02.13		
F)	**Health utility**							03.40**
1.	Low	Up to 19	14	11.66	Up to 18	20	16.67	
2.	Medium	20 to 23	59	49.17	19 to 22	79	65.83	
3.	High	24 & above	47	39.17	23 & above	21	17.50	
		Total	120	100	Total	120	100	
		Mean	21.63		Mean	20.59		
		SD	02.46		SD	02.27		
G)	**Overall utility perception**							
1.	Low	Up to 71	19	15.84	Up to 69	23	19.17	02.91**
2.	Medium	72 to 84	82	68.32	70 to 81	80	66.67	
3.	High	85 & above	19	15.84	82 & above	17	14.17	
		Total	120	100	Total	120	100	
		Mean	78.35		Mean	75.78		
		SD	07.00		SD	06.64		

** Significant at 0.01 level of probability * Significant at 0.05 level of probability NS - Non-significant

Utility perception index of all the respondents was calculated and presented in the Table-2. It is apparent from table- 2 that, majority (83.00 %) of deoni cattle rearers belonged to medium category of utility perception, while 17.50 per cent and 16.00 per cent of them were from low and high

utility perception of cattle, respectively. It is also noticed from Table 27 that more than two third (66.50 %) of non-descriptive cattle rearers were having medium utility perception followed by 20.83 per cent of them had low and 11.67 per cent of them had high utility perception of cattle.

Table-2. Distribution of the respondents according to their utility perception index

Sr. No.	Category	Deoni Cattle rearers (n=120)			Non-Descriptive Cattle rearers (n=120)			'Z' value
		Score	F	%	Score	F	%	
1.	Low	Up to 74.32	21	17.50	Up to 72.01	25	20.83	
2.	Medium	74.33 to 88.90	83	83.00	72.02 to 85.84	81	67.50	
3.	High	88.91 & above	16	16.00	85.85 & above	14	11.67	**02.92****
		Total	**120**	**100**	**Total**	**120**	**100**	
		Mean	**81.61**		**Mean**	**78.93**		
		SD	**07.29**		**SD**	**06.92**		

** Significant at 0.01 level of probability

The calculated 'Z' value 02.92 was significant at 0.01 per cent of probability which indicates that there is significant difference in the utility perception of deoni cattle rearers and non-descriptive cattle rearers about utility perception of cattle. These results might be due to the fact that the deoni cattle rearers had more knowledge about cattle management, more extension contact, social participation, annual income and use of sources of information than non-descriptive cattle rearers which helps them to know the more utility of cattle.

CONLUSION

The most of respondents i.e, deoni cattle rerarers and non-descriptive cattle rearers had middle aged, educated up to primary to secondary school, small family size, farming with cattle rearing as their major occupation, medium level of overall use of sources of information, medium level of extension contact, medium risk orientation and medium level of overall knowledge about management practices of cattle rearing.

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RESEARCH ARTICLE

Training Needs of Sugarcane Growers of Ahmednagar district Maharashtra

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ABSTRACT

Sugarcane (Saccharum officinarum L.) is one of the important crops fulfilling 60 per cent of the sucrose requirement. It is considered as a cash crop and plays the main role in the rural economy of the Maharashtra. Sugarcane is very economically, socially and politically sensitive crop. World production of sugarcane is 1,324 million tones with an area of 20.42 million ha. India rank second in both area and production next to Brazil. In India, sugarcane crop occupies about 4.86 million ha area with production of 324.91 millions tones and 66922 Kg ha yield of sugarcane during 2011-2012. In Maharashtra, it is important commercial crop occupying 0.896 millions hectare of area with production of 54,046 lakhs tons. Maharashtra is second to Uttar Pradesh in area with productivity (Anonymous, 2012).Sugarcane also supports two important rural and cottage industries viz. Gur (Jaggary) and khandsari industry. Sugarcane green tops are used as cattle feed. Byproducts of sugar industry such as molasses, bagasses and press mud play an important role in the national economy. Training is method which helped to change the knowledge, still and attitude of an individual. To increase the production of sugarcane crop, it is essential to train the sugarcane growers in some specific areas. In view of this, the present study was conducted with an objective to ascertain the training needs of sugarcane growers.

Keywords: Sugarcane crop, Training needs.

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MATERIALS AND METHODS

Rahuri and Karjat tahsils of Ahmednagar districts were selected purposefully for the study purpose because these both thasils having low productivity as compared to other tahasils of Ahmednagar district. The list of villages having maximum area under sugarcane crop from sample tahsils was prepared with the help of State Agriculture Department of Ahmednagar district and ten villages with minimum production and productivity were selected for the study purpose. In all total 120 sugarcane growers were selected by proportionate random sampling method. Training need index of sugarcane growers was calculated in the form of most needed, needed and not needed by assigning score 2, 1, 0 respectively. Training need index of the sugarcane growers was calculated by using following formula.

$$\text{Training Need Index (TNI)} = \frac{\text{Total obtained score}}{\text{Maximum obtainable score}} \times 100$$

RESULT AND DISCUSSION

A. Subject-wise training needs of sugarcane growers

The data depicted in the Table-1 revealed that 78.33 per cent of the sugarcane growers had most need of training in set treatment of sugarcane followed by ratoon management (40.83 per cent), water management (35.83 per cent) and 30.83 per cent of the sugarcane growers had most need of training in weed management of the sugarcane. It is observed that 65.00 per cent of the sugarcane growers had medium need of training in varietal selection followed by fertilizer management (63.33 per cent), plant protection (57.50 per cent), Water management (55.84 per cent), ratoon management (50.00 per cent) and 43.33 per cent of the Sugarcane growers had medium need of training in set rate. The data presented in Table-2 revealed that, a large majority of sugarcane growers needed high training need in subjects viz,

set treatment (89.83 per cent), ratoon management (84.14 per cent), fertilizer management (81.02 per cent), Water management (74.16 per cent), recommended varieties (70.41 per cent), weed management (68.91 per cent), Plant protection (64.72 per cent), plant population (51.04 per cent), soil type (45.13 per cent) and spacing (38.17 per cent). While, sugarcane growers needs less training in the subjects like planting time (35.14per cent),preparatory tillage (26.33 per cent),transportation (19.17 per cent) and marketing (12.08 per cent).

Table-1: Subject wise training needs of the sugarcane growers

Sr. No.	Practices	Need of training (N=120)		
		Most Needed	Needed	Not Needed
1	Soil Type/ soil testing	0	56 (46.67)	62 (53.33)
2	Varieties	26 (21.67)	78 (65.00)	16 (13.33)
3	Preparatory tillage	0	28 (23.33)	92 (76.67)
4	Planting time	0	18 (15.00)	102 (85.00)
5	Spacing	0	32 (26.67)	88 (73.33)
6	Plant population	10 (08.34)	52 (43.33)	58 (48.33)
7	Sets treatment	94 (78.33)	19(15.83)	07 (05.84)
8	Fertilizer Management	29 (24.17)	76 (63.33)	15 (12.50)
9	Weed management	37 (30.83)	47 (39.17)	36 (30.00)
10	Water management	43 (35.83)	67 (55.84)	10 (08.33)
11	Transportation	0	19 (15.83)	101 (84.17)
12	Marketing	0	20 (16.67)	100 (83.33)
13	Ratoon management	49 (40.83)	60 (50.00)	11 (09.17)

(Figures in parenthesis indicates percentage)

Further it was found that 85.00 per cent of the sugarcane growers had not need of training in sowing time followed by transportation (84.17 per cent) and 83.33 per cent of the sugarcane growers

had not need of training in marketing of sugarcane.

Formula for working out Training Need Index of sugarcane growers of particular subject is as under.

$$\text{Training need index (TNI)} = \frac{\text{Total obtained score}}{\text{Maximum obtainable score}} \times 100$$

Table 2: Subject wise training need index of the Sugarcane growers

Sr. No.	Training subject	Training need index (per cent)	Rank
1	Set treatment	89.83	I
2.	Ratoon management	84.14	II
3.	Fertilizer management	81.02	III
4.	Water management	74.16	IV
5.	Varieties	70.41	V
6.	Weed management	68.91	VI
7.	Plant protection	64.72	VII
8.	Plant population	51.04	VIII
9.	Soil type/ soil testing	45.13	IX
10.	Spacing	38.17	X
11.	Planting time	35.14	XI
12.	Preparatory tillage	26.33	XII
13.	Transportation	19.17	XIII
14.	Marketing	12.08	XIV

Average (mean) Training Need Index or All Over Training Need Index of the sugarcane growers in sugarcane cultivation:

$$\text{Average Training Need Index (ATNI)} = \frac{\text{Sum of the all index}}{\text{Total area}}$$

$$\text{Average Training Need Index} = \frac{760.34}{14} = 54.31 \text{ per cent}$$

Therefore Overall Training Need Index of the respondents is 54.31 per cent.

Further the information pertaining to the suggestions of the sugarcane growers about training requirement on sugarcane crop was collected, tabulated and analyzed. The results are presented in Table - 3.

The data depicted in Table-3 showed that 88.33 per cent of the sugarcane growers required one day training followed by 25.00 per cent and 14.16 per cent of the sugarcane growers required three days and five days of training respectively.

Table-3 : Suggestions of sugarcane growers about training requirement on sugarcane crop

Sr. No.	Particulars	Frequency (N=120)	Per cent
A)	**Duration of training**		
1	One day	106	88.33
2	Three days	30	25.00
3	Five days	17	14.16
B)	**Venue of training**		
1	In own village	109	90.84
2	Krishi Vigyan Kendra	57	47.50
3	Agri. Research Station/ SAU	27	22.20
C)	**Training institute**		
1	Krishi Vigyan Kendra	94	78.33
2	Agril. Technical School	12	10.00
3	State Agril. University	34	28.33
D)	**Training method**		
1	Lecture and Practical combine	110	91.67
2	Group discussion	72	60.00
E)	**Time of training**		
1	Pre-seasonal	73	60.83
2	During the crop growth	47	39.17
F)	**Number of training required**		
1)	One training in year	94	78.33
2)	Two training in year	29	24.16

Most of the sugarcane growers i.e. 91.67 per cent need training through lecture and practical combine while, 60.00 per cent of the sugarcane growers wish to training through group discussion. Most of the (90.84 per cent) of the sugarcane growers wish the place of training should be in their own village while 47.50 per cent of the sugarcane growers were ready to get training at KVK followed by 22.50 per cent at SAU. It is seen from A majority i.e. 78.33 percent of the sugarcane growers suggested one training programme in a year while 24.14 per cent wish to take two training in a year.

CONCLUSION

From above crucial findings, it was observed that sugarcane growers need training in areas like sugarcane set treatment, ratoon management, fertilizer management, recommended varieties, weed management followed by plant protection measures and plant population. Therefore, organizing and conducting training programmes based on felt needs of sugarcane growers would definitely influence and change their behaviour in desire manner. Extension agencies need to orient their training programmes towards the areas as identified in the present study. These sugarcane growers need to be trained by organizing one or two days training programmes at central place (nearest SAU/KVK) before the commencement of every season.

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RESEARCH ARTICLE

Attitude of Farmers towards Farm Mechanization in Agriculture

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ABSTRACT

This study was conducted in Seloo Panchayat Samiti of Wardha district of Maharashtra State. The main objective of the study was to know the attitude of farmers towards farm mechanization in Agriculture with sample size of 100 farmers from ten villages. The respondents were collected with the help of pretested schedule by contacting them personally. Hence, the exploratory design of social research in the present investigation was used. Majority of the respondents were had favourable attitudes towards, improved farm implement save much time and labour (93.00%), followed by statement that, use of improved farm implements increases production (92.00%) and Improved farm implements make a good tilth (85.00%), improved farm implements cuts the weeds and turns them under the soil making the field quite clean (83.00%) and improved farm implements were not costly as compared to their benefits (72.00%). Majority of the respondents were undecided with the statement that, limitations in use of improved farm implements (33.00%), followed by, improved farm implements require very high draft and the bullocks to week to work and improved farm implements are difficult to use as compare to traditional farm implements both having 27.00 per cent, improved farm implements were beneficial only to large cultivators and not to small ones (23.00%), The majority of farmers (68.00 %) shows favourable attitude towards farm mechanization. The variables age, irrigation source, annual income and source of information were positive and significant correlation with attitude of farmers towards farm mechanization in Agriculture.

Key words: Attitude, Farmers, Farm mechanization, Favourable attitude
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MATERIALS AND METHODS

The present study was undertaken in Seloo Panchayat Samiti of Wardha district of Maharashtra State with sample size of 100 farmers from ten villages. The respondents were collected with the help of pretested schedule by contacting them personally. Hence, the use of exploratory design of social research in the present investigation was made. An interview schedule was prepared in view of the objective of the study and data were collected by personal interview from the selected respondents.

RESULTS AND DISCUSSION
Attitude of respondents about farm mechanization

The attitude in terms of reaction of an individual towards a particular technology is a key determinant for its adoption. Although the respondents selected under study possessed the various equipments and machineries, it was thought appropriate to understand their attitude towards mechanization as a whole.

From Table 1, it is revealed that, great majority of the respondents were agreed with the statement that, improved farm implement save much time and labour (93.00%), followed by, use of improved farm implements increases production (92.00%), then, improved farm implements make a good tilth (85.00%), improved farm implements cuts the weeds and turns them under the soil making the field quite clean (83.00%) and improved farm implements were not costly as compared to their benefits (72.00%).

It is also revealed that, majority of the respondents were undecided with the statement

that, limitations in use of improved farm implements (33.00%), followed by improved farm implements require very high draft and the bullocks to week to work and improved farm implements are difficult to use as compare to traditional farm implements both having 27.00 per cent and improved farm implements were beneficial only to large cultivators and not to small ones (23.00%). Similar findings observed by Bite (2009).

It was also observed that majority of the respondents were disagreed with the statement that, improved farm implements were difficult to use as compare to traditional farm implements (52.00%) and improved farm implements renders the soil poor because it turns over the fertile

surface soil to the sub surface and the unfertile subsurface soil to the surface and improved farm implements are beneficial only to big cultivators not to small ones (40.00%).

Respondents has disagree with statement that, improved farm implement save much time and labour (02.00%). majority of the respondents were disagreed with the statement that, improved farm implements were difficult to use as compare to traditional farm implements (52.00%), followed by statement that, improved farm implements renders the soil poor because it turns over the fertile surface soil to the sub surface and the unfertile subsurface soil to the surface and improved farm implements are beneficial only to big cultivators not to small ones (40.00%).

Table- 1. Distribution of respondents according to their statement wise response to their attitude towards farm mechanization.

Sr. No	Statements	Agree		Undecided		Disagree	
		Freq.	%	Freq.	%	Freq.	%
1	Improved farm implement save much time and labour.	93	93.00	05	05.00	02	02.00
2	Improved farm implements cuts the weeds and turns them under the soil making the field quite clean.	83	83.00	10	10.00	07	07.00
3	Improved farm implements are difficult to use as compare to, traditional farm implements.	21	21.00	27	27.00	52	52.00
4	Improved farm implements render the soil poor because it turns over the fertile surface soil to the sub surface and the unfertile subsurface soil to the surface.	44	44.00	16	16.00	40	40.00
5	Improved farm implements make a good tilth.	85	85.00	10	10.00	05	05.00
6	Improved farm implements are beneficial only to big cultivators not to small ones.	40	40.00	23	23.00	37	37.00
7	Improved farm implements are not costly as compared to their benefits.	72	72.00	10	10.00	18	18.00
8	There are limitations in use of improved farm implements.	36	36.00	33	33.00	31	31.00
9	Improved farm implements require very high draft and the bullocks to week work.	52	52.00	27	27.00	21	21.00
10	Use of improved farm implements increases production.	92	92.00	03	03.00	05	05.00

Levels of Attitude

By and large majority of the respondents (68.00 %) had favourable attitude about improved farm Implements and machineries. Jalak (2002) in his finding stated that majority of farmers (74.00%) had medium level attitude The 18.00 per cent of respondents were found to be in high favourable attitude 14.00 per cent respondents had less favourable attitude towards about improved farm implements and machineries of farm mechanization.

Table-2. Distribution of respondents according to their level of attitude about improved farm implements and machineries of farm mechanization

Sr. No.	Attitude level	Respondents (n=100)	
		Frequency	Percentage
1	Less favourable (Up to 46.16)	14	14.00
2	Favourable (46.17 to 85.14)	68	**68.00**
3	Highly favourable (Above 85.14)	18	18.00
	Total	**100**	**100.00**
	Mean =65.65		S.D. = 19.49

Table-3. Correlates and determinants of attitude of respondents about farm mechanization

Sr No	Characteristics	'r' value
1	Age	0.2364^*
2	Education	0.0548^{NS}
3	Size of family	0.1497^{NS}
4	Land holding	0.1265^{NS}
5	Irrigation source	0.1990^*
6	Cropping pattern	0.0395^{NS}
7	Annual income	0.2510^{**}
8	Source of information	0.2494^{**}
9	Risk preference	0.0612^{NS}

NS- Non significant   * Significant at 0.05% level **Significant at 0.01 % level

It could be seen from Table 3, that among the selected variables age, irrigation source, annual income and source of information were positive and significant correlation with attitude of farmers towards farm mechanization. The variables education, size of family, land holding, cropping pattern, and risk preference had non-significant relationship with attitude of farmers towards farm mechanization in agriculture.

CONCLUSION

The finding regarding the attitude of the respondents towards farm mechanization shows that a majority of the respondents had medium to high attitude towards farm mechanization. But some of in them were in low category of attitude. This needs regular dissemination of information about the farm mechanization, its efficiency, benefits through advertisement, publication and result demonstration should be arranged.

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RESEARCH ARTICLE

Knowledge of Ratoon Management Practices by the Sugarcane Growers

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ABSTRACT

The present investigation was conducted with the objective to study knowledge of ratoon management practices by sugarcane growers. To find out the relationship between selected characteristics with knowledge and constraints faced by sugarcane growers and obtain their suggestions. It was found that majority (68.33 percent) Sugarcane growers had medium knowledge level regarding ratoon management practices. Regarding relationship characteristics viz., education, land holding, size of family, annual income, source of information, social participation and cropping pattern had shown positive and significant correlation, while age show the negative correlation with knowledge. The result of multiple regression analysis reported that variables i.e. age, education, annual income, and cropping pattern contributed non-significant towards the variation in knowledge held by the respondents about recommended ratoon management practices. Among the remaining variables age, land holding, size of family, source of information and social participation are significant at 1 per cent level of significance. Total variation of independent variable with dependent variable = 57.56. The respondents faced the constraint of labour shortage at the time of farm operation, lack of knowledge about pest control, high cost of fertilizer, insecticide and lack of knowledge about biological pest control. Majority of the respondents suggested demonstration on white grub pest management on farmer field should be conducted and awareness of trash management practice in ratoon sugarcane is needed.

Key words: Sugarcane growers, ratoon management practices, white grub pest management

MATERIALS AND METHODS

The study was conducted in two tahsil of kolhapur district namely, Karveer, Hatkanangale having maximum area under sugarcane crop. The expost facto design of social research was used for present study. Vilages were selected on the basis of maximum area under sugarcane ratoon crop. Six villages from each tahsil was selected randomly. Ten sugarcane growers were selected from each village by randon sampling method, making a sample size of 120 in total. It was the body of information possessed by sugarcane growers in respect of ratoon management practices. Score '2' was assigned for knowing theexpected answer perfectly, score '1' was assigned for knowing the expected answer partially and score '0' was assigned for lack of knowledge about the expected answer of ratoon management practices.

RESULTS AND DISCUSSION
Knowledge

It refers to the knowledge of the sugarcane growers about the different improved sugarcane ratoon management practices. Knowledge plays a key role in maximization of the profit by adopting new improved technology. The information regarding the knowledge of sugarcane ratoon management practices was collected and analysed. The Classification of sugarcane growers according to their overall knowledge is presented in Table 1.

Table 1. Classification of respondents according to their overall knowledge

Sr. No.	Knowledge	Respondent(N =120)	
		Nos.	%
1	Low (Upto 77)	18	15.00
2	Medium (78 to 90)	82	68.33
3	High (91 and above)	20	16.67
	Total	**120**	**100**

From the Table-1 observed that the majority (68.33 per cent) sugarcane growers had medium knowledge, followed by (16.67 per cent) had high knowledge and only 15.00 per cent had low knowledge. The average score of knowledge is 84.

Relationship of personal and socio-economic characteristics of sugarcane growers with their knowledge.

Table-2. Relationship between the selected independent variables and knowledge

Sr. No.	Independent variables	Knowledge
		Corr. Coefficient (r)
1.	Age	0.0032NS
2.	Education	0.2242*
3.	land holding	0.1884*
4.	Size of family	0.2225*
5.	Annual Income	0.2252*
6.	Source of information	0.4799**
7.	Social participation	0.4451**
8.	Cropping pattern	0.2034*

** = Significant at 1 per cent level of probability

 * = Significant at 5 per cent level of probability

NS = Non-significant

It was observed from table 2 age of sugarcane growers was found non-significant relationship with their knowledge (r=0.0032), whereas education, (r=0.2242), land holding (r=0.1884), family (r=0.2225), annual income (r=0.2252), source of information (r=0.4799), social participation (r=0.4451) and cropping pattern of sugarcane growers highly significant and positively related with their knowledge (r=0.2034).

The result of multiple regression analysis reported in table 3 that the result revealed that variables i.e.

age, education, annual income, and cropping pattern contributed non-significant towards the variation in knowledge held by the respondents about recommended ratoon management practices. Among the remaining variables age, land holding, size of family, source of information and social participation are significant at 1 per cent level of significance. The data further indicated that, all the independent variables taken together, accounted for 57.56 per cent variation in the knowledge of the respondents as could be seen from the calculated 'F' value 6.78.

Table 3 Multiple regression analysis of dependent variable with knowledge

Sr. No.	Independent variable	Coefficient of regression 'b'
1	Age	0.0456 NS
2	Education	-0.0954NS
3	Land holding	0.7755**
4	Size of Family	0.3204**
5	Annual income	-0.090 NS
6	Source of information	0.4198**
7	Social participation	1.4019**
8	Cropping pattern	-0.3311**

R^2=0.3314, F-value = 6.87

* Significant at 5 per cent level of probability

** Significant at 1 per cent level of probability

Constraints faced by the sugarcane growers

The respondents faced the major constraint are lack of knowledge about biological pest control of labour shortage at the time of farm operation. Other constraints are high cost of fertilizer, insecticide, lack of knowledge about biological pest control, Irregular supply of electricity, inconsistency in the market price, lack of knowledge about drip irrigation, unavailability of finance, high labour cost and high cost of micronutrient.

Suggestions: For effective adoption of ratoon management practices the following suggestions were made Majority of the respondents suggested conduct demonstration on white grub pest management on farmer field, awareness of trash management practice in ratoon sugarcane is

needed. resistant variety should be developed in respect of pest and disease control, the timely technical advice should be made by concerned extension personnel, Technical information of latest and advanced technologies should be provided through print and electronic media. mass media for the benefit of sugarcane growers. The farmers knowledge and skills on trash management and use of crowbar for fertilizer application can be increased through method demonstration, crow bar should be provided through Zilla Parishad and Agriculture department.

CONCLUSION

The majority (68.33 per cent) sugarcane growers had medium knowledge, followed by (16.67 per cent) had high knowledge and only 15.00 per cent had low knowledge. The average score of knowledge is 84, variables i.e. age, education, annual income, and cropping pattern contributed non-significant towards the variation in knowledge held by the respondents about recommended ratoon management practices. The respondents faced the major constraint are lack of knowledge about biological pest control of labour shortage at the time of farm operation. Other constraints are high cost of fertilizer, insecticide, lack of knowledge about biological pest control, Irregular supply of electricity. Majority of the respondents suggested conduct demonstration on white grub pest management on farmer field, awareness of trash management practice in ratoon sugarcane is needed. resistant variety should be developed in respect of pest and disease control, the timely technical advice should be made by concerned extension personnel.

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RESEARCH ARTICLE

Factors affecting the Information needs of Soybean Growers

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ABSTRACT

Present study was conducted to access the information needs of soybean growers in three selected Talukas of Dahod district of Gujarat State. Purposively12 villages from three selected Talukas of Dahod district were selected having the maximum area under soybean cultivation. After selecting villages, 10 farmers from each village were selected randomly. Thus, total 120 soybean growing farmers were selected for the study. Out of different thirteen variables education, experience in soybean cultivation, social participation, extension participation, mass media exposure, knowledge, economic motivation, market orientation, scientific orientation and risk orientation were observed negative and significantly related with the information needs of the soybean growers. One variable like age was observed positively non-significant, while two variables like land holding, annual income had negative and non-significantly related with the information needs of the soybean growers. More than two-fifth (41.67 per cent) of the soybean growers had medium level of knowledge regarding improved soybean cultivation practices.

Key words: *Factors affecting Information needs, Soybean growers.*

MATERIALS AND METHODS

The study was conducted on a random sample of 120 soybean growers of twelve purposively selected villages of three purposively selected talukas of Dahod district of Gujarat state. The data thus, collected were classified, tabulated and analyzed in order to make the finding meaningful. The statistical measures, such as percentage, frequency, mean score, correlation and arbitrary method were used in analysis of data.

RESULTS AND DISCUSSION

1) Profile of the soybean growers

The respondents were categorized into different groups on the basis of their some of the important personal, social, economic, communicational and psychological characteristics of the livestock owner were selected and studied the findings are as follows **Age:** The findings indicate that more than two-third (69.17 per cent) of the soybean growers belonged to middle age group, young age (15.83 per cent) and old age (15.00 per cent).

Education: It is evident that slightly less than two-fifth (39.17 per cent) of soybean growers had obtained secondary and higher secondary education, followed by primary level of education (28.33 per cent) and illiterate (15.00 per cent). While, 13.33 per cent of the respondents had college level and above level of education and only 04.17 per cent of them can read write.

Farming Experience: The data revealed that slightly less than half (49.17 per cent) of the soybean growers had 11 to 15 year of farming experience in soybean cultivation, while 27.00 per cent and 23.33 per cent of them had above up to 10 years and above 15 years of experience in soybean cultivation, respectively.

Social Participation: It is that slightly less than two-fifth of soybean growers (38.33 per cent) had membership in one organization followed by 32.50 per cent and 15.83 per cent who had membership in two organizations and no

membership in any organization respectively. While only 10.00 per cent had membership in more than two organizations and very few (03.33 per cent) were position holders.

Land Holding: It can be seen that more than two-fifth of the soybean growers (45.00 per cent) had small size of land holding, followed by 35.83 per cent with marginal land holding and 13.33 per cent with medium size of land holding. While, only 05.83 per cent belonged to large size of land holding i.e. above 4.00 ha.

Annual Income: As observed from the data presented in Table 1 more than two-fifth (45.83 per cent) of the soybean growers had up to Rs. 50,000/- annual income followed by 40.00 per cent 06.67 and 05.83 per cent of them with the annual income Rs. 50,001 to 1,00,000, Rs. 1,50,001 to 2,00,000 and Rs. 1,00,001 to 1,50,000 annual income, respectively. Only 01.67 per cent of them had annual income above Rs. 2,00,000.

Extension Participation: It can be seen that nearly more than two-fifth (43.33 per cent) of the soybean growers had low level of extension participation, followed by 34.17 per cent, 16.67 per cent and 05.83 per cent of them had medium, very low, and high level of extension participation, respectively. While none of them had very high level of extension participation.

Mass Media Exposure: The data indicated that more than two-fifth (46.67 per cent) of the soybean growers had medium level of mass media exposure followed by 23.33 per cent, 20.83 per cent, 07.50 per cent and 01.67 per cent had very low, low, high and very high level of mass media exposure respectively.

Economic Motivation: The data revealed that more than half (55.00 per cent) of the soybean growers belonged to medium economic motivation category followed by 24.17 per cent, 10.00 per cent, 09.17 per cent and 01.66 per cent had low, very low, high and very high level of economic motivation, respectively.

Market Orientation: The data clearly indicated that exactly half (50.00 per cent) soybean growers had medium level of market orientation followed by 25.00 per cent, 21.67 per cent, 01.67 per cent and 01.66 per cent had low, high, very low and very high level of market orientation, respectively.

Scientific Orientation: The results indicate that nearly half (49.33 per cent) of the soybean growers had medium scientific orientation, followed by 27.50 per cent, 14.17 per cent, 09.17 per cent and 00.83 per cent had low, high, very low and very high scientific orientation, respectively.

Risk Orientation: The results indicate that exactly half (50.00 per cent) of the soybean growers had medium risk orientation, followed by 24.16 per cent, 15.83 per cent, 08.33 per cent and 01.67 per cent had low, high, very low and very high risk orientation, respectively.

2) Information needs of Soybean growers: The respondents were grouped according to their overall information needs on the basis of their degree of information needed in relation to all the aspect together. The respondents were categorized into five groups i.e. very high, high, medium, very low and low. The data in this regards are presented in Table 1.

Table-1: Distribution of the soybean growers according to their overall information needs n=120

Sr. No.	Category	Respondents	
		Freq.	%
1	Very Low (00.00 to 20.00 %)	02	01.67
2	Low (20.01 to 40.00 %)	22	18.33
3	Medium (40.01 to 60.00 %)	47	39.17
4	High (60.01 to 80.00 %)	49	40.83
5	Very High (80.01 to 100.00 %)	00	00.00
	Total	**120**	**100.00**

It is clear from Table 1 that more than two-fifth of the soybean growers (40.83 per cent) were fall under high level of information needs group, followed by 39.17 per cent, 18.33 per cent and

01.67 per cent of soybean growers were categorized under medium, low and very low respectively. While none of them were in the category of very high level of information needs group.

3) Factors affecting the Information needs of Soybean Growers- With a view to understand the nature of relationship between independent and dependent variable, the data were subjected to correlation co-efficient and presented in Table-2

Table 2: Factors affecting the Information needs of Soybean Growers

Sr. No.	Profile of the soybean growers	Correlation coefficient (' r ' value)
1.	Age	0.1054NS
2.	Education	-0.4351**
3.	Experience in soybean cultivation	-0.2855**
4.	Social participation	-0.2853**
5.	Land Holding	-0.1700NS
6.	Annual income	-0.1765NS
7.	Extension participation	-0.3105**
8.	Mass media exposure	-0.2181*
9.	Knowledge	-0.8123**
10	Economic motivation	-0.3114**
11	Market orientation	-0.3166**
12	Scientific orientation	-0.2899**
13	Risk orientation	-0.3059**

NS = non-significant at 0.05 level * = significant at 0.05 level
** = significant at 0.01 level

Data revealed that out of thirteen variables nine variables *viz.*, education, experience in soybean cultivation, social participation, extension participation, mass media exposure, knowledge, economic motivation, market orientation, scientific orientation and risk orientation were observed negative and significantly related with the information needs of the soybean growers. One variable like age was observed positively non-significant, while two variables like land holding, annual income had negative and non-significantly related with the information needs of the soybean growers.

CONCLUSION

According to their overall information needs more than two-fifth of the soybean growers (40.83 per cent) were fall under high level of information needs group, followed by 39.17 per cent, 18.33 per cent and 01.67 per cent of soybean growers were categorized under medium, low and very low respectively. While none of them were in the category of very high level of information needs group. Nine variables *viz.*, education, experience in soybean cultivation, social participation, extension participation, mass media exposure, knowledge, economic motivation, market orientation, scientific orientation and risk orientation were observed negative and significantly related with the information needs of the soybean growers. One variable like age was observed positively non-significant, while two variables like land holding, annual income had negative and non-significantly related with the information needs of the soybean growers.

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RESEARCH ARTICLE

Economic Empowerment of Women through Self Help Groups (SHGs)

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ABSTRACT

The present was conducted in twelve villages of Latur district of Marathwada Region of Maharashtra State to assess the economic empowerment of women through SHG.A multistage random sampling technique was used to select tahsils , villages and members. The sample comprised to 120 women members. Economic empowerment of SHG was measured by considering the random activities and computing Economic Empowerment Index (EEI). It was towards that majority of the respondents (63.34 per cent) belonged to medium level also followed by low and high category of economic empowerment. It was also observed that age , education , occupation , annual income , social participation , use of sources of information by women members were positively and highly significantly related with economic empowerment of women through SHG. Realizing the importance of the empowerment of women through SHG.

Key Words: Women SHG, Empowerment, demographic characteristics

MATERIAL AND METHODS

The present study was conducted in randomly selected Renapur and Chakur tahsils of Latur district in Marthwada Region of Maharashtra State. (India) From each tahsils six villages were randomly selected and from each village, One SHG was randomly selected by lottery method and from each SHG, 10 members were randomly selected. Thus the sample comprised of 120 respondents. The data were collected personally interviewing with the help of pre-structured schedule. The activities considered for the economic empowerment were based on the scale developed by Tayde and Chole (2006) with some modification. Economic empowerment was measured with the help of economic empowerment index (EEI) by using the formula:

Economic Empowerment Index (EEI) =

$$\frac{\text{Obtained Score}}{\text{Maximum Possible Scores}} \times 100$$

RESULTS AND DISSCUSSION

1. Demographic characteristics of women It was noticed that majority (67.50 per cent) of respondents were from middle age group, educated up to middle school level (30.84 per

cent) , 30.84 per cent of them were from Scheduled caste (SC) category while, 75.83 per cent of them were from medium size of family. As regards to occupation, 43.34 per cent of the respondents were engaged in house work + agril. / dairy business. Majority (61.66 per cent) of the respondents were belonged to low annual income category and 63.33 per cent of them had low social participation , 57.50 per cent of them were having medium use of sources of information and 54.16 per cent were from nuclear family type.

2. Economic empowerment of women through SHGs

Table 1: Distribution of respondents on the basis of their economic empowerment through SHGs

Economic Empowerment	Number	Per cent
Low (< 38)	26	21.66
Medium (38 to 58)	76	63.34
High (>58)	18	15.00

The data presented in Table 1 reveals that majority (63.34 per cent) of the respondents were in medium economic empowerment category followed by 21.66 per cent and 15.00 per cent in low and high empowerment respectively.

3. Relationship of demographic characteristics of women with the economic empowerment through SHGs

Table- 2: Relationship between demographic characteristics of women and their economic empowerment through SHGs

Sr. No.	Independent variables	Correlation Coefficient 'r'	t value
1	Age	0.719	11.237**
2	Education	0.707	10.858**
3	Caste	-0.056	-0.608**
4	Family size	-0.756	-12.546**
5	Occupation	0.712	11.016**
6	Annual income	0.622	8.626**
7	Source of information	0.630	8.812**
8	Use of social participation	0.861	10.892**
9	Type of family	0.017	0.1846NS

** Significant at 1 per cent level.   NS- Non Significant.

It could be noticed from Table-2 that independent variables like age, education, occupation, annual income, social participation, use of sources of information of the respondents were having positive and highly significant relationship with economic empowerment of women through SHGs. Caste and family size were negatively significant with economic empowerment through SHGs. Whereas, type of family could not establish any relationship with economic empowerment of women through SHGs.

4. Multiple regression analysis

A perusal of data in Table 3 vividly present the fact that the 'F' value was significant and coefficient of determination was 0.935 meaning that 93.50 per cent variation in the economic empowerment of women through SHGs was explained by the set of selected nine independent variables. The unexplained variation of 6.50 per cent may be attributed to the factors not included in the study. Further, it could concluded that out of nine variables, four variables, viz., education, occupation, social participation and use of sources of information had positive and highly significant contribution to the economic empowerment of women through SHGs while age was non-significant and caste and family size, annual income and type of family was negatively significant with economic empowerment of women through SHGs.

Table 3 : Multiple regression analysis

Sr No	Independent variable	Re. Coeff. B(i) value	S.E.	't' value
1	Age	-0.006	0.011	0.005 NS
2	Education	3.135	0.050	6.241**
3	Caste	-0.030	0.017	-1.734*
4	Family size	-1.893	0.025	-7.397*
5	Occupation	0.091	0.059	0.015*
6	Annual income	-0.038	0.009	-4.097*
7	Social participation	0.086	0.049	1.744**
8	Sources of information	2.047	0.020	9.908**
9	Type of family	-3.138	0.081	-3.847*

** Significant at 1 per cent level.   * Significant at 5 per cent level.

CONCLUSION

It was observed that age , education , occupation , annual income , social participation , use of sources of information by women members were positively and highly significantly related with economic empowerment of women through SHG. The findings of the present study conclude that economic empowerment of women through SHGs was to the extent of medium.

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RESEARCH ARTICLE

Profiles of Victims in Farmer's Suicide Case

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ABSTRACT

The present study was observed with the objective of to know personal, socio-economic, psychological and situational characteristics of the selected victims. The case study method of social research was used in the present investigation. The data from victims (12) in Nanded and Hingoli district of Maharashtra were collected with help of interview schedule. It was revealed that majority of the victims (6) were semi medium farmers having land holding up to 2.01 to 4.00 ha. All the respondents except one were found that to have no subsidiary occupation. Maximum number of victims (10) had annual income up to Rs. 25000/-. Majority of victims were found to be shouldering responsibility of health treatment of family members followed by responsibility of children's education and remaining victims performed responsibility of marriages of their daughters. Almost all the victims were indebted and debt ranges from minimal of Rs.37000/- to max 1, 72,660.Suicide of farmers was not a random or pointless act in study area on the country, it was adopted by the deceased farmers to escape from various problems or a crisis that were invariably causing intense suffering to them. The study also concluded that causes of suicide were varying from case of case but the main reasons behind the all causes were non profitable farming business that leads to indebtedness, non-sustainable finical and social web.

Keywords*: Suicide, situational characteristics, non-sustainable finical and social web.*

MATERIALS AND METHODS

The case study method of social research was used in the present investigation. The present study was undertaken in Nanded and Hingoli district of Maharastra. The victims were selected from Naigaon Khairgaon, Kandhar, Loha tahsils of Nanded district and Hingoli and Aundha Nagnath tahsils of Hingoli district of Marathwada region of Maharashtra state. Six victims were selected from each district. Thus 12 victims were selected on for the study. Among these three years, 2007 year was selected in which maximum suicide occurred. Data were collected by personally interviewing the victim's households with the help of pre-tested and structured interview schedule. In addition to these discussions, personal observations, key informants, time line study for historical perspectives etc. were some important techniques used for data collection. the basis of randomly possessed from list of victims who committed

suicide during January 2007 to December 2007. As a first stage families of farmers who had committed suicide during January 2007 to December 2009 were considered

RESULTS AND DISCUSSION
Personal, socio-economic, psychological and situational characteristics of the selected victims

Age was an important factor determining suicide rates of farmers. It was found that majority victims were under young age category (6) and its equal number of the victims was middle (3) and old (3). It was revealed that all victims were (12) married. One fourth of the members of victims were illiterate (3). Equal number of the victims educated upto middle school (3) and two up to higher secondary school (3) two primary school, remaining one upto college level. Majority of the victims (7) hailed from medium size family having 4 to 6 member, followed by three victims having

large family size (7 to 9 members) and equal number of victims with small (1) and very large family size(1). Majority of victims (7) were found in joint families and remaining five victims had nuclear family. Farming experiences play an important role in bearing various risks in farming business. It is assumed that the farming experience increase the risk bearing capacity of an individual in his farming. It was observed that (4)

victims had farming experience upto 10 years and its equal number of victims had farming experience between 21 to 30 year (4 victims), to victim's between 11 to 20 of farming experience, while two victims above 30 year farming experience. All victims except two were found to participate more or less in some social activity. However, this needs further probing (explain how this social participation was false).

1. Personal characteristics

Table 1:- Personal characteristics of selected victims

Victim's code No.	Education	Age (year)	Marital status	Family type	Family member	Farming experience	Social participation
1.	12th Std.	35 (young)	Married	Joint	5 (Medium)	10	Yes
2.	12th Std.	25 (young)	Married	Nuclear	3 (small)	5	No
3.	Illiterate	50 (middle)	Married	Nuclear	8 (Large)	30	Yes
4.	Illiterate	65 (old)	Married	Nuclear	4 (medium)	45	Yes
5.	12th Std.	35 (young)	Married	Joint	7 (Large)	15	Yes
6.	B.A.	35 (young)	Married	Joint	6 (Medium)	10	Yes
7.	7th Std	42 (middle)	Married	Joint	6 (Medium)	22	Yes
8.	2th Std	50 (middle)	Married	Joint	5 (Medium)	30	Yes
9.	8th Std	35 (young)	Married	Nuclear	5 (Medium)	15	Yes
10.	4th Std	55 (old)	Married	Joint	10 (Very large)	30	No
11.	7th Std.	35 (young)	Married	Joint	7 (Large)	10	Yes
12.	Illiterate	55 (old)	Married	Nuclear	5 (Medium)	40	Yes

2. Socio-economic characteristics

Table 2:--Brief information of the selected victims about land and occupation

Victim's code No.	Land holding (ha)	Type of house	Occupation		Source of irrigation
			Main	Supplementary	
1.	3.4	Soil	farming	No	Well
2.	1.49	Cement	farming	No	No
3.	1.4	Soil	farming	Wages	Well
4.	2.2	Soil	farming	Wages	No
5.	3.2	Cement	farming	No	Tube well
6.	0.8	Soil	farming	Work on contract basis	No
7.	2.4	Soil	farming	Wages	No
8.	2.8	Soil	farming	Wages	Well
9.	2.0	Soil	farming	No	No
10.	1.9	Soil	farming	Wages	Tube well
11.	2.2	Soil	farming	Wages	River
12.	0.8	Soil	farming	Wages	River

It is assumed that land owned by an individual explains his ability to bear risk, to adopt innovations and to utilize the land for cultivation of variety of crops. The case studies indicate that majority of the victims (6) had semi medium land holding between 2.01 to 4.00 ha followed by four victims were small farmer possessing land

between 1.01 to 2.00 ha whereas (2) victims were marginal land holders (upto 1.00 ha). Subsidiary occupation is an important indicator of socio-economic position of an individual as it is linked with income. Maximum number of victims (11) were found to have no subsidiary occupation but were engaged in wage earning. Majority of victims (10) were living in Kachha type of house.

3. Situational characteristics

Income is a major determinant of the economic status of an individual. Every individual's style of living is decided to a great extent by his income. Low income creates difficulty for an individual to manage affairs of the family. Such people are discouraged and cannot perform their functions properly (Madan, 1980). A great majority of the victims (10) had annual income upto Rs. 25000. Whereas, two victims had annual income between Rs. 25001 to 50000/-. The average annual income of the victims households was Rs. 21,708.33/-. So far as livestock population is concerned it was observed that majority of victims (8) did not have any livestock population.

Crops production and productivity depends on a number of situational factors, out of which type of land is one of the important determinants. The data regarding the type of land of the selected victims revealed that equal numbers of victims (6) were having light type of land. And 6 victims were having medium type of land.

Table 3:--Brief information of the selected victims about annual income

Victim's code No.	Annual income (Rs.)			Total consumption per year (Rs)	Type of land
	Farm	Supplementary	Total		
1.	23,500	--	23,500	62,000	Light
2.	14,800	--	14,800	40,000	Light
3.	6,000	4,000	10,000	48,000	Medium
4.	10,800	2,200	13,000	33,000	Medium
5.	18,000	--	18,000	92,000	Medium
6.	8,900	30,000	38,900	1,18,000	Light
7.	19,700	2,000	21,700	23,860	Light
8.	25,000	2,000	27,000	34,000	Light
9.	14,600	--	14,600	55,000	Light
10.	22,000	3,000	25,000	80,000	Medium
11.	21,400	15,000	36,400	58,000	Medium
12.	13,600	4,000	17,600	1,10,000	Medium

4. Socio-psychological characteristics

Table 4:--Brief information of the selected victims about source of loan and victims problem

Victim's code No.	Source of loans (Rs.)			Victims habits	Victims health	Family health	Family dispute
	Institutional	Non Institutional	Total				
1.	32,666	1,40,000	1,72,666	No	Good	Fathers illness	No
2.	15,000	22,000	37,000	No	Good	Mothers illness	No
3.	61,702	60,000	1,21,702	Tobacco chewing	Good	Good	No
4.	54,370	60,000	1,14,370	Tobacco chewing	Good	Good	No
5.	25,000	30,000	55,000	No	Good	Good	No
6.	19,594	1,00,000	1,19,594	No	Good	Sons Illness	No
7.	11,900	40,000	51,900	No	Good	Good	No
8.	12,000	40,000	52,000	No	Good	Good	No
9.	10,164	30,000	40,164	No	Good	Sons Illness	Occasional
10.	39,153	50,000	89,153	Drinking alcohol and Gambling	Cancer	Good	No
11.	22,000	90,000	1,12,000	No	Good	Cancer problem to his wife	No
12.	10,000	90,000	1,00,000	No	Good	Good	No

Family responsibilities of individual victims namely children's education, daughter/sister marriage, treatment of family member for Maximum numbers of victims (9) did not have any bad habit. Two victims were observed tobacco chewing and smoking Bidi habit whereas only one was found to be drinking Alcohol and Gambling habit. Out of total twelve victims (11) were free from health problem and one victim had cancer problem. Majority of victims (7) did not have family member's health problem. Whereas five victims family member's had health problem. Majority of victims (11) were free from any domestic dispute with their family members. Whereas, (1) victims were having dispute/quarrel with family members. prolonged illness. Majority of victims (5) had the responsibility of health treatment of family members; followed by (4) victims had responsibility of children's education. And three victims performed responsibility of marriages of their daughters. Almost all the victims were indebted and debt ranges from a minimum of Rs.37,000/- to max. Rs.1,72,660/-

CONCLUSION

It was concluded from the study that majority six victims were under young age category. All victims were married. It was observed from study that (3) victims were illiterate, one up to college level and rests of them were educated below 12th standards. Majority of victims (7) were living in medium size family having four to six members. Followed by three victims having large family size (7 to 9 members) majority of victims (7) were having joint type of families and remaining (5) victims had nuclear families. . Almost all the victims were indebted and debt ranges from minimal of Rs.37000/- to max 1,72,660/- Majority of victims (9) were free from habit whereas only one victim was reported to have alcohol consumption habit. Majority of victims (11) were free from any domestic dispute with their family member.

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RESEARCH ARTICLE

Yield gap analysis through Field Demonstration in Wheat crop

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ABSTRACT

Wheat (Triticum aestivum) is the second most important winter cereal crop in India after rice contributing substantially to the national food security by providing more than 50 per cent of the calories to the people who mainly depend on it. In historical perspective, India had made spectacular advancement in productivity and sustainability of wheat and wheat based cropping system. The scenario of the past ten years has clearly indicated that the wheat production in the country has soared ahead despite area remaining the same. The wheat programme has released 399 wheat varieties, comprising bread wheat (335), durum (54),dicoccum (5) and triticale (5) for cultivation under different production conditions in all the wheat growing zones. (Anonymous, 2012) Wheat is an important food crop of Maharashtra state. Nasik district has been considered as productively potential region of wheat crop due to assured irrigation facilities and favourable soil and climate conditions. However, there is still a wide gap between the productivity of Maharashtra and north Indian states. Also the gap is observed between potential and the actual production realized by the farmers. This may be due to partial adoption of recommended package of practices by the wheat growers. Technology gap is a major problem in increasing wheat production in Nasik district of Maharashtra State. So far, no systematic efforts were made to study the technological gap existing in various components of wheat cultivation.

Keywords*: Package of practices, Technology gap, Productivity and sustainability of wheat.*

MATERIALS AND METHODS

The study was carried out by District Extension Centre, Agricultural Research Station, Niphad, Nasik during *rabi* season from 2011-12 to 2013-14 (three consecutive years) in the farmers field of nine adopted villages *viz.,*Varhedarna, Lalpadi, Jalgaon and Kurudgaon from Niphad tehsil and Bhagurdi, Vanjari, Golakhal, Abhona and Dahyane from Kalwan tehsil of Nasik district. During three years of study, area of 110 ha was covered with plot size of 0.4 ha each under field demonstration with active participation of 275 farmers. Before conducting Field demonstrations, a list of farmers was prepared from group meeting and specific skill training was given to the selected farmers regarding cultivation and package of practices of wheat. The difference between demonstration package and existing farmers' practices is given in Table 1. In general the soils under study were medium black in texture with a pH ranging between 6.8 to 8.0. The available nitrogen, phosphorous and potassium varied between 100-272, 26-60, 150-630 Kg/ha, respectively. In deficient whether micro nutrients were given to farmers. In demonstration plots, use of certified/truthful seeds of improved varieties, timely weeding, need based of pesticides as well as balanced fertilization, irrigation were emphasized and comparison has been made with the existing practices. (Table1). The traditional practices were maintained in case of local check. The data output collected from both Field

demonstration plots as well as control plots, the extension gap, technological gap, technological index along with the benefit-cost ratio were calculated. (Samui *et al.*, 2000) as given below.

Technology gap = Potential yield- Demonstration yield

Extension gap = Demonstration yield- Farmers yield

$$\text{Technology index} = \frac{\text{Potential yield - Demonstration yield}}{\text{Potential yield}}$$

RESULTS AND DISCUSSION

Table 1: Comparison between improved production technology and farmers practices for wheat demonstrations

Sr. No.	Particulars	Improved Production Technology	Farmer practice
1	Farming situation	Irrigated	Irrigated
2	Variety	Tapovan (NIAW - 917), NIAW- 34 Trimbak (NIAW - 301)	Lok-1, Nirmal-144, Mohan Wonder, Ajit-102
3	Time of sowing	Timely sown : 1-15 November Late sown : 1-10 December	October to Januray
4	Method of sowing	Seed drill	Seed drill/broadcasting
5	Seed treatment	Capton/Thirum, 2-3 g/kg of seed and Azotobactor + PSB 250 gm each/ 10 kg of seed.	Without seed treatment
6	Seed rate	Timely sown :100-110 kg/ha Late sown :120-125 kg/ha	130-140 kg/ha, Irrespective of period of sowing
7	Fertilizer dose	Timely sown: 120:60:40 kg NPK/ha Late sown: 90:60:40 kg NPK/ha	NPK -100-80-00 kg/ha. and injudicious use of fertilizer
8	Plant protection	i) Spraying of Thiamethoxam 25 WG @50g in 500 litres of water/ha to control the aphids. ii) Two sprays of Dithane M-45 (0.3%) @ 1500 g in 500 litres of water/ha to control of wheat rust. iii) Two sprays of Copper Oxychloride + Mankozeb @ 1000g each in 500 lit.of water/ha. at an interval of 15 days to control of wheat blight syndrome.	Injudicious use of pesticides and fungicides
9	Weed management	Mechanical – One hoeing and two hand weeding as per intensity of weeds. Chemical- Spraying of Metsulphuron Methyl (20%), 20 gm per hectare in 800 lit water after 35 DAS.	No weeding

Table 2: Productivity, technology gap, extension gap and technology index in wheat under Field Demonstration

Sr. no	Year	Area (ha)	No. of Farmers	Seed yield (q /ha)			% increase over control	Techn-ology gap (q/ha)	Exten-sion gap (q/ha)	Tech-nology Index (%)	B. C. ratio	
				Pote ntial	Demons tration	Cont-rol					Demon-stration	Local check
1	2011-12	30	75	50	48.01	45.04	6.59	1.99	2.97	3.98	3.46	3.42
2	2012-13	40	100	50	45.69	39.35	16.11	4.31	6.34	8.62	4.66	4.18
3	2013-14	40	100	50	41.50	32.20	28.88	8.50	9.30	17.00	2.19	1.25
	Average	110	275		45.07	38.86	17.19	4.93	6.20	9.87	3.44	2.95

The data showed in Table 2 revealed that, the yield of wheat fluctuated successively over the years in demonstration plot. The maximum yield (48.01 q/ha) was reported during the year 2011-12, minimum yield (41.50 q/ha) was reported in the year 2013-14 and the average yield of three year (45.07 q/ha) was reported over control (38.86 q/ha). During three years of study, the increase in per cent yield over control ranged between 6.59 to 28.88. The data indicated the positive effect of field demonstration over the existing practices towards increasing the yield of wheat in Nasik

district of Maharashtra. B. C. ratio was recorded also higher under demonstration than the control during all the year. The extension gap ranged between 2.97 to 9.30 q/ha. The technological gap i.e. the difference between potential yield and yield of demonstration plot were 1.99, 4.31 and 8.50 q/ha during the year 2011-12, 2012-13 and 2013-14, respectively. The average technology gap in all the three years was 4.93 q/ha. Technology gap imply researchable issues for realization of potential yield, while the extension gap imply what can be achieved by the transfer of existing technologies. The technological index revealed the feasibility of the demonstration technology. As such variation in technology index (3.98 to 17.00 %) during the study period in certain area may be attributed to variation in the soil fertility condition, pest-diseases attack, non-availability and poor quality of irrigation water and weather conditions.

Reasons of low productivity of wheat at farmer's fields:

1. Optimum sowing time is not followed. 2. Sometimes, non-availability of quality seed or improved variety seed and farmers go for the local seed in hand. 3. More than 90 percent of farmers not maintain the plant population at field. 4. Lack of popularization of seed cum fertilizer drill for sowing. 5. Use of inadequate and imbalance dose of fertilizers especially the phosphatic fertilizers by farmers does not make possible to fetch potential yield. 6. The incidence of insect, pest and disease is not up to a great extent in wheat but sometimes the problem of aphids (*Lipaphis errysimi*) cause substantial loss in the wheat crop

and farmers do not adopt the chemical control measures. 7. Mechanical weed control is costly and chemical control is quite uncommon in this region.

Specific constraints with Marginal / Sub marginal farmers:

a) **Small Holding:** The adoption of well proven technology is constrained due to small size of holding and poor farm resources. Small and marginal farmers have less capability to take risk and do not dare to invest in the costly inputs due to high risk and the purchase capacity of small farmer is also very low.

b) **Farm Implements and Tools:** Traditional implements and tools are still in practice due to small holdings which have poor working efficiency. The lack of simple modern tools for small holdings also hinders the adoption of improved technologies.

CONCLUSION

On the basis of the result obtained in present study, it can be concluded that use of improved methods of wheat cultivation can reduced the technology gap to a considerable extent and thus leading to increase productivity of wheat in the district. Extension gap ranged between 2.97 to 9.30 q/ha emphasis the need to educate the farmers through various means like village level training, on campus training, method demonstration, front line demonstration, etc. Technology index which shows the feasibility of the technology demonstrated has depicted good performance of the intervention.

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RESEARCH ARTICLE

Communication on Career in Extension Education: A Prologue

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ABSTRACT

This paper is based on a study at Banaras Hindu University entitled Career Dynamics in Extension Education. The study was carried out among 100 respondents from different agricultural institutions. It was mainly concerned to know where the students of Extension Education/ Agricultural Sciences can find their jobs/ placements. Owing to the research the paper presents the different sectors which offer jobs/ placements to the students of Extension Education. Highlights the different branches of Extension Education and focuses the subjects taught in Extension Education. Enlists the major institutions which offer the courses in Extension Education at Post graduate as well as Doctoral research levels.

Keywords: Extension Education, career, job placements, scope.

MATERIALS AND METHODS

The study was conducted at Banaras Hindu University. Non-Random sampling design methodology was used and the respondents of the study were selected through convenience sampling method from different Agricultural institutions like NDRI, IARI, IVRI, ICAR, ANAND Agricultural University, and VBSP University of India who responded to the questionnaire of the author. In this study 180 questionnaires among the respondents of different institutions were distributed and only 100responses were received. Out of 100 respondents 60 respondents were professionals, including 21 from extension education and 39 from non-extension education field. The rest 40 respondents of the sample includes 16 students from the extension education and 24 research scholars from non- extension disciplines. The measurements Frequencies and percentage were used to draw suitable conclusions.

RESULTS AND DISCUSSION

The following findings was collected for general reference.

Branches of Extension Education

1. Agricultural Extension Education	**6.** Fisheries Extension Education
2. Animal Husbandry & Dairy Extension Education	**7.** Home Science Extension Education
3. Veterinary/livestock Extension Education	**8.** Medical Extension Education/ community medicine
4. Agricultural Engineering Extension	**9.** Industrial Extension Education
5. Forestry Extension Education	

(Source:Education&Communication for Development, Dahama and Bhatnagar 2005.)

Scope & Importance

There are government, private and some consultancy services one can opt for job as per his qualification and experience. Among government services there are posts of Lecturer/ Assistant Professor in the SAUs, Scientist in the ICAR/CSIR Institutes, DRDO etc. Training Associates (TA) in Krishi Vigyan Kendras (KVKs) run by selected ICAR institutes, SAUs, State Departments etc. Besides, temporary job as a JRF/SRF Research Associate/ Project Associates etc. in various ICAR, CSIR and DRDO sponsored research projects under ICAR, CSIR institutes, SAUs etc. are also available. A large number of

national and international NGOs engaged in rural development and related R&D activities recruit Extension personnel in different positions depending on the educational qualifications and experiences. Many KVKs run by several NGOs employ Extension Educationists as Scientist. Presently, opportunity to work as a counselor or consultant is limited. Nevertheless, enough scope will be there for Extensionists to explore and exploit the opportunities in the area of self-employment in the future.

Courses taught

1. Rural Sociology
2. Educational Psychology
3. Development Perspectives of Extension Education
4. Dimensions of Agricultural
5. Development communication and information management
6. Diffusion and adoption of innovations
7. Entrepreneurship Development and Communication Skills
8. Extension Methodologies for Transfer of Agricultural Technology
9. Research methods in behavioral sciences
10. E-extension
11. Entrepreneurship development and management in extension
12. Human resource development

Institutes / Universities offering degree in Extension Education:

The Agricultural Universities are major partners in growth & development of Agricultural Research and Education under National Agricultural Research System. The following branches of the Extension Education such as Agricultural Extension, Veterinary/Animal Husbandry Extension, Diary Extension, Fishery Extension, Home Science Extension, etc. fall within the purview of higher agricultural education with emphasis on respective technical areas. In India the subject is taught in masters and doctoral level. With a few exceptions, all the State Agricultural Universities (SAUs) and four National Institute (NDRI, IVRI, IARI and CIFE)/ Deemed Universities (DUs) of Indian Council

Agricultural Research (ICAR) offer master's degree for two years and doctoral degree in the branches of Extension Education. It has been observed that the products from Extension Education have been placed in highly remunerative jobs.

List of Agricultural Universities offering Masters/Doctoral degree in Extension Education

Sl. No.	Name of the Universities
1.	Acharya NG Ranga Agricultural University, Hyderabad
2.	Anand Agricultural University, Anand, Gujarat
3.	Assam Agricultural University, Jorhat.
4.	Bidhan Chandra Krishi Viswavidyalaya, West Bengal
5.	Bihar Agricultural University, Sabour, Bhagalpur, Bihar.
6.	Birsa Agricultural University, Ranchi
7.	Central Agricultural University
8.	Chandra Shekar Azad University of Agriculture & Technology, Kanpur
9.	Chaudhary Charan Singh Haryana Agricultural University
10.	Chhattisgarh KamdhenuVishwavidyalaya
11.	DrBalasaheb Sawant KonkanKrishiVidyapeeth
12.	Dr. Panjabrao Deshmukh Krishi Vidyapeeth
13.	Dr Yashwant Singh Parmar University of Horticulture & Forestry
14.	Dr. YSR Horticultural University
15.	Govind Ballabh Pant University of Agriculture & Technology
16.	Guru Angad Dev Veterinary and Animal Science University
17.	Indira Gandhi Krishi Vishwavidyalaya
18.	Jawaharlal Nehru KrishiViswavidyalaya
19.	Junagadh Agricultural University, Junagadh
20.	Karnataka Veterinary, Animal and Fisheries Sciences University
21.	Kerala Agricultural University, Kerala
22.	Kerala University of Fisheries & Ocean Studies
23.	Maharana Pratap Univ. of Agriculture & Technology
24.	Mahatma Phule KrishiVidyapeeth
25.	ManyavarShriKanshiramJi University of Agriculture and Technology
26.	Marathwada Agricultural University
27.	Narendra Deva University of Agriculture & Technology, Faizabad
28.	Navsari Agricultural University, Navsari, Gujarat.

Sl. No.	Name of the Universities
29.	Orissa Univ. of Agriculture & Technology, Orissa
30.	Punjab Agricultural University, Ludhiana
31.	Rajasthan University of Veterinary and Animal Sciences
32.	Rajendra Agricultural University, Samastipur, Bihar.
33.	Rajmata Vijayraje SciendiaKrishi Vishwa Vidyalaya
34.	Sardar Vallabhbhai Patel University of Agriculture and Technology
35.	Sardarkrushinagar- Dantiwada Agricultural University
36.	Sher-E-Kashmir Univ of Agricultural Sciences & Technology of Kashmir
37.	Swami Keshwanand Rajasthan Agricultural University
38.	Tamil Nadu Agricultural University, Tamilnadu
39.	Tamil Nadu Fisheries University
40.	University of Agricultural Sciences, Bangalore
41.	University of Agricultural Sciences, Dharwad
42.	University of Agricultural Sciences, Shimoga
43.	Uttar Banga Krishi Viswavidyalaya
44.	Institute of Agriculture, Vishwa Bharti Central University, West Bengal
45.	Indian Agricultural Research Institute, PUSA, New Delhi
46.	Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.
47.	National Dairy Research Institute, Karnal
48.	Indian Veterinary Research Institute, Bareilly
49.	Allahabad Agricultural Deemed Institute, Allahabad
50.	Jamia Milia Islamia, New Delhi.
51.	Annamalai University, Annamalai Nagar.

(This List is indicative only)

Placement opportunities On the basis of findings it can be said that students of Extension Education may be placed in different sectors / areas as under:

S. No.	Sectors of Employment
1	ICAR
2	Cooperatives
3	NGOs
4	Banks (Rural Development Officers/ Agriculture officer/ Agricultural Extension Officer)
5	DRDO (Extension Scientist)
6	KVKs (SMS)
7	SAUs (Asst./ Assoc. Professors), Agricultural Education Teacher at Higher Secondary level
8	NDDB (Research Scientists/ Extension Officers, etc.)
9	Education Officer, (Mini. of Labour& Employment, GOI), Education Specialist
10	Directorate of Extension Education, (Govt. of India)
11	Planning Commission (Rural Advisor)
12	State Govt. Departments (Extension Officers)
13	IGNOU (Academicians)
14	Reliance Life Sciences/ Reliance Industries (Research Scientist)
15	Research Associate- FAO
16	ICRISAT (Program Officer)
18	International Livestock Research Institute (Research scientist)
19	Asst. Prof. in Social Science departments of general college/universities under UGC
20	NIRD, Hyderabad
21	IIMs (Rural Development, Humanities, etc.)
22	MANAGE, Hyderabad (Extension Experts)
23	All state line departments like Agril, Animal Sc., Fisheries, etc.
24	HRD/ Marketing head of Agro-processing industries (Insecticides/Pesticides/Fertilizer Industries)
25	KRIBHCO/IFFCO- Marketing Specialist
26	Commodity boards(Coffee board,Tea board, etc.)
27	Agri-Business Communicator- Private Agri-business firms (Fertilizer/ seeds/ processing industries, etc.)
28	IIFM (Indian Institute of Forest Management)
29	IIPM (Indian Institute of Plantation Management
30	Central government department officer (Food Corporation of India, Central Warehouse Corporation, Plant Protection Boards etc.), Family and Consumer Sciences Agent
31	Consulting agencies (event manager, program planner)
32	Multinational software companies (research associate, agriculture package developer, analyst)
33	Media agencies (news editor, media manager, radio jockey, agriculture journalist)
34	Public Relations Director at HR department, Agricultural Consulting Companies
35	4-H Specialists/ Extension Specialists at State 4-H Office (Cooperative Extension) in the context of USA

As per the evidence collected in the study it was revealed that the opportunity for placement is found more in KVKs, Banks, Media Agencies, Private Agri. Business Firms, Co-operative, Consulting Agencies, SAUs, Central Government Department Officers, IGNOU, ICAR and NDDB, respectively.

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RESEARCH ARTICLE

Constraints Perceived by the Farmers in Adoption of Recommended Coriander Production Technology

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ABSTRACT

Present study was conducted in Baran district which was selected purposively. The Baran district consists of eight tehsils. Out of which two tehsils namely Atru and Chhipabrod were selected by randomlyAtru and Chhipabrod tehsils comprises of 34 and 29 gram panchayats respectively. Among these two gram panchayats from Atru tehsil and two gram panchayats from Chhipabrod tehsil, were selected by randomly. Eight villages were selected from the selected four gram panchayats by using simple random sampling technique. A sample of 120 coriander growers were selected from these selected villages by using simple random sampling with proportion to size of sample. Among the four constraints related to input, was the major constraints perceived by the coriander growers. This constraint was followed by constraints related to marketing, miscellaneous. Least perceived constraints were technical constraints.The overall constraints faced by the respondents were 52.30 MPS.

Key Words*: Input constraints, Technical constraints, Marketing constraints, Miscellaneous constraints and Coriander.*

MATERIALS AND METHODS

A sample of 120 coriander growers were selected from these selected villages by using simple random sampling with proportion to size of sample inBaran district of Rajasthan. The constraints that hinders the adoption of recommended coriander production technology, a separate schedule was prepared for study. All possible constraints were included in the schedule in accordance with the coriander production technology. The responses obtained from respondents were recorded on a three point continuum scale *viz.*, very important, important and least important and were assigned 3, 2 and 1 score respectively.

RESULTS AND DISCUSSION

1. Input constraints perceived by the farmers in adoption of recommended coriander production technology

A critical examination of Table 1 revealed that majority of respondents were facing problems of "green colour maintaining variety is not available

in the market" (78.61 MPS) followed by "unavailability of short duration varieties" (76.11 MPS) and higher cost of labour (75.27 MPS) in adoption of recommended coriander production technology, "uncertainty of good production" "seed, fertilizer and chemicals" are costly and lack of irrigation facility were ranked 4th, 5th and 6th respectively. The Table further shows that coriander growers reported major problem (above 70 MPS) regarding unavailability of varieties maintaining green colour after harvest, unavailability of short duration varieties, higher cost labour and uncertainty of good production. Further constraints (above 50 to 70 MPS), "seed, fertilizer and chemicals are costly inputs", "lack of irrigation facility," "required more organic matter". And "unavailability of fertilizers" during peak season were moderately. Least constraints (below 50 MPS) perceived by coriander growers were, unavailability of fertilizers during peak season were moderately, small land holding, small land holding and supply of inferior quality of seed by the agencies.

Table-1: Input constraints perceived by the farmers in adoption of recommended coriander production technology (N = 120)

Sr.	Constraints	Mean per cent score	Rank
1.	Unavailability of improved seed at time of sowing	28.88	XII
2.	Supply of inferior quality seed by the agencies	35.27	X
3.	Unavailability of fertilizer at the peak seasons	47.22	VIII
4.	Unavailability of recommended chemical for plant protection measures	33.88	XI
5.	Lack of irrigation facility	56.11	VI
6.	Uncertainty of good production	72.77	IV
7.	Small land holding	45.55	IX
8.	Requires more organic manure	54.72	VII
9.	Unavailability of short duration varieties	76.11	II
10.	Green colour maintaining variety is not available in the market	78.61	I
11.	Seed fertilizer and chemical are costly input	62.50	V
12.	High cost of labour	75.27	III
	Average	**55.57**	

2. Technical constraints perceived by the farmers in adoption of recommended coriander production technology

A critical examination of Table 2 reveals that majority of coriander growers were facing major problem lack of knowledge about grading and standardization, lack of knowledge about chemical weed control and lack of knowledge about seed treatments with 53.88, 46.66 and 46.38 MPS, respectively followed by lack of knowledge about cultivation of high yielding varieties with 45.83 MPS in the adoption of recommended coriander production technology. Lack of knowledge about recommended seed rate and lack of knowledge about plant protection chemicals were ranked 5th and 6th respectively. Least problems were faced by them was poor knowledge about dose of chemical fertilizers, poor knowledge about irrigation management and technical guidance unavailable were ranked 7th, 8th and 9th respectively by them.

Table-2: Technical constraints perceived by the farmers in adoption of recommended coriander production technology (N = 120)

S. No.	Constraints	Mean per cent score	Rank
1.	Lack of knowledge about seed treatment	46.38	III
2.	Lack of knowledge about grading and standardization	53.88	I
3.	Lack of knowledge about cultivation of HYV	45.83	IV
4.	Lack of knowledge about recommended seed rate	43.05	V
5.	Poor knowledge about dose of chemical fertilizer	39.72	VII
6.	Poor knowledge about irrigation management	39.44	VIII
7.	Lack of knowledge about plant protection chemicals	42.22	VI
8.	Lack of knowledge about chemical weed control	46.66	II
9.	Technical guidance unavailable at the time of sowing	37.77	IX
	Average	**43.88**	

Table-3: Marketing constraints perceived by the farmers in adoption of recommended coriander production technology (N = 120)

S. No.	Constraints	Mean per cent score	Rank
1.	Lack of storage facilities	53.33	IV
2.	Transportation facilities are very costly	52.50	V
3.	Lack of knowledge about market intelligence	42.77	VII
4.	Incorrect weight measurement by businessman	47.77	VI
5.	Low price of good quality product in the market	58.88	III
6.	Unnecessary deduction by businessman	41.38	VIII
7.	Minimum support price is not fixed by Govt.	74.05	I
8.	High fluctuation in price	70.88	II
	Average :-	**55.19**	

3. Marketing constraints perceived by the farmers in adoption of recommended coriander production technology

A critical examination of Table 3 reveals that over all respondents were facing major problems like minimum support price is not fixed by government (74.05 MPS) and high fluctuation in price (70.88 MPS) in the adoption of coriander production technology. Low price of good quality product in the market, lack of storage, facilities and transportation facilities are very costly were ranked 3rd, 4th and 5th, respectively and incorrect weight measurement by businessman, lack of knowledge about market intelligence and unnecessary deduction by the businessman were ranked 6th, 7th and 8th, respectively.

4. Miscellaneous constraints perceived by the farmers in adoption of recommended coriander production technology

A critical examination of Table-4 reveals that majority of the respondents were facing serious constraints regarding to cloudy weather and rainfall at the time of flowering and seed formation with (66.88 MPS). Further followed constraints which were faced relatively lesser extent by early showing coriander crop affected by the low temperature, unable to bear risk, the harvested coriander crop affected by the wind, late sowing reduces the yield and more attack insect pest disease with 66.66, 55.66, 52.22, 54.72 and 50.88 MPS, respectively.

Table-4 Miscellaneous constraints perceived by the farmers in adoption of recommended coriander production technology (N = 120)

S. No.	Constraints	Mean per cent score	Rank
1.	Cloudy weather and rainfall at time of flowering and seed formation	66.66	I
2.	The early showing coriander crop affected by the low temperature	55.66	II
3.	The harvested coriander crop affected by the wind	52.22	IV
4.	Unable to bear risk	54.72	III
5.	Late sowing reduces the yield	50.61	V
6.	More attack insect pest disease	50.88	VI
	Average	55.08	

5. Overall constraints perceived by the farmers in adoption of recommended coriander production technology

The data in Table-5 reveals that among the four categories of constraints, input, technical, marketing and miscellaneous constraints. Out of which input constraints were showed highest intensity. Followed by marketing constraints, miscellaneous constraints in and technical constraints were perceived least and respondents.

Table-5: Overall constraints perceived by the farmers in adoption of recommended coriander production technology

S. No.	Constraints related to	Mean per cent score	Rank
1.	Input constraints	55.57	I
2.	Technical constraints	43.38	IV
3.	Marketing constraints	55.19	II
4.	Miscellaneous constraints	55.08	III
	Average	**52.30**	

CONCLUSION

The most severe Input constraints like Lack of knowledge about Green colour maintaining variety is not available in the market, Marketing constraints, like Minimum support price is not fixed by Government Miscellaneous constraints, like Cloudy weather and rainfall at time of flowering and seed formation, Technical constraints, like lack of knowledge about grading and standardization was found.

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Dr. V. S. Shirke
Secretary, MSEE

Report of the Secretary for the year 2015

Dear Members,

I take this opportunity with immense pleasure to present the progress report of Maharashtra Society of Extension Education before the distinguished members of the society.

The Maharashtra Society of Extension Education was formed in the year 1980 at the College of Agriculture, Nagpur and registered in the year 1982 with the strong and motivated initiative of the founder members Dr. R.R. Sinha, Dr. V.R. Kubde and Dr. D.M. Nikhade. The society was established with the following objectives.

1.   To publish a scientific journal devoted to the research in the field of extension education

2.   To organize National level seminars, workshops, conferences on various need based aspects in extension education to come out with valuable recommendations for national and state level policy makers

3.   To institutionalize and award various prizes to encourage and improve professional competence of students, researchers and teachers

Ever since its inception, the society has made formidable progress and has come to the forefront with the inspiration and able guidance of Dr. A.G. Sawant, President, Dr. R.R. Sinha and Dr. K.D. Kokate,Vice-Presidents, all stalwarts and internationally acknowledged scientists in the field of extension education. The society has been regularly organizing events like national seminars and publishing its journal. The Maharashtra Journal of Extension Education has been renamed as Asian Journal of Extension Education and is being published with its new name since 2004 in continuation with its earlier volume numbers. During last year we have published Journal volume of the year 2014 and during this current year the volume for the year 2015 has been published.

During the Annual General Body meeting of the society held at Goa on September 26, 2008, it was decided to shift the office of the MSEE from the Directorate of Extension Education, MPKV, Rahuri to the Division of Extension Education at College of Agriculture, Pune.

NAAS Rating of the Journal:
I am very glad to inform that the proposal for NAAS Rating of the Journal was made to the ICAR. The sincere efforts were made to comply the formalities thereof. However, it is proud to know to all our dignitaries, officials and members of the Society that the Asian Journal of Extension Education has been NAAS Rated as 2.91 by the ICAR in the year 2014.

It also gives me immense pleasure to inform the members that the Society has started its website and was inaugurated at the hands of Dr. K.D. Kokate, Hon'ble DDG, ICAR during National Seminar held at DBSKKV, Dapoli on 5th March, 2010. In order to facilitate paperless fast and efficient submission of research articles for publishing in the journal and all other related correspondence, the **e-mail** address of the society **ajeepune@gmail.com** has been started and being used for communication and correspondence.

On the financial scenario, presently the society has capital funds worth Rs. 90,285 (2014-15) along with fixed deposits worth Rs.1,54,000/- in all.
I am confident that with the farsighted leadership at the helm of this society, it shall continue to grow, progress and prosper at an accelerated pace.

I wish to appreciate the painstaking efforts made by my colleagues Dr. V. J. Tarde, Treasurer, Dr. H. P. Sonawane, Joint Secretary and Shri. S. S. Neware in bringing out this issue of the Asian Journal of Extension Education for the years 2015. I sincerely thank the members of the Executive Body of MSEE and Editorial Board of the Asian Journal of Extension Education and the distinguished members of MSEE for their whole hearted co-operation and encouragement towards the noble cause of the society.

Pune
Dec. 2015
V. S. Shirke

PREPARATION OF MANUSCRIPT

Authors are urged to have not more than two co-authors per manuscripts. Read the manuscripts critically prior to submission. Submission implies non-submission elsewhere and if accepted, no future publication without the consent of the Editorial Board.

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