ISSN 0971-3115
NAAS Rated-2014

VOLUME 32
YEAR 2014

Asian Journal of Extension Education

Published by

Maharashtra Society of Extension Education
Division of Extension Education
College of Agriculture, Pune - 411 005
Maharashtra, India
Website : www.msee.org

MAHARASHTRA SOCIETY OF EXTENSION EDUCATION

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The Maharashtra Journal of Extension Education has been renamed (since 2004) as ***Asian Journal of Extension Education*** *and the volume numbers of the Journal are continued...*

NAAS RATED

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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.

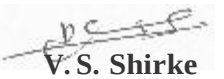
Asian Journal of Extension Education is a very humble attempt to provide platform towards this goal of networking with the all extension professionals who could kindle the minds of their peers and young scientists through their research articles.

I have immense pleasure to present this 30th issue of Asian Journal of Extension Education for the year 2012. 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 Co-editors 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: December 2014

Asian Journal of Extension Education

Vol. 32 Year 2014

CONTENT

Barriers and Preparedness of Agricultural Extension Workers towards ICT Utilization in Gazipur District of Bangladesh

Foyez Ahmed Prodhan[1] and Md. Safiul Islam Afrad[2]

The use of information and communication technology (ICT) is becoming progressively more widespread throughout various sectors including education, business as well as agriculture. One of the most popular ICT applications is e-Learning. With e-Learning, we can use available technologies to enhance learning and expand access to education and training in the agricultural sector (Omotayo, 2005). According to Technical Centre for Agricultural and Rural Cooperation (CTA), ICT are technologies which facilitate communication and thus the processing and transmission of information electronically. ICT includes technologies and methods for storing, managing and processing as well as communicating information (Akpabio *et al*., 2007). ICT as an extension tool could enhance the flow of information in the application of agricultural extension services. Barriers and Preparedness is relative term, and their type, nature affect ICT utilization in agriculture. Similarly, the ICTs mean for a number of information disseminating deviceE-learning in agricultural fields is still in the early phases of adoption. Agriculture is the mainstay of Bangladesh. The economy of Bangladesh is based on agriculture, industry and services. Agriculture is one of the vital sectors in which ICT can be used reasonably in transferring the modern agricultural technologies to the farmers. Information and communication technology in agriculture includes internet, radio/community radio, television, wireless communication tools, cell phone, audio visuals, digital camera, Geographic Information System

(GIS), Global Positioning System (GPS) and other technologies which direct the agricultural activities towards precision agriculture. ICT as tools for communication by the extension organizations faces barriers and obstacles. High start-up costs, infrastructural obstacles, lack of good and skillful trainers, poor connectivity and rugged hardwires are among some of the barriers (Mirzaei, 2003). The present study intends to explore factors, which affect the barriers and preparedness towards ICT utilization. Identifying these factors help increase the knowledge of the extension personnel in using ICT for the agricultural sector. Therefore, the present study was under taken to i) determine the extent of barriers faced by agricultural extension workers towards ICT utilization; ii) explore the extent of preparedness of agricultural extension workers towards ICT utilization; and iii) find out the relationship and contribution between selected characteristics of the agricultural extension workers and their extent of barriers and preparedness.

Methodology

The study was conducted in Gazipur district which consist of five upazilas viz. Kapasia, Sreepur, Kaliakoir, Kaligonj and Gazipur Sadar upazila. The Sub Assistant Agriculture Officers (SAAOs) of the Gazipur district were the target population of this study. The total target population in Kapasia, Sreepur, Kaliakoir, Kaligonj and Gazipur Sadar upazilas, of Gazipur district were 214, out of this population, a number of 90 (42%) SAAOs were selected as the sample of the study following the proportionate random sampling. A pre-tested interview schedule was used to collect data from the respondents during July to September 2012. To measure barriers and

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preparedness towards ICT utilization a 5-point Likert type scale ranging from 'strongly disagree' to 'strongly agree' was used. Barriers and preparedness scores of a respondent was obtained by summing up the weights for his/her 20 statements on four dimensions. The barriers and preparedness score could range from 20 to 100, while 20 indicating low barriers and preparedness and 100 indicating highest level of barriers and preparedness. Statistical measures like number, range, percent, mean, standard deviation and Pearson's correlation coefficient (r), analysis of variance and multiple regression analysis were utilized both for data evaluation and hypotheses testing by using SPSS program. Barriers and Preparedness Index was computed for each of four dimensions by using the following formula as used by Mansur (1989).

Barriers/Preparedness Index =

$$(P_l \times 1) + (P_m \times 2) + (P_h \times 3)$$

Where,

P_l = percentage of agricultural extension workers having low barriers/preparedness

P_m = percentage of agricultural extension workers having medium barriers/preparedness

P_h = percentage of agricultural extension workers having high barriers/preparedness

In order to measure the extent of barriers and preparedness on the statement of each aspect modified Mean Index (MI) was used as developed by Biswas (2004).

$$\text{Mean Index (MI)} = \frac{f_1X_1 + f_2X_2 + \ldots\ldots + f_nXn}{N} \times 100$$

$$= \frac{\sum^{n}_{i=0} f_nX_n}{N} \times 100$$

Where,

X_i = scale value at the i^{th} priority of the statement

f_i = Frequency of responses on that statement

n = number of statements in the parameter

N = number of respondents

i = 1,2,3,……n

Findings

Detailed discussions of barriers and preparedness of the agricultural extension workers towards ICT utilization have been presented in the following sub- sections:

A) Dimensions of barriers

The barriers faced by the agricultural extension workers towards ICT utilization were conceptualized as consisting of four dimensions namely i) organizational barriers ii) personal barriers iii) technological barriers and iv) policy barriers. For each dimensions of barriers the respondents' actions were arbitrarily judged from 1(low barrier) to 25 (high barrier) continuum. The salient features of different components have been presented in Table

Table- 1. Salient features of the different dimensions of barriers faced by respondents towards ICT utilization

Dimensions of barriers	Observed score range (Possible range: 1-25)	Barrier Index	Rank
Organizational barriers	13-25	216.60	1
Personal barriers	11-24	211.11	2
Technological barriers	8-24	205.60	3
Policy barriers	10-23	190.80	4

Data contained in Table-1 show that organizational barrier ranked first followed by personal and technological barriers.

1 Organizational barriers

These can be ranged from physical items to individual and group attitudes that restrain or obstruct progress, access, etc. It is important factor to utilize ICT in agriculture. Findings contained in the Table 2 hint that big majority (92.2%) of the respondent encountered medium to high organizational barriers. Reason behind that might be due to lack of technical support from the organization. Other potential organizational barriers were lack of awareness in availability of ICT and lack of interest by top managers and extension experts to use ICT found in the study area.

Table 2. Distribution of the respondents according to their barriers in four dimensions

Dimensions	Category	Respondents		Mean	SD
		No.	Percent		
Organizational barriers	Low (up to 15)	7	7.8	18.97	2.21
	Medium (16-20)	61	67.8		
	High (21-25)	22	24.4		
Personal barriers	Low (up to 15)	10	11.11	18.51	2.51
	Medium (16-20)	60	66.67		
	High (21-25)	20	22.22		
Technological barriers	Low (up to 15)	13	14.4	17.95	2.82
	Medium (16-20)	59	65.6		
	High (21-25)	18	20.0		
Policy barriers	Low (up to 15)	18	20.0	17.42	2.67
	Medium (16-20)	62	68.9		
	High (21-25)	10	11.1		

2 Personal barriers- Personal barriers are self-controlled factors that prevent people from accomplishing their goals or cause them to behave in a self-sabotaging way. Findings in Table 2 indicate that best part of the respondents (88.89%) demonstrated medium to high personal barriers. Most of the respondents in the study area had very low confidence in ability to use ICT and poor skills to use ICT. On the other hand, language problems towards using ICT and time management problems in using ICT were the potential personal barriers of the respondents in the study area.

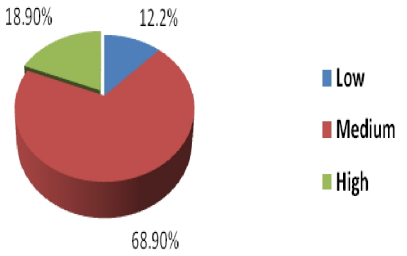
3 Technological barriers- Technological barrier is an obstacle to utilizing ICT that restrains observable and measurable technical competencies. It is one of the crucial factors to utilize ICT. Data presented in Table 2 indicate

that huge proportion (85.6%) of the respondents came across medium to high technological barriers. Because of low computer literacy level in agricultural service provider community, lack of appropriate hardware and software and the limitation of virtual training for operational technique most of the respondent faced high technological barriers in the study area.

4 Policy barriers Policy barrier is an obstacle which prevents a given policy instrument being implemented, or limits the way in which it can be implemented. In the extreme, such barriers may lead to certain policy instruments being overlooked, and the resulting strategies being much less effective. Information displayed in the Table 2 indicates that great part of the respondents (88.9%) exposed with low to medium technological barriers. Reason behind that might be due to lack of strategic vision in development of e- learning, law related to ICT policies in agriculture sector are not user supported and budget allocation for ICT in the agriculture sector are insufficient vision in development e-learning' (BI =365) in case of policy barriers.

Overall barriers faced by the respondents- The overall barriers scores of the respondents ranged from 42 to 96 against the possible range of 1 to 100, with an average 72.86. Data contained in Figure-1 indicate that the highest proportion (87.8%) of the respondents had medium to high barriers towards ICT utilization in agriculture **Table- 2. Distribution of the respondents according to their barriers in four dimensions.**

Statements		Extent of opinion					MI *	Rank
		SA*	A	UD	DA	SDA		
Organizational barriers								
1.	Limitations of technical support from organization	42	28	17	3	0	421	1
2.	Lack of training to learn ICT	26	36	22	3	2	392	2
3.	Lack of interest by top managers and extension experts to use ICT	30	27	13	20	0	375	3
4.	Unfamiliar of top manager with ICT applications	18	34	28	10	0	367	4
5.	Lack of awareness in availability of ICT	12	33	27	17	1	342	5
Personal barriers								
1.	There is a lack of skills to use ICT	51	29	7	3	0	442	1
2.	Require new knowledge to use ICT	39	24	19	9	2	392	2
3.	Lack of confidence in ability to use ICT	29	28	13	18	2	372	3
4.	Language problems towards using ICT	16	26	27	20	1	341	4
5.	Time management problems in learning to use ICT	6	24	32	25	3	308	5
Technological barriers								
1.	Low computer literacy level in agriculture community	34	28	21	5	2	397	1
2.	Lack of appropriate hardware and software	31	27	11	20	1	374	2
3.	The limitation of virtual training for operational techniques	18	32	21	16	3	351	3
4.	Poor infrastructure development in agriculture sector	22	27	12	24	5	344	4
5.	Weak telecommunication systems and old telephone lines	18	27	20	19	6	335	5
Policy barriers								
1.	Lack of strategic vision in development e-learning	26	26	22	13	3	365	1
2.	The existing government policies and regulations about ICT are shaky	18	39	12	20	1	358	2
3.	Budget in the availability of ICT in agriculture sector are limited	27	18	18	26	1	349	3
4.	Lack of appropriate rules for using e-learning	13	32	24	20	1	340	4
5.	Law related to ICT policies in agriculture sector are not supportive	13	19	40	17	1	329	5



B) **Rank order of the statements of barriers across four dimensions -** A rank order of the statements considering four dimensions regarding barriers towards ICT utilization according to their Mean Barrier Index (BI) has been presented in Table 3 for a clear understanding of the comparative barriers faced by the respondents on the statements of each aspect. Results indicate that the respondents showed the highest concern on the statements like 'limitations of technical support from organization' (BI =421) in case of organizational barriers, 'there is a lack of skills to use ICT' (BI =442) in case of personal barriers, '1ow computer literacy level in agriculture community' (BI =397) in case of technological barriers and 'lack of strategic**Disagree**

Relationship between the selected characteristics of the respondents and extent of barriers faced

Findings on correlation analysis between the selected characteristics of the respondents and their extent of faced barriers indicate that out of nine selected characteristics of the respondents training exposure, innovativeness, job satisfaction, cosmopoliteness, use of information sources and knowledge on ICT showed negative significant relationship with their faced barriers (Table 4). It was found that training exposure showed negative significant relation with their barriers. This implies that barriers decrease with the increasing training exposure. Training facilities can play an important role to change behavior by increasing knowledge, skill and attitude of the respondents. It may be concluded that unless the training exposure of the respondents are increased they will continue to face barriers towards ICT utilization which was similar to those of Ali and Magalhaes (2008). Innovativeness of the respondents had significant negative relationship with their faced barriers. This indicates that barriers decrease with their increasing innovativeness. Innovativeness of an individual helps to adopt new ideas and technology. Job satisfaction of the respondents showed significant negative relationship with their faced barriers. This indicates barriers decrease with their increasing job satisfaction. Annor-frempong *et al*. (2006) found the same results in their studies.

Table-4.Relationship between selected characteristics of the respondents and their extent of faced barriers towards ICT utilization

Selected personal attributes	Co-efficient of correlation (r)
Age	0.158^{NS}
Service experience	0.089^{NS}
Training exposures	-0.388^{**}
Innovativeness	-0.488^{**}
Job satisfaction	-0.426^{**}
Cosmo politeness	-0.233^{*}
Use of information sources	-0.252^{*}
Aspiration	0.055^{NS}
Knowledge	-0.315**

* Correlation is significant at the 0.05 level (2-tailed) and
** Correlation is significant at the 0.01 level (2-tailed).

Cosmopoliteness of the respondents has significant negative relationship with their perceived barriers. Through cosmopoliteness quality an individual becomes aware of the recent information. Probably due to low cosmopoliteness the respondents faced more barriers. The use of information source is one of the main important components to aware agricultural extension workers in respect of various agricultural development issues. Soekartawi (2005) found that that the cosmopoliteness of the agricultural extension worker had negative significant relationship with implementing 'e-learning'. Use of information sources of the respondents showed

negative significant relationship with their faced barriers. This hints that the respondents having higher use of information sources faced lower barriers. Knowledge of the respondents has significant negative relationship with their faced barriers. Knowledge of any individual increases his/her awareness, mental alertness makes him/her familiar or acquaint with facts, respondents are increased they will continue to face barriers towards ICT utilization.

D) Dimensions of preparedness- The preparedness of the agricultural extension workers towards ICT utilization were conceptualized as consisting of four dimensions.

Overall preparedness of the respondents

The preparedness scores of the respondents ranged from 39 to 88 against the possible range of 1 to 100, with an average 66.94. Findings contained in Figure 2 indicate that the highest proportion (66.7%) of the respondents had medium preparedness compared to 22.2 percent low and 11.1 percent high preparedness towards ICT utilization. These dimensions included: i) farmers' preparedness ii) personal preparedness iii) infrastructure preparedness and iv) management preparedness. For each dimensions of preparedness the respondents' actions were arbitrarily judged from low to high preparedness continuum. **Conclusion** Based on the major findings of the study, it can be concluded that more than fourth fifth of the respondents encountered medium to high barriers towards ICT utilization. This might be due to the fact that a considerable proportion of the SAAOs had not enough training exposure, and had moderate usages of source of information and medium knowledge on ICT. The comparative barriers perceived by the respondents towards ICT utilization in agriculture, organizational barrier was relatively higher compare to other three dimensions. Reason behind that might be due to lack of training to learn ICT and limitations of technical support from the organization. Big majority of the respondents had low to medium preparedness towards ICT utilization. The comparative preparedness of the respondents towards ICT utilization in agriculture, management preparedness was relatively higher compare to other three dimensions. The respondents could have higher training exposure, innovativeness, job satisfaction, cosmopoliteness, use of information sources and knowledge on ICT, had higher preparedness towards ICT utilization; and respondents' innovativeness, cosmopoliteness, job satisfaction and knowledge on ICT would be to contribute significantly in their preparedness towards ICT utilization.

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An Analysis of Operational Mechanism and Achievements of Self Help Group

Anjali Ray

The women need special care to bring them into the folds of development. It has been realized that although women form half of our population still much have not done for their empowerment. To empower women and eradicate poverty, "Self Help Promotion" is of recent paradigm. Now all government and non-government sectors are trying to eradicate poverty through Self Help Groups (SHGs). The rural women are illiterates / semi-literates and cannot fight individually against poverty. They can be organized into Self Help Groups to achieve a strong and permanent improvement of socio-economic conditions.

Self Help Groups is a small voluntary association of women and usually the poor women pool their savings into a fund from which they can borrow as and when necessary. It is a means to carry out programmes for development of economic condition. It is an association of women who come together for the purpose of solving their common problems through mutual help. It promotes small savings and inter-loaning systems among its members. Self Help Groups can play as a powerful vehicle for their socio-economic development.

MethodologyThe study was under taken in four blocks of Kendrapada district, namely Kendrapada, Derabish, Patamundai and Marsaghai. The sample for the study consisted of President and Secretary of the selected SHGs. Altogether 65 SHGs were randomly selected. These were 29 from kendrapada,22 from Derabish,9 from Patamundai and 7 from Marsaghai. The selected respondents were interviewed by means of structured interview schedule designed on the basis of objectives of the study.

Findings

1. Structure, function and activities of SHG in relation to their achievement.

The SHG are formal organizations and are operated through certain rules and regulation with main focus of profit based activities .The size of each SHG varied from 10-12 members under the survey.

(i). Age of SHG: -The age of SHG was found to be of about 12 years starting from year of 2000-2012. The year wise distribution of surveyed SHG is given below. Most of the of the SHGs were established in between the year 2000-2012 and only 9.23% after 2010.In other words, the selection of SHG is sound and they are in a position to be evaluated.

(ii) Awareness about SHG program- It was within interest of the study to ascertain the awareness of the group about structure and function of SHGs. The results in this connection are presented in the table given below.

Table-1 Age of the sample SHG

Year	Kendrapada	Derabish	Marssghai	Patamundai	Total	%
1.Up to 5 years	15	4	4	3	26	40.00
2.5-10 years	10	15	4	4	33	50.77
3.More than 10 years	2	3	1	0	6	9.23
Total	**27**	**22**	**09**	**07**	**65**	**100.00**

Programme Co-ordinator, Krishi Vidnyan Kendra, Kendrapara, Orisa

Table-2-Awareness about structure and function of SHGs

Group awareness for SHG	Kendrapada	Derabish	Marshaghai	Patamundai	Total	%
Yes	19	21	07	03	50	76.92
No	08	01	02	04	15	23.08
Total	27	22	09	07	65	100.00

The SHG, as per norm, operates with basket full of activities. The local condition, local market, local social system and other related factors influence the promotion of SHG. The results reveal that as high as 76.9% of the sample is fully aware of functions and structure of SHGs against 23.08% who did not. The inference is that all the SHG members are to be made aware about function, structure and role of SHG to have good achievement.

(iii) The initiator of the SHG-In rural areas women mostly remains ignorant about program of the Govt. They are required to be informed about the activities of the development that can be achieved through SHGs. In finding out initiators of ideas of SHG the following information were obtained.

Table-3 Initiator of the SHG

Initiator	Frequency	%
1.NGO	3	4.61
2.Block official	13	20.00
3.Anganwadi workers	34	52.30
4.Members of SHG	09	13.85
5.Others	06	9.24
Total	**65**	**100.00**

It is revealed that Anganwadi workers (52.30%) and block officials (20.00%) take the leading role in initiating SHG in the villages under study.

(iv) Function of SHG- Decision making, leadership, election, rotation of members and conflict management are the major functions of SHG. It is expected that SHG should operate democratically with elected members, rotation of office bearers and resolving of conflict if arise. In examining these issues of SHG the following information were obtained.

Table-4 Functions of SHGs

Functioning of SHG	Sample (65)	Percentage
1. Decision Making Process		
(i).Democratic	36	56.45
(ii)Outside pressure	21	32.31
(iii). Pressure of influential members	6	9.23
Total	65	100.00
2. Selection of Leader		
(i).Election	17	26.15
(ii).Nomination	48	73.85
Total	65	100.00
3. Rotation of Group leaders		
(i) Yes	34	52.31
(ii) No	31	47.69
Total	**65**	**100.00**

The major functions of SHG are decision making, selection of group leader, rotation of office bearer and solving of conflicts arising among the members of SHG. In case of decision making democratic approach is followed (58.46%) and out side pressure operates to an extent of 32.31% where as pressure of members is only 9.23%.It seems that in majority cases decision making follows democratic path**.**

Selection of group leader is an important event of the SHGs. In most of the cases nomination is adopted to elect group leader (73.85%) and with rotation (52.31%). Conflict among the members is observed in many cases. It is reported that conflicts are resolved amicably (75.38%) and by action up to 7.7%.However, in case of 15.38% of the sample SHGs no conflict was reported.

(v) Meeting place-Many of the SHG do not have their own buildings to operate. As per survey it is found that in case of 38.46%, the meetings are held in houses of members against 61.54% who conduct it on common places. In no case place of meeting has been reported as constraint.

(vi) Keeping of record-The SHG makes transaction of money and material, contribution of members, credit from bank, sale proceed and asset formation are to be recorded properly. The account is subjected to verification. The scenario of record keeping of sample SHG is given below.

Table-5 Record Keeping in SHG

Record maintainer	Kendrapada	Derabish	Marshaghai	Patamundai	Total	%
1.outsider	01	00	05	00	06	9.23
2.secretary	20	21	01	07	49	75.38
3.SHG member	06	01	03	00	10	15.39
Total	**27**	**22**	**09**	**07**	**65**	**100.00**

In most of the cases, Secretary of the SHG keeps account and in case of 15.39% ordinary members of SHG look after it. It is interesting to observe that in case of 9.23% the account is maintained by outsider.

(vii) The reasons for forming SHG-The SHG are formed out of group action and group dynamics plays an important role in promoting group action. The reason for forming SHG was found to be reported as reflected in table below.

Table-6. Reasons for forming SHG

Reasons	Frequency	%
1.Credit facilities	39	60.00
2.Making of profit	20	30.77
3.Meanningfull engagement	11	6.92
4.Institutional pressure	10	15.38
5.Members	4	6.15
6.Others reason	1	1.54
Total	**65**	**100.00**

As observed in table above, credit facilities, profit making, meaningfull engagement and institutional pressure are the major reasons of attraction for formation of SHG.

(viii) Activities of SHG-Activities of the SHGs are production and profit oriented. The SHGs are advance loan by the banks to take up income generating activities to provide engagement as well as profit. The activities under taken by the SHG under study are given below.

Table-7 Activities of SHG

Activities	Frequency	%	Rank
1.Agriculture	32	49.23	II
2.Animal husbandry	24	36.92	IV
3.Fishery	18	27.69	V
4.Horticulture	45	69.23	I
5.Handicraft	08	12.31	VI
6.Non agricultural activities	27	41.54	III

Result reveal that SHG are taking up enterprise, in horticulture followed by agriculture, non agriculture, animal, husbandry, fishery and handicraft. The activities of the SHGs are of many folds depending on situations of the locality.

(a) Horticulture-Horticulture provides ample scope in rural areas . The horticulture enterprises,are vegetables like tomato, brinjal, cauliflower which have ready market besides raising of seedlings. These vegetables being short duration and perishable in nature the SHG members need immediate market for disposal.

(b) Agriculture- Growing of agriculture crops like scented rice is coming up in Kendrapada district The SHGs are taking up of boiling of rice in large scale and supply clean rise to the market.

(c) Non- agricultural activities-These activities include budi and pampad making,agarbati making which are less cost intensive but with sustainable marketing demand. The women in rural areas are more acquainted these type of activities.

(d) Animal husbandry-Animal husbandry includes dairy and poultry. The cost of chicken and egg have better scope to generate good amount of profit. Some SHGs are taking of dairy activities in terms of keeping cow and value addition of milk product.

(e) Fishery- Psciculture in coastal area is a paying business. Since long, preparation of fish feed, fingerlings and rearing of fish is common. Pisciculture in the ponds of panchayat is gaining moment of the state. The women SHG are taking advantages of it.

(f) Handicraft-The home decoration products made out of golden grass is very popular in Kendrapada areas. The SHG are also involved in preparation of decorating activities for marketing purpose.

Credit and its management-

The credit is the major focus of SHG. The SHG are created and maintained to provide loan for development at village level. The SHG also train women in account keeping and making best use of available resources. The sample women under study have found to have availed credit for different activities.

(1) Source of funding-The SHG collect fund from different sources. The sources are membership fees,, banks loan and others.

Table-8 Sources of funding of SHG9n=65)

Sources	Amount	Percentage
(1)Members contribution	8.45	27.99
(2)Bank loan	21.62	71.61
(3)Other sources	0.12	0.4
Total	**30.19**	**100.00**

The amount cited in table indicates the fund raising system of SHG. It is observed that bank loan is major source of funding followed by contribution of the members. However, the amount cited in table above accounts for last 5 years of the SHG i.e 2005-2010.

(2) Availing of credit-The objective of the SHG is to provide loan to its members for income generating activities. The members utilize the loan, take the benefit and repay back to SHG. The scenario of sample SHG about disbursement of loan is given below.

Table- 9 Disbursement pattern of loan (2005-10)

Credit advanced	SHGs	SHG members at present	Amount (Lakh)	No. of members availed credit
(1) Kendrapada	27	324	3.80	207
(2)Derabish	22	221	2.77	160
(3)Marsaghai	9	98	5.79	81
(4)Patamundai	7	73	1.71	58
Total	**65**	**716**	**14.07**	**506**

The total strength of member's o 65 SHGs is 716 out of which 506 (70.67%) have availed credit facility. It seems that most of the members avail loan from the respective SHGs.

(3) Loan repayment-The repayment of loan is one of the challenging problems at SHG level. Members avail credit but do not make repayment owing to various reasons. It is found that about 65% make regular repayment where as rest 35% make deviation. In finding out the methods adopted by SHG for recovery of credit the following information were obtained.

Table-10_ Action taken for recovery of loan amount

Method of recovery of loan	Frequ-ency	Percentage
Persuation	11	16.92
Allow further time with interest	36	55.38
Social restriction	03	4.62
Expulsion from group	08	12.31
legal action	02	3.08

The most common methods adopted for recovery of loan are, allowing further time with interest, persuation,expulsion from SHG and social restriction along with legal action.

SHG in social development-

Table-11_SHG in social development

Items	Frequency	Percentage
1.Involved in development		
(a)yes	46	70.77
(b)No	19	29.23
2.Involement in elimination of social stigma		
(a)yes	8	12.31
(b)No	57	87.69

Development in villages depends on acceptance and adoption of innovations. The SHGs beside their remunerative enterprises also take part in social development. Recently the SHG are also involved in mid day meal of school programs. In finding out extent of involvement in development activities as well as fighting against social stigma. The following information was obtained.

The women SHGs comparatively more involved in development work against non participation of 29.23%.In removing social stigma only 12.31% are found to be involved against 87.69% who are not. It shows although women SHG are active in development work but hardly fight against social stigma.

Problems in marketing-

Marketing is a major concerns for the sustainability of SHG. The SHGs produce variety of products keeping demand of local market in view. Observations reveal that marketing of SHG product is of major concern for which govt. is taking initiatives. Within the frame work of the study, marketing issues have been studied in terms of source of market information, reasons of poor sale, linking to market network, problems faced in marketing, help of SHG to members in marketing, fate of non-sold produce and sources of market information.

(i).Market information- The producers need information about marketing, demand. supply, price and consumer interest. In finding out sources of marketing information of the sample SHGs, the following information was obtained.

Table 12. Sources of marketing information

Sources of information	Mentions	Percentage
Local Market	43	66.15
Mass Media	4	6.15
Villagers	17	26.15
Brokers	2	3.08

Rural based SHGs receive marketing information from the sources like local market, villagers and mass media. This meets their requirements as their produce are meant for

local market. With change of time they may send their produce outside the locality for which their sources of information may be expanded.

(ii)Reasons of Poor sale: The general complain with all the SHGs is that they face the problem of poor sale. There may be many reasons but the important reasons stated by the sample are as follows.

Table 13. Reasons of poor sale

Reasons	Mentions	Percen-tage	Rank
Low quality	43	66.15	II
High Price	5	7.69	VIII
Lack of marketing strategy	56	86.15	I
Lack of marketing persons	34	52.31	III
No market link	28	43.07	V
Lack of salesmanship	32	49.23	IV
Lack of training to produce better product	26	40.00	VI
Lack of market support	18	27.69	VII

Opinion of the sample indicates that poor marketing of SHG produce is due to lack of marketing strategy, low quality, lack of marketing perons,lack of salesmanship, lack of training to produce better products, lack of market support and high price sometimes. These are possible reasons for poor sales of SGH produce of the sample under study.

During the course of investigation it was ascertained that non-disposal of perishable produce, lack of storage facilities, cost of transport and exploitation of middlemen are some of additional problems that the SHGs are facing in rural areas.

Achievements of SHG Members: The SHGs are the rural based organizations to provide social, economic and technological benefits to its members. It is observed universally that so far members are deriving benefits out of it they cling to organizations otherwise; they try to disassociate or wait for opportunity to have alternatives. Taking 65 SHGs as sample an analysis was made to find out achievements as described in table below.

Results reveal that members of SHG have gained benefits in many aspects. Maximum benefits obtained by them are community participation, social mobility, and comfort in family life, and self prestige in order. The gain in other aspects includes contact with outside agencies, asset formation, social contact, annual income standard of living and engagement per year.

Table14. Achievement of SHG members

Sr. No.	Achievements	Pre-SHG period Score	Post SHG period Score	Difference (%)	RANK
1	Social contact	1.72	2.45	29.75	VII
2	Social mobility	1.21	2.54	52.36	II
3	Contact with outside agencies	1..45	2.67	45.69	V
4	Comfort in family life	0.45	0.86	47.67	iii
5	Annual income	0.56	0.78	28.20	viii
6	Engagement per year	1.87	2.50	25.20	x
7	Community participation	0.32	0.71	54.92	i
8	Assest formation	0.56	0.89	37.07	vi
9	Stanrad of living	01.30	1.80	27.77	IX
10	Self prestige	0.30	0.56	46.42	IV

Conclusions

A study entitle "An analysis of operational mechanism and achievements of Self help groups" was carried out with a randomized sample of 65 respondents belonging to 65 SHGs of blocks namely Kendrapada,Derabish,Patamundai,Marshaghai of Kendrapada district. The study was designed to investigate into structure, function and achievements of SHGs.

1.The SHGs selected for the study were of existence within 5-10 years. The sample was aware of structure and function of SHGs to a greater extend.

2.Anganawadi workers,NGOs,and block officials take leading role in formation of SHGs. The decision in SHGs to select leader is of democratic manner with provision of rotation.SHGs do not have specific building for office and meetings are held in the houses of members and records are maintained by the secretary of SHGs.

3. Credit facilities and making of profit are two important reasons followed by institutional pressure to form SHGs. Horticulture, agriculture; animal husbandry and fishery are the major activities.

4. Bank loan and the contribution of member are the major source of funding of the SHGs and a good number of members have availed credit. The method of recovery of loan is simply to allow further with higher rate of interest.

5. Although SHGs take active part in rural development but play negligible role in elimination of social stigma.

6.The problems in marketing are many and source of market information is limited to local market only. Lack of marketing strategy, low quality, and lack of marketing person and absence of salesmanship are the reasons of poor sale.

7. The achievement of SHGs members have been recorded in the areas of community participation, social mobility, comforts in family life, self prestige and contact with outside agencies.

The SHGs in general have brought, remarkable changes in the life style of members of SHGs in rural areas.

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A Comparative Study of Dairy Organizations

A.K. Thakur

The organizations are viewed as systems embedded with its environment. The 'System theory' of organization has now been extended into contingency approach (Lawrence and Lorsc, 1967). Based on 'the system demand model', Mott, P.E. (1972) defined organizational effectiveness as the ability of the organizations to mobilize, to meet the demands in the areas of production, adaptability and flexibility. Mott's view of effectiveness was in keeping with 'contingency approach' which advocated situational thinking and emphasized flexibility and adaptability. According to Rogers et. al. (1976) "organizational effectiveness is the degree to which organizational purposes are achieved". For some purposes, the degree to which output goals are achieved is the most appropriate measure for effectiveness. Likert (1967) viewed that the organizational effectiveness is a function of output variables, intervening variables and short range, long range goals of the organization.

Anantaditya et al. (2012) evaluted the organizational effectiveness of Indonesian firms following the concepts on various ratio analyses in order to measure the firms performance particularly the level of effectiveness.

In the interest of generalizability, we need criteria of effectiveness which are comparable between the organizations. Against the background of lack of comparative studies in terms of organizational effectiveness, the present study was designed and undertaken to make a comparative study between two dairy organizations in respect of different criteria of organizational effectiveness.

Methodology

With the advent of cooperative structure in dairying, the state of Uttar Pradesh(U.P.) has been brought under the umbrella of Dairy Co-operative set-up on 'Anand Pattern model' replicated throughout the country through Operation Flood (OF) Programme. The study was conducted in U.P. Dairy cooperative set-up operating under the administrative control of State Milk Board (SMB) and Pradeshik Cooperative Dairy Federation (PCDF). Keeping in view the three tier structure of U.P. Dairy cooperative organization, the sampling size of the study comprised of three, different hierarchical levels i.e., head office/federation at the apex level, milk union at district level, and the Dairy cooperative society at the village level. In PCDF, the composite sampling size comprising of all three levels came to 99. In SMB, total sample size of the respondents was numbering 85. Organizational effectiveness refers to the ability of an organization to mobilize its resources and centers of power for action, production and adaptation. In the present study, the effectiveness of dairy organizations was measured with the help of an instrument developed by Mott, P.E. (1972) consisting of eight items pertaining to different criteria of organizational effectiveness viz., productivity, adaptability and flexibility. The overall effectiveness score was obtained by summation of response scores given to all eight items pertaining to productivity, adaptability and flexibility. The mean scores were computed for different hierarchical levels of both the organizations pertaining to different criteria of organizational effectiveness viz., productively adaptability and flexibility.

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Findings

In the present study, the organizational effectiveness was measured with the help of an instrument developed by Mott, P.E. (1972) which was comprised of three components viz., productivity. adaptability and flexibility as different criteria of effectiveness. The data regarding organizational effectiveness and its components are presented in table- 1.

The finding of the study on organizational effectiveness and its components viz., productivity, adaptability, flexibility at different levels of the SMB and PCDF with relevant discussions have been presented under the following sub-heads:

(a) Productivity

The data shown in table 1 indicated that the level of productivity in PCDF was higher than that of SMB. However, the productivity score was found to be slightly higher at milk union level in SMB. The results accrued from ANOVA technique and 't' statistics revealed that there was a highly significant difference between SMB and PCDF in terms of productivity. The productivity was found to be significantly different in SMB only between two levels i.e., the head office and milk union.

Table. 1 Effectiveness of the organizations at different levels (Mean Score)

	SMB				PCDF			
Organizational effectiveness	**Head Office**	**Milk Union**	**D.C. Society**	**Total**	**Head Office**	**Milk Union**	**D.C. Society**	**Total**
Productivity	9.26^{a} ±0.29	10.35^{b} ±.22	9.88^{ab} ±0.13	9.91^{A} ±0.13	10.96^{a} ±0.20	11.23^{a} ±0.43	11.26^{a} ±0.43	11.09^{B} ±0.17
Adaptability	12.00^{a} ±0.65	12.83^{a} ±0.41	11.71^{a} ± 0.28	12.21^{A} ± 0.24	14.35^{a} ±0.29	15.46^{a} ± 0.41	13.30^{b} ± 0.36	14.18^{B} ± 0.21
Flexibility	3.10^{ab} ±0.25	3.45^{a} ± 0.11	2.71^{b} ± 0.10	3.07^{A} ±0.11	3.71^{a} ± 0.18	3.53^{ab} ± 0.18	3.16^{b} ± 0.12	3.52^{B} ± 0.82
Overall effectiveness	24.36^{a} ± 0.98	26.61^{b} ±0.53	24.28^{a} ±0.47	25.15^{A} ±0.36	29.03^{a} ±0.49	30.23^{a} ±0.62	27.43^{b} ± 0.64	28.70^{B} ±0.36

No significant difference was however, observed between different levels of PCDF. The reasons for the overall higher productivity of PCDF could be attributed to the fact that being an implementing agency of Operation Flood programme in the state, the PCDF used to receive financial and technical support from National Dairy Development Board (NDDB). Besides, the need based consultancy services were also provided by NDDB to PCDF from time to time. It was also observed that PCDF was being run by well qualified managerial team dominated by young dairy professionals. Whereas, the SMB was manned by government officials of the State Department of dairy development. The higher productivity at milk union level in SMB might be on account of better job performances and efficiency of incumbents working at milk union levels as compared to other level of that organization.

(b) Adaptability:

It was quite evident from table 1 that the adaptability score was higher at all levels in PCDF as compared to those levels of SMB. However the adaptability score was found to the maximum at milk union level in both the organizations. The findings based on ANOVA technique and 't' statistics revealed that there

was a highly significant difference between SMB and PCDF in respect of organizational adaptability. Further, the adaptability was not found to be significantly different at all three levels in SMB. However adaptability score was found to be significantly higher in PCDF than that of SMB and it was significantly higher at milk union level in PCDF as compared to other levels.

As the PCDF is rapidly going for modernization and technology up gradation with the financial and technical assistance from NDDB, the ability to bring about organizational changes to cope with the changing technology was more pronounced in PCDF as compared to that of SMB. Probably, that is why the organizational adaptability was found to be higher is PCDF than that of SMB.

The higher extent of adaptability at milk union level might be indicative of the fact that milk union being the operational level is often confronted with new problems which demand greater ability to effect changes so as to cope with the ever changing circumstances and contingencies. Staying abreast of new technologies and methods applicable to the various activities of dairy development often pose new challenges for maintaining higher level of operational efficiency at milk union level in both the organizations. Probably, these were the reasons why the adaptability was found to be maximum at milk union level.

(c) Flexibility:

It was obvious from the table-1 that the flexibility score was higher at all levels of the organization in PCDF as compared to those levels of SMB. However, the extent of flexibility at milk union level was found to be maximum in SMB. In PCDF, the flexibility score was found to be higher at head office level. On the basis of ANOVA and 't' test, it was further ascertained that there was a highly significant difference between SMB and PCDF in respect of organizational flexibility. Further, the flexibility score was found to be significantly higher in PCDF than that of SMB.

On the whole, the scores of organizational flexibility and adaptability were found to be significantly higher in PCDF than that of SMB.

Flexibility is conceptually different from adaptability because the organizational changes that result from meeting emergencies are usually temporary in nature. But, the adaptive changes on account of adaptability are likely to be more lasting as compared to flexibility. Thus, PCDF has an edge over SMB in respect of organizational flexibility in terms of its ability to cope milk the temporary overload of work and meeting and emergency.

(d) Overall effectiveness

The table 1 pointed out that in respect of overall effectiveness PCDF had an edge over SMB at all levels of the organization. However, the score of overall effectiveness was found to be maximum at milk union level in both the organization on the basis of ANOVA and 't' test, it was evident that there was significant difference between SMB and PCDF in terms of overall effectiveness. The table -1 further indicated that there was a significant variation between different levels in both the organizations.

The overall effectiveness of PCDF was found to be significantly higher than that of SMB. On account of technical consultancy and grants given by NDDB under O.F. programme the PCDF was financially and technically much sound footing. While SMB solely depends up on financial aid provided by the State Government.

Further the operational strategy of PCDF combined the principles of co-operative organization with the commercial approach of business organization. Whereas SMS is a bureaucratic organization being dominated by govt. officials of traditional department of dairy development under state government.

Conclusion

Based on the 'system demand model', The findings of the study show that the PCDF was more effective Dairy organization that of SMB. On all studied criteria of organizational effectiveness viz. productivity, adaptability and flexibility, the PCDF had an edge over SMB. Besides the study also highlighted the need to streamline SMB on the pattern of PCDF by combining the principle of Co-operative organization with the commercial approach of a business organization in order to survive in the competitive environment of dairy industry.

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Impact of Watershed Development Project in Jabalpur District of Madhya Pradesh

Lyaqat Ali[1], L.K.Sharma[2] P. S. Slathia[3]

In India the concept of watershed management was introduced to integrates the schemes of water conservation and land management with other components of economics and socio-ecological system. The watershed management also integrates agriculture, forestry, fisheries, poultry, dairying and other allied activities with moisture conservation practices for optimal utilization of water and sustainable development of economical activities. The National Watershed Development Programme for rainfed areas was initiated in Eighth Five year plan for development of the rain fed/dry land areas. The primary objective of this programme is to stabilize agricultural production in rainfed areas. The project focused on conservation and up gradation of natural resources in integrated manner with low cost technology and generating employment opportunities for the poverty stricken rural masses in the rain fed areas through directly involving farmers. The impact of watershed management can be measured in four dimensions viz. Physical impact i.e. Land use, cropping pattern and crop production, Economic impact i.e income and employment generation, Hydrological
impact i.e. ground water, sub surface storage and water holding capacity and Social impact i.e. capacity building which means to bring about local capacity and skill of the poor people and equip them to plan for the judicious utilization of their own resources. The present study was conducted with the objective to know the change with respect to cropping pattern, income and employment status among the beneficiaries after the induction of watershed in Jabalpur District of M. P.

Methodology

The present study was conducted in Panagar block of Jabalpur district of Madhya Pradesh. The district comprises of seven developmental blocks and twenty five watershed projects. Out of these twenty five projects, one watershed i.e. Basha Chaitri Nallah situated in Panagar block was selected purposively as this watershed completes five years of inception. The catchment area of the project covers four villages and all the four villages were selected purposively for the study. The list of beneficiaries of each village was prepared with the help of secretary of watershed programme. From the list of beneficiaries 20% were randomly selected for the study. Thus, the total number of beneficiaries selected for the study were 115 from four villages. The data was collected through pretested structured schedule by personal interview method with beneficiaries.

The table 1 clearly revealed that in Kharif season percentage of area increased under paddy i.e 26.50 ha (92.98) followed by decrease in area under kodo- kutki, til and urd i.e.70.00, 60.00 and 57.14 percent . In Rabi season area increased under wheat (35.59) and Gram (44.44) and decreased under linseed, pea and lentil. There was cent percent increase in area under vegetables in the summer for first time. There was increase of 29 ha i.e. 13.80 per cent of the total cropped area. The increase in area was observed more in Rabi than Kharif.

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Table-1. Area under different crops before and after the induction of watershed.

Sr. No.	Season/Crop	Area before the induction of watershed(ha)	Area after the induction of watershed(ha)	Increase in area+(ha) Or Decrease in area –(ha)	
1	**Kharief**			**Area (ha)**	**%**
	Paddy	28.50	55	+26.50	+92.98
	Arhar	9	5	-4	-44.44
	Urd	7	3	-4	-57.14
	Til	5	2	-3	-60.00
	Kudo-kutki	10	3	-7	-70.00
	soybean	5	4	-1	-20
	Sub Total	64.50	72.00	+7.50	11.62
2	**Rabi**				
	Wheat	59	80	+21	+35.59
	Gram	45	65	+20	+44.44
	Pea	13	5	-8	-61.553
	Lentil	19	9	-10	-52.63
	Linseed	9.50	4	-5.50	61.11
	Sub Total	145.50	163	+17.50	12.11
3	**Summar/Zaid**				
	vegetables	-	4	+4	+100
	Total cropped area	**210**	**239**	**+29**	**+13.80**

Table-2. Distribution of watershed beneficiaries according to their average three year income before and after the induction of watershed project.

Category	Before WDP		After WDP	
	No.	%	No.	%
Low (up to 25,000)	94	81.74	68	59.13
Medium(25000-40000)	19	16.52	26	22.61
High(above 40000)	2	1.74	21	18.26
Total	**115**	**100.00**	**115**	**100.00**

The results in Table- 2. were regarding the income enhancement after the implementation of Water shed Programme. The study revealed that before the induction of watershed 81.74 per cent beneficiaries fall in low income group and after the induction of watershed it was 59.13 per cent. That is 22.60 per cent of beneficiaries fall in the next category.

In medium group before the induction of watershed16.52 per cent beneficiaries belonged to this group after the induction of watershed there was increase by 6.09 per cent. In high group only about two per cent beneficiaries were found but after the induction of watershed it was 18.26 per cent.

Table-3. Distribution of watershed beneficiaries according to extent of available employment before and after the induction of watershed project

Category	Before WDP		After WDP	
	No.	%	No.	%
Low (up to 10 days)	75	65.22	37	32.17
Medium(10-15 days)	35	30.43	55	47.83
High(above 15 days)	5	4.35	23	20.00
Total	**115**	**100.00**	**115**	**100.00**

Table- 3 clearly depicts that the total 65.22 per cent beneficiaries belonged to low employment status before the induction of watershed project, it was 32.17 per cent beneficiaries after the induction 0f watershed project i.e 33.05 per cent beneficiaries shift to the next category. In medium category there was 30.43 percent beneficiaries before the induction of watershed and 47.83 per cent beneficiaries after the induction of watershed i.e. 17.40 per cent beneficiaries comes in this category. In high group category there were only 4.35 per cent beneficiaries before the induction of watershed project and 20.00 per cent beneficiaries after the induction of watershed project. There was increase of 15.65 per cent.

Conclusion

In kharief season higher percentage of area increased under paddy and decreased under kudo-kutki,til and urd. In rabi season higher paercentage of area incrteaded under wheat , gram and decreased under linseed and lentil. The area increase in rabi was slighter more than the kharief crops. There was cent percent increase in summer crops. There fore it was concluded that watershed plays important role in increasing the area and change in cropping pattern. Annual income of majority of the beneficiaries.

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Awareness about Social Computing among the Students

Aditya[1], A.K. Thakur[2] and Basavaprabhu Jirli[3].

Over the past years, the Internet has seen as impressive growth in user driven applications such as blogs, podcasts, wikis and social networking sites. This trend can be referred to by the term 'social media' as online applications increasingly support the creation of value by social networking of people. The term social computing refers to applications and service that facilitate collective action and social interaction on the internet. Such as blogs, wikis, social networks and discussions forums "Social computing in a general term for area of computer science that is concerned with the intersection of social behavior and computation system. Wang (2007) defined 'Social computing' as a computational facilitation of social studies and human dynamics as well as the design and use of ICI technologies that consider social context. Social computing have become a hot topic attracting broad interest from not only students and researchers but also technologists, software and online game vendor, web entrepreneurs, business strategists, political analysts and digital government practitioners. Against this backdrop, the present study on social computing was undertaken with the specific objective to find out the frequency and source of Internet use and extent of awareness about social computing among the students.

Methodology

The study was conducted in Banaras Hindu University (BHU), Varanasi. Simple random sampling was used to select sample from population. Simple random sampling is the simplest and commonest method of sampling in which the sample is drawn unit by unit, with equal probability of selection for each unit at each draw. The students selected from the science faculty belonged to the multi-faceted science disciplines such as Botany, Zoology, Mathematics, Physics, Chemistry and Environmental Sciences. Most of the postgraduate science faculty students were in the final semester of the course while the students in the undergraduate belonged to the second year of the degree program. Similarly, the postgraduate students from the Institute of Agricultural Sciences belonged to the final semester of the course while the undergraduate students were selected from the third year of the degree program. A total of 530 students were selected through the method of proportionate random sampling. Out of them 400 schedules (200 from each faculty) which were complete in all respects were finally selected for analysis.

Findings

The results and the discussion regarding the important findings of the study is described in various heads mentioned below

The frequency of internet visits by the respondents was studies under the heads, daily, weekly, monthly or occasionally.

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Table - 1 The frequency of internet use

Sr. No.	Frequency of Internet visits	Students of Agriculture		Students of faculty of science	
		Frequency	Percentage	Frequency	Percentage
1.	Daily	80	40	77	38.50
2.	Weekly	12	6	24	12
3.	Monthly	8	4	19	9.50
4.	Occasionally	100	50	80	40
	Total	**200**	**100**	**200**	**100**

Majority of the respondent of the agriculture institute belonged to be occasional users group with 50 percent of the respondents. It was followed by daily users with 40.00 percent majority, weekly and monthly users with 12.0 and 8 percent frequency respectively. In case of faculty of science students, it followed a similar trend. It can be inferred from the table that students visit the social networking sites occasionally most often to great and so on followed by daily users who have great affinity towards these sites.

II. Source of interest use

Table 2: Source of internet used by the respondents

Sr. No.	Source of Internet used	Students of Agriculture		Students of faculty of science	
		Frequency	Percentage	Frequency	Percentage
1.	Personal Computer	60	30	91	45.50
2.	Cybercafés	19	9.50	18	9
3.	University/ Institute	41	20.50	28	14
4.	Mobile phones	80	40	63	31.50
	Total	**200**	**100**	**200**	**100**

Majority of respondents belonging to the agriculture institute were seen to be surfing the internet over the mobile phone (40.00 percent) followed by personal computer (30.00 Percent), university /institute (20.50 percent). It can be inferred from the table that with the easy availability and lower cost of the handsets containing advanced features, the utilization of internet from mobile phones have become very common. It is followed by use of personal computer since the university provides good connectivity in the hostels.

III. Awareness about social computing

Table 3: Awareness regarding social networking

Sr. No.	Source of Internet used	Students of Agriculture		Students of faculty of science	
		Frequency	Percentage	Frequency	Percentage
1.	Aware of social networking	189	94.50	180	90
2.	Not aware of social networking	11	5.50	20	10
	Total	**200**	**100**	**200**	**100**

It can be seen from the table that maximum no. of respondents comprising 94.50 percent and 90 percent in case of agriculture and science faculty students were aware of social networking.

Conclusion

Social Computing and online communities have ushered in a new era of the web, where information and communication technologies are facilitating organized human endeavor fundamentally in new ways. The study clearly revealed that students visited the social networking site occasionally that too most often to greet and so on followed by daily users who have great affinity towards these sites. The study further pointed out that with the easy availability and lower cost of the handsets containing advanced features, the utilization of internet from mobile phones had gained popularity. As far as the awareness about social computing in concerned, the study revealed that most of the students were aware about it. The broad impact of social computing in diverse domains and the complexity of features that span diverse disciplines pose new challenges for information Systems researchers.

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Wholesale Fish Market of Nagpur, Maharashtra, India: A Case Study

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Maharashtra is bestowed with around 3,18,000 ha water spread area in the form of tanks, reservoir, lakes etc., and around 19,500 Km stretch of river is the potential area for inland fishery (Department of Fisheries (DOF), Nagpur, Government of Maharashtra). The state achieved 1,45,110 tonnes inland fish production in ar 2011-2012 and Rs. 1,10528.84 lakh in terms of value tonnes (Department of Fisheries, Nagpur, Government of Maharashtra).

Fish marketing is important to the field of fisheries, because it significantly contributes to the economics of country, in turn is a helping hand for poverty alleviation, employment generation, and raising livelihood for the fishers

In India, marketing efficiency is more in case of marine species than fresh water species since the fresh water species have to travel longer distances from the point of production to consumption centre passing many intermediaries as compared to the marine species. India has the prevalent fish marketing system in its Kolleru lake area in Andhra Pradesh which is highly efficient marketing system of Indian Major Carps (IMC) than any other major aquaculture states like West Bengal, Orrisa and marine states like Maharashtra and Tamilnadu. umar (Kumar et. al. 2008, 2010).

Nagpur is one of the leading cities of Maharashtra. Nagpur region includes six districts *viz*Wardha, Nagpur, Bhandara, Gondia, Chandrapur and Gadchiroli. Collectively the inland fish production of the potential region of Maharashtra is 52,831 tonnes in the year 2011-12 which is region wise largest in the state. Among these six districts of Nagpur region, Nagpur alone has achieved the inland fish production of 12,200 tonnes in the year 2011-2012. Inland fishery resources are abundantly available in Nagpur Region.

Methodology

The information was collected from 44 respondents from Bhoipura fish market, largest wholesale market of Nagpur market which included Farmer, Wholesaler, Retailer, Vendor, with the help of interview schedule. The study was conducted during April, 2014. Discussions were held with the Commissioner of Fisheries, Assistant Fisheries Development Officer (AFDO) from the Department of Fisheries of Nagpur. Protocols used for data collection were standardized with the consultation of experts.

Findings

The present research study focused to explore the peculiarities of the selected fresh water fish market and its existing marketing pattern.

Profile of Nagpur Fish Market

Bhoipura fish market is the largest wholesale market of Nagpur. Total number of species coming in the market were 15-20. Most dominant among them were Catla, Rohu, Mrigal, Magur and Pangasius. There are 150 retailers in the market and 20 wholesalers. The approximate turnover of the market is Rs. 250000per day. Market opens at 8:00 am and is closed at 7:00 pm. The market area is 300 sq km.

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Prevailing Wholesale and Retail Prices of Carp Species

Wholesale price of Catla, Mrigal, Silver carp and Common carp was Rs. 60/Kg whereas Rohu was sold at a little higher price at Rs. 70/Kg. Retailer selling price varied from Rs. 100 to 120/Kg. The marketing margin for Catla, Rohu and Mrigal between wholesaler and Retailer is 50 Rs./kg but the minimum margin is in case of common carp and silver carp which is 40 Rs./Kg. Though the rate of Rohu was higher than Catla and Mrigal, marketing margin found was the same. An acceptable table size of Catla fish was found 3-7 Kg, Rohu and Silver carp 3-5 Kg, Common carp 3-6 Kg and Mrigal 2-4Kg respectively. The fishes were packed using jute bags for local transportation and plastic crates were used for the fish coming from Andhra Pradesh and Karnataka.

Prevailing Wholesale and Retail Prices of Non-Carp Species

Non-carp species sold were Seenghala, Pangasius, Scampi, Wallagoattu, Murrels, Magur and Tilapia. Their wholesale price ranged from Rs. 30/Kg for Tilapia which was the least and Rs.200/Kg for scampi which was the highest price. The retailer's price for Tilapia was Rs. 50/Kg and Rs.400/Kg for scampi. The market margin for non-carp species varied between Rs. 20 to 200 /kg. An acceptable table size found for scampi was 60-250gm, Pangasius above 1 Kg, Seenghala 50-100gm, Magur less than ½ kg, Murrel ½ Kg, Tilapia 6-100gm and Wallagoattu ½-4 Kg. The packaging material used for Scampi and Pangasius was plastic crates and thermocole boxes along with ice since it was procured long distance places, bamboo crates were used for Seenghala and Tilapia, Murrel and Wallagoattu were packed in gunny bags and live Magur was sold in fibre crates whereas dead fish in jute bags.

Sources of Fish Procurement

Indian Major Carps were procured from reservoir, river and inland aquaculture ponds, however consumer preferred reservoir and river fishes. Silver carp, Common carp and Tilapia were procured from reservoir and aquaculture ponds whereas seenghala, scampi, Murrel, Pangsius and Magur were exclusively available from aquaculture ponds. *Wallagoattu* was the species which was available only from reservoir. Indian Major Carps, Scampi, Magur and Pangasius available in the market were mostly brought from Andhra Pradesh, Karnataka and the other species available were brought from within the Maharashtra and nearby places of Nagpur like Bhandara , Chandrapur, Gadchirolli, Bor dam of upper Wardha&local places of Nagpur like Shukravar lake and local ponds.

Prevailing fish marketing channels

The supply of fish to the market from capture fisheries and culture fisheries was carried out through the different market channels. In the above fish marketing chain, fish farmer is the producer who cultivates the fish, wholesaler is the one who purchases the fish in large quantity or in bulk, Middlemen act as the commission agent, traders are the merchants who move from village to village and purchase the produce from the fish farmers directly.

Monthly supply of fish in Nagpur fish market

All the available species of fish except Magur (*Clarius batrachus*) and sometimesSeengalaare sold in dead condition. As in the case of marine fish, there is no banned season for fresh water fishes. Fishes are spoiled rapidly during summer due to the melting of ice. Icing ration used is 60% ice and 40% fish. Spoiled fishes are thrown away instead using for fish meal or fertilizer. Table 1 shows the availability as per quantity of different fish species. Retailers purchase the fish in small quantities and sell it directly to the consumers.

Table 1: Availability of different fish species in the market

Sr. No.	Species	Availability	Peak availability	Less availability
1.	Catla, Rohu, Mrigal,	Oct-June	Jan-March	July-Sep
2.	Silver carp, Common carp	Dec-June	March- June	July - Oct
3.	Murrel, Magur, Seenghala, Wallagoattu	Oct-June	April-May	July -Sep
4.	Pangasius and Scampi	Jan-Dec	Jan-March	July-Oct

Transportation of Fishes

Fishes coming from local or nearby water bodies reach the market within 1-1/2 hr and fishes which are imported from Andhra Pradesh and Karnataka need one day to reach the Nagpur fish market. The fish are transported to the market by trains and trucks. These are properly packed in thermocol boxes, trays and cages, plastic crates prior to transportation to avoid physical damages and autolytic degenerations. During this, they maintain an approximate ratio of fish and ice of 60:40.

Annual Calendar of Supply and Demand

There is a good supply of fish in August however, there is no demand because Hindus observe *Shravan*month when they do not eat non vegetarian food. In monsoon season, there are many festivals of Hindus hence July – Sep there is good supply but less demand for fish. During October to June, the demand of fish is high and the peak demand is during winter season. In winter, price is high as demand is more. There is variation in price between summer and winter season because in summer fishes are highly perishable than winter. Price rate is high in winter by Rs. 30-40 compared to peak season.

Conclusion

From the study it is clear that Bhoipura fish market which is the largest wholesale market of Nagpur has a good presence of a local market for different fresh water fish species. This market is a valuable asset for the marketing of fish. With aquaculture and fisheries being given importance in the recent plans by Central as well as State Governments this detailed survey of Bhoipura fish market, largest wholesale market of Nagpur with complete information about local species availability, fish supply and demand, and pricing of various available fish species can be used for making recommendations for appropriate fish marketing strategy for the local markets. The policy maker can have ready information on the fish species which have the market and encourage the culture of these species accordingly.

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Constraints in Adoption of Guava Cultivation Technologies by the Rural Women

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Fruits and vegetables are playing a pivotal role in strengthening the country's nutritional security besides generating employment avenues. Fruits, fresh or dried have been natural staple diet of human being. Utilization of fruits has been inherent in the Indian way of life since long. A large variety of fruits are grown in India starting from Apple to Ber and among these guava is fourth most important fruit of the tropics and subtropics area Each part of the Guava tree i.e.leaf, fruit, bark, root, seed and twigs has medicinal properties and economic value. Women play a significant and crucial role in agricultural development and its allied fields..A continuous efforts are being made by the union and state government to train them through various policy initiatives. The results of the research studies indicated that despite this dominance of the labor force, women in India are still facing problems. These problems may be of different types and might be perceived by women with different magnitude. Therefore, the present study is an attempt to find out the major barricades which hinder the adoption of recommended guava cultivation technologies in the chittorgarh district.

Methodology

The present study was conducted in Chittorgarh district of Rajasthan state. The study was conducted in four villages *swroop ji ki khedi* and *vamanheda* of Begun panchayat samiti and *kharnai* and *Dhagad mau khurd* villages of Bhaisrodgarh panchyat samiti The total sample of the study consisted of 100 rural women. Interview schedule was developed by the investigator for the study and interview technique was used for data collection. Frequency and Percentage were calculated to analyze the data.

Findings

A constraint means any impediment faced by the respondent in adoption of new technology. Adoption of new technology is not an easy task. An individual face many problem in adoption of new technologies differs from practice to practice. Hence in present investigation an effort was made to explore problems faced by the economic constraint and general constraint. The pertaining information is presented as under.

Table 1:- Technical constraints in adoption of Guava cultivation technologies as perceived by the rural women (n=100)

Sr.No.	Technical constraint	f/%
1.	High mortality of plants during the initial stage	76
2.	Lack of technical know - how	70
3.	Long vegetative period	70
4.	Disease sensitive	66
5.	Lack of regular water supply	25
6.	Poor quality of water	10

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The technical problems associated with acceptance & utilization of guava cultivation technologies data presented in Table 1 reveal that majority (70-76%) of the respondent reported that during the initial stage of plant growth mortality rate was high, lack of technical knowledge in fertilizer application, planting material treatment, plant protection measures and long vegetative period. Other constraints observed by more than half of the respondent were disease sensitivity of guava orchards. lack of regular water supply and poor quality of water as reported by 10-25 per cent respondents.

Table 2 :-Marketing constraints in adoption of Guava cultivation technologies as perceived by the rural women (n = 100)

Sr.No.	Marketing constraints	f/%
1.	Lack of storage facility	81
2.	Lack of grading & packaging facility	74
3.	Fluctuation in market prices	74
4.	No processing industry	35
5.	Poor marketing in local area	33
6.	Lack of cooperative markets	28

With regards to marketing problems faced by the respondents in marketing of guava data presented in Table 2 depicts that lack of storage facility, lack of grading & packaging facility and fluctuation in market prices were the major constraints associated with marketing of guava were reported by more than 70 per cent respondents. Data in the table further show that nearly one third of the respondents were in view that lack of preservation industry in the area, poor local market and lack of cooperative marketing system were the other problems associated with guava cultivation. Information related to economic obstacle in adoption of guava cultivation technologies data presented in Table 3 indicate that more than half of the respondents were of the view that high post-harvest losses, high initial cost of orchard establishment, high cost of transportation including fruits and planting materials and labor intensive affair were the economic problems in guava cultivation. High costs of planting materials, insecticides & pesticides and lack of credit facility were the other constraints perceived by 25- 28 per cent guava growers.

Table 3 :- Economic constraints in adoption of Guava cultivation technologies as perceived by the rural women (n = 100)

Sr. No	Economic constraints	f/%
1.	High post- harvest losses	77
2.	High initial cost of orchards establishment	66
3.	High cost of transportation of fruits & planting materials	65
4.	Labor intensive affairs	55
5.	Costly planting materials	47
6.	High cost of insecticides and pesticides	28
7.	Lack of credit facility	25

Table 4:- General constraints in adoption of Guava cultivation technologies as perceived by the rural women (n = 100)

S.No.	General constraints	f/%
1.	Threats from wild and stray animals	80
2.	Small and fragmented land holding	75
3.	Chances of theft	36

Data presented in Table 4 reveal that majority of respondents reported for the problem of wild and stray animals, small and fragmented land holdings and theft of fruits were the major problems as perceived by 80, 75 and 36 per cent respondents, respectively.

Conclusion

On the basis of findings of the study it can be concluded that majority of the respondents faced the problem of high

mortality of plants during the initial stage ,lack of technical know – how, long vegetative period, lack of storage facility , lack of grading & packaging facility, fluctuation in market prices , high post- harvest losses, high initial cost of orchards establishment and threats from wild and stray animals were the major problems faced by the guava growers. Therefore efforts should be made to overcome these problems through developmental programs.

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Hi-tech Gerbera cultivation Practices followed in Maharashtra

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Agriculture and allied sectors contributes 24% of the total GDP and provides employment to around 67% Indian population Indian farmers face several challenges such as small land holding, poor yields due to reliance on inefficient methods of farming, too much reliance on natural phenomena such as rainfall and lack of knowledge of modern methods of agriculture. Currently, farmers are taking interest in polyhouse farming. Polyhouse farming process requires expertise in three areas - construction of the structure, cultivation techniques and marketing. Within cultivation, the pre-harvest techniques include irrigation, providing fertilizers, pesticides and micro-nutrients, maintaining temperature, humidity and sunlight in the polyhouse, cutting, pruning and cleaning practices and controlling pH and electrical conductivity of the soil. The post-harvest techniques include cutting, storage cooling chambers and transport by cooling vans.Realizing the importance of polyhouse technology, the polyhouse units at farmer's level as an enterprise are increasing day by day. In Maharashtra, particularly Pune district is leading in polyhouse technology for cultivation of flowers and vegetables. The polyhouse differs in terms of cost on the basis of type. Government of India gives 50% subsidy for low cost polyhouse, 20% for medium cost polyhouse and 10% for high cost polyhouse as an incentive. The Gujarat Govt. provides the flat subsidy rather than the type of polyhouse. As per the suggestions of the polyhouse owners the Maharashtra Govt. also provide the subsidy on the line of Gujarat Govt.

Methodology

The present study conducted in the three tahsils Baramati, Haveli and Bhor in Pune District. Total 36 respondents were selected for the study and from these six (6) respondents from each tahsil were Gerbera growers.

Findings

Knowledge and Adoption

Gerbera cultivation technology:

The data from table- 1 revealed that the cent percent of the respondents had the knowledge and adoption of the recommended soil requirement, land preparation, size of bed, variety, transplanting time, planting distance and following the recommended inter-culturing operations for Gerbera. Regarding water management practices all had following the drip and other irrigation practices. As regards plant protection majority of the farmers (77.76 per cent) having knowledge and adoption about control of insects like Mites, Thrips and diseases like powdery mildew. Nearly all the respondents 94.44 per cent having knowledge of control measures for *Leaf Minor*. Considering the harvesting and storage practices, cent percent farmers having knowledge and adoption about harvesting time, method and packaging material. All the respondent farmers following the recommended gradation practice, production, and all were having knowledge about the plant population.

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Table - 1: Practice wise Knowledge and Adoption of farmers about Polyhouse technology for Gerbera

Sr. No.	Improved Practice	Knowledge level (n=18)			Adoption level (n=18)		
		Complete	Partial	No	Complete	Partial	No
1	**Medium (Soil/ Cocopit)**	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
2	**Soil**						
	1) Well Drained	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	2) PH (5.5 to 6.5)	15 (83.33)	3 (16.87)	0 (00.00)	14 (77.78)	4 (22.22)	0 (00.00)
3	**Land Preparation**						
	1. Red Soil	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	2. Soil Sand Compost (2:1:1)	17 (94.44)	1 (5.56)	0 (00.00)	17 (94.44)	1 (5.56)	0 (00.00)
	3. Size of Bed 75cm W X 30-45cm H	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	4. Fumigation 3% Formalin	14 (77.78)	4 (22.22)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
4	**Seedling Treatment** Carbanzim 0.1 % 2 min	14 (77.78)	4 (22.22)	0 (00.00)	14 (77.78)	3 (16.67)	1 (5.56)
5	**Variety** Aronla, Dyblow, Sawana, Ranoflek, Dalna, Pink Theling etc.	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
6	**Transplanting Time** July-Aug	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
7	**Planting Distance**						
	1. 30 X 30 cm	18 (100.00)	0 (00.00)	0 (00.00)	16 (88.89)	2 (11.11)	0 (00.00)
	2. Distance bet. 2 Beds- 50cm	12 (00.00)	6 (33.33)	0 (00.00)	14 (77.78)	4 (22.22)	0 (00.00)
	3. Plants per Guntha	16 (88.89)	2 (11.11)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	4. Size of Bed L & W X 90cm	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
8	**Environment Control**						
	1. Day Temp. 22^0c - 25^0c	0 (00.00)	17 (94.44)	1 (5.56)	11 (61.11)	7 (38.89)	0 (00.00)
	2. Night Temp 20^0c - 22^0c	9 (00.00)	6 (33.33)	3 (16.67)	13 (72.22)	5 (00.00)	0 (00.00)
	3. Humidity 60-70% Use fogger	7 (38.89)	11 (61.11)	0 (00.00)	7 (38.89)	8 (00.00)	3 (16.67)
9	**Fertilizes Management**						
	1. NPK Planting Time 20:20:15	12 (66.67)	5 (27.78)	1 (5.56)	12 (66.67)	6 (33.33)	0 (00.00)
	2. NPK / Month 10:15:20 for three month	12 (66.67)	5 (27.78)	1 (5.56)	12 (66.67)	6 (33.33)	0 (00.00)

	3. NPK after 3 Months 15:10:30	12 (66.67)	5 (27.78)	1 (5.56)	12 (66.67)	6 (33.33)	0 (00.00)
10	**Interculturing operation**						
	1.Remove dry leaves	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	2. Hoeing once a month	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	3.Remove off type buds/flowers	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
11	**Water Management**						
	1. Drip Irri. 700ml/plant/day	14 (77.78)	4 (22.22)	0 (0.00)	14 (77.78)	4 (22.22)	0 (0.00)
	2. Watering with Zari (21 days)	18 (100.00)	0 (0.00)	0 (0.00)	15 (83.33)	3 (16.67)	0 (0.00)
12	**Plant Protection**						
	1. Nematode	1 (5.56)	2 (11.11)	15 (83.33)	3 (16.67)	0 (0.00)	15 (83.33)
	2. Karpa	4 (22.22)	12 (66.67)	2 (11.11)	6 (33.33)	10 (55.56)	2 (11.11)
	3. Powdery Mildew	14 (77.78)	4 (22.22)	0 (0.00)	14 (77.78)	4 (22.22)	0 (00.00)
13	**Harvesting and Storage**						
	1. Centre colour	15 (83.33)	0 (00.00)	3 (16.67)	15 (83.33)	0 (00.00)	3 (16.67)
	2. Standing pollens	14 (77.78)	4 (22.22)	0 (00.00)	17 (94.44)	1 (5.56)	0 (00.00)
	3. Harvesting at Morning/Evening	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	4. Use water bucket	12 (66.67)	6 (33.33)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	5. Harvesting method	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	6. Use of polythene for packing	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	7. Storage at 4^{o}c	2 (11.11)	11 (61.11)	5 (27.78)	1 (5.56)1	0 (00.00)	17 (94.44)
14	**Grading**						
	1. Same size	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	2. Straight stem	18 (100.00)	0 (00.00)	0 (00.00)	17 (94.44)	1 (5.56)	0 (00.00)
	3. Length and diameter of stem - 40cm	15 (83.33)	3 (16.67)	0 (00.00)	14 (77.78)	4 (22.22)	0 (00.00)
15	**Production**						
	1. Production per plant 30-40 flowers	15 (83.33)	3 (16.67)	0 (00.00)	15 (83.33)	3 (16.67)	0 (00.00)
	2. Plants Per guntha	18 (100.00)	0 (00.00)	0 (00.00)	18 (100.00)	0 (00.00)	0 (00.00)
	3. Flowers per guntha	16 (88.89)	2 (11.11)	0 (00.00)	16 (88.89)	2 (11.11)	0 (00.00)

II Overall knowledge and adoption of the respondents about polyhouse technology

Table - 2 Overall Knowledge of the respondents about Gerbera Cultivation Technology

Sr. No.	Category	Frequency	Percent
1.	**Low** (Score Up to 75)	4	22.22
2.	**Medium** (Score 76-88)	11	61.11
3.	**High** (Score above 89)	3	16.67

From the results, it is observed that majority (61.11 per cent) of the respondents possessed medium level of knowledge about gerbera polyhouse technology. About 22.22 per cent of the respondents had low knowledge and only 16.67 per cent respondents had high level of knowledge about Gerbera polyhouse technology.

Table – 3 Overall Adoption of the respondents about Gerbera Cultivation Technologies

Sr. No.	Category	Frequency	Percent
1.	**Low** (Score Up to 75)	6	33.33
2.	**Medium** (Score 76-95)	12	66.67
3.	**High** (Score above 96)	0	0.00

The results regarding overall adoption of Gerbera polyhouse technology more than half of the respondents (66.67 per cent) had medium level of adoption, followed by 33.33 per cent respondents having low level of adoption. Not a single respondent had high level of adoption about Gerbera polyhouse technology.

Constraints and Suggestions

I. Constraints

Cent percent of the respondents had the constraints i.e. Irregular supply of electricity. Almost all (95.70 per cent) had recorded High charges of consultancy services i.e. Rs. 300000 to 50000 per unit/ year. High cost of seeds, fertilizer, insecticides and pesticides (93.55 per cent). Shortage of skilled labours for routine polyhouse work (91.40 per cent). Damage to the polyhouse structure due to high winds and difficult to settle the insurance claims (90.78 per cent)

II. Suggestions

Cent percent of the respondents recorded the suggestion i.e. "Electricity may be supplied for 24 Hrs.". The market rates of the polyhouse products should be fixed by the Govt. Increase the subsidy ratio 50% for the establishment of polyhouse as per Gujarat Govt. The subsidy of the polyhouse should be getting immediately after the sanction of the proposal. The procedure for the bank loan should be simplified.

Conclusion

The study about overall adoption of Gerbera polyhouse technology revealed that more than half of the respondents (66.67 per cent) had medium level of adoption, followed by 33.33 per cent respondents having low level of adoption. Not a single respondent had high level of adoption about Gerbera polyhouse technology. On the basis of findings of the study it is suggested that the long duration trainings (minimum 15 days) needs to be organized by the Agriculture Universities and State Department of Agriculture for the polyhouse owners so as to reduce high cost of private consultancy services.

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Level of Attitude of Respondents Regarding Indigenous Water Harvesting Practices in Bikaner District of Rajasthan

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Water is the most precious commodity in the arid region due to prevalence of unfavourable hydro-meteorological condition. In north western Rajasthan particularly in Bikaner district the quantity of water available from various sources such as surface water and ground water are not sufficient even for drinking purpose. Over and above the insufficient quantity, the ground water is moderately to high saline over a large area. People have been depending on rain water harvesting structure (RWH) in the form of small ponds (Nadis) reserviors underground tank (Tanka), khadins etc. either for drinking purpose or for agriculture, since time immemorial.

In Rajasthan, the traditional method of rain water harvesting can be one of the answers of the problems of perennial water scarcity for drinking water. To overcome the shortage of drinking water, a traditional method of water harvesting called TANKA is a useful alternative source. TANKA is a local name given to a covered underground tank generally made of masonary or concrete for collection and storage of surface run-off.

Methodology

The present study was conducted purposively in selected Bikaner and Kolayat Panchayat Samities of district Bikaner. Five villages where maximum number of Indigenous Water Harvesting Practices in operation were selected from each identified panchayat samity. A list of total Indigenous Water Harvesting Structure (Tanka) from each selected village were prepared with the help of GramSevak and Patwari and a sample of 120 peoples and 12 Tanka owners were drawn randomly from each village. Data were collected by the investigator through personal interview technique with the help of structured schedule.

Findings

Level of attitude of respondents regarding Indigenous Water Harvesting Practices

This deals with the results related to ascertain the level of attitude of respondents regarding Indigenous Water Harvesting Practices. The "Attitude scale" specially developed for the present study was administered to the selected respondents. The total score of a respondent on the attitude scale was obtained by adding the scores of all individual items in the scale. The range of the score of the respondents in the present study varied from 20 to 60.

To measure the attitude of farmers towards Indigenous Water Harvesting Practices, the average score for each farmer was calculated by adding the scores of all 20 items and dividing the total score by the total number of items. The range of mean score varied from 1.67 to 2.85. The overall mean score of respondents was found to be 43.02. Based on the mean score obtained by the respondents, standard deviation was calculated.

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On the basis of overall mean score and standard deviation, the attitude of farmers was classified into three categories namely "Less favourable attitude", "Favourable attitude" and "Most favourable attitude".

1. The farmers who attained the mean score below 39.45 were classified as having less favourable attitude towards Indigenous Water Harvesting Practices.
2. Respondents who obtained the mean score between 39.45 to 46.61 were categorized as having favourable attitude towards Indigenous Water Harvesting Practices.
3. The farmers who obtained the mean score more than 46.61 were categorized as having most favourable attitude towards Indigenous Water Harvesting Practices.

Table Distribution of the respondents on the basis of level of attitude regarding Indigenous Water Harvesting Practices

Average Attitude score	Level of attitude	Frequency	Percentage
Below 39.45	Less favourable	11	9.17
Between 39.45 to 46.61	Favourable	90	75.00
More than 46.61	Most favourable	19	15.83
Total		**120**	**100.00**

Mean = 43.03, SD=3.58

The data reported in Table show that the 9.17 per cent respondents having less favourable attitude and 15.83 per cent having most favourable attitude towards Indigenous Water Harvesting Practices. Maximum (75.0%) respondents having favourable attitude regading Indigenous Water Harvesting Practices. As over all mean score of the respondents is 2.13, hence it may be inferred that most of the farmers had, positive attitude towards Indigenous Water Harvesting Practices.

It could be concluded that majority of the farmers (75.0 per cent) had "Favourable Attitude", followed by 9.17 per cent and 15.83 per cent respondents who has "Less Favourable Attitude" and "Most Favourable Attitude", respectively, towards Indigenous Water Harvesting Practices. This might be due to the fact the farmers are realizing the importance of water harvesting from the point of view of sustainability in agriculture.

Conclusion

It was observed that 75.00 per cent respondents were having favourable attitudes towards Indigenous Water Harvesting Practices, whereas, 15.83 and 9.17 per cent respondents were having less favourable and most favourable attitude, respectively.

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Relationship between Knowledge and Selected characteristics of Tribal Farmers Regarding Watershed Management

N. G. Patel[1], Dr. J. B. Patel[3] and P. C. Patel[2]

The total agriculture production of rainfed area is of the order 46 per cent of the national agricultural production. If the available irrigation potential is developed to its full extent, nearly 50 per cent of cultivated land will still remain under rainfed farming for the foreseeable future. Realizing the importance of dry land agriculture and in order to meet the challenge before the country to support higher level of population and better standard of living, the Government of India have accorded the highest priority to the logistic and sustainable development of rainfed areas, through adoption of holistic approach of watershed. As far as Gujarat is concerned it is predominantly the state for dry land agriculture. At present, out of 95.83 lakh hectares of total net area, about 77 per cent area is rainfed. Tribal area is potential for agriculture in the state. In Gujarat, tribal population constitutes 14.92 per cent of the total population in the state. Gujarat is fourth among the states with a sizable tribal population. Tribal largely inhibit the border and hilly tracts of Gujarat. Keeping above fact in mind it was considered worthwhile to study knowledge of Tribal Farmers Regarding No-Cost and Low-Cost Technologies of Watershed Management.

Methodology

The study was conducted on a random sample of 120 tribal farmers of four purposively selected villages of three purposively selected talukas of Panchmahals district of Gujarat state. The data were collected by personal interview technique. 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.

Findings

1) Knowledge level of no-cost and low-cost technologies of watershed management among the tribal farmers

Table: 1 Practice wise knowledge level of no-cost and low-cost technologies of watershed management among the tribal farmers

Sr. No	Categories	Practices			
		(I) Soil and water conservation technology		(II) Crop production technology	
		Frequency	Percentage	Frequency	Percentage
1	Very low	00	0.00	00	0.00
2	Low	00	0.00	27	22.50
3	Medium	38	31.67	77	64.17
4	High	37	30.83	12	10.00
5	Very high	45	37.50	04	03.33
Total		**120**	**100.00**	**120**	**100.00**

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1.1 Soil and water conservation technology

The data presented in the table-1 reveal that less than half (37.50 per cent) of tribal farmers found with very high level of knowledge, followed by 31.67 per cent and 30.83 per cent of tribal farmers found with medium and high level of knowledge regarding soil and water conservation technology. None of the tribal farmers fall under the categories of very low and low level of knowledge regarding soil and water conservation technology.

1.2 Crop production technology

The data presented in the table reveal that nearly two third (64.17 per cent) of tribal farmers found with medium level of knowledge, followed by 22.50 per cent, 10.00 per cent and 3.33 per cent of tribal farmers found with low, high and very high level of knowledge regarding crop production technology. None of the tribal farmers fall under the categories of very low level of knowledge regarding crop production technology.

Table:2 Distribution of tribal farmers according to their overall knowledge level of no-cost and low-cost technologies of watershed management.

Sr. No.	Overall knowledge level categories	Tribal farmers	
		Frequency	Per cent
1	Very low (Up to 20 score)	00	0.00
2	Low (21 – 40 score)	00	0.00
3	Medium (41 – 60 score)	55	45.83
4	High (61 – 80 score)	40	33.34
5	Very high (Above 80 score)	25	20.83
Total		**120**	**100.00**

The data from the table-2 indicated that nearly half (45.83 per cent) of the tribal farmers had medium level of overall knowledge followed by 33.34 per cent and 20.83 per cent had high and very high level of overall knowledge. None of the tribal farmers fall under the categories of low and very low level of overall knowledge about no-cost and low-cost technologies of watershed management.

2) Relationship between profile of tribal farmers and their knowledge of no-cost and low-cost technologies of watershed management.

Table:3

Sr. No.	Independent Variables	Correlation Coefficient ('r' value)
1	Age	- 0.192*
2	Education	0.489**
3	Experience in farming	0.222*
4	Social participation	0.223*
5	Training received	0.198*
6	Mass media exposure	0.527**
7	Extension contact	0.363**
8	Occupation	0.401**
9	Land holding	0.281**
10	Annual income	0.374**
11	Scientific orientation	0.253**

**** Significant at 0.01 probability level * Significant at 0.05 probability le**

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-3. The relationship analysis revealed that the education, mass media exposure, extension contact, occupation, land holding, annual income and scientific orientation exhibit positive and highly significant relationship with knowledge level of tribal farmers.

Education is pre-requisite of desirable changes in human behaviour and it helps the individual to open mental horizon of mind resulted into positive disposition towards any innovation, better exposure of tribal farmers through mass media provided them the knowledge and importance of various no-cost and low-cost technologies of watershed management for sustainable rainfed farming occupation in same way occupation is only a factor which influences the annual income of an individual. As occupation increased, automatically income will be increases and with the increase of income risk bearing capacity of the farmers will be increased which led them acquire knowledge about new technologies, as well as large land holding permitted them to manage the fodder and housing requirement in a better way. Moreover, they could maintain larger farming and obtained high returns likewise better financial condition of tribal farmers might have helped them to be capable to gain knowledge regarding proven no-cost and low-cost technologies of watershed management, in addition to purchase/avail the essential inputs for successful rainfed farming. And scientific orientation opened the mental horizon which acted as a catalyst in changing behavior of the tribal farmers, which would have resulted into its significant influence on knowledge of no-cost and low-cost technologies of watershed management.

Conclusion

It can be concluded that cent per cent of tribal farmers had medium to very high level of overall knowledge about no-cost and low-cost technologies of watershed management.

The variables like education, extension contact, annual income and risk orientation could contribute significantly towards knowledge of farmers about no now-cost and low-cost technologies of watershed management.

The probable reason for medium level of knowledge of farmers might be due to their very high level of extension contact and medium to high level of mass media exposure, besides their primary to secondary level of formal education might have encouraged them to take interest in various awareness programmes run by State Agricultural Department, SAUs, Watershed Management Agencies, K.V.K., NGO's and Vanbandhu Welfare Programmes of Tribal Development Department in the tribal belt of Gujarat state.

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Information Seeking Behaviour of Pomegranate Growers in Western Maharashtra

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India with diverse soil and climate comprising several agro-ecological regions provides ample opportunity to grow a variety of horticultural crops. These crops form a significant part of total agricultural produce in the country. Pomegranate is gaining a lot of attention world over because of its high economic and neutraceutical values. India is the largest pomegranate producer in the world (8.6 lakhs tones) sharing about 36 per cent of the world's production. The study revealed that the majority of the pomegranate growers had 36 to 50 years age, received up to degree and higher education, had higher socio-economic status, cosmopoliteness and small land holding, cultivating the pomegranate crop on 2.01 to 5.00 hectares of their land holding, had annual income between Rs. 4, 00,001/- to 7, 00,000/-, were having higher scientific orientation (60.44 %), economic motivation (58.22) and innovativeness (40.44 %), higher use of extension personnel, group contact sources for getting information on plant protection measures

Methodology

The emphasis in the study was on information sources used by the pomegranate growers. In Maharashtra the pomegranate is being grown on larger area in Nashik, Solapur, Sangali, Ahmednagar, Satara and Jalgaon districts. Considering larger area under pomegranate cultivation Sangli, Solapur and Nashik districts from Kolhapur, Pune and Nashik divisions are selected for the present investigation. One tahasil having maximum area under pomegranate cultivation from each selected district was considered for the study. Hence, three tahasils viz., Atpadi, Sangola and Satana were selected for the study. Five villages from each tahasil were selected randomly on the basis of maximum area under pomegranate cultivation. In all total fifteen villages were selected for the study. The data were collected from 225 pomegranate growers with the help of personal interview schedule specially structured for the purpose and the data were analyzed. Hence, for conducting the present study an exploratory design of social research was used.

Findings

A) Personal traits of pomegranate growers in Western Maharashtra

The data regarding the personal traits of the respondent's *viz.,* age, education, socio-economic status and cosmopoliteness of pomegranate growers are depicted as follows.
The results revealed that more than half of the pomegranate growers were of 'middle' age. Fifty five per cent of the total respondents were 'middle' age followed by 32.89 per cent 'young' age respondents and 11.56 per cent 'old' respondents. It is inferred from the table that more young and middle aged farmers are engaged in the pomegranate cultivation.

The results shows that maximum number of respondents (36.00 %) were educated upto 'degree' and higher education level, followed by respondents educated upto the 'secondary' and'higher.

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It is seen, that majority of the pomegranate growers (51.55 %) belonged to 'high' to very higher socio-economic status, followed by the respondents (21.78 %) belonging to 'medium' socio-economic status. While, 18.22 per cent of them had 'low' socio-economic status. It is observed from Table 16 that, majority of the pomegranate growers (46.67 %) had 'higher' level of cosmopoliteness, followed by 28.89 per cent and 24.44 per cent had 'medium' and 'low' level of cosmopoliteness respectively. The data thus indicated that large proportions of respondents were had higher cosmopoliteness.

It also depicts that majority of the pomegranate growers (41.33 %) had annual income between Rs. 4, 00,001/- to 7, 00,000/-. However, an equal proportion of respondents had income upto Rs. 4, 00,000/- and Rs. 7, 00,001/- to 10, 00,000/- respectively. While, 17.78 per cent had income above Rs. 10, 00,000/-. It was apparent, that nearly two-fifth of the respondents (38.67 %) belonged to the category of 'small' land holding ranging from 2.01 to 4.00 ha. It was followed by (32.00 %) 'medium' land holding possessing land from 4.01 to 10.00 ha. and (19.11 %) respondents belongs to 'large' holding category i.e. above 10.00 ha. It was observed from Table 1, that majority of pomegranate growers (52.00 %) belonged to the category of 'small' area under pomegranate cultivation from 2.01 to 5.00 ha. followed by (25.33 %) 'marginal' category holding area up to 2.00 ha. and (14.22 %) respondents belongs to 'medium' category i.e. from 5.01 to 7.50 ha. The data thus indicated that a large proportion of the respondents were having '2.01 to 5.00 hectare' area under pomegranate. Most of the respondents (52.89 %) had experience up to 7 years in pomegranate cultivation. It was followed by (32.44 %) respondents who had experience from 8 to 12 years and only (14.67 %) of the respondents had experience above 13 years in pomegranate cultivation. The findings are consistent with the observations made by Fulzele *et al.* Table 1 indicates that a majority i.e 60.44 per cent of the respondents had 'high' economic motivation category. However, 26.22 and 13.33 per cent had 'medium' and 'low' economic motivation category, respectively.

It is seen that 58.22 per cent of the respondents were in 'high' scientific orientation category. However, 29.78 and 12.00 per cent had 'medium' and 'low' scientific orientation category, respectively.

Overall information source use

The adoption of an innovation is viewed as a process and requires some sorts of information at different stages. The farmers who are keeping frequent visit with extent agencies can obtain more knowledge about latest plant protection techniques. In this way, twenty four major information sources were indicated to the respondents and their frequency of contact was worked out.

Table 1: Distribution of respondents according to their overall level of information source use

Sl. No.	Characteristic	Respondents (N = 225)	
		Nos.	Percent
1.	**Low** (up to 57 score)	63	28.00
2.	**Medium** (58 to 71 score)	37	16.44
3.	**High** (above 72 score)	125	55.56
	Total	**225**	**100.00**

Table-1, that the majority of the respondents (55.56 %) were having 'higher' level of use of information sources, while 28.00 per cent of the respondents were having 'low' level of use of information sources. Only 16.44 per cent of the respondents were having 'medium' level sources of information about pomegranate cultivation with respect to plant protection measures.

Details about information sources use Extension personnel

Table 2 :Distribution of respondents according to use of extension personnel's as source of information

Sl. No.	Name of Extension Personnel	Once in week	Sometime in a week	Once in fortnight	Once in a month	Once in a season	Sometime in a season	Never	Overall (N=225)
1.	Agril. Assistant	60 (26.67)	53 (23.56)	73 (32.44)	26 (11.56)	02 (0.89)	01 (0.44)	10 (4.44)	225 (100.00)
2.	Agril. Supervisor	0 (0.00)	25 (11.11)	76 (33.78)	08 (03.56)	16 (07.11)	88 (39.11)	12 (05.33)	225 (100.00)
3.	Taluka Agriculture Officer	0 (0.00)	01 (0.44)	01 (0.44)	26 (11.56)	20 (08.89)	123 (54.67)	54 (24.00)	225 (100.00)
4.	Sub Divisional Agril. Officer	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	26 (11.56)	93 (41.33)	106 (47.11)	225 (100.00)
5.	District Superintending Agril. Officer	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	61 (27.11)	164 (72.89)	225 (100.00)
6.	Joint Director Agriculture	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	35 (15.56)	190 (84.44)	225 (100.00)
7.	Scientist from Agril. University	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	182 (80.89)	06 (02.67)	37 (16.44)	225 (100.00)
8.	Experts from private companies	34 (15.11)	54 (24.00)	54 (24.00)	51 (22.67)	20 (08.89)	05 (02.72)	07 (03.11)	225 (100.00)
9.	Officers of Pomegranate Growers Association	0 (0.00)	10 (04.44)	36 (16.00)	19 (08.44)	98 (43.56)	42 (18.67)	20 (08.89)	225 (100.00)
10.	Agro Service Centers	89 (39.56)	52 (23.11)	55 (24.44)	06 (02.67)	0 (0.00)	21 (09.33)	02 (0.89)	225 (100.00)
11.	Agril. consultants	0 (0.00)	0 (0.00)	0 (0.00)	31 (13.78)	07 (03.11)	74 (32.89)	113 (50.72)	225 (100.00)
12.	Experts from KVKs	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	02 (0.89)	28 (12.44)	195 (86.67)	225 (100.00)

(Figures in the parentheses indicate percentages)

It is evident from the Table- 2 that the majority (32.44 %) of the pomegranate growers obtained information from Agriculture Assistant 'once in fortnight'. 33.78 per cent respondents contacted Agril. Superviors 'once in fortnight' for getting information. 54. 67, 41.33 and 27.11 per cent respondents had approached 'sometime in a season' to Taluka Agricultural Officer, Sub Divisional Agricultural Officer and District Superintending Agricultural Officer respectively. Scientists from Agricultural Universities were contacted by 80.89 per cent respondents 'once in a season'. While, 15.11, 24.00 and 22.67 per cent of the respondents availed information from experts of private companies 'once in week', 'some time in a week', 'once in a month', respectively. However, more than seventy percent respondents not approached District Superintending Agricultural Officer, Joint Director Agriculture and KVK experts.

Details about information source use – Group contact

Table 4: Distribution of respondents according to the use of different group contacts as source of information

Sl. No.	Name of Group Contact Method	Once in week	Sometime in a week	Once in fortnight	Once in a month	Once in a season	Sometime in a season	Never	Overall (N=225)
1.	Field Visits	0 (0.00)	02 (0.89)	77 (34.22)	90 (40.00)	48 (21.33)	07 (03.11)	01 (0.44)	225 (100.00)
2.	Farmers Study Tours	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	01 (00.44)	116 (51.56)	108 (48.00)	225 (100.00)
3.	Expert Lectures	0 (0.00)	0 (0.00)	45 (20.00)	48 (21.33)	50 (22.22)	63 (28.00)	19 (08.44)	225 (100.00)
4.	Group Discussions	0 (0.00)	0 (0.00)	0 (0.00)	11 (04.89)	100 (44.44)	78 (34.67)	36 (16.00)	225 (100.00)
5.	Group trainings	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	57 (25.33)	86 (38.22)	82 (36.44)	225 (100.00)
6.	Method Demonstrations	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	79 (60.44)	136 (60.44)	10 (04.44)	225 (100.00)
7.	Result demonstrations	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	02 (0.89)	211 (93.78)	12 (05.33)	225 (100.00)

(Figures in the parentheses indicate percentages)

It is apparent from the data presented in Table 4 that, 40. 00 per cent pomegranate growers attended field visit 'once in a month'. While, more than fifty per cent respondents participated in study tour 'sometime in a season'. Expert lectures, group discussion and group training were attended by 28.00 per cent, 44.44 and 38.22 per cent 'some time in a season' and 'once in a season', respectively.

Details about information source use – Local personnel- A local personnel act as important information source for pomegranate farmers. The data pertaining to the major local personnel was collected from the respondents

Table 5: Distribution of respondents according to the use of different local personnel's as source of information

Sl. No.	Name of Local Personnel	Once in week	Sometime in a week	Once in fortnight	Once in a month	Once in a season	Sometime in a season	Never	Overall (N=225)
1.	Friends	144 (64.00)	61 (27.11)	02 (0.89)	18 (8.00)	0 (0.00)	0 (0.00)	0 (0.00)	225 (100.00)
2.	Relatives	41 (18.22)	88 (39.11)	26 (11.56)	41 (18.22)	11 (4.89)	18 (8.00)	0 (0.00)	225 (100.00)
3.	Progressive Farmers	01 (0.44)	03 (01.33)	69 (30.67)	41 (18.22)	79 (35.11)	13 (05.78)	19 (08.44)	225 (100.00)
4.	Progressive Farmers in pomegranate cultivation	10 (04.44)	55 (24.44)	08 (03.56)	32 (14.22)	62 (27.56)	42 (18.67)	22 (09.78)	225 (100.00)
5.	Award winning farmers	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	05 (02.22)	34 (15.11)	186 (82.67)	225 (100.00)

(Figures in the parentheses indicate percentages)

The data presented in Table 5 reveals that, 64 per cent respondents availed information from relatives 'once in a week'. 39.11 per cent respondents approached relatives 'sometime in a week' for obtaining information with respect to plant protection measures. 35.11, 27.56 and 15.11 per cent respondents got information from progressive farmers, progressive farmers in pomegranate cultivation, award winning farmers 'once in a season', 'sometime in a season', respectively.

Conclusion

Majority of the respondents were having 'higher' level of use of information sources through extension personnel, while few of the respondents were having 'medium' level of use of information sources through extension personnel. A large Majority of the respondents had 'high' group contact, while, an equal proportion of respondents had 'medium' and 'low' group contact, respectively. Thus, it can be concluded that pomegranate growers were using all the information sources for getting the needed technical information pertaining to the pomegranate orchard management.

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Participation of Rural Youth in Cattle Management Practices

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Latur is a country of rural based subsistence agricultural farming system. Such this developing Country, rural sector plays a vital role because most of the people (80.50 percent) of this country live in rural areas. Therefore, the policy makers have recognized rural development as the enterprise of national development. We can seen of this situation by active participation of our rural youth with various Cattle management practices. Cattle of Latur are an inseparable part of the agricultural farming system.

Despite such a high density of cattle population, the outputs of animal production such as milk, meat and drought power fall far short of requirement. These short falls are encouraging due to lack of optimum level of nutrition, disease control, proper housing management practices, and efficient reproductive performance and well thought systematic breeding programme, etc. These animals are kept mainly in the stall with limited grazing on the roadside; Several cattle management practices including feeding straw, green forage and water,breeding practices inclu ding artificial insemination, health care including cleaning and sanitation activity, milk production including processing, storing and marketing are being done directly by rural people. The degrees of participation vary due to the various type of working activity. Dairy enterprise provide additional income and gainful Employment to the members of the family throughout the year are being practiced by many rural youth. Therefore, the present study was undertaken in Latur to know the Participation of rural youth in cattle management practices.

Methodology

The present study was a field survey to investigate the participation of rural youth in cattle management in a selected area Latur in M.S. (2010-2011).A total of twelve villages selected for study. Participation of Rural youth in cattle management practices in a Selected Area of Latur. The total cattle population of Latur district is 2, 99,301(2001 census). Out of eight districts of Marathwada region, one districts viz. Latur was purposively selected. There are ten talukas of Latur district of which three talukas namely Chakur, Latur and Renapur were randomly selected. For the purpose of the study, four villages from each selected taluka and ten respondents from each village were randomly selected. Those ten rural youth from each village were selected and from each village ten respondents were drawn by purposively. Thus, 120 rural youths were taken from the sample 12 villages for the study. A list of rural youth participated in cattle management practices was presented with help of local people for each area. The parameters studied includes the participation of rural youth in activities such as different feeding management and health care activity distribution of dairy cattle by breed type in relation of land , problem ranking regarding cattle rearing and also personal characteristics like education , land holding, type of family, social participation cosmopoliteness,extension contact, source of information. etc. of rural youth. After completionfield survey, data from the entire inte rview schedules was set for its tabulation cording and reduction.

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Findings

A). Practice wise Participation of rural youth in cattle management practices.

Table-1 Participation about selection of animals. (N=120)

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1.	Selection of milking animals	58	48.33	60	50.00	2	1.66	0	0.00
2.	Selection of breed	55	46.00	64	53.33	1	0.83	0	0.00

Table-1 reveals that 48.33 per cent of respondents independently participated in the selection of animals and 46.00 per cent participated fir selection of breed, 50.00 per cent and 53.33 per cent rural youth jointly participated for the selection not milking animal and selection of breed respectively. Only 1.66 per cent rural youth participated through labour for selection of milking animals and merge per cent participates through labour for selection of breed.

Table-2. Participation of taking loan for milking (N=120)

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1.	Purchase of animal	74	62.00	45	37.5	1	0.83	0	0.00
2.	Purchase of fodder	84	70.00	33	27.5	3	2.50	0	0.00
3.	Obtain loan for construction byre.	62	52.00	55	46.00	3	2.50	3	2.5
4.	Other	33	27.5	84	70.00	3	2.50	0	0.00

The data indicates that 70.00 per cent of the rural youth independently participate in the purchase of fodder, 62.00 per cent of purchase of the animals ,52.00 per cent of obtain loan for the construction of byre and very few per cent i.e.2.5 per cent of taking loan for other milking facilities.

Table- 3 Participation about cattle feeding. N=120

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Feeding concentrates	100	83.33	11	9.16	8	6.7	1	0.83
2	Feeding roughages	98	82.00	13	11.00	9	7.50	0	0.00
3	Feeding green leaves	99	82.50	12	10.00	9	7.50	0	0.00
4	Taking animal for grazing	99	82.50	8	6.70	12	10.00	1	0.83
5	Storing feeds	93	77.50	13	11.00	13	10.83	1	0.83
6	Bringing green leaves from field	36	30.00	11	9.16	72	60.00	1	0.83
7	Cleaning of feeding vessels	39	32.00	31	25.84	50	42.00	0	0.00
8	Feeding of animal according to their type.	46	38.00	65	54.16	9	7.50	0	0.00
9	Prepare feeding mixture.	46	31.0	62	52.00	11	8.33	1	0.83

The data regarding participation of rural youth in feeding of animals indicate that majority of rural youth independently participated in feeding animals. 83.33 per cent feeding concentrates, 82.50 per cent feeding green leaves and taking animal for grazing, 82.00 per cent feeding green roughages, 77.50 per cent of the storing feeds and 38.00 per cent of rural youth participated in feeding of animal according to their type.30.00 per cent of bringing green leaves from field and 31.00 per cent of the respondents participate in prepare feeding mixture.

Table- 4 Participation about watering.

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1.	Serving water to calf	104	87.00	6	5.00	10	8.33	0	0.00
2.	Cleaning of water tank	16	13.33	39	32.5	65	54.16	0	0.00
3.	Tieing the animal in the byre.	66	55.00	43	35.84	11	9.16	0	0.00

The information in respect of participation of rural youth about watering to animals indicates that 87.00 Per cent of rural youth independently participated in serving water to calf, 55.00 Per cent tying the animals in byre and very few rural youth i.e. 13.33 per cent participated in cleaning of water tank.

Table- 5 Participation about Breeding.

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1.	Identifying animal in heat	42	35.00	68	57.00	10	8.33	0	0.00
2.	Taking animal for service	35	29.16	76	63.33	08	7.00	01	0.83
3.	Caring pregnant animals	43	35.84	69	57.50	07	6.00	01	0.83

The data in Table-5 about participation of rural youth in breeding of milch animals indicates that 35.84 per cent of rural youth independently participated in caring pregnant animals, 35.00 per cent identifying animal in heat and very few i.e.29.16 per cent of rural youth taking animal for service.

Table- 6. Participation about animal health care.

Sr. No	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
1	Cleaning animals	80	67.00	20	16.50	19	16.00	01	0.83
2	Cleaning the byre	78	65.00	18	15.00	23	19.16	01	0.83
3	Dis infecting animal byre	68	57.00	40	33.33	16	13.33	01	0.83
4	Identifying sicking animals	72	60.00	42	35.00	5	4.16	01	0.83
5	Taking animal to veterinary hospital	46	38.33	67	56.00	7	6.00	0	0.00
6	Taking animal for vaccination	35	30.00	65	54.16	4	13.33	0	0.00
7	Maintaining sicking animals	70	58.33	43	35.84	5	4.16	02	2.00

It was further noticed from Table-6 that 67.00 percent of rural youth independently participated in cleaning animals, 65.00 per cent of cleaning byre, 60.00 per cent of identifying sicking animals, 58.33 per cent maintaining sick animals, 57.00 per cent rural youth participated in disinfecting animal byre, 38.33 percent taking/sending animal for veterinary hospital and 30.00 per cent taking animals for vaccination.

Table-7.Participation about milking animal.

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
1	Bringing animal for milking	103	86.00	15	12.34	02	1.66	0	0.00
2	Cleaning milking vessels	97	81.00	17	14.16	06	5.00	0	0.00
3	Hand and under disinfection	95	79.00	20	16.67	05	4.16	0	0.00
4	Udder cleaning	104	87	12	10.00	04	3.33	0	0.00
5	Milking	95	79	19	15.84	06	5.00	0	0.00
6	Keeping milk safe.	98	81	22	18.33	0	0.00	0	0.00

The data presented in Table-7 showed that majority of rural youth participated in milking activity. 87.00 per cent of rural youth independently participated in udder cleaning.86.00 per cent of rural youth participated in bringing animal for milking, 81.00 per cent of rural youth participated in cleaning milking vessels and keeping milk safe. 79.00 per cent of youth participated in hand and under disinfection and milking respectively.

Table- 8. Participation about care of calving.

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Giving warm water bath at calving	32	27	37	30.84	51	42.50	0	0.00
2	Feeding colostrums& milk.	35	29	27	22.5	58	48.33	0	0.00
3	Giving warm water to drink	36	30	26	22.00	58	48.33	0	0.00
4	Feeding cooked grains	80	67	19	15.84	12	10.00	09	7.50
5	To spray insecticide in byre.	55	45.84	56	47.00	09	7.5	0	0.00
6	Vaccinating big calf	34	28.33	65	54.16	09	7.5	0	0.00
7	After two months Slowly stop after feeding milk and green leaves.	65	54.16	45	37.84	10	8.33	0	0.00

The data in Table 8 further showed that 67.00 percent of rural youth independently participated in feeding cooked grains to the animals at the time of calving, 54.16 percent youth participate in after two months slowly stop after feeding milk and green leaves, 45.84

per cent to spray insecticide in byre. 30.00 per cent of giving warm water to drink, 29.00 percent of rural youth independently participated in feeding colostrums and milk, 28.33 per cent vaccinating big calf and very few i.e. 27.00 per cent of rural youth participated giving warm water bath at calving.

Table- 9 Participation about milk and milk product.

Sr. No.	Particulars of participation	Independent Participation		Joint Participation		Through Labour		No participation	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Selling Milk	105	87.50	15	12.5	0	0.00	0	0.00
2	Preparation of khawa	0	0.00	21	17.50	5	4.16	94	78.33
3	Storing milk and milk products.	0	0.00	4	3.33	8	7.00	108	90
4	Selling milk and milk products	1	0.83	1	0.83	18	15.00	100	83.33

It was noticed from the data that 87.50 per cent of rural youth independently participated in selling milk, 0.83 per cent selling milk and milk products. Generally storing of milk and milk products 90 per cent and the preparation of khawa78.33 per cent haverural youths not participated .

Table -10 Overall participation of rural youth in cattle management practices.

Category	Frequency	Percent
Low	24.00	20.00
Medium	30.00	25.00
High	66.00	55.00

Conclusion

It can seen that most of the rural youth did not participate in the selection of milch animals and majority of the rural youth not participated in taking loan for purchasing animals fodder and construction of byre. About the one third of respondents taking care of newly born calf and animals at the time of calving. Majority of the respondents had (55.00 per cent) high level of participation in cattle management while (25.00 per cent) had medium level of participation and 20.00 per cent of the respondents had low participation and. This indicates that in general rural youth had high to low level of participation in cattle management. Majority of rural youth participated in feeding activities viz.feeding green leaves, roughages, concentrate and preparing feeding mixture. About one fourth of respondents taking care of newly born calf and animals at the time of calving. It was seen that majority of the rural youth did not participated in milk and milk products ,preparation of khawwa and selling of milk. The present article is outcome of the research work carried out under College of Agriculture Latur- Project on 'Participation of rural youth in cattle management practices.

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Indian Bovine and Environment

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According to an estimate the emission of Green House Gases in India by different sectors is Energy 61 %, Industry 8%, Agriculture 28%, Forestry 1%, and Waste2% (Singh and Dangi 2013, Mishra and Mudgal 2010). Ruminant contribute to global warming by emitting CO_2 through respiration and methane through digestive process. Methane is second largest contributor to Green House effect after CO_2. 80% methane or even more is normally produced during digestible fermentation of feed stuffs in rumen by methanogenes (methane producing bacteria). The methannogenic bacteria in rumen are .*Methanobreribacter ruminatium, Methanomicrobium mobile, Methanobacterium ruminantium, Methanobrevibactor smithi ,Methanosarcina barkeri* (Mudgal *et al* 1995). In India major low quality roughage is used for maintenance of livestock , resulting in a higher level of methane production per unit of product. In general 8-12% of dietary energy is lost in the form of methane during enteric fermentation (Blaxter 1967).

During microbial digestion process in ruminants 97% volatile fatty acids (acetic, prop ionic, butyric acid) are produced and the rest 3% consists of methane, carbon dioxide and ammonia. Volatile fatty acids are absorbed into blood stream as source of energy. Where as methane is probably no use to body and is a waste. The ruminant cannot utilize the methane because the rumen doesn't contain methanotropic bacteria. About 8-9% of gross energy is lost as a result of methane production (Singh 2010).The methane production by Indian cattle and buffalo is about 80-96 gm/day/animal (Singh 1997). As per estimateof McAllister *et al* (1996), cattle produces 40 methane annually. Raghuvanshi and Singh (1991) also estimated similar methane emission. Possible due to this fact and taking into consideration the livestock population India is being held responsible in International forums for producing methane in high quality.

Out of the total methane emited by the animal about 90 per cent of methane comes from fermentation in rumen and remaining 10 per cent comes from the hind gut (Torrent and Johnson 1994). The methane produced in rumen is released by belching and exhalation through mouth and nostrils. Depending upon the type, quality and quantity of feed, feeding level, physiological status, activity and health of animal methane production can go up to the level of 7% of total enteric fermentation products. Methane production per unit milk decreases with an increase in milk yield. It is interested to note that the methane production of animal origin measures 240 gm per liter of milk in India as against 40 gm in western countries.

Fibrous diets of ruminants as generally practiced in India, results in higher methane production and lower their productivity. Studies in developed countries have indicated a positive correlation between increased productivity and methane reduction. EPA 1994-reported that increase in milk production from 3195kg to 7000 kg in USA from 1960 to1990 reduced the methane emission from 24 to 17 g/kg milk as increase in milk yield reduced the maintenance energy requirement. Methane production per unit milk decreases with an increase in milk yield due to dilution of

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maintenance energy requirements. As in high milk producing animal most of the energy is utilized in milk production. Extra propionate formation for more milk yield will be responsible for lowering the methane formation (Singh *et al* 2010). However some reports indicate the reverse trends as reported by Kirchgessner *et al* (1995) Leng (1991).

Large population of ruminants produces considerable quantity of methane gas and carbon di-oxide which are important in "Green House Effect". These are detrimental to the environment. India ranks fifth in CO_2 and methane pollution and second in methane gas pollution. Out of the total methane produced 33% is attributed to animal origin (Mangurkar 2006). The share of methane emission by different species of live stock is Cattle – 41%; Buffaloes – 18%; Goat 25%; Sheep- 12% and Pigs – 3%.

The relative effectiveness of one kg methane in term of global warning potential is equal to 40 kg of CO2. Hence India having largest livestock population is greatly related with its share in global warming. The Indian contribution of methane from all sources is around 12 % of the total world production (Singh *et al* 2010).

The study revealed that the total methane emission from the live stock production system in year 1992 was as fallows in million tones (MT)

A) Emission from enteric fermentation – 9.355 million Tones
B) Emission from manure management – 0.202 million Tones.
C) Emission from burning of dung cakes – 0.210 million Tones.

Total methane emission from livestock 9.767 million tones.

Global warming scenario (Global Climate Change). :- The United Nations Inter Government Panel on climate change (IPCC) projects increase in global temperature ranging from 1.4 to 5.8 ^{0} C. by the year 2100. Due to rise in temperature the projected sea level rise is likely to be between 0.18-0.59 meters by the end of this century. IPCC also revealed that earth has become warmer over the last century by 0.6+/-0.2^0 C. Further it discovered that snow covers has decreased by 10 per cent since the late 1960 resulting in average global sea level rise in between 0.1 to 0.2 meter since 1900.

Citing IPCC data Upadyaya and Associates (2008) reported that due to global warming the mean temperature has increased between 0.3-0.6^{0}C, the sea level has risen between 10-25 cm, CO_2 has increased by more than 20% and methane by 145% and their future predictions suggest warming by 2^{0}C and sea level rise by 45-50 cm by 2100.

Mitigation of Methane Emissions

There is an urgent need to develop appropriate strategies for livestock development to mitigate the methane emission. Following are some of the way to reduce methane emission from livestock.

Feeding of the live stock.:- The type of diet fed to the ruminant livestock can have major effect on methane production. Methane production by ruminant is actually a loss of feed energy from the diet and represents inefficient feed utilization. Depending on the type, quality and quantity of feed intake, feeding level can change the total enteric fermentation production which affects the methane emission also.

a) It is well documented that the poor quality of feed and fodder are the major reason for excess methane production, so dietary change will enhance the reduction of methane emission.

More concentrates feeding will increase the propionate production; the propionate is glycogenic in nature and utilizes the hydrogen. More the propionic acid formation more will be the milk quantity and lesser will be the methane production.

The higher concentrates also lower the rumen PH due to which some protozoa and methanogenes are eliminated which also results in low methane production. But high concentrate feeding is associated with fertility problem.

Effect of dietary manipulation on methane production

Sr No.	Method	Extent of reduction %	Reference
1	Increase in concentrate mixture	20-32	Singh 1998
2	Supplementation of deficient nutrients	8-23	Singh 1998
3	Supplementation of UMM block	10-11	Singh 1999
4	Supplementation of green fodder	11-27	Singh & Mohini 1999
5	Supplementation of feed additives a) Maintenance ration b) Medium production ration c) High production ration	 14-23 23-32 14-25	Singh 1999

Scientifically it is revealed that by 25% increase in carbohydrate level in diet will lower methane production by 20%. In vitro methane production on ration of green fodder of berseem , oat and maize with wheat or paddy straw resulted in 20-30% reduction in methane production. (Das and Singh 1999, Singh and Mohini 1999).To reduce methane gas emission supplementation of ruminant diet with molasses urea block lick, fiber pelletisation , processing of straw.

Willium *et al* (1963), Tyagi and Singhal(1999) found that any other receptor of hydrogen except of carbon dioxide, like unsaturated fatty acids, oils and fats rich in fatty acids, if introduced in diet of ruminant can reduce the methane production. However there is one more aspect of dietary supplement of fatty acids/oils/fats in ruminants that their dietary excess may reduce the fiber digestion and microbial protein synthesis in the rumen.

Dr. Mike Abartone a scientist of institute of grassland and environment research revealed that by increasing feeding of fodder crops having more carbohydrates and leguminous fodder will reduce the methane pollution. Because the rumen micro-organism can degrade these easily. He also predicted that the methane emission depends on digestible quality of feeds and fodder. More digestible fodder consumption reduces the enteric methane emission. According to him a cow produces 100-200 liter of methane daily which can be reduced by supplying them good quality fodder.

Recent reports suggest that feeding of leguminous fodder or some tropical fruits in diet (Hess etal 2001) reduce methane production by 20%.

The mixed farming system is an ideal choice to sustain the land and livestock resources.

Genetic Improvement for Milk Production

More the milk production, lower will be the methane emission. In the high yielding animals the major diet energy is utilized for milk production. Where as in low yielding animals most of the diet energy is consumed for the body maintenance and thus resulting in more methane production.

The breeding strategies can play a significant role in improving the efficiency of the live stock. Crossbreeding between exotic and indigenous breed is not the universal solution. Upgrading of the local low producing stock with improved local breed may be advantageous in under developed area.

There is no control on the number and breeding of livestock so uncontrolled breeding should be stopped. Propogation of unwanted degraded scrub animals should be prevented by

sterilization of male and female's castration and use of biotechnological products like "Tulsar" are effective tool for sterilization of males.

New reproductive techniques such as artificial insemination, embryo transfer and conception, in vitro fertilization using ovum pick up techniques, oestrus synchronization, induced estrous and ovulation are some of the important methodologies being used for faster genetically development in production and reproduction traits in dairy cows. It is necessary to develop alternative strategies for rehabilitation of stray and unproductive animals.

Biotechnology:

Use of biotechnology in live stock increase the milk yield and at the same time emission of GHG are reduced was observed by Neumeier and Mitloehrer (2013) during their study on effect of biotechnology in live stock on environment and milk yield, it is due to efficient use of animal, agricultural production and improvement in management of manure.(sourse Agroone a daily news paper related with agriculture)

Defaunation :

Removal of protozoa from rumen is known as defaunation. Researchers are trying to alter the cattle and other dairy animals digestion, either by removing the micro-organism that produce methane from their rumen or by creating micro organisms that can produce metabolic end products other than methane. Defaunation improve the growth , food conversion efficiency, weight gain and performance of the animal (Coleman 1980, Chaudhary etal 1988, Bird 1989, Chaudhary and Mudgal (1989). Defaunation decreases the methonogenesis as most of the methanogenes are attached to protozoa.

Pal *et al* (1994) revealed that defaunation reduce methane production by 20-50% and improve the feed utilization efficiency.

Acetogens :

They are rumen microbes that convert CO_2 and H_2 to acetate. In vitro study showed that supplementation of acetogens in rumen fluid decreases the methane production (Lopez etal 1999). These acetogens microbes are present in the rumen but in very few number and attempts to increase the acetogens have not successful but methane production can be lowered by using acetogens as a daily feed additive.

Probiotics :

It refers to micro-organisms which when fed to animal has positive impact on host by improving gastro-intestinal tract microbial balance. Commonly used cultures are *Aspergillus oryzae, Saccharomyces cerevisiae, Lactobacillus species, Bifidobacterium adolescentis, B. animalis and Streptococcus* species. They helped in improving the digestibility and over all performance. It was found that supplementation of *Asperigillus oryzac* reduces methane emission by lowering the protozoan population (Frumholtz *et al* 1989). Similarly *Saccharomyces cerevisiae* reduce methane emission by 10%. (Mutsvangwa *et al* 1992). *Brevibacillus parabrevis* is reported to have the ability to convert methane into CO_2 (Singh 2010).

Herbs:

Garlic and cinnaman (component of clove bud) shows promising results in maintaining the healthy rumen (Kamel and Greathead 2007, Calsamglia *et al* 2007). Supplimentation of garlic and fennel, clove and garlic extract in ethanol and methanol reduces the methanegensis in the rumen (Patra *et al* 2006).

Biogas plants

Cow dung gas contains 55-65 percent methane, 30-35 per cent carbondioxide and some hydrogen, nitrogen etc (Mishra and Mandal 2010). The dung can be used as source of energy by production of methane gas through biogas plant and remaining slurry can be used as organic manure for the farm.

The healthy value of Biogas methane is about 600 B.T.U. per cubic foot where as natural gas consists of around 80% methane, yielding about 1000 B.T.U. value. About one cubic foot of gas may be generated from one pound of cow manure which is sufficient to cook a days meal for a family of 5-6 people. About 1.7 cub meter of biogas is equivalent to one liter of gasoline.

The dung slurry and urine can pollute the neighbouring water and environment. Stagnant pools are breeding and multiplication sources of flies and mosquitoes. Due attention is needed in compost management. Biogas formation utilize the dung as well as eliminate the multiplication of flies and insects.

Scientist from Hoenhem university Scyugart Germany had developed a herbal tablet on feeding of which reduces the enteric methane emission.

Disposal of animal carcass which is not satisfactory. Throwing dead bodies in open create a pollution as well as danger to the health of surroundings. It is basic need to find appropriate and cheaper method for utilization of dead bodies.

Extension work

Majority of the farmers are illiterate and they assume livestock farming as secondary business related to agriculture. They are not aware of methane emission, it's disadvantages so it is necessary to educate them about environmental pollution through livestock management. They do not bother about genetic makeup, pedigree, breeding animal with high yielding bull, balance feeding etc. So it is need to train them about good management practices which indirectly affect the methane emission.

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Knowledge of Ratoon Management Practices of the Sugarcane Growers

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Sugarcane is one of the major cash crops of Maharashtra that has significantly contributed in the economic, social and educational progress of the State. In the past few years there has been stagnation or slightly decline in the productivity of sugarcane in Maharashtra state. Low yield of ratoon crop is regarded as one of the major reasons behind decreased sugarcane productivity in the State. Despite the area under sugarcane ratoon being 35 to 40 per cent of the total area under sugarcane, the share of ratoon in production is only 25 to 30 per cent. Hence, for increasing overall productivity of sugarcane crop, increasing production and productivity of sugarcane ratoon is of utmost importance. The research conducted at the Central Sugarcane Research Station, Padegaon has shown that sugarcane ratoon crop can yield as good as plant cane if proper recommended production technology is followed. Besides, sugarcane ratoon crop proves more profitable to the farmers than plant cane as expenditure of almost Rs. 35,000/- to Rs. 40,000/- per hectare incurred on land preparation, seed (setts), seed (sett) treatment, sowing and intercultivation is saved. Also there are numerous other indirect benefits like improving organic matter and fertility status of soil, less water and fertilizer requirement, less incidence of weeds and an early maturing crop. However, sugarcane ratoon crop production following State Agricultural University recommended trash decomposition technique is not even followed on ten per cent of the area under ratoon crop.

Hence, in order to determine the causes behind low use of sugarcane ratoon production technology, there is a need to assess the knowledge of sugarcane ratoon production technology of the growers and accordingly the present experiment was conducted with the following objectives.

Methodology

The present study was purposively conducted in Satara district of western Maharashtra. Three tahsils, *viz;* Karad, Koregaon and Phaltan having maximum area under sugarcane crop were selected for the study. From each tahsil three villages were selected and from each village 10 sugarcane growers were selected for the study. Thus, in all 90 sugarcane growers from 9 villages were randomly selected for the study. All the sugarcane growers were personally interviewed with the help of schedule specially structured for the purpose. The collected data was processed and converted into standard score, frequency and percentage.

Findings

Personal, social and economic characteristics of the sugarcane growers

It is revealed that 47.78 per cent of the respondents were middle aged followed by 38.89 per cent respondents who were old. The results revealed that 45.56 per cent of the respondents were educated upto secondary school followed by 20.00 per cent educated upto higher secondary school and 18.89 per cent educated upto graduation. A meager 2.23 per cent respondents were illiterates. The respondents having high farming experience were 36.67 per cent followed by 35.56 per cent having medium farming experience.

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Majority of the respondents (60.00 per cent) had joint families. Small families of upto five members were reported by 45.56 per cent respondents followed by 40.00 per cent respondents having medium sized families. Agriculture as their primary occupation was mentioned by 97.78 per cent respondents, whereas, 47.77 per cent respondents had dairy as secondary occupation. The results further showed that 45.56 per cent of the respondents had small land holdings followed by 30.00 per cent respondents having semi-medium land holding. There were 12.22 per cent marginal farmers. Majority of 54.45 per cent respondents had between 1.01 to 2.00 Ha. of land under sugarcane cultivation. On studying the percentage of land under sugarcane crop of the respondents, it was observed that 35.56 per cent of the farmers grow sugarcane on their entire land holding. The respondents growing sugarcane on more than 50 per cent of their total land holding was 48.89 per cent (17.77 + 31.12 per cent). A majority of 62.22 per cent respondents had fair irrigation status. Half of the respondents (50 per cent) had medium income ranging between Rs.100001/- to Rs.300000/-. The results are in line with the results of Maraddi (2006) for age, farming experience, land holding and annual income and in line with the results of Chouhan *et al.* (2013) for age and education.

Knowledge of sugarcane growers about ratoon management

Table- 1. Extent of knowledge of sugarcane growers about ratoon management practices

Sr. No.	Technology / Management Practice	Knowledge (N=90)	
		Complete	No
1	**Sugarcane harvesting and post harvest practices**		
1.1	Harvesting at ground level	75 (83.33)	15 (16.67)
1.2	Cleaning stubbles of trash	56 (62.22)	34 (37.78)
1.3	Stubble shaving	72 (80.00)	18 (20.00)
1.4	Spraying Bavistin on stubbles	45 (50.00)	45 (50.00)
1.5	Bavistin Spray of 0.1 per cent concentration (1 gm. Bavistin / Lt. water)	45 (50.00)	45 (50.00)
2	**Gap filling**		
2.1	Use of single eyebud seedlings for gap filling	49 (54.44)	41 (45.56)
2.2	Seedling age below 45 days	36 (40.00)	54 (60.00)
2.3	Gap filling after first irrigation	38 (42.22)	52 (57.78)
3	**Trash Management**		
3.1	Keeping trash	83 (92.22)	07 (7.78)
3.2	Moving trash in furrows	69 (76.67)	21 (23.33)
3.3	Use of trash decomposing culture	48 (53.33)	42 (46.67)
3.4	Trash decomposing culture @ 10 Kg. / Ha.	34 (37.78)	56 (62.22)
3.5	Use of urea for trash decomposition	54 (60.00)	36 (40.00)
3.6	Use of urea @ 80 Kg. / Ha.	36 (40.00)	54 (60.00)
3.7	Use of SSP for trash decomposition	40 (44.44)	50 (55.56)
3.8	Use of SSP @ 100 Kg. / Ha.	32 (35.56)	58 (64.44)
4	**Irrigation Management**		
4.1	First irrigation after application of trash decomposing culture + Urea + SSP (Single Super Phosphate)	28 (31.11)	62 (68.89)
4.2	Irrigation at 8 to 10 days interval in summer	79 (87.78)	11 (12.22)
4.3	Irrigation at 14 to 15 days interval in monsoon	80 (88.89)	10 (11.11)
4.4	Irrigation at 18 to 20 days interval in winter	85 (94.44)	05 (5.56)
4.5	Stopping irrigation 15 days before harvesting	74 (82.22)	16 (17.78)

Sr. No.	Technology / Management Practice	Knowledge (N=90)	
		Complete	No
5	**Fertilizer Management**		
5.1	Use of crowbar for fertilizer application	51 (56.67)	39 (43.33)
5.2	Fertilizer dose of 250:115:115 Kg. N:P:K / Ha.	52 (57.78)	38 (42.22)
5.3	Fertilizer dose in two equal splits	54 (60.00)	36 (40.00)
5.4	First fertilizer split dose within 15 days of sugarcane harvest	52 (57.78)	38 (42.22)
5.5	First dose to be applied by crowbar at a distance of 0.5 ft from stubbles in 0.5 ft. deep holes taken 1 ft. apart on one side of the ridge	32 (35.56)	58 (64.44)
5.6	Second dose applied similarly but on other side of the ridge after 135 days	29 (32.22)	61 (67.78)
5.7	25 Kg. Ferrous Sulphate, 20 Kg. Zinc Sulphate, 10 Kg. Manganese Sulphate and 2 Kg. Boron / Ha. as micronutrients	50 (55.56)	40 (44.44)
5.8	All micronutrients after chelating for 5 to 7 days in FYM	19 (21.11)	71 (78.89)
5.9	All micronutrients alongwith first fertilizer dose	42 (46.67)	48 (53.33)
6	**Intercultivation and Weed Management**		
6.1	No intercultivation	44 (48.89)	46 (51.11)
6.2	Use of weedicide if trash not kept	60 (66.67)	30 (33.33)
6.3	Spraying weedicide 4 weeks after cane harvest	57 (63.33)	33 (36.67)
6.4	Glyphosate weedicide	53 (58.89)	37 (41.11)
6.5	Glyphosate @ 2.5 Kg. in 500 Lt. water / Ha.	37 (41.11)	53 (58.89)
6.6	Glyphosate spraying only on weeds	53 (58.89)	37 (41.11)
6.7	Use of Flat Fan Nozzle or Wild Flood Nozzle (WFN-40) while weedicide spraying	39 (43.33)	51 (56.67)
7	**Crop Protection**		
7.1	Chlorpyriphos 2.5 Lt. / Ha. in 1000 Lt. water through furrows for control of white grub	22 (24.44)	68 (75.56)
7.2	Community collection and destruction of white grub adults from neem, bhabhul and ber trees after first rain showers	07 (7.78)	83 (92.22)
7.3	Use of Zinc Phosphide poison bait for control of rats	48 (53.33)	42 (46.67)
7.4	Use of Ferrous Sulphate for ferrous deficiency yellowing	61 (67.78)	29 (32.22)
7.5	Destruction of affected plants for control of Grassy Shoot Disease (GSD)	61 (67.78)	29 (32.22)
7.6	Change seed after 3 to 4 years for control of GSD	65 (72.22)	25 (27.78)
7.7	Use of Phule Trichocards for control of stem and internode borers	16 (17.78)	74 (82.22)
7.8	Five releases of Phule Trichocards at an interval of 10 to 15 days / Ha.	12 (13.33)	78 (86.67)
7.9	Spraying 30 ml. Methyl Dematon 25% EC / 26 ml. Dimethoate 30% EC / 20 ml. Malathion 50% EC in 10 Lt. water for control of mealy bugs	07 (7.78)	83 (92.22)
7.10	Spraying 20 ml. Malathion 50% EC in 10 Lt. water for control of white fly	07 (7.78)	83 (92.22)
7.11	Conservation of Conobathra, Micromus and Difa insects for control of white wolly aphids	06 (6.67)	84 (93.33)
7.12	Bamboo shadenet of 5 x 5 x 4 mts. for conservation of *Difa aphidivora*	04 (4.44)	86 (95.56)
7.13	Use of 15 to 20 Kg. Phorate 10% Granular per Ha./ 2 to 3 Sprays of 15 ml. Methyl Dematon 25% EC / 15 ml. Dimethoate 30% EC in 10 Lt. water for control of white wolly aphids in absence of bio-control agents	39 (43.33)	51 (56.67)

1. Knowledge of sugarcane harvesting and post harvest practices- The results presented in Table 2 depict that 83.33 and 80.00 per cent of the respondents had knowledge regarding harvesting of canes at ground level and stubble shaving, respectively. The practice of cleaning stubbles of trash was known to 62.22 per cent respondents. An equal number of respondents (50.00 per cent, each) had information about spraying Bavistin on stubbles for avoiding soil borne diseases and the right concentration of Bavistin spray, which, in turn implies that 50.00 per cent of the respondents were not aware of this practice.

2. Knowledge of gap filling in sugarcane ratoon crop-Table 2 further shows that 54.44 per cent of the respondents had knowledge about the use of single eyebud seedlings for gap filling. However, 60.00 and 57.78 per cent respondents, respectively lacked knowledge about the exact age of seedlings and time of gap filling.

3. Knowledge of trash management practices- A vast majority of 92.22 per cent respondents had knowledge about keeping trash in ratoon crop instead of disposing it off by burning. Moving trash in furrows as part of trash management was known to 76.67 per cent respondents. Although use of trash decomposing culture was known to 53.33 per cent of the respondents, only 37.78 per cent respondents had knowledge about the amount of trash decomposing culture to be used per hectare. Sixty per cent respondents had knowledge about use of urea for trash decomposing. However, the practices *viz;* use of SSP for trash decomposing, amount of urea and SSP for trash decomposing was not known to more than 55.00 per cent of the farmer respondents.

4. Knowledge of irrigation management- More than four-fifth of the respondents had knowledge regarding appropriate irrigation intervals in summer, monsoon and winter seasons and regarding stopping irrigation 15 days prior to harvesting. The practice of providing first irrigation after application of trash decomposing culture + Urea + SSP was known to only 31.11 per cent respondents.

5. Knowledge of fertilizer management- Use of crowbar for fertilizer application was known to 56.67 per cent of the respondents. Sixty per cent respondents had knowledge of applying fertilizers to sugarcane ratoon in two equal split doses. The right fertilizer dose per hectare and right time of applying first split dose was known to an equal number of respondents (57.78 per cent, each). There were 55.56 per cent respondents who had knowledge of the micronutrient fertilizer dosage. However, 78.89 per cent respondents did not have knowledge regarding application of micronutrients after chelating them with FYM for a week. Similarly, majority of the respondents lacked knowledge regarding method of applying fertilizers with crowbar, time of application of second fertilizer split dose and time of application of micronutrients. The findings are in non-consonance with the findings of Bhingardeve *et al.* (2013).

6. Knowledge of inter-cultivation and weed management- More than half of the respondents were unaware about the fact that sugarcane ratoon crop requires no intercultivation (Table 2). Two third of the respondents (66.67 per cent) had knowledge about use of weedicide if trash is not kept. The use of Glyphosate weedicide by spraying only on weeds 4 weeks after cane harvest was known to a majority of respondents. However, a majority of more than fifty per cent of the respondents lacked knowledge about the exact dose of Glyphosate and use of specific nozzles for spraying weedicide.

7. Knowledge of sugarcane ratoon crop protection- The results from Table 2 indicate that the majority of the respondents did not have knowledge regarding control of common pests and disease in ratoon crop, *viz;* white grub, stem borer, internode borer, mealy bugs, white fly and wolly aphid. However, 67.78 per cent and 72.22 per cent respondents had

knowledge about control measures for GSD by removal of affected plants and changing seed after every 3 to 4 years. Similarly, 67.78 per cent respondents had knowledge of using ferrous sulphate in case of ferrous deficiency yellowing followed by 53.33 per cent respondents who had knowledge of zinc phosphide poison baiting for control of rats.

Overall knowledge of sugarcane growers about ratoon management

Table 3. Overall knowledge of sugarcane growers about ratoon management

Sr. No.	Knowledge level	Respondents (N = 90)	
		Frequency	Percentage
1	Low (Upto 33.33)	18	20.00
2	Medium (33.34 to 66.66)	58	64.44
3	High (66.67 to 100.00)	14	15.56

The results presented in Table 3 reveal that a majority of 64.44 per cent respondents had medium level of knowledge regarding sugarcane ratoon management followed by 20.00 per cent respondents who had low knowledge level. There were only 15.56 per cent respondents who had high knowledge level. The findings are in conformity with the findings of Maraddi (2006) and in non-conformity with the findings of Pillegowda *et al.* (2010).

Conclusion

More than 80.00 per cent of the sugarcane growers were cultivating sugarcane on more than 50.00 per cent of their total land holding. Thus, maximum farmers were allotting maximum share of their land for sugarcane cultivation. On this backdrop, it was observed that more than fifty per cent of the respondents were lacking knowledge regarding the following important sugarcane ratoon management practices; age of seedlings and exact time of gap filling, exact quantities of trash decomposing culture, use of urea and SSP for trash decomposition, time for applying first irrigation, time and method of applying fertilizer split doses and micronutrients, chelating of micronutrients, following no inter-cultivation as recommended, amount of weedicide and proper nozzles for weedicide spray and control measures for pests, *viz;* white grub, stem borer, internode borer, mealy bug, white fly and white wooly aphid. Overall knowledge level was medium (64.44 per cent) to low (20.00 per cent). Hence, in order to enhance the knowledge level of sugarcane growers about ratoon production technology, the State Department of Agriculture alongwith the sugar factories, should conduct short duration (single day) training courses imparting knowledge and logical reasoning to the farmers regarding input use in sugarcane ratoon crop. The State Agricultural Universities, in turn, should conduct detailed trainings for the field level extension functionaries of the State Agriculture Department and sugar factories.

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Factors Accountable for Adoption of Crop Insurance Scheme in India

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Agriculture production and farm incomes in India are frequently affected by natural disasters such as droughts, floods, cyclones, storms, landslides and earthquakes. Susceptibility of agriculture to these disasters is compounded by the outbreak of epidemics and man-made disasters such as fire, sale of spurious seeds, fertilizers and pesticides, price crashes etc. All these events severely affect farmers through loss in production and farm income, and they are beyond the control of the farmers. With the growing commercialization of agriculture, the magnitude of loss due to unfavourable eventualities is increasing. The question is how to protect farmers by minimizing such losses. In recent times, mechanisms like contract farming and futures trading have been established which are expected to provide some insurance against price fluctuations directly or indirectly. But, agricultural insurance is considered an important mechanism to effectively address the risk to output and income resulting from various natural and manmade events.

Methodology

The Pune District was purposively selected for the study considering the more beneficiaries of Crop Insurance Scheme are located in Pune and the tahsils selected were Bhor, Khed, Junnar and Ambegaon. Total 120 respondents were selected purposively. Data were collected by contacting the respondent personally through structural interview schedule by keeping the view of objectives of the study.. The qualitative data converted into quantitative form. The independent and dependent variable were measured by assigning score. Thee coefficient of correlation 'r' was worked out to

find the association between independent and dependent variable to study the factor responsible for adoption of Crop Insurance Scheme.

Findings

The selected characteristics of the Crop Insurance respondents were studied viz., age, education, size of land holding, annual income, social participation, family size, occupation, Information about Crop Insurance Scheme, Awareness, Social participation and Risk orientation.

Distribution of the Subscribers according to their Characteristics

It seems that, majority of the respondents had small family size (40.83 per cent) followed by medium family size (30.83 per cent) and large size of the family (28.33 per cent) respectively. It is also observed that number of families decreases across the size class. The data also revealed that, 55.83 per cent respondents belonged to middle age group i.e. between 40 to 51 years followed by young age (31.67 per cent) and (12.50 per cent) old age group.

The data shows that, nearly one third (32.50 per cent) of the respondents acquired primary education i.e. from fifth standard to seventh standards, followed by 23.34 per cent of the respondents had secondary education and 15.84 per cent had higher secondary education. While 15.00 per cent had preprimary, 07.50 per cent had completed higher education and 05.84 were illiterate.

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It seems that, substantial proportion of respondents (35.84 per cent) had semi-medium land holding (2.01 to 4.00), followed by small farmers (24.16 per cent), medium land holders (17.50 per cent), marginal farmers (14.16 per cent) and high land holders (08.34 per cent). The average land holding of the respondents was 3.32 ha.

The maximum respondents (56.66 per cent) had low experience regarding Crop Insurance Scheme, followed by medium (28.34 per cent) and high (15.00 per cent) experience towards Crop Insurance Scheme. It is also observed that, awareness regarding Crop Insurance Scheme among the respondents is low (61.66 per cent), followed by the medium (28.34 per cent) and high awareness (10.00 per cent). More than half (53.34 per cent) of the respondents had medium social participation, while 36.66 per cent and 10.00 per cent respondents had low and high social participation respectively. ItIt was observed that, 48.34 per cent respondents had used medium sources of information, while 35.00 per cent and 16.66 per cent of them had used low and high sources of information respectively.

It also revealed that, nearly half (47.50 per cent) of the respondents had low annual income followed by 30.84 per cent of the respondents had medium annual income while only 21.66 per cent respondents had high annual income. .

It is discovered that, 46.67 per cent of the respondents were moderately adventurous in risk orientation, while 39.17 per cent and 14.17 per cent of them were highly adventurous and poorly adventurous in risk orientation respectively.

Factors accountable for the adoption of Crop Insurance Scheme

In order to ascertain factors responsible for perception of Crop Insurance Scheme, the coefficient of correlation was worked out between personal and socio-economic characteristics of the respondents and their perception towards Crop Insurance Scheme. For these purpose views of previous research scholars was taken under consideration and Karl Pearson's coefficient of correlation was worked out between factors procured and perception of the respondents towards Crop Insurance Scheme.

Association of significance was tested at one per cent and five per cent level of probability. Test of significance were tested by 't' test. The data so obtained is presented in Table–1

Table-1. Factors accountable for the adoption of Crop Insurance Scheme

Sr. No.	Factors	'r' value
1	General and household particulars of the sample farmers	0.12**
2	Operational land holdingof the farmers	0.25*
3	Credit flow	0.27*
4	Number of earners in the family	0.36*
5	Premium rate of the insurance	0.41*
6	Information about agriculture insurance	0.10**
7	Awareness about insurance products	0.24*
8	Social participation of the respondents	0.34*
9	Source of information of the respondents	0.91**
10	Annual income of the family	0.60**
11	Risk management of the respondent	0.18*

* = Significant at five per cent level ** = Significant at one per cent level

Age and education of an individual have greater inclination towards modern ideas and they are more prone to change. The 'r' value 0.12 from the table-2 shows the positive and highly significant association of with general and household particulars and perception of respondent.The 'r' value 0.25 from the table-2 shows the positive and significant association of size of land holding with perception of respondent.The 'r' value 0.27 spectacles the positive and significant association of experience with perception of respondent.The 'r' value 0.36 from the table-2displays that, the association between number of earners in family and perception of respondent is positively correlated and significant.The 'r' value 0.41 displays the positive and significant association of premium rate with perception of respondent.The 'r' value 0.10 spectacles that, the association between information and perception is highly significant.The 'r' value 0.24 shows the positive and significant association of awareness with perception of respondent.The 'r' value 0.34 shows that, the association between social participation and perception of respondent is highly significant.The 'r' value 0.91 from the table-2spectacles the positive and significant association of sources of information with the perception.The 'r' value 0.60 shows the positive and significant association of annual income with perception of respondent.The 'r' value 0.18 spectacles the positive and significant association of risk orientation with perception of respondent.

Conclusion

The study indicated that, the respondents were small family sized, middle aged having primary education, semi medium land holding, low experience and low awareness about Crop Insurance Scheme, medium social participation and medium sources of information. All the members were members of Village Credit Co-operative Society and shows medium annual income and were moderately adventurous in risk orientation. There is positive and significant association between the perception and factors responsible for adoption of crop insurance sceme.

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Foliar application of Thiourea Enhanced Pearl millet Productivity on Farmer's Fields

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Pearl millet is an important coarse grain crop providing nutritional food for millions of people and fodder for animals under conditions of limited and erratic rainfall and nutritionally poor soils. Pearl millet is the major kharif crop grown in Sawaimadhopur district of Rajasthan with an area of around 70 thousand hectares. Despite the availability of varieties having yield potential of 25-30 q ha^{-1}, the productivity of pearl millet is varying around 13-15 q ha^{-1} due to technological gaps in adoption of improved agro-technologies and climatic factors. This is challenge for researchers as well as extension workers. Agronomic factors responsible for low productivity of pearlmillet includes use of high seed rate resulting improper plant geometry, lack of seed treatment, imbalanced and inadequate use of fertilizers and inadequate weed & pest management. Among climatic factors, rainfall remained major yield deciding factor. Pearl millet is cultivated entirely based on rainfall which is highly variable, resulted in water deficit or excess stress on the crop. Pearl millet crop even with good vegetative growth fails to provide good yields due to moisture and high temperature stress during grain filling stage. In recent years, use of bio-regulators has been offered new avenues for enhancing productivity of several crops even under stress conditions. Among bio-regulators, thiourea, a sulphydryl compound, contains one –SH group beside containing nitrogen in the form of $–NH_2$ (Jocelyn, 1972). It have been reported to improve the productivity of pearl millet in many studies (Sahu *et*.al, 2006). Organization of front-line demonstrations is most effective tool for transfer of cost-effective technologies among the farmers. Therefore, frontline demonstrations were conducted during *kharif* 2008 to 20012 on selected farmer's fields of the operational area of Krishi Vigyan Kendra, Sawaimadhopur with the objective of demonstrating the impact of thiourea application in pearl millet for enhancing productivity on farmer's fields.

Methodology

Frontline demonstrations were conducted in pearl millet crop during *kharif* seasons of the year 2008 to 2012 on 53 farmers fields covering 5 different villages of Sawaimadhopur district namely Gambhira Bhadoti, Shympura-Padli, Khilchipur, Kunkuta and Badagaon Sarwar. Soils of the study area are loamy to clay loam in texture with low nitrogen, low to medium phosphorus and high in available potassium. Farmer's were selected based on group meetings taking in to consideration mainly the approachable site having uniform stand of pearl millet crop and adaptive attitude of the farmers. The area under each demonstration were 0.4 to 0.5 ha with farmers practice as control plots. Technological intervention demonstrated under FLD's comprised of foliar application of bio-regulator thiourea @ 0.05 solution at 30-35 days after sowing and ear initiation stages of pearl millet crop. Thiourea was applied @ 0.1% solution when only one spray applied at ear initiation stage. A spray volume of 600 litres ha^{-1} was used each year. In order to make sprays more effective, these were carried out either during morning or evening hours (avoiding noon hours) and teepol was mixed @0.5 ml $litre^{-1}$ with spray as a sticking agent.

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Farmer's practice plots were kept without foliar spray of thiourea. The farmers were also suggested for using optimum seed rate, recommended doses and method of for efficient use of fertilizers, need based weed and pest management. Crop was sown during last week of June to second week of July depending on rainfall occurrence. Selected farmers were provided trainings on foliar spray of thiourea in pearl millet. Lab grade thiourea was distributed and other inputs were suggested as per need. All steps like site and farmer selection, layout of demonstration, farmer's participation etc. were followed as suggested by Choudhary (1999). Monitoring of FLD sites were done by periodical visits and needful suggestion were given to the farmers. Field days were organized at crop maturity to demonstrate the impact of FLD among other farmers of the area. The crop was harvested between second fortnight of September. Data related to yield and cost particulars were collected separately for FLD and farmers practice. The average prices of inputs and outputs commodities prevailed during each year of demonstrations were taken for calculating cost of cultivation, net return and benefit cost ratio.

Findings

The data presented on average pearl millet grain yield (Table.1) clearly indicates that foliar application of thiourea enhanced the grain yield of pearl millet during all the five years (2008 to 2012). The average grain yield ranged from 18.2 to 30.54 q ha^{-1} under demonstrated technology as against 15.3 to 26.24 q ha^{-1} under farmers practices (local check). Pooled data over five years shows that thiourea applied plots recorded mean grain yield of 23.63 q ha^{-1} which represents 16.8 per cent yield improvement over local check (20.23 q ha^{-1}). The higher productivity of pearl millet under demonstration in comparison to farmer's local practice clearly indicates positive influence of thiourea on grain formation. It has been reported that thiourea application increases yield attributes on account of its positive role in enhancing canopy photosynthesis and metabolic transport of photosynthetic assimilates to grains via effect on phloem loading (Sahu and Singh, 1995). Thiourea application have been reported to improved harvest index in wheat indicating its role in partitioning of dry matter towards grain (Sharma *et*.al., 2008). In the light of feedback provided by the farmers that thiourea application increased size of pearl millet grain and ear, crop remained green for comparative long time, it is fairly conceivable that thiourea might have improved photosynthetic capacity and duration of that capacity. Sahu and Solanki (1991) also recorded 34.1 per cent increased grain yield of maize over control due to foliar spray of 0.1 per cent thiourea at grain formation stage.

Economic indicators i.e. gross cost of cultivation, gross returns, net returns and B:C ratio are presented in Table 2. The gross cost of cultivation for pearl millet cultivation under demonstrated practice ranged from Rs. 8167 to 9390 ha^{-1} with a mean value of Rs. 8661 ha^{-1} as against local check where it ranged from Rs.7200 to 8110 ha^{-1} with an average of Rs. 7574 ha^{-1}. Demonstrated technology provided substantially higher net returns than farmers practice during all the years of demonstration. On five years average basis, FLD practice fetched net returns of Rs 14882 ha^{-1} has against Rs 13053 ha^{-1} under local practice. An average additional returns of Rs.2795 ha^{-1} was obtained under FLD practice with incremental B:C ratio of 2.62 . A perusal of cost benefit ratio observed in FLD's and farmers practice revealed that thiourea application did not reduced B:C ratio despite the general conception that thiourea being higher cost input . In present study, thiourea application provides reasonable additional returns which justified that it found as a economically feasible input for yield enhancement of pearl millet on farmer's fields. Farmer's were also found greatly convinced with the thiourea application due to higher yield even under stress conditions with least additional investment.

Table 1: Productivity of Pearl millet as influenced by Foliar application of Thiourea

Year	No. of demonstration	Area of Demonstration (ha)	Yield (q/ha)		% increase over FP
			DP	FP	
2008	10	5.0	30.54	26.24	16.4
2009	10	5.0	27.50	23.30	17.9
2010	10	5.0	18.20	15.33	18.7
2011	10	5.0	22.86	19.69	16.1
2012	13	5.2	19.05	16.60	14.7
		Mean	**23.63**	**20.23**	**16.80**

DP- Demonstration practice FP- Farmer's local practice

Table.2 : Economic indicators of Pearl millet cultivation as influenced by Foliar application of Thiourea

Year	Gross cost of cultivation (Rs./ha)		Gross Return (Rs./ha)		Net Returns (Rs./ha)		B:C ratio		Additional Returns (Rs./ha)	Incremental B:C ratio
	DP	FP	DP	FP	DP	FP	DP	FP		
2008	8167	7200	22062	19181	13895	11981	1.70	1.66	2280	2.36
2009	8863	7895	27250	23470	18387	15575	2.07	1.97	3780	3.90
2010	8678	7698	20016	17490	11338	9792	1.31	1.27	2526	2.58
2011	8208	6968	23431	20737	15223	13769	1.85	1.98	2695	2.17
2012	9390	8110	24955	22260	15565	14150	1.66	1.74	2695	2.11
Mean	8661	7574	23543	20628	14882	13053	1.72	1.72	2795	2.62

Conclusion

The results of front line demonstrations presented clearly indicates that the pearl millet productivity can be enhanced to the extend of 14 to 18 per cent on farmers fields by the foliar sprays of thiourea. There is need of transfer of such feasible technologies for adoption by the farmers on a large scale.

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Constraints Faced by Members and Non-Members of Dairy Co-operative Societies

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Dairying has played a prominent role in strengthening India's rural economy. It has been recognized as an instrument to bring about socio- economic transformation, small and marginal farmers and landless labourers, who derive a substantial part of their livelihood from sale of milk, own about 70 percent cattle in the rural areas. The vast potential of dairying in employment generation and poverty alleviation is well recognized. Successful dairy farming depends on the availability of healthy crossbreed animals. For this proper feeding, disease prevention, sanitation, breeding, cleaning, milking practices are important to improve the profitability of dairy farming. Hence these management practices play a vital role in the optimum milk production. Co-operative societies helping their members in breeding, feeding and management. Several programmes were undertaken by co-operatives like provision of improved fodder seeds, veterinary medicines, advice regarding management practices, facility of artificial insemination, sufficient and timely loans for dairy farmers. In the Western Maharashtra co-operative movement is active in dairy business. Therefore present investigation entitled "Constraints Faced by members and non-Members of Dairy Co-operative Societies"was undertaken with following objectives.

Methodology

The study was conducted in Karjat tahsil of Ahmednagar district of Maharashtra. Out of 440 dairy co-operative societies from Karjat tahsil 10 dairy co-operative societies were selected by using random sampling method. From these 10 selected dairy co-operatives, 6 members and 6 non- members from each dairy co-operative society were randomly selected. Thus in all 120 respondents were selected as a sample for the study. The data was collected with the help of structured and pre-designed interview schedule. Frequency and percentage were worked out for analyzing and interpretation of data.

Findings

Personal, social and economic characteristics of the members and non- members of dairy co-operative societies

It is observed from table I that majority of the members (63.00 per cent) and non members (70.00 per cent) were in the middle age group. It is noticed that maximum number (36.67 per cent) of the members and non members (48.33 per cent) had secondary education. Regarding family size majority (63.33 percent) of the members had medium size and majority of members (80.00) percent and Non members (73.33 per cent) had joint family. It is revealed from table that majority (63.33 per cent) of the members and non members (56.67) had medium social participation. The data regarding the size of land holding of the respondents indicated that, majority (40.00 per cent) of the members had medium size of land

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holding and majority (46.66 per cent) of the non members had small size of land holding. It is noticed that maximum number (48.33 per cent) of the members and 58.33 percent non members had medium annual income. It is seen from table that majority (65.00 per cent) of the members and non members (63.33 percent) were having the medium level of experience in dairy occupation. The data regarding the herd size possessed by the respondents indicated that majority (40.00 per cent) of the members had large herd size and in case of non members nearly half of the respondents (48.33 percent) had small herd size. The data in respect of motivation revealed that majority (60.00 percent) of the members and 58.33 percent of the non members were having medium motivation. It is observed that majority (60.00 percent) of the members and non members (58.33 per cent) had medium level of aspiration.

Nature of problems faced by the members and non members of the dairy co-operative societies

Economic problems

The data regarding economic problems in table II revealed that the majority of the respondents (84.16 per cent) experienced the problem of construction of byre being costly, followed by inadequacy of capital for purchase of milch animals (74.16 per cent), lack of knowledge about banking procedure (76.66 per cent), difficulties in securing loan (70.00 per cent) ,inadequacy of capital for purchase of feed and fodder (66.66 per cent), irregular and untimely supply of loan for dairy business (55.00 per cent). Half of the respondents reported higher rate of interest for sanctioned loans.

Supply problems

It was observed that, 52.50 per cent of the respondents felt that they sometimes face the problem of un-availability of crossbred cows and pure breeds of buffaloes, followed by 44.14 per cent and 38.33 per cent of the respondents face the problems of poor quality of concentrate available in market and un availability of green fodder for milch animals throughout the year, respectively 32.50 per cent respondents expressed that, they frequently face the problems of unavailability of veterinary facilities to animals in time and 30.00 per cent of the respondents reported scarcity of labour for dairy business.

Problems of milk marketing

It is observed that 91.66 per cent and 70.00 per cent of the respondents expressed they have problems of preservation of their milk for long time and poor transport facilities in rural areas respectively. About 53.33 percent and 45.83 percent of the respondents experienced the problems of the delay in payment of milk and irregular purchase of milk by the societies, respectively.

Other problems

It is observed that the majority of the respondents (93.33 per cent) had the problems about lack of scientific knowledge about feed and fodders to given to milch animals and 92.50 percent of the respondents had lack of knowledge of milk processing, while 90.00 percent of the respondents had lack of knowledge about silage preparation respectively followed by irregular visit of veterinary officers (65.83 per cent) and un-availability of veterinary facilities in the village (38.33 per cent).

Suggestions made by the respondents for the effective management practices.

From table III it was revealed that 84.17 percent of the respondents suggested that there should be timely payment of milk prices, about 81.17 per cent respondents suggested to increase milk prices, followed by 68.33 percent for subsidies on purchase of milch animals should be increased, good quality and less expensive feed and concentrate should be supplied by society (60.00 percent).

Table No. II Distribution of respondents according to nature of constraints faced by them

Sr. No.	Problems	Respondents		Total (N = 120)
		Members N= 60)	Non-members N= 60)	
A.	**Economic problems**			
1.	Construction of byre is costly	49 (81.66)	52 (86.66)	101 (84.16)
2.	Inadequacy of capital for purchase of milch animals	42 (70.00)	47 (78.33)	89 (74.16)
3.	Inadequacy of capital for purchase of feed and fodder	37 (61.66)	43 (71.66)	80 (66.66)
4.	Irregular and untimely supply of loan for dairy business	31 (51.66)	35 (58.33)	66 (55.00)
5.	Higher rate of interest for loans sanctioned	25 (41.66)	36 (60.00)	61 (50.83)
6.	Difficulties in securing loan	41 (68.33)	43 (71.66)	84 (70.00)
7.	Lack of knowledge about banking procedure	40 (66.66)	52 (86.66)	92 (76.66)
B.	**Supply problems**			
1.	Un-availability of crossbreed cows and pure breeds of buffaloes	27 (45.00)	36 (60.00)	63 (52.50)
2.	Poor quality concentrate available in market	24 (40.00)	29 (48.33)	53 (44.16)
3.	Un-availability of green fodder to milch animals throughout the year	21 (35.00)	25 (41.66)	46 (38.33)
4.	Un-availability of veterinary facility to animals in time	15 (25.00)	24 (40.00)	39 (32.50)
5.	Scarcity of labour for dairy business	20 (33.33)	16 (26.66)	36 (30.00)
C.	**Problems of milk marketing**			
1.	Irregular purchase of milk by the society	15 (25.00)	40 (66.66)	55 (45.83)
2.	Delay in payment of milk prices	20 (33.33)	44 (73.33)	64 (53.33)
3.	Poor transport facilities in rural areas	43 (71.66)	41 (68.33)	84 (70.00)
4.	Inadequate milk preservation and chilling facilities available with the society	54 (90.00)	56 (93.33)	110 91.66)
5.	Improper measurement of milk	12 (20.00)	45 (75.00)	57 (43.33)
6.	Milk prices are decided without consideration of members	16 (26.66)	32 (53.33)	48 (40.00)
7.	Milk prices are not given as per fat content	10 (16.66)	35 (58.33)	45 (37.50)
8.	Office bearer give higher prices to their relatives	17 (28.33)	38 (63.33)	55 (45.83)
D.	**Other problems**			
1.	Lack of knowledge of milk processing	54 (90.00)	57 (95.00)	111 (92.50)
2.	Lack of knowledge for preparation of silage	52 (86.66)	56 (93.33)	108 (90.00)
3.	Lack of scientific knowledge about feed and fodders to be given to milch animals	55 (91.66)	57 (95.00)	112 (93.33)
4.	Un-availability of veterinary facilities in the village	21 (35.00)	25 (41.66)	46 (38.33)
5.	Irregular visit of veterinary officers	39 (65.00)	40 (66.66)	79 (65.83)

Also more than half (54.16 percent) of the respondents suggested that they should be given training on animal health, nutrition and dairy management practices by proper agency followed by Government should provide financial support for dairy farmers (47.50 percent), veterinary facilities in village should be increased (44.16 per cent). While 40.83 per

cent respondents wants lower rate of interest and 28.33 per cent respondents suggested that Govt. should support economically weaker families.

Table No. III Suggestions made by the respondents for their effectively management practices (N= 120)

Sr. No.	Suggestions	Number	Percentage	Rank
1.	Timely payment of milk prices has to be done	101	84.17	I
2.	There is need to increase milk prices	98	81.67	II
3.	Subsidies on purchase of milch animals should be increased	82	68.33	III
4.	Good quality and less expensive feed and concentrate should be supplied by society	72	60.00	IV
5.	Training should be imparted by concerned agencies on animal health, nutrition and dairy management practices	65	54.16	V
6.	Government should provide financial support for dairy farmers	57	47.50	VI
7.	Veterinary facilities in village should be increased	53	44.16	VII
8.	Interest rate of loan needs to be lowered down	49	40.83	VIII
9.	Government should support economically weaker families	34	28.33	IX
10.	The office bearers and other member should co-operate with the non members and each other	23	19.16	X

Conclusion

Majority of the members of dairy co-operative societies and non-members were illiterate, most of the respondents having medium size of family and belonged to joint families, having medium social participation, medium level of experience, small herd size, medium level of annual income, medium level of motivation and also medium level of aspiration.

The study regarding constraints faced by members and Non-members of dairy co-operatives societies indicated that lack of finance, lack of scientific knowledge, irregular veterinary facilities, delay in payment, lack of knowledge about banking procedure are the most important constraints faced by them. It is therefore, very essential to take steps to provide funds for carrying out various training programmes. Government should give subsidies or economic support and incentives to develop dairy co-operative societies.

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Relationship between Adoption and Selected characteristics of Tribal Farmers Regarding Watershed Management

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If the available irrigation potential is developed to its full extent, nearly 50 per cent of cultivated land will still remain under rainfed farming for the foreseeable future. The total agriculture production of rainfed area is of the order 46 per cent of the national agricultural production. Realizing the importance of dry land agriculture and in order to meet the challenge before the country to support higher level of population and better standard of living, the Government of India have accorded the highest priority to the logistic and sustainable development of rainfed areas, through adoption of holistic approach of watershed. As far as Gujarat is concerned it is predominantly the state for dry land agriculture. At present, out of 95.83 lakh hectares of total net area, about 77 per cent area is rainfed. Tribal area is potential for agriculture in the state. In Gujarat, tribal population constitutes 14.92 per cent of the total population in the state. Gujarat is fourth among the states with a sizable tribal population. Tribal largely inhibit the border and hilly tracts of Gujarat. Keeping above fact in mind it was considered worthwhile to study knowledge of Tribal Farmers Regarding No-Cost and Low-Cost Technologies of Watershed Management.

Methodology

The study was conducted on a random sample of 120 tribal farmers of four purposively selected villages of three purposively selected talukas of Panchmahals district of Gujarat state. The data were collected by personal interview technique. The data thus, collected were classified, tabulated and analyzed in order to make the finding meaningful. The statistical measures, such as percentage, mean score, correlation and arbitrary method were used in analysis of data.

Findings

1) Adoption level of no-cost and low-cost technologies of watershed management by the tribal farmers

The result in Table-1 indicates that from various soil and water conservation technologies *viz.,* summer ploughing was adopted by 98.33 per cent tribal farmers and was ranked first, followed by sowing a across (93.33 per cent) and tillage across slope (90.83 per cent) were ranked second and third, respectively. The technologies viz., land leveling (83.33 per cent) and contour sowing (75.83 per cent) were assigned fourth and fifth rank, respectively. Sixth rank was assigned to recharge trench (74.17 per cent). Seventh rank was assigned to stubble and agro waste plugging (70.83 per cent), while dividing field with small bonds (68.33 per cent), small earthen bunds (66.67 per cent), natural grasses on boundaries (60.83 per cent), vegetative bunds (58.33 per cent), afforastation (57.50 per cent) and sowing as per recommended spacing (56.66 per cent), were ranked 8th,9th,10th,11th ,12th and 13th , respectively.

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While irrigation in alternative row and furrow was not adopted by any respondent, the probable reason might be that lack of information and skill oriented farmer about irrigation in alternative row and furrow.

So, far as crop production technology is concerned the technologies *viz.,* use of improved / hybrid /short duration varieties was adopted by majority (75.83 per cent) of tribal farmers ranked first, followed by inter-culturing (71.67 per cent) and hand weeding (70.83 per cent) and were ranked second and third respectively. The technologies *viz.,* use of organic measure (68.33 per cent), timely sowing (66.66 per cent) and use of neem coated urea as chemical fertilizer (50.00 per cent) were found in fourth, fifth and sixth rank respectively. Seven and eight rank was assigned to intercropping (48.33 per cent) and mid season correction (44.16 per cent), respectively. The practices *viz.,* supplementary irrigation (39.16 per cent) and planting tree on fellow land / boundary (34.16 per cent) were ranked 9th, 10th, respectively and chemical method of weed control (17.50 per cent) *viz.,* ranked last.

Table-1: Aspect wise adoption of tribal farmers about no-cost and low-cost technologies of watershed management. n=120

Sr N.	Practices	Frequency	%	Rank
I	**Soil and water conservation technologies**			
1	Sowing across the slops	112	93.33	**II**
2	Sowing as per recommended spacing	68	56.66	**XIII**
3	Summer ploughing	118	98.33	**I**
4	Contour sowing	91	75.83	**V**
5	Vegetative bunds	70	58.33	**XI**
6	Dividing field with small bunds	82	68.33	**VIII**
7	Small earthen bunds	80	66.67	**IX**
8	Land leveling	100	83.33	**IV**
9	Tillage across the slops	109	90.83	**III**
10	Stubble and agro waste plucking	85	70.83	**VII**
11	Natural grasses on boundaries and waterways.	73	60.83	**X**
12	Afforestation	69	57.5	**XII**
13	Recharge trench	89	74.17	**VI**
14	Irrigation in alternative row and furrow	--	--	--
II	**Crop production technologies**			
1	Selection of short durational variety	91	75.83	**I**
2	Timely sowing	80	66.66	**V**
3	Intercropping	58	48.33	**VII**
4	Mid season correction	53	44.16	**VIII**
5	Use of organic manures	82	68.33	**IV**
6	Use of neem coated chemical fertilizer as urea	60	50.00	**VI**
7	Interculturing	86	71.67	**II**
8	Weed management			
	i) Hand weeding	85	70.83	**III**
	ii) Use of herbicides	21	17.50	**XI**
9	Supplementary irrigation	47	39.16	**IX**
10	Planting of tree on farm boundary / in waste land	41	34.16	**X**

Table: 2 Distribution of tribal farmers according to their overall adoption level of no-cost and low-cost technologies of watershed management n=120

Sr. No.	Overall adoption level categories	Tribal farmers	
		Frequency	Per cent
1	Very low (Up to 20 score)	00	0.00
2	Low (21 – 40 score)	01	0.83
3	Medium (41 – 60 score)	44	36.67
4	High (61 – 80 score)	63	52.50
5	Very high (Above 80 score)	12	10.00
Total		**120**	**100.00**

Table-2 indicated that majority (52.50 per cent) of the tribal farmers had high level of overall adoption followed by 36.67 per cent, 10.00 per cent and 0.83 per cent had medium, very high and low level of overall adoption. None of the tribal farmers fall under the categories of very low level of overall adoption about no-cost and low-cost technologies of watershed management.

2) Relationship between profile of tribal farmers and their adoption level of no-cost and low-cost technologies of watershed management.

The relationship analysis revealed that the education, experience, social participation, mass media exposure, extension contact, occupation, land holding, annual income, scientific orientation and knowledge exhibit positive and highly significant relationship with adoption level of tribal farmers. Whereas age is negatively significantly related with adoption low cost and no cost of technologies by farmers.

Table:3 Relationship between profile of tribal farmers and their adoption level

Sr. No.	Independent Variables	Correlation Coefficient ('r' value)
1	Age	-0.247**
2	Education	0.307**
3	Experience in farming	0.313**
4	Social participation	0.252**
5	Training received	0.216*
6	Mass media exposure	0.455**
7	Extension contact	0.438**
8	Occupation	0.348**
9	Land holding	0.326**
10	Annual income	0.328**
11	Scientific orientation	0.237**
12	Knowledge	0.666**

Young and middle aged farmers were more enthusiastic in nature with unique power of decision making when old age farmers had greater reluctance to learn and had set habits in way of thinking which punctured in forming favorable attitude towards new innovation. Farmers having higher education with inquisitive mind harvest the rich fruit of research resulted in rational pragmatic decision making. Likewise tribal farmers with low to medium experience in farming followed traditional as well as scientific or integrated watershed management practices, while tribal farmers who were relatively new in rainfed farming, were more favorably inclined to adopt recommended improved technologies of watershed management as they were eager to get better results in terms of greater income realization and farmers having more participation in various organizations might have lead to contacts of various sources of information which might have helped them to get exposure and share knowledge in similar way better exposure of tribal farmers through mass media provided them the knowledge and importance of various no-cost and low-cost technologies of watershed management for sustainable rainfed farming occupation, interaction between extension personnel with

tribal farmers regarding proven no-cost and low-cost technologies of watershed for sustainable and successful rainfed farming occupation, which can have helped them to gain knowledge and skill and cleared their doubts about various no-cost and low-cost technologies of watershed management, scientific orientation opened the mental horizon which acted as a catalyst in changing behaviour of the tribal farmers, which would have resulted into its significant influence on adoption

Conclusion

Thus, it can be concluded that nearly cent per cent of tribal farmers had medium to very high level of overall adoption about no-cost and low-cost technologies of watershed management. The variables like education, extension contact, annual income, knowledge and scientific orientation could contribute significantly towards knowledge leads to increasing adoption rate of farmers about no now-cost and low-cost technologies of watershed management vice versa.

For high to medium level of adoption of tribal farmers the probable reason might be due to their very high level of extension contact and medium to high level of mass media exposure, besides their primary to secondary level of formal education might have encouraged them to take interest in various awareness programmes run by State Agricultural Department, SAUs., Watershed Management Agencies, K.V.K., NGO's and Vanbandhu Welfare Programmes of Tribal Development Department. Here, none per cent of tribal farmers had very low level of overall adoption which is mainly attributed to literacy, means understandable educational status.

The use of improved/ hybrid /short duration varieties was the most adopted practices followed by inter culturing, hand weeding and use of organic manures, respectively. The probable reason might be that the farmers have increased their crop production per unit area by adopting improved / hybrid variety without bearing more expenses. Another reason might be that the improved varieties are being easily available at everywhere.

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Aspirations of Post Graduate Students of Agriculture faculty

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Agricultural education today has become highly complex and specialized and offers many opportunities to plan and choose careers to its recipients. Agricultural post graduate students do have some aspirations and plans to pursue a specific career after getting their degree. Aspiration means a strong desire to do or get something. Indeed, aspiration can be said to be the desired future state of being with respect to standards of living, social status, marriage and family, education and career. The participation of post graduate students had been constantly increasing since 2001 which reflects the raising interest of students on research in different disciplines of agriculture offered by Central and State Agricultural Universities.

Knowledge of aspirations is important to sociologist, since a person does have notions of desirability regarding his/her future status and does believe that by his/her own selection and decision he/she can materially affect the role he/she will acquire and discharge. Failing to reach one's professed goals, particularly work goals in any competitive oriented society, is to invite personal adjustment problems, such as frustration and feelings of deprivation. Therefore, studying aspirations of students had significance.

Methodology

This study was conducted during 2011-2012 in Post Graduate Institute, Rahuri and College of Agriculture, Pune of Mahatma Phule Krishi Vidyapeeth. The respondents of the study were 93 post graduate students of Post Graduate Institute, Rahuri and 27 post graduate students of College of Agriculture, Pune of 2010-2012 batches constituting to a sample of 120 students. Selection of respondents was done by following Proportionate Stratified Random Sampling.

Data were collected by formulating an interview schedule which was designed to obtain information with respect to both independent and dependent variables. The independent variables were academic performance of respondent students at Higher Secondary School and Under Graduation, type of family, family education status, size of land holding, parents occupation and family annual income. The dependent variables were aspirations of respondent students which include the educational, professional, economical, social and entrepreneurial aspirations and the collected data were analyzed using statistical methods like frequency, percentage, mean, standard deviation and co-efficient of correlation.

Findings

Personal Characteristics of the post graduate students

The present investigation revealed that 55.83 per cent of the post graduate students had secured 'First class' at H.S.C, while 73.33 per cent of them had secured 'First class' in under graduation, 84.17 per cent of them belonged to nuclear family, 38.33 per cent of their fathers' were graduates and around 41.67 per cent of mothers' were educated up to secondary level, 27.50 per cent of the parents of them had semi medium sized land holding i.e. between 2.1 to 4.0 hectare, 55.83 per cent of respondents' father had service as occupation and about

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70.83 per cent of respondents' mother had no income generating occupation, 91.67 per cent of the respondents' father had medium level of annual income (Rs.17,067/- to Rs. 5,52,216/-) and only 20.83 per cent of respondents' mother had medium level of annual income (Up to Rs. 76,805/-).

Aspirations of the post graduate students

Overall Aspiration

The data about overall aspirations of the post graduate students are presented in table 1

Table 1: Distribution of the Post graduate students according to their aspiration

Sl. No.	Aspiration	Respondents (N=120)	
		Number	Percent
1.	Low (up to 31 score)	15	12.50
2.	Medium (32 to 52 score)	85	70.83
3.	High(53 and above)	20	16.67
	Total	**120**	**100.00**

It is observed from table 1 that majority (70.83 per cent) of the post graduate students had medium level of aspiration, while 16.66 per cent and 12.50 per cent of them had high and low level of aspirations respectively. It clearly indicates that, most of the post graduate students have satisfactory level of aspirations. The distribution of the post graduate students in various categories of aspiration level is more or less normal. It seems that majority of the post graduate students have average aspiration level, while from the remaining, nearly equal number of the post graduate students have a low and high aspirations. This difference in the aspiration level might be due to differences in their aspirations about education, profession, economic status, social status and entrepreneurship.

Educational aspirations

Table-2 Distribution of the Post graduate students according to their Educational aspirations

Sl. No.	Educational aspirations	Respondents(N=120)	
		Number	Percentage
1.	To complete MBA	17	14.16
2.	To complete doctoral studies	20	16.67
3.	To complete post-doctoral studies	15	12.50
4.	To complete any entrepreneur oriented short term courses Aspire to fly abroad for higher studies	60	50.00
5.		7	5.83
6.	To acquire soft skills and management competencies	21	17.50
7.	To study any diploma courses	4	3.33
8.	To complete Post Graduation only	70	58.33

It is observed from the table- 2 that 58.33 per cent of the post graduate students had aspired 'to complete Post Graduation only', followed by 'to complete any entrepreneur oriented short term courses' (50.00 per cent). It indicated that most of them have high aspirations regarding their education. Looking into these educational aspirations, it is necessary to help and guide them in fulfilling these aspirations. The findings of the present study slightly differs with the findings of Anonymous (1997) and Iswalkar (2001).

Professional aspirations

The information regarding professional aspirations of the post graduate students is presented in table- 3.

Table 3: Distribution of the Post graduate students according to their Professional aspirations

Sr. No.	Professional Aspirations	Respondents (N=120)	
		Frequency	Percentage
1.	To do Farming	36	30.00
2.	To do State Public Service	70	58.33
3.	To aspire any reputed position in Agricultural	15	12.50
4.	universities	20	16.67
5.	To achieve Agricultural Research Services	24	20.00
6.	To become an Agricultural entrepreneur	19	15.83
7.	To acquire any Profession in leading Corporate sector	8	6.67
8.	To acquire any Profession in Co-operative Organizations	12	10.00
	To acquire any Profession in Private Organizations		

It is seen from the table- 3 that 58.33 per cent of the post graduate students aspired 'to do State Public Service', whereas 30.00 per cent and20.00 per cent of them aspired 'to do Farming' and 'to become an Agricultural entrepreneur' respectively. Nearly equal per cent of them aspired 'to achieve Agricultural Research Service (16.67 per cent) and 'to acquire any Profession in leading Corporate sector' (15.83per cent), while 12.5 per cent, 10.00 per cent and 6.67per cent of them aspired 'to acquire any reputed position in Agricultural universities.

Table- 4: Distribution of the Post Graduate Students according to their Professional aspirations with regards to their respective colleges (Figures in parenthesis are percentages)

Sl. No.	Professional Aspirations	Respondents (N=120)	
		PGI, Rahuri (n=93)	COA, Pune (n=27)
1	To do Farming	30 (32.26)	6 (22.22)
2	To do State Public Service	59 (63.44)	11 (40.74)
3	To aspire any reputed position in Agricultural universities	15 (16.13)	5 (18.52)
4	To achieve Agricultural Research Services	13 (13.98)	7 (25.93)
5	To become an Agricultural entrepreneur	10 10.75)	14 (51.85)
6	To acquire any Profession in leading Corporate sector	9 (9.67)	10 (37.03)
7	To acquire any Profession in Co-operative Organizations	3 (3.23)	5 (18.52)
8	To acquire any Profession in Private Organizations	9 (9.68)	3 (11.11)

The data from the table-4 revealed that 63.44 per cent of the post graduate students of PGI, Rahuri and about 40.74 per cent of the post graduate students of College of Agriculture, Pune had aspired to do state public services, 51.85 per cent of the respondents of College of Agriculture, Pune and only 10.75 per cent of the respondents of PGI, Rahuri had aspired to become an agricultural entrepreneur, 25.93 per cent of the respondents of College of Agriculture, Pune and only 13.98 per cent of the respondents of PGI, Rahuri had aspired to achieve Agricultural research services. Nearly one-third (32.26 per cent) of the respondents of PGI, Rahuri and nearly one-fourth (22.22 per cent) of the respondents of College of Agriculture, Pune reported to do farming.

Economical Aspirations The observations regarding economical aspirations of the post graduate students are presented in table- 5.

Table- 5: Distribution of the Post graduate students according to their Economical aspirations

Sl. No.	Economical aspirations	Respondents(N=120)	
		Frequency	Percentage
1.	To raise standard of living of family	75	62.50
2.	To establish financial independence	36	30.00
3.	To create an effective financial record keeping	15	12.50
4.	To accumulate an appropriate emergency fund	23	19.17
5.	To purchase appropriate type and amounts of insurance	27	22.50
6.	coverage	26	21.67
7.	To create and implement a flexible budget	22	18.33
8.	To evaluate and select appropriate investment	31	25.83
	To make a will and develop an estate goal		

Table- 6: Distribution of the Post graduate students according to their Social aspiration

Sl. No.	Social Aspirations	Respondents(N=120)	
		Frequency	Percentage
A.	**Church activity**		
1.	Community outreach	15	12.50
2.	Helping the elderly	32	26.67
3.	Church-sponsored music	5	4.17
4.	Athletic programs	2	1.67
5.	Missionary work	1	0.83
B.	**Club organization**		
1.	Chess club	30	25.00
2.	Role playing club	10	8.33
3.	Youth club	20	16.67
4.	Laughing club	5	4.17
5.	Yoga Club	48	40.00
C.	**Governance**		
1.	Student Government	8	6.67
2.	Student council	21	17.50
3.	Krishi samiti	5	4.17
4.	Community youth board	8	6.67
5.	Shetkari sangh	14	11.67
D.	**Volunteer Work**		
1.	Volunteer in orphan homes	12	10.00
2.	Habitat for Humanity	8	6.67
3.	Tutoring and mentoring,	19	15.83
4.	Community fund-raising	13	10.83
5.	Rotary club association	20	16.67
6.	Hospital work	30	25.00
7.	Self Help Group	14	11.67
8.	Animal rescue	18	15.00
9.	Nursing home work	10	8.30
10.	Volunteer fire department,	9	7.50
11.	Camps to enlighten human relations	11	9.67
12.	Serve for rural development works	50	41.67

The data presented in the table 5 indicated that 62.50 per cent of post graduate students have aspired only 'to raise standard of living of family' and others also mentioned different percentages of different economical aspirations. From the above observations it is clear that majority of the post graduate students feel responsibility not only regarding their economic status but also to indicate their individuality in their economic career.

Social Aspirations The observations regarding social aspirations of the post graduate students are presented in table- 6.

It can be concluded from these findings that the post graduate students are eager to work for betterment of rural areas which indirectly helps to develop agriculture.

Entrepreneurial Aspirations

The information regarding entrepreneurial aspirations of the post graduate students are presented in table 7.

Table 7: Distribution of the Post graduate students according to their entrepreneurial aspirations

Sl. No.	Entrepreneurial Aspirations	Respondents (N=120)	
		Frequency	Percentage
1.	I will choose career as an entrepreneur.	19	15.83
2.	I prefer to be an entrepreneur rather than be an employee in a company.	18	15.00
3.	I am prepared to do anything to be an entrepreneur.	11	9.17
4.	I'll make every effort to start and run my own business.	21	17.50
5.	I have thought seriously to start my own business after completing my	13	10.83
6.	study.		
7.	I have a strong intention to start a business someday.	16	13.33
8.	I'm determined to create a firm in the future.	14	11.67
9.	I will put effort to make more money by following industrial ideas	5	4.17
10.	I want to be my own boss.	36	30.00
	I will start my business in the next 5 years.	31	25.83
11.	I will prefer as a service provider instead of service man	50	41.67

The data presensted in the table 7 revealed that 41.67 per cent of the post graduate students have aspirations 'to prefer as a service provider instead of service man', whereas 30.00 per cent and 25.83 per cent of them indicated that 'I want to be my own boss' and 'I will start my business in the next 5 years' respectively, while nearly equal per cent of them mentioned that I'll make every effort to start and run my own business'(17.50 per cent), 'I will choose career as an entrepreneur'(15.83 per cent), 'I prefer to be an entrepreneur rather than be an employee in a company'(15.00 per cent), 'I have a strong intention to start a business someday'(13.33 per cent). Only few per cent of them said that 'I'm determined to create a firm in the future' (11.67 per cent) and 'I have thought seriously to start my own business after completing my study' (10.83 per cent). Only few of them said that 'I am prepared to do anything to be an entrepreneur' (9.67 per cent) and 'I will put effort to make more money by following industrial ideas' (4.67 per cent).

Relationship between personal characteristics and aspirations of the Post graduate students

The observations keenly revealed that the characteristics namely academic performance of post graduate students in H.S.C. and fathers' annual income had positive and significant relationship with aspirations of post graduate students at 5.00 per cent level of probability whereas the relationship between size of landholding and aspirations of post graduate students is positive and significant at 1.00 percent level of probability.

However the relationship between other characteristics namely academic performance of post graduate students in Under graduation, family education status, fathers' occupation was non-significant, whereas there was negative and non-significant relationship between post graduate students mothers' annual income and their aspirations.

Constraints that affected the aspirations of Post graduate students and suggestions given by the Post graduate students

Regarding administration nearly less than half (44.17 per cent) of the post graduate students have faced some constraints with 'inadequate co-operation from non teaching staff'. Constraints about library revealed that the 'unavailability of e- journals, video conferencing facility' (26.67 per cent), while 24.17 per cent of them reported 'no provision of coaching classes for competitive entrance exams' under academic constraints.

The major suggestions given by the post graduate students about curriculum were 'more emphasis should be given on practical training' (91.67 per cent) and inclusion of new subjects majorly 'Agriculture and Poverty alleviation' (41.67 per cent). The major suggestions about teaching were 'introduction of e-learning must be encouraged' (66.67 per cent). Regarding library, one-third (33.33 per cent) of the post graduate students suggested to provide 'Recent editions of text books and reference books'. The data pertaining to suggestions about examinations revealed that two-third (66.67 per cent) of them suggested 'to give orientation for various competitive examinations' and the 100.00 per cent of them suggested 'to provide online announcement of college notices and results'.

Conclusion

Majority of post graduate students aspired to do state public services. The reason for this may be the less availability of any other suitable profession in the academic side. Hence they must be provided with sufficient job opportunities in the academic side both at state and central level. Majority of them aspired to serve for rural development works inferring that, they have been able to develop favourable attitude towards rural developmental activities. Therefore, efforts should be made by the concerned authorities to encourage their participation and to utilize their services in a fruitful way. Nearly two-fifth of the post graduate students aspired 'to be as a service provider instead of service man'. Hence efforts could be made by the planners to mould their aspirations towards agro-based enterprises and efforts could be made by government agencies to provide them with good projects with various infrastructural facilities like entrepreneurship training, credit, marketing etc., to take up agriculture enterprise in a better way.

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The Relational Analysis of Profile of Agriculture Graduates with Attitude towards Entrepreneurship

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Entrepreneurship which can be understood as the mind set and process to create and develop economic activities. In today's economic entrepreneurship is seen as vital source for economic growth and competitiveness, job creation as well as wealth creation and providing societal interest. The role of education has been conformed as a important component in the creation and continuing development of entrepreneurial attitude. In this context students are seen as the primary resource of future entrepreneur. However there is a need to understand how to develop and nurture potential entrepreneur further while continuing to grow in entrepreneurship education, our understanding of students in respect to entrepreneurial education is still lacking.

Moreover, attitudes are defined by cognitive psychology as the predisposition to respond in a generally favourable or unfavourable manner with respect to the object of the attitude. The attitudinal approach has been utilized in many fields including evaluating entrepreneurship education. Thus, for increasing the level of entrepreneurial initiative among students it is needful to increase positive attitudes towards entrepreneurship, so attitudes can be viewed as the stepping stone to entrepreneurial intentions. There are numerous interconnections between attitudes and various interrelated objects. Attitudes would measure the extent of individual values positively or negatively. Generally, the behaviour of an individual is greatly determined by his/her attitude.

Methodology

The present study was an attempt to assess the attitude of B.Sc. (Agri.) VIIIth semester agricultural students towards entrepreneurship at College of Agriculture in Parbhani. The study has conducted within a surveying methodology by using questionnaire. Statistical population of the study consisted of 20 students of each Experiential Learning Module i) Ground nut Production Technology-Agronomy, ii) Milk & Milk Products- Dairy, iii) Mushroom Production Technology- Plant Pathology, iv) Commercial Vegetable Production-Horticulture, v) Soil Water Plant & Fertilizer Analysis Laboratory- Soil Science vi) Commercial Sericulture, thus 120 agricultural graduating students samples were selected randomly. Data gathering tool was a questionnaire a paper based survey was used in order to allow the survey to achieve high coverage as the questionnaires could be given directly to students and collected at the same time. The data were subjected to statistical analysis with the help of frequency, percentage, mean, and standard deviation and co-efficient of correlation.

Findings

Table 1: The profile of the respondents

The data with regards to profile of the respondents are presented in table 1. More than half of the respondents (51.66 per cent) was medium (Rs. 60001 to 2,00,000) Annual Family Income, while 26.67 per cent and 21.67 per cent respondents were found in low (Up to Rs. 60,000) and high

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(above Rs. 2,00,000) annual family income category respectively. Maximum number of respondents (57.50 per cent) had medium level social participation, while 31.67 per cent and 10.83 per cent respondents had low and high social participation respectively.

With regards to gender, it was observed that more than two third (76.67 per cent), of the respondents were male and (23.33 per cent) respondents were female. Majority of the respondents (62.50 per cent) had living in joint type of family while 37.50 per cent of them had belongs to nuclear family. Near about thirty per cent (29.17 per cent) of the respondent had semi medium land holding, followed by small land holding (20.83 per cent), big (15.83 per cent) while 14.17 per cent were medium and 13.33 per cent landless whereas 6.67 per cent of the respondents were marginal land holder. Large majority of respondents (82.50 per cent) had belonged to rural back ground, while 17.50 per cent of them had urban background. Majority respondents (61.67 per cent) had medium family size, (5 to 7 members) while 21.67 per cent and 16.66 per cent of the respondents had small (Up to 4 members) and big family size (more than 7 members) respectively. Academic performance (CGPA) of majority (64.17 per cent) of the respondents had possessed second class while 35.83 per cent respondents had first class, whereas none of the respondents was found pass class and first class with distinction. As for as scholarship holding by the respondent is concerned majority (55.83 per cent) respondents reported that they got GOI scholarship, while 9.17 per cent and 5.00 per cent respondents holding other (NTS) and freeship respectively.

Table 2: Overall attitude of the respondents towards entrepreneurship

Attitude	Frequency	Percentage
Unfavourable (Upto 102)	07	05.83
Favourable (103 to 127)	87	72.50
Highly favourable (128 & above)	26	21.67

The data with regard to respondent's overall attitude towards entrepreneurship are presented in table- 2.

It is observed from table 2 that majority (72.50 per cent) of the respondents had favourable attitude towards the entrepreneurship, while 21.67 and 5.83 per cent respondents had highly favourable and unfavourable attitude towards entrepreneurship respectively. It means majority of the respondents were having favourable attitude regarding entrepreneurship in future.

It was observed from table- 3 that annual family income, social participation, landholding, and academic performance were found positive and significant relationship with attitude towards entrepreneurship, whereas gender, family types, family size, family background and scholarship were shown non-significant relationship with attitude towards the entrepreneurship. The higher is the annual family income respondents, they are having favourable attitude towards entrepreneurship. Those respondents having more social participation and land holding they are also having favourable attitude towards entrepreneurship.

The academic performance of the students plays a vital role in making the favourable attitude towards the entrepreneurship. Higher grade point (CGPA) students are also feels to start the enterprise, instead of seeking job.

Table 3: The relationship between the profile of the respondents and attitude towards entrepreneurship.

Sr, No.	Characteristics	'r' value of attitude
1	Annual family income	0.231*
2	Gender	0.033^{NS}
3	Social Participation	0.253*
4	Family type	0.111^{NS}
5	Land holding	0.241*
6	Family size	0.038^{NS}
7	Family background	0.261^{NS}
8	Academic performance	0.221*
9	Scholarship	0.059^{NS}

** Significant at 0.01 per cent level of probability *significant at 0.05 per cent level of probability

It is noticed from the table- 4 that highly majority (98.33 per cent) of the respondents expressed that provide the student with an ideas to starts new business stands rank first, 95.83 per cent of the respondents suggested that create more awareness of entrepreneurship as possible carrier choice. While 93.33 per cent respondents expressed that arrange the conferences / workshop on entrepreneurship and bring the students in contact with the network need to start new enterprise. While 92.50 per cent were suggested that offer a bachelor or master study and project work focused on entrepreneurship. 91. 67 per cent respondent also expressed that provide students with financial means needed to start a new enterprise and very meagre percentage (3.33 per cent) of the respondent were suggested that brought entrepreneurial students in contact with each other.

Table- 4: Inviting suggestions towards entrepreneurship development

Sr. No.	Suggestions	Respondents		Rank
		Frequency	Per cent	
1	Create more awareness of entrepreneurship as a possible career choice	115	95.83	II
2	Provide students with ideas to start a new business	118	98.33	I
3	Offer a bachelor or master study on entrepreneurship	111	92.50	IV
4	Offer project work focused on entrepreneurship	111	92.50	IV
5	Arrange conferences / workshops on entrepreneurship	112	93.33	III
6	Bring students in contact with the network needed to start a new enterprise	112	93.33	III
7	Provide students with the financial means needed to start a new enterprise	110	91.67	V
9	Brought entrepreneurial students in contact with each other	004	03.33	VI

Conclusions

The Respondents had predominantly the profile as they were male, having rural background, medium annual family income, social participation, semi medium land holding belonging to joint and medium size family, sought GOI scholarship and possessed second class in academic performance.

The personal characteristics such as annual family income, social participation, land holding and academic performance are directly influence on making favourable attitude towards entrepreneurship. Large majority of the respondents suggested that provide the students with new idea to start new enterprise.

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Attitude of Farmers towards Farm Implements and its Relationship with Knowledge and Utilization

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The technological improvements in Indian agriculture since mid sixties have brought about revolutionary increase in agricultural production. In the context of increasing commercialization of agriculture, mechanization is very important as it contributed to the increase in output due to timeliness of operations and increasing precision in input application. Farm mechanization saves time and labor, cuts down crop production costs in the long run, reduces post-harvest losses and boosts crop output and farm income. (Singh *et. al.* 2011)

From number of studies and literature it has been reported that the attitude of farmer or end user plays a vital role in the adoption or rejection of an innovation. The adoption or rejection of any technology or activity is depends upon the favourable or unfavourable attitude of its end users. Therefore, it was felt necessary to study the attitude of farmers towards farm implements and its relationship with knowledge and utilization.

Methodology

The study was conducted in Ahmednagar and Solapur district. In Ahmednagar district Newasa and Rahuri tahsils (irrigated area) as well as Karjat and Pathardi tahsils (rainfed area) were selected. While in Solapur district, Pandharpur and Malshiras tahsils (irrigated tahsils) and Karmala and Mohol tahsil (rainfed tahsils) were selected. Total 288 representative farmers were selected by using proportionate random sampling procedure from the selected 16 villages of these 8 tahsils in Ahmednagar and Solapur districts. The data were collected through specially developed interview schedule; thereafter the data were analyzed, tabulated and interpreted with suitable statistical instruments like frequency, average, arbitrary method and correlation coefficient.

In the present study attitude has been operationalized as the degree of positive or negative relation of respondent mind towards the farm implements. It was measured by the attitude scale used by Dhere (2012). The scale followed the Likert scaling pattern. The response patterns were strongly agree, agree, undecided, disagree and strongly disagree. The scoring procedure followed by 5,4,3,2 and 1 for positive and 1,2,3,4 and 5 for the negative statements respectively.

Findings

Attitude is a psychological characteristic on the part of the individual mental inclination towards the subject of hand. Although the respondents selected under study possessed the various farm implements and machineries, it was thought appropriate to understand respondent's attitude towards the farm implements as a whole.

From Table 1 it is revealed that, in irrigated area more than half (56.25 %) of the respondents were having favourable attitude towards the farm implements followed by more than two fifth (41.67 %) of the respondents were having highly favourable attitude.

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While very few respondents (2.08 %) having less favourable / moderate attitude towards the farm implements. Similarly in rainfed area about two third (74.31 %) respondent farmers were having favourable attitude towards the farm implements followed by highly favourable (14.58 %) and less favourable / moderate attitude (11.11 %) towards the farm implements.

I. Attitude of farmers towards the farm implements

Distribution of the respondents by their attitude towards farm implements in irrigated and rainfed area is presented in Table- 1.

Table- 1. Distribution of the respondents according to attitude about farm implements

Sl. No.	Attitude level	Irrigated (N=144)	Rainfed (N=144)	Overall N=288
1.	Highly unfavourable (10 to 18)	0 (0.00)	0 (0.00)	0 (0.00)
2.	Unfavourable (19 to 26)	0 (0.00)	0 (0.00)	0 (0.00)
3.	Less favourable / Moderate (27 to 34)	3 (2.08)	16 (11.11)	19 (6.60)
4.	Favourable (35 to 42)	81 (56.25)	107 (74.31)	188 (65.28)
5.	Highly Favourable (43 to 50)	60 (41.67)	21 (14.58)	81 (28.13)
	Total	**144 (100.0 0)**	**144 (100.00)**	**288 (100.0 0)**
	Maximum Score	**50**	**50**	**50**
	Minimum Score	**10**	**10**	**10**
	Class interval	**8**	**8**	**8**

(Figures in the parentheses indicate percentages)

While focus on overall population, it is concluded that though some of the farmers were used the farm implements and machineries on hired basis; majority (65.28 %) of the respondents were having favourable attitude towards the farm implements. Followed by, highly favourable (28.13 %) and less favourable / moderate favourable attitude (6.60 %) towards the farm implements. At the same time it was observed that no one had highly unfavourable or unfavourable attitude towards the farm implements. Not a single respondents was found in highly unfavourable and unfavourable category of attitude, this may be because of the farm implements help in performing farm operations speedily, efficiently, uniformly and relieving the farmers from the drudgery of physical work. These findings are in line with the findings of Anonymous (1999), Jalak (2002), Dhere (2012) and Salunke (1994).

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II. Statement wise distribution of respondents according to their responses of attitude towards farm mechanization

The statement wise attitude score distribution is as follows.

It is revealed that in overall very large majority (98.96 %) of the respondents were agreed (i.e. strongly agreed and agreed) with the statement that farm implement save much time and labour, followed by statement that, farm implements cuts the weed and turn them under the soil making the field quite clean (98.61 %), then, use of improved farm implements increases production (95.84 %), improved farm implements make a good soil tilth (88.54 %), improved farm implements were not costly as compared to their benefits (52.08 %). At the same time very few respondents were agreed to statement that, there are large limitations on use of improved farm implements (10.07 %) and improved farm implements are beneficial only to big cultivators and not to small ones (9.03 %). Followed by, statement that It is more difficult to handle improved farm implements as compared to traditional farm implements 6.26 %), there are large limitations on use of improved farm implements (6.25 %) and Improved farm implements render the soil poor because it turns over the fertile surface soil to the subsurface and the unfertile subsurface soil to the surface (3.47 %)

It is also revealed that, about one fourth respondents were undecided with the third and eighth statement that, it is more difficult to handle improved farm implements as compared to traditional farm implements (25.35 %) and there are large limitations on use of improved farm implements (24.31%).

Similarly when focused to dis-agreeness of respondents, Table- 2 revealed that majority of respondent disagreed (i.e. disagree, strongly disagree) the statements number six i.e. improved farm implements are beneficial only to big cultivators and not to small ones (84.73 %) followed by statement that improved farm implements require very high draft and make the bullocks too weak (81.60 %) then, statement that improved farm implements render the soil poor because it turns over the fertile surface soil to the subsurface and the unfertile subsurface soil to the surface (75.35 %) and statement that, it is more difficult to handle improved farm implements as compared to traditional farm implements (68.41%).

It is interesting to see these four disagreed statements of number six, nine, four and three. Basically these were negative statements use in the scale which also inferred the positive attitude of farmers with the farm implements. Collectively it can be says that the mechanization on first side was favors by almost all the farmers because, of its need in today's agriculture.

III. Relationship of farmers' attitude with knowledge 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 attitude of respondents with their knowledge and attitude towards farm mechanization.

The correlation coefficient between attitude of the respondents with knowledge level and utilization index of the farm implements is presented in Table- 2.

Table 2: Correlation coefficient between attitude of the respondents with knowledge level and utilization index of the farm implements

Sl. No.	Dependant Variables	'r' value's in Irrigated area	'r' value's in Rainfed area
1.	Knowledge level	0.358**	0.195*
2.	Utilization index	0.088 NS	0.143 NS

**Significant at 0.01 level of probability, *Significant at 0.05 level of probability and NS: Non-Significant

It is evident from Table 2 that, there is significant positive relationship between 'attitude' and 'knowledge level' of respondent farmers in irrigated area (r = 0.358**) as well as in rainfed area (r = 0.195**) too. The study also revealed that 'utilization index' of respondent farmers in irrigated area (r = 0.088^{NS}) as well as in rainfed area (r = 0.143**) have been found non significant with the 'attitude'. The finding is in contradictory with the findings of Salunke (1994), Prasad (2000) and Jalak (2002).

Conclusion

From the study it is concluded that majority of farmer respondents were having favourable attitude towards the farm implements. This may be because of the farm implements help in performing farm operations speedily, efficiently, uniformly and relieving the farmers from the drudgery of physical work. This is a good signs that farmers exhibited a favourable attitude towards use of farm implements and can be taken into consideration by the decision makers for policy making and extension agencies for effective dissemination and adoption of farm implements. From the study it is also concluded that, there is significant positive relationship between 'attitude' and 'knowledge level' of respondent farmers in irrigated as well as in rainfed area. This indicates that one's attitude towards new technology determines further gain in knowledge. In other words a respondent with favourable attitude seeks to get more knowledge and vice versa. But at the same time 'utilization index' of respondent farmers in irrigated as well as in rainfed area have been found non- significant with the 'attitude'. This may be because of farmers respondent possess knowledge of farm implement but at the same time many of them didn't have their own farm implements but they were using implements on hire or share basis.

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Utilization of Information Sources and their Credibility for Farm Information Perceived by the Farmers

R. M. Ghadge, S. P. Patinge

The role of communication is of paramount importance in transfer of latest technology from research station to the farmers. Information about improved agricultural technology can be communicated through various sources to the farmers. The communication sources like television, newspaper, radio provides information on improved agricultural technology along with the experience of successful farmers which reinforces confidence in other farmers to take up similar activities or try out new innovation.

The fact changing agricultural technology demands for more information to be transmitted to our increasing volume of cliental. But the farmers generally rely on few sources for acquiring need based information, as the farmers perceive a few only as credible sources of information. This information credibility is decided by the degree to which a communication source is perceived as trustworthy and competent by the growers. Hence keeping in mind the importance of information sources utilized by farmers for getting farm information and its credibility among farmers, the study was conducted.

Methodology

The present investigation was carried out in Nagpur district of Maharashtra. A sample of 100 growers was selected randomly from 10 villages of two chosen blocks and from each village 10 growers as respondents. The data were collected with the help of well structured interview schedule. Before actual investigation for data collection the interview schedule was pre-tested.

The identified concepts for study were to know the extent of utilization of different information sources and their credibility perceived by farmers for getting the information about agricultural technology.

The extent of utilization of each identified source was measured on a three point continuum scale. The source `0' was given for never,`1' for sometimes and `2' for always. On the basis of the extent of utilization of various information source the respondents were categorised as high, medium and low level using mean and standard deviation. The utilization of information source were ranked based on mean percent score (MPS).

The credibility of information source for farm information as perceived by farmers was measured in terms of their extent of belief on the farm information disseminated by these sources. Information credibility was measured on three point continuum scale. The source `0' was given for not credible, `1' for partially credible and `2' for most credible. The credibility index was obtained by using the following formula. credibility index = Total score obtained by the respondent/ maximum obtainable score * 100 .The categories of credibility were made on the basis of the credibility index as high, medium and low level using mean and standard deviation. The credibility of information source for farm information as perceived by growers were ranked based on mean percent score.

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Findings

Table- 1. Utilization of information sources

Sr. No.	Utilization of information source	Respondents	
		Frequency	Percentage
1.	Low (Below 2.25)	19	19.00
2.	Medium (2.25 to 8.41)	64	64.00
3.	High (above 8.41)	17	17.00

Mean=5.33 S.D. =3.08

The table- 1 indicates that 64 percent farmers had medium level of utilization of information source followed by 19 percent respondents had low of utilization of information source and 17 percent respondents had high of utilization of information sources.

Table- 2 Credibility of information sources

Sr. No.	Credibility of information source	Respondents	
		Frequency	Percentage
1.	Low (Below 27.30)	16	16.00
2.	Medium (27.30 to 59.80)	65	65.00
3.	High (above 59.80)	19	19.00

Mean=43.55 S.D. =16.25

The data in table- 2 shows that 65 percent farmers perceived medium (some) credibility of information sources for agricultural information while 16 percent respondents reported low credibility of these resources. There were only 19 percent respondents who perceived high credibility of these resources. This clearly indicates the need to put more efforts for enhancing the credibility among the growers of these sources for agricultural information.

The data in Table- 3 reveals that agricultural input dealer was main source utilized by farmers for getting agricultural information, as it was ranked first. Majority of growers make use of Television and progressive farmers for farm information which were ranked as second and third respectively among the selected sources of farm information. Also newspaper, agricultural officer, subject matter specialist were ranked as fourth, fifth, and sixth respectively. But it was observed that information sources like radio, agricultural magazine and village level worker were less utilized by the growers for farm information. Also it is clear from the table- 3 that the television was considered the most credible source to the respondents for collecting farm information. The progressive farmers and subject matter specialists were ranked as second and third credible source respectively followed by agricultural input dealers, agricultural officer and radio.

Table- 3 Use of information sources

Sr. No.	Information source	Source utilization		Credibility	
		M.P.S.	Rank	M.P.S.	Rank
1	Progressive farmers	38.50	3	66.00	2
2.	Agricultural officer	23.50	5	39.00	5
3.	Village level worker	14.50	9	15.50	9
4.	Subject matter specialist	23.00	6	55.50	3
5.	Agricultural input dealers	58.50	1	45.50	4
6.	Newspaper	26.00	4	30.50	8
7.	Television	46.00	2	74.00	1
8.	Radio	19.50	7	36.50	6
9.	Agricultural magazines	15.50	8	33.00	7

Conclusion

It may be concluded that the majority of respondents (64 percent) had medium level of utilization of communication sources for getting agricultural information. It is also revealed from the present study that agricultural input dealers, television and progressive farmers are mostly utilized communication sources by growers for getting agricultural information. Also the majority of growers (65 percent) perceived medium level of credibility of these communication sources for farm information. It may be concluded that farm information communicated through television, progressive farmers and subject matter specialists were perceived to be more credible source by growers for collecting agricultural information.

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Feedback of sugarcane growers and sugar factory representatives about CO. 86032 and CO. M. 0265 varieties of Sugarcane

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Sugarcane is the most important cash crop and plays pivotal role in Indian rural economy. Sugar industry is the largest agro based industry next to cotton industry. However, Maharashtra is a prominent sugar producing state in the country contributing 4.42 per cent of the world's sugar production and one-third of the country's sugar production. Considering these facts, the present need of sugar industry and sugarcane growers is proper use of recommended production technology and development of improved varieties of sugarcane to sustain climate change. There are differences among sugar industry and sugarcane growers regarding acceptance of CO. M. 0265 (Phule 265).Thus present investigation was conducted to obtain the feedback of sugarcane growers and sugar factory representatives about cultivation aspects qualitative and quantitative characteristics of CO. 86032(Nira) and CO. M. 0265 (Phule 265) improved varieties of sugarcane.

Methodology

The present study was conducted in Baramati tahsil of Pune district as it is a major sugarcane belt of these varieties. On the basis of maximum area under these two varieties, 10 villages which were purposively selected from Baramati tahsil. From these selected villages, list of sugarcane growers was prepared in consultation with cane development officer, gate clerk and chit boy of Malegaon Co-operative Sugar Factory, Shivnagar Ltd, Baramati of Pune district. From this list, 12 respondents i.e. six sugarcane growers of each varietiy i.e.CO. 86032 and CO. M. 0265 from each village were purposively selected, thus total sample size was 120 (60 of each) was considered for the study.

To obtain the feedback of sugar factory representatives 4 sugar factories were selected i.e. Malegaon Co-operative Sugar Factory Ltd., Shivnagar, Baramati, Someshwar Co-operative Sugar Factory Ltd., Someshwarnagar, Baramati, Bhima - Patas Cooperative Sugar Factory Ltd., Daund, Ghodganga Co-operative Sugar Factory Ltd., Raosahebnagar, Shirur. As well 5 representatives i.e. chairman, vice'chairman, managing director, director and cane development officer from each factory were considered as the respondents. Thus total 20 representatives were selected to obtain the feedback. Feedback was divided into three continuum viz. agree, somewhat agree and disagree to the given statements under study.

Findings

Feedback of sugarcane growers about CO. 86032 and CO. M. 0265 varieties

Cultivation characterstics

Table 1 revealed that all (100.00 per cent) sugarcane growers fully agreed to cultivation characteristics i.e. CO. 86032 and CO. M. 0265 varieties are suitable for pre-seasonal.,*suru* and *adsali* planting seasons, heavy to medium soil type and dry/wet as well single/double eye bud planting methods.

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Qualitative characteristics

Data regarding important qualitative characteristics from table 1 revealed that 56.67 per cent sugarcane growers agreed that CO. 86032 variety is tolerant to water stress condition however 65.00 per cent disagreed to the water stress tolerance of CO. M. 0265. Most of the respondents (90.00 per cent ,80.00 per cent) agreed that both varieties are easy for de – trashing and non lodging (83.33 per cent agree, 78.34 per cent) respectively. Regarding ratooning quality 80.00 per cent and 73.34 per cent agreed that CO. 86032 and CO. M. 0265 varieties are good ratooner respectively. Majority of the respondents agreed that both varieties are medium to late maturing and suitable for harvesting. Near about half of the respondents said that both varieties give good response to chemical fertilizers,better for gul production and has excellent jaggery quality. However 91.67 per cent respondents said there is no loss in cane weight and sugar recovery if harvested late in case of CO. 86032 but 95.00 per cent are disagreed for the same in case of CO. M. 0265 variety .

Quantitative characteristics

Data from Table 1 shows that 100.00 per cent respondents were fully agreed to the statement that sugar recovery of CO. 86032 variety is more than CO. M. 0265 by 02-0.3 per cent . As far the yield is concerned, 41.67 per cent and 38.33 per cent sugarcane growers agreed that CO. 86032 and CO. M. 0265 varieties give good average yield respectively. However, there is a strong controversy regarding rate given by sugar factory to these

Table 1. Distribution of the sugarcane growers according to their feedback about various characteristics of CO. 86032 (Nira) and CO. M. 0265 (phule 265) varieties of Sugarcane

Sr. No.	Cultivation characteristics	CO. 86032 (N = 60)			CO. M. 0265 (N = 60)		
A		Agree	Some What Agree	Disagree	Agree	Some What Agree	Disagree
1.	Suitable for *adsali*	60 (100.00)	00 (00.00)	00 (00.00)	60 (100.00)	00 (00.00)	00 (00.00)
2	Suitable for preseason	60 (100.00)	00 (00.00)	00 0(0.00)	60 (100.00)	00 (00.00)	00 (00.00)
3	Suitable for *suru*	60 (100.00)	00 (00.00)	00 (00.00)	00 (00.00)	60 (100.00)	00 (00.00)
4	Suitable for medium to heavy soil	60 (100.00)	00 (00.00)	00 (00.00)	60 (100.00)	00 (00.00)	00 (00.00)
5.	Suitable for planting methods i.e. dry, wet, single and double eye bud planting methods.	60 (100.00)	00 (00.00)	00 (00.00)	60 (100.00)	00 (00.00)	00 (00.00)
B	**Qualitative characteristics**						
1	Tolerant to water stress condition	34 (56.67)	20 (33.33)	6 (10.00)	8 (13.33)	13 (21.67)	39 (65.00)
2	Easy for de - trashing	54 (90.00)	3 (5.00)	3 (5.00)	48 (80.00)	2 (3.33)	10 (16.67)
3	Non lodging	50 (83.33)	6 (10.00)	4 (6.67)	47 (78.34)	5 (8.33)	8 (13.33)
4	Good ratooner	48 (80.00)	6 (10.00)	6 (10.00)	44 (73.34)	8 (13.33)	8 (13.33)

Sr. No. A	Cultivation characteristics	CO. 86032 (N = 60)	CO. M. 0265 (N = 60)				
		Agree	Some What Agree	Disagree	Agree	Some What Agree	Disagree
5	Good response to chemical fertilizers	28 (46.67)	26 (43.33)	6 (10.00)	30 (50.00)	28 (46.67)	2 (3.33)
6	Medium to late Maturity	43 (71.67)	10 (16.67)	7 (11.66)	42 (70.00)	8 (13.33)	10 (16.67)
7	Better for gul production	35 (58.34)	20 (33.33)	5 (8.33)	32 (53.33)	18 (30.00)	10 (16.67)
8	Best adaptable in less rainfall	24 (40.00)	19 (31.67)	17 (28.33)	12 (20.00)	15 (25.00)	33 (55.00)
9	Suitable for harvesting	49 (81.66)	10 (16.67)	1 (1.67)	43 (71.67)	9 (15.00)	8 (13.33)
10	Resistant to borers, scale insects and wooly aphids	40 (66.66)	19 (31.67)	1 (1.67)	39 (65.00)	18 (30.00)	3 (5.00)
11	Resistant to smut, red rot, wilt foliar and whiptail disease	45 (75.00)	10 (16.67)	5 (8.33)	41 (68.33)	9 (15.00)	10 (16.67)
12	No loss in cane weight and sugar recovery if harvested late	55 (9 1.67)	3 (5.00)	2 (3.33)	1 (1.67)	2 (3.33)	57 (95.00)
13	Thick and solid stem	7 (1 1.67)	18 (30.00)	35 (58.33)	27 (45.00)	22 (36.67)	11 (18.33)
14	Less percentage of arrows	44 (73.34)	14 (23.33)	2 (3.33)	40 (66.67)	12 (20.00)	8 (13.33)
15	Jaggery quality - excellent	32 (53.34)	26 (43.33)	2 (3.33)	31 (51.66)	25 (41.67)	4 (6.67)
C	**Quantitative characteristics**						
1	Good average yield	25 (41.67)	23 (38.33)	12 (20.00)	23 (38.33)	19 (31.67)	18 (30.00)
2	Better sugar recovery	60 (100.00)	00 (00.00)	00 (00.00)	60 (100.00)	00 (00.00)	00 (00.00)
3	Proper rate given by sugar factory	53 (88.33)	6 (10.00)	1 (1.67)	6 (10.00)	5 (8.33)	49 (81.67)

Feedback of sugar factory about CO. 86032 and CO. M. 0265 varieties

Table 2 revealed that most of (95.00 per cent and 85.00 per cent) sugar factory representatives expressed that CO. 86032 and CO. M.265 varieties are good for sugar recovery respectively. CO. 86032 variety fetches good rates expressed by 85.00 per cent members as compare to CO. M.265 (75.00 per cent).

Suggestions made by sugarcane growers about CO.86032(*Nira*) and CO. M. 0265 (*Phule* 265)

Table 3.A indicates that more than ninety per cent (91.67 per cent) of sugarcane growers suggested that there should be timely availability of quality, truthful planting material of this variety by sugar factory to sugarcane growers in sufficient quantity, followed 83.33 per cent suggested that this variety should be suitable to saline soil. More than half per cent

(58.33 per cent) of sugarcane growers suggested that cane size of this variety should be thick and cost of planting material should be less ,suggested by 41.67 per cent members. Similar findings were reported by Shaikh et al(2004).

Table 2. Distribution of the sugar factory representatives according to their feedback about (N = 20)

Sr. No.	Quantitative characteristics	CO. 86032			CO. M. 0265		
		Agree	Some What Agree	Disagree	Agree	Some What Agree	Disagree
1	Good sugar recovery	19 (95.00)	1 (5.00)	00 (00.00)	17 (85.00)	00 (00.00)	3 (15.00)
2	Better for sugar factory rate	17 (85.00)	2 (10.00)	1 (5.00)	15 (15.00)	1 (5.00)	4 (20.00)
3	Good Sugar production	16 (80.00)	3 (15.00)	1 (5.00)	13 (65.00)	3 (15.00)	4 (20.00)
4	Medium to late maturity	14 (70.00)	3 (15.00)	3 (15.00)	2 (55.00)	2 (10.00)	7 (35.00)

Suggestions made by sugarcane growers about CO. M. 0265 (*Phule* 265) variety

It indicates that more than ninety per cent (95.00 per cent) of sugarcane growers suggested that there should be no loss in cane weight and sugar recovery due to late harvesting of this CO. M. 0265 variety, followed by proper rates should be given by sugar factories (81.67 per cent). More than sixty per cent (65.00 percent) of sugarcane growers suggested that this variety should develop resistance for water stress condition and less sprouting percentage said by 56.67 per cent respondents. Similar findings were

reported by Gurav and More (2013). More than 50 per cent (55.00 and 53.33 per cent of sugarcane growers suggested that this variety should be adaptable to less rainfall and harvesting of this variety should be done at proper time by sugar factories respectively.

Suggestions made by sugar factory representatives about these both varieties

It indicates that more than ninety per cent (95.00 and 90.00 per cent) of sugar factory representatives suggested that proper planning of planting and harvesting at proper time of these varieties should be done by the sugarcane growers. However 70.00 per cent of representatives suggested that there should be no loss in cane weight and sugar recovery due to late harvesting of these varieties.

Conclusion

It is concluded from the above findings that respondents expressed positive feedback about qualitative and quantitative characteristics of both the varieties except C0.0265 should develop water stress tolerance and avoid losses in cane weight and sugar recovery due to late harvesting. Further study can be conclude that Sugar factory should accept C0.0265 variety and give remunerative rates as it has good yield potential. Coordinated planning should be done for getting timely planting material and timely harvesting of sugarcane by the sugar factories.

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Cultivation Practices Followed by Progressive Coconut Growers of Coastal Zone of Sindhudurg District

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Coconut (*cocos nucifera* L.) is the most important versatile crop which provides all required amenities to human life. Coconut is grown in India for last three thousand years and thus it may be having longest history among cultivated crops. Now India forefront among the coconut producing countries in the world with an annual production of 15609 thousand metric tons from an area of 2137 thousand ha (Anon., 2013). The importance of the crop lies in the fact that it provides a livelihood and sustenance for the millions of small and marginal farmers. In India, almost the entire production goes for internal consumption in the following pattern: about 47% for edible purpose, 28% for coconut oil, 11% for tender nut and 6% for edible copra. Global export of coconut products exceeds $1.2 billion annually (Ravi, 2009).

In Maharashtra state coconut is mainly grown in konkan region. The area under coconut crop in the konkan region is 42,000 hectares with an average yield of 58.63 nuts/tree. Among the four districts of the region the Sindhudurg district is one of the important coconut producing districts. The farmers of this district are showing inclination towards adoption of scientific package of practices of coconut. Further, some of the progressive coconut growers getting more yield than the konkan region average yield i.e.59.08 nuts/tree. However, the exact information about the package of practice followed by progressive coconut growers was not available. Therefore, the present study was undertaken with the following objectives.To study the socio-economic characteristics of progressive coconut growers. To study the package of practices followed by progressive coconut growers. To analyze the constraints experienced by progressive coconut growers in adoption of improved package of practices. To obtain and analyze the suggestions of progressive coconut growers for better yield of coconut.

Methodology

The Sindhudurg district of South Konkan Coastal Zone was selected purposively for the study. Out of 8 talukas of the district 4 talukas i.e. Vengurla, Malwan, Kankavali and Sawantwadi were selected on the basis of maximum area under coconut crop. The lists of villages having maximum area under coconut crop were obtained from Panchayat Office of concerned taluka and four villages from each tahsil were selected, randomly. So in all 16 villages were selected for the study. A list of progressive coconut growers for each village was prepared in consultation with village level Extension worker and Taluka Agricultural officer for concerned taluka and from each village four progressive coconut growers were selected, randomly. Thus, in all 64 respondents which constitute the sample size for the study. A coconut grower whose average coconut yield is more than the konkan region average yield (57.88 nuts/tree) and having at least 100 coconut trees (10 to 25 years old) was considered as a progressive coconut grower for this study. The data were collected through personal interview with the help of specially designed interview schedule.

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Findings

Personal and Socio- economic characteristics of the respondents.

A perusal revealed that maximum number of the respondents (46.88 per cent) belongs to "Middle age group" followed by "Young age group" (28.12 per cent) and old age group (25.00 per cent). The average age of the respondent was 49.19 years. The data pertaining to major occupation of the respondents indicated that large number of respondents (75.00 per cent) having farming as major occupation followed by business (18.75 per cent) and service (6.25 per cent). The information regarding education showed that more than two –fifth (40.62 per cent) of the respondents has education up to "middle school" level. Whereas, sizeable number of respondents (28.12 per cent) were observed in category of primary level. While, only 18.76 per cent respondents belonged to "graduate and above category". The average education of the respondents was 9th std. About family size data revealed that more than half of the respondents (53.12 per cent) were from medium size family category. Whereas 28.12 per cent respondents were from small family size category followed by big family size (18.75 per cent). The data with regards to social participation indicated that maximum number of respondents (48.43 per cent) had membership in one organization. Whereas, more than two- fifth (45.32 per cent) of the respondents had membership in more than one organization. However, only 6.25 per cent respondents had membership in organization with specific position.

The information regarding land holding of the respondents showed that maximum number of the respondents (46.62 per cent) had medium land holding followed by small (31.25 per cent). The average land holding of the respondent was 2.50 ha. The data pertaining to annual income of the respondents indicated that more than three- fifth (64.06 per cent) of the respondents were from medium income category. Whereas, more or less equal number of respondents were observed in the income category of low (18.75 per cent) and high (17.19 per cent).

About main source of information data revealed that equal number of respondents (26.56 per cent) stated "Extension worker of state Agril. Dept." and "Progressive farmer" as a main source of information followed by "Scientists of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth" (25.50 per cent).

Package of practices followed by the progressive coconut growers

It is observed from Table 1 that maximum number of respondents (43.75 per cent) had maintained the recommended spacing while establishing the coconut orchard. Whereas, in below recommended distance category there were 31.25 per cent respondents. However, one-forth (25.00 per cent) respondents have kept more spacing than the recommendation.

The data pertaining to the size of pit for coconut plantation indicated that maximum number of respondents (42.19 per cent) have dug the pit as per the recommended size. While, 34.38 per cent of the respondent dug the pit with bigger size than the recommendation. Whereas only 23.43 per cent of the respondents dug the pit with smaller size than recommendation. The findings in respect of the variety grown showed that more than half of the respondents (53.12 per cent) have planted T. X D coconut variety. While, 34.37per cent of the respondents planted "Banavali". Whereas, 12.51 per cent respondents have planted "Pratap" variety of coconut. As regards the irrigation given to coconut orchard the data revealed that three- fifth of the respondents (59.38 per cent) irrigated the orchard with below level than recommendation. However,23.43 per cent of the respondent irrigated their orchards as per the recommendation. While, 17.19 per cent respondents provided irrigation with higher level than recommendation. About the plant

protection measures undertaken it was seen that for controlling rhinoceros beetle large number of respondent (70.31 per cent) have adopted the recommended control measure. In case of red palm weevil and bud rot 65.62 per cent and 75.56 per cent respondents used the recommended control measure, respectively.

Table 1 : Package of practices followed by progressive coconut growers

Sr. No	Particular	Category	Respondents (N = 64)	
			Number	Percentage
1.	**Spacing**	Below recommended distance	20	31.25
		As per recommended distance	28	43.75
		Above recommended distance	16	25.00
		Total	**64**	**100.00**
2.	**Pit size**	Below recommendation	15	23.43
		As per recommendation	27	42.19
		Above recommendation	22	34.38
		Total	**64**	**100.00**
3.	**Variety**	Banavali	22	34.37
		T X D	34	53.12
		Pratap	08	12.51
		Total	**64**	**100.00**
4.	**Irrigation**	Below recommendation.	38	59.38
		As per recommendation.	15	23.43
		Above recommendation.	11	17.19
		Total	**64**	**100.00**
5.	**Plant protection**			
i)	For rhinoceros+ s beetle	Adopted the recommended control measures.	45	70.31
		Not adopted recommended control measures.	19	29.69
		Total	**64**	**100.00**
ii)	Red palm weevil	Adopted the recommended control measures.	49	76.56
		Not adopted recommended control measures.	15	23.44
		Total	**64**	**100.00**
iii)	Bud rot	Adopted recommended	42	65.62
		Not adopted recommended control measures	22	34.38
		Total	**64**	**100.00**
6.	**Fertilizer**	Below recommended dose.	23	35.43
		As per recommendation.	29	45.31
		Above recommendation.	12	18.76
		Total	**64**	**100.00**
7.	**Inter cropping**	Nutmeg.	13	20.31
		Nutmeg + Black pepper.	26	40.62
		No intercropping.	25	39.07
		Total	**64**	**100.00**

As regards the fertilizer dose it was observed that more than two – fifth (45.31 per cent) respondents applied the fertilizer dose as per the recommendation. Whereas, 35.43 per cent respondents have applied below recommendation dose. However, 18.76 percent respondent has applied fertilizer more than the recommended dose. The data pertaining to intercropping in coconut orchard indicated that two- fifth (40.62 per cent) of the respondents

planted Nutmeg and Black pepper as an intercrop in their orchards. While, 20.31 per cent respondents have planted only back pepper as an intercrop. However, 39.07 per cent had no intercrop in their orchard.

Constraints experienced by progressive coconut growers

Table 2 : Distribution of coconut growers according to the constraints experienced by them

Sr. No.	Constraints	No. of respondents	Percentage
1.	Lack of availability of true to type planting material.	52	81.25
2.	Buckling problem.	43	67.18
3.	Unavailability of irrigation facility.	34	53.12
4.	Savoir infestation of bud rot disease and attack of red palm weevil.	34	53.12
5.	Unavailability of processing units in near by area.	33	51.56
6.	Coconut dehusking is tedious job.	33	50.00
7.	Lack of knowledge about irrigation and nutrient management.	30	46.87
8.	Sudden fluctuation in prices of coconut.	29	42.18

It is seen from Table- 2 that "Lack of availability of true to type planting material" was the major constraint as reported by 81.25 per cent of the respondents. While, the buckling habit in HYV's of coconut was the constraint experienced by 67.18 per cent of the respondents. Whereas, equal number of the respondents (53.12 per cent) reported "Unavailability of irrigation facility" and "Severe infestation of bud rot disease and red palm weevil" as constraints. In other "Unavailability of processing units in nearby area" (51.56 per cent), "Coconut dehusking is tedious job" (50.00 per cent), " Fruit drop at initial stage" (48.43 per cent), "Lack of knowledge about irrigation and nutrient management " (46.87 per cent) and "Sudden fluctuation in prices of coconut (42. 18 per cent) were some of the constraints.

Suggestions of the progressive coconut growers

The data pertaining to the suggestion of the respondents to overcome the problems faced in coconut cultivation and given in Table 4.

Table -3: Distribution of coconut growers according to the suggestions offered by them

Sr. No.	Suggestion	Respondent (n = 64)	
		Number	Percentage
1.	Genetically pure true to type planting material be made available.	50	78.12
2.	Variety without buckling problem and resistant to bud rot disease may be evolved.	48	75.00
3.	Trap for control of rhinoceros beetle and red palm weevil be made available.	48	75.00
4.	Mechanically operated device for dehusking of coconut may be developed.	43	67.19
5.	Training classes pertaining to scientific coconut cultivation be arranged for the cluster of villages.	38	59.37
6.	Establish cooperative societies of marketing at taluka placed for assured rate for coconut.	37	57.81
7.	Entrepreneurial initiative be taken by the cooperative sector for processing and product diversification.	34	53.12

It is seen from Table- 3 that majority of the respondents (78.12 per cent) suggested that "Genetically pure true to type planting material be made available." While three - forth of respondents (75.00 per cent) suggested that "Variety without buckling problem and resistant to bud rot disease may be evolved" and ' Trap fro control of rhinoceros beetle and red palm weevil be made available'. Mechanically operated device for dehusking of coconut be developed" and Training classes on scientific cultivation of coconut be arranged for cluster of villages were the suggestions of 67.19 per cent and 59.37 per cent of the respondents, respectively. Followed by "Establish co-operative societies of marketing at taluka places for assured rate for coconut (57.81 per cent) and "Entrepreneurial initiative be taken by co-operative sector or Govt. for processing and product diversification" (53.12 per cent) were some of the suggestions.

Conclusion

By maintaining genetically pure coconut orchard. The farmers need to be provided with true to type planning material. Further, training classes pertaining to the scientific cultivation of coconut need to be organized for cluster of villages for increasing adoption of recommended packages of practices by among the coconut growers. The research work may be undertaken to solve the problem of buckling and bud rot disease of coconut orchard. To regulate the price of coconut, the cooperative marketing societies at taluka level may be establish. For the processing purpose Govt. agencies may encourage the local entrepreneurs for establishment of processing unit of coconut at least for the cluster of villages.

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Empowerment of Rural Women through Self Help Groups in Pune District

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A Self Help Group is a group of men or women (minimum 10 and maximum 20) formed with an objective to earn, save and utilize in such a way to solve their day to day necessities trough the entrepreneurship and to make themselves self sufficient. In India there are 21.0 lakh Self Help Groups (2004). However, Andhra Pradesh ranks first position having 5.80 lakh Self Help Groups while Maharashtra stands 6th position having 1.16 lakh Self Help Groups. Amravati district ranks first in the State of Maharashtra. As a part of the Joint - Research Project assigned to College of Agriculture, Pune the present study on "Empowerment of Rural Women through Self Help Groups" has been conducted in College Development Block,.

Methodology

The present study was undertaken in College Development Block, Bhor of Pune district in the year 2006-07. List of Self Help Groups was obtained from Taluka Co-ordinator of Self Help Group, Panchayat Samiti, Bhor. The four major activities viz; preparation of Urea Briquettes, running of General Store, Sheep and Goat rearing and dairying were identified. It was required to select five Self Help Group's for each activity; however, due to the hilly area and unirrigated situation in Bhor tehsil, actual and functional Self Help Group's were studied according to various activities. The head and three members of each Self Help Group were studied. In all 80 members of Self Help Group from 14 villages were studied under this project.

Findings

Training

Present study revealed that, very meagre picture has been observed regarding imparting knowledge on related aspects of activities to the members of Self Help Group. Only 16 members (20.00 per cent) of dairy business have been trained by Panchayat Samitee, Bhor. However, only four each members were trained by NGO's on small business activities and preparation of Urea Briquettes.

Different Activities undertaken by women member of Self Help Group

Table - 1 Distribution of the women members of Self Help Group according to various activities

Sr. No.	Characteristics	Self Help Groups (Nos.)	Respondent (n = 80)	
			Nos.	Percent
1	Dairying	13	52	**65.00**
2	Sheep / Goat Rearing	4	16	20.00
3	Urea Briquettes	1	4	5.00
4	General Store	2	8	10.00
	Total	**20**	**80**	**100.00**

The data presented in Table 1 it is reveals that nearly two third (65.00 per cent) of the respondent are having dairy as a major activity followed by Sheep / Goat rearing (20.00 per cent). Majority of the Self Help Group started during 2001-2005. On an average every year 15 per cent Self Help Group have been established.

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Table - 2 : Distribution of the finance of Self Help Group

Sr. No.	Particular	Amount (Rs.)
1	Expenditure on business installation	
	a) Rent charges for building	2400/-
	b) Machinery and Equipments	9000/-
	c) Utensils	9375/-
2	Expenditure on resources	
	a) Inputs	225875/-
	b) Lights	6100/-
	c) Water	2000/-
	d) Wages	16000/-
3	Interest on loan	51056/-
4	Repayment of loans	146650/-
5	Repairs and maintenance + feeds	184450/-
6	Depreciation cost of machinery	2500/-
7	Expenditure on marketing	
	a) Storage	2000/-
	b) Grading and packing	1000/-
	c) Transport	14500/-
	d) Commission	1000/-
8	Total expenditure	673906/-
9	Income	
	a) Main produce	1097876 /-
	b) By produce	60750/-
	Total	1158626 /-
10	Net profit	484720/-
11	Profit expenditure ratio	0.72

From Table 2 it is observed that the total income of the Self Help Group from different activity is Rs. 11,58,626/- against the total expenditure Rs. 6,73,906/-. So the expenditure income ratio is 1:1.72.The net profit of the Self Help Group is Rs. 4,84,720/- hence the profit expenditure ratio is 0.72

Table – 3: Distribution of members of Self Help Group according to utilization pattern

Sr. No.	Expenditure on	Amount	Percentage	Average
1	Children Education	1,36,400/-	14.22	2,236/-
2	Wedding of Children	23,000/-	2.40	4,600/-
3	Domestic a) Daily need	5,14,700/-	**53.69**	6,434/-
4	Agriculture Inputs	37,550/-	3.92	1,632/-
5	Agri-Business Enterprises	1,13,000/-	11.79	3,324/-
6	Family Health	66,750/-	6.96	1,011/-
7	Saving a) Life Insurance (Policy) b) Postal Deposits	 51,000/- 1,000/-	 5.32 0.10	 1,417/- 1,000/-
8	Expenditure on Religious / Festivals	6,800/-	0.71	850/-
9	Expenditure on Fairs	8,500/-	0.89	773/-
	Total	9,58,700/-	100.00	

The data from Table 3 revealed that the members of Self Help Group earned through their various activities of Self Help Group have been utilized on basic and domestic needs of their families. Major expenditure (53.69 per cent) is made to fulfill the daily needs, followed by children education and running of Agri business enterprises 14.22 and 11.79 per cent respectively. However, the prime objectives of Self Help Group i.e. saving has no any significance observed under the study.

Constraints of member in running Self Help Group

Table - 4: Distribution of respondent according to constraints faced by them

Sr. No.	Constraints	Respondent n = 80	
		Nos.	Percent
1	Irregularities in attending meeting	25	**21.25**
2	Discouragement to start group business	1	1.25
3	Insufficient subsidy amount for business loan	4	5.00
4	Lack of Government support for infrastructure development	33	**41.25**
5	Inavailability of raw material	7	8.75
6	Lack of training facility	11	13.75
7	No guidence from authority to start business	4	5.00
8	Lake of convenient market for produce	11	13.75
9	Less rates for product in market	34	**42.50**
10	Less transport and storage	6	7.50

From Table 4, it is revealed that, nearly equal number (42.00 per cent) of the respondents stated, less rate for product in market and basic infrastructure not provided by Government for business were the constraints in running the Self Help Group. Another constraints were irregularity in attending meeting by members (21.25 per cent), no training facility for members and no market for the products (13.75 per cent each).

Conclusion

The present study on "Empowerment of Rural Women through Self Help Groups" has been conducted in College Development Block, Bhor of Pune district. Slightly more than two-third (67.50 per cent) of the respondents were from middle age group, (68.75 per cent) of the respondents were educated up to primary education. Maximum (70.00 per cent) of the respondents had small size family. Regarding the caste, nearly two-third (65.00 per cent) of the members of Self Help Group were from open category, followed by Schedule Tribe category (18.75 per cent). Nearly two third (65.00 per cent) of the respondent are having dairy as a major activity followed by Sheep / Goat rearing (20.00 per cent). Major expenditure (53.69 per cent) is made to fulfill the daily needs, followed by children education and running of Agri business enterprises 14.22 and 11.79 per cent respectively. A large majority (more than 80.00 per cent) of the respondents stated improvement in self image, development of business ambition, feeling security in family and development of venture are the major empowerment through Self Help Group. Nearly (42.00 per cent) of the respondents stated, less rate for product in market and basic infrastructure not provided by Government for business were the constraints in running the Self Help Group. Another constraints were irregularity in attending meeting by members (21.25 per cent), no training facility for members and no market for the products (13.75 per cent each)

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A Critical Analysis of the Farm Advertisements

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Content analysis of magazines has been receiving increasing attention of the social scientists. However, the contribution of these magazines in publishing agricultural advertisements has been quantified by only a few researchers in the past. Further, the comparison between the magazines published by different organizations with regard to content and coverage of farm advertisement has not been done so far. Eventually, very little information is available regarding types, contents communicability and perceived utility of printed farm advertisements appearing in farm magazines by the farmer readers. With this in view, an attempt has been made to analyse the contents and coverage of farm advertisements of two Marathi farm magazines namely, `Shetkari' and `Baliraja', published by the government and private organization, respectively.

Methodology

Comparative content analysis of farm advertisements appeared in the selected issues of the 'Shetkari' and `Baliraja' farm magazines into farm and non-farm advertisements, space occupied by them, nature, types and subject of the farm advertisements.

The agriculture sector has become more vibrant during the last decade of 20th century. This decade experienced revolutionary changes in the agricultural technology. So also, printing technology also experienced remarkable changes in this decade. Recognizing this, all the issues of the 'Shetkari' and `Baliraja' farm magazines published during the period of 1991 to 2001 were selected for content analysis of the farm advertisements published in them. In all, 122 issues of `Shetkari' magazine and 129 issues of `Baliraja' magazine were analysed to study the farm advertisements. Six issues of `Shetkari' magazine and one issue of `Baliraja' magazine were not available even at the Editor's desk, so those had to be dropped from the study.

Findings

The data regarding the number of advertisements appeared in both the farm magazines during 1991-2001 are given in Table- 1.

The data presented in Table 1 revealed that *`Baliraja'* magazine had published more advertisements (4731) then *`Shetkari'* magazine (1638) during the eleven years under study (1991-2001).

Table- 1.Number of the advertisements in *`Shetkari'* and *`Baliraja'* magazine (1991-2001)

Sl. No.	Farm magazine	Number of issues considered	Page of advertisements				Total
			Cover page			Text	
			2	3	4		
1.	*Shetkari*	122	109 (6.65)	100 (6.10)	119 (7.26)	1310 (79.99)	1638 (100.00)
2.	*Baliraja*	129	127 (2.68)	116 (2.47)	117 (2.47)	4371 (92.40)	4731 (100.00)

(Figures in parentheses indicate percentages)

1-Art Incharge,Communication Center,MPKV,Rahuri 2-PRO,MPKV,Rahuri 3-Former DEE, MPKV, Rahuri

2. Number of farm advertisements and non-farm advertisements in farm magazines

The data regarding the number of farm advertisements and non-farm advertisements appeared during eleven years (1991-2001) in both the magazines are given in Table 2.

Table- 2.Number of the farm advertisements and non-farm advertisements in *`Shetkari'* and *`Baliraja'* magazines (1991-01)

Sl. No.	Farm magazine	Number of farm advertisements appeared	Number of non-farm advertisements appeared	Total number of advertisements
1.	*Shetkari*	1598 (97.55)	40 (2.45)	1638 (100.00)
2.	*Baliraja*	4332 (91.56)	399 (8.44)	4731 (100.00)

The data presented in Table 2 indicated that 'Shetkari' magazine had published 1598 farm advertisements and 40 non-farm advertisements during eleven years (1991-2001) of period. 'Baliraja' magazine had published 4322 farm advertisements and 399 non-farm advertisements during the same period.

3. Space occupied by the farm advertisements in the farm magazines

The data regarding farm magazine space in square centimeters occupied by the farm advertisements are presented in Table- 3.

Table- 3.Space occupied by the farm advertisements in *`Shetkari'* and *`Baliraja'* magazines

Sl. No.	Farm magazine	Space in square centimetres (sq. cm)		Total space for advertisements (sq.cm)
		Farm advertisements	Non farm advertisements	
1.	*Shetkari*	394998.38 (97.58)	9784.25 (2.42)	404782.63 (100.00)
2.	*Baliraja*	2191437.71 (95.43)	100130.69 (4.57)	2191437.71 (100.00)

(Figures in the parentheses indicate percentages)

Table 3 shows that most of the farm magazine space (97.58 per cent in 'Shetkari' and 95.43 per cent in 'Baliraja') allotted for advertising was occupied by the farm advertisements, while the non-farm advertisements occupied meager (2.42 per cent in 'Shetkari' and 4.57 per cent in 'Baliraja') space in both the farm magazines.

4. Page covered by farm advertisements in the farm magazines

The data concerning page covered by farm advertisements appeared in 'Shetkari' and 'Baliraja' magazine are presented in Table- 4.

Table- 4.Page covered by farm advertisements appeared in *`Shetkari'* and *`Baliraja'* magazines (1991-2001)

Sl. No.	Farm magazine	Page covered by farm advertisements				
		Full	Half	Quarter	Less than ¼	Total farm advts.
1.	*Shetkari*	688 (43.80)	252 (15.76)	627 (39.23)	31 (1.93)	1598 (100.00)
2.	*Baliraja*	2310 (53.34)	1010 (23.31)	809 (18.67)	203 (4.68)	4332 (100.00)

(Figures in parentheses indicates percentage)

It is seen from Table 4 that, in both the magazines (`*Shetkari*' and `*Baliraja'*), majority of the farm advertisements were of 'full page' size. It might be due to strong financial position of the sponsors and their thinking that the full page advertisement would have good communicability, effectiveness and utility to the farmer readers.

5. Nature of farm advertisements

The information regarding nature of farm advertisements appeared in '*Shetkari*' and '*Baliraja'* farm magazines is presented in Table- 5. The data suggested that the *'Baliraja'* magazine had published mostly the farmadvertisements from private sector and had published very meager per cent of farm advertisements of Government, Corporate, Co-operative and NGOs as compared to *'Shetkari'* magazine. It might be due to high tariff rate charged for publishing advertisements in *'Baliraja'* magazine.

Table- 5.Nature of farm advertisements appeared in *`Shetkari'* and *`Baliraja'*

Sl. No.	Nature of farm advertisements	Number of farm advertisements	
		`Shetkari' **(N = 1598)**	***`Baliraja'*** **(N = 4332)**
1.	Private sector	1141 (71.42)	4113 (94.90)
2.	**Government department**	183 (11.45)	165 (3.50)
3.	Corporate sector	217 (13.57)	19 (0.40)
4.	Co-operative sector	57 (3.56)	31 (0.70)
5.	NGOs	-	23 (0.50)
	Total	1598 (100.00)	4332 (100.00)

(Figures in the parentheses indicate percentages)

6. Type of farm advertisements

The farm advertisements appeared in *'Shetkari'* and '*Baliraja'* were broadly categorized as product oriented and service oriented concerning farm business The information on the type of farm advertisements is presented in Table- 6.

Table-6.Type of farm advertisements appeared in *`Shetkari'* and *`Baliraja'* magazines

Sl. No.	Type of farm advertisements	Number of farm advertisements	
		`Shetkari' **(N = 1598)**	***`Baliraja'*** **(N = 4332)**
1.	Product oriented	1162 (72.71)	3808 (87.90)
2.	Service oriented	436 (27.29)	524 (12.10)
	Total	1598 (100.00)	4332 (100.00)

(Figures in the parentheses indicate percentages)

The data (Table 6) revealed that the product oriented farm advertisements were highest (87.90 per cent in *'Baliraja'* and 72.71 per cent in *'Shetkari'*) in both the magazines.

Conclusion

The finding pertaining to overall distribution of the space for farm advertisements and total number of farm advertisement appeared in the farm magazines brought forward that *`Baliraja'* magazine had published more farm advertisements as compared to *`Shetkari'* magazine and space occupied by farm advertisement in *`Baliraja'* magazine was more than *`Shetkari'* magazine. It is suggested that *`Shetkari'* magazine has great scope for publishing more farm advertisement. It will also help the farmer readers to know new farm inputs available in market. From the study it is clear that printed farm advertisements had

cover large number of subjects in both *`Shetkari'*and *`Baliraja'* magazine. The subject are related to farm inputs such as seed, fertilizers equipments etc. The main aim of printed farm advertisements is promoting these farm inputs. But it can be used for promoting new farm techniques and new farm ideas also.

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Involvement of SHG women members in food processing and dairy management practices.

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As women play an active role in the economy of their families, they are wise enough to invest money and lead better life. There is linkage between a women's access to independent income and her position in family. It is believed that when women are provided credit and they take up income generating activities, their income is expected to increase. When they earn money, their say in the decision making in the house improves.

The rural women of SHG undertake various income generating activities like agro-based processing units i.e. preparation of pickle, papad, fruit jam, jelly, tomato ketch up, sauce etc. also manufacturing of other craft work, candles, livestock rearing, vermicompositng, vending of various commodities in rural areas, preparation of dairy products like basundi, pedha, curd, paneer etc. The processing of various fruits like mango, anola, wood apple, papaya etc. and food crops like soybean, gram, tur etc. is carried out on large scale under self help groups. Women represent 40% of the labour force in the food processing sector.

Self help group women are also involved in dairy management and dairy technology as their side business. Role of women in agriculture sector, especially as keepers of livestock, greatly improves world food security by enhancing health and livelihood of individual families. Women provide much of the unpaid family labour to agriculture including animal husbandry, having highly employed in livestock rearing activities; rural women were found to devote 90 per cent of their time on cattle care, making it more or less a female domain. Dairy is the income generating source for women in SHG. A woman plays multiple roles with regional differences, women takes care of animal production. Their activities vary widely ranging from care of animals, grazing, fodder collection, cleaning of animals sheds, processing milk. In livestock management, indoor jobs like milking, cleaning etc. are done by women in 90 per cent families.

Methodology

The present study was conducted in Parbhani District of Marathwada region of Maharashtra state. The Parbhani and Gangakhedtaluka of Parbhani district were purposively selected for the study. Sample of 120 respondents was purposively selected, 60 respondents from each taluka on the basis of their involvement in food processing and dairy management. The respondents were interviewed with the help of well structured interview schedule and analyzed by using suitable statistical techniques like, mean, frequency, percentage.

Findings

The findings obtained from the present study as well as relevant discussion have been presented as follows-

The extent of participation of SHG women member was measured by computing participation score by developing Participation index.

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$$\text{Participation index} = \frac{\text{Participation score of the SHG women}}{\text{Maximum possible score}} \times 100$$

Here we will see the results obtained after studying the activity wise participation of SHG women member in food processing.

It was seen from table 1. that only 30 per cent SHG woman members participated in purchasing of raw materials for food processing, while half of them took help of their family members, and others. Further, 54.00 per cent SHG woman members, actively participated in training programmes about food processing while 46.00 per cent could not, due to family restrictions.The data further indicated that, 10.00 per cent of SHG woman members participated in decision of selling of processed food products; most of them took help of the family members i.e. husband or son or any other male to have security in the process.

About 24.00 per cent had their full participation in preparation of processed food products and 30.00 per cent in packaging of processed products; this is due to; as during preparation and packaging of products SHG woman they need help of their family members or labourers. Near about 82.00 per cent of SHG woman members participated in storage of processed products. Majority of them were involved in storage practices.

Majority of SHG women (76.00 per cent) were involved in financial transaction activities of their food processing units; they did it actively because they want to give details about their transactions to the other members of self help group. But only 36.00 per cent were involved in carrying out transaction and banking activities of self help group as remaining took help of others in this and some of them were totally dependent on SHG leader or chairman for this.

Table- 1. Participation of SHG women members in food processing activities (N=50)

Sr. No.	Particular of participation	Frequency and percentage		
		Full participation	Partial participation	No participation
1.	Purchasing of raw materials for food processing	15 (30.00%)	28 (56.00%)	7 (14.00%)
2.	Participation in training programme	27 (54.00%)	0 (0.00%)	23 (46.00%)
3.	Decision in selling of processed food products	5 (10.00%)	39 (78.00%)	6 (12.00%)
4.	Preparation of processed food products	72 (24.00%)	38 (76.00%)	0 (0.00%)
5.	Packaging of processed product	15 (30.00%)	29 (58.00%)	6 (12.00%)
6.	Storage of processed product	41 (82.00%)	8 (16.00%)	1 (2.00%)
7.	Distribution of processed products	0 (0.00%)	37 (74.00%)	13 (26.00%)
8.	Transaction and banking activities of SHG	18 (36.00%)	23 (46.00%)	9 (18.00%)
9.	Participation in financial transaction of food processing unit	38 (76.00%)	6 (12.00%)	6 (12.00%)
10.	Participation in monthly meetings of SHG	33 (66.00%)	14 (28.00%)	3 (6.00%)

* Figures in bracket indicates percentage

Further it was also observed that 66.00 per cent of SHG women members participated regularly in monthly meetings and remaining could not due to their household work and other farming activities. But majority of them were observed enthusiastic about their work participation in the distribution of processed products, as this work was performed by their family members or servants. due to male dominant society and some limitations to females due to cultural impact or due to society norms. and involvement in SHG.

Participation of SHG women members in dairy management practices

From table 2. It was observed that majority (88.60 per cent) of SHG woman members were involved in care of pregnant animals as these activities are traditionally set for women. Also, 81.43 per cent woman members were participated in preparation of milk products.

Further data also indicated that only 15.72 per cent SHG women members participated in milking activity. This shows that this work was mostly done by male members of family.The data further indicated that 67.14 per cent SHG woman members did not participated in purchasing and selling of animals. Also, 11.43 per cent SHG women participated in purchase of fodder. This might be due to that it is a male dominated activity. The data about identifying sick animals show that only 21.43 per cent of SHG women participated in this activity. This may be due to lack of knowledge regarding diseases of animals. Further the data revealed that only 18.60 per cent SHG woman members participated in decision of selling milk and milk products and 17.14 per cent SHG woman members participated in transportation of milk and milk products.

Table 2. Participation ofSHG women members in dairy management practices. (N=70)

Sr. No.	Particular of participation	Frequency and percentage		
		Full participation	Partial participation	No participation
1.	Milking of animals	11 (15.72%)	45 (64.28%)	14 (20.00%)
2.	Care of pregnant animals	62 (88.60%)	7 (10.00%)	1 (1.4%)
3.	Purchasing and selling of animals	2 (2.86%)	21 (30.00%)	47 (67.14%)
4.	Purchase of fodder	8 (11.43%))	51 (72.86%))	11 (15.71%))
5.	Identification of sick animals	15 (21.43%))	33 (47.14%))	22 (31.43%))
6.	Decision of selling of milk and milk products	13 (18.60%))	46 (65.70%))	11 (15.70%))
7.	Transportation of milk and milk products	12 (17.14%)	23 (32.86%))	35 (50.00%))
8.	Preparation of milk products	57 (81.43%)	9 (12.86%)	4 (5.71%)
9.	Banking transactions	5 (7.14%)	50 (71.43%)	15 (21.43%)
10.	Primary health care of animals	29 (41.43%))	16 (22.86%))	25 (35.71%))

* Figures in bracket indicates percentage

This shows that due to male dominated society they showed less participation in these activities. The data further indicated that, only 7.14 per cent of SHG women participated in Banking transactions. As these activities are mostly performed by help of their family members or peers. Also 41.43 per cent SHG women participated in primary health care practices of animals. This may be due to lack of knowledge. So from above discussion, it can be deducted that SHG women, participated in care of pregnant animals and preparation of milk products. But they had negligible participation in activities like purchasing and selling of animals, purchase of fodder, transportation of milk and milk products and banking transactions. The findings of the present study from table 1 revealed that the SHG woman members had medium level of participation in food processing and dairy management practices. These findings are in line with Shinde (2007).

Table.-3 Distribution of SHG women members in food processing and dairy management practices

Sr. No.	Enterprise	Frequency	Percentage
1.	Food processing	50	41.67
2.	Diary management	70	58.33
	Total	120	100

From the data given in Table 3, it is observed that 41.67 per cent SHG women members are involved in food processing and 58.33 per cent of the respondents are involved in dairy management. As the dairy business is traditional subsidiary business of Indian farmers, females are well known with the practices involved in it. So the majority SHG women members were involved in this business. They had obtained microfinance from banks, for purchasing of animals, and started their business.

It was observed that SHG women members mostly involved in regular processing practices like papad making, Chatni making, pickle making, Khoa preparation etc. While, food processing requires quite higher investment, so mostly femalses with medium economic-conditions were involved in this sector. Also the distribution of processed products is difficult job for female members. So compared to dairy management practices, food processing showed less participation of SHG women members.

Conclusion

The study revealed that majority (58.33per cent) of SHG women members were involved in dairy management practices, then food processing (41.67 per cent) due to lack of information about food processing techniques, lack of risk bearing ability, lack confidence while taking decision etc.

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Agricultural Child Labour in Marathwada Region

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Child is the father of man and today's child is tomorrow's citizen. Well nourished, educated and socialized child may well prove to be a strong foundation for a nation's development. So it is our duty to look after them; protect them and provide them better care for their physical and mental growth (Neeti, 2004). Children are blooming flowers of the garden of society. It is therefore, our duty to protect them from the damaging effects of excessive exposure to heat, cold and rains and not to pluck them to satisfy (Shrivastava, 2009). The International Labour Organization (1993) has defined "Child labour includes children prematurely leading adults lives, working long hours for low wages under damaging conditions, their mental development sometimes separated from their families, frequently deprived of meaningful education and training opportunities that would open up for them a better future". Child labour is that force of work a child is engaged in which is detrimental to the growth and development of child family labour which interferes with a child's educations recreation or physical, mental or normal health would also be considered child labour (UNICEF, 1993). UNICEF counts 158 million children worldwide who are engaged in labour and further characterizes child labour as work that exceeds a minimum number of hours, depending on the age of a child and on the type of work. In Asia 61 per cent, 31 per cent in Africa and 7 per cent in Latin America, 1per cent in US, Canada, Europe and other wealthy nations (NGO's India 2010). According to the 2001 census, India has 12.6 million children between the age of 5-14 years which nearly accounts for 3.15 per cent of the total population. The Maharashtra state has 1.20 millions of child labours in the age group of 5 to 14 years. It can be reasonably concluded that this majority was engaged in some kind of work either as wage labour or were supporting their families by looking after their siblings thereby making adults free to work. Marathwada region has near about 3.89 lakh of child labours. In view of the above situations it was decided to undertaken study on involvement of child labour in agriculture.

Methodology

The study was conducted in Nanded and Beed districts of Maharashtra state. These districts were selected purposively as the highest number of agricultural child labour population among eight districts of Marathwada region. Purposively two talukas from Nanded and Beed districts, out of 16 and 11 talukas as they contents highest number of child labour population therefore total four talukas i.e. Hadgaon, Mukhed in Nanded district and Beed, Georai in Beed district were selected for proposed study. Out of 195 and 128 villages in Hadgaon and Mukhed talukas of Nanded district and 228 and 217 villages in Beed and Georai talukas of Beed district, three villages from each taluka were selected on the basis of maximum number of child labour population. Therefore total number of twelve villages was selected for study. A list of households having child labour in the selected villages was prepared with the help of Sarpanch, Talathi, Gramsevak or villagers.

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Findings

Distribution of child labour according to their personal characteristic

It was evident from results that, majority of the child labour (59.16 %) were in the age of 11 to 13 years, followed by 22.50 per cent in 14 and above years age group and remaining 18.33 per cent in 5 to 10 years age group. The observations of post researcher in this regard indicate similar trend of age of child labour Neeti Tandon (2004) reported that the majority of the child labours have been in the age group of 5 to 14 years.Perusal of the data indicated that majority of the child labours (65 %) were found to have been educated upto middle school level followed by 18.33 per cent upto high school level as they were forced to work by family members. Giri (2003) has remarked that majority of the respondents (47.50 %) were educated upto middle school, followed by 26.67 per cent primary school level. In the present finding it was observed that though the children were educated upto middle school level, they were engaged in agricultural work.

It was clearly observed the involvement of third son (38%) in labour work was maximum followed by first son (34%) and second son 32 per cent. The observations of Giri (2003) are that second sons (43.33%) are involved relatively more in agricultural operations than first son 33.33 per cent and third son 14.17 per cent.The data indicated that 35.33 per cent of the parents were of small land holding, followed by 26.67 per cent marginal category and 18.33 per cent were of landless. Similarly, big land holding category were nil, whereas 17.5 per cent and 1.67 per cent were of semi medium and medium category, respectively. Singh and Verma (1987) have revealed that overwhelming majority of the guardians (70.14 %) was more, then the members in the family prohibit the children from working and when the people are landless than it is necessary to send their child to work for getting additional income.

It was revealed that 80 per cent families of child labour earn Rs.31,000 to 97,000 /- per annum followed by the 10.84 per cent families Rs.97,001/- and above and remaining 9.16 per cent families earn up to Rs.30000/- annually.It was observed that all parents (100%) had the nuclear family and joint family was nil. Frequent violation among the family members, thinking of independent living, conflicts due to who to be take family responsibility ?, family economic problems, etc., are responsible for the nuclear type of families. It was clearly shown that majority of the parents (51.67%) were having 5 to 6 members in their family. Whereas 33.33 per cent of the parents family members were up to 4, while remaining 15 per cent parents had 7 and above members in their family.

Number of days per year child labour engaged

Table-1. Distribution of child labour according to days engaged per year

Sr. No.	Number of days per year	Child labour	
		Frequency	Percentage
1	Up to 95 days /year	14	11.68
2	96 to 228 days / year	86	71.67
3	229 and above days / year	20	16.67
	Total	**120**	**100.00**

In an attempt to know the time spent in days per year by the child labour on working as labour, it was observed (Table 2) that majority of them (71.67 %) worked from 96 to 228 days, followed by 229 and above were 16.67 per cent and only 11.68 per cent worked upto 95 days per year. The mean of days worked per year was 162 days. Giri (2003) revealed similar result that the mean of days of working per year was 132 days. Even than keeping in view the tender age of child labour the strenuous long days in a year. Time spent in labour work is really a matter of concern to all and it becomes necessary to make their involvement.

Remedies for child labour problem

Table- 2. Distribution of respondents according remedies of child labour problem

Sr. No.	Remedies	Frequency	Per cent
1.	Elevating the wage rates so that parents will avoid to send their children to work as child labour	2	1.67
2.	Giving free meal to child in school in both sessions	30	25.00
3.	Provide note books, uniforms etc to children in school	56	46.67
4.	Give presently incentives to school children	56	46.67
5.	Increase the wages of child labour as wages of adult labour, then employer will prefer to engage adult labourers.	---	---
6.	Other (financial assistance from government, assurance of job, scholarship to all)	21	17.5

It was evident from the data (Table 2) that good suggestions were made by child labours. It was suggested by 46.67 per cent child labour that provide free books, uniforms etc. to children in school and give presently incentives to school attending children. Further 25 per cent children suggested that, give free meal to children in both secessions. 1.6 per cent children suggested that equalization of wages of child labour as per wages of the adult worker therefore employers will prefer to engage adult labourer instead of child labour. 17.5 per cent respondents suggested other ways to solve the child labour problems as providing bicycles to them, good teaching methods in school, scholarships to all children, availability of transport facility to go to school.

Conclusion

It is therefore, concluded that child labour respondents under study were from down trodden section of the society with poor economic conditions. Child labour were mainly between age of 11 to 13 years, educated middle school level (65%), 31.67 per cent child labours having their third ordinal position, performs 3 to 20 items of farm work (92.5 %), having small land holding (35.83%) working as farmer (43.33 %). About 80 per cent had annual income from rupees 31,000/- to 97,000/- belonging to nuclear family (100 %) had 5 to 6 members in their families (51.67%). The majority of the child labourer (71.67 %) were found to be engaged for 96 to 228 days in a year and 16.67 per cent engaged above 229 days and 11.68 per cent were engaged upto 95 days per year. The majority of child labourer suggested remedies like providing free note books, uniforms etc. giving presently incentives to school children (46.67 %), giving free meal at both sessions (25 %) and equating wages for both child and adult labourers, so that employers will prefer adult labours.

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A Study on the Constraints Encountered by the Tomato Growers in Marketing of Tomato

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Tomato is an important crop in erstwhile Kolar district. In view of the dominance of Tomato crop in the economy of the district, it has been considered important to study the marketing problems apart from the production in erstwhile Kolar district. Although the production of the Tomato in the country in general and erstwhile Kolar district in particular has increased over the years, it is alleged that Tomato producers are not getting remunerative price for their produce, whereas consumer has to pay high price for the same. This implies inefficiencies, which may be the result of lacuna in marketing of Tomato. Also, the farmers are facing so many problems in marketing. Keeping in view of above issues and considering the importance given to Tomato production in the study area.

Methodology

This study was conducted in erstwhile Kolar district, which is one of the largest producers of Tomato in Karnataka and ranks first in both area and production. Farmers cultivating Tomato extensively as a major crop. Out of 11 taluks in erstwhile Kolar district,Chintamani, Kolar, Mulbhagal, Srinivspur taluks purposively selected as these four taluks had highest area and production under Tomato in erstwhile Kolar district. From each taluk, three villages were selected on highest area under Tomato cultivation. Thus, 12 villages were selected for the study. From each village, 10 respondents were selected by simple random sampling technique. Thus, a total of 120 Tomato growers constituted as sample for the study.

Findings

The results are presented under various headings as below.

1. Socio-personal characteristics of the Tomato growers

The important findings regarding socio-personal characteristics of the tomato growers are given below.An appraisal of the Table 1 in relation to socio-personal characteristics of farmers reveals that 35 % of farmers belonged to old age group followed by 33.33% under middle age group. The number of farmers in young age group was only 31.67 %. Usually farmers of old age group have more, experience and responsibility. Normally, the elderly will have to take more burden and would have settled on the farm due to family pressure. This is a common phenomenon in rural society in general. 43.33% of farmer's had medium level of education, whereas 42.50% had high level and 14.17% had low level of education. One of the attribution could be that schooling facilities available to them and realization of importance of education encouraged them to go for up to medium level of education. The distance between the higher study center and their village, might have prevented from going to higher education. 39.17 % of farmers belonged to small size family whereas 35.83 % and 25 % of the farmer's belonged to medium and big family respectively. This might be due to the realization of the advantages of small and medium families for comfortable life and increased awareness about small family norms.

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The data pertaining to land holding revealed that 46.67 % were small farmers, where as 30.83 % were marginal, while 22.50 % of respondents belonging to the big farmer's category. The possible reason that could be attributed may be that agriculture being the main occupation of the family, all the farmer depends on their land for their living. The other reason could be the growing demand for agriculture land and fragmentation of ancestral land into small sized land holding.A glance at the table indicated that 44.17% of the farmers had medium level of income, whereas 35 % and 20.83 % had low level and high income level respectively. The main reason for this might be that farmers were not getting good prices for their produce and other reason may be the large percentage of farmers belonged to are small farmers category and have less annual income. An observation of the Table 1 makes clear that 45.83% of farmers had high Mass media participation. The possible reason might be their interest in knowing the things and medium level of education background might have made them to access for more information and reading habits. The Table 1 cites that majority (60.83%) of the farmers had low extension participation. The possible reason might be that lack of motivation and disinterest of the respondents in the extension activities. Due to poor exposure and farmers are not aware of some of the extension programmes. The data in the Table 1 shows that majority (51.67%) of the farmers had medium level of cosmopoliteness whereas 29.16 % of farmers belonged to high and remaining 18.17% had low level of cosmopoliteness. The possible reason might be that the respondents were busy with the farm activities and due to lack of time, they might not interested to share their time with others and rarely move out of village. Observation in Table 1 indicates that 56.67% of farmers had low extension contact. A glance of the table 2 reveals that 47.50% of farmers expressed market place are far away, 20% of the farmers expressed that disruption of marketing activity due to strike, where as 17.5% of the farmers indicated that high influence of local politics, while 10.83% of the farmers indicated congested market. The possible reason may be the extension workers are not visiting to farmer's field to provide solutions to their problems and also limited staff, which might have lead to cover only limited areas. Majority (64.17%) of the respondents indicated moderate level of infrastructure facilities. The possible reason might be that some of the markets do not have facilities like post office, bank, cold storage and yet other reason may be some of the farmers are not using raithbhavan and other things.

2.0 Marketing constraints

Market price

With regard to market price, cent price of farmers expressed with regard to price fluctuation, 96.67% of farmers expressed with regard to high commission charges, 85% of them expressed relating demand/supply information from different markets. But 32.5 % of farmers expressed with regard traders monopoly in fixing price while 16.67% of farmer expressed regarding non-availability of day today price information.

Transportation

With regard to transportation 80.83 per cent of farmers expressed problem relating to high cost of transportation, 44.17 per cent of farmers expressed problems related to timely transportation, 23.33 per cent of them expressed with regard spoilage during transportation and 10. 83 per cent of them expressed with regard to proper road to transportation.

Weightage and grading

Majority of farmers (74.17%) expressed regarding illegal deduction in weight, where as 70.83% of farmers expressed regard non availability of grading facilities.

Table 1: Distribution of tomato growers according to constraints faced by them in marketing of tomato (n=120)

Sl. No	Constraints	Responses	
		No	%
1	Market place		
	Congested market	13	10.83
	Disruption of market activity due to strike	24	20.00
	Local politics	21	17.50
	For away of market place	57	47.50
2	Market price		
	Day –to-day price information	20	16.67
	Traders monopoly in fixing prices	39	32.50
	Price fluctuation	120	100.00
	Glut in the market	10	8.33
	Demand\supply information from different markets	102	85.00
	Higher commission charges	116	96.67
3	Transportation		
	Timely transportation	53	44.17
	Cost of transportation	97	80.83
	Spoilage during transportation	28	23.33
	Proper road to transport	13	10.83
4	Grading and weightage		
	Non availability of grading facility	85	70.83
	Deduction in weight	89	74.16
5	Storage and processing		
	Non establishment of processing facility	98	81.67
	Non availability of storage facility	105	87.50
6	Packing		
	Non availability of suitable packing material	45	37.50
	Cost of packing materials	106	80.33
	Packing techniques	16	13.33
7	Labour		
	High labour charges for handling	98	81.67
	Timely availability of labour	43	35.83
	Skilled labour	26	21.67
8	Export promotion		
	Lack of knowledge about export potential	120	100.00
	Lack of public and private sectors taking initiatives	87	72.50

***More than one response**

Storage and processing

It is evident from the Table 2 that 87.5% of the farmers expressed that problem related to non-availability of storage facility, where as 81.67% of the farmers expressed with regard to non-availability of processing facility.

Packing

With regard to packing 80.33% of the farmers expressed problem relating cost of packing, 37.50% of farmers expressed regarding timely availability of packing material, where as 13.33% of farmers expressed regarding packing technique.

Labour

Majority (81.67%) of farmers expressed with regard to high labour charges for handling, whereas 35.83% of the farmers expressed with regard to timely availability of labour, while 1.67% of the farmers have expressed regarding availability of skilled labour.

Export promotion

With regard to export, cent per cent of the farmer had lack of knowledge about export potential, where as 72.50 % of the farmers expressed that lack of private and public sector initiatives.

3.0 Suggestion to overcome constraints

Table 3. Suggestion to over come constraints (n=120)

Sr. No	Suggestion	Responses	
		No	%
1	Providing support price	114	95.00
2	Establish storage facilities	107	89.17
3	Fixing minimum labour charges	104	86.67
4	Providing concessional transport charges	102	85.00
5	Fixing minimum price	98	81.67
6	Strict action against illegal weight deduction	93	77.50
7	Grading facilities	87	72.50
8	More procurement centernear by place	79	65.83
9	Shifting market to suitable place	63	52.50
10	Low cost packing material	47	39.17
11	Establish separate market	43	35.83

***More than one response**

Table 3 shows that most (95%) of the farmers have suggested that there must be providing support price for the produce, 89.17% have suggested establishment of storage facility, 86.67% have suggested fixing minimum labour charges, 85% felt there must be provision for concessional transport charges, 81.67 % suggested for providing fixing minimum price for the produce,77.50 % strict rules on illegal weight deduction, 72% felt that grading facilities, 65.83 % of respondents suggested for more procurement center near by place, 52.50% felt shifting market to suitable place, 39.17% expressed low cost packing material and 35.83% expressed establishment of separate market for Tomato.

Conclusion

It can be concluded from the above results that all the farmers mentioned price fluctuation as a major constraint followed by more cost of transportation, lack of storage facilities, and lack of knowledge about export potential.

Hence, the government should take necessary steps to establish local market, create storage facilities and processing unit in the rural areas so that they can reduce the above constraints. Also, the officials of state department of horticulture are held responsible to provide the information on the export potential of tomato.

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Knowledge and Adoption of Dryland Agricultural Technologies in Western Maharashtra

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The fortune of agriculture in Maharashtra 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 2009-10 in Maharashtra only 4.05 million hectares (17.9%) have irrigated and remaining 82.1 per cent area comes under dryland agriculture (Annonymous, 2013).

Maintaining food security for growing population, narrowing regional imbalance and creating rural employment in the country are major challenges. Since per unit area productivity in irrigated areas is reaching a plateau, it is argued that bulk of the future increase in food production has to come from rainfed areas. In fact, the available technologies can enhance the productivity from 0.8 t/ha to 1.5 to 2.0 t/ha. This doubling of productivity can contributes another 40 million tons food grain from rainfed regions. To accomplish this target, the transfer of dryland technology is needed (Benal et al., 2010).

Methodology

The study was conducted in Ahmednagar and Solapur districts of western Maharashtra. These districts were purposively selected, as dryland agriculture covers a large area in these districts. Two Tahsils each of these districts Karjat and Pathardi from Ahmednagar, Karmala and Mohol from Solapur were selected purposively, and four villages from each Tahsils were selected randomly. Seventy two dryland farmers from each of the four villages were selected by using simple random sampling technique. It accomplished a total of 288 dryland farmers. The data collected through a well-structured interview schedule were coded and tabulated for statistical analysis. The statistical tools and tests such as frequency, percentages, mean, standard deviation and correlation were used wherever found appropriate.

Findings

I. Knowledge level of dryland farmers about dryland agricultural technologies:

The distribution of the dryland farmers according to their knowledge index of dryland agricultural technologies presented in Table- 1.

Table-1. Distribution of dryland farmers according to their knowledge level of dryland agricultural technologies

Sr. No.	Knowledge level of dryland agricultural technologies	Frequency (N=288)	Per cent (%)
1	Very low (Score up to 39.33)	1	0.35
2	Low (39.34 to 51.46)	16	5.56
3	Medium (51.47 to 63.59)	66	22.92
4	High (63.60 to 75.72)	71	24.65
5	Very high (More than 75.73)	134	46.54
	Total	288	100

Table 1 revealed that, Nearly half (46.54 %) of the dryland farmers were found to have very high knowledge index, followed by high (24.65 per cent) and medium (22.92 per cent) level of knowledge of dryland technologies.

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Very few respondents (5.56%) had low and very low level (0.35%) of knowledge of dryland agricultural technologies. The minimum score of knowledge index was 39.33 out of maximum score of 100. From the above it is concluded that about 90 per cent of the dryland farmers were having either high or medium level of knowledge of dryland agricultural technologies

II. Extent of adoption of dryland farmers about dryland agricultural technologies:

Among the dryland technologies, 53 aspects were included in the adoption index. The total adoption score dryland agricultural technologies for each farmer was computed by adding up the scores of all fifty three technologies. These adoption scores were further analyzed and the results are given in Table- 2.

Table 2. Distribution of dryland farmers according to their extent of adoption of dryland agricultural technologies.

Sr. No.	Extent of adoption of dryland agricultural technologies	Frequency (N=288)	Percent (%)
1	Very low (Score up to 17.55)	4	1.39
2	Low (17.56 to 30.58 score)	39	13.54
3	Medium (30.59 to 56.65 score)	185	64.24
4	High (56.66 to 69.68 score)	59	20.48
5	Very high (More than 69.69 score)	1	0.35
	Total	288	100

The result in Table- 2 shows that, about two third (64.24 %) of respondents had medium adoption level and 20.48 per cent high adoption level about dryland agricultural technologies. Followed by low adoption level (13.54 %), very low (1.39 %) and very high adoption (0.35 %). So it is concluded that a majority of the respondents (95 %) were found to possessed low to high adoption level group. This was a positive trend which needs to taken ahead with further efforts in this direction.

III. Correlation analysis between extent of adoption of dryland agricultural technologies and selected variables of the dryland farmers:

Correlation of extent of adoption with socio-personal-economic, psychological and communication characteristics of dryland farmers was studied using correlation co-efficient. The Correlation analysis between extent of adoption of dryland agricultural technologies and selected independent variables is given in Table- 3.

The results indicated in Table- 3 shows that the extent of adoption of dryland agricultural technologies was found to be positively and significantly correlated with their education, socio-economic status, social participation, information source use, knowledge and attitude in dryland agricultural technologies.

Age, size of family, farming experience of dryland farmers was however, having negative but significant correlation with adoption. Some of the variables viz. land holding and annual income were having positive correlation but were found to be non-significant. Occupation of dryland farmers was having negative and non- significant correlation with adoption. Education was found highly significantly correlated with adoption of dryland agricultural technologies. This means that more educated farmers had greater adoption of dryland agricultural technologies. This is may be because of education enhance the knowledge and also makes favourable attitude towards the innovations. The results of this study are more or less similar with the findings of Chandegara and Yadavendra (1999). Reddy and Tirky (2004), and Singh *et.al.*(2010).

Table 3. Correlation analysis between extent of adoption of dryland agricultural technologies and selected independent variables

Sl. No.	Independent variables.	Correlation coefficients (r) of adoption of dryland agricultural technologies
A	**Personal and social variables**	
1.	Age	-0.468**
2.	Education	0.92**
3.	Size of family	-0.225**
4.	Farming experience	-0.492**
5.	Socio-economic status	0.212**
6.	Social participation	0.104 NS
B	**Economic variables**	
7.	Land holding	0.046 NS
8.	Occupation	-0.088 NS
9.	Annual income	0.099 NS
C	**Communication variables**	
10.	Information source use	0.377**
D.	**Psychological variables**	
11.	Knowledge	0.961**
12.	Attitude	0.563**
**Significant at 0.01 level of probability, *Significant at 0.05 level of probability and NS: Non-Significant		

Conclusion

The extension strategy should be of targeted approach towards the young farmers who had high adoption rate of dryland agricultural technologies and old age group farmers should be educated regarding new dryland agricultural technologies. There is a need to further improve the social participation of the dryland farmers by mobilizing them towards forming the self help groups and farmers clubs. Extension agency contact should be strengthened for higher adoption of dryland agricultural technologies.

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Knowledge and Adoption of Plant Protection Measures followed by the Mango Growers

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India is endowed with diverse agro-climate and soil type which is unique advantage for a wide range of horticultural crops. Mango (*Mangifera indica* L.) belonging to family Anacardiaceae is the world's leading fruit crop and it is the second most important commercially grown fruit crop of the country after banana. Total mango production in India is 18.00 million tonnes with 22.1 per cent share in total fruit production. In India mango is grown on 2.5 million ha which contributes 35.8 per cent share in total area under fruit crops. Irrespective to the reality that India is having a comparative advantage over other mango producing countries in terms of total production still the productivity (7.2 tonnes/ha) continues to be low.Maharashtra is one of the major states in case of area under mango (0.48 million ha) but total mango production of the state is low as compared to other states (0.63 million tonnes). Hence, productivity of mango in Maharashtra is tends to be very low (1.3 tonnes/ha). (Indian Horticulture Database 2013)

As mango is susceptible to incidence of different pests and diseases, their occurrence is the important factor influencing its production and productivity. The loss of yield in mango is due to occurrence of different pest and diseases and inability to control the same by the growers due to lack of knowledge. Generally, it is observed that mango growers do not adopt plant protection measures on large scale, which is one of the main constraint in increasing the average yield per hectare.

Taking into consideration all these facts, it is necessary that mango growers should have knowledge about the appropriate plant protection measures and they should adopt those plant protection measures to keep their mango crop free from pest and disease infestations so that they can increase production and productivity of mango.

Methodology

The present study was under taken in Kolhapur district of western Maharashtra region which is adjacent to the leading region in mango production i.e. South Konkan. Two tehsils from Kolhapur district with highest area under mango crop were selected for the research study *viz;* Chandgad and Gadhinglaj. Information regarding the progressive mango growers was obtained from the Taluka Agriculture Officer and then 105 respondents from two tehsils were selected purposively considering the conveyance, roadside access to the orchard and objectives of the study.

The data from mango growers were collected through personal interview schedule. The qualitative data were converted into quantitative form. The independent and dependent variables were measured by assigning score. The frequencies and percentage were worked out to describe the characteristics of mango growers.

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Findings

Extent of knowledge of the mango growers regarding plant protection measure

The data revealed that less than two- third (65.71 per cent) of the mango growers had 'medium' level of knowledge regarding plant protection measures, while less than one- fifth (19.05 per cent) of them had 'low' level of knowledge. Only 15.24 per cent of the mango growers had 'high' level of knowledge. Zagade *et al.* (2000) and Kawale *et al.* (2011) had also found the similar results regarding knowledge level of the respondent. Adoption level of plant protection measures followed by the mango growers It is observed that about majority (66.67 per cent) of the mango growers had 'medium' level of adoption regarding plant protection measures, while 21.90 per cent and 11.43 per cent of them had 'low' and 'high' level of adoption respectively..Information pertaining to the knowledge and adoption of the mango growers regarding plant protection measures for control of pest.

Control of Mango Hoppers

For control of mango hoppers a six sprays schedule is recommended at different stages of mango, the data stated that, in case of control of mango hoppers, majority (69.52 per cent) of the mango growers had 'no' knowledge and majority (79.05 per cent) of the mango growers had 'no' adoption regarding the first spray of 3 ml cypermethrin 25 EC or 5 ml fenvalerate 20 EC or 9 ml decamethrin 2.8 EC in 10 litres of water at the end of September or first week of October. In case of the second spray for control of mango hoppers, after bud burst stage with 20 ml quinalphos 25 EC in 10 litres of water, majority (84.76 per cent) had 'no' knowledge and majority (87.62 per cent) of the mango growers had 'no' adoption. With respect to the third spray i.e. two weeks after second spray with 3 ml imidacloprid 17.8 EC or 1.2 g chlothianidin 50 WDG in 10 ml of water majority (60.95per cent) of the mango growers had 'no' knowledge and 83.81 per cent of the mango growers had 'no' adoption. The fourth spray for control of mango hoppers which is scheduled two weeks after third spray i.e. spray of thiomethoxam 25 WG at the rate of 1g per 10 litres of water, majority (91.43 per cent) of the mango growers had 'no' knowledge and which was not at all adopted by the mango growers. In case of the fifth spray, two weeks after fourth spray with 20 ml phenthoate 50 EC or 10 ml dimethoate 30 EC in 10 litres of water, majority (78.09 per cent) of the mango growers had 'no' knowledge and 92.39 per cent of the mango growers had 'no' adoption, whereas with regard to sixth spray, not even single mango grower knew the practice of sixth spray so they were not adopting the sixth spray.

Control of Thrips

In case of recommendation for control of thrips i.e. spraying 2.5 ml spinosad 45 EC in 10 litres of water, it is depicted that majority (94.29 per cent) of the mango growers had 'no' knowledge whereas, majority (98.10 per cent) of the mango growers had 'no' adoption. The second spray which is recommended for sever infestation of thrips i.e. spray of 2 gm thiamethoxam 25 WG in 10 litres of water, majority (91.43 per cent) of them had 'no' knowledge and it was not adopted by any of the mango grower.

Control of Fruit Fly

For control fruit fly, which is one if the major pest of mango, recommended practice of installation of *Rakshak* trap (pheromone trap) at the rate of 4 traps per ha and use of methyl eugenol (3 ml/ trap) as fly attractant, majority (94.29 per cent) of the mango growers had 'no' knowledge and this practice was was not at all adopted by the mango growers.

Control of Stem Borer

It is inferred that majority (82.86 per cent) of the mango growers had 'no' knowledge and majority (83.81per cent) of the mango growers had 'no' adoption about mechanical method for control of stem borer i.e. removal of grubs from tree trunk with help of iron hook. In case of chemical control i.e. injection of EDCT mixture or one aluminium phosphide (ALP) tablet in hole and sealing the hole with mud, majority of the mango growers (93.34 per cent) had 'no' knowledge and it was not at all adopted by any mango grower.

Control of Shoot Borer

With respect to control of shoot borer with spray of 20 ml quinalphos 25 EC in 10 litres of water, majority (84.76 per cent) of the mango growers had 'no' knowledge and majority (87.62 per cent) of the mango growers were not adopting recommended control measure.

Control of Mealy Bug

With respect to the recommended practice of mixing 100g of 2 per cent methyl parathion dust in soil under the tree it is indicated that majority (88.57 per cent) of the mango had 'no' knowledge and 89.53 per cent of the mango had 'no' adoption. In case of spraying 20 ml chlorpyrifos 20 EC or 20 ml profenofos 50 EC and addition of sticker or 25 g fish oil rosin soap in 10 litres of water, it is revealed that majority (98.10 per cent) of the mango growers had 'no' knowledge and this practice was not at all adopted by the mango growers. Regarding the physical control i.e. banding the tree trunks with 30 cm wide and 400 gauge plastic sheet to prevent the nymphs from climbing on tree, majority (91.43 per cent) of the mango growers had 'no' knowledge and 97.14 per of the mango growers had 'no' adoption of this practice.

Control of Termites

Regarding control of termites i.e. complete destruction of whole termitarium as well as queen, most of the (86.67 per cent) mango growers had 'complete' knowledge and most of the (80.95 per cent) mango growers had 'complete' adoption. Majority (84.76 per cent) of the mango growers had 'no' knowledge regarding the recommendation of spraying 5 ml chlorpyrifos 20 EC or 2 ml methyl parathion 50 EC per litre of water against termites while, majority (84.76 per cent) of the mango growers had 'no' adoption.

Knowledge and of the mango growers regarding plant protection measures for control of diseases

Control of Die- back

It is stated that in case of recommended control measures for die- back i.e. spraying 30 g copper oxychloride 50WP or 30 g mancozeb 80 WP in 10 litres of water or spraying 1% Bordeaux mixture, majority (63.81 per cent) of the mango growers had 'no' knowledge whereas, majority 71.43 per cent of the mango growers had 'no' adoption. Majority (83.81 per cent) of the mango growers had 'no' knowledge regarding cutting and burning of infected branches and applying Bordeaux paste on cut portion.

Control of Anthracnose

Anthracnose is the one of the major disease of the mango which infects the different plant parts like leaves, inflorescence and fruits also. It is also stated that with respect to the control measure of this disease i.e. spraying 10 g carbendazim 50 WP or 25 g copper oxychloride 50 WP in 10 litres of water on leaves, inflorescence and fruits, majority(49.52 per cent) of the mango growers had 'complete' knowledge and (46.67 per cent) of the mango growers had 'partial'

control measures for the control of powdery mildew disease i.e. spraying 20 g sulphur 80 WP or 10 g carbendazim 50 WP or 5 ml hexaconazole 5 EC or 10 g thiophanate methyl 70 WP or 20 g propineb 70 WP in 10 litres of water, majority (52.58 per cent) of the mango growers had 'complete' knowledge whereas, majority (40.00 per cent) of the mango growers had 'complete 'adoption.**Control of Fruit Rot**

In case of post harvest control measures for control of fruit rot i.e. dipping mango fruits in 0.05 per cent solution of carbendazim 50 WP for 10 minutes, majority (47.62 per cent) of the mango growers had 'no' knowledge and majority (68.57 per cent) of the mango growers had 'no' adoption.

Other Parasites

1. Control of Loranthus

For control of loranthus which is ecto- parasite in the mango crop reveals that majority (54.29 per cent) of the mango growers completely knew the practice of cutting loranthus and majority (69.52 per cent) of the mango growers were partially adopting the practice. In case of chemical control of loranthus i.e. application of butachlor 0.03% or fluchlorlin 0.3% or glyphosate 0.5% weedicide on infected area there was no knowledge and adoption.

Suggestions made by the mango growers to overcome the constraints in adoption of plant protection measures

It can be depicted from data that the major suggestions made by the mango growers to overcome constraints regarding knowledge of plant protection measures were 'information regarding recommended doses of insecticides and fungicides should be given by expert personnel at village level' (85.71 per cent), 'training should be organized more often at village level for mango growers regarding identification of pests, their nature of damage, diseases and their symptoms' (80.95 per cent), 'information about recommended plant protection measures should be displayed at public places' (34.28 per cent) and 'need to establish good linkages between farmers and research system for proper guidance' (22.86 per cent). The important suggestions made by the mango growers were 'financial support should be provided by the government' (42.85 per cent), 'outbreak weather situations should be forecasted regularly through newspaper or TV channel' (12.38 per cent) and 'establishment of Agri- clinic at village level' (04.76 per cent).

Conclusion

The findings of the study indicated that as mango growers had more level of knowledge regarding recommended plant protection measures for control of diseases than level of knowledge regarding recommended plant protection measures for control of pests hence, extent of adoption of regarding recommended plant protection measures for control of diseases also tends to be more than extent of adoption regarding recommended plant protection measures for control of pests.

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Dr. V. S. Shirke
Secretary, MSEE

Report of the Secretary for the year 2014

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 2013 and during this current year the volume for the year 2014 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. 46859/- (2013-14) along with fixed deposits worth Rs.1,54,000/- in all. Extending sincere thanks to ICAR for grant of funds of Rs. 75000/- for printing of Journal (Received in June,2014)

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 2014. 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. 2014

V. S. Shirke

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Edited and Published by Dr. V.S. Shirke, Professor, Agril. Extension, College of Agriculture, Pune - 411 005

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Typeset, Processed and Printed by: Kasturi Communications, Pune