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# *Gujarat Journal of Extension Education*

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Directorate of Extension Education  
Anand Agricultural University, Anand-388110, Gujarat, India  
website : [www.gjoe.org](http://www.gjoe.org) • email : [seeganand@gmail.com](mailto:seeganand@gmail.com)



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Mobile: 9825239290 • Email: dee@nau.in

### Dr. A. M. Parakhia

Director of Extension Education  
Junagadh Agricultural University  
Junagadh - 362001  
Mobile: 9879104662 • Email: dee@jau.in

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Professor & Head  
Dept. of Extension Education  
B.A. College of Agriculture  
Anand Agricultural University, Anand - 388110  
Mobile: 9925842689  
Email: drchauhanb@yahoo.com

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Professor & Head  
Dept. of Extension Education  
N. M. College of Agriculture  
Navsari Agricultural University, Navsari - 396450  
Mobile: 9427862188  
Email: pandyard4@yahoo.co.in

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Professor & Head  
Dept. of Extension Education  
C. P. College of Agriculture  
SDAU, SKNagar-385506  
Mobile: 9998553060  
Email: vtpatel12022@gmail.com

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Assistant Professor  
Dept. of Extension Education  
College of Agriculture  
Junagadh Agricultural University, Junagadh - 362001  
Mobile: 9638051255  
Email: bnkalsariya@gmail.com

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Assistant Professor  
Dept. of Extension Education  
C. P. College of Agriculture  
SDAU, SKNagar-385506  
Mobile: 9979413858  
Email: vvprijapati1963@gmail.com

### Dr. N. B. Jadav

Program Co-ordinator  
Krushi Vigyan Kendra  
Pipalia Ta. Dhoraji  
Dist. Rajkot  
Mobile : 9924012649  
Email : nb\_jadav@yahoo.com

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Director  
Institute of Distance Education  
Anand Agricultural University, ATIC,  
Nr. Borsad Chowkdi, Anand - 388001  
Mobile: 9824839456 • Email: pradip55aau@gmail.com

### Dr. G. R. Gohil

Assistant Extension Educationist  
Office of DOEE  
Junagadh Agricultural University  
Junagadh-362001  
Mobile: 9275708342  
Email: grgohil@jau.in

### Dr. Y. R. Ghodasara

Associate Professor  
College of Agril. Information Technology  
Anand Agricultural University, Anand - 388110  
Mobile: 9429045525  
Email: yrghodasara@yahoo.uk

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### Dr. J. B. Patel

Associate Professor  
Department of Extension Education  
B.A. College of Agriculture  
Anand Agricultural University, Anand - 388110  
Mobile : 9427385081  
Email : jb@aau.in

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### Dr. N. V. Soni

Extension Educationist  
Publication Department  
Directorate of Extension Education  
Anand Agricultural University, Anand - 388110  
Mobile : 9427856045  
Email : nvsonianand@gmail.com

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Ahmedabad - 380061  
Ph. : 079-27480263 • Mobile: 9924604660

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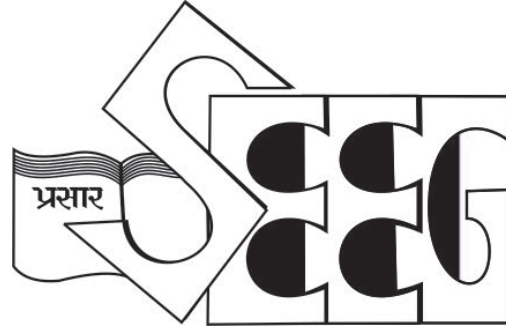
73, Amit Nagar Society  
Bh. Lal Bag, Shahikunj Road,  
Junagadh - 362001  
Mobile: 9427218332 • Email : hbg@jau.in

### Dr. P. P. Patel

17/A, Karnavatinagar Society, Opp. Sarvodaya Nagar Society  
Nr. K. K. Nagar Cross Road,  
Rannapark, Ghatlodia, Ahmedabad - 380061  
Mobile: 9925003072 • Email : drpppatel1954@gmail.com

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Anand Agricultural University

Anand-388 110, Gujarat, India

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Email: drmprajapati@yahoo.com

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Associate Extension Educationist  
Publication Dept., DOEE, Anand Agricultural University  
Anand – 388 110  
Mo. : 94278 56045  
Email: nvsonianand@gmail.com

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Associate Editor  
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B.A., College of Agriculture, Anand Agricultural University  
Anand – 388 110  
Mo. : 94273 85081  
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Senior Scientist & Head, Krushi Vigyan Kendra  
Anand Agricultural University  
Arnej-382230  
Mo. : 96012 79243  
Email: jkpatelaau@gmail.com

**Dr. V. J. Savaliya**  
Assistant Professor, Dept. of Extension Education  
College of Agriculture, Junagadh Agricultural University  
Junagadh-362001  
Mo. : 94277 41952  
Email: vjsavaliya2@yahoo.co.in

**Dr. H. U. Vyas**  
Associate Professor, Dept. of Extension Education  
College of Agriculture, NAU, Bharuch - 392012  
Mo. : 8128994357  
Email: huvyas@yahoo.com

**Dr. J. K. Patel**  
Assistant Professor, Dept. of Extension Education  
C.P. College of Agriculture  
Sardarkrushinagar Dantiwada Agricultural University  
SK Nagar-385506  
Mo. : 9429848010  
Email: jk\_sweta@yahoo.com

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## **Gujarat Journal of Extension Education**

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- 1 Gujarat Journal of Extension Education is published yearly by “Society of Extension Education”, Anand, which includes the articles contributed by the members of the association and invited articles of eminent researchers.
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- 3 The paper submitted for the publication in the journal should not contain material already published in any form or even a part of it offered for publication elsewhere.
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- 5 All papers are published after peer review and thereafter approved by the Chief Editor.
- 6 Submission of paper (through online or offline with CD) does not guarantee its acceptance or publication in Gujarat Journal of Extension Education.
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- 4 Paper may be outlined under main heading- ABSTRACT, INTRODUCTION, METHODOLOGY, RESULTS AND DISCUSSION, CONCLUSION if -any, -ACKNOWLEDGEMENTS, REFERENCES etc should be in capitals.
- 5 Manuscript should be submitted in duplicate typed in 12 pt Times New Roman in double space through on A4 size paper with a minimum 3 cm left margin and Soft copy will be required at the time of submission of revised paper.
- 6 Abstract should not exceed 200 words. Key words upto six may be given beneath the abstract. 1 Where the methods are well known, citation of standard work would suffice.
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**Whole book:**

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- 11 Authors are requested to follow the international system of units for exact measurement of physical quantities.
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- 1 Manuscript is typed in double space throughout in 12 pt Times New Roman
- 2 Title is written in running letters only.
- 3 AUTHORS NAME is capitalized
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- 5 Sub-heading are left aligned.
- 6 Check all reference cited in the text are in the reference and vice-versa.\
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1	20 May 1990	Seminar on “Future Challenges and Strategies of Extension Education”	Navsari
2	8 February 1992	Seminar on “Role of Rural Women in Development	Anand
3	23 October 1994	Seminar on “Role of Farm Literature in Agricultural Development”	Sardarkrushinagar
4	27 January 1996	Seminar on “Role of Co-operative Organization in Rural Development”	Navsari
5	30 April 1997	Seminar on “Challenges of Extension Education in 21 <sup>st</sup> Century”	Anand
6	9 January 1998	Seminar on “Distance Extension Education in Electronic Era”	Junagadh
7	27 April 2001	Seminar on “Human Resource Development in Agriculture”	Sardarkrushinagar
8	27 February 2003	Seminar on “Transfer of Agricultural Technology in 21 <sup>st</sup> Century”	Navsari
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10	25 February 2007	Seminar on “Extension Strategy for Agricultural Development”	Navsari
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12	18 August 2012	Seminar on “Innovative Avenues of Extension Education	Sardarkrushinagar
13	5 April 2014	National Seminar on “Dimensions of Extension Education in Holistic Development of Farmers”	Anand
14	7-8 February 2015	National Seminar on “Magnitude of Extension Approaches in Agricultural Development”	Navsari
15	18-19 March 2016	National Seminar on “Contemporary Innovations for Quantum Extension in Agricultural Development”	Junagadh

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# ***ANNOUNCEMENT***

## **National Seminar**

**Jointly Organized by Society of Extension Education, Gujarat &  
Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar**

**on**

**6 – 7 April 2017**

**Extension Plus: Expanding Horizons of Extension for Holistic Agricultural Development**

### **PREAMBLE**

Today Agricultural Extension is at its cross age where the paradigm of its application shifts towards pluralistic direction. Agricultural Extension requires continuous renewal of its content and methods. So, we have to think not only in present context but also for the future to make the discipline more competitive and fruitful. We have to consider the expanding demand of information and extension support for the changing situation to deal with the challenges. Keeping this view of futuristic role of extension in rapidly changing scenario of agricultural development, a National Seminar on “Extension Plus: Expanding Horizons of Extension for Holistic Agricultural Development” is planned to provide a right forum to every professionals of the discipline as well as the farmers, policy makers and administrators to share their experiences and expertise, to support the extension professionals as well as the farming community.

### **THEMATIC AREAS :**

#### **1 Pluralistic Extension Systems and Policies**

- Govt. programmes for agricultural and rural development
- Demand driven extension, market led extension and commodity based extension, contract based and corporate extension
- Special group extension, participatory extension, PPP, NGOs, IPR and WTO

#### **2 Role of ICT in Agricultural Development**

- Use of ICT tools for extension research, information management and technology dissemination
- IT based initiatives
- Role of mass and print media
- Information delivery mechanism
- Information and communication management
- Need based and resource based information
- Adoption of remote sensing and GIS in agriculture

#### **3 Gender Mainstreaming**

- Differential needs of women and their problems
- Gender sensitivity and mainstreaming in technology generation and dissemination
- Women empowerment programmes and their impact, case studies and success stories

#### **4 Technologies and Practices for Sustainable Rural Livelihood**

- Strategies and approaches to manage impact of climate change for rural livelihood
- Farming system research and extension
- Indigenous Traditional Knowledge (ITK)
- Family farming
- Resource use management practices and value addition
- Effect of global warming on agriculture and live stock production
- Organic farming, precision farming, protected agriculture along with other sustainable approaches

#### **5 Transfer of Technology and its Impact**

- Innovative models of technology transfer
- Adoption of technology and constraints in adoption
- Convergence in extension
- Participatory intervention and impact assessment of technology
- Feedback mechanism

#### **6 Human Resource and Entrepreneurship Development**

- Human resource development through training and entrepreneurial development
- Entrepreneurial characteristics and behaviour
- Impact assessment, constraints and case studies of entrepreneurs
- Innovative entrepreneurial options (SHGs, FPO, CIG, FIGs etc.)
- Training for HRD

#### **Awards:**

- Best Young Extension Scientist Award (Upto 35 years age)
- Best Extension Scientist Award (Above 35 years age)
- Best Paper Presentation Award
- Best Poster Presentation Award
- Best Innovative Farmer Award
- Khushalbai Revabhai Patel Medal / Cash Prize

**: CONTECT :**

**Dr. V. T. Patel**

Organizing Secretary &

Head, Department of Agricultural Extension

C. P. College of Agriculture

Sardarkrushinagar Dantiwada Agricultural University

Sardarkrushinagar, Gujarat 385506

Phone: 02748 278414 • Mob:09998553060

E- Mail : seegsdau2017@gmail.com

## ***From Chief Editor's Desk.....***

*The major function of extension education is to bring positive changes in the society in general and agriculture in particular. This might be achieved through the blend of modern as well as indigenous technologies with the help of new trends of extension like privatization, market led extension, use of ICT, gender sensitization, farmer to farmer extension, and networking of various groups. The Gujarat Society of Extension Education is also engaged in this noble cause by publishing a research journal and organizing special national seminars on current topics every year.*

*It is a matter of immense pleasure to note that publication of Gujarat Journal of Extension Education is being brought out as a sincere commitment to the farming community and the extension professionals. The contributors' efforts are to be appreciated for paying their enduring attention, which is painstaking and time consuming, toward contributing quality research papers. Indeed, we are extremely grateful to the contributors for their sincere dedication in contributing to the journal.*

*We do hope that their keen interest shall be sustained in making the journal progressive. We are sure that the journal shall be significantly useful to all the readers. Simultaneously, we welcome the valuable feedback from our readers for improvement of the journal.*

*The activities of all the associated professionals are diverse, so I could not have been completed without the cooperation of every one. I feel privileged to thank my editorial team members Dr. N. V. Soni, Dr. J K Patel, Dr. J. B. Patel, Dr. H. U. Vyas and Dr. V J. Savaliya for their untiring efforts for finalizing the articles and bringing this journal into present form.*

*My sincere thanks are due to Dr. Arun Patel, Director of Extension Education and President of the Gujarat Society of Extension Education and all the members of the society for providing us this opportunity. My sincere thanks are also to the energetic and focused colleagues Dr. N. B. Chauhan, Dr. R. D. Pandya, Dr. P. R. Kanani and Dr. V. T. Patel for availing their wide experience, deep insights and knowledge to make our journal reputed.*

*I hope this publication will prove its utility for all those who are engaged and interested in noble cause of upliftment and advancement of agriculture through suitable strategic extension approaches.*

*We always welcome your suggestions and comments and solicit the same.*

  
**(Dr. M.R. Prajapati)**  
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## TOOL TO MEASURE ATTITUDE OF THE AGRICULTURAL SCIENTISTS TOWARDS AGRICULTURAL PUBLICATIONS

A. R. Makwan<sup>1</sup> and N. B. Chauhan<sup>2</sup>

1 Assistant Professor, Institute of Distance Education, AAU, Anand - 388110

2 Professor & Head, Department of Extension Education, BACA, AAU, Anand - 388110

e-mail: anil@aau.in

### ABSTRACT

*The study was conducted to develop and standardize a reliable and valid scale to measure attitude of the agricultural scientists towards Agril-Publications (APs). From the available methods to develop attitude scale, 'Scale product method' was used. This method combines Thurston and Likert techniques. Total 45 statements were selected for judgment; a team of 50 judges was appealed to give the score for each statement on five point continuum. Based on the Scale (median) and Q values, twenty statements were finally selected to constitute the scale to measure attitude of the agricultural scientists towards agro-publications.*

**Keywords:** agricultural publications, agricultural scientists, attitude

### INTRODUCTION

A breakthrough in any field of agriculture is impossible without an effective communication support to disseminate the research findings. Speedy dissemination of agricultural information and technological knowhow to the farmers is essential for bridging the gap between the agricultural scientists and the farmers. The existing extension services are too small to perform this task so; the mass media like agricultural publications with their tremendous speedy range and force of impact offer the greatest possibility for effective communication of agricultural technology. Moreover, agricultural scientists through their active participation in agricultural publications can play an important role in increasing farmers' knowledge regarding agriculture technology. By reading the articles, naturally it is expected that farmers may be motivated to adopt the agriculture technology on their farm. Considering significance of agricultural scientists' role in agricultural publication, it was felt necessary to develop a tool to measure feelings of the agricultural scientists towards Agril-Publications.

### OBJECTIVE

To develop a tool to measure attitude of the agricultural scientists towards agricultural publications

### METHODOLOGY

In the current study, attitude is defined as positive

or negative feeling of scientists towards agricultural publications. Among the procedures accessible 'The Scale product method' which is a combinations of the Thrustone's technique (1928) of equal appearing interval scale for selection of items and Likert's technique (1932) of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949) was used.

### Item collection

The items of attitude scale are known as statements. In initial stage, 45 statements reflecting feelings of the scientists towards Agricultural Publications (APs) were collected from relevant literature and discussion with experts of extension discipline. The composed statements were edited according to the criteria suggested by Edward (1957). Thereafter selected 45 statements were selected for the further procedure as they were found to be unmistakable.

### Item analysis

With a view to judging the degree of 'Unfavorableness' to 'Favorableness' of each statement on the five point equal appearing interval continuum, a team of judges was selected. Fifty slips of the selected statements were handed over to the experts connected with agricultural publication and extension educational works. The judges were requested to judge each statement in terms of their most agreement or most disagreement with the statements

with the five equal appearing interval continuums. Out of these experts, all the experts returned the statements after duly recording their judgments and were considered for the analysis.

**Determination of scale and ‘Q’ values:** Based on responses of the judges, Frequency distribution in five continuums was prepared. On the bases of judgment, the Median Value of the distribution and ‘Q’,  $Q_3$  and  $Q_1$  values for each of 45 statements were worked out. The inter-quartile range ( $Q = Q_3 - Q_1$ ) for each statement was exercised for determination of vagueness involved in the statement. Only those statements as items were selected, whose median (scale) values were greater than Q values. On the other hand, when a few items had the same scale values, items having lowest Q value were selected. Based on this, 20 statements were finally selected to constitute attitude scale. The selected 20 statements for final

format of the attitude scale were randomly arranged to avoid response bias. The final format of the scale is presented in Table: 1.

**Reliability of the scale**

The reliability of the scale is an important aspect in the development of dependable tool to measure attitude. In order to know the consistency of the scale, reliability was worked out. The split-half technique was used to measure the reliability of the scale. Selected 20 attitudinal statements were divided into two equal halves with 10 (Ten) odd and 10 (Ten) even numbered statements. Each of the two sets was treated as separate scales having obtained two score, for each of the 20 respondents. Co-efficient of reliability between the two sets of score was calculated by Rulon’s formula (Guilford 1954), which was 0.89.

**Table 1: Final selected statements to measure attitude of the agricultural scientists towards Agricultural Publications**

No.	Statements	‘S’ value	‘Q’ value
1	Agril-Publications (APs) provide solutions to tackle current agricultural situations. (+)	4.08	0.75
2	APs are less effective than other media in getting farmers’ feedback. (-)	3.88	1.35
3	APs help in harmonizing scientists, extension personnel and farmers. (+)	3.77	1.65
4	APs are incompetent to channelize functioning between researchers and extension agents. (-)	4.19	1.63
5	APs are potential media to connect agricultural research, education and extension management. (+)	4.11	1.15
6	APs are inefficient to address every areas of agriculture. (-)	4.13	1.39
7	APs are encouraging means to aid current extension systems. (+)	4.24	1.14
8	APs have insignificant contribution in farming process. (-)	3.97	0.78
9	APs encourage farmers effectively to purchase farm inputs. (+)	3.76	1.46
10	I consider Agril-publications as useless part in my life. (-)	4.22	0.97
11	Existing infrastructure of APs is capable to meet farmers’ needs. (+)	4.25	1.11
12	I have never experienced scientists advising me to contribute through APs. (-)	2.19	1.96
13	APs contribute productively for farmers. (+)	4.05	0.86
14	Agril-publications are not my areas of interest. (-)	3.98	1.53
15	APs provide sound opportunity to farmers know information in local language. (+)	4.02	0.86
16	It is difficult to address ideas through Agril-publications. (-)	4.57	1.16
17	APs facilitate integration of information sources. (+)	3.93	1.40
18	I think agricultural publication is possible only by trained specialists. (-)	4.54	1.29
19	APs are the strength of progress of agricultural extension. (+)	4.25	1.11
20	I visualize significance of Agril-publications for my future work. (+)	4.54	1.29

**Validity of the scale**

The validity of content is also an important part to develop applicable, suitable and appropriate scale to measure attitude. The validity of scale was checked by deep conversation with experts and specialists of the extension and statistics. Specialists scrutinized and appreciated correctness of the every item or statement to determine the feeling of

scientists towards Agricultural Publications.

**Administration of the scale (Scoring technique)**

For application of the scale, the researcher can collect information against each 20 statements in five point continuum viz. ‘Strongly agree’, ‘Agree’, ‘Undecided’, ‘Disagree’ and ‘Strongly disagree’ with weighted score of 5,4,3,2 and 1 for positive and reverse scoring is advised to



quantify negative statements.

## **CONCLUSION**

There are various methods available to construct attitude scale. From the various methods available for constructing the attitude scale, scale product method' was used in this study. This method is a combination of the Thurstone's technique of equal appearing interval scale, for selection of items and Likert's technique of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown was used to measure the attitude of agricultural scientists towards *Agricultural Publications (APs)*. The tool developed here will certainly be helpful to appreciate and develop positive feelings of the agricultural scientists towards *Agricultural Publications*.

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## INTERPERSONAL CONFLICT AMONG EMPLOYEES OF AGRICULTURAL UNIVERSITIES OF GUJARAT

Sunil R. Patel<sup>1</sup>, J. K. Patel<sup>2</sup> and Smt. K. U. Chandravadiya<sup>3</sup>

1 Officer on Special Duty/principal, College of Agriculture, AAU, Jabugam - 391155

2 Program Coordinator, Krushi vigyan Kendra, AAU, Arnej - 382230

3 Assistant professor, College of Agriculture, AAU, Jabugam - 391155

Email : srpatelanand@aau.in

### ABSTRACT

*The present investigation was carried out with a view to knowing the extent of interpersonal conflict among employees and its relationship with their various characteristics. Total 120 employees of three categories: upper cadre, middle cadre and lower cadre from Anand Agricultural University, Anand and Sardar Krushinagar Dantiwada Agricultural University, S.K.Nagar of Gujarat State were selected for the investigation. The results revealed that lower cadre employees had higher extent of overall interpersonal conflict than middle and upper cadre employees. Age, experience, annual income, attitude towards working pattern of SAU, job satisfaction and communication had negatively significant and perception of workload had positively significant correlation with the extent of interpersonal conflict.*

**Keywords :** conflict, satisfaction, employee

### INTRODUCTION

Conflict is a part of human existence and is a basic fact of life in groups and organizations. Though people spend about one third of each day at work place, the psychological hand over of the tension and conflict generated at the place of work continues even beyond the hours of work. They also face conflict in social life. This means that major portion of employee's life is spent with conflicts. These prolonged conflicts and tension adversely affect employee's mental and physical health. This, in turn, results in decreased efficiency and productivity of an employee and thereby of an organization.

In this situation, for any organization to be more effective and productive incessantly, it is of vital importance for the organization to know the extent of conflict among its employees and how it is affected by various their characteristics.

### OBJECTIVES

- (1) To find out the extent of interpersonal conflict existing among employees of agricultural universities of Gujarat
- (2) To study the relationship between the extent of interpersonal conflict and profile of employees of

agricultural universities of Gujarat

### METHODOLOGY

The present investigation was conducted in Anand Agricultural University, Anand and Sardar Krushinagar Dantiwada Agricultural University, S.K.Nagar of Gujarat State. For the investigation, technical employees were taken into consideration and were broadly divided into three categories: upper cadre, middle cadre and lower cadre. From each cadre, 40 respondents were randomly selected making a total sample size of 120 respondents. As two Agricultural Universities were selected for the study; it was also decided to have equal size of sample from both the universities. Thus from each of the two universities, 20 respondents each from upper, middle and lower cadre were selected by employing random sampling techniques. Thus, in relation to universities, 60 respondents each from AAU and SDAU were randomly selected.

The extent of interpersonal conflict among employees was measured with developed and standardized scale. An interview schedule was developed in accordance with the objectives and the data were collected through personal interview. The statistical measures such as percentage, mean score, standard deviation and coefficient

of correlation were used to interpret the data. The results revealed that the proportion of the employees having low, medium and high extent of overall interpersonal conflict was almost equal i.e. one-third.

**RESULTS AND DISCUSSION**

**Extent of interpersonal conflict among employees**

Interpersonal conflict comprising task conflict as well as relationship conflict existing among the employees is of vital concern for the organization. Hence, it was thought worthwhile to study the extent of interpersonal conflict existing among employees of Agricultural Universities of Gujarat at three levels: interpersonal conflict with their superiors, colleagues and subordinates. The results in this regard have been given in the succeeding pages.

**Extent of interpersonal conflict among employees with their superiors**

The information pertaining to interpersonal conflict among employees with their superiors is presented in Table: 1.

**Table: 1 Distribution of respondents according to their extent of interpersonal conflict with their**  
n=120

Sr. No.	Extent of interpersonal conflict with superiors	Cadre of the employees			Overall
		Lower	Middle	Upper	
1	Low (below 21.761)	09 (22.50)	13 (32.50)	10 (25.00)	32 (26.67)
2	Medium (in between 21.761 and 27.223)	18 (45.00)	13 (32.50)	15 (37.50)	46 (38.33)
3	High (above 27.223)	13 (32.50)	14 (35.00)	15 (37.50)	42 (35.00)

Mean: 24.492 S.D.:2.731  
Figures in parenthesis indicate percentage

As it is evident from the Table: 1, middle cadre employees were found to be distributed nearly equally in the low (32.50 per cent), medium (32.50 per cent) and high (35.00 per cent) category of interpersonal conflict with superiors. In case of lower cadre, more than three-fourth (77.50 per cent) of the employees were observed to have medium to high extent of conflict with their superiors, whereas 22.50 per cent of them had low extent of interpersonal conflict with their

superiors. With regards to upper cadre, equal number of employees i.e. 37.50 per cent had medium and high extent of interpersonal conflict with their superiors and remaining 25.00 per cent of them had low extent of interpersonal conflict with their superiors.

In total, it can be stated that slightly less than three-fourth of the employees (73.33 per cent) had medium to high extent of interpersonal conflict with their superiors.

**Extent of interpersonal conflict among employees with their colleagues**

The data in respect of interpersonal conflict among employees with their colleagues are presented in Table: 2.

**Table: 2 Distribution of respondents according to their extent of interpersonal conflict with their colleagues**

n=120

Sr. No.	Extent of interpersonal conflict with colleagues	Cadre of the employees			Overall
		Lower	Middle	Upper	
1	Low (below 20.713)	06 (15.00)	15 (37.50)	18 (45.00)	39 (32.50)
2	Medium (in between 20.713 and 27.121)	19 (47.50)	16 (40.00)	14 (35.00)	49 (40.83)
3	High (above 27.121)	15 (37.50)	09 (22.50)	08 (20.00)	32 (26.67)

Mean:23.917 S.D.:3.204  
Figures in parenthesis indicate percentage

It is obvious from the Table: 2 that slightly less than half (47.50 per cent) of the lower cadre employees were found to have medium extent of interpersonal conflict with their colleagues followed by 37.50 per cent and 15.00 per cent of them with high and low extent of interpersonal conflict with their colleagues, respectively. In case of middle cadre, majority (77.50 per cent) of the employees were observed to have medium to low extent of interpersonal conflict with their colleagues, whereas in upper cadre, four-fifth of the employees (80.00 per cent) had low to medium extent of interpersonal conflict with their colleagues. Overall, it can be said that nearly three-fourth of the employees (73.33 per cent) had medium to low extent of interpersonal conflict with their colleagues.

Contrary to middle and upper cadre, higher extent of interpersonal conflict with their colleagues was found to be prevailing among lower cadre employees. Since the lower cadre employees were struggling for their advancement in the career, some sort of rivalry might be prevailing among them. This might be the reason for such trend of result.

**Extent of interpersonal conflict among employees with their subordinates**

The data in respect of interpersonal conflict among employees with their subordinates are presented in Table: 3.

**Table: 3 Distribution of respondents according to their extent of interpersonal conflict with their subordinates**

n=120

Sr. No.	Extent of interpersonal conflict with subordinates	Cadre of the employees			Overall
		Lower	Middle	Upper	
1	Low (below 18.214)	09 (22.50)	16 (40.00)	22 (55.00)	47 (39.17)
2	Medium (in between 18.214 and 23.436)	12 (30.00)	12 (30.00)	11 (27.50)	35 (29.17)
3	High (above 23.436)	19 (47.50)	12 (30.00)	07 (17.50)	38 (31.66)

Mean:20.825 S.D.:2.611

Figures in parenthesis indicate percentage

The perusal of the data depicted in Table: 3 reveals that higher number of employees from lower cadre (47.50 per cent) had high extent of interpersonal conflict with their subordinates followed by medium and low extent of interpersonal conflict observed with 30.00 per cent and 22.50 per cent of the employees, respectively. The reverse trend was observed in case of upper cadre in which 55.00 per cent of the employees were found to have low extent while 27.50 per cent and 17.50 per cent of them were found to have medium and high extent of interpersonal conflict with their subordinates, respectively. In case of middle cadre employees, two-fifth had low extent of interpersonal conflict with their subordinates, whereas equal numbers of employees i.e. 30.00 per cent each were found to be in the medium and high category of interpersonal conflict with their subordinates.

Conclusively in relation to all the cadres together,

it can be stated that more than two-third (68.34 per cent) of the employees had low to medium extent of interpersonal conflict with their subordinates.

**Extent of overall conflict**

The information pertaining to overall conflict level of employees is depicted in Table: 4.

**Table: 4 Distribution of respondents according to their extent of overall interpersonal conflict**

n=120

Sr. No.	Extent of overall interpersonal conflict	Cadre of the employees			Overall
		Lower	Middle	Upper	
1	Low (below 62.105)	10 (25.00)	14 (35.00)	15 (37.50)	39 (32.50)
2	Medium (in between 62.105 and 76.355)	10 (25.00)	15 (37.50)	16 (40.00)	41 (34.17)
3	High (above 76.355)	20 (50.00)	11 (27.50)	09 (22.50)	40 (33.33)

Mean:69.23 S.D.:7.125

Figures in parenthesis indicate percentage.

The data presented in Table: 4 clearly show that half of the lower cadre employees had high extent of overall interpersonal conflict while remaining half were equally distributed in the low and medium category of overall interpersonal conflict. In case of upper and middle cadre, majority of the employees i.e. 77.50 per cent and 72.50 per cent, respectively were found with medium to low extent of overall conflict. If all the cadres are considered together, it can be concluded that the proportion of the employees having low, medium and high extent of overall interpersonal conflict was almost equal i.e. one-third.

Minute observation brings to the notice that lower cadre employees had higher extent of overall interpersonal conflict than middle and upper cadre employees. The frustration developed among lower cadre employees because of no promotion opportunities coupled with other organizational factors such as workload, salary, working pattern of the university etc. might have affected their psychological makeup adversely. Such situation might have increased their overall interpersonal conflict.

**Relationship between the extent of interpersonal conflict and profile of employees of Agricultural universities of Gujarat**

The interpersonal conflict felt by the employees is not independent itself, but is rather a complex process which is governed by socio-personal, psychological and

organizational attributes. It was in this context felt necessary to study the relationship between the extent of interpersonal conflict and profile of employees of Agricultural Universities of Gujarat, i.e. their socio-personal, psychological and

organizational variables. The relationship was determined and tested with the help of Karl Pearson's co-efficient of correlation, the results of which are presented in the Table: 5.

**Table: 5 Relationship between the extent of interpersonal conflict and profile of employees of Agricultural Universities of Gujarat**

Sr. No.	Independent variables	Co-efficient of correlation (r value)
Personal and socio-economic variables		
1	Age	-0.236**
2	Education	-0.172
3	Total experience	-0.221*
4	Annual income	-0.317**
5	Caste	-0.111
6	Training exposure	0.018
Psychological variables		
1	Attitude towards working pattern of Agricultural University	-0.432**
2	Achievement motivation	-0.066
3	Job satisfaction	-0.235**
4	Perception of workload	0.648**
5	Empathy	0.090
6	Self-confidence	-0.133
7	Self-esteem	0.010
Organizational variables		
1	Communication	-0.411**
2	Decision-making ability	-0.015
3	Co-ordination ability	-0.135

\*\* Significant at 0.01 level of probability \* Significant at 0.05 level of probability

As evident from Table 5, among personal and socio-economic variables, age, experience and annual income were found to have negative and significant correlation with extent of interpersonal conflict, while education, caste and training exposure were found to be non-significant with extent of interpersonal conflict. In case of psychological variables, attitude towards working pattern of SAU and job satisfaction with negative direction and perception of work load with positive direction had significant relationship with extent of interpersonal conflict. Achievement motivation, empathy, self-confidence and self-esteem could not establish correlation with extent of interpersonal conflict up to the level of significance. Among organizational variables, communication had negative but significant relationship with the extent of interpersonal conflict, while decision-making ability and co-ordination ability were not significantly related with the extent of interpersonal conflict.

## CONCLUSION

The proportion of the employees having low, medium and high extent of overall interpersonal conflict was almost equal i.e. one-third. Further, lower cadre employees had higher extent of overall interpersonal conflict than middle and upper cadre employees. Age, experience, annual income, attitude towards working pattern of SAU, job satisfaction and communication had negatively significant and perception of workload had positively significant correlation with the extent of interpersonal conflict.

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## ADOPTION OF PACKAGE OF PRACTICES FOR DAIRY ANIMALS

A. C. Vaidya<sup>1</sup>, A. R. Macwan<sup>2</sup> and N. H. Joshi<sup>3</sup>

1 Associate Professor and Head, Department of Veterinary and A. H. Extension, A.A.U., Anand - 388110

2 Assistant Professor, IDEA, AAU, Anand - 388001

3 M.V. Sc. Scholar, Department of Veterinary and A. H. Extension, A.A.U., Anand - 388001

Email : acvaidya@aaui.in

### ABSTRACT

*Animal husbandry plays a significant role for uplifting rural community in India. Dairying is considered as a “treasure” of the Indian rural economy. It provides gainful employment to a vast majority of rural households. Successful animal husbandry depends of adoption of package of practices. The present study were carried out to study the adoption of different package of practices for dairy animals. The study revealed that adoption of package of practices in dairy animals like general livestock management, feed and water management, calf rearing, breeding, clean milk production and health management were low and there are some gaps in adoption of scientific livestock management practices. Deworming, full hand milking, washing of the teats after milking, feeding of silage, urea treated straw and chaffed green and dry fodder, insurance of dairy animals, participation in animal husbandry training camps, treatment camps and agricultural fairs, record keeping are important practices to be adopted by dairy farmers.*

**Keywords:** adoption, package of practices and dairy animals

### INTRODUCTION

Animal Husbandry and Dairying play an important role in the national economy and in the socio-economic development of the country. The livestock sector alone contributes nearly 25.6% of Value of Output at current prices of total value of output in Agriculture, Fishing & Forestry sector and an overall contribution of Livestock Sector in total GDP is nearly 4.11% at current prices during 2012-13. (Livestock Census, 2012). These sectors also play a significant role in supplementing family income and generating gainful employment in the rural sector, particularly, among the landless laborers, small and marginal farmers and women, besides providing cheap nutritional food to millions of people. Milk producers of Ahmadabad district of Gujarat state follow the ancestral system of milk production. Majority of Animal keeper are small, marginal and landless farmers. Considering these facts present study was under taken to know the adoption of no cost and low cost dairy practices by formulating above objectives.

### OBJECTIVES

(1) To study the selected characteristics of dairy farmers.

(2) To study the adoption of dairy practices by the dairy farmers

### METHODOLOGY

Out of nine talukas of Ahmadabad district, four talukas namely Bavla, Sanand, Ahmadabad city taluka and Dholka were selected randomly. For the selection of villages two villages Rupal and Juda randomly selected from Bavla and Sanandtaluka having dairy cooperative society and two villages Saijpur and Lana randomly selected from Ahmadabad and Dholka taluka having no dairy cooperative society. A list of dairy farmers was obtained from VLWs and Chairman / Secretary of dairy cooperatives. From those four villages twenty five (25) dairy farmers from each village were selected randomly, thus total one hundred (100) dairy farmers were selected as respondents for the study.

Pertaining to the study an interview schedule was developed according to the objectives with the help of Professors of Agricultural and Veterinary colleges of Anand Agricultural University, Anand. The data were collected through the personal interview of selected dairy farmers. The data were tabulated and analyzed to draw the meaningful conclusion.

**RESULTS AND DISCUSSION****Table 1 : Distribution of the respondents according to their characteristics**

n=100

No.	Characteristic	Category	No.	Person
1	Age	Young age (Up to 35 year)	37	37.00
		Middle age (35 to 50 year)	44	44.00
		Old age(Above 50 year)	19	19.00
2	Education	Illiterate	30	30.00
		Up to Primary level	32	32.00
		Up to Secondary level	27	27.00
		Up to HSC level	03	03.00
		Graduate and above	08	08.00
3	Types of Family	Nuclear family	49	49.00
		Joint family	51	51.00
4	Size of Family	Up to 5 member	40	40.00
		More than 5 member	60	60.00
5	Occupation	Only Livestock farming	24	24.00
		Livestock farming with Agriculture	45	45.00
		Livestock farming and Agriculture along with farm laboring	02	02.00
		Livestock farming and services	15	15.00
		Livestock farming with other business	14	14.00
6	Land holding	Landless	37	37.00
		Up to 1 ha.	30	30.00
		Above 1 to 2 ha.	16	16.00
		Above 2 ha.	17	17.00
7	Animal possession	Up to 5 animal	28	28.00
		More than 5 animals	72	72.00
		Only cow keepers	03	03.00
		Only buffalo keepers	59	59.00
		Cow and Buffalo keepers	38	38.00
8	Annual Income	Up to ₹ 50,000	34	34.00
		Above ₹ 50,000 to ₹ 1,00,000	30	30.00
		Above ₹ 1,00,000 to 2,00,000	20	20.00
		Above ₹ 2,00,000	16	16.00
9	Social participations	Milk Co-operative society	43	43.00
		Credit co-operative society	08	08.00
		Village Panchayat	02	02.00
		Self-help-group	26	26.00
		ATMA project (FIG)	00	00.00
		Irrigation cooperative society	00	00.00
10	Extension Contact	Low (up to 0.37)	65	65.00
		Medium (0.37 to 3.31)	15	15.00
		High (Above 3.31)	20	20.00
		Mean=1.84, SD=2.94)		

It is concluded from Table 1 that more than two fifth (44.00 per cent) of the respondents were from middle age group and livestock farming with agriculture as their occupation. Three fifth (60.00 per cent) of the respondents were illiterate to primary level of education and had more than five member in their family. It is also found that 37.00 per cent landless respondents were engage in livestock raising occupation. Nearly three fourth (72.00 per cent) of the respondents had more than five animal and nearly three fifth (59.00 per cent) were keeping only buffaloes. More than two third (64.00 per cent) of the respondents had annual income up to one lack rupees. Less than half (43.00 per cent) of the respondents were the members of milk cooperative society. More than two third (65.00 per cent) of the respondents had low level of extension contacts.

**Table: 2 Adoption status of respondents about livestock management**

n=100

Sr. No.	Improved Practices	Ad-opted	Left after adop-tion	Not ad-opted
<b>1</b>	<b>General livestock management practices</b>			
1	Provided enough space, proper ventilation and sufficient sun light to each animal	96	00	04
2	Provided hard, well slopped and non-slippery floor in cattle shed	44	00	56
3	Provided manger in cattle shed	58	00	42
4	Cleaned cattle shed regularly	96	00	04
5	Made manure pit away from cattle shed and human residence	85	00	15
6	Covered the roof of cattle shed with dry fodder in summer	66	00	34
7	Provided tree shed around the cattle shed	75	00	25
8	Sprayed pesticide at regular interval in animal shed to control ecto-parasites.	14	00	86
9	Bathed dairy animals every day in summer	46	00	54
10	Groomed dairy animals during bath regularly	06	00	94
11	Consulted veterinary doctor while purchasing the dairy animals	06	00	94
12	Kept record of feeding, calving and sale of milk	02	00	98
13	Participated in animal husbandry training camps, animal treatment camps and agricultural fairs.	05	00	95

14	Preferred loan to purchase the dairy animals from nationalize bank instead of private money lenders	08	00	92
15	Insured precious dairy animals	06	00	94
<b>2</b>	<b>Feed and water management practices</b>			
1	Cultivated fodder crop using high yielding varieties	15	00	85
2	Fed at list 10 kg green fodder to milch animals	56	00	44
3	Fed <i>ad lib</i> dry fodder to milch animals	72	00	28
4	Fed chaffed green and dry fodder	04	00	96
5	Fed urea treated straw	00	00	100
6	Fed the silage	00	00	100
7	Supplemented 30 to 40 gm/day mineral mixture/common salts	20	00	80
8	Provided concentrate according to milk production	40	00	60
9	Provided enough fresh and clean drinking water according to season (80 to 100 litre/day/ animal)	69	00	31
<b>3</b>	<b>Calf rearing practices</b>			
1	Cut and disinfection of navel cord with sterilized knife and tincture iodine	12	00	88
2	Cleaned nostrils and mouth immediately after birth	94	00	06
3	Fed colostrums to calf within 0.5 to 1.5 hrs. of birth	98	00	02
4	Fed concentrate to calf	48	00	52
5	Follow dehorning	03	00	97
6	Regular deworming to the calf according to advice of veterinarian	07	00	93
7	Regular vaccination to the calf	08	00	92
<b>4</b>	<b>Breeding practices</b>			
1	Followed timely A.I after heat detection (10 – 12 hrs.)	14	00	86
2	Followed pregnancy diagnosis after 60days of A.I./N.S	03	00	97
3	Breeding after 60 days of calving.	03	00	97
<b>5</b>	<b>Clean milk production practices</b>			
1	Cleaning and washing the floor before milking	35	00	65
2	Washing and drying the hand before milking	60	00	40
3	Washed the udder and teats before milking.	94	00	06
4	Washed the teats after milking.	03	00	97



5	Followed full hand milking	06	00	94
6	Using facemask and trimming the nail	24	00	76
7	Used properly cleaned utensils for milk collection	94	00	06
8	Used dome shaped, narrow mouth stainlesssteel utensils for milking	30	00	70
9	Removal of 1st 2 to 3 strips of milk from each teat to reduce bacterial load in milk.	70	00	30
10	Quick and complete milking in noise free environment.	73	00	27
11	Milking the sick and under treatment animals at last and kept their milk separate	59	00	41
12	Followed regularity of milking operation in terms of time interval, place and person.	86	00	14
13	Filter the milk with clean, dry cloth and tightly covered container and kept in cool place	86	00	14
14	Sale the milk immediately	94	00	06
<b>6</b>	<b>Health management practices</b>			
1	Followed regular vaccination against contagious disease like FMD, HS4 Brucellosis.	65	04	31
2	Regular deworming of the herd	07	00	93
3	Informed immediately to nearest veterinary hospital at the time of outbreak of contagious disease.	04	02	94
4	Identified, isolated and treated the sick animals as early as possible	28	02	70
5	Isolated sick animals from herd.	40	00	60
6	Dry the milch animals before 60 days of parturition.	87	00	13
7	Removal of carcass carefully and properly	87	00	13

Looking to the adoption of general livestock management practices data presented in Table-2 indicated that more than 96.00 per cent of the respondents were provided enough space, proper ventilation and sufficient sun light to each animal and cleaned cattle shed regularly. More than two fifth (44.00 per cent) of the respondents provided hard, well slopped non slippery floor in cattle shed and bathed dairy animals every day in summer (46.00 per cent). More than half of the respondents were provided manger (58.00 per cent) in cattle shed and covered the roof of cattle shed (66.00 per cent) with dry fodder in summer. Majority of the respondents made manure pit away from cattle shed and human residence

(85.00 per cent) and provided tree shed around the cattle shed (75.00 per cent).

Only 14.00 per cent respondents were sprayed pesticides at regular interval in animal shed to control ecto parasites. Less than 10 .00 per cent of the respondents were groomed dairy animals during bath, consulted veterinary doctor while purchasing the dairy animals, kept record of feeding, calving and sale of milk, participated in animal husbandry training camps, animal treatment camps and agricultural fairs, preferred to obtain loan from nationalize bank to purchase the dairy animals and insured dairy animals

Regarding adoption of feed and water management practices majority (72.00 per cent) of the respondents fed *ad lib* dry fodder to milch animals and more than 69.00 per cent of the respondents were provided enough fresh and clean drinking water according to season (80 to 100 litre/day/ animal). More than half (56.00 per cent) of the respondents were fed at least 10 kg green fodder to milch animals. Two forth of the respondents were provided concentrate according to milk production.20.00 per cent and 15.00 per cent of the respondents were supplemented 30 to 40 gm/day mineral mixture and/or common salts and cultivate fodder crop using high yielding varieties, respectively. Only4.00 per cent respondents were fed chaffed green and dry fodder and none of them were fed urea treated straw and silage to their animals.

As far as calf rearing practices were concern more than 98.00 per cent of the respondents were fed colostrums to calf within half to one and half hour of birth. 94.00 per cent were cleaned nostrils and mouth immediately after birth. Nearly half (48.00 per cent) of the respondents fed concentrate to calf. 12.00 per cent of respondents were cut and disinfected navel cord with sterilized knife and tincture iodine. Less than 10.00 per cent of the respondents were vaccinated and dewormed their calf regularly according to advice of veterinarian and followed the dehorning practices.

Regarding breeding practices, it was observed that more than 86.00 per cent of the respondents not followed timely A.I after heat detection. Few of them (3.00 per cent) followed pregnancy diagnosis after 60 days of A.I/N.S. and breeding after 60 days of calving.

Looking to the adoption of clean milk production practices, 94.00 per cent of respondents washed the udder and teats before milking, use properly cleaned utensils for milking, sale the milk immediately, 86.00 per

cent respondents followed regularity of milking operation in terms of time interval, place and person, filtered milk with clean, dry cloth and tightly covered container and kept in cool place, 70.00 per cent and above of the respondents were followed quick and complete milking in noise free environment and removed 1st 2 to 3 strips of milk from each teat to reduce bacterial load in milk. Nearly three fifth (59.00 per cent) of the respondents were washed and dried the hand before milking and milked the sick and under treatment animals at last and kept its milk separate. More than one third (35.00 per cent) of the respondents were cleaned and washed the floor before milking. 30.00 percent and 24.00 per cent of the respondents were used dome shaped stainlesssteel utensils for milking and used face mask and trimmed their nails, respectively. Only 6.00 per cent and 3.00 per cent of the respondents were followed full hand milking method and washed the teats after milking.

Regarding adoption of health management practices, majority (87.00 per cent) of the respondents removed carcasses carefully and properly and dried their milch animal before 60days of parturition. 65.00 per cent respondents followed regular vaccination against contagious diseases like FMD, HS, and Brucellosis. Two fifth (40.00 per cent) of the respondents were isolated sick animals from herd and 28.00 per cent of them were identified, isolated and treated the sick animals as early as possible. Only few (7.00 per cent) of them were dewormed to their herd regularly.

## **CONCLUSION**

Adoption of package of practices in dairy animals like

General livestock management, feed and water management, calf rearing, breeding, clean milk production and health management were low and there are some gaps in adoption of scientific livestock management practices. Deworming, full hand milking, washing of the teats after milking, feeding of silage, urea treated straw and chaffed green and dry fodder, insurance of dairy animals, participation in animal husbandry training camps, treatment camps and agricultural fairs, record keeping are important practices to be adopted by dairy farmers. Therefore there is a need of extension activity in research area to increase the adoption among the dairy farmers regarding above mentioned practices.

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## PERFORMANCE OF SYSTEM OF RICE INTENSIFICATION (SRI) TECHNIQUE IN RICE (*ORYZA SATIVA L.*) ON FARMER'S FIELD

K.D.Mevada<sup>1</sup>, M.V.Patel<sup>2</sup> and N.P.Chauhan<sup>3</sup>

1 Associate Professor, Department of Agronomy, BACA, AAU, Anand - 388110

2 Professor and Head, Department of Agronomy, BACA, AAU, Anand - 388110

3 Professor, Department of Agronomy, BACA, AAU, Anand - 388110

Email : amt\_kd@yahoo.com

### ABSTRACT

Rice being a hydrophilic crop consumes high quantity of water for production. System of Rice Intensification (SRI) is a technique which can improve productivity with augmenting factor productivity, particularly water. Fifty eight (58) demonstrations had been organized on the farmer's field in middle Gujarat comprising the districts of Ahmedabad, Anand, Kheda, Vadodara and Dahod during kharif season of 2008 and 2009. Results showed comprehensive gain in grain yield (15.6 percent) under SRI over farmer's practice (FP). Moreover, under SRI technology, saving of inputs like seed (80 percent), nursery area (90 percent) and water (33 percent) exhibited input use efficiency over FP, which was reflected in higher WUE (4.12 kg/ha-mm) under SRI as compared to FP (2.67 kg/ha-mm). Higher monetary return (₹ 85561 ha<sup>-1</sup>) and BCR (6.63) had been obtained under SRI. Farmers' adaptation ratio was also increased from 50 % to 88%.

**Keywords:** rice, system of rice intensification, farmer's Practice

### INTRODUCTION

Rice (*Oryza sativa L.*) is the staple food for over half of the world's population. Ninety per cent of the world's rice is produced and consumed in Asian region only. In Gujarat, it occupies 7.28 lakh hectare with production of 15.63 lakh ton and productivity of 2149 kg/ha. (Anon, 2016). Rice being a hydrophilic crop consumes about 3600 lit of water to produce 1 kg of rice grain. Considering this production, in Gujarat alone 562.68 x 10<sup>10</sup> liter of water is required. The common practice to keep the rice field flooded with water during its life period leads to wastage of the most precious natural resource, water and also results in to occurrence of the problems like deterioration of soil physical, chemical and biological properties, leaching loss of nutrients like nitrogen, and emission of the most harmful gas, methane, responsible for global warming.

The introduction of new aerobic rice technology in rice cultivation has proved to get reasonably good yields with 2-3 irrigations, thus saving 30-40 percent of water. System of rice intensification technology, popularly known as SRI, is another emerging water saving technology for rice (Laulanie,1993). Due to creation of aerobic condition soil physico-chemical as well as biological property has been improved, which resulted in to sustainable crop production.

In India, SRI is experimented in all the 22 districts during 2003 kharif with encouraging results in Andhra Pradesh. Over 1,00,000 farmers are experimenting with this system worldwide at present. In Gujarat, though its significance has been established at Main Rice Research Centre, AAU, Nawagam; its practical implementation and popularization amongst the farming community was still awaiting.

### OBJECTIVE

To know the performance of system of rice intensification (SRI) technique in rice (*Oryza Sativa L.*) on farmer's field.

### METHODOLOGY

Under Farmer's Participatory Action Research Programme (FPARP) fifty eight field demonstrations on SRI Technique in rice during kharif-2008 and kharif-2009 were demonstrated in Ahmedabad, Anand, Kheda, Vadodara and Dahod districts of middle Gujarat. SRI technology had been executed on farmers' field and compared with farmers' practices (FP) of rice cultivation. GR-12 and Gurjari varieties had been evaluated under SRI technology versus farmer's practice (FP) in different agro-ecological situations.

Under all the demonstrations same methodology

has been applied, which could be classified under nursery management and field preparation. Under nursery management pre-sprouted seeds @ 5 kg ha<sup>-1</sup> were sown on raised nursery bed having area of 1.0 guntha ha<sup>-1</sup>. Nursery bed was prepared like garden crops, wherein, a layer was prepared with fine manure, on which spouted seeds of rice were spread and then it was covered with another layer of fine manure. The bed was then mulched with paddy straw and watered carefully till transplanting.

Main field was prepared similar to that of regular rice cultivation with proper leveling. A trench to facilitate drainage was prepared at every 3 m distance. Lines were drawn both ways at 25 cm x 25 cm spacing with the help of marker for transplanting.

A 12 days old seedling, having only two small leaves, before development of fourth phyllochron, was uprooted carefully from the nursery with minimizing trauma during transplanting and placed it in the field without

plunging too deep into soil at intersection at 25 cm x 25 cm in a square pattern with only one seedling per hill. Two weeding, first weeding initiated 10 days after transplanting, along with two interculturing with “Paddy hoe” were done before panicle initiation to keep the rice crop weed free as well as to aerate the root zone. The crop was watered regularly just to keep the field moist, not flooded as in case of farmer’s practice, with intermittent drying, alternating aerobic and anaerobic soil condition up to panicle initiation. Then after up to physiological maturity of the crop 5 cm water level was maintained in the field. From physiological maturity to harvesting of the crop, water was drained out. FYM or compost @ 10 t ha<sup>-1</sup> was applied in addition to 100-25-00 NPK kg ha<sup>-1</sup>, out of which 25 percent nitrogen was applied through organic source (FYM) as against 100-25-00 NPK kg ha<sup>-1</sup>, totally through chemical fertilizers under farmer’s practice. Methodology has been summarized in Table-1.

**Table 1 : Input comparison in SRI with FP**

Sr. No.	Agronomic Practice	System of rice intensification (SRI)	Farmer’s Practice (FP)
1	Seed rate (kg ha <sup>-1</sup> )	5 kg ha <sup>-1</sup>	25 kg ha <sup>-1</sup>
2	Seed bed	Raised bed	Flat bed
3	Nursery Area	1.0 Guntha for 1 ha. Transplanting	10.0 Guntha for 1 ha. Transplanting
4	Transplanting days	12-14 DAS	25-30 DAS
5	T.P. Spacing	25 x 25 cm	Arbitrary @ 15-22 seedlings/ m <sup>2</sup>
6	Seedling/ hill	One	Two
7	Water management:	Only keep moist field from transplanting to panicle initiation (PI) stage. Keep flooding 5 cm of water from PI to physiological maturity	Field is filled with water throughout the cropping season.
8	Nutrient Management	100 – 25 N-P kg/ha, out of which 25 % N and 100 % P <sub>2</sub> O <sub>5</sub> is applied as basal, while remaining N is applied in two to three equal splits. 25 % N from organic source.	100 – 25 N-P kg/ha, out of which 25 % N and 100 % P <sub>2</sub> O <sub>5</sub> is applied as basal, while remaining N is applied in two to three equal splits.

**RESULTS AND DISCUSSION**

Fifty eight farmers from Ahmedabad, Anand, Kheda, Vadodara and Dahod districts were selected for demonstrations on “SRI Technique” under FPARP. The results are presented in the given tables.

**Grain Yield**

Results presented in Table-2 revealed that for variety GR-12 gave 14.7 % and variety Gurjari gave 16.9 % higher grain yield under SRI over farmer’s practice (FP). Overall, 15.6 % increase was observed for mean grain yield

under SRI technique as compared to FP. This might be due to good root growth because of good aeration of soil under restricted moisture condition which also provided more oxygen in the rhizosphere and increased nitrogen availability due to improved microbial activities in the soil. Good root system also gave 40 to 50 tillers per plant under SRI as compared to 25 to 35 tillers per plant under FP. More over, each additional weeding helped not only reduced weed competition, but also resulted in increased productivity because of better aeration in the rhizosphere. Rice variety Gurjari responded well over variety GR-12 with 16.2 % and 13.9 % higher grain yield under SRI and FP, respectively.

**Table 2: Grain yield, straw yield (kg/ha) and water requirement (mm) of rice as influenced by SRI and FP (Av. of 2 years)**

Sr. No.	District	Variety	Water Requirement (mm)		Grain Yield (kg ha <sup>-1</sup> )		Straw Yield (kg ha <sup>-1</sup> )		Water Saving over FP (mm)	Water Saving over FP (%)	Yield Increased over FP	
			SRI	FP	SRI	FP	SRI	FP			kg ha <sup>-1</sup>	Percent
1	Ahmedabad	GR-12	1200	1600	4217	3872	8218	7439	400	33.33	345	8.9
2	Kheda		1200	1650	4158	3490	9156	7028	450	37.50	668	19.1
3	Vadodara		1000	1500	5147	4582	10324	8261	500	50.00	565	12.3
4	Anand		1200	1700	4284	3628	8624	6981	500	41.66	656	18.1
5	Dahod		1200	1600	5758	4973	10254	8321	400	33.33	785	15.8
Varietal Mean			<b>1160</b>	<b>1610</b>	<b>4713</b>	<b>4109</b>	<b>9315</b>	<b>7606</b>	<b>450</b>	<b>38.79</b>	<b>604</b>	<b>14.7</b>
6	Ahmedabad	Gurjari	1300	1600	6123	5428	11236	8964	300	23.08	695	11.3
7	Anand		1400	1800	5034	4138	9824	7628	400	28.57	896	21.6
8	Kheda		1200	1500	5274	4486	10637	7959	300	25.00	788	17.5
Varietal Mean			<b>1300</b>	<b>1633</b>	<b>5477</b>	<b>4684</b>	<b>10566</b>	<b>8184</b>	<b>333</b>	<b>25.62</b>	<b>793</b>	<b>16.9</b>
Mean			<b>1213</b>	<b>1619</b>	<b>5000</b>	<b>4325</b>	<b>9784</b>	<b>7823</b>	<b>406</b>	<b>33.47</b>	<b>675</b>	<b>15.6</b>

**Input savings**

Results given in Table-3 indicated savings in inputs and increase in their efficiencies.

Seed requirement under SRI is reduced to 80 % and only 5 kg seeds ha<sup>-1</sup> as against 25 kg seeds ha<sup>-1</sup> needed for FP. The area requirement for raising nursery is also cut down to 1/10<sup>th</sup> in SRI technique compared to FP. Application of 25 % nitrogen through organic source under SRI against FP would be beneficial for mitigating ill effect of chemical fertilizers along with cutting down the cultivation costs.

The most important feature of SRI Technique was its potentiality to save water. The saving of water was higher for variety GR-12 (38.79 percent) compared to variety Gurjari (25.62%) under SRI over FP. On an average, 406 mm water was saved under SRI, which tuned to 33.47 % saving over FP. So, for production of 1 kg grains of rice, 2426 lit. of water was sufficient under SRI, as against 3743 lit. water required for producing the same quantity under FP, indicating about 35 % higher efficiency of water under SRI over FP. Likewise, WUE was also higher (4.12 kg/ha-mm) under SRI as compared to FP (2.67 kg/ha-mm).

**Table 3 : Savings or benefits (%) in various inputs under SRI as compared to FP**

Sr. No.	Item	SRI Technology	Farmer's Practice (FP)	Benefit/ Saving (%)
1	Water required to produce 1 kg grain of rice (lit)	2426	3743	33.5
2	water use efficiency (kg/ha-mm)	4.12	2.67	35.0
3	<b>Yield (kg ha<sup>-1</sup>)</b>			
a	Grain yield	5000	4325	15.6
b	Straw yield	9784	7823	25.0
4	<b>Inputs used</b>			
a	Land required for nursery (guntha)	1 guntha	10 guntha	90.0
b	Seed	5	25	80.0
5	Gross Income (₹. ha <sup>-1</sup> )	85561	73091	12470
6	Gross Expenditure (₹ ha <sup>-1</sup> )	12906	11819	1087
7	Net Realization (₹ ha <sup>-1</sup> )	72655	61272	11383
8	BCR	6.63	6.18	-

**Economics**

Economics shown in Table 4 revealed that there

was a clear-cut increase in gross (₹.85561 ha<sup>-1</sup>) as well as net (₹.72655 ha<sup>-1</sup>) realization under SRI over FP, in spite of higher net expenditure (₹.1150/ha) under SRI. This was also

reflected in BCR and higher BCR (6.63) was obtained under SRI as compared to FP (6.18).

**Table 4: Economics of SRI and FP in rice**

Sr. No.	Grain Yield (kg ha <sup>-1</sup> )		Straw Yield (kg ha <sup>-1</sup> )		Gross Expenditure (₹. ha <sup>-1</sup> )		Gross Income (₹. ha <sup>-1</sup> )		Net realization (₹. ha <sup>-1</sup> )		Realization over FP (₹. ha <sup>-1</sup> )		BCR	
	SRI	FP	SRI	FP	SRI	FP	SRI	FP	SRI	FP	Gross	Net	SRI	FP
1	4217	3872	8218	7439	13250	12500	75582	69239	62332	56739	6344	5594	5.70	5.54
2	4158	3490	9156	7028	12750	11500	76104	62892	63354	51392	13212	11962	5.97	5.47
3	5147	4582	10324	8261	11500	10500	92691	81122	81191	70622	11570	10570	8.06	7.73
4	4284	3628	8624	6981	13650	12000	77196	64892	63546	52892	12305	10655	5.66	5.41
5	5758	4973	10254	8321	13000	11500	101751	87077	88751	75577	14675	13175	7.83	7.57
<b>Var. Mean</b>	<b>4713</b>	<b>4109</b>	<b>9315</b>	<b>7606</b>	<b>12830</b>	<b>11600</b>	<b>84668</b>	<b>73044</b>	<b>71838</b>	<b>61444</b>	<b>11624</b>	<b>10394</b>	<b>6.60</b>	<b>6.30</b>
6	6123	5428	11236	8964	12850	12000	96453	84010	83603	72010	12443	11593	7.51	7.00
7	5034	4138	9824	7628	13500	12750	80178	65236	66678	52486	14942	14192	5.94	5.12
8	5274	4486	10637	7959	12750	11800	84518	70257	71768	58457	14261	13311	6.63	5.95
<b>Var. Mean</b>	<b>5477</b>	<b>4684</b>	<b>10566</b>	<b>8184</b>	<b>13033</b>	<b>12183</b>	<b>87050</b>	<b>73168</b>	<b>74017</b>	<b>60985</b>	<b>13882</b>	<b>13032</b>	<b>6.68</b>	<b>6.01</b>
<b>Mean</b>	<b>5000</b>	<b>4325</b>	<b>9784</b>	<b>7823</b>	<b>12906</b>	<b>11819</b>	<b>85561</b>	<b>73091</b>	<b>72655</b>	<b>61272</b>	<b>12470</b>	<b>11383</b>	<b>6.63</b>	<b>6.18</b>

**Selling price :**

Variety	Grain (₹ ha <sup>-1</sup> )	Straw (₹ ha <sup>-1</sup> )
GR 12	15.00	1.50
Gurjari	13.00	1.50

**Total benefits accrue (tangible & intangible):**

**(A) Tangible benefits**

- More yield per drop of water
- Saving of land for nursery preparation
- Better water use efficiency
- Better fertilizer use efficiency
- Saving in seed quantity
- Better yield with lesser resources

**(B) Intangible benefits**

- Soil health can be sustained for a longer period
- With the same amount of water more area can be covered under cultivation.
- Taking less time in nursery for seedling preparation, reduce the possibilities of insect/pest and disease infestations.
- Frequent weeding made the soil porous and allows more growth of roots, enhancing more number of tillers per seedling.
- Improves soil physical condition for a longer period.
- Lower the methane emission.

**Adaptability of the technology by the farmers**

During *khariif*- 2008, only 16 farmers were ready to allow the demonstrations on SRI on their field. Out of them,

only 8 farmers (50%) were carried out the demonstrations successfully. But in the second year (*khariif*-2009) 58 farmers were ready to demonstrate the technology on their field and 51 farmers (88 %) were successfully conducted the demonstrations. This reflected the response of farmers in adopting this technique.

**Effectiveness of the technology**

During *khariif*-2009, monsoon was very weak. Rainfall was erratic and scanty (Av. 400 mm against state av. of 927 mm ). In spite of this adverse condition for rice cultivation, SRI Technique gave higher yield (5 to 6 t/ha) against av. productivity of 2.4 t/ha of conventional method of transplanted rice cultivation. During *khariif*-2009, 52 demonstrations on SRI have been conducted on farmers' field. And under the vagaries of monsoon, 46 farmers have successfully conducted the demonstrations.

**CONCLUSION**

For efficient use of water, SRI is an effective and farmer's friendly technology which not only helped to sustain productivity of rice, but also assisted for higher factor productivity of the crop.

## **FUTURE THRUST**

The technology is practically feasible as well as economically viable. Therefore, it can be replicated on large plots in wider range of soils and climate. Particularly, area having limited and scanty rainfall or where irrigation facility is limited and under control, this technique is proved far better than conventional technique of rice transplanting. Not only that, but under vagaries of monsoon the crop can be sustained with considerably good yield.

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## MANAGEMENT EFFICIENCY OF POULTRY OWNERS

G. N. Thorat<sup>1</sup>, S. G. Vahora<sup>2</sup> and M. M. Trivedi<sup>3</sup>

1 Assistant Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadh Baria - 389 380

2 Associate Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadh Baria - 389 380

3 Professor, Department of Pashu Vigyan B. A. College of Agriculture, AAU, Anand - 388 110

E-mail:gunvantthorat@rediffmail.com

### ABSTRACT

*In present era, scientific management has a great potential for increasing the poultry production Therefore, raising management efficiency is of prevailing importance for poultry farmer. Keeping this objective the present study on management efficiency of poultry owners in two districts i.e Anand and Kheda of Gujarat was conducted. Related data were collected with the help of personal interview technique from 150 samples data analyzed by appropriate statistical tools. The study revealed that exactly two third (66.00 per cent) of the respondents had medium level of management efficiency followed by 18.67 per cent and 15.33 per cent of the respondents had high and low level of management efficiency.*

**Keywords:** management efficiency, poultry farmer, poultry management

### INTRODUCTION

Today poultry has made a quantum jump to emerge as a dynamic industry, which exist as a backward occupation. During the past decades, our poultry has transformed from a backward activity into a modern, scientific and vibrant industry driven by technology.

At present, India has emerged as the fifth largest egg producer in the world after China, U.S.A, Russia and Japan and the 19<sup>th</sup> largest broiler producer. There are many factors affecting the development and production of poultry but, the management factor is very important. Management input is not capital, income, and material resources, but it is an individual which helps him to exploit natural resources and accumulate capital. Management is a distinct process consisting of activities of planning, organizing, actuating and controlling, performed to determine and accomplish stated objectives with the use of human beings and other resources (Terry and Franklin, 1984). According to Bora and Ray (1986) management is the process by which the farmer is able to enhance return from the farm on a sustained basis for the attainment of a family goal.

In highly competitive world, the challenges before the poultry owners is how well they can manage the poultry farm to enhance the net returns on a sustained basis. Further, the

resources are very limited in India. Therefore, efficient use of resources depend to a greater extent on how they acquire and adopt innovation in the sector of poultry in effective manner to reach the higher level of performance i.e. management efficiency of the poultry owners for the development of every poultry owner is necessary. By considering all above facts, the present investigation "Management Efficiency of Poultry farmers" was undertaken with the following specific objective:

### OBJECTIVE

To know the management efficiency of poultry owners

### METHODOLOGY

The present investigation was conducted in milk city of Anand and Charotar bhumi of Kheda district of Gujarat state. Anand districts which is located between north 22.07° to 23.29° Latitudes and east 72.15° to 73.18° Longitude and an average elevation of 45.1 meters. Kheda district is located between north 22.41° to 23.75° Latitudes and east 72.41° to 72.68° Longitude respectively and an 21 meters above the mean sea level.

Anand district is composed of eight talukas and Kheda district is composed of ten talukas. Four talukas from



each district were selected. Thirteen villages from Anand and twelve villages from Kheda districts were purposively selected. In all 150 poultry farmers were selected from 25 villages. for the study. The data were collected through the personal interview. Personal interview schedule has been considered to be the most important tool through which researcher can get most authentic first hand information. The interview schedule was prepared by keeping in view the objectives of the study and was common for all the respondents. Their responses were collected through pre tested, well structured, interview schedule. The respondents were contacted at their home or at their poultry farm.

### RESULTS AND DISCUSSION

Management efficiency is a degree to which an individual acquires and adopt effectiveness factors in an enterprise to reach higher level of performance. The data regarding management efficiency of the poultry farmers were categorized into three groups and data of which are presented in Table 1.

**Table 1: Distribution of the respondents according to their management efficiency**

n=150

Sr. No.	Management efficiency	No	Per cent
1	Low level (Below 56.39 score)	23	15.33
2	Medium level (56.39 to 70.35 score)	99	66.00
3	High level (Above 70.35 score)	28	18.67

Mean =63.37

S.D.=6.98

It was evident from the Table 1, that exactly two third (66.00 per cent) of the respondents had medium level of management efficiency followed by 18.67 per cent and 15.33 per cent of respondents had high and low level of management efficiency. bleh level of economic status through better adoption of poultry enterprise. In a nutshell, it can be said that majority (66.00 per cent) of the respondent had medium level of risk orientation. Patel et.al. (2012) reported revealed that, slightly more than two-third (68.50 per cent) of the rose growers had medium level of management efficiency while 16.54 per cent of the rose growers had high and 14.96 per cent of the rose growers had low level of management efficiency.

This finding derives support from the results

reported by Patel and Patel (2000), Patel et al. (2003), Toppo et al. (2004), Patel (2005) and Patel and Vyas (2015).

### CONCLUSION

It can be concluded that majority of the respondents had medium to high level of management efficiency in poultry management practices. It was expected that the findings of this study will be useful to the extension agencies in modifying and qualifying their ways of educating the farmers and their management efficiency of poultry farmers. The outcome of the study will help the planners, administrators and research workers to formulate suitable programme and use appropriate methods to increase the managerial level as well as economic level of the tribal farmers. Also efficient managers can be identified and success stories of them can be exercised by the extension workers to motivate, influence and educate other farmers.

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## DIGITAL-ENABLED SERVICES FOR AGRICULTURE DEVELOPMENT

R.S. Parmar<sup>1</sup>, D.R. Kathiriya<sup>2</sup> and G.J.Kamani<sup>3</sup>

1 Associate Professor, College of AIT, AAU, Anand - 388110

2 Principal & Dean, College of AIT, AAU, Anand - 388110

3 Assitant Professor, College of AIT, AAU, Anand - 388110

Email : rsparmar@aau.in

### ABSTRACT

*Digital technology has had an enormous impact on society. The role of digital technology to develop agriculture and quality of life in rural area is well established. Digital technology can help a farmer to get relevant information regarding agro-inputs, crop production technologies, agro processing, market support, agro-finance and management of farm Agri-business. Agriculture sector faces major challenges of enhancing production in a situation of falling natural resources necessary for production. The growing demand for agriculture products, however, also offers opportunities for farmers to sustain and improve their livelihood. A digital technology has a major role in addressing these challenges and uplifting the livelihood of the farming community. This paper attempts to review the significance of digital technology in agriculture, discuss their opportunities in agricultural development in India.*

**Keywords:** digital - enabled serices, agricultural development

### INTRODUCTION

Digital technology is likely to continue to be a major driver of agriculture development in India. The capabilities of local entrepreneurs, start-ups and businesses to provide services such as technical assistance and finance are growing significantly due to greater access to mobile and internet technology. As such digital solutions are likely to make a huge contribution to addressing local concerns, connecting people in remote areas and to reaching greater numbers of people than more traditional development initiatives. Such technologies are already transforming the way in which smallholder farmers' work and interact. The digital Technology in this era of globalization has accentuated new modes of knowledge transformation and communication patterns. Digital has opened up uncommon opportunities for developing countries in terms of providing low cost access to information. This is the fastest growing tool of communication ever with the number of users growing from 150 million in 1998 to more than 700 million in 2001 ( Brown, 2002 ). Today, there are more than 7 billion people on the planet, a figure that's expected to reach 9.6 billion by 2050. By then, the middle class—who typically have more money available for food, leading to greater demand—could reach 5 billion people by 2030. If these numbers hold, overall food

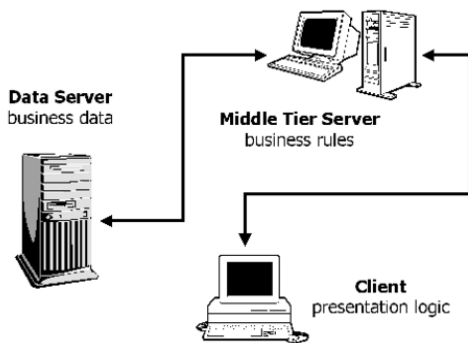
production will need to double in a relatively short period of time to meet demand to feed the world's population ([https://www.accenture.com/\\_acnmedia/Conversion-Assets/DocCom/Documents/Global/PDF/Digital\\_3/Accenture-Digital-Agriculture-Point-of-View.pdf](https://www.accenture.com/_acnmedia/Conversion-Assets/DocCom/Documents/Global/PDF/Digital_3/Accenture-Digital-Agriculture-Point-of-View.pdf)). India has 70% of its population, which is dependent on Agriculture for its livelihood. Considering this, use of digital Technology in agricultural development is of strategic importance in a country like India. Digital Technology has tremendous potential in timely collection of data and distributing it to the potential users even in developing countries. Thus, providing low cost access to information. German mathematician, Gottfried Wilhelm Leibniz (<http://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releases/digital-technology#>), defines it as “Digital technology is a base two process. Digitized information is recorded in binary code of combinations of the digits 0 and 1, also called bits, which represent words and images. Digital technology enables immense amounts of information to be compressed on small storage devices that can be easily preserved and transported. Digitization also quickens data transmission speeds. Digital technology has transformed how people communicate, learn, and work“. In some economically developed countries, digital technology (IT) continues to develop rapidly and is

widely and successfully employed in the agricultural sector. Large central computers with millions of farm's field files, operated by program, have been operational for decades to provide the farmers with information (Xiong B H, et al.,2005; Nuthall, P, et al., 2004; Warren, M, et al.2000). Data bases are also increasingly used in a decentralized way on low cost personal computers, by farmers and farm advisors, in the so-called management information systems. Veterinary practitioners use such systems to support a new methodology for safeguarding agriculture animals health under the prevailing intensive production conditions (Vaarst, M, et al., 2006; Hamilton, C, et al., 2006; Nyman, A, et al.2007).

**METHODOLOGY**

Digital technology has been implemented as a layered structure having three layers viz., User Interface layer (UIL), Application layer (APL) and Database layer (DBL). Each layer has its own specific functions. Applications are usually broken into logical chunks called “tiers”, where every tier is assigned a role. Traditional applications consist only of 1 tier, which resides on the client machine, but web applications lend themselves to an n-tiered approach by nature. Though many variations are possible, the most common structure is the three-tiered application. In its most common form, the three tiers are called presentation, application and storage, in this order. A web browser is the first tier (presentation), an engine using some dynamic Web content technology (such as ASP, ASP.NET, CGI, ColdFusion, JSP/Java, PHP, Perl, Python, Ruby on Rails or Struts2) is the middle tier (application logic), and a database is the third tier (storage).

The web browser sends requests to the middle tier, which services them by making queries and updates against the database and generates a user interface. In a three-tier architecture (also known as a multi-tier architecture), there are three or more interacting tiers, each with its own specific responsibilities (see Fig. 1).



**Fig. 1: Three-Tier Architecture**  
 (<http://www.linuxjournal.com/article/3508>)

**RESULTS AND DISCUSSION**

The Government has over the past few years launched far reaching reforms aimed at enhancing agricultural productivity and improving the lot of farmers in the State. As a result of these initiatives, there has been a marked increase in agricultural productivity and production, with the State recording significantly higher levels of growth compared to the national average. The Government has also launched a major drive to harness digital technologies to promote knowledge based farming practices to ensure a more robust and sustainable system of agriculture. The role and potential of digital technologies in the effective dissemination of information and knowledge, as well as in improving service delivery to farmers is well recognised; and various initiatives have been both launched both by the Central and State Governments to promote the use of such tools and technologies.

Digital Technologies are indispensable catalysts of agricultural development. It helps scientists to provide quick solutions to farmers, agriculture extension department to disseminate information to farmers and government to create awareness amongst farmers. Some Digital-enabled services for agriculture development are as follows:

**Knowledge Hubs**

The knowledge hubs have house servers, Studio and high speed link to the central server for Video conferencing / Virtual classrooms at the village level.

**Activities**

- ◆ Online guidance to the farmers through virtual classrooms by the scientists
- ◆ Generation and digitization of clips on the FAQs by farmers and their solutions given by the scientists
- ◆ Integration and Uploading of FAQ clips with the main application database
- ◆ Production of Audio-video CD / DVD on crops and cropping practices, seminars, trainings etc.

**Mobile Based Agriculture - Information Services**

The mobile based agriculture - information services envisage sending daily SMS feeds to subscribed farmers on agricultural commodity prices of their choice and weather information from a weather station closest to them.

### Activities

- ♦ Mobile based agro information services to farmers using SMS gateways
- ♦ Integration with APMC, Agmarknet, Weather Information portals
- ♦ Agricultural Directory Services
- ♦ Management of Agrinet portals with Audio-visual contents

### Agriculture Online Content Management

The agriculture online content management envisages creation of an online repository of agricultural contents. The contents shall be indexed with respect to Commodity/Variety and geographical reference if any to ensure relevance of the information served to farmer.

### Activities

- ♦ Indexed, categorized & sub categorized browsable contents
- ♦ Easy search and book-marking
- ♦ Agricultural best practices documents videos in local language covering all major Crops

### Agriculture Directory Services

The agriculture directory services platform will provide the farmers a facility to search for agricultural inputs suppliers and service providers servicing his village. Such listing would include information such as Name , Address, Tel number, Contact person, Mobile , Email, Products & Services, GeoCodes, Bank info, Category & Sub Category of Services , Rating etc. Wherever relevant, Google facility for location map etc. shall be leveraged for impactful delivery of directory information to farmers.

### Knowledge Dissemination through Agriculture Universities

The knowledge dissemination through agriculture universities will cater to the farmers' requirement to seek expert advice for the problems they face. The advisory shall be enabled both on an HTML based Helpdesk services and video conferencing. It is also envisaged to set up a multicasting/broadcasting facility at the agricultural universities in the State that will enable scheduled transmission of agricultural advisories on common problems. The services anchored

at SAUs will answer to voice calls; web based queries from farmers also. To ensure that the advice provided to the farmers is specific and authentic, the Soil Health card reference also shall be referred to while providing advisories. To facilitate this, while accepting the query from farmer, the SHC reference also shall be captured.

### Agriculture E-Trade Platform:

The trade centre services envisages providing a web based interactive platform for the farmers and buyers to exchange information on availability of their agricultural produce for sale and the buyers to view commodities of their interest offered on sale filtered by geography.

The platform shall facilitate contacting the farmer/buyer from the information available in the posting for next steps in the trading activity cycle. The platform shall include facility for posting pictures of agricultural produce being offered.

Agriculture of the future will be digitally integrated at all stages of production, from understanding genetics to transport logistics. We are using our expertise in digital innovation and agriculture to improve decision making for farmers, agribusiness, policy-makers and researchers.

(<http://www.csiro.au/en/Research/AF/Areas/Digital-agriculture>).

'Digital agriculture' includes activities such as the development, testing and deployment of information and communication technologies for agricultural research, development and delivery. By generating detailed insights, farmers can make data-based operational decisions that will optimize yield and boost revenue while minimizing expenses and the chances of crop failure. A mobile application on the field agent's hand-held device is the hub for connecting the farmer to the agro-input company with a steady stream of information and advice for improving crop yield throughout a season (<http://www.gps.gov/applications/agriculture>).

### CONCLUSION

- ♦ Digital technologies now make it possible to collect and leverage huge amounts of critical data at minimal costs—thus making a farm's field operations more insight driven, and potentially more productive and efficient.
- ♦ Digital technology is a technological innovation to promote one farmer at a time concept, each farmer will get personalized attention, and solutions to their

problems.

- ♦ Digital technology have a major role to play in the life of farmers as they provide them with latest know-how on agriculture, on line selling and buying, daily weather forecasts, information on cropping patterns, soil conservation, and government schemes.
- ♦ India would benefit from approaching the issue by using digital technology in agriculture by focusing on providing broadband connectivity and a centric development approach.

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## KNOWLEDGE OF NUTRITIONAL PRACTICES AMONG THE TRIBAL WOMEN

**G.J.Patel<sup>1</sup>, Dipti P. Patel<sup>2</sup> and Dweep B. Ramjiyani<sup>3</sup>**

1 Professor and Unit Head, Tribal Research Cum Training Centre, AAU  
Devgadh Baria -389 380

2 & 3 Research Associate, Tribal farm women training centre, AAU  
Devgadh Baria - 389 380

Email : girish\_agri2005@aau.in

### ABSTRACT

*Tribal people are the most conservative, orthodox and superstitious, which affect their growth and development in all walks of life. Study objective was to assess the present knowledge of tribal women about selected areas of nutritional practices. A study was carried out in two talukas of Dahod district in which six villages were selected purposively. Data were collected by personal interview method. Hundred tribal women purposively selected for the study. An average age of them was 37.01 years, monthly income was found ₹1000 to 5000, most of tribal women belonged to joint family; half of the women were illiterate. More than half of tribal women had medium level of knowledge about selected nutritional practices. The women were found the most knowledge about "Consumption of large amount of tea would lower down the hemoglobin level in the body" while the least knowledge about "consumption of two-three glasses of milk and eight-nine glasses of water daily for maintain good health". The study implies that the information and importance of certain nutritional practices could be spread to increase the awareness about human nutrition among the tribal women for their development.*

**Key words:** nutritional practices, knowledge, tribal women

### INTRODUCTION

Tribal people are the most conservative, orthodox and superstitious which affect their growth and development in all walks of life particularly for women (Rajjihari, 2008). Tribal diets are different from the entire population as they include certain common foods and different manner (Mittal, 2006). Tribal women's health varies because of such factors as local disease prevalence, health related behavior, women education and exposure to health information. Nutritional anemia and malnutrition were major problems among the tribal women as found by several studies. Nutritional knowledge has great importance for improving dietary behavior and good health. The present study was thus undertaken for the same purpose.

### OBJECTIVE

To know the knowledge of nutritional practices among the tribal women of Dahod district

### METHODOLOGY

A survey was carried out in Devgadh Baria and

Limkheda talukas of Dahod district of Gujarat. The study was confined to the 100 women whose age belonged to 25 to 60 years as well as they were willing to participate were selected from the six villages for the study. The data was collected through personal interview method and set of 15 questions of nutritional practices of food were used. The questions were multiple choice, true or false and fill in the blanks related to food groups, health and disease. The data was analyzed by using the statistical tools i.e. percentage, mean and SD.

### RESULTS AND DISCUSSION

#### The socio-economic characteristics of the tribal women

The data presented in Table 1, revealed that the range of age of tribal women was 25 to 60 years with an average age of 37.01 years. About 52 percent of women were of young age and 38 percent of women having middle age that is 36 to 50 years. Only 10 percent of the women were above 50 years of age. From the data on educational status it is seen that 52 percent of the women were illiterate and 2 percent of the women were graduates. The tribal women who got education up to secondary school level were 23 percent. Most

of tribal women lived in a joint family that is 58% while 42 percent were from nuclear families. Family incomeranged from Rs.1000 to 5000 per month. About 78% of families had an annual income up to Rs 25,000. Most of the women were engaged in agricultural work along with animal husbandry (79 percent) and only 12 percent of women were engaged in labour work. More than half the of respondents lived in “kachhamakan” (46 percent) while 34 percent of the respondents lived in “pakkamakan.”

**Table 1 : The Socio economic characteristics of the tribal women**

n=100

Sr. No	Particulars	No.	Percent
1	<b>Age group ( years )</b>		
	Young ( up to 35 )	52	52.00
	Middle ( I n Between 36 to 50 )	38	38.00
	Old ( above 50 )	10	10.00
2	<b>Education status</b>		
	Illiterate	52	52.00
	Primary	19	19.00
	Secondary	23	23.00
	Higher Secondary	04	04.00
	Graduate	02	02.00
3	<b>Family type</b>		
	Joint	58	58.00
	Nuclear	42	42.00
4	<b>Family Income</b>		
	Up to ₹ 25,000	78	78.00
	₹ 25001 to 50,000	17	17.00
	₹ 50,001 to 75,000	05	05.00
	Above ₹ 75000	00	00.00
5	<b>Occupation</b>		
	Agriculture	07	07.00
	Agriculture and animal husbandry	79	79.00
	Agriculture and labour	02	02.00
	Labour	12	12.00
6	<b>Residence</b>		
	PakkaMakan	34	34.00
	Kachha	46	46.00
	Mix	20	20.00

**Knowledge level of the Tribal women on selected nutritional practices**

To study the knowledge of nutritional practices among the tribal women set of questions were asked to the

individual during the survey. A score of one was given for each correct answer and zero was given for a wrong answer or if no answer was given by the tribal woman. The response given by the tribal women on questions asked to them are presented in decreasing order of knowledge level in table-2

**Table 2 : Knowledge of the tribal women on selected nutritional practices**

n=100

Sr. No	Knowledge of Nutritional Practice	Percent
1	Consumption of large amount of tea that lower down Hb level in the body	92*
2	Excessive consumption of sugar,salt,oil,ghee can leads to chronic diseases(diabetes,kidney problem, heart problem)	70*
3	We should change the cooking oil regularly for maintain good health	62*
4	Combination of cereal and pulses in the food prepration gives complete protien	58*
5	Fermented pulses and green leafy vegetables should be included in the diet for increasing Hb level of the body	56*
6	Milk and milk products should be consumed regularly for healthy bone development	49#
7	Washing of rice 3-4 times properly before cooking destroy water soluble nutrients	47#
8	Whole cereals pulses and fruits vegetables in the diet can prevent constipation	41#
9	Fruits and vegetables should be consumed daily for good health	38#
10	Consumption of green leafy vegetables regularly is required for proper function of eye,skin and bone	27#
11	Increasing consumption of amla that will help in increasing immunity power of the body	22#
12	Regular using of soyabean in the diet will provide protein	18@
13	Peels of fruits and vegetables help in digestion because it contain fibers	13@
14	Two –three glasses of milk should be consumed daily for good health	12@
15	Eight –nine glasses of water should be taken daily for good health	10@

Mean = 41.13

SD = 23.44

\*=Maximum knowledge(above 50 percent)

#= Moderate knowledge (20-50 percent)

@=Least knowledge (less than 20 percent)

Table 2 indicates that the tribal women had the maximum knowledge about five selected nutritional practices that is 92% of the respondents knew that “Consumption of large amounts of tea would lower down the Hb level in the body.” Knowledge about facts such as ill effects of consumption of salt ,sugar etc, changing of cooking oil, combination of cereals and pulses for complete protein etc were high. About six of the selected nutritional practices were only moderately known to the women . This included “Consumption of milk and milk products for healthy bones,leaching of water soluble nutrients due to excessive leaching, prevention of constipation etc. About 9 -20 % knowledge was prevalent for four of the nutritional practices. This lowknowledge was related to consuming two-three glasses of milk and eight-nine glasses of water daily for maintain good health.

The extent of knowledge on nutritional practices was analyzed on the basis of the scores obtained. Accordingly, respondents were classified as having high (eight and above eight), medium ( in between three to eight) ,low (two and lower than two) levels of knowledge as presented in table-3

**Table 3 : Knowledge level of tribal women on selected nutritional practices**

n=100

Sr. No.	Knowledge level	Number	Percent
1	High level (eight and above eight)	30	30.00
2	Medium level(three and above)	68	68.00
3	Low level (two and below two)	02	02.00

The Table shows that majority (68%) of the tribal women had medium level of knowledge while 30% of the tribal women had high levels of knowledge. Only 2% of the tribal women had low levels of knowledge.

**CONCLUSION**

It can be concluded from the present study that the majority of the tribal women were aged between 25 to 60 years .They belonged to joint families mainly. More than half of the women were illiterate .The family income ranged from Rs 1000 to 5000 per month. Most of the respondents (79 percent) were engaged in agriculture work and animal husbandry. Less than half (46 percent) of the women lived in “kachhamakan”. Maximum of the tribal women (68 percent) had medium level o knowledge about selected nutritional practices. Tribal women were found to be the most knowledgeable about the consumption of large amount of tea that lower down Hb level in the body. They had the least knowledge about the fact that peels of fruits and vegetables help in digestion because it contain fibers,two –three glasses of milk should be consumed daily for good health and eight-nine glasses of water should be taken for good health.

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## YIELD GAP AND LEVEL OF DEMONSTRATED CROP PRODUCTION TECHNOLOGY

A. K. Rai<sup>1</sup>, Raj Kumar<sup>2</sup> and J. K. Jadav<sup>3</sup>

1,2&3 SMS (ICAR-CIAH) Krishi Vigyan Kendra- Panchmahals  
Vejalpur, Godhra, (Gujarat)  
Email :ajayrai74@gmail.com

### ABSTRACT

*The study was conducted in the Panchmahals district of Gujarat with objective of Study on yield gap and level of demonstrated crop production technology in Panchmahals district. Training to the farmer's and participatory front line demonstrations is an efficient measure for reducing knowledge gap of farmers and enhancing productivity, generating production data and collection feedback for large adoption of the technology. Six villages in demonstrated by KVK and total 94 demonstrations conducted on selected farmers fields. The study concluded that, higher yields under demonstration over farmers practices was found in case of integrated nutrient management, improve varieties and use of zinc sulphate, followed by other demonstration.*

**Keywords :** yield gap; demonstration; crop production technology

### INTRODUCTION

The objectives of front line demonstration on crops are to be demonstrated the superior productivity potentials of various location/ region specific technologies to practicing farmers and test there implement ability and viability and obtain feedback from the end users and bring about necessary corrections to improve their acceptability and suitability in real farm situations vis-vis prevailing traditional farmers practices. Front line demonstrations are also one of the methodologies to evaluate performance of technology under on farm conditions, technology adoption by the participating farmers and its diffusion to no n participating farmers. Large variation in crop yield exists from place to place depending on the environment, soils type and use of cultivation practices. Training to the farmer's and participatory front line demonstrations is an efficient measure for reducing knowledge gap of farmers and enhancing productivity, generating production data and collection feedback for large adoption of the technology.

### METHODOLOGY

The study was carried out in six villages namely Dudhava, Kharshaliya, Bhadaroli, Sureli, Kanod and Bediya of Panchmahals district of Gujarat. These all six villages demonstrated by KVK during two year (2009-10 and 2010-11) and total 94 demonstrations conducted on selected farmers

fields. Out of this 62 demonstration on each of technologies like, improved variety of maize paddy, sesamum, gram and castor and 22 demonstration on use of micronutrients (zinc sulphate) in pigeonpea (8) and wheat (14) and 10 demonstration on integrated nutrient management in green gram were raised with recommended package of practices under supervision of KVK, scientists.

### RESULTS AND DISCUSSION

The data presented in Table 1 that under demonstration plot the crop yield was found to be substantially more than that under local check during two the years. In the improved variety of maize (GM-4), paddy (GR-11), Sesamum (GT-1). gram (GG-1), and castor (GCH-7). Crop yield demonstration plots were noted to be 22.10, 35.00, 5.68, 16.55, and 21.70 q/ha respectively which were 42.50, 31.33, 45.26, 29.30 and 37.80 percent higher over control. In case of use of micro nutrients (zinc sulphete) in pigeonpea (BDN-2) and wheat and integrated nutrient management in green gram demonstration plots gave an average yield of 8.65, 35.36 and 11.75 q/ha which accounted for 32.06, 28.58 and 37.58 percent increase over local check was regards to the average yield of improved variety in maize (GM-4), paddy (GR-11), Sesamum (GT-1). gram (GG-1), and castor (GCH-7) under demonstration and local check was found to be 42.50, 31.33, 45.26, 29.30 and 37.80 percent. Higher yields under demonstration and local check was found to be 45.26,

42.50, 37.80 and 37.58 improved variety and integrated nutrient management in green gram respectively. Table also evident that, effect of zinc sulphate on pigeonpea and wheat was 32.06 and 28.58 percent higher yield over to local check.

Similar yield enhancement in mustard crops in front line demonstration has amply been documented by Singh, Navab and Sharma, F.L. (2004).

**Table 1 : Increase of yield, technology and extension index of components demonstration**

Sr. No.	Components of Demonstrated	Demonstrated crop	Demonstration technology	No. of Demonstrated	Mean yield q/ha		Increase % over F.P.
					I.P.	F.P.	
1	GM-4	Maize	Improved variety	11	22.10	15.50	42.50
2	GR-11	Paddy	Improved variety	10	35.00	26.65	31.33
3	Zinc sulphate and BDN-2	Pigeonpea	Use of micro nutrients	08	08.65	06.55	32.06
4	Zinc sulphate and GW-496,	Wheat	Use of micro nutrients	14	35.36	27.50	28.58
5	GT-1	Sesamum	Improved variety	16	05.68	03.91	45.26
6	Integrated nutrient management and GM-4	Green Gram	Improved variety with INM	10	11.75	08.54	37.58
7	GG-1	Gram	Improved variety	10	16.55	12.8	29.30
8	GCH-7	Castor	Improved variety	15	21.70	14.00	37.80

**Table 2 Adoption level technology intervention of front line demonstrations**

Sr. No.	Problem	Technological Intervention	Adoption level				Change in adoption %
			Before		After		
			f	%	f	%	
1	Lack of knowledge and unavailability improver variety	Variety Maize: GM-4	21	22.34	56	59.58	37.24
		Paddy: GR-11	14	14.90	43	47.75	33.56
		Sesamum: GT-1	09	9.58	39	41.49	31.91
		Castor: GCH-7	10	10.64	51	54.26	43.62
2	Lack of knowledge and no use of micro nutrients	Pigeonpea:BDN-2 and Zinc sulphate	07	7.45	46	48.94	41.49
		Wheat: GW-496 and Zinc sulphate	05	5.32	38	40.42	35.10
3.	Lack of knowledge about PSB& Rhizobium Culture	Gerrn Gram GM-4 and Use of PSB & Rhizobium @ 2.5 kg/ha with FYM	5	5.32	42	44.68	39.36
4.	Lack of knowledge and no use Balance fertilizer	Gram- GG-1 and Recommended Dose fertilizer NPK (20:40:00)	11	11.70	37	39.36	27.66

The Table 2 should that the assessment of adoption of technology interventions showed that the improved variety of maize (GM-4), paddy (GR-11), Sesamum (GT-1) and castor (GCH-7) were maximum popularized and adopted by, 37.24, 33.56, 31.91 and 43.62 percent farmers. Other interventions points i.e. Use of zinc sulphate in Pigeonpea (41.49%) and wheat (35.10%), use of PSB & Rhizobium culture (39.36%) and use of balance dose of NPK fertilizer (27.66%) were also adopted by a large number of farmers in view of their impact on crop yield. The knowledge gap about the technology and the availability was reduced by means of training and the impact was visualized by the farmers in the demonstration. Thus, it become quite effective in achieving higher production and economic returns from the investment and monetary returns can be increase substantially by training of farmers

regarding important intervention points like improved variety, use of zinc sulphate in pigeonpea and wheat, use of PSB & Rhizobium culture in green gram, and balance use of NPK in gram through front line demonstrations. The results of the present study are in consonance with the findings of Singh *et. al.* (2004) and Singh *et. al.* (2007) .

**CONCLUSION**

It can be concluded from the discussion that, higher yields under demonstration over to local check was found in case of integrated nutrient management, improve variety GM-4, GT-1, GR-11, GG-1, GCH-7, use of zinc sulphate, followed by pigeonpea and wheat under demonstrations. The assessment of adoption of technological interventions showed

that the improved variety i.e. maize (GM-4), paddy (GR-11), Sesamum (GT-1) and castor (GCH-7) were maximum popularized and adopted by farmers. As well as the other interventions points i.e. Use of zinc sulphate in pigeonpea and wheat, Use of PSB & Rhizobium culture in green gram and use of balance dose of NPK fertilizer in gram were also adopted by a large number of farmers.

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## DIGITAL DAIRY FARM MANAGEMENT SYSTEM

R.S. Parmar<sup>1</sup>, H.K Patel<sup>2</sup> and N.M. Vegad<sup>3</sup>

<sup>1</sup> Associate Professor, College of AIT, AAU, Anand - 388110

<sup>2&3</sup> Assitant Professor, College of AIT, AAU, Anand - 388110

Email : rsparmar@aau.in

### ABSTRACTS

*A digital dairy farm management system is presented in this paper, which based on standardization dairy farm management framework. It can manage dairy farm from each stage including dairy animals' basic information, milk Information, milk selling electronic records, vaccination schedule and milk production cost. Integrate electronic dairy farm management records was set up, which based on dairy farm activities and can implement statistical analytic function of dairy farm and guide dairy farm management. The Unique numbers and integrated dairy animals records information of every dairy animals will lay the foundation for food of animal origin traceability. This system includes four subsystems dairy animals' basic information management subsystem, milk Information subsystem, milk selling electronic records subsystem, vaccination subsystem and costing subsystem. With the help of system analysis and software design techniques, it is can manage the data of milk production, milk selling, milk production cost easily and effectively.*

**Keywords:** digital management, dairy animal , dairy Farm

### INTRODUCTION

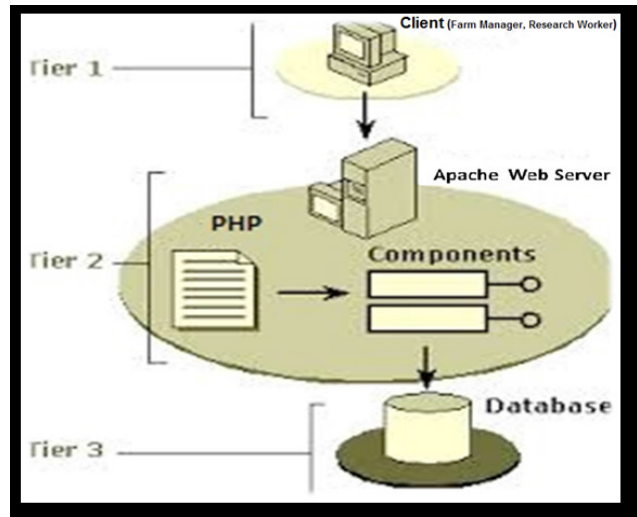
The digital Technology in this era of globalization has accentuated new modes of knowledge transformation and communication patterns. Digital has opened up uncommon opportunities for developing countries in terms of providing low cost access to information. This is the fastest growing tool of communication ever with the number of users growing from 150 million in 1998 to more than 700 million in 2001 ( Brown, 2002 ). India has 70% of its population, which is dependent on Agriculture for its livelihood. Considering this, use of digital Technology in Dairy Farm Management is of strategic importance in a country like India. Digital Technology have tremendous potential in timely collection of data and distributing it to the potential users even in developing countries. Thus, providing low cost access to information. German mathematician, Gottfried Wilhelm Leibniz ([http:// www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releasesdigital-technology#](http://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releasesdigital-technology#)), defines it as “Digital technology is a base two process. Digitized information is recorded in binary code of combinations of the digits 0 and 1, also called bits, which represent words and images. Digital technology enables immense amounts of information to be compressed on small storage devices that can be easily preserved and transported. Digitization also quickens data transmission speeds. Digital technology has transformed how people communicate, learn,

and work“. The dictionary defines management as “the act or art of managing; the conducting or supervising of something (as a business).” As we can see, this definition is relatively broad and applicable to most management situations. If looking at business management more specifically, we will find definitions that are more about how the management is done. Giles and Stansfield defines it as “Management is a comprehensive activity, involving the combination and co-ordination of human, physical and financial resources in a way which produces a commodity or a service which is both wanted and can be offered at a price which will be paid, while making the working environment for those involved agreeable and acceptable.” All business management, regardless of the size of the firm, involves decision making and supervising. A good manager is usually characterized by making good decisions. All decisions made by a manager might not be satisfactory, but the more decisions that are made in an informed manner, the more likely we are to produce a positive outcome. For management of Dairy Farm one should store the large amount of data and from that He has to take a decision. Decision can be taken by measuring key parameters and comparing these with kept records, the observation of a possible problem will be facilitated. With the help of system analysis and software design techniques, system is can manage the data of dairy animals' basic information ,milk production, milk selling , vaccination, costing for farm on dairy farm efficiently. System generate the various dynamic

reports of milk production per animal, milk selling, profit/loss etc. In some economically developed countries, information technology (IT) continues to develop rapidly and is widely and successfully employed in the dairy cattle sector. Large central computers with millions of cow files, operated by cow diseases control program, have been operational for decades to provide the farmers with information (Xiong B H, et al.,2005; Nuthall, P, et al., 2004; Warren, M, et al.2000). Data bases are also increasingly used in a decentralized way on low cost personal computers, by farmers and farm advisors, in the so-called management information systems. Veterinary practitioners use such systems to support a new methodology for safeguarding cow health under the prevailing intensive production conditions (Vaarst, M, et al., 2006; Hamilton, C, et al., 2006; Nyman, A, et al.2007).

**METHODOLOGY**

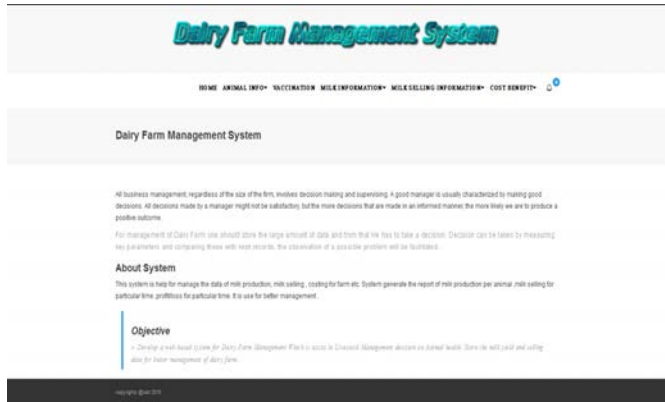
Web-based user-friendly, a digital dairy farm management system has been implemented as a layered structure having three layers viz., User Interface layer (UIL), Application layer (APL) and Database layer (DBL). Each layer having its own specific functions. The User interface layer is implemented using combination of HTML, JavaScript and CSS. Application layer is implemented using PHP (http://php.net). It is an open source general-purpose server-side scripting language originally designed for web development to produce dynamic web pages. Database layer is implemented using MySQL (http://www.mysql.com) database for storing dairy farm data. It is the world’s most used open source relational database management system (RDBMS) as a server providing multi-user access to a number of databases. It can be accessed using the browser of the user’s system. The system is completely menu driven and offers user-friendly screens organized to simplify and reduce effort to understand. The layer structure of a digital dairy farm management system is presented in Fig. 1



**Fig. 1 : Layer structure of a digital dairy farm management system**

**RESULTS AND DISCUSSION**

The Home page (Fig.2) of the digital dairy farm management system has menu items like “Home”, “Animal Info”, “Vaccination”, “Milk Information”, “Milk Selling Information” and “Cost Benefit”. By clicking on these menu options one can get the desired page.



**Fig. 2 : Home Page**

To create and manage databases for dairy animals’ basic information, vaccinations schedule of dairy animals’, animal wise milk production information , animal wise milk selling information and animal wise cost benefit information, the end users have to click “Animal Info”, “Vaccination”, “Milk Information”, “Milk Selling Information” and “Cost Benefit” options respectively. This options provides end users with a systematic way to create, retrieve, update and manage dairy animals’ basic information (Fig. 3),

The various aspects included in this studied have been organized under the following subsystems:

- a. Dairy animals basic information management subsystem
- b. Milk Information subsystem
- c. Milk selling electronic records subsystem
- d. Vaccination and costing subsystem

Vaccinations Schedule of dairy animals' (Fig. 4), Animal wise milk production information (Fig. 5) , Animal wise Milk Selling Information (Fig. 6) and Animal wise Cost Benefit Information (Fig. 7) respectively.

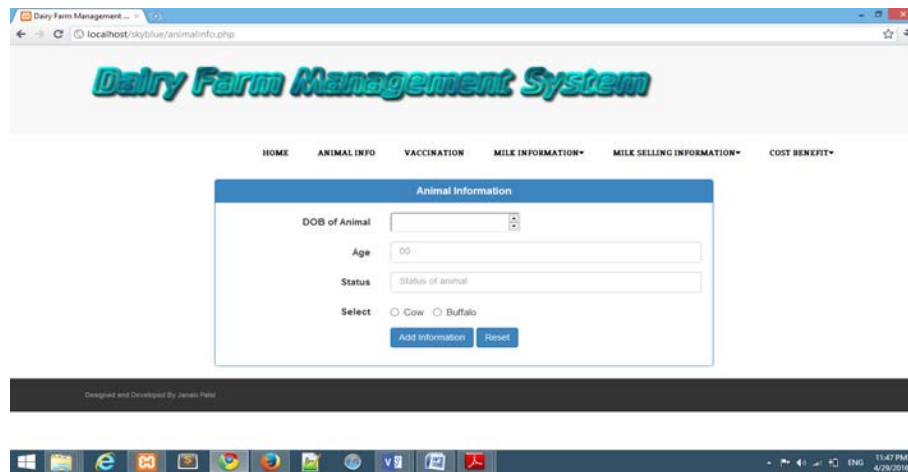


Fig. 3 : Dairy Animals' Basic Information

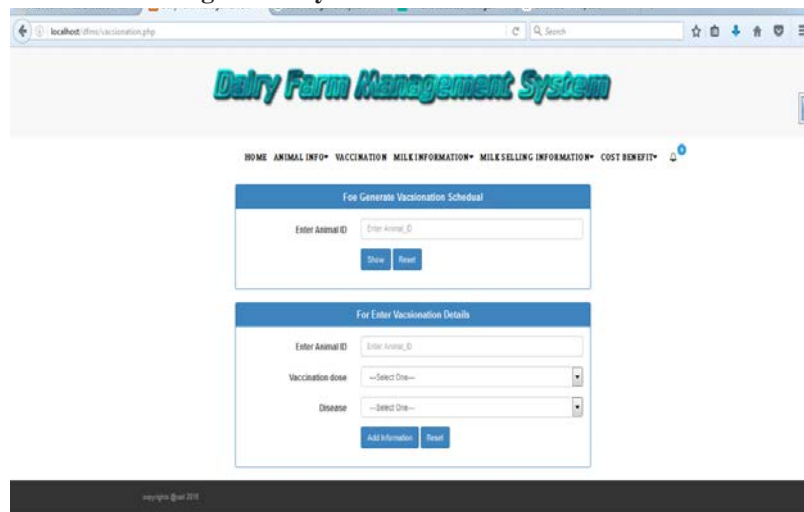


Fig. 4 : Vaccinations Schedule of Dairy Animals'

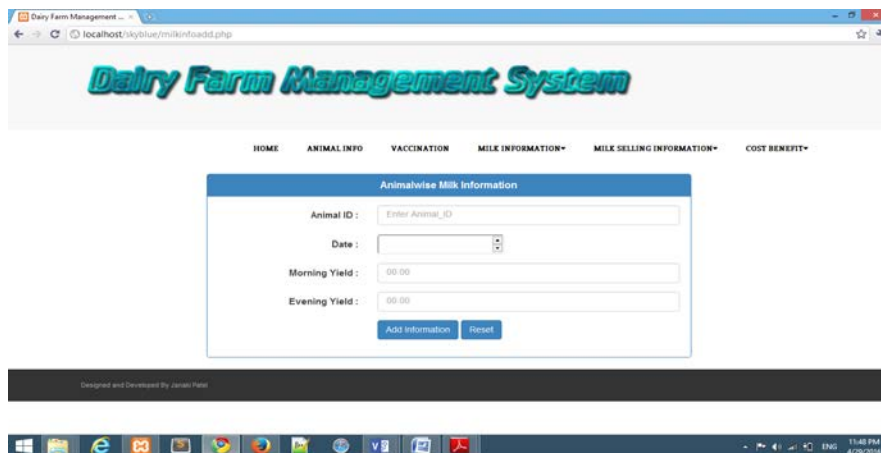


Fig. 5 : Animal wise milk production Information

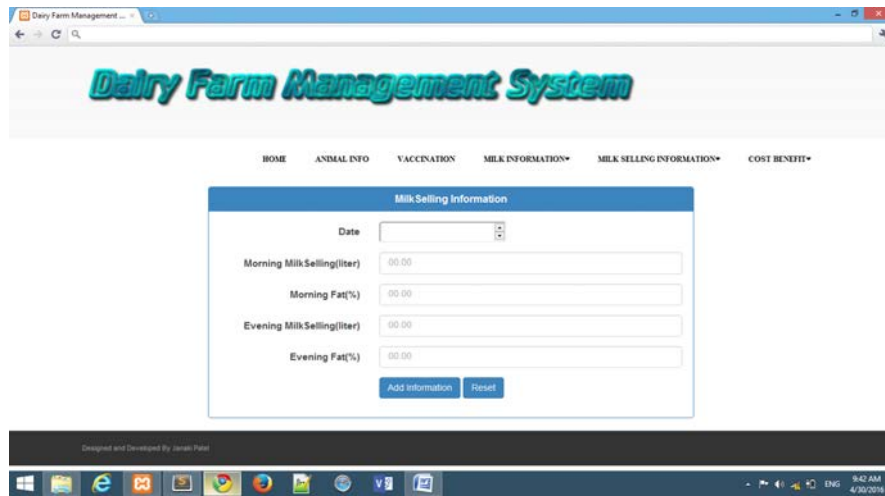


Fig. 6 : Animal wise Milk Selling Information

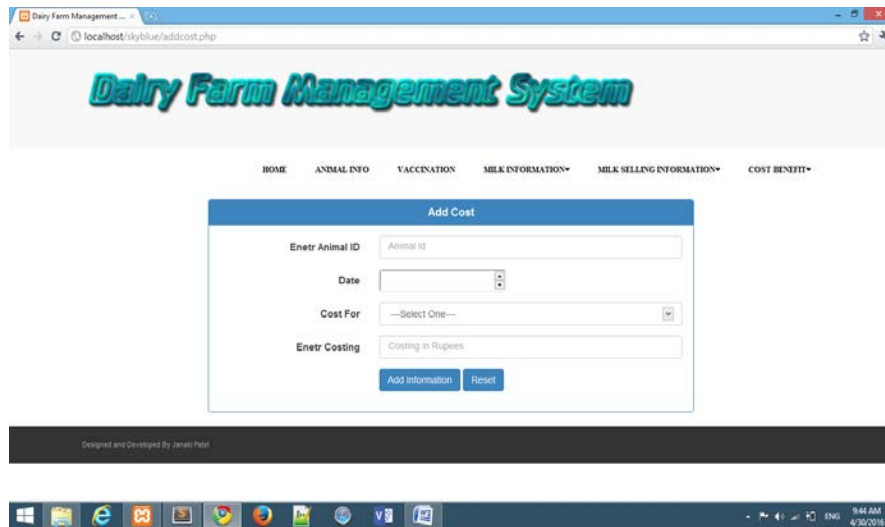


Fig. 7 : Animal wise Cost Benefit Information

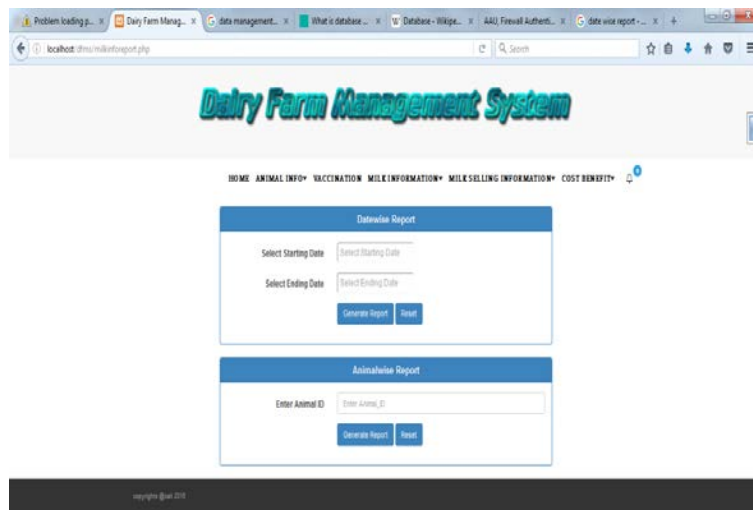


Fig. 8 : Date wise Milk Production Report

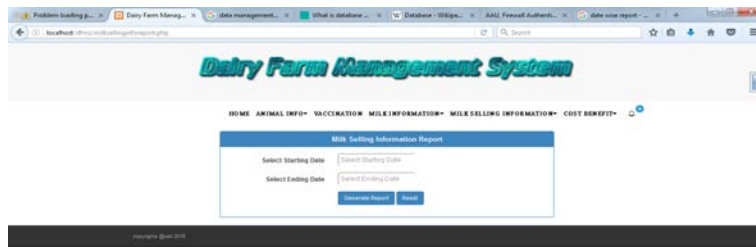


Fig. 9 : Date wise Milk Selling Report

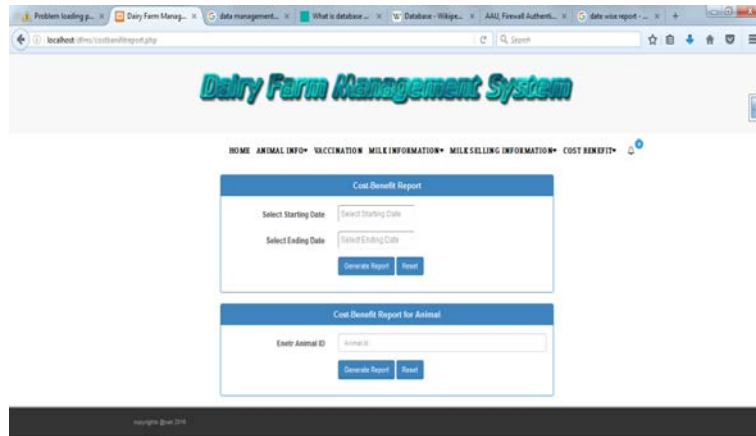


Fig. 10 : Cost Benefit Report

By clicking on “Milk Information”, “Milk Selling Information” and “Cost Benefit” menu items on Home page one can get the report option under each menu item for “Date wise Milk Production” (Fig. 8) , “Date wise Milk Selling” (Fig. 9) and “Cost Benefit” (Fig. 10) reports respectively.

The Date wise Milk Production and Date wise Milk Selling reports are presented in Fig.11 and Fig. 12 respectively.

Sr No	Animal ID	Date	Morning Yield(liter)	Evening Yield(liter)
1	1	2016-04-17	12.23	15.23
2	1	2016-04-22	14.12	26.3
3	1	2016-04-26	12	10
4	1	2016-04-27	10.23	12.23
5	1	2016-04-27	12.1	10.12

Fig. 11 : Date wise Milk Production Report



Sr No	Date	Morning Selling(Liter)	Evening Selling(Liter)	Total Selling(Liter)	Morning Amount(Rs)	Evening Amount(Rs)	Total Amount(Rs)
1	2016-04-01	23	25	48	690	750	1440
2	2016-04-02	53	54	107	1590	1620	3210
3	2016-04-03	45	53	98	1350	1590	2940
4	2016-04-04	45	56	101	1350	1680	3030
5	2016-04-06	58	54	110	1680	1620	3300
6	2016-04-07	75	78	153	2250	2340	4590
7	2016-04-08	45	56	101	1350	1680	3030
8	2016-04-09	56	54	110	1680	1626.9	3306.9
9	2016-04-10	56	54	110	1686.9	1627.8	3314.7

**Fig. 12 : Date wise Milk Selling Report**

## CONCLUSION

The digital dairy farm management system that was created implements routine monitoring standardization, applicable and integrity electronic milk selling records, dairy animals' basic information, milk Information, vaccination schedule and milk production cost. It can manage dairy farm from each stage. Integrate electronic dairy farm management records was set up, which based on dairy farm management records. The Unique numbers and integrated dairy animals records information of every dairy animal will lay the foundation for food of animal origin traceability. With the help of system analysis and software design techniques, it is can manage dairy farm activities effectually. These will bring evident economic returns. Thus it will be an important application to design and develop digital dairy farm management system in management of dairy farm.

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## RELATIONSHIP BETWEEN READING BEHAVIOUR OF KRUSHIJIVAN FARM MAGAZINE SUBSCRIBER LIVESTOCK OWNERS AND THEIR PROFILE

V. V. Solanki<sup>1</sup>, J. B. Patel<sup>2</sup>, Sunny Jani

1&3 Ex. PG Student, IDEA, AAU, Anand -388001  
2 Associate Professor, Department of Extension Education,  
BACA, AAU, Anand -388110  
Email : vvsolanki88@gmail.com

### ABSTRACT

*The Bhavnagar district of the Gujarat state having more number of life members of Krushijivan Farm Magazine (KFM) was selected purposively for study. Among Bhavnagar district, Talaja, Mahuva and Palitana taluka were selected purposively for the study. Total 75 subscriber respondents and 75 non subscriber respondents were selected proportionately from above three taluka. Thus, total 75 subscriber livestock owners and 75 non subscriber livestock owners were included for the study. Education of the KFM subscriber livestock owners had establish positive and significantly relationship with their reading behaviour where as age had negative and significant correlation. Other variable viz., Social participation, Land holding, Herd size, Milk production, Annual income, Extension participation, Mass media exposure failed to show any significant correlation with their reading behavior*

**Keywords:** relationship, reading behaviour, farm magazine, livestock

### INTRODUCTION

A breakthrough in any field of agriculture is not possible without an effective communication support to disseminate the research findings to its ultimate users. The farm magazines provide technological know-how to the farmers at regular intervals and also increase the knowledge of farmers regarding improved package of practices of different crops and other allied fields. It is assumed that individuals who read farm magazine are likely to gain more knowledge about agricultural technology. Krushijivan Farm Magazine (KFM) is being published regularly since 1969 by Gujarat State Fertilizers and Chemicals Ltd. (GSFC), at Vadodara. The aim of the magazine is to disseminate and popularize scientific methods of agriculture. In this farm magazine the information of agricultural technology are published as per the need and time of the farmer.

### OBJECTIVE

To find out the relationship between reading

behaviour of KFM Subscriber livestock owners and their profile.

### METHODOLOGY

Bhavnagar district is composed of nine talukas, namely Bhavnagar, Shihor, Palitana, Ghogha, Umarala, Vallabhipur, Gariyadhar, Talaja and Mahuva. Out of that top three taluka were selected for the study which have more KFM subscriber. Among these talukas, Talaja, Mahuva and Palitana talukas were selected purposively for the study as they possessed more number of KFM subscribers i.e. 400,225, and 199 respectively. This study compares the KFM subscriber farmers and nonsubscriber farmers. To find out the relationship between reading behaviour of KFM subscriber livestock owners and their profile, reading behaviour variable considered as dependent variable. To know the reading behaviour of the respondents, structured scheduled was prepared. The responses of the respondents were recorded and calculated with the help of frequency and Percentage.

## RESULTS AND DISCUSSION

**Table-1 Relationship between reading behaviour of KFM Subscriber livestock owners and their profile.**

n=75

Sr. No.	Variables	Correlation coefficient
X <sub>1</sub>	Age	-0.204*
X <sub>2</sub>	Education	0.775**
X <sub>3</sub>	Social participation	-0.075NS
X <sub>4</sub>	Land holding	-0.125NS
X <sub>5</sub>	Herd size	-0.042NS
X <sub>6</sub>	Milk production	-0.030NS
X <sub>7</sub>	Annual income	-0.013NS
X <sub>8</sub>	Extension participation	0.091NS
X <sub>9</sub>	Mass media exposure	0.040NS

\*\* Significant at the 0.01 level (2-tailed)

\* Significant at the 0.05 level (2-tailed)

### Age and Reading behaviour of KFM

It can be concluded from Table-1 that the age of the respondents had negative and significant relationship with their reading behaviour of KFM subscriber livestock owners. The age had negative and significant relationship with their reading behaviour of KFM subscriber livestock owners indicates that as age increased, the reading behaviour decreased and the age is the factor which determines the zeal, aptitude and hard work required for determining effectiveness in any activity.

### Education and Reading behaviour of KFM

It can be concluded from Table-1 that the education level of the KFM subscriber livestock owners had positive and significant relationship with their reading behaviour. The probable reason might be fact that education is the production of desirable changes in human behaviour. It helps the individual to make progress in right direction. Education might have helped in getting more information by use of mass media like printed literature, namely farm magazines etc. having recent information regarding new innovation.

### Social participation and Reading behaviour of KFM

Unrespectable result was found with relationship between social participation and their reading behaviour. Thus, it can be said that the non subscriber livestock owners were also socially participated with the different organizations. Reason might be that now a days people joined with the gram panchayat, cooperative organizations and other social group.

### Land holding and Reading behaviour of KFM

The results revealed from Table-1 that size of land holding by the KFM subscriber livestock owners had negative and none significant relationship with their reading behaviour of KFM. It means that most of livestock owners belonging to small category of land holding. This might be the reason to have none significant relationship between the land holding and reading behaviour of KFM.

### Herd size and Reading behaviour of KFM

The result found from Table-1 that herd size of the KFM subscriber livestock owners had negative and non significant with their reading behaviour of KFM.

### Milk production and Reading behaviour of KFM

There was negative and non significant relationship between reading behaviour of KFM subscriber livestock owners and milk production. Reason might be that the KFM could not impact on the subscriber livestock owners to high milk production. In other words it can also be said that the information in KFM related to animal husbandry put in sufficient quality and quantity to the subscriber livestock owners to produce high milk.

### Annual income and Reading behaviour of KFM

There was negative and non significant relationship between reading behaviour of KFM subscriber livestock owners and their annual income. It means that the no significant impact of KFM subscriber livestock owners to get high annual income. Reason might be that the subscriber livestock owners and non subscriber livestock owners both had small size land holding, medium size herd size and medium milk production. Other reason might be that the KFM could not impact on KFM subscriber livestock owners to get high annual income.

### Extension participation and Reading behaviour of KFM

Extension participation and Reading behaviour of KFM The calculated correlation coefficient "r" values were found to be positive and non significant. It means that extension participation had not played much more role in improving reading behaviour of the KFM subscriber livestock owners.

### Mass media exposure and Reading behaviour of KFM

The data presented in the Table-1 shows that there

was positive but non significant relationship between mass media exposure of the KFM subscriber livestock owners and their reading behaviour of KFM. In fact, this tendency was not up to the level of significant. It means that mass media exposure had played a little role in improving reading behaviour of KFM but it was not up to the level of significant. It is therefore, the null hypothesis (Ho) was accepted and it can be concluded that mass media exposure have not shown any effect in improving the reading behaviour of KFM.

#### **CONCLUSION**

Only one variable viz., Education of the KFM subscriber livestock owners had establish positive and significantly relationship with their reading behaviour where as age had negative and significant correlation. Other variable viz., Social participation, Land holding, Herd size, Milk production, Annual income, Extension participation, Mass media exposure failed to show any significant correlation with their reading behavior.

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## EFFECTS OF INDEPENDENT VARIABLES ON OVERALL EXTENT OF CONTRIBUTION OF TRIBAL FARMWOMEN IN AGRICULTURAL ACTIVITIES

**Mahesh R. Patel<sup>1</sup>, D. D. Patel<sup>2</sup> and Jaydip D. Desai<sup>3</sup>**

1 Associate Extension Educationist, EEI, AAU, Anand - 388110

2 Assistant Professor, DoEE, AAU, Anand - 388110

3 Senior Research Assistant, DoEE, AAU, Anand - 388110

Email : newsmrp@aau.in

### ABSTRACT

*Agricultural production plays a significant role in the Indian economy. In India, women and agriculture seem synonymous terms. One can not think of agriculture without women. There is hardly any activity in agriculture except ploughing, where women are not involved. The tribal farmwoman shares with her husband the arduous burden of farm work in addition to her major responsibility as home maker, by helping in all other agricultural and animal husbandry activities. Keeping this fact in mind, the present study was carried out to find out Effects of independent variables on overall extent of contribution of tribal farmwomen in agricultural activities. The result of the study revealed that Overall extent of contribution of tribal farmwomen in agricultural operations was found to be predicted by four independent variables namely, age, education, herd size and risk preference of tribal farmwomen from highest to lowest order based on standard partial regression coefficient with combine effect of 57.65 per cent of the total variation in it. The co-efficient of determination ( $R^2$ ) indicated that the variable education of tribal farmwomen alone contributed significantly to 53.74 per cent of total variation in their overall extent of contribution in agricultural operations.*

**Keywords:** contribution, tribal farmwomen

### INTRODUCTION

Agriculture is the largest industry in India contributing to the source of livelihood for over 70 per cent of population. Agricultural production plays a significant role in the Indian economy. In India, women and agriculture seem synonymous terms. One can not think of agriculture without women. There is hardly any activity in agriculture except ploughing, where women are not involved. In some of the activities, she is relatively more efficient than man. Dahod is one of the Integrated Tribal Development Project (ITDP) areas of Gujarat State, where various administrative measures have been adopted through large number of tribal development and welfare programmes under Tribal Area Sub Plan (TASP). Since, independence huge fund have been diverted by the Central and State Government through different agencies with a view to uplift their living standard and bringing them into the main stream of nation. Even after lapses of more than 50 years of independence the progress of tribal farmwoman is not yet up to the level of expectation in the field of agriculture and animal husbandry as she is continued to be in a state of neglect. A victim of man made

system, she is hardly considered equal to man in wage and social status. Keeping in view the above said facts and information about the tribal farmwoman's situation and her multiple roles in agriculture and animal husbandry a study on "Effects of Independent variables on overall extent of contribution of tribal farmwomen in Agricultural activities" was undertaken.

### OBJECTIVE

To know the effects of independent variables on overall extent of contribution of tribal farmwomen in agricultural activities

### METHODOLOGY

The present study was undertaken in Integrated Tribal Development Project areas of Dahod district of Gujarat. Out of seven talukas of the district, five talukas namely (1) Dahod (2) Zalod (3) Limkheda (4) Garbada and (5) Dhanpur were selected purposively for this study. Out of total villages of each selected taluka, two villages were randomly selected comprising total ten villages from five selected talukas

kof ITDP Dahod. From each village, 20 respondents were selected randomly, thus, total sample of 200 respondents were selected for the present study. The interview schedule was prepared keeping in view the objectives of the study for data collection. Total 21 variables was selected as under :

**(A) Independent variables**

**I Personal-social**

- 1 Age
- 2 Education
- 3 Marital status
- 4 Type of family
- 5 Size of family
- 6 Social participation
- 7 Socio-economic status

**II Economical**

- 1 Occupation
- 2 Bullocks possessed
- 3 Material possession
- 4 Size of land holding
- 5 Herd size
- 6 Number of other working family member
- 7 Migration habit
- 8 Annual family income

**III Psychological**

- 1 Innovativeness
- 2 Risk preference
- 3 Scientific orientation
- 4 Attitude towards different development programmes
- 5 Awareness regarding different development programmes

**IV Communication**

- 1 Source of information

**(B) Dependent variables**

Contribution of tribal farmwomen in agricultural operations

The data were analysed with Standard partial regression coefficient.

**RESULTS AND DISCUSSION**

**Extent of variation caused by independent variables on dependent variables**

In the previous sub-section, the relationships

between independent and dependent variables were ascertained by computing correlation coefficients ( $r$ ). The correlation coefficient value only gives the strength and direction of association but does not reflect on predictive ability of independent variables to the dependent variable. Hence, in order to access the amount of contribution (influence or predictive abilities) of each independent variable to the dependent variables, the stepwise regression analysis was carried out with the help of computer. Efromson's (1962) stated that the stepwise regression is one such method which had widely adopted in multiple regression analysis. It has got the added advantage that at each stage of analysis, every variable is subjected to an examination for its predictive value. The multiple regression co-efficient ( $R$ ) represents the correlation between the dependent variables' actual score and the predicted score obtained from the fitted multiple regression equation. The co-efficient of multiple regression determination ( $R^2$ ) gives the average amount of change in dependent variables, when all independent variables were taken together and was tested with 'F' test for its significance.

The partial regression co-efficient ( $b_{Yi.j}$ ) represents the change in dependent variable ( $Y_i$ ) with a quite change in independent variable ( $x_i$ ) keeping other variables constant and it was tested with student's 't' test for its significance. The various independent variables had their own unit of measurement, which did not permit a comparison of the partial ( $b_{Yij}$ ) values. To facilitate comparison, the partial ( $b_{Yij}$ ) values were converted into standard partial ( $b'_{Yij}$ ) values, which were free from the units of measurements. The independent variables were than ranked on the basis of standard partial ( $b'_{Yij}$ ) values (ignoring sign) to find out their relative importance in predicting the dependent variable.

**Stepwise regression analysis of independent variables on overall extent of contribution of tribal farmwomen in agricultural operations**

Stepwise regression analysis with overall extent of contribution of tribal farmwomen in agricultural operations as a dependent variable and twenty one independent variables was carried out. The results are presented in Table 1 and Table

2.

**Table 1: Stepwise regression analysis of overall extent of contribution of tribal farmwomen in agricultural operations** n = 200

Sr. No.	Independent variable	Partial regression coefficient (b <sub>Yij</sub> )	Standard partial error of regression coefficient (SE of b <sub>Yij</sub> )	't' value	'F' value	Standard partial regression coefficient (b' <sub>Yij</sub> )	Rank
1	Age (X <sub>1</sub> )	- 0.0040	0.0023	1.873 NS	3.012 NS	- 0.0843	IV
2	Education (X <sub>2</sub> )	0.3845	0.0376	10.679**	104.676**	0.6279	I
4	Herd size (X <sub>11</sub> )	0.1680	0.0462	3.368**	13.194**	0.1766	II
4	Risk preference (X <sub>16</sub> )	0.0210	0.0081	2.519*	6.715*	0.1594	III

Constant : 7.2728

Multiple R = 0.7593

R<sup>2</sup> = 0.5765

NS = Non-significant

\* = Significant at 0.05 level of probability

\*\* = Significant at 0.01 level of probability

X<sub>1</sub> = Age

X<sub>11</sub>/ X<sub>16</sub> / X<sub>2</sub> / Y<sub>1</sub>

X<sub>2</sub> = Education

X<sub>11</sub> = Herd size

X<sub>16</sub> = Risk preference

Therefore, the fitted equation would be as under :

$$Y_1 = 7.2728 - 0.0040 X_1 + 0.3845 X_2 + 0.1680$$

$$X_{11} + 0.0210 X_{16}$$

The data presented in Table 1 indicate that out of 21 independent variables, only four variables namely, age, education, herd size and risk preference of tribal farmwomen were accounting influence on overall extent of contribution of tribal farmwomen in agricultural operations. All the four independent variables together accounted 57.65 per cent extent of variation as indicated by multiple regression coefficient value (R<sup>2</sup>) for overall extent of contribution of tribal farmwomen in agricultural operations. As a result of stepwise regression analysis, the following regression model was obtained :

$$Y_1 = a + b_1 X_1 + b_2 X_2 + b_{11} X_{11} + b_{16} X_{16}$$

Where,

Y<sub>1</sub> = Overall extent of contribution of tribal farmwomen in agricultural operations

a = The intercept i.e. 7.2728 ( constant )

b<sub>1</sub> = Coefficient of partial regression of Y<sub>1</sub> on X<sub>1</sub>  
i.e. - 0.0040

b<sub>2</sub> = Coefficient of partial regression of Y<sub>1</sub> on X<sub>2</sub>  
i.e. 0.3845

b<sub>11</sub> = Coefficient of partial regression of Y<sub>1</sub> on X<sub>11</sub> i.e. 0.1680

b<sub>16</sub> = Coefficient of partial regression of Y<sub>1</sub> on X<sub>16</sub> i.e. 0.0210

The partial regression coefficient (b<sub>Yij</sub>) value of these four variables were converted in to standard partial regression co-efficient (b'<sub>Yij</sub>) value. The 't' values of partial b<sub>Yij</sub> were found to be positively significant at 0.01 level of probability for two variables namely, education, herd size and at 0.05 level of probability for variable risk preference, whereas variable age found non-significant. Based on the absolute values of standard partial regression coefficients (b'<sub>Yij</sub>) they were ranked from highest to lowest order of contribution as under :

Standard partial regression coefficient (b' <sub>Yij</sub> )	Name of variable	Rank
0.6279	Education (X <sub>2</sub> )	I
0.1766	Herd size (X <sub>11</sub> )	II
0.1594	Risk preference (X <sub>16</sub> )	III
- 0.0843	Age (X <sub>1</sub> )	IV

The extent of variation accounted by different

independent variables on overall extent of contribution of tribal farmwomen in agricultural operations are presented in Table 2.

**Table 2 : Stepwise extent of variation accounted by different independent variables on overall extent of contribution of tribal farmwomen in agricultural operations**

n = 200

Step No.	Variables included	Multiple correlation coefficient (R)	Total variation accounted [R <sup>2</sup> (%)]
Step-I	Education (X <sub>2</sub> )	0.7331	0.5374 (53.74 %)
Step II	X <sub>2</sub> + Herd size (X <sub>11</sub> )	0.7457	0.5560 (55.60 %)
Step III	X <sub>2</sub> + X <sub>11</sub> + Risk preference (X <sub>16</sub> )	0.7549	0.5699 (56.99 %)
Step IV	X <sub>2</sub> + X <sub>11</sub> + X <sub>16</sub> + Age (X <sub>1</sub> )	0.7593	0.5765 (57.65 %)

It is apparent from the Table 2 that the variable, education of tribal farmwomen had independently contributed to 53.74 per cent of total variation in overall extent of contribution of tribal farmwomen in agricultural operations. Whereas, herd size and education of tribal farmwomen jointly contributed to 55.60 per cent and risk preference, herd size and education of tribal farmwomen jointly contributed their role to 56.99 per cent. While, 57.65 per cent joint influences on overall extent of contribution of tribal farmwomen in agricultural operations was observed from all the variable namely age, risk preference, herd size and education of tribal farmwomen.

From the above results it can be concluded that

overall extent of contribution of tribal farmwomen in agricultural operations was found to be predicted by four independent variables namely, age, education, herd size and risk preference of tribal farmwomen having with the combine effect of 57.65 per cent of the total variation in overall extent of contribution of tribal farmwomen in agricultural operations. This findings are suggestive of fact that for increasing overall extent of contribution of tribal farmwomen in agricultural operations in the areas of ITDP Dahod, implementing agencies of different development programmes taken up in integrated tribal development project Dahod have to increase the level of education of tribal farmwomen by organizing different education promoting programmes/activities.

### CONCLUSION

It is concluded from the study that Overall extent of contribution of tribal farmwomen in agricultural operations was found to be predicted by four independent variables namely, age, education, herd size and risk preference of tribal farmwomen from highest to lowest order based on standard partial regression coefficient with combine effect of 57.65 per cent of the total variation in it. The co-efficient of determination (R<sup>2</sup>) indicated that the variable education of tribal farmwomen alone contributed significantly to 53.74 per cent of total variation in their overall extent of contribution in agricultural operations.

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## DETERMINANTS IN KNOWLEDGE ABOUT RECOMMENDED PACKAGE OF PRACTICES OF ROOT & TUBER CROPS

V. B. Girawale<sup>1</sup> and R. M. Naik<sup>2</sup>

1 Postgraduate student (Extension Education)

2 Associate professor, Department of Extension Education, NMCA, NAU, Navsari

Email : vedantgirawale60@gmail.com

### ABSTRACT

*With a view to know the correlation of knowledge about recommended package of practices of root and tuber crops with the root and tuber crop growers characteristics, the present study was undertaken in Navsari district of Gujarat. Majority of root and tuber crop growers had medium level of knowledge about recommended package of practices of root and tuber crops. The independent variables viz., farming experience, social participation, mass media exposure, education, size of land holding, annual income, extension contact and extension participation were positively and significantly correlated with knowledge about recommended package of practices of root & tuber crops.*

**Keynote :** knowledge, root & tuber crops

### INTRODUCTION

Tropical root and tuber crops are considered as the third important group of food crops after cereals and grain legumes. They contribute 6% of the average daily calorific intake of human beings. Mostly tropical tuber crop produced, that are used for human food and animal feed. Elephant foot yam, Greater yam, Aerial yam, Colocasia, Tannia, and Sweet potato play a major role in the socio-economic condition of small and marginal farmers of tribal areas of Gujarat region in context of food and nutrition security. It is believable that to motivate farmers for adopting recommended package of practices of root & tuber crops for food security and nutritional security is very much essential. Final decision of farmers to adopt root & tuber crops cultivation is usually the result of their knowledge about recommended package of practices of tuber crops. Knowledge of the root and tuber crop growers can be affected by their various characteristics. In this context, an attempt has been made to carry out the present investigation.

### OBJECTIVE

To know the Determinants in knowledge about recommended package of practices of root & tuber crops

### METHODOLOGY

The study was conducted during April-June 2016 in Navsari district of Gujarat state. Gandevi, Chikhali and Khergam Talukas were randomly selected from Navsari district. From each taluka three villages were selected randomly with maximum number of root and tuber crop growers. In each of the selected villages farmers were selected according to random proportionate sampling to form 70 respondents as a sample size for the study. In order to measure correlation between profile of root and tuber crop growers and knowledge of recommended package of practices, various scale developed by different social scientist were adopted with due modification and correlation of coefficient (r) test was applied.

### RESULTS AND DISCUSSION

#### **Relationship between the personal, socio-economic characteristics of root and tuber crop growers and their knowledge**

The association between the profile of root and tuber crop growers and their knowledge about recommended package of practices of root and tuber crops were worked out with the help coefficient of correlation. The findings were presented in Table 1.

**Table 1: Relationship between profile of the root and tuber crop growers and their knowledge regarding recommended package of practices of root and tuber crops**

n=70

Sr. No.	Independent Variables	Correlation-Coefficient ('r' value)
X <sub>1</sub>	Age	0.099 NS
X <sub>2</sub>	Education	0.736**
X <sub>3</sub>	Farming experience	0.204*
X <sub>4</sub>	Size of land holding	0.299**
X <sub>5</sub>	Annual income	0.535**
X <sub>6</sub>	Material possession	0.122 NS
X <sub>7</sub>	Extension contact	0.491**
X <sub>8</sub>	Extension participation	0.344**
X <sub>9</sub>	Social participation	0.250*
X <sub>10</sub>	Mass media exposure	0.201*

NS= non-significant,

\* = significant at 0.05 level,

\*\*=significant at 0.01 level

The data manifested in the Table 1 revealed that in case of root and tuber crop growers, characteristics such as age (r = 0.099) and material possession (r = 0.122) was positive and non-significantly correlated with knowledge

level. The characteristics such as farming experience (r = 0.204), social participation (r = 0.250) and mass media exposure (r = 0.201) was positive and significantly correlated with knowledge level. Education (r = 0.736), size of land holding (r = 0.299), annual income (r = 0.535), extension contact (r = 0.491) and extension participation (r = 0.344) were positive and high significant with knowledge level.

### CONCLUSION

There were positive and significant relationship between farming experience, social participation, mass media exposure, education, size of land holding, annual income, extension contact and extension participation with the level of knowledge about recommended package of practices of root & tuber crops.

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## IMPACT OF CUMIN CROP FIELD DEMONSTRATIONS ON KNOWLEDGE OF FARMERS

Patel D. B.<sup>1</sup>, Mistry J. J.<sup>2</sup> and Patel V. M.<sup>3</sup>

<sup>1</sup> Assistant Professor, Directorate of Extension Education, SDAU, Sardarkrushinagar - 385505

<sup>2</sup> Associate Professor, Directorate of Extension Education, SDAU, Sardarkrushinagar - 385505

<sup>3</sup> Assistant Professor, Polytechnic in Agriculture, SDAU, Khedbrahma - 383255

Email : mistryjanak99@gmail.com

### ABSTRACT

*The present study was undertaken in North Gujarat to know the impact of field demonstration (FLD) on cumin crop conducted by Center for research on seed spices, Jadgdan. The Banaskantha, Mehsana, Kachchh, Gandhinagar, Patan and Sabarkatha districts were selected purposively. The demonstrations on cumin crop were conducted in these districts. Total 50 FLD farmers and 50 other (non FLD) farmers were randomly selected from the villages in which FLDs were conducted. The data were collected through interview schedule. Appropriate statistical tools were used for analysis of data. The farmers had overall medium level of knowledge about cumin production technology. There was a significant difference between beneficiary and non beneficiary farmers regarding knowledge of seven package of practices of improved cumin production technology. The 'r' value was positively and significantly associated with knowledge level of improved cumin production technology by the beneficiary and non beneficiary farmers with education.*

**Keywords :** knowledge, field demonstrations, impact

### INTRODUCTION

The basic purpose of front line demonstrations is to demonstrate newly released crop production technologies and its management practices on farmer's field under real situation. Looking to the importance of front line demonstration, it was felt imperative that impact of these demonstration must be evaluated on scientific line and some measures should be suggested to make these demonstrations more effective. The results of the study might be of interest to the researches of main spices research station, krushi vigyan Kendra scientists, and all those who are directly or indirectly involved in planning and executing the front line demonstrations. Hence it thought necessary to measure the impact of field demonstrations on cumin crop on the beneficiary farmers with the following specific

### OBJECTIVES

- [1] To study the personal attributes of beneficiary and non-beneficiary farmers
- [2] To measure the level of knowledge of beneficiary farmers in comparison with non-beneficiary farmers regarding cumin production technology demonstrated

under front line demonstrations

- [3] To study the practice wise level of knowledge of improved cumin production technology by FLD beneficiary and non-beneficiary farmers
- [4] To find out the association of personal attributes of beneficiary farmers and non beneficiary farmers with their level of knowledge of improved cumin production technology

### METHODOLOGY

The present study was undertaken in North Gujarat to know the impact of field demonstrations (FLDs) on cumin crop conducted by center for research on seed spices, Jadgdan. The Banaskantha, Mehsana, Kachchh, Gandhinagar, Patan and Sabarkatha districts were selected purposively. The demonstrations on cumin crop were conducted in these districts. Total 50 FLD farmers and 50 other (non FLD) farmers were randomly selected from the villages in which FLDs were conducted. The data were collected through interview schedule. Appropriate statistical tools were used for analysis of data. The data were tabulated, analyzed and interpreted in light of the objectives.

## RESULTS AND DISCUSSION

## Personal attributes of respondents

Table 1: Distribution of the respondents according to their the personal attributes

n=100

Sr. No.	Attributes	Classification	Beneficiary farmers (n=50)		Non-beneficiary farmers (n=50)	
			No.	Percent	No.	Percent
1	Age	Young age (below to 35 year)	14	28.00	08	16.00
		Middle age (35 to 50 year)	21	42.00	26	52.00
		Old age (Above 50 year)	15	30.00	16	32.00
2	Education	Illiterate	03	06.00	07	14.00
		Primary education (Up to VII std.)	27	54.00	20	40.00
		High School (VIII to X std.) level	11	22.00	05	10.00
		Higher secondary (XI to XII) level	06	12.00	15	30.00
		College level	03	06.00	03	6.00
3	Land holding	Marginal (Up to 1.0 ha.)	16	32.00	22	44.00
		Small (1.01 to 2.0 ha.)	24	48.00	10	20.00
		Medium (2.01 to 4.0 ha.)	08	16.00	07	14.00
		Large (More than 4.0 ha.)	02	04.00	05	10.00
4	Source of information	Low (Up to 6 source)	13	26.00	10	20.00
		Medium (7-13 sources )	24	48.00	35	70.00
		High (Above 13 sources)	13	26.00	05	10.00
5	Extension participation	Low (Up to 10 score)	02	04.00	19	38.00
		Medium (11 to 28 score )	36	72.00	23	46.00
		High (Above 28 score)	12	24.00	08	16.00
6	Economic motivation	Low (Up to 17 score)	08	16.00	14	28.00
		Medium (18 to 24 score )	35	70.00	30	60.00
		High (Above 24 score)	07	14.00	06	12.00
7	Risk percentage	Low (Up to 15 score)	04	08.00	20	40.00
		Medium (16 to 23 score )	35	70.00	25	50.00
		High (Above 23 score)	11	22.00	05	10.00
8	Scientific orientation	Low (Up to 16 score)	06	12.00	14	28.00
		Medium (17 to 24 score )	38	76.00	28	56.00
		High (Above 24 score)	06	12.00	08	16.00

The data depicted in Table 1 show that maximum number of respondents from beneficiary group (42.00 percent) and non-beneficiary group (52.00 percent) were found in middle age group. Nearly one half number of beneficiary farmers (54.00 percent) had primary education, while 40.00 per cent were found in non-beneficiary farmers. Majority (48.00 percent) of the beneficiary farmers were small farmers having 1.01 to 2.00 ha. of cultivable land. Whereas, majority of (44.00 percent) of non-beneficiary farmers were marginal farmers having up to 1.00 ha. of cultivable land. Maximum number of from beneficiary farmers (48.00 percent) and non-beneficiary farmers (70.00 percent) had medium level

utilization of information sources. Maximum numbers of beneficiary farmers (72.00 percent) had medium level of extension participation. Majority of the respondents from beneficiary group (70.00 percent) and non-beneficiary group (60.00 percent) had medium level of economic motivation. Maximum number of respondents from beneficiary group (70.00 percent) and non-beneficiary group (50.00 percent) were having medium level of risk preferences. Maximum number of respondents from beneficiary group (76.00 percent) and non-beneficiary group (56.00 percent) were having medium level of scientific orientation.

**Knowledge level of respondents****Table 2: Distribution of the respondents according to their level of knowledge of improved cumin production technology**

n-100

Sr. No.	Category	Beneficiary farmers (n=50)		Non-beneficiary farmers (n=50)	
		No.	Percent	No.	Percent
1	Low (Up to 24 score)	07	14.00	18	36.00
2	Medium (25 to 35 score)	33	66.00	31	62.00
3	High (Above 35 score)	20	40.00	02	04.00

It is clear from Table 2 that nearly equal number of the beneficiary farmers (66.00 %) and non-beneficiary farmers (62.00%) had medium level of knowledge about cumin production technology. On the other hand 40.00 per cent beneficiary and 4.00 per cent non-beneficiary farmers had high level of knowledge about cumin production technology.

Remaining 14.00 per cent beneficiary and 36.00 per cent non-beneficiary farmers had low level of knowledge about cumin production technology

**Table 3: Practice-wise knowledge of improved cumin production technology by FLD beneficiary and non-beneficiary farmers**

n=100

Sr. No.	Name of Practice	Mean Score		Standard deviation of Mean	Calculated 'Z' value
		Beneficiary (n=50)	Non-beneficiary (n=50)		
1	Variety	2.60	1.90	0.089	8.868**
2	Seed treatment	3.06	2.32	0.151	3.895**
3	Sowing time	3.71	3.21	0.098	3.866**
4	Fertilizer	5.13	4.96	0.214	4.093**
5	Irrigation	2.87	3.59	0.084	8.623**
6	Weed Control	2.39	2.98	0.152	4.854**
7	Plant protection measures	6.22	4.99	0.204	3.901**
8	Harvesting and storage	2.24	2.26	0.124	0.217 <sup>NS</sup>

\*\* significant at 0.01 level

NS: Not significant

Table 3 reveal that there was significant difference in knowledge level of beneficiary and non-beneficiary farmers regarding the practice viz., variety, seed treatment, sowing time, fertilizer, irrigation, plant protection measures and

weed control and plant protection measures. No significant difference was observed between beneficiary and non-beneficiary farmers in respect of harvesting and storage.

**Associations of personal attributes of respondents with knowledge level of cumin production technology**

**Table 4: Associations of personal attributes of respondents with their level of knowledge of improved cumin production technology** n=100

Sr. No.	Attributes	Correlation Coefficient ('r' value)	
		Beneficiary farmers (n=50)	Non-beneficiary farmers (n=50)
X <sub>1</sub>	Age	-0.2750**	-0.1134 <sup>NS</sup>
X <sub>2</sub>	Education	0.3779**	0.2618*
X <sub>3</sub>	Social Participation	-0.0734 <sup>NS</sup>	-0.1355 <sup>NS</sup>
X <sub>4</sub>	Land holding	0.1726 <sup>NS</sup>	0.0483 <sup>NS</sup>
X <sub>5</sub>	Extension participation	0.3379**	-0.2350 <sup>NS</sup>
X <sub>6</sub>	Economic motivation	0.3999**	0.0999 <sup>NS</sup>
X <sub>7</sub>	Risk preference	0.2687**	0.0775 <sup>NS</sup>
X <sub>8</sub>	Scientific orientation	0.4731**	0.1448 <sup>NS</sup>

\*\* significant at 0.01 level

\* significant at 0.05 level

NS: Not significant

The data presented in Table 4 show that the independent variables viz., education (0.3779), extension participation (0.3379), economic motivation (0.3999), risk preference (0.2687), scientific orientation (0.4731) were positively and significantly associated with knowledge level of improved cumin production technology by the beneficiary farmers at 0.01 level of significance. Age of respondents (-0.2750) was negatively and significantly associated with knowledge level of improved cumin production technology by the beneficiary farmers at 0.01 level of significance. In case of non-beneficiary farmers education (0.2618) was positively and significantly associated with knowledge level of improved cumin production technology. Whereas, the age, social participation, land holding, extension participation, economic motivation, risk preference and scientific orientation were not association with knowledge level of improved cumin production technology.

**CONCLUSION**

It can be concluded that maximum number of beneficiary and non beneficiary farmers were middle aged, had primary level of education, medium source of information, medium extension participation, medium risk preference and

medium scientific orientation. The farmers had overall medium level of knowledge about cumin production technology. There was a significant difference between beneficiary and non beneficiary farmers regarding knowledge of package of practices of improved cumin production technology viz; variety, seed treatment, sowing time, fertilizer, irrigation, weed control and plant protection measures. The 'r' value was positively and significantly associated with knowledge level of improved cumin production technology by the beneficiary and non beneficiary farmers with education. The 'r' values were not associated with knowledge level of improved cumin production technology by the beneficiary farmers with social participation and land holding. There was a significant association between extension participation, economic motivation, risk preference and scientific orientation of beneficiary farmers and knowledge level of improved cumin production technology.

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## CONSTRAINTS FACED BY BIOFERTILIZER USERS

Chaudhary Diptesh<sup>1</sup> and Dr. N.M. Chauhan<sup>2</sup>

1 Postgraduate Student

2 Principal, Polytechnic in Agriculture. NAU, Vyara - 394650

Email : nikulsinh\_m@yahoo.in

### ABSTRACT

*The constant and sustained efforts of the microbiologists and biotechnologists for isolating and standardizing the activities of microorganisms have helped to increase the production of bio fertilizers. The bio fertilizers are carrier based provision containing effective strains of microorganisms like bacteria, algae, fungi alone or in combination with sufficient number which can provide plant nutrients through microbial activity. Bio fertilizers are environment friendly, less costly and non-bulky. With this background, the study entitled "Extent of knowledge and adoption of biofertilizers use by the biofertilizer users of Navsari district" was undertaken with the following objectives: To study the profile of the biofertilizer users, to ascertain the knowledge level of biofertilizer users towards the use of biofertilizers, to study the adoption pattern of bio fertilizers by biofertilizer users, to measure the relationship between profiles with level of Knowledge and adoption towards the use of biofertilizer and to identify the constraints faced and obtain suggestions by the biofertilizer users in adoption of biofertilizers. Results indicated that majority of the farmers was in the middle age group (36-50 years), most of the farmers had education up to high school level, majority of farmers had 2 to 5 acre of land holding, majority of farmers belonged to more than Rs. 1,00,000 annual incomes, majority of farmers had low level of social participation, majority of farmers had medium extension contact, majority of the farmers had low level of scientific orientation, majority of farmers belonged to medium mass media exposure, majority of farmers belonged to medium level of knowledge about use of biofertilizer, majority of farmers belonged to medium level of adoption of biofertilizer. Majority of the respondents expressed that lack of technical skill to use biofertilizers and occupied rank first, Non availability of biofertilizer locally at times when needed ranked second, Inability to understand the details of biofertilizers ranked third, No guidance by agricultural Supervisor and Gramsevak ranked fourth, Non-availability of extension literature on biofertilizer usage ranked fifth, Lack of finance ranked sixth, Lack of knowledge about practices ranked seventh, Improper soil condition ranked eighth and Low shelf life of biofertilizer ranked ninth. Majority of the respondents expressed that bio fertilizer usage can be increased if they are provided free of cost was the major suggestion offered by the farmers to adopt bio -fertilizer technology. The other suggestions were printed literature in simple local language can be distributed by the Dept. of Agriculture and the University or the NGOs like Krishi Vigyan Kendra, awareness campaign on popularization of biofertilizers like krishi mela , availability of bio fertilizers in villages , subsidy for bio fertilizers.*

**Keywords:** constructions, suggestion, biofertilizer users

### INTRODUCTION

In India, Agriculture sector contributes 23 per cent share to the national income but day by day still it is going on decreasing. Even though large hectares of area are under cultivation in this country, the yield per hectare for many crops is lower than expected level. This is because of lack of adoption of new, improved practices, advanced techniques, use of non-productive soils, decreasing soil conditions etc. It is possible to increase yield per unit area by adopting new production technologies viz., use of biofertilizers, vermicompost, organic

farming, bio-control remedies, genetically modified crops etc in golden era of organic farming. In Agricultural production, chemical fertilizers play an important role *visa-vis* they are available in sufficient quantities. However, they are more costly and their excessive use may cause ill effects on soil, causing increased soil acidity/alkalinity and increased soil pollution with decreased soil productivity. Now maximum farmers in the world are aware about the dangerous effects of chemicals on human being. Hence, there is increasing demand for organic foods. Therefore, there is a need of

certain supplements to the chemical fertilizers with organic manures. In this case, bio-fertilizers can play a significant role in improving soil condition and agricultural production. Now a days Biofertilizers are available in ample with all SAUs in Gujarat. Especially ,NAU is producing huge mass of Biofertilizers.

**OBJECTIVES**

- (1) To know the constraints faced by biofertilizer users
- (2) To know the suggestions offered by biofertilizer users for adoption of biofertilizer

**METHODOLOGY**

An ex-post-facto research design was used in the present investigation. The study was conducted during April-June 2016 in Navsari district of Gujarat state. The main focus of the investigation is on extent of knowledge and adoption of biofertilizers use by the biofertilizer users of Navsari district. The District comprises of six Talukas, among which Gandevi, Chikhali and Khergam Talukas were randomly selected for the study. Three talukas were selected for the study and from each taluka two village were selected. In each of the selected villages farmers were selected according to random sampling to form 60 respondents as a sample size for the study. Eight variables were measured, in that size of land holding, annual income and social participation, scientific orientation and mass media exposure is measured by scale developed by eminent scientists. In order to measure knowledge and extent of adoption of biofertilizer use a structured schedule was developed by reviewing related literature and seeking expert’s suggestions. The data were collected by personal interview method. Statistical tools viz. frequency, percentage, ranking and correlation, were used to analyze the data.

**RESULTS AND DISCUSSION**

**Personal profile of the respondents**

Personal profile of the respondents indicated that majority of the farmers were in the middle age group (36-50 years).Most of the farmers had education up to high school level. Majority of farmers had 2 to 5 acre of land holding. Majority of farmers belonged to more than Rs. 1,00,000 annual income. Majority of farmers had low level of social participation. Majority of farmers had medium extension

contact. Majority of the farmers had low level of scientific orientation. Majority of farmers belonged to medium mass media exposure. The same was also reported by Pandya (2010) and Patel *et al* (2014).

**Knowledge level of the respondents**

**Knowledge level of farmers about the use of biofertilizers.**

**Table 1: Distribution of the respondents according to their level of overall knowledge of farmers about biofertilizers** n=60

Sr. No.	Category	Frequency	Percent
1	Low knowledge	06	10.00
2	Medium knowledge	41	68.33
3	High knowledge	13	21.67

Mean =8.20 SD=1.60

From the above table No.1 it is evident that majority of farmers (68.33 per cent) belonged to medium level of knowledge, followed by low (21.67 per cent) and high (10.00 per cent).The above findings are in line with the findings of Mokhale *et al.* (2010) with respect to majority of farmers having medium level of knowledge. Majority of farmers belonged to medium level of knowledge about use of biofertilizer. Reddy et al (2012) also reported the same.

**Adoption level of biofertilizer by the farmers**

**Table 2: Distribution of the respondents according to their level of overall adoption of biofertilizers by farmers** n=60

Sr. No.	Category	Frequency	Percent
1	Low knowledge	15	25.00
2	Medium knowledge	29	48.33
3	High knowledge	16	26.67

Mean =5.05 SD=0.79

From the above table No.2 it is evident that majority of farmers (48.33 per cent) belonged to medium level of adoption, followed by high (26.67 per cent) and low (28.00 per cent).The above findings are in line with the findings of Shashidhara. K. K (2012) with respect to majority of farmers belongs to medium level of adoption. Majority of farmers belonged to medium level of adoption of biofertilizer. Reddy et al (2012) and Mokhale, *et al* (2010) also reported the same.



**Constraints encountered in the adoption of biofertilizer practices by the farmers****Table 3 : Constraints encountered in the adoption of biofertilizer practices by the farmers**

n=60

Sr. No.	Constraints	Frequency	Percent	Rank
1	No guidance by agricultural Supervisor and Gramsevak	39	65.00	IV
2	Inability to understand the details of biofertilizers	41	68.33	III
3	lack of technical skill to use biofertilizers	48	80.00	I
3	Lack of finance	36	60.00	VI
4	Non availability of biofertilizer locally at times when needed	47	78.33	II
5	Lack of knowledge about practices	34	56.67	VII
6	Non-availability of extension literature on biofertilizer usage	38	63.33	V
7	Improper soil condition	30	50.00	VIII
8	Low shelf life of biofertilizer	27	45.00	IX

It is revealed by the respondents in Table-3 that majority of the respondents expressed that lack of technical skill to use biofertilizers (80.00 per cent ) and occupied rank first, Non availability of biofertilizer locally at times when needed (78.33 per cent )ranked second, Inability to understand the details of biofertilizers (68.33 per cent) ranked third, No guidance by agricultural Supervisor and Gramsevak (65.00 per cent) ranked fourth, Non-availability of extension literature on biofertilizer usage (63.33 per cent) ranked fifth, Lack of finance (60.00 per cent) ranked sixth, Lack of

knowledge about practices (56.67 per cent) ranked seventh, Improper soil condition (50.00 per cent) ranked eighth and Low shelf life of biofertilizer (45.00 per cent) ranked ninth. Jangid (2012) and Srinivas and Bhalekar, (2013) and Slathia *et al.* (2013) also reported the same. Low shelf life and non-availability of specific strains of biofertilizer, no guidance by agricultural Supervisor and Gramsevak and inability to understand the details were also expressed as constraints by some farmers.

**Suggestions by the farmers for adoption of bio fertilizer****Table 4 : Suggestions by the farmers for adoption of bio fertilizer**

n=60

Sr. No	Suggestions	Frequency	Percent	Rank
1	Bio fertilizers usage can be increased if they are provided free of cost	49	81.67	I
2	Availability of bio fertilizers in villages	34	56.67	IV
3	Subsidy on bio fertilizers	32	53.33	V
4	Awareness campaign on popularization of biofertilizers like krishi mela	35	58.33	III
5	Printed literature in simple local language can be distributed by the Dept. of Agriculture and the University or the NGOs like Krishi Vigyan Kendra	47	78.33	II

Suggestions offered by the farmers in adoption of bio fertilizer were analyzed and presented in Table-4. Majority of the respondents expressed that bio fertilizer usage can be increased if they are provided free of cost was the major suggestion offered by the farmers to adopt bio fertilizer technology. The other suggestions were printed literature in simple local language can be distributed by the Dept. of Agriculture and the University or the NGOs like

Krishi Vigyan Kendra(78.33 per cent), awareness campaign on popularization of biofertilizers like krishi mela (58.33 per cent), availability of bio fertilizers in villages (56.67per cent), subsidy for bio fertilizers (53.33 per cent). Bodake *et al* (2012) and Damor, (2013) also reported the same. On above findings this can be conclude like training for the farmers on bio fertilizers usage should be give more and also awareness programmes can be conducted.

## CONCLUSION

From the above study it can be concluded that majority of biofertilizer users belong to 36 to 50 years, having education primary to graduate, medium land holding, high annual income, low level of membership, medium extension contact, low scientific orientation, medium mass media exposure. Majority of farmers had medium knowledge level. Majority of farmers had medium adoption level. The variable age is negative but significant relationship with the level of knowledge about the use of biofertilizer, education is positive and highly significant and other variables viz., land holding, annual income, social participation, extension contact, scientific orientation and mass media exposure are positive and significant. The variable age is negative but significant relationship with the level of adoption of biofertilizer, education and extension contact are the positive and highly significant and other variables viz. land holding, annual income, social participation and mass media exposure is positive and significant relationship with the level of overall adoption of the biofertilizer. Scientific orientation is negative and non-significant. Majority of the respondents expressed that lack of technical skill to use biofertilizers and occupied rank first, Non availability of biofertilizer locally at times when needed ranked second, Inability to understand the details of biofertilizers ranked third, No guidance by agricultural Supervisor and Gramsevak ranked fourth, Non-availability of extension literature on biofertilizer usage ranked fifth, Lack of finance ranked sixth, Lack of knowledge about practices ranked seventh, Improper soil condition ranked eighth and Low shelf life of biofertilizer ranked ninth. Majority of the respondents expressed that bio fertilizer usage can be increased if they are provided free of cost was the major suggestion offered by the farmers to adopt bio -fertilizer technology. The other suggestions were printed literature in simple local language can be distributed by the Dept. of Agriculture and the University or the NGOs like Krishi Vigyan Kendra, awareness campaign on popularization of biofertilizers like krishi mela, availability of bio fertilizers in villages, subsidy for bio fertilizers.

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## KNOWLEDGE LEVEL OF RECOMMENDED GREEN GRAM CULTIVATION TECHNOLOGY OF TRIBAL FLD FARMERS

**J. J. Mistry<sup>1</sup>, D. B. Patel<sup>2</sup> and V. M. Patel<sup>3</sup>**

1 Associate Professor (Ext. Edu.), DEE, SDAU, Sardarkrushinagar - 385505

2 Assistant Professor (Ext. Edu.), DEE, SDAU, Sardarkrushinagar - 385505

3 Assistant Professor, Polytechnic in Agriculture, SDAU, Khedbrahma - 383255

E-mail : mistryjanak99@gmail.com

### ABSTRACT

*The study was conducted in Sabarkantha district. Total 100 tribal FLD green gram farmers were selected by proportionate random sampling method. The majority of the respondents were illiterate, had big family, possessed membership in one organization, medium extension participation, medium annual income, doing farming as well as animal husbandry, medium herd size and had 10 to 20 years of farming experience. The respondents were having over all medium level of knowledge regarding green gram cultivation technology. The positive and significant relationship was exhibited by education, social participation, extension participation, annual income, occupation and herd size with knowledge level of respondents regarding green gram cultivation technology.*

**Keywords:** information, communication, technology, services.

### INTRODUCTION

Krishi Vigyan Kendra has been functioning in the Sabarkantha district since February 2005. The main aim of Krishi Vigyan Kendra is transfer of technology through on and off campus training programmes for farmers and extension functionaries, front line demonstrations, on farm trials and other extension activities. Front line demonstration on different crops grown in the district is the mandatory activity of Krishi Vigyan Kendra. Tribal farmers are growing pulse crops since couple of decades. Green gram is important pulse crop grown by tribal farmers. Thus, Krishi Vigyan Kendra had given front line demonstrations on green gram crop to tribal farmers. Thus, study on knowledge and adoption of recommended green gram cultivation technology by tribal FLD beneficiary farmers of Sabarkantha district was felt necessary. The study was conducted with following objectives.

### OBJECTIVES

- (1) To study selected personal and socio-economic attributes of respondents
- (2) To study knowledge level of respondents regarding recommended green gram cultivation technology
- (3) To determine the association between selected personal and socio-economic attributes of respondents with

their level of knowledge

### METHODOLOGY

The present study was conducted in Sabarkantha district. The all the tribal villages in which green gram FLDs had been given by KVK, Khedbrahma were selected purposively from Khedbrahma, Bhiloda and Vijaynagar talukas. Total 200 FLDs on green gram were given by KVK, Khedbrahma. The sample was selected by proportionate random sampling method. The detail is as under.

Name of Takuka	No. of green gram FLD beneficiaries	No. of selected farmers
Khedbrahma	130	65
Vijaynagar	30	15
Bhiloda	40	20

Thus, total 100 tribal farmers were selected for present study. The data were collected by personal interview. The interview schedule was developed through discussion with experts, scientist and extension officers working in the district. The percentage, arithmetic mean and standard deviation were used for classification of respondents into different categories. The coefficient of correlation test was used to find out association between dependent and independent variables.

**RESULTS AND DISCUSSION**

**Personal and socio-economic attributes of respondents**

**Table 1: Distribution of the respondents according to their profile**

n=100

Sr. No.	Attributes	Classification	Frequency	Percent
1	Age	Young (Up to 35 years )	30	30.00
		Middle (35 to 50 years)	34	34.00
		Old (above 50 years)	36	36.00
2	Education	Illiterate	38	38.00
		Primary education (1-7 <sup>Std.</sup> )	30	30.00
		Secondary education (8-10 <sup>Std.</sup> )	18	18.00
		Higher secondary education (11-12 <sup>Std.</sup> )	14	14.00
3	Family size	Small family (Up to 5 members )	24	24.00
		Big family (Above 5 members )	76	76.00
4	Land holding	Marginal (Up to 1.00 ha)	46	46.00
		Small (1.10 to 2.00 ha)	50	50.00
		Medium (2.10 to 4.00 ha)	04	04.00
5	Membership in organization	No membership	22	22.00
		Membership in one organization	46	46.00
		Membership in more than one organization	28	28.00
		Membership with holding position	04	04.00
6	Extension participation Mean=4.76 S. D.=2.40	Low (below 2.36)	15	15.00
		Medium (2.36 to 7.16)	69	69.00
		High (above 7.16)	16	16.00
7	Annual Income Mean=0.60 S. D.=0.42	Low (below ₹ 0.18 lacs)	10	10.00
		Medium (₹ 0.18 – 1.02 lacs)	69	69.00
		High (above ₹ 1.02 lacs)	21	21.00
8	Occupation	Farming only	04	04.00
		Farming + labour	06	06.00
		Farming + Animal husbandry	86	86.00
		Farming + Service	04	04.00
9	Herd size Mean=5.65 S. D.=2.29	Low (Up to 3)	18	18.00
		Medium (4 to 7)	66	66.00
		High (Above 7)	16	16.00
10	Farming experience	Below 10 years	04	04.00
		10 – 20 years	42	42.00
		21 – 30 years	23	23.00
		More than 30 years	31	31.00

The data presented in Table 1 show that 36.00 per cent of respondents belonged to old age group and 34.00 per cent belonged to middle age group followed by young age group (30.00 percent). It is revealed that 38.00 per cent of respondents were illiterate, followed by primary education (30.00 percent), secondary education (18.00 percent) and higher secondary education (14.00 percent). The majority of respondents had big family (76.00 percent) while 24.00 per cent respondents had small family. The data shows that majority of respondents were small farmers (50.00 percent), followed by marginal farmers (46.00 percent) and

medium farmers (4.00 percent). The 46.00 per cent of the respondents had membership in one organization followed by membership in more than one organization (28.00 percent) and no membership (22.00 percent). Only 4.00 per cent respondents were holding position in social organization. The data indicated that majority of the respondents fall under medium level of extension participation category (69.00 percent) where as 16.00 per cent and 15.00 per cent of them possessed high and low level of extension participation categories, respectively. The majority (69.00 percent) of the respondents fall under medium group of annual income

followed by 21.00 percent in high income group and 10.00 per cent in low income group. The data in Table indicated that majority (86.00%) of the respondents had occupation of farming + animal husbandry where as 6.00 percent of respondents had occupation of Farming + labour. An equal number of respondents (4.00%) had occupation of farming and Farming + Service. The majority (66.00%) of the respondents possessed medium herd size followed by small herd size (18.00%) and big herd size (16.00%). The 42.00 per cent of the respondents possessed 10 to 20 years of experience in farming followed by 31.00 percent and 23.00 per cent of them had more than 30 years and 21 to 30 years experience in farming, respectively. Only 4.00 per cent respondents had below 10 years farming experience.

**Knowledge level of respondents regarding green gram cultivation technology**

**Table 2 : Distribution of the respondents according to their level of knowledge regarding green gram cultivation technology**

n=100

Sr. No.	Knowledge	Frequency	Percent
1	Low (Up to 8 score )	07	07.00
2	Medium (9 – 11 score)	70	70.00
3	High (above 11 score)	23	23.00

Mean=10.31

S. D.=1.47

The data in Table 2 revealed that majority (70.00 percent) of the respondents possessed medium level of knowledge. Whereas 23.00 per cent and 7.00 per cent of them possessed high and low level of knowledge regarding green gram cultivation technology, respectively.

**Association of selected attributes with knowledge level of respondents regarding green gram cultivation technology**

The data in Table 3 showed that the correlation coefficient of the knowledge with the different attributes of respondents. It clearly indicate that the variables viz; education, social participation, annual income, occupation and heard size had shown positive and significant association with knowledge of respondents regarding green gram cultivation technology. Family size of the respondents had shown negative and non significant association with knowledge. Land holding of the respondents had no

association with level of knowledge. Extension participation of the respondents had positive and significant association with level of knowledge. Age and farming experience had established negative and significant association with level of knowledge of respondents regarding green gram cultivation technology.

**Table 3 : Association of selected attributes of respondents with their level of knowledge regarding green gram cultivation technology**

n=100

Sr. No.	Attributes	Knowledge
1	Age	-0.307**
2	Education	0.411**
3	Family size	-0.025 <sup>NS</sup>
4	Land holding	0.175 <sup>NS</sup>
5	Social participation	0.304**
6	Extension participation	0.253*
7	Annual income	0.277**
8	Occupation	0.268**
9	Heard size	0.368**
10	Farming experience	-0.213*

**CONCLUSION**

From the present study it can be concluded that majority of the respondents had big family, possessed membership in one organization, medium extension participation, medium annual income, doing farming as well as animal husbandry, medium herd size and had 10 to 20 years of farming experience. Nearly equal numbers of respondents were observed in young, middle and old aged group. Majority of the respondents were illiterate. The respondents were having over all medium level of knowledge regarding green gram cultivation technology. Education, social participation, extension participation, annual income, occupation and heard size exhibited positive and significant relationship with knowledge level of respondents regarding green gram cultivation technology.

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## RISK PREFERENCE OF TRIBAL FARM WOMEN AND ITS RELATIONSHIP WITH THEIR CONTRIBUTION IN AGRICULTURE AND ANIMAL HUSBANDRY

**Mahesh R. Patel<sup>1</sup>, Arun Patel<sup>2</sup> and Pravin Chaudhary**

1 Associate Extension Educationist, EEI, AAU, Anand - 388110

2 Director of Extension Education AAU, Anand - 388110

3 PG Student, BACA, AAU, Anand - 388110

Email : newsmrp@gmail.com

### ABSTRACT

*Agricultural production plays a significant role in the Indian economy. In India, women and agriculture seem synonymous terms. One can not think of agriculture without women. There is hardly any activity in agriculture except ploughing, where women are not involved. The tribal farmwoman shares with her husband the arduous burden of farm work in addition to her major responsibility as home maker, by helping in all other agricultural and animal husbandry activities. Keeping this fact in mind, the present study was carried out to find out Risk Preference of tribal farm women and its relationship with their contribution in agriculture and animal husbandry. The result of the study revealed that slightly more than three fourth (77.00 per cent) respondents had medium level of risk preference. Whereas 12.00 per cent had high and 10.50 per cent of them had low level of risk preference. It is also observed that there is a positive and highly significant relationship between the risk preference and overall extent of contribution of tribal farmwomen in agricultural operations whereas there is non-significant relationship between the risk preference and overall extent of contribution of tribal farmwomen in animal husbandry activities.*

**Keywords:** risk preference, tribal farmwomen

### INTRODUCTION

Agriculture is the largest industry in India contributing to the source of livelihood for over 70 per cent of population. Agricultural production plays a significant role in the Indian economy. In India, women and agriculture seem synonymous terms. One can not think of agriculture without women. There is hardly any activity in agriculture except ploughing, where women are not involved. In some of the activities, she is relatively more efficient than man. Dahod is one of the Integrated Tribal Development Project (ITDP) areas of Gujarat State, where various administrative measures have been adopted through large number of tribal development and welfare programmes under Tribal Area Sub Plan (TASP). Since, independence huge fund have been diverted by the Central and State Government through different agencies with a view to uplift their living standard and bringing them into the main stream of nation. Even after lapses of more than 50 years of independence the progress of tribal farmwoman is not yet up to the level of expectation in the field of agriculture and animal husbandry as she is continued to be in a state of neglect. A victim of man made system, she is hardly considered equal to man in wage and

social status. Keeping in view the above said facts and information about the tribal farmwoman's situation and her multiple roles in agriculture and animal husbandry a study on "Risk Preference of tribal farm women and its relationship with their contribution in agriculture and animal husbandry" was undertaken.

### OBJECTIVE

To know the risk preference of tribal farm women and its relationship with their contribution in agriculture and animal husbandry

### METHODOLOGY

The present study was undertaken in Integrated Tribal Development Project areas of Dahod district of Gujarat. Out of seven talukas of the district, five talukas namely (1) Dahod (2) Zalod (3) Limkheda (4) Garbada and (5) Dhanpur were selected purposively for this study. Out of total villages of each selected taluka, two villages were randomly selected comprising total ten villages from five selected talukas of ITDP Dahod. From each village, 20 respondents were selected randomly, thus, total sample of 200 respondents were

selected for the present study. The interview schedule was prepared keeping in view the objectives of the study. Risk preference was measured with the help of risk preference scale developed by Supe (1969). The data was analysed with percentage and coefficient of correlation.

**RESULTS AND DISCUSSION**

Farming in general is characterised by many uncontrollable variables such as rainfall, pest and diseases and price fluctuations, etc. Thus, there is a risk in farming. Therefore, it was felt appropriate to study the risk taking ability of the tribal farmwomen. Data in this regards are presented in Table 1.

**Table 1 : Distribution of respondents according to their level of risk preference**

n = 200

Sr. No.	Risk preference	Number	Per cent
1	Low (< 15.49 score)	22	11.00
2	Medium (15.49 to 22.17 score)	154	77.00
3	High (above > 22.17 score)	24	12.00

Mean = 18.83

S.D. = 3.34

It is evident from the data reported in Table 1 that slightly more than three fourth (77.00 per cent) of the respondents had medium level of risk preference. Whereas 12.00 per cent had high and 11.00 per cent of them had low level of risk preference, respectively. Thus, it appears that majority of the tribal farmwomen had medium to high risk preference ability.

In general, it is observed that agriculture in tribal area is characterised by many uncontrollable variables, for example, uneven rain fall, disease, risk of wild animal and forest conflagration or wild fire, this can be oriented them to adopt any risky ideas for their survival. This might be the probable reason for observing medium to high level of risk preference in majority of the tribal farmwomen. Similar findings have been reported by Gamit (1993), Sarkar and Bandyopadhyay (1996), Patel (1998) and Diwan (2000).

**Relationship between risk preference and overall extent of contribution of tribal farmwomen in agricultural operations**

The calculated correlation co-efficient value of  $r = 0.52799$  was significant at 0.01 level. It can be concluded that, there is a positive and highly significant relationship between the risk preference and overall extent of contribution of tribal

farmwomen in agricultural operations. It indicates that extent of contribution increases significantly with increase in risk preference of tribal farmwomen. It was obvious that highly risk preferred tribal farmwomen were oriented towards maximization of profits from agriculture. Therefore, they have favourable perception towards progressive change and this might have led them towards more contribution in agricultural operations. This finding is in concurrence with findings reported by Jullana et al. (1991), Padhi (1993), Patel (1998) and Diwan (2000).

**Relationship between risk preference and overall extent of contribution of tribal farmwomen in animal husbandry activities**

The calculated correlation co-efficient value ( $r = -0.05005$ ) was non-significant at 0.05 level. It can be concluded that, there is non-significant relationship between the risk preference and overall extent of contribution of tribal farmwomen in animal husbandry activities. This might be due to the fact that there is not much risk in adopting animal husbandry practices. This finding is in concurrence with findings reported by Patel (1983).

**CONCLUSION**

It is concluded from the study that slightly more than three fourth (77.00 per cent) respondents had medium level of risk preference. Whereas 12.00 per cent had high and 10.50 per cent of them had low level of risk preference. It is also observed that there is a positive and highly significant relationship between the risk preference and overall extent of contribution of tribal farmwomen in agricultural operations whereas there is non-significant relationship between the risk preference and overall extent of contribution of tribal farmwomen in animal husbandry activities.

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## COMMUNICATION BEHAVIOR OF TRIBAL DAIRY WOMEN IN ANIMAL HUSBANDRY

G. N. Thorat<sup>1</sup>, S. G. Vahora<sup>2</sup> and D. B. Ramjiyani<sup>3</sup>

1 Assistant Professor, Pashu Vigyan Kendra, AAU, Devgadha Baria - 389 380

2 Associate Professor, Pashu Vigyan Kendra, AAU, Devgadha Baria - 389 380

3 Research Associate, Devgadha Baria -389 380

Email:gunvantthorat@rediffmail.com

### ABSTRACT

*Dahod has a large tribal population having agriculture and animal husbandry as major source of livelihood. The cows and buffaloes are major milk producing animals in the district. Many research studies have indicated that responsibilities of animal husbandry are almost completely shouldered by women. The present study was conducted on communication behavior of tribal dairy women in animal husbandry in Dahod district of Gujarat state. Study revealed that less than three-fifth (57.00 per cent) of the tribal dairy women made their contact with relatives and 45.00 per cent of them made contact with progressive farmers., Majority of the TDW had medium level of extension contact and extension participation. 37.00 per cent of the tribal dairy women participated in Krushimela while 24.00 per cent of respondents had participated in training programme related the animal husbandry.*

**Keywords:** communication behavior, animal husbandry, tribal dairy women

### INTRODUCTION

Livestock sector is a prominent sector among agriculture and allied activities in India. It provides livelihood support to millions of small, marginal farmers and land less labors. Even after several years of planning, the picture in the area of quality of milk as well as productivity is not very encouraging. The animal owners are not aware about the importance of scientific animal husbandry practices and hence milk productivity is very low. In one hand, there are number of factors affecting the productivity as well as dairy development and another hand, the action of individual farmer is governed by social and economical as well as communicational i.e. extension factor.

Communication plays key role in development process. According Berlo (1960), the sole purpose of communication is to influence. People communicate to influence to effect with intent. He says that all communication behavior has its purpose, its goal, as production of response. Lass well (1948) described communication sequence as who says; what, to whom, when, in what manner, under what circumstances and with what effect. The dissemination of any improved technology depends on how best the information

regarding the particular technology is communicated. Today is the era of information explosion. Innumerable information is generated, synthesized and disseminated in each and every moment. Information technology has revolutionized the transfer of information through new ways, i.e., internet, e-mail etc. Information from any part of the world could be easily made available through information technology there by changing the world into global village. Therefore, farmers should be also equally privileged to get informed of farm related information without delay.

### OBJECTIVE

To know the communication behavior of tribal dairy women in animal husbandry

### METHODOLOGY

The present study was purposively conducted in Dahod district, which is operational area of Pashu Vigyan Kendra- Limkheda under the jurisdiction of Anand Agricultural University with ex-post facto research design. Five talukas viz. Devgadha Baria, Dahod, Limkheda, Garbada and Zalod were selected, from selected talukas two villages and from each village 10 tribal dairy women were selected

making the total sample of 100 respondents for the study. By personal interview method from all the 100 respondents, responses were recorded in the schedule. All the required statistical measures were used.

**RESULTS AND DISCUSSION**

Communication sources are conceptualized as the sources through which tribal dairy women (TDW) get information about improved method of animal husbandry. The study was focused mainly on two variables namely extension contact and participation in extension activities of communication behavior of tribal dairy women regarding the animal husbandry and dairy enterprise.

**Contact with Extension Agency**

Extension contact refers to the contact made by the respondents with extension agency or extension worker locally or outside the village.

**(a) Name of extension contact agency**

The study revealed that slightly less than three-fifth (57.00 per cent) of the tribal dairy women made their contact with relatives followed by progressive farmers (45.00 per cent), veterinary doctor (35.00 per cent) which was also reported by Patel et al. (2015). The probable reason might be that these sources are accessible easily by majority of the TDW also due to their poor economic condition and high illiteracy do not permit them to utilize other sources of information. The study also reported that 29.00 per cent of respondents used village level extension worker for gained information regarding the animal husbandry and dairy enterprise.

**(b) Frequency of contact with extension agency**

The data regards frequency of contact with extension agency, the study reported that 33.00 per cent of tribal dairy women had made contact two extension agency followed by three extension agency contacts (21.00 per cent) and one extension agency contact (20.00 per cent). 19.00 per cent of the respondents had no contact with extension agency while only 7.00 per cent of them had contact with more than three contact of extension agency.

**(c) Level of extension contact**

The result of the study reported in Table-1, revealed that slightly less than three-fourth (74.00 per cent) of the

tribal dairy women had medium extension contact, whereas 19.00 per cent and 7.00 per cent of the respondents had low and high extension contact, respectively. These findings are in line with the findings of Patel et al. (2015) and Vahora et al. (2015).

**Table 1: Distribution of the Respondents according to their extension contact**

n=100

Sr. No.	Particular	No.	Per cent
(a)	<b>Name of extension contact agency</b>		
1	Village Level Worker	29	29.00
2	Milk Co-op. Society	01	01.00
3	Progressive Farmers	45	45.00
4	Relatives	57	57.00
5	Krishi Vigyan Kendra	7	07.00
6	Veterinary Doctor	35	35.00
(b)	<b>Frequency of contact with Extension agency</b>		
1	No Contact	19	19.00
2	One Contact	21	21.00
3	Two Contact	33	33.00
4	Three Contact	20	20.00
5	above three Contact	07	7.00
(c)	<b>Level of Extension contact</b>		
1	Low level	19	19.00
2	Middle level	74	74.00
3	High level	07	07.00
	Total	100	100.00

Mean = 1.77

SD=1.23

**Extension Participation**

It refers to extent of participation made by the dairy farmers in extension activities like training programme, field days, field visit, demonstrations, cattle exhibition and krishimela locally and outside the village.

From the data regarding the participation in extension activities was found that 37.00 per cent of the tribal dairy women participated in Krushimela during the last two years, while 24.00 per cent of respondents had participated in training programme related the animal husbandry. The probable reason for these type of results was that the Government of Gujarat celebrates the 'Krishi Mahotsav programme with main aim to boost up the Agriculture, Horticulture, Animal husbandry and allied production Since 2002, the state has embarked upon an intensive, integrated animal Health care drive, to bring about massive economic resurgence in its rural economy. In the same regards a collective animal healthcare camp known as 'Pashu Arogya

Mela' is conducted every year post monsoon. At this camp, specialized animal health care services, breeding facilities and extension activities are offered to rural livestock owners at their doorstep. Soni et al. (2014) reported in his study that the detail information regarding Animal Husbandry practices should be given to farmers during *Krishi Mahotsav* programme same was reported by Patel and Patel (2014).

**Table 2: Distribution of the respondents according to their Participation in Extension activities**

n=100

Sr. No.	Name of the Extension Activity	No.	Per cent
1	Participated in any Animal Husbandry training	24	24.00
2	Demonstration was organized at farmers' field by any extension agency during last two years	01	1.00
3	Tribal Dairy women was visited any exhibitions during last two years.	15	15.00
4	Participated in Krushimela during last two years	37	37.00
5	Read farm information published in local news papers	02	02.00
6	Read any farm magazine	00	00.00
7	View any A.H. programme on Tele Vision	04	4.00
8	Listening A.H. Programme broadcasting on radio	01	1.00

It was also observed that 15.00 per cent tribal dairy women were was visited exhibitions during last two years followed by View any A.H. programme on Tele Vision (04.00 per cent ) and read farm information published in local news papers (0.2.00 per cent). Negligible percentage of Tribal dairy women participated in organizing the demonstration at their field as well as they were not read any farm magazine and not listened A.H. Programme broadcasting on radio. The finding is in conformity with those of Thakor and Waghmare (1992) and Patel (1995).

**Level of Extension Participation**

The data presented in Table 3, disclosed that more than fifty per cent (54.00 per cent) of the respondents had low level of extension participation while equal percentage (22. 00 per cent) of them had no participation and medium level of extension participation in extension activities. Only 2.00 per cent of the respondents had high level of extension participation. Same results was reported by Kavadi et al.

(2015).

**Table 3: Distribution of the Respondents according to their level of Extension Participation in**

n=100

Sr. No.	Category of Extension participation	No.	Per cent
1	No participation (0 score)	22	22.00
2	Low participation (up to 2 score)	54	54.00
3	Medium participation (3 to 4 score)	22	22.00
4	High participation (above 4 score)	02	02.00

**CONCLUSION**

It can be concluded from the study that majority of the respondents' contacted relatives and progressive farmers as well as two extension agency for gained information on animal husbandry. Further a study concluded that majority of the respondents had medium to low level of extension participation and extension contact. 37.00 per cent of the tribal dairy women participated in Krushimela, while 24.00 per cent of respondents had participated in training programme. Extension workers should concentrate to increase the level of knowledge, education and annual income for promotion of dairy technology. Subject matter specialists, veterinary doctors, extension officers should visit the village and guide them to solve the problem of the dairy farm women in accordance with resources availed with dairy.

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## CONSTRAINTS FACED BY FARMERS IN PURCHASE OF AGROCHEMICALS IN VEGETABLE CROPS

V.V.Prajapati<sup>1</sup>, C.A.Gohil<sup>2</sup> and M.A.Tunvar<sup>3</sup>

1 Principal, Polytechnic in Agriculture, SDAU, Deesa - 385535  
2&3 Assitant Professor, Polytechnic in Agriculture, SDAU, Deesa - 385535  
E-mail : vvprajapati1963@gmail.com

### ABSTRACT

*The Indian agrochemicals market is highly fragmented in nature with over 800 formulators. The competition is fierce with large number of organized sector players and significant share of spurious pesticides. The market has been witnessing mergers and acquisitions with large players buying out small manufacturers. The use of agrochemicals in vegetable crops are very essential part of cultivation of crops. The present study was conducted in Deesa and Dantiwada talukas of Banaskantha district of Gujarat. Total ten villages were selected based on consumption of agrochemicals. Further, 15 farmers from each village were selected on random basis. Thus, total 150 farmers were surveyed in present study. Majority of the farmers awareness about insecticides were medium to high but less awareness about other chemicals. Majority of the farmers spray insecticides at the time of pest attack. Most of the farmers preferred retailer shop to purchase agrochemicals. Knowledge of farmers towards agrochemicals was low to medium. The reasons behind selection of a particular brand by farmers due to its high effectiveness, easily availability in market and price. The main important constraints perceived by the vegetable growers in purchasing of agrochemicals where high price of agrochemicals, lack of technical knowledge ,poor quality of agrochemicals, lack of training and lack of finance.*

**Keywords:** constraints, knowledge, agro chemicals

### INTRODUCTION

The Indian agrochemicals market is highly fragmented in nature with over 800 formulators. The competition is fierce with large number of organized sector players and significant share of spurious pesticides. The market has been witnessing mergers and acquisitions with large players buying out small manufacturers. Exports currently constitute almost 50.00 per cent of Indian crop protection industry and are expected to grow at a CAGR of 16.00 per cent to reach USD 4.2 billion by FY 2019, resulting in 60.00 per cent share in Indian crop protection industry. Domestic market on the other hand would grow at 8.00 per cent CAGR, as it is predominantly monsoon dependent, to reach USD 3.3 billion by FY 2019. Globally, India is fourth largest producer of crop protection chemicals, after United States, Japan and China. The crop protection companies in India can be categorized into three types –Multi-National, Indian including public sector companies and small sector units. According to the Pesticide Monitoring Unit, there are about 125 technical grade manufacturers, including about 10 multinationals, more than 800 formulators and over 145,000 distributors in India. More than 60 technical grade

pesticides are being manufactured indigenously. The market share of large players depends primarily on product portfolio and introduction of new molecules. Strategic alliances with competitors are common to reduce risks and serve a wider customer base. There are numerous companies which are engaged in production and marketing of agrochemicals in India which include multinational, national and some local companies. All are in effort to increase their market share in India. These companies produce various types of agrochemicals including pesticides such as insecticide, herbicide, rodenticides, fungicides *etc.* There are many constraints faced by farmers in purchase of agrochemicals. Hence, the present study entitled; “constraints faced by farmers in purchase of agrochemicals in vegetable crops “was planned.

### OBJECTIVES

- (1) To know the farmers awareness regarding agrochemicals in vegetable crops by farmers
- (2) To know the constraints faced by farmers in purchase of agrochemicals

**METHODOLOGY**

Deesa and Dantiwada talukas of Banaskantha district were purposively selected, because this talukas of have higher area under vegetable cultivation as compared to other talukas of district. Ten vegetables growing villages were randomly selected from those two talukas. For this study 150 vegetable growers were selected by proportionate random sampling technique and all 150 vegetable growers considered as a sample and as farmers. The data were collected with the help of well structured, pre-tested scheduled through personal contact and data were compiled, tabulated and analyzed to draw valid conclusions. A simple ranking technique was applied to measure the problems faced by vegetable growers. The statistical tools used were percentage, mean score, rank and standard deviation.

**RESULTS AND DISCUSSION**

**Farmers' awareness regarding agrochemicals in vegetable crops by farmers**

**Table 1: Distribution of the respondents according to farmers' knowledge about different categories of agrochemicals used in agriculture**

n=150

Sr. No.	Name of agro-chemical	Frequency		Total	Percent	
		Yes	No		Yes	No
1	Insecticide	147	03	150	98.00	02.00
2	Fungicide	66	84	150	44.00	56.00
3	Herbicide	139	11	150	92.67	07.33
4	Other	02	148	150	1.33	98.67

The data presented in Table 1 shows details of the awareness of farmers about different categories of agrochemicals. It was observed that more than ninety per cent farmers were aware about insecticide (98.00%) and herbicide (92.67%) and 44.00 per cent farmers were aware about fungicide. The awareness of other agrochemical was found very low among farmers.

**Time of spray of agrochemicals in vegetable crops by the farmers**

The data collected from the vegetable grower about time of purchase agrochemical were classified according to their time of purchase which are presented in Table 2.

**Table 2: Distribution of the respondents according to time of spray of agrochemicals in vegetable crops by the farmers**

n=150

Sr. No.	Time of purchase	Frequency	Per cent
1	Before pest attack	08	05.33
2	Time of pest attack	101	67.33
3	After certain loss	41	27.34

Table 2 represented the time of purchase of agrochemicals 67.33 per cent of farmers purchased agrochemical at the time of pest attack on vegetable crop followed by 27.33 per cent of farmers purchased agrochemicals after certain loss on vegetable crop. It was shows that, majority of farmers purchased agrochemicals at the time of pest attack.

**Purchase sources of agrochemical by the farmers**

Farmers purchases of agrochemicals were categorized in four categories first are dealer shop, second are retailer shop, third are co-operative society and fourth are other.

**Table 3: Distribution of the respondents according to purchase sources agrochemicals by farmers**

n=150

Sr. No	Where purchase	Frequency	Per cent
1	Dealer shop	08	5.33
2	Retailers shop	134	89.33
3	Co-operative society	08	5.34
4	Other	00	0.00

Table 3 revealed that majority farmers (89.33%) preferred to purchase agrochemicals from retailer shop and retailer was choice for product of various companies. Farmer's selection of chemical product can be made as per previous experience and result. Retailer also consults about crop protection. So that majority of farmers 89.33 per cent preferred retailer to purchase agrochemicals. The farmer bought agrochemicals from dealer found only 5.33 per cent.

**Farmers' knowledge about vegetable crops**

An attempt has been made to assess the knowledge level of the farmers regarding purchasing behaviour of agrochemicals of vegetable crops. The teacher made test of 15 items was prepared to assess the knowledge level of the

farmers. The score of ‘one’ was assigned to correct answer and ‘zero’ to incorrect answer. Based on knowledge score attained, the index for each farmers was calculated. The farmers on the basis of knowledge index were classified in to three categories. The data in this regard presented in Table:

**Table 4: Distribution of the farmers’ according to their knowledge about vegetable crops**

n=150

Sr. No	Categories	Frequency	Percent
1	Low (up to 61.00 score)	43	28.67
2	Medium (between 62.00 to 75.00 score)	97	64.67
3	High (above 75.00 score)	10	6.66

Mean X=68.18

S.D.=7.42

It could be seen from the Table 4 that 64.67 per cent of the farmers had medium knowledge of purchasing behaviour of agrochemicals in vegetable crops. Whereas 28.67 per cent farmers had low level of knowledge. Only 6.66 per cent of the farmers were found having high level of knowledge about purchasing agrochemicals of vegetable crops.

**Reasons behind selection of a particular brand by the farmers**

**Table 5: Distribution of the respondents according to reasons behind selection of a particular brand by the farmers**

n=150

Sr No	Particular	Frequency		Per cent	
		Yes	No	Yes	No
1	High effectiveness	142	08	94.67	05.33
2	Easily availability in market	144	06	96.00	04.00
3	Price	139	11	92.67	07.33
4	Promotion activity	19	131	12.67	87.33
5	Other	06	144	04.00	96.00

It is found in Table 5 there majority of farmers (96.00%) select brand because easily availability in market followed by 94.67 per cent farmers select brand due to high effectiveness of crops and 92.67 per cent farmers select brand because price factor. Only 12.67 per cent select brand for promotion activity.

**Constraints faced by farmers in purchase of agrochemicals**

Farmers always faced problems about

agrochemicals, from the study following Constraints were identified.

**Table 6: Distribution of the respondents according to constraints faced by farmers**

n=150

Sr. No	Factor	Frequency	Per cent	Rank
1	Lack of technical knowledge	126	84.00	II
2	High price of agrochemicals	128	85.33	I
3	Lack of timely available	08	05.33	VII
4	Residual effect on the crop/next crop	10	6.67	VI
5	Poor quality of agrochemicals	109	73.67	III
6	Lack of finance	65	43.33	V
7	Lack of Training	107	71.33	IV
8	Others	05	03.33	VIII

Data revealed in Table 6 that the main important constraints perceived by the vegetable growers in purchasing of agrochemicals where high price of agrochemicals (85.33%), lack of technical knowledge (84.00%), poor quality of agrochemicals(73.67%), lack of training(71.33%) and lack of finance(43.33%)The least important constraints faced by farmers were residual effect on (6.67%) and lack of timely available (5.33%).It can be concluded that high price of agrochemicals and lack technical knowledge were major important constraints faced by farmers.

**CONCLUSION**

Farmers were very conscious about purchasing agrochemicals for vegetables crops in Deesa and Dantiwada talukas. They preferred appropriate agrochemicals for particular crop. Farmers mostly demanded for the agrochemical which gives better results without spoiling the crops soil health as well as environment. Majority of the farmers awareness about insecticides were medium to high but less awareness about other chemicals. Majority of the farmers spray insecticides at the time of pest attack. Most of the farmers preferred retailer shop to purchase agrochemicals. Knowledge of farmers towards agrochemicals was low to medium. The reasons behind selection of a particular brand by farmers due to its high effectiveness, easily availability in market and price. The main important constraints perceived by the vegetable growers in purchasing of agrochemicals where high price of agrochemicals, lack of technical

knowledge ,poor quality of agrochemicals, lack of training and lack of finance.

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## ASSOCIATION BETWEEN THE ADOPTION OF CRISIS MANAGEMENT PRACTICES AND SELECTED PROFILE CHARACTERISTICS OF COTTON GROWERS

G.R.Gohil<sup>1</sup>and P.B.Raviya<sup>2</sup>,V.G.Barad<sup>3</sup>

1 Assistant Extension Educationist, DEE, JAU, Junagadh - 362001

2 P.G. Student, Department of Extension Education, J.A.U. Junagadh -362001

3 Assistant Extension Educationist, Sardar Smruti Kendra, JAU, Junagadh -362001

Email : grgohil100@gmail.com

### ABSTRACT

*Cotton is widely grown in all the districts particularly in South Saurashtra Agro-Climatic Zone of Gujarat State. The study was carried out in Amreli and Bhavnagar District of South Saurashtra Agro-Climatic Zone. A random sample of 200 cotton growers was selected from Amreli and Bhavnagar District and the constraints faced by cotton growers in cotton cultivation were studied. Age and index of farm experience were negatively and significantly associated with the level of adoption of crisis management practices. The characteristics like education, social participation, irrigation index, yield level, management orientation, innovativeness, risk orientation and extension participation had positive and highly significant relationship with adoption level of respondents with respect to crisis management practices. There was a non-significant association of the adoption level of respondents with respect to crisis management practices with their size of land holding, irrigation index and cropping intensity.*

**Keywords:** crisis management, adoption, saurashtra agro-climatic zone

### INTRODUCTION

Cotton is one of the most important commercial fiber crops of India. The seed of cotton is a potential source of edible oil, cake and hull meal. It is also known as “King of Apparel Fiber” and “white gold”. Besides food and housing, clothing is one of the primary needs of human being Cotton is cultivated in about 60 countries of the world. India is having the largest area under cotton; its average productivity is only 520 kg per hectare as against the world average productivity of 650 kg per hectare. In India, cotton contributes about 85.00 per cent of the total fiber consumed in the textile industries. Gujarat is one of the major cotton producing states in the country. Gujarat state has second largest area under cotton after Maharashtra in India. Cotton is widely grown, particularly in all districts of Gujarat state. Gujarat has been the key contributor in cotton research in the country.

Bhavnagar and Amreli are the predominant cotton growing districts of South Saurashtra Agro-Climatic Zone of Gujarat State with 3044 ha. And 2356 ha with the average yield of 821 kg/ha. And 643 Kg/ha, during 2007-

08, respectively. The two districts are more concentrated with respect to area, production and average yield in South Saurashtra Agro-climatic Zone of Gujarat state.

On one hand, cotton crop gives high economic return to the farmers, while on the other hand, there are many risks involved in it. The cultivation of cotton also needs costly inputs in terms of seeds, fertilizers and pesticides if proper care is not taken, it proves as monetary uncertain business. It is also sensitive crop to many disease and pest. It is known as risky crop considering natural hazards, as well as the everyday fluctuating of wholesale price index. Crisis management is the systematic attempt to avoid personal or organization crisis or to manage those crisis events that do occur. The practice of crisis management involves attempts to eliminate technological failure to avoid or to manage crisis situations. Crisis management consists of skills and techniques required to assess, understand and cope with any serious situations, especially from the moment it first occurs to the point that recovery producer start. With respect of association between the adoption of crisis management practices and selected profile characteristics of cotton growers in Saurashtra region.

**OBJECTIVES**

- (1) To study the socio-economic and psychological profiles of the cotton growers
- (2) To ascertain association between profiles of the cotton growers and their level of adoption of crisis management practices

**METHODOLOGY**

The present study was carried out in Amreli and Bhavnagar district of South Saurashtra Agro-Climatic Zone of Gujarat State. This study was conducted by adopting an *ex post facto* research design. A multistage random sampling technique was used for the study. Two districts of South Saurashtra Agro-Climatic Zone Viz., Bhavnagar and Amreli were purposively selected as these districts have ideal conditions for cotton cultivation. The present study was carried out in Mahuva Taluka (Bhavnagar) and Rajula Taluka (Amreli) in which there is maximum area under cotton cultivation. The list of villages was sought from the Taluka Panchayats of the selected Talukas and five villages of each selected Taluka were purposively selected based on more area under cotton cultivation. Thus, total 10 villages were covered in this study as shown in. The list of cotton growers was obtained from the Village Panchayats of the selected villages. A random sampling procedure was followed for the selection of the respondents and accordingly 20 cotton growers from each of the selected villages were selected as respondents. Ultimately, a total of 200 cotton growers were selected for the study. The head of the family i.e. major decision maker was considered as respondent for the study. The respondents were grouped into three levels of knowledge viz; Low level of knowledge (Below Mean-SD), Medium level of knowledge (Between Mean± SD) and High level of knowledge Above (Mean + SD) by using mean and standard deviation.

**RESULTS AND DISCUSSION**

The study was carried out with a view to find out the association between the adoption of crisis management practices of the respondents (dependent variable) and their selected characteristics (independent variables) such as age, education, size of land holding, social participation, irrigation index, yield level, management orientation, cropping intensity, index of farm experience, innovativeness, risk orientation, extension participation and knowledge. The co-efficient of correlations (‘r’ values) were calculated. The research hypotheses in null form were derived for testing the

association and their significance in zero order correlation. The zero order correlation (‘r’ values) is given in table-1. From the table, it is evident that there was negative and significant association between adoption of crisis management practices of cotton growers and their age. It indicates that as age increased the adoption of crisis management decreased.

**Table-1 : Association between adoption of crisis management practices and selected independent variables**

n = 200

Sr. No.	Independent variables	Correlation coefficient (r)
X <sub>1</sub>	Age	-0.3153**
X <sub>2</sub>	Education	0.6446**
X <sub>3</sub>	Size of land holding	0.0500 <sup>NS</sup>
X <sub>4</sub>	Social participation	0.6914**
X <sub>5</sub>	Irrigation index	-0.0510 <sup>NS</sup>
X <sub>6</sub>	Yield level	0.3571**
X <sub>7</sub>	Management orientation	0.7950**
X <sub>8</sub>	Cropping intensity	-0.0535 <sup>NS</sup>
X <sub>9</sub>	Index of farm experience	-0.2086**
X <sub>10</sub>	Innovativeness	0.6965**
X <sub>11</sub>	Risk orientation	0.6803**
X <sub>12</sub>	Extension participation	0.7106**
X <sub>13</sub>	Knowledge	0.6354**

NS = Non-significant      \*\* = Significant at 0.01 level

There was positive and highly significant association between the crisis management practices and their education. Hence, it can be summarized that an increased in education was responsible for the increase in adoption of crisis management practices by cotton growers.

There is no association between the crisis management practices adopted by cotton growers and their size of land holding. This might be due to the fact that the farmers were willing to augment their production which facilitated them for higher adoption of crisis management practices adopted by cotton growers irrespective of their size of land holding.

There is no association between crisis management practices adopted by cotton growers and their social participation. The relationship clearly showed that the adoption level of crisis management practices increases with increase in the level of social participation. The probable reason behind this finding might be that more social participation provides more in-depth information and better understanding to the respondents which lead to develop the confidence among them to adopt the crisis management

practices.

There is no association between crisis management practices adopted by cotton growers and their irrigation index. The probable reason for this finding might be that majority of the respondents possessed the medium irrigation facility. Besides this, cropping system largely depends upon the precipitation through the south-west monsoon.

There is no association between the crisis management practices adopted by cotton growers and their yield level of cotton crop. It indicated that the adoption of crisis management practices by cotton growers was highly associated with their yield level. The relationship clearly indicated that the adoption level of crisis management practices increases with increase of yield level and vice versa.

There is no association between the crisis management practices of the cotton growers and their management orientation. This indicated that the extent of crisis management practices and management orientation were dependent on each other. The direction of association was positive and highly significant which indicated that with increase in management orientation of the respondents, the adoption of crisis management practices was also increased.

There is no association between the crisis management practices adopted by cotton growers and their cropping intensity.

There is no association between the adoption of crisis management practices of the cotton growers and their index of farm experience. This indicated that the extent of crisis management practices and index of farm experience were dependent on each other. The direction of association was negative and significant which indicated that with increase in farm experience of the respondents, the adoption of crisis management practices was decreased.

There is no association between crisis management practices adopted by cotton growers and their innovativeness. The relationship clearly indicated that the adoption level of crisis management practices increases with increase in the level of innovativeness.

There is no association between the risk orientation of the respondents and their adoption of crisis management practices of cotton crop. It indicated that with increases in risk bearing ability there was increases in adoption of crisis management practices. The probable reason for this finding

might be that the area under study is rainfed. Under such situation the risk is evitable, it had developed risk capacities among respondents which resulted higher adoption of crisis management practices.

There is no association between the crisis management practices adopted by cotton growers and their extension participation. The direction of association was positive indicated that with increase in extension participation the adoption of crisis management practices was increased.

## **CONCLUSION**

The age and index of farm experience were negatively and significantly associated with the adoption level of cotton growers with respect to crisis management practices. The relationship was highly significant. The characteristics like education, social participation, yield level, management orientation, innovativeness, risk orientation, extension participation and knowledge had positive and highly significant relationship with adoption level of cotton growers with respect to crisis management practices. The non-significant association of adoption level of cotton growers was observed in case of size of land holding, irrigation index and cropping intensity.

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## INVOLVEMENT OF TRIBAL DAIRY WOMEN IN HEALTH CARE MANAGEMENT PRACTICES OF ANIMAL HUSBANDRY

S. G. Vahora<sup>1</sup>, G. N. Thorat<sup>2</sup> and D. B. Ramjiyani<sup>3</sup>

1 Associate Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadh Baria - 389 380

2 Assistant Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadh Baria - 389 380

3 Research Associate, TRTC, AAU, Devgadh Baria - 389 380

Email: gunvantthorat@rediffmail.com

### ABSTRACT

*The control of disease is important in animal husbandry practices. Resistance to disease improves animal welfare, makes livestock farming more efficient in terms of profit and quality food also helps to protect the people from zoonotic diseases too. However, the animal health has not received due attention in tribal areas that it deserves. In tribal areas, women play crucial and significant role in livestock rearing. Related data were collected with the help of personal interview technique from 100 samples from Dahod district of Gujarat. The study revealed that majority of the tribal dairy women actively involved in health care management practices of animal husbandry i.e. care of sick animal with mean score 2.42, care of new born calf (2.39), colostrums feeding to new born calf (2.37), care of pregnant animals (2.31) and weaning & management of Calf (2.32).*

**Keywords:** tribal dairy women, participation, animal husbandry, health care and management

### INTRODUCTION

Health is a major constraint to livestock production and development in rural and peri-urban communities where the half of the world's livestock population is found. Most of the communities in marginal areas affected with endemic pathogens, vectors and disease. According to Government of India report (GOI, 2005), only 5.1 per cent of farmers had access to modern livestock technologies against 40 per cent in agriculture. To accrue profit from animal husbandry and dairying efficient management is of utmost importance. Management is an art of judiciously using all the factors of production. Efficient management reduces the cost of production thereby increasing the profitability. In dairying the milk production not only depends on the best breeds but also on animal health and housing management.

Many research studies have indicated that responsibilities of dairy are almost completely shouldered by women. Women are generally responsible for the feeding, grazing, fodder collection, milking, processing, dung management, while men who manage the finances generally sale of milk and milk products (Sethi, 2010). Keeping this in view the study was carried out to know the involvement of tribal dairy women in health care management practices in animal husbandry.

### OBJECTIVE

To know the involvement of tribal dairy women in health care management practices of animal husbandry

### METHODOLOGY

The present study was purposively conducted in operational area of Pashu Vigyan Kendra, Limkheda Anand Agricultural university of Dahod district of Gujarat state. Multistage random sampling technique was used for the study. Total of 100 tribal dairy women were selected, two villages from each five taluks and ten respondents each from 10 villages were randomly selected for the study. The tribal respondents having at least one milch animal were selected for the study. The data were collected with the help of structured and pre-tested interview schedule. Data collected were analyzed statistically using frequency and percentage. The data included information about the existing animal health care and management practices followed by the tribal dairy farmers.

### RESULTS AND DISCUSSION

#### Participation of tribal dairy women in management practices

The major activity where women participated

**Table 1: Distribution of the dairy women according to their participation in management practices**

n=100

Sr. No.	Management Practices	Fully participated	Participated	Not at all	Total score	Mean Score	Rank
1	Cleaning of animal shed	41 (41.00)	41 (41.00)	18 (18.00)	223	2.23	V
2	Disposal of dung	35 (35.00)	32 (32.00)	33 (33.00)	202	2.02	VI
3	Preparing cow dung cake	05 (5.00)	39 (39.00)	56 (56.00)	149	1.49	IX
4	Washing & Grooming of animals	40 (40.00)	48 (48.00)	12 (12.00)	228	2.28	IV
5	Cleaning of Utensils	08 (8.00)	36 (36.00)	56 (56.00)	152	1.52	VIII
6	Milking	18 (18.00)	28 (28.00)	54 (54.00)	164	1.64	VII
7	Care of new born calf	47 (47.00)	45 (45.00)	08 (8.00)	239	2.39	I
8	Colostrum feeding to new born calf	48 (48.00)	41 (41.00)	11 (11.00)	237	2.37	II
9	Weaning & management of Calf	47 (47.00)	38 (38.00)	15 (15.00)	232	2.32	III
10	Maintaining of farm & Dairy records	1 (1.00)	18 (18.00)	81 (81.00)	120	1.20	XI
11	Culling of uneconomic animals	12 (12.00)	20 (20.00)	68 (68.00)	144	1.44	X

**Note :** Figures in parenthesis indicate percentage

actively was management of livestock. The data in Table-1, pertaining to participation for cleaning of animal shed reveal that equally percentage (41.00 per cent) of dairy women fell under 'fully participated' as well as 'participated' group and 18.00 per cent of them fell under 'not participated at all' group.

Data in Table 1, regarding participation of dairy women for disposal of dung revealed that 35.00 per cent of the them were categorized under 'fully participated' group followed by 33.00 per cent and 32 per cent with 'not participated' and 'participated' group, respectively. Cow dung cake preparations were also one of the dairy farming practices studied. This activity was specially done for the fuel purpose. Here in this activity, only 5.00 per cent of dairy women were participated fully while, more than 50.00 per cent women could not participate and 39.00 per cent women were only participated at all.

As far as washing and grooming of animals is concerned, nearly half (48.00 per cent) of the dairy women fell under 'participated' category followed by "fully participated" and "not participated".

Data in Table1, regarding participation of dairy

women in cleaning of utensils revealed that majority (56.00 per cent) of the dairy women were found in the category 'not participated' and remaining 36.00 per cent were participated and only 8.00 per cent were fully participated in cleaning of utensils of animals. Similarly Rathod et al. (2011) observed the respondents majorly participated in milking of animals followed by their involvement in cleaning of milking utensils.

With regard to milking activity, it was observed that 47.00 per cent of tribal dairy women had fully participated, whereas 46.00 per cent with 'participated' and 7.00 per cent with 'no participated' group.

Dairy women are also taking good care of their new born calf. 47.00 per cent and 45 per cent of dairy women were found having 'fully participation' and participation in this activity, respectively. Only 8.00 per cent women had no participation in caretaking of new born calf.

It could be seen from the data presented in Table-1 that 48.00 per cent tribal farm women were found fully participated in colostrum feeding to new born calf followed by 41.00 per cent with participation and 11.00 per cent with no participation in colostrum feeding to new born calf.

From data in Table-1, it can be observed that 47.00 per cent of the dairy women were fully participated in the activity of weaning and management of calf, while 38.00 per cent and 15.00 per cent of them felt under 'participated' and 'not participated', respectively. In case of maintaining of farm and dairy records, vast majority (81.00 per cent) of the dairy women were not participated at all. With regards to culling of uneconomical animals, it was found that 68.00 per cent dairy women were not participated, whereas 20.00 per cent participated and only 12.00 per cent were fully participated.

Overall observation on participation of dairy women in animal husbandry practices related management activities show that care of new born calf with mean score 2.39 ranked first followed bycolo strums g to new born calf (2.37), weaning & management of Calf (2.32), washing &grooming of animals (2.28), cleaning of animal shed (2.23), disposal of dung (2.02), mlking (1.64), cleaning of Utensils (1.52), preparing cow dung cake (1.49), culling of uneconomic animals (1.44) and maintaining of farm & dairy records (1.44) with rank II, III, IV, V, VI, VII, VIII, IX, X and XI respectively.

**Table 2: Distribution of the dairy women according to their item wise participation in health care management practices**

n=100

Sr. No.	Health care management Practices	Fully participated	Participated	Not at all	Total score	Mean Score	Rank
1	Taking animal for Vaccination	33 (33.00)	37 (37.00)	30 (30.00)	203	2.03	V
2	Deworming	05 (5.00)	31 (31.00)	64 (64.00)	141	1.41	VII
3	Care of sick animal	52 (52.00)	39 (39.00)	9 (9.00)	243	2.43	I
4	Taking animal for treatment	38 (38.00)	39 (39.00)	23 (23.00)	215	2.15	IV
5	Purchase of vet. Medicine	04 (4.00)	34 (34.00)	62 (62.00)	142	1.42	VI
6	Disposal of carcass	04 (4.00)	17 (17.00)	79 (79.00)	125	1.25	VIII
7	Care of new born	43 (43.00)	41 (41.00)	16 (16.00)	227	2.27	III
8	Care of pregnant animals	44 (44.00)	43 (43.00)	13 (13.00)	231	2.31	II

Note : Figures in parenthesis indicate percentage

The data presented in Table 2, shows that 37.00 per cent of the dairy women fall under 'participated' category for taking animal for vaccination, while 33.00 per cent with fully participated group and 30.00 per cent with not participation.

The work of cleaning of animal shed, grooming of animals were performed by women which is in accordance with the findings of Puri (1971) and Rathod et al. (2011) who revealed that preparation of feed, grazing and washing of animals were mostly carried out by women.

**Participation of tribal dairy women in health care management practices**

Disease free and good health condition of dairy animal is prerequisite to the better animal productivity. Knowledge of commonly occurring animal diseases and preventive measures is of more significance for better productivity and profitability of dairy animals.

The women in their late middle and old age actively participated in health care as they had learnt the things by seeing and out of experience. Most of the respondents interviewed were of the view that they require lot of training and knowledge with regard to the health care aspects. These results are in confirmation with the results of Adhikari (1987) and Bhurtel (1996).

From data in Table 2, it can be observed that that majority of the dairy not participated in the activities of disposal of carcass, deworming and in purchasing of vet. Medicine and participated in care of pregnant animals and

new born.

Rathod et al. (2011) reported in his study that 91.66 per cent rural women were engaged in health care of pregnant animals followed by 89.16 per cent respondents looked after new born or young calves and care of sick animals (86.66%).

Item wise participation related to health care hierarchy, Care of sick animal rank first with mean score 2.43 followed by care of pregnant animals (2.31), care of new born (2.27), taking animal for treatment (2.15), taking animal for vaccination (2.03), purchase of vet. medicine (1.42), deworming (1.41) and disposal of carcass (1.25) with rank II, III, IV, V, VI, VII and VIII, respectively.

The findings are in conformity with the findings of Rangnekar et al. (1992) and similar findings were also reported by Tripathi and Bhanja (2000) and Toppo et al. (2004).

## CONCLUSION

It can be concluded from the above study that participation of dairy women in related to management activities, it was found that majority of dairy women were participated care of new born calf, weaning & management of Calf, washing & grooming of animals, cleaning of animal shed and disposal of dung were major areas of training. Looking to the various aspects of health care hierarchy, care of sick animal, care of pregnant animals, care of new born, taking animal for treatment and taking animal for vaccination were area where dairy women actively participated.

As dairy women were participated in dairy and animal husbandry enterprise, the extension functionary may organize specialized training programmes especially for tribal dairy women in the area of health care management practices. Various research and extension agencies have to collaborate and create effective region based strategies to involve tribal dairy women in general and health care management technologies. Further, Tribal dairy women should establish a valid veterinarian/client/patient relationship with a licensed veterinarian to assist them in providing proper health care to

their herd.

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**EVALUATION AND DEMONSTRATION OF BIORATIONAL-BASED INTEGRATED PEST MANAGEMENT PACKAGE AGAINST POD BORER, *HELICOVERPA ARMIGERA* HUBNER INFESTING CHICKPEA**

**Shakti Khajuria<sup>1</sup>, A.K.Rai<sup>2</sup> and Kanak Lata<sup>3</sup>**

1&2 SMS, (ICAR-CIAH), KVK-Panchmahal, Vejalpur, Godhra-389340

3 Head, (ICAR-CIAH), KVK-Panchmahal, Vejalpur, Godhra-389340

Email : shaktikhajuria@gmail.com

*ABSTRACT*

*Chickpea, (Cicer arietinum L.) is an important pulse crop world-wide. There are many constraints in the production of the crop, of which pod borer, Helicoverpa armigera Hubner is the notorious one which causes both quantitative and qualitative loss. Therefore, an on farm trial was conducted during rabi 2011-12 to 2013-14 to evaluate different biorational based IPM packages viz., IPM package 1 (P<sub>1</sub>) = Installation of pheromone traps with Helicoverpa armigera lures @ 40 traps/ha. ; IPM package 2 (P<sub>2</sub>) = P<sub>1</sub> + spray neem oil @ 0.5 % on the appearance of first instar larvae. Results indicated that the IPM package (P<sub>2</sub>) revealed the best performance reducing 76.18% pod damage over control and provided significantly the highest yield (1,933 kg/ha). Consequently, the highest benefit cost ratio (BCR) (1.97) was also recorded from this package. Hence, installation of pheromone traps and spraying of neem oil may be recommended for effective management of pod borer attacking chickpea.*

**Keywords:** chickpea pod borer; pheromone traps, neem oil, IPM

**INTRODUCTION**

Chickpea is of the important and premier pulse crop cultivated and widely consumed in India. It is occupying 8.56 million hectares area and contributing 39 per cent (7.35 million tonnes) to the total production of pulse in the country (Meena *et al.*, 2012 and Singh *et al.*, 2013). The major chickpea producing states are Madhya Pradesh, Uttar Pradesh, Haryana, Gujarat, Rajasthan, Maharashtra, Andhra Pradesh, Karnataka, Bihar, Chattishgarh, and West Bengal. In Gujarat, chickpea occupies an area of 2.15 lakh hectares with a production of 2.10 lakh tones with an average productivity of 977 kg/ha, accounts for 2.46% and 2.80% area and production of country, respectively (Singh, 2010). Chickpea is cultivated in the entire Panchmahal district and the area comes under semi arid condition. The low productivity can be attributed to several factors i.e. quality seed, growing methods and adaption of appropriate plant protection measures. By conducting survey, farmer's interaction and field diagnostics, it was observed that one of the important factors for low productivity of chickpea was attributed to infestation by pod borer, *Helicoverpa armiger* Hubner which causes both quantitative and qualitative loss. The yield loss in chickpea due to pod borer was 10-60 per cent in normal weather conditions (Bhatt and Patel, 2001). On an average, 30-40 per cent pods

were found to be damaged by this pest and an average of 400 kg/ha grain was lost by the borer. In favourable condition, pod damage goes up to 90-95 per cent (Shengal and Ujagir, 1990). So far, use of chemical pesticides has been the major approach for controlling this pest in different crops in India and in most of the developing countries. Chemical control is one of the effective and quicker methods in reducing pest population, where farmer obtains spectacular results within a short period. However, over reliance and indiscriminate use of pesticides for longer periods resulted in a series of problems, mainly risk of environmental contamination, loss of biodiversity which contributed to the development of insecticide resistant *H. armigera* population, resurgence, out breaks of the secondary pests into primary pest status, destruction of natural enemies, increase in inputs on chemicals and toxicological hazards due to pesticide residue etc., The use of excessive and un-recommended pesticides to manage the menace is in vogue with the farmers. In IPM practices, Installation of pheromone traps with *Helicoverpa armigera* lures @ 40 traps/ ha and spray of neem oil @ 0.5% have been recommended for management of chickpea pod borer. In view of the above factors, on farm trials were undertaken in a systematic manner on farmers' field to evaluate and demonstrate performance of integrated pest management (IPM) packages against chickpea pod borer for enhancing



production and productivity of chickpea.

## METHODOLOGY

The present study was carried out by Krishi Vigyan Kendra-Panchmahal (Gujarat) during rabi season from 2011-2014 (3 years) under on farm testing activity in farmers field of six villages of three talukas of Panchmahal district. In total 36 OFTs in 6 ha area in different locations were conducted. Following IPM packages were compared:

IPM package 1 (P<sub>1</sub>): Installation of pheromone traps with *Helicoverpa armigera* lures @ 40 traps/ ha. The traps were installed one month after sowing and at one feet height above the crop canopy covering the whole field uniformly. The lures were changed after every 3 weeks.

IPM package 2 (P<sub>2</sub>): P<sub>1</sub>+ spray neem oil @ 0.5 % on the appearance of first instar larvae. Conventional farmers' practices (P<sub>3</sub>): No recommended pod borer management practices and untreated control.

These treatments were imposed in farmers' fields. All recommended agronomical practices were followed to raise healthy crop. Pheromone traps with lures of *H. armigera* were installed in the field at 30 days after sowing (DAS) @ 40 traps/ ha maintaining equal distance among the traps. The pheromone traps were placed just above the crop canopy by means of bamboo support. The traps were kept in the chickpea field throughout the cropping season.

Spray neem oil @ 0.5 % was done twice at an interval of 7 days starting from pod formation stage. At maturity, all the pods were collected from 10 randomly selected plants from middle rows of each plot and examined. The damaged (bored) and total numbers of pods were counted and the per cent pod damage was determined using the following formula: % Pod damage = Number of damaged pods/ Total number of pods x 100. The grain yield obtained from each field was also recorded. Moreover, benefit cost ratios of different IPM packages were also calculated. Catch of adult *H. armigera* moths were also recorded fortnightly from each pheromone trap.

## Statistical analysis

The data collected were transformed into angular values as per the standard requisites. The experiments were subjected to statistical scrutiny and the means were compared

with Least Significant Difference (L.S.D.) (Gomez and Gomez, 1984).

## RESULTS AND DISCUSSION

The infested pods ranged from 8.24 to 34.60 % and differed significantly among the treatments (Table 1). The lowest pod borer damage (8.24%) was attained from IPM package 2 (P<sub>2</sub>) (pheromone trapping + spray neem oil @ 0.5 %) followed by IPM package 1 (P<sub>1</sub>) (pheromone trapping). However, the highest pod borer damage was found in untreated control plots. Fortnightly catch of adult *Helicoverpa armigera* moths by pheromone trap was 3.6/trap, which contributed in bringing down pod infestation. The pod borer damage reduction over control by different IPM packages ranged from 18.50% to 76.18%. The highest pod damage reduction over control was observed in P<sub>2</sub> and the lowest in farmer's practiced field.

**Table 1 : Effect of different management packages on pod borer damage in chickpea during Rabi 2011-12 to 2013-14 (Pooled data of three years)**

Treatments	Pod damage (%)	Damage reduction over control (%)
P <sub>1</sub> = Pheromone traps	17.68 (24.79)	48.90
P <sub>2</sub> = Pheromone traps + neem oil spray	8.24 (16.65)	76.18
P <sub>3</sub> = Farmers practice	28.20 (32.04)	18.50
Untreated control	34.60 (36.02)	0
S.E±	(0.62)	
CV	(3.94)	
LSD(5%)	(2.19) *	

Figures in parenthesis are transformed angular values;

\* Significant at 5%

This result were in accordance with the findings of Mahmudunnabi *et al.*, (2013) who reported that the lowest pod damage was observed in pheromone traps + bio-pesticide sprayed plots. Pod damage reduction by pheromone traps and bio-pesticides over untreated control ranged from 32.12 to 68.20%. Prabu (2009) and Dong and Zhao (1996) noted that neem oil has repellent, antifeedent, stomach and contact poison properties as well as inhibits growth of many insects and effective against several insect pests which are partly in agreement with the present findings.

**Table 2 : Benefit cost analysis after application of different management options for the control of chickpea pod borer (Pooled data of three years)**

Treatments	Yield (Kg/ ha)	Input cost (Rs)	Gross Return (Rs)	Net Return (Rs)	BC ratio
P <sub>1</sub> = Pheromone traps	1,697	24,460	44,408	19,948	1.81
P <sub>2</sub> = Pheromone traps + neem oil spray	1,933	25,727	50,632	24,905	1.97
P <sub>3</sub> = Farmers practice	1,390	22,750	36,425	13,675	1.60
Untreated control	1,115	21,000	24,530	3,530	1.17

The yield of chickpea in different treatments varied remarkably. The highest yield was 1,933 kg/ha obtained from P<sub>2</sub> comprising pheromone trapping + spraying of neem oil followed by P<sub>1</sub> comprising pheromone trapping (1,697 kg/ha) and P<sub>3</sub> (Farmers practices). Similarly, the highest yield increase over control (73.36%) was obtained from P<sub>2</sub>. However, the lowest yield (1,115 kg/ha) was obtained from untreated control. This result of the present study is more or less in conformity with Mahmudunnabi *et al.*, (2013) who obtained significantly the highest yield (1,832 kg/ha) from pheromone trapping + bio-pesticide sprayed fields.

**CONCLUSION**

Final recommendation for micro level situation in IPM package 2 i.e., installation of pheromone traps with *Helicoverpa armigera* lures @ 40 traps/ ha. + spray neem oil @ 0.5% on the appearance of first instar larvae manage chickpea pod borer. Liking of farmers this IPM package is due to higher yield (1,933 kg/ha) and lower chickpea pod borer damage (8.24%).

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## KNOWLEDGE OF RATOON MANAGEMENT PRACTICES BY THE SUGARCANE GROWERS

S. S. Patel<sup>1</sup> and V. P. Vejapara<sup>2</sup>

<sup>1</sup> Postgraduate Student

<sup>2</sup> Programme Organizer, Sardar Smruti Kendra, NAU, Navsari - 396450

Email : vinubhai.vejpara@gmail.com

### ABSTRACT

*The knowledge of any technology is a key factor for its adoption. Being major sugarcane growing district of South Gujarat, Navsari district was randomly selected for the present investigation. The District comprises of six Talukas, among which Jalalpor, Gandevi and Chikhali talukas were randomly selected for the study. From each selected taluka two villages were selected randomly with maximum number of sugarcane growers. In each of the selected villages farmers were selected according to simple random sampling to form 60 respondents as a sample size for the study. This study was found that majority of the respondents had medium knowledge regarding ratoon management in sugarcane and characteristics such as age were negative and significant association between respondents level of knowledge. Education was positive and highly significant association between respondents level of knowledge. Annual income, mass media exposure, farming experience and social participation were positive and significant association between respondents level of knowledge about ratoon management in sugarcane.*

**Keywords :** knowledge, ratoon management practices, sugarcane growers

### INTRODUCTION

Sugarcane (*Saccharum officinarum* L.) is an important commercial crop of the world and is cultivated in about seventy five countries, the leading countries being India, Brazil, Cuba, Mexico and Thailand. The sugar industry plays an important role in the agricultural economy of India. India occupies the second rank in production of sugarcane in the world. The area under sugarcane in India is 5.06 million hectares during the year 2013-14 and cane production of 342.20 million tonnes and productivity is 69.37 Metric tonnes per ha. Sugar production 2013-2014 year is estimated to be around 26.6 million tonnes. India's annual consumption of sugar is around 28.00 million tonnes. As per the latest data from the ministry of agriculture, sugarcane has already been planted in around 4.9 million hectares of land. (Directorate of Economics and Statistics, Department of Agriculture and Co-operation, GOI 2014-2015). Ratooning of cane is very essential for increasing the benefit to the farmer. Ratooning saves expenses as land preparation, planting material cost, seed treatment cost and planting expenses. For this proper management of ratoon crop is necessary. Therefore, it was felt necessary to study the knowledge of ratoon management practices by the sugarcane growers of Navsari district of Gujarat state.

### OBJECTIVE

To know the knowledge of ratoon management practices by the sugarcane growers

### METHODOLOGY

Being major sugarcane growing district of South Gujarat, Navsari district was randomly selected for the present investigation. The District comprises of six Talukas, among which Jalalpor, Gandevi and Chikhali talukas were randomly selected for the study. From each selected taluka two villages were selected randomly with maximum number of sugarcane growers. In each of the selected villages farmers were selected according to simple random sampling to form 60 respondents as a sample size for the study. For the purpose of measuring of knowledge level structural scale was developed. To find out the relationship between independents and dependents variables, Correlation of coefficient (r) test was applied.

### RESULTS AND DISCUSSION

#### Level of knowledge

Knowledge is the cognitive behavior of an

individual. The body of knowledge is the product of learning process. Once the knowledge is acquired, it produces changes in thinking process of an individual, which would lead to further changes in rational decisions, that is prerequisite for the adoption of any innovation. Keeping in this view, an attempt was made to determine the knowledge of ratoon management practices by the sugarcane growers. The data collected and analyzed in this regard are presented in Table-1.

**Table-1: Distribution of respondents according to their level of knowledge about ratoon management practices in sugarcane**

n=60

Sr. No.	Knowledge level	Frequency	Percent
1	Low	10	16.66
2	Medium	36	60.00
3	High	14	23.33

The data indicate that majority of the (60.00 per cent) Sugarcane growers were possessed medium level of knowledge about ratoon management practices in sugarcane, whereas 23.33 per cent and 16.66 per cent of sugarcane growers possessed high and low level of knowledge, respectively. The result is pointed out that majority (60.00 per cent) of the sugarcane growers had medium level of knowledge about ratoon management practices in sugarcane.

**Relationship between profile of the sugarcane growers and their knowledge about ratoon management practices in sugarcane**

The association between the selected characteristics of sugarcane growers viz, age, education, land holding, size of family, annual income, mass media exposure, social participation and farming experience and knowledge level were worked out with help of coefficient of correlation. The findings were present in Table-2.

The data manifested in Table-2 revealed that characteristics such as age (-0.220\*) was negative and significant association between respondents level of knowledge. Characteristics such as Size of land holding (0.0831) and Size of family (0.0925) there was non-significant relationship between respondents level of knowledge.

Education was positive and highly significant (0.708\*\*) association between respondents level of knowledge. Annual income (0.247\*) mass media exposure (0.266\*), Farming Experience (0.221\*) and Social participation (0.223\*) were positive and significant association between respondents level of knowledge about ratoon management in sugarcane.

**Table-2: Relationship between selected characteristics and level of knowledge**

n=60

Sr. No.	Independent Variables	Correlation-Coefficient ('r' value)
X <sub>1</sub>	Age	-0.220*
X <sub>2</sub>	Education	0.708**
X <sub>3</sub>	Land holding	0.0831 NS
X <sub>4</sub>	Size of the family	0.0925 NS
X <sub>5</sub>	Annual income	0.247*
X <sub>6</sub>	Mass media exposure	0.266*
X <sub>7</sub>	Social participation	0.223*
X <sub>8</sub>	Farming experience	0.221*

NS= non-significant

\* = significant at 0.05 level

\*\*=significant at 0.01 level

**CONCLUSION**

Majority of the sugarcane growers were possessing medium level of knowledge about ratoon management practices in sugarcane and characteristics such as age were negative and significant association between respondents level of knowledge. Education was positive and highly significant association between respondents level of knowledge. Annual income, mass media exposure, farming experience and social participation were positive and significant association between respondents level of knowledge about ratoon management in sugarcane.

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## IMPACT OF FRONT LINE DEMONSTRATION ON FEEDING OF LOW COST HIGH PROTEIN RICH FOOD (*POSHAK AAHAR*) TO MALNOURISHED RURAL TRIBAL CHILDREN

Arti N. Soni<sup>1</sup>, C.D.Pandya<sup>2</sup> and D.N.Soni<sup>3</sup>

1 SMS (Home Science), KVK, NAU, Vyara - 394650

2 Programme Co-ordinator, KVK, NAU, Vyara -394650

3 SMS (Home Science), KVK, NAU, Navsari - 396450

Email : sonyarti@gmail.com

### ABSTRACT

*In Tapi district, many of children of this area have poor nutritional and health status i.e. malnutrition. Majority of tribal farm women of this area have lack of knowledge about health and nutrition, dietary pattern for pregnant & lactating women and supplementary feeding for children. In addition to milk, children need other nutrients for their optimum growth and development. Protein is one of the most important nutrient required for better growth and development of children. Therefore, KVK, NAU, Tapi has conducted FLD on 'Feeding of low cost high protein rich food (POSHAK AAHAR) to malnourished rural tribal children of 1 to 3 years of age and evaluated its effect on the growth of children compared to control group. The data indicated that percent weight gain in the demonstration group was 8.54% as compared to control group was 3.65% i.e. less than half of gain in weight of the demonstration group. Thus, it could be concluded that low cost high protein rich food(POSHAK AAHAR) prepared by KVK, Tapi is acceptable and could be useful in growth and development of children and prevent malnutrition problem.*

**Keywords :** malnutrition, supplementary feeding, protein rich food, front line demonstration

### INTRODUCTION

Tapi is a tribal dominated district with poor economic condition of farmers. Majority of tribal farm women of this area have lack of knowledge about health and nutrition, dietary pattern for pregnant & lactating women and supplementary feeding for children. In addition to that, due to poor economic condition, they are unable to purchase fruits, vegetables and other foodstuff from market for their daily dietary need which is resulted in poor health and imbalance nutritional status of family. Many of children of this area have poor nutritional and health status i.e. malnutrition. In addition to milk, children need other nutrients for their optimum growth and development. Protein is one of the most important nutrient required for better growth and development of children. It forms the important component of muscle, other tissues and vital body fluids like blood. Protein as antibodies helps the body to defend against infection. Therefore, KVK, NAU, Tapi has conducted FLD with specific objective to study the feeding of low cost high protein rich food (*POSHAK AAHAR*) to malnourished rural tribal children and evaluated its effect on the growth of children.

### METHODOLOGY

To know the impact of front line demonstration on feeding of low cost high protein rich food (*Poshak aahar*) to malnourished rural tribal children

### METHODOLOGY

The best quality of protein is the one, which provides essential amino acid pattern very close to the pattern of tissue proteins. *e.g.* egg protein, human milk protein *etc.* But plant proteins are of poor quality since essential amino acid composition is not balanced. *e.g.* cereal proteins are poor in amino acid lysine while pulses & oilseed proteins are rich in lysine but they are poor in sulfur containing amino acid. Thus, deficiency of amino acid in one can be made good by an adequate level in another, if both are consumed together. Therefore, a combination of cereals & pulses in the ratio of 3:1 has been found to give an optimum combination (Recommended by WHO). Hence, keeping all these factors in mind KVK, NAU, Tapi has designed and developed low cost high protein rich food (*POSHAK AAHAR*) for rural tribal children to prevent malnutrition. Detail of preparation

of POSHAK AAHAR from locally available food material is presented in Table 1.

**Table 1: Preparation of POSHAK AAHAR (mixture of cereals & pulses, ratio 3:1) with nutrient composition**

n=100

Sr. No.	Ingredients	Amount (gm)	Nutrients		
			Protein (gm)	Energy (K.cal)	Calcium (mg)
1	Wheat flour	25.0	3.03	85.25	12.00
2	Jowar flour (Sorghum)	25.0	2.60	87.25	06.25
3	Rice flour	25.0	1.70	86.25	02.50
4	Soybean flour	12.5	5.40	54.00	30.00
5	Bengal gram flour	12.5	2.81	46.50	07.00

(Source: Nutritive value of Indian foods by C. Gopalan & et.al, National Institute of Nutrition, ICMR, Hyderabad)

The present study was conducted in adopted villages of Tapi district. The village namely Ghodchit, Vanskui,

Aamalgundi, Degama and Bhadbhunja were selected purposively. To assess the growth promoting effect of low cost high protein rich diet (POSHAK AAHAR), 20 malnourished rural tribal children of 1 to 3 years of age were selected from AANGANVADIES of one village in each year during 2010-11 to 2014-15 (Five years) and divided into two groups. One group were fed POSHAK AAHAR 100 to 150 gm per day per child with existing traditional dietary pattern for four months period and another group as control with traditional dietary pattern. KVK, Tapi has organized FLD training for rural tribal mothers of malnourished children. In FLD training, various low cost nutritious recipes were prepared from POSHAK AAHAR like *Paustic mix, Sukhadi, Bhakhari, Thepla, Muthia, Dhokla, Handawa etc.* The malnourished rural tribal children were weighed at the beginning of feeding trial and were repeated after every month (30 days) until the end of the experiment i.e. four months period. The data were analyzed with simple statistic tools like Mean and percentage.

### RESULTS AND DISCUSSION

The data regarding the study were analyzed and presented in the following Table 2.

**Table 2: Average weight gain of malnourished tribal children after feeding of POSHAK AAHAR compared to control group after four months**

n=100

Year	Village and Block	Group	No. of malnourished tribal children	Average body weight (Kg)		Weight gain (kg)	Percent weight gain
				Before FLD	After FLD		
2010-11	Ghodchit (Songadh)	Demonstration	10	7.900	8.880	0.980	12.40
		Control	10	8.300	8.750	0.450	5.42
2011-12	Vanskui (Vyara)	Demonstration	10	8.710	9.500	0.790	9.07
		Control	10	9.020	9.400	0.380	4.21
2012-13	Aamalgundi (Songadh)	Demonstration	10	7.970	8.700	0.730	9.15
		Control	10	8.290	8.540	0.250	3.01
2013-14	Degama (Valod)	Demonstration	10	8.660	9.090	0.430	4.96
		Control	10	9.730	9.940	0.210	2.15
2014-15	Bhadbhunja (Uchchhal)	Demonstration	10	8.910	9.580	0.670	7.51
		Control	10	8.510	8.820	0.310	3.64
Five years	Adopted villages	<b>Demonstration</b>	<b>50</b>	<b>8.430</b>	<b>9.150</b>	<b>0.720</b>	<b>8.54</b>
		<b>Control</b>	<b>50</b>	<b>8.770</b>	<b>9.090</b>	<b>0.320</b>	<b>3.65</b>

Weight gain is the parameter used to assess the effect of low cost high protein rich food on the body of malnourished rural tribal children. Therefore, initial and final weights of malnourished children were recorded and from this data gain in weight and percent gain in weight were calculated. The data portrayed in Table 2 indicated that the demonstration group fed low cost high protein rich food (POSHAK AAHAR)

and control group fed traditional food for four months period showed an average initial body weight was 8.430 kg and 8.770 kg respectively while after conducting FLD, an average final body weight of malnourished children was 9.150 kg and 9.090 kg respectively. Therefore, the demonstration group and control group of tribal malnourished children showed an average weight gain of 0.720 kg and 0.320 kg respectively.

Percent weight gain in the demonstration group was 8.54% as compared to control group was 3.65% i.e. less than half of gain in weight of the demonstration group.

#### Feedback of Mothers

- POSHAK AAHAR is good in taste therefore children are eating this food one to two times in a day. So that weight of children is increased and ultimately weakness of children is decreased.
- POSHAK AAHAR is cheaper and easily available at home.
- Recipes of POSHAK AAHAR can be prepared as per taste required.

#### CONCLUSION

From the above results and discussions, it could be concluded that low cost high protein rich food(POSHAK AAHAR) prepared by KVK, NAU, Vyara, Dist.Tapi is acceptable and could be useful in growth and development of children and prevent malnutrition problem. The beneficial effect of POSHAK AAHAR indicates that it can be successfully incorporated in rural community programmes like MAHILA SHIBIR, Health camp, Health awareness programmes, In-service training for AANGANVADI workers and health workers, Method demonstration and other community based extension activities for promoting health and nutritional

status of children as well as rural community.

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## FACTORS ASSOCIATED WITH THE SUCCESS-FAILURE OF CASHEW NUT GROWERS AND PROCESSING ENTERPRISE

G. G. Chauhan<sup>1</sup>, R. M. Naik<sup>2</sup> and G. R. Patel<sup>3</sup>

1 Assistant Professor, College of Agriculture, NAU, Waghai - 394730

2 Associate Professor, NMCA, NAU, Navsari - 396450

3 Director of Extension Education, NAU, Navsari - 396450

Email: rmnaik@nau.in

### ABSTRACT

An entrepreneurial economy, whether on the national, regional or community level, differs significantly from a non-entrepreneurial economy in many respects, not only by its economic structure and its economic vigorousness, but also by the social vitality and quality of life which it offers with a consequent attractiveness to people. Present study was carried out in Valsad and Dang districts of southern part of Gujarat state. The selected talukas from the Valsad district were Dharampur and Kaparada, while from the Dang district, Waghai and Subir talukas were selected. From the each selected taluka, five villages were randomly selected. The 10 cashew nut growers were selected from each village which makes 200 cashew nut growers as respondents. A standard and reliable scale was developed to measure entrepreneurial ability. The majority of the cashew nut growers possessed low to medium level of adaptability, possessed 'medium' level of Sustainability, had 'medium' level of satisfaction and had 'medium' prestige earned in enterprise.

**Keywords :** *entrepreneurship, entrepreneurial ability, entrepreneurial economy, cashew nut growers*

### INTRODUCTION

Entrepreneurship is increasingly recognized as an important driver of economic growth, productivity, innovation and employment, and it is widely accepted as a key aspect of economic dynamism. Institutions and individuals promoting rural development now see entrepreneurship as a strategic development intervention that could accelerate the rural development process. It is abundantly clear that entrepreneurship is important for economic growth, productivity, innovation and employment, and many countries have made entrepreneurship explicit policy priority. Entrepreneurial activities have been recognized as an important element in organizational and economic development, performance and wealth creation. Entrepreneurship in rural areas can benefit a lot from the so called strategic development alliances, i.e., partnership among governments or nonprofit seeking organizations, universities and the private sector. Successful entrepreneurship is hard work carried out in an unpredictable environment. Encouraging and motivating entrepreneurs in rural areas is not an easy proposition.

However, to the real entrepreneur looking on the dark side of the situation is fatal. Optimism is the heart and soul of the entrepreneur. While strategic planning, feasibility and market studies and analysis are necessary parts of new business start-ups, very few real entrepreneurs, the famous and not so famous, waited for a printout to see whether they should launch their new idea. Processing of agricultural commodities helps in value addition, as well as, leads to increase the share of producer in consumer's rupee. It also helps in providing gainful employment opportunities and increase storage life. Processing helps for tapping distant markets and getting better prices for agricultural commodities. Processing acts as link between the industry and agriculture. There is a wide scope for development of processing industry. Because of the development of agro-based processing industry, the productivity per hectare, total production, total employment and the standard of living of rural people will increase. The sale of processed products gives more returns as compared to the raw agriculture produce.

Due to increased area and production of cashew in the South Gujarat, cashew nut growers as well as processing industry has gained much importance. Looking to the



employment and income generation potential of the cashew nut growers, many cashew nut processing units have been established in the region. Keeping these issues and questions in mind, the present study was conducted.

**OBJECTIVE**

To know the factors associated with the success-failure of cashew nut growers and processing enterprise

**METHODOLOGY**

Present study was carried out in Valsad and Dang districts of southern part of Gujarat state. The selected talukas

from the Valsad district were Dharampur and Kaparada, while from the Dang district, Waghai and Subir talukas were selected. From the each selected taluka, five villages were randomly selected. The 10 cashew nut growers were selected from each village which makes 200 cashew nut growers as respondents. Success is considered as the accomplishment of end aimed and the failure means the condition or fact of not achieving the desired end or ends. The ‘success-failure of the cashew nut processing enterprise’ was considered as second dependent variable for the present study. It was measured by using the scale developed by Chandrasekhar (2010), with slight modifications. This includes the above important components.

Symbol	Profitability Parameters	Symbol	Score
A	Amount of money invested (₹)	AMI	Actual Amount in ₹
B	Gross Return of the enterprise in the last three years	GR	Average of GR 1+GR 2+GR 3
1	2008-09	GR 1	Actual Amount in Rs.
2	2009-10	GR 2	Actual Amount in Rs.
3	2010-11	GR 3	Actual Amount in Rs.
C	Adaptability	ADP	10
1	Adapted very well to the demands of the day	ADP 1	10
2	Adapted well to some situations only	ADP 2	07
3	Could survive barely and now adjusting	ADP 3	05
4	Could not foresee the impending crisis and unable to adjust well	ADP 4	03
5	Could not adjust at all and thinking of quitting or changing	ADP 5	00
D	Sustainability	SUS	10
1	I am enjoying this experience of running the enterprise	SUS 1	10
2	I feel quite comfortable with sustaining the enterprise	SUS 2	07
3	I am able to survive the crisis and now growing slowly	SUS 3	05
4	I may not be able to continue for long in this enterprise	SUS 4	03
5	I wish I had started another enterprise; I do not see any future in this enterprise	SUS 5	00
E	Degree of satisfaction	DOS	10
1	Highly dissatisfied	DOS 1	00
2	Dissatisfied	DOS 2	03
3	So-So (Neutral)	DOS 3	05
4	Satisfied	DOS 4	07
5	Highly satisfied	DOS 5	10
F	Prestige earned	PE	10
1	None at all	PE 1	00
2	Moderate name earned	PE 2	02
3	Earned a good name in sales	PE 3	04
4	Became quite popular in the vicinity	PE 4	06
5	Much sought after by every farmer for opt advice	PE 5	08
6	Won awards and enjoyed good press coverage in local and national dailies	PE 6	10

**RESULTS AND DISCUSSION**

**Factors associated with success-failure of cashew nut enterprise**

The findings pertaining to success-failure of the cashew nut processing enterprise and factors influencing it are presented below.

**(1) Adaptability in enterprise**

**Table 1: Distribution of the cashew nut growers according to their adaptability in enterprise**

n=200

Sr. No.	Adaptability in enterprise	No.	Percent
1	Adapted very well to the demands of the day	68	34.00
2	Adapted well to some situations only	34	17.00
3	Could survive barely and now adjusting	98	49.00
4	Could not foresee the impending crisis and unable to adjust well	00	00
5	Could not adjust at all and thinking of quitting or changing	00	00
Adaptability in enterprise (score)			
1	Low (up to 6)	94	47.00
2	Medium ( 7 to 10)	106	53.00
3	High ( 11 and above)	0	0

Mean= 1.53

SD= 0.499

The data presented in Table 1 about adaptability revealed that nearer to one half (49.00 per cent) of the cashew nut growers ‘could survive barely and now adjusting’ adaptability. About adaptability level, more than one half (53.00 per cent) of the cashew nut growers had ‘medium’ adaptability, whereas about one half (47.00 percent) of the cashew nut growers had ‘low’ adaptability. It can be discerned from these observations that experience in any enterprise determines the ability of an entrepreneur to overcome the obstacles and make adjustments as per the situation. That is why the cashew nut growers might have exhibited better adaptability level.

**(2) Sustainability in enterprise**

**Table 2: Distribution of the cashew nut growers according to their sustainability in enterprise**

n=200

Sr. No.	Sustainability in enterprise	No.	Percent
1	I am enjoying the experience of running the enterprise	70	35.00
2	I feel quite comfortable with sustaining the enterprise	50	25.00
3	I am able to survive the crisis and now growing slowly	80	40.00
4	I may not be able to continue for long in this enterprise	0	0
5	I wish I had started another enterprise; I do not see any future in this enterprise	0	0
Sustainability in enterprise (score)			
1	Low (up to 5)	84	42.00
2	Medium ( 6 to 10 )	116	58.00
3	High ( 11 and above)	0	0

Mean= 1.58

SD= 0.493

The data presented in Table 3 indicated that two fifth (40.00 per cent) of the cashew nut growers said ‘I am able to survive the crisis and now growing slowly’, while 35.00 per cent of the cashew nut growers said, ‘I am enjoying the experience of running the enterprise’. Nearer to Three fifth (58.00 per cent) of the cashew nut growers had ‘medium’ sustainability. This may be attributed due to the experience, competence and abilities of the cashew nut growers

**(3) Degree of satisfaction in enterprise**

**Table 3: Distribution of the cashew nut growers according to their degree of satisfaction in enterprise**

(n=200)

Sr. No.	Degree of satisfaction in enterprise	No.	Percent
1	Highly dissatisfied	-	-
2	Dissatisfied	20	10
3	So-So (Neutral)	56	28
4	Satisfied	116	58
5	Highly satisfied	8	4

Degree of satisfaction in enterprise (score)			
1	Low (up to 5 )	76	38
2	Medium ( 6 to 9)	116	58
3	High ( 10 and above)	8	04

Mean=1.66

SD=0.551

It is seen from Table 3 that less than three fifth (58.00 per cent) of the cashew nut growers were ‘satisfied’ in their enterprise. As per the degree of satisfaction score, less than three fifth (58.00 per cent) of the cashew nut growers had ‘medium’ satisfaction in their enterprise. The cashew nut growers might have been satisfied possibly because their enterprise had helped them to earn more and live better life than their counterparts having traditional farming.

**(4) Prestige earned in enterprise**

It is seen from Table 4 that 32.00 per cent and 28.00 per cent of the cashew nut growers said ‘moderate name earned’ and ‘earned a good name in sales’ respectively. It is also seen from Table 4 that more than two fifth (45.00 per cent) of the cashew nut growers had ‘medium’ prestige earned. The study revealed that the cashew nut growers were running their enterprise for a longer period and were earning more money than the traditional farmers obviously, they were having higher socio-economic status and prestige in the society.

**Table 4: Distribution of the cashew nut growers according to prestige earned by them in enterprise**

n=200

Sr. No.	Prestige earned in enterprise	No.	Percent
1	None at all	-	
2	Moderate name earned	32	16
3	Earned a good name in sales	64	32
4	Became quite popular in the vicinity	56	28
5	Much sought after by every farmer for apt advice	38	19
6	Won awards and enjoyed good press coverage in local and national dailies.	10	05

Prestige earned in enterprise (score)			
1	Low (up to 4 )	78	39
2	Medium ( 5 to 9)	90	45
3	High ( 10 and above)	08	16

Mean= 1.059

SD= 0.567

**(5) Overall success-failure of cashew nut enterprise.**

**Table 5: Distribution of the cashew nut growers according to their overall success-failure in enterprise**

n=200

Sr. No.	Overall success-failure (score)	No.	Percent
1	Low (up to 23)	56	28
2	Medium ( 24-38)	116	58
3	High ( 39 and above)	28	14

Mean= 1.86

SD= 0.632

It is seen from Table 5 that less than three fifth (58.00 per cent) of the cashew nut growers had ‘medium’ success-failure. It can be inferred from these findings that majority of the cashew nut growers had medium overall success-failure. The finding is but natural, because the cashew nut growers had long experience of their entrepreneur. The findings of the present study are similar with Shindedesai(2011) while dissimilar with the findings of Akhouri (1979),Kaptan (1987) and Giriappa (1990).

**CONCLUSION**

It can be concluded that majority of the cashew nut growers possessed low to medium level of adaptability, possessed ‘medium’ level of Sustainability, had ‘medium’ level of satisfaction and had ‘medium’ prestige earned in enterprise.

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## DEVELOPMENT OF SCALE TO MEASURE ATTITUDE OF POULTRY FARMERS TOWARDS POULTRY MANAGEMENT PRACTICES

G. N. Thorat<sup>1</sup>, S. G. Vahora<sup>2</sup> and M. M. Trivedi<sup>3</sup>

1 Assistant Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadh Baria - 389 380

2 Associate Professor, Pashu Vigyan Kendra, TRTC, AAU Devgadh Baria - 389 380

3 Professor, Department of Pashu Vigyan, B. A. College of Agriculture, AAU, Anand - 388 110

Email: gunvantthorat@rediffmail.com

### ABSTRACT

*The study was conducted to develop and standardize the reliable and valid scale, to measure attitude of poultry owners towards poultry management practices. Appropriate statistical methods 'Scale product method' was used, which combines Thurston and Likert techniques. A panel of 50 judges was requested to assign the score for each selected statement for judgment on five point continuum. Based on the scale (median) and Q values, 19 statements were finally selected to constitute attitude of poultry farmers towards poultry management practices.*

**Keywords:** attitude, poultry farmer, poultry and management

### INTRODUCTION

India's population has largely crossed one billion and by 2035 India will overtake China as the world's most populous country. In India poultry plays a crucial role in the rural economy by way of generating self employment and is the easy means of earning livelihood for economically backward rural people, which counts about 70.00 per cent of total population, living below poverty line. The eggs and chicken meat are important and rich sources of animal protein, vitamins and minerals. Poultry business is rich source of organic manure, income and employment to millions of farmers and other persons engaged in allied activities. However, poultry farmers feel unusual to start poultry farming. It is universally accepted fact that an attitude of an individual affects his behavior with respect to a particular object. Realizing this, researchers have developed a scale to measure attitude of the poultry farmers towards poultry management practices.

### METHODOLOGY

Attitude refers to the "degree of positive or negative affect associated with some psychological object" (Thurstone, 1946). In the present study attitude is conceptualized as positive or negative reaction of beneficiary poultry owner towards improved poultry management practices. Among the techniques available, researcher has used. 'Scale product

method' which combines the Thurstone's technique of equal appearing interval scale (1929) for selection of items and Likert's technique of summated rating (1932) for ascertaining the response on the scale.

### Item collection

The items of attitude scale called as statements. In initial stage of developing the scale large number of statements about improved poultry management practices were collected from relevant literature, discussion with experts of poultry, staff of extension education institute, A.A.U., Anand and Extension workers of the area. The statements, thus selected were edited according to the criteria laid down by Edward (1957). In all 75 statements were selected as they were found to be non-ambiguous and non factual.

### Item Analysis

Seventy five slips of the selected statements were handed over to the professors and extension educationists of Anand Agricultural University, Anand, poultry scientists and extension officers of Gujarat State. The judges were requested to judge each statement in terms of their agreement or disagreement with the statements with the five point equal appearing interval continuum. Out of these experts, only 50 experts had returned the statements after dully recording their judgments and were considered for the analysis.

**Determination of scale and values**

The five points of the rating scale were assigned scores ranging from 1 score (for strongly disagree) to 5 score (for strongly agree). For positive statement, 5, 4, 3, 2 and 1 score was given to strongly agree, agree, undecided, disagree and strongly disagree response respectively, while for negative statements scoring system was reversed. Frequency distribution of the scores of judges was than prepared. Based on the judgment, scale (median) value and ‘Q’ value for each of 48 statements were calculated by using following formula

$$S = L + \frac{0.50 - P_b}{P_w} \times i$$

Where,

S = The median or scale value of the statement

L = Lower limit of the interval in which the median falls

P<sub>b</sub> = The sum of the proportion below the interval in which the median falls

P<sub>w</sub> = The proportion within the interval in which the median falls

i = The width of the interval and is assumed to be equal to 1.0 ( one ).

The inter-quartile range (Q = Q<sub>3</sub> - Q<sub>1</sub>) for each statement was also worked out for determination of ambiguity involve in the statement.

When there was a good agreement among the judges, in judging the degree of agreement or disagreement of a statement, Q was small compared to the value obtained, when there was relatively little agreement among the judges. Only those items were selected whose median (scale) value were greater than Q values. However, when a few items had the same scale values, items having lowest Q value were selected. Based on the median and Q values 19 statements were finally selected to constitute attitude scale.

**Reliability of the scale**

The reliability of the test was examined by employing test-retest method. In this method, the developed attitude scale with 19 items was administered twice to the 20 poultry owners at 15 days interval, who were neither previously

interviewed nor had a chance to come in the final sample of study. Thus, two sets of attitude scores were obtained for 20 respondents. Co-efficient of reliability between the two sets of score was calculated by Rulon’s formula (Guliford 1954), which was 0.832.

$$r_{tt} = 1 - \frac{\sigma^2_d}{\sigma^2_t}$$

Where,

r<sub>tt</sub> = Co-efficient of reliability.

**Administering the scale**

The selected 19 statements for the final format of the attitude scale presented in Table- 1, are randomly arranged to avoid response biases, which might contribute to low reliability and detract from validity of the scale. The responses can be collected on five point continuums viz., strongly agree, agree, undecided, disagree and strongly disagree with respective weights of 5, 4, 3, 2, and 1 for the favorable statements and with the respective weights of 1, 2, 3, 4, and 5 for the unfavorable statements. With this same manner, attitude scale of farmers towards dehorning in cattle and attitude of tribal’s towards cross breed cattle rearing were developed and standardized statistically by Chauhan et al.(2015) and Panjabi et al. (2001), respectively.

**Table 1: Final statements of the scale to measure attitude of farmers towards poultry management practices**

Sr. No.	Statements	SU	MU	N	MF	SF
1	Improved poultry production technology is adopted extensively by most of poultry farmers.					
2	Adoption of new techniques in poultry production is a risky.					
3	Adopting improved poultry production technology one should get higher production of poultry produce.					
4	Improved poultry production technology is an instrument for social and economic change.					
5	There is no risk in adoption of Improved poultry production technology.					

6	Only progressive and big farmers can adopt Improved poultry production technology.					
7	Poultry production is not economically viable because it requires more investment.					
8	Adoption of new Improved poultry production technology affects the participation in social activities.					
9	Hybrid poultry strain is not given better result than the desi poultry strain.					
10	There is no matter a poultry ownershould be used either case system or deep letter system.					
11	No matter what poultry farmers may try, poultry production will be improved only when god will it.					
12	Expenditure on feeding is compensated by more production.					
13	Only educated farmers can cultivate the poultry production efficiently.					
14	Improved poultry production is difficult as it requires more technical skill.					
15	I would like to advise my son to continue improved poultry production technology.					
16	No matter, however new technology of poultry production may be tried, poultry production will not increase.					
17	Improved poultry production is not relevant to the need of most of the poultry farmers.					
18	I preferred improved poultry production due to low diseases attack.					
19	Improved poultry production increases the employment opportunity in rural area.					

**SU:**Strongly unfavourable, **MU:** Moderately unfavourable, **N:** Neutral, **MF:** Moderately favourable **SF:** Strongly favorable

## CONCLUSION

The scale developed to measure attitude of poultry farmers towards poultry management practices is reliable and valid, hence it may be used in future studies with due modifications.

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## KNOWLEDGE LEVEL OF PERSONNEL INVOLVED IN CONVERGENCE

**D. J. Patel<sup>1\*</sup> and R. D. Pandya<sup>2</sup>**

1 Postgraduate student (Extension Education)

2 Professor & head, Department of Extension Education, NMCA, NAU, Navasri - 396450

Email : darvinpatel1110@gmail.com

### ABSTRACTS

*With a view to know the correlation of knowledge about convergence the present study was undertaken in Navsari agricultural university. Majority of respondents had medium level of knowledge about the convergence. The independent variables viz., Age, education, designation, other responsibility, working distribution, working time, personality characteristic, farming experience, were non-significant relationship with knowledge about convergence*

**Keywords:** knowledge, convergence

### INTRODUCTION

Convergence plays important roles to avoid duplication work, collaboration between the departments, conflict management, improve the social relationship. Reducing work load, work finish timely as well as effectively, improve communication ability, improve leadership ability, sharing the strengths and weakness, etc. to members of the different organization. In different members of different department, institutes, organization of agriculture faced different problem like increases work load, conflict between the departments, not proper communication etc this problem is occurred / faced due to low level of knowledge about convergence. Convergence related different aspect about collaboration, communication, leadership the knowledge of convergence has great scope for reducing time, avoid duplication, conflict management, avoid work load in a organization due to this the study has been selected as knowledge about convergence.

### OBJECTIVE

To study the level of knowledge about way and mance of convergence

### METHODOLOGY

Present investigation was carried out in Navsari Agricultural University. Navsari agricultural have 4 sub-

college viz., surat, bharuch, dediapada, waghai,. Navsari agricultural university divided in five discipline; - agriculture, veterinary, horticulture, forestry, agriculture business management. All the discipline was divided in the different department. 40 respondents selected only those who have power to take the decision purchase money e.g principal, head of department, and research scientist. An Ex-post-factor research design was used in the present investigation. Knowledge of the respondents about convergence to measure with structured schedule was developed. Each question was given a score of one for correct answer and zero for incorrect answer.

### RESULTS AND DISCUSSION

**Table 1: Distribution of respondents according to their level of knowledge about the convergence**

n=40

Sr. No	Categories	Frequency	Percent
1	Low	06	15.00
2	Medium	30	75.00
3	High	04	10.00

Table 1 indicated that majority of the respondents (75.00 per cent) had medium level of knowledge about the convergence followed by 15.00 and 10.00 per cent had low and high level of knowledge about the convergence respectively.

**Table 2 : Relationship between independent variables and extent reading knowledge about convergence**  
n=40

Sr. No.	Independent variables	Coefficient of correlation
X <sub>1</sub>	Age	0.041538 <sup>NS</sup>
X <sub>2</sub>	Education	0.042750901 <sup>NS</sup>
X <sub>3</sub>	Designation	-0.167065211 <sup>NS</sup>
X <sub>4</sub>	Extracurricular activity	0.192260196 <sup>NS</sup>
X <sub>5</sub>	Academic	0.079870425 <sup>NS</sup>
X <sub>6</sub>	Education	0.231767694 <sup>NS</sup>
X <sub>7</sub>	Research	-0.097102895 <sup>NS</sup>
X <sub>8</sub>	Extension	-0.241605257 <sup>NS</sup>
X <sub>9</sub>	Working time	0.115244603 <sup>NS</sup>
X <sub>10</sub>	Personality characteristic	0.023262 <sup>NS</sup>

\* significant at 0.05 level

\*\* significant at 0.01 level

NS - Non significant

The data manifested in Table 2 that the age (0.041538<sup>NS</sup>), education (0.042750901<sup>NS</sup>), Extracurricular activity (0.192260196<sup>NS</sup>), academic (0.079270425<sup>NS</sup>), education (0.231767694<sup>NS</sup>) working time (0.115244603<sup>NS</sup>) personality characteristic (0.023262<sup>NS</sup>), had positive and non significant relationship with knowledge. Designation (-0.167065211<sup>NS</sup>), research (-0.097102895<sup>NS</sup>), extension (-0.241605257<sup>NS</sup>) of respondents found negative and non-

significant with level of knowledge about convergence.

## CONCLUSION

It can be concluded that majority of the respondents were medium level of knowledge about the convergence. Age, education, designation, other responsibility, working distribution, working time, personality characteristic, have non-significant relationship to the knowledge about convergence.

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## EXTENT OF AWARENESS OF PLANT PROTECTION MEASURES AMONG VEGETABLE AND FRUIT GROWERS

H. P. Sonawane<sup>1</sup> and S. S. Neware<sup>2</sup>

1 Assistant Professor, Department of Extension Education, College of Agriculture, Pune (M.S.)

2 J.R.A. Department of Extension Education, College of Agriculture, Pune (M.S.)

Email : hpsonwane7@gmail.com

### ABSTRACT

*The present study was conducted in Pune district of Maharashtra state. Pune district was purposively selected for the study because it is having large area under vegetable and fruit cultivation. From Pune district Ambegaon, Junnar and Khed tahsils were selected on the basis of area under vegetable and fruit cultivation as the area of present research study. There were 13 villages from 3 tahsil selected. The findings of the study are based on the data collected by interviewing 115 selected vegetable and fruit growers. Out of 110 vegetable and fruit growers who used 'Fipronil', vast majority (80.00 per cent) were using it 'more than recommended dose', while in case of 'Dimethoate', majority (90.00 per cent) of the respondents were using 'more than recommended dose' and of those who were using 'Thiamethoxam', 52.00 per cent were using it 'as per recommended dose'. Majority (94.78 per cent) of the respondents were aware about adverse effects namely, 'Headache' (94.78 per cent), 'Irritation in eyes' (93.91 per cent), 'Itching on skin' (90.43 per cent), 'Nausea' (84.35 per cent), 'pesticide causes death of valuable pollinators like honey bee' (72.17 per cent), 'persistent chemicals contaminate soil for longer period' (59.13 per cent) and 'developed pesticide resistant in pest due to constant use' (53.91 per cent). 'Pesticides should be kept away from reach of children and animals' (98.26 per cent), 'pesticides should be stored in cool, dry, safe and locked room' (85.22 per cent), 'washing of spray pumps near the river and wells should be avoided' (70.43 per cent), 'the clogged nozzle and other parts should not be blown by mouth' (64.35 per cent) and 'empty tins of pesticides should not be used' (53.91 per cent) were the major suggestions given by them. There is a need to convey the message that prevention of adverse health effects and promotion of health are profitable investments for employers and employees as a support to a sustainable development of economics. To sum up, based on our limited knowledge of direct or inferential information, the domain of pesticides illustrates a certain ambiguity in situations in which people are undergoing life-long exposure. There is thus every reason to develop health education packages based on knowledge, attitude and practices and to disseminate them within the community in order to minimize human exposure to pesticides.*

**Keywords :** plant protection measures, vegetable & fruit growers

### INTRODUCTION

'Agriculture pollution' is defined as the liquid and solid wastes from all types of farming, including the run-off from pesticides, fertilizers and feed lots. Crop protection in India begun in 1947- 48 with introduction of Benzene Hexa Chlorine (BHC) and Dichloro Diphenyl Trichloro Ethane (DDT) for the control of insect pest of agriculture and public health importance. Later, copper based Bordeaux mixture and Burgundy mixture became prominent as they were more effective and not phytotoxic. From 1950 onwards, mercury compounds were introduced from Germany particularly, as seed dressers. Later, organophosphorous compounds, organosulphur fungicide, rodenticides were released for use. Today, India is the largest manufacturer of pesticides in the world.

There are more than 234 registered pesticides in India and the Indian pesticide industry includes more than 125 large and medium scale producers of more than 500 pesticide products. Among the various pesticide formulations produced, dust formulations constitute about 85% of the total, followed by water-soluble dispersible powder (12%) and dispersible powder (2%). India is one of the few remaining countries still producing and using some of the chlorinated pesticides such as DDT and lindane (Abhilash and Singh, 2009; Vijgen *et al.* 2011).

Use of pesticides in India is increasing at the rate of 2.00 to 5.00 per cent per annum and is about 3.00 per cent of total pesticides used in world. About 90,000 metric

tonnes of technical grade pesticides are currently produced and more than 67.00 per cent is used in agriculture sector alone (Nigam and Murthy, 2000). However, the consumption of pesticides in India is relatively less i.e. 0.400 kg / ha than in USA (3 kg/ha), Malaysia (9 kg/ha) or Japan (11 kg/ha). Among the various states, Uttar Pradesh is the largest consumer followed by Punjab, Haryana and Maharashtra. Regarding the pesticide share across agricultural crops, cotton account for 45%, followed by rice (25%), chillies/vegetables/fruits (13-24%), plantations (7-8%), cereals other than rice seeds (6-7%), sugarcane (2-3%) and other (1-2%) (Gupta, 2004; Abhilash and Singh, 2009). There are 400 insecticides in the schedule of Insecticide Act 1968 as against 129 at the time of enactment of the Act. Of these, 164 pesticides are registered so far, 78 products are being produced in India (Kulsheshta 1992).

Exposure to pesticides, both occupationally and environmentally, causes a range of human health problems. It is estimated that nearly 10,000 deaths occur annually due to use of chemical pesticide worldwide, with about three-fourth of these occurring in developing countries. At present, India is the largest producer of pesticides in Asia and ranks twelfth in the world for the use of pesticides with an annual production of 90,000 tons (Meera and Bahal, 2000). A vast majority of the population in India (56.70 per cent) is engaged in agriculture and therefore exposed to the pesticides used in agriculture. Pesticides being used in agricultural tracts are released into the environment and come into human contact directly or indirectly. Humans are exposed to pesticides found in environmental media (soil, water, air and food) by different routes of exposure such as inhalation, ingestion and dermal contact. Exposure to pesticides results in acute and chronic health problems. These range from temporary acute effects like irritation of eyes, excessive salivation to chronic diseases like cancer, reproductive and developmental disorders etc.

Although efforts are made to restrict pesticides to the targeted crops and their pests, pesticides easily reach adjacent vegetation, wild life, soil, water and sometimes humans. In this way, the impact of pesticides is felt throughout the environment and public health. Frequent use of pesticides often adversely affects the health of humans when they are exposed to them. Health and environment problems arise not only from use of chemicals and pesticides, but also from their production. Frequent use of pesticides destroy not only targeted pest, but also naturally present beneficial predators and parasites, which help keep pest population in cultivated

and wild areas in check. Without their natural enemies, secondary pests present in the crops are able to reach outbreak levels. Another serious and costly side effect of heavy pesticides use has been the development of pesticide resistance in pest, insects, pathogens and weeds.

## OBJECTIVES

- (1) To study the profile of the respondent farmer
- (2) To study the extent use of pesticides and plant protection practices followed by respondent farmer
- (3) To study the awareness of respondent farmers about adverse effects of pesticides

## METHODOLOGY

The study was conducted in Pune district of Maharashtra. Considering the maximum area under vegetable and fruit cultivation, three tahsils viz; Khed, Ambegaon and Junnar were selected. From Ambegaon and Junnar tahsil, four villages were selected. Ten vegetable and fruit growers were selected randomly from each village from Ambegaon and Junnar tahsil and from Khed tahsil five villages were selected and seven vegetable and fruit growers were selected randomly from each village. In all, 115 farmers were selected. An interview schedule was specially designed in line with the objectives set forth to collect the needed information. The data were collected by personally interviewing the selected farmers.

## RESULTS AND DISCUSSION

### Profile of the vegetable and fruit growers

It was observed that majority (62.61 per cent) of the respondents was in the 'middle' age group and their average age was 46.00 years. As regards education, a maximum number (60.87 per cent) of the respondents had completed 'Secondary' followed by 'College' education (14.78 per cent). Amongst the respondents, 46.09 per cent and 35.65 per cent had 'marginal' and 'small' land holdings, respectively. The average land holding of the respondents was 1.75 ha. It is revealed that, majority number (62.61 per cent) of the respondents had 'medium' annual income. The average annual income of the respondents was Rs. 3.77 lakh. Regarding experience in vegetable and fruit cultivation, 61.74 per cent of the respondents had 'medium' experience in vegetable and fruit cultivation. On an average, the respondents had 19 years of experience in vegetable and fruit cultivation. With regards to area under vegetable and fruit,

53.91 per cent of the respondents were having 'low' area under vegetable and fruit cultivation with an average area of 1.5 ha. Maximum numbers of the respondents (68.70 per cent) were in the 'medium' category of extension contact. Majority of the respondents (59.13 per cent) were in the category of 'medium' source of information. Whereas, 74.78 per cent of the respondents had 'medium' risk preference and 71.30 per cent of the respondents in the 'medium' category

of economic motivation.

#### Extent of use of pesticides and plant protection practices followed by the vegetable and fruit growers

The results of the present investigation, in respect of nature and extent of use of pesticides by the vegetable and fruit growers is given in Table 1.

**Table 1: Distribution of the respondents according to nature and extent of pesticides used by them**

n=115

Chemical method						
Sr. No.	Crop (Major pest)	Pesticides& dose (ml/10 lit)	As per recommended dose	More than recommended dose	Less than recommended dose	Total
<b>a</b>	<b>Vegetables</b>					
1	Onion (Thrips)	Fipronil (20 gm)	22 (20.00)	88 (80.00)	-	110 (100.00)
2	Tomato (Leaf-miner)	Dimethoa-te (20 ml)	07 (10.00)	61 (90.00)	-	68 (100.00)
3	Potato (Aphid)	Thiamet-hoxam (250 gm)	26 (52.00)	24 (48.00)	-	50 (100.00)
4	Chilli (Thrips)	Imidachl-orpid (20 gm)	16 (31.00)	22 (42.00)	14 (27.00)	52 (100.00)
5	Brinjal. (Stem borer)	Dichlorv-os (20 ml)	-	33 (89.00)	4 (11.00)	37 (100.00)
<b>b</b>	<b>Fruits</b>					
6	Mango (Mangohopper)	Acephate (10 gm)	-	24 (100.00)	-	24 (100.00)
7	Sapota (Moth)	Carbaryl (15 ml)	13 (15.00)	76 (85.00)	-	89 (100.00)
8	Grapes (Mealy bug)	Monocrot-ophos (16 ml)	05 (18.00)	23 (82.00)	-	28 (100.00)

It is observed from table 1 that, out of 110 vegetable and fruit growers who had used 'Fipronil' of which vast majority (80.00 per cent) of them were using it 'more than recommended dose' and only 20.00 per cent of the respondents were using 'as per recommended dose'. Among tomato growers, in case of 'Dimethoate', majority (90.00 per cent) of the respondents were using 'more than recommended dose', followed by one-tenth of the respondents (10.00 per cent) 'as per recommended dose'.

The respondents of potato growers those were using 'Thiamethoxam' 52.00 per cent of them using it 'as per recommended dose' and 48.00 per cent of them were using 'more than recommended dose', whereas, out of 52 respondents of chilli growers those who were using 'Imidachlorpid' maximum number (42.00 per cent) of them were using

'more than recommended dose', followed by 31.00 per cent 'as per recommended dose' and 27.00 per cent 'less than recommended dose'. Out of 37 'Dichlorvos' using respondents, majority (89.00 per cent) of them were using 'more than recommended dose' followed by 11.00 per cent respondents 'less than recommended dose'.

In case of 'Acephate' all mango growers (100.00 per cent) were using these pesticides 'more than recommended dose'. Whereas out of 89 'Carbaryl' users majority of them (85.00 per cent) were using it 'more than recommended dose' while 15.00 per cent of them were using it 'as per recommended dose'. In case of 'Monocrotophos' users majority of them were using 'more than recommended dose' (82.00 per cent), while only 18.00 per cent of them were using 'as per recommended dose'.

Other measures		Yes	No	Total
<b>(a) Mechanical measures</b>				
1	Cutting of infected branches	44 (38.26%)	71 (61.74%)	115 (100.00)
2	Cleaning of orchard	107 (93.04%)	8 (6.96%)	115 (100.00)
3	Use of smoke	-	115 (100.00%)	115 (100.00)
4	Intercultural operations	71 (61.74%)	44 (38.26%)	115 (100.00)
<b>(b) Biological measures</b>				
5	Use of “Rakshak trap”	69 (60.00%)	46 (40.00%)	115 (100.00)
6	Use of parasites and predators	-	115 (100.00)	115 (100.00)

Note : Figures in parentheses indicate percentages

In case of other measures, it was observed that majority (61.74 per cent) of the respondents had not followed the practice of ‘cutting of infected branches’, whereas majority (93.04 per cent) of the respondents were following the practice of ‘cleaning of orchard’. Out of 115 respondents none of them followed the practice of ‘use of smoke’ for the control of insect-pest. Three-fifth (60.00 per cent) of the respondents were using ‘Rakshak trap’ for the control of fruit fly, while 61.74 per cent followed ‘intercultural operations’. It is observed that, none of the respondents were ‘using parasites and predators’ for the control of pest and diseases in vegetable and fruit.

**Awareness of vegetable and fruit growers about adverse effects of pesticides**

The results regarding overall awareness about adverse effects of pesticides is given in table2.

**Table 2: Distribution of respondents according to their awareness about adverse effects of pesticides**

n=115

Sl. No.	Awareness	Number	Percent
1	Low (Up to 14 score)	23	20.00
2	Medium ( 15 to 19 score)	71	61.74
3	High (20 score and above)	21	18.26

It is observed from table 2 that, majority (61.74 per cent) of the respondents had ‘medium’ awareness about adverse effects of pesticides, while remaining 20.00 per cent

and 18.26 per cent of the respondents had ‘low’ and ‘high’ awareness, respectively. On an average, awareness of the respondents had 17 score.

**CONCLUSION**

Majority of the vegetable and fruit growers belonged to the middle age group most of them had received secondary education, having marginal land holding and followed by small, medium income group, medium experience in vegetable and fruit cultivation, had medium extension contact, medium Source of information, medium risk orientation, with medium economic motivation. Majority of vegetable and fruit growers possessed medium awareness about adverse effect of pesticides.

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## DETERMINANTS IN KNOWLEDGE ABOUT RECOMMENDED PACKAGE OF PRACTICES OF ROOT AND TUBER CROPS

R. M. Naik<sup>1</sup>, V. B. Girawale<sup>2</sup> and G.G.Chauhan<sup>3</sup>

1 Associate professor, Department of Extension Education, NMCA, NAU, Navsari - 396450

2 Postgraduate Scholar (Extension Education), NAU, Navsari - 396450

3 Assistant Professor, College of Agriculture, NAU, Waghai - 394730

Email: rmnaik@nau.in

### ABSTRACT

*With a view to know the correlation of knowledge about recommended package of practices of root and tuber crops with the root and tuber crop growers characteristics, the present study was undertaken in Navsari district of Gujarat. Majority of root and tuber crop growers had medium level of knowledge about recommended package of practices of root and tuber crops. The independent variables viz., farming experience, social participation, mass media exposure, education, size of land holding, annual income, extension contact and extension participation were positively and significantly correlated with knowledge about recommended package of practices of root & tuber crops.*

**Keywords :** knowledge, root tuber crops, package of practices

### INTRODUCTION

Tropical root and tuber crops are considered as the third important group of food crops after cereals and grain legumes. They contribute 6 percent of the average daily calorific intake of human beings. Mostly tropical tuber crop produced, that are used for human food and animal feed. Elephant foot yam, Greater yam, Aerial yam, Colocasia, Tannia, and Sweet potato play a major role in the socio-economic condition of small and marginal farmers of tribal areas of Gujarat region in context of food and nutrition security. It is believable that to motivate farmers for adopting recommended package of practices of root & tuber crops for food security and nutritional security is very much essential. Final decision of farmers to adopt root & tuber crops cultivation is usually the result of their knowledge about recommended package of practices of tuber crops. Knowledge of the root and tuber crop growers can be affected by their various characteristics. In this context, an attempt has been made to carry out the present investigation.

### OBJECTIVE

To know the determinants in knowledge about recommended package of practices of root and tuber crops

### METHODOLOGY

The study was conducted during April-June 2016 in Navsari district of Gujarat state. Gandevi, Chikhali and Khergam Talukas were randomly selected from Navsari district. From each taluka three villages were selected randomly with maximum number of root and tuber crop growers. In each of the selected villages farmers were selected according to random proportionate sampling to form 70 respondents as a sample size for the study. In order to measure correlation between profile of root and tuber crop growers and knowledge of recommended package of practices, various scale developed by different social scientist were adopted with due modification and correlation of coefficient (r) test was applied.

### RESULTS AND DISCUSSION

#### **Relationship between the personal, socio-economic characteristics of root and tuber crop growers and their knowledge**

The association between the profile of root and tuber crop growers and their knowledge about recommended package of practices of root and tuber crops were worked out with the help coefficient of correlation. The findings were presented in Table 1.

**Table 1: Relationship between profile of the root and tuber crop growers and their knowledge regarding recommended package of practices of root and tuber crops**

n=70

Sr. No.	Independent Variables	Correlation-Coefficient ('r' value)
X <sub>1</sub>	Age	0.099 NS
X <sub>2</sub>	Education	0.736**
X <sub>3</sub>	Farming experience	0.204*
X <sub>4</sub>	Size of land holding	0.299**
X <sub>5</sub>	Annual income	0.535**
X <sub>6</sub>	Material possession	0.122NS
X <sub>7</sub>	Extension contact	0.491**
X <sub>8</sub>	Extension participation	0.344**
X <sub>9</sub>	Social participation	0.250*
X <sub>10</sub>	Mass media exposure	0.201*

NS= non-significant

\* = significant at 0.05 level

\*\*=significant at 0.01 level

The data manifested in the Table 1 revealed that in case of root and tuber crop growers, characteristics such as age ( $r = 0.099$ ) and material possession ( $r = 0.122$ ) was positive and non-significantly correlated with knowledge level. The characteristics such as farming experience ( $r = 0.204$ ), social

participation ( $r = 0.250$ ) and mass media exposure ( $r = 0.201$ ) was positive and significantly correlated with knowledge level. Education ( $r = 0.736$ ), size of land holding ( $r = 0.299$ ), annual income ( $r = 0.535$ ), extension contact ( $r = 0.491$ ) and extension participation ( $r = 0.344$ ) were positive and high significant with knowledge level.

## CONCLUSION

There were positive and significant relationship between farming experience, social participation, mass media exposure, education, size of land holding, annual income, extension contact and extension participation with the level of knowledge about recommended package of practices of root & tuber crops.

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## **PARTICIPATION OF TRIBAL DAIRY WOMEN SPECIAL REFERENCE TO FEEDING AND BREEDING PRACTICES IN ANIMAL HUSBANDRY AND DAIRY**

**S. G. Vahora<sup>1</sup>, G. N. Thorat<sup>2</sup> and D. B. Ramjiyani<sup>3</sup>**

1 Associate Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadhi Baria - 389 380

2 Assistant Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadhi Baria - 389 380

3 Research Associate, TRTC, AAU, Devgadhi Baria - 389 380

Email: gunvantthorat@rediffmail.com

### *ABSTRACT*

*The role of women in tribal communities is substantial and crucial. They constitute about half the total population but in tribal society women are more important than in other social groups, because they work harder and the family economy and management depends on them. The objectives of the present research were to find out the participation of Tribal Dairy Women (TDW) special reference to nutritional and breeding practices in animal husbandry. The studies involved total of 100 TDW respondents from each 10 villages of selected five talukas of Dahod districts of Gujarat. Related data were collected with the help of personal interview technique. Data were analyzed by appropriate statistical tools. Study revealed that majority of TDW involved, feeding the animal, watering the animals, storage of feed & fodder and fodder collection while according participation in breeding practices, it was concluded that majority of dairy women were participation in giving warm water bath after calving, care during pregnancy, detection of heat and involvement during parturition*

**Keywords:** *tribal dairy women, participation, animal husbandry, breeding and feeding*

### **INTRODUCTION**

Dairying is one of the important enterprises, which supports the rural households by providing gainful employment and steady income. The importance of milk and milk products for the physical development and well-being of human beings is universally recognized. But profitability of dairying depends upon three main factors viz. breed, management and feeding practices followed. Feeding plays a very crucial/important role in growth, development and productivity of dairy animals. Adequate feeding will ensure that animal attains desired body weight, produce more milk and remains healthy. As feeding alone accounts for around 70% of the expenses incurred for dairying it further augment its importance.

In India, women involvement in livestock management is a longstanding tradition and dairy farming has been an integral part of homestead farming system. Many research studies have indicated that responsibilities of dairy are almost completely shouldered by women. There is considerable evidence that livestock and management

related activities continue to be predominately rural women's responsibility and domain. Women are generally responsible for the feeding, grazing, fodder collection, milking, processing, dung management, while men who manage the finances generally sale of milk and milk products (Sethi, 2010). Women are actively participating in various dairy farming practices including harvesting and bringing of fodder from field, care of sick animal, feed preparation, feeding the animal, cleaning of animal shed, milking, cow dung collection and cake making, etc. as reported by Narmatha *et al.*, 2009.

### **OBJECTIVE**

To know the participation of tribal dairy women special reference to feeding and breeding practices in animal husbandry and dairy

### **METHODOLOGY**

The present study was conducted in operational area of Pashu Vigyan Kendra, Limkheda. Out of eight talukas of Dahod district five talukas namely Devgadhi Baria, Limkheda, Dahod, Garbada and Zalod were selected. From each Taluka



two villages were selected randomly and from each selected village, 10 dairy women were randomly selected making the total sample of 100 dairy farmers. Interview schedule was prepared in light of the objectives in consultation with extension experts. The data was collected through personal interview method.

## RESULTS AND DISCUSSION

The facts and findings of the study are presented under following heads:

### (a) Feeding Practices

Data pertaining to participation of dairy women regarding harvesting the fodder crops practices reveal that 44.00 per cent dairy women were grouped into 'fully

participated' category while equally 28.00 per cent were grouped under 'participated' and 'not participated' category.

As far as participation with respect to fodder collection is concerned, slightly less than half (49.00 per cent) of dairy women fell under the category "fully participated", whereas 42.00 per cent and 14.00 per cent of them were found in the "participated" and "not participated" group, respectively.

Further, in case of use of storage of feed and fodder, more than two-fifth (44.00 per cent) of the dairy women belonged to 'fully participated' group while 42.00 per cent and 14.00 per cent dairy women were found under 'participated' and 'not participated' group, respectively.

**Table 1: Distribution of the dairy women according to their item wise participation in feeding practices**

n=100

Sr. No.	Feeding practices	Fully participated	Participated	Not at all	Total score	Mean Score	Rank
1	Harvesting the fodder, crops	44 (44.00)	28 (28.00)	28 (28.00)	216	2.16	V
2	Fodder collection	49 (49.00)	30 (30.00)	21 (21.00)	228	2.28	IV
3	Storage of feed & fodder	44 (44.00)	42 (42.00)	14 (14.00)	230	2.30	III
4	Chaffing fodder	09 (9.00)	35 (35.00)	56 (56.00)	153	1.53	VIII
5	Feeding the animals	62 (62.00)	32 (32.00)	06 (6.00)	256	2.56	I
6	Taking animals for grazing	35 (35.00)	31 (31.00)	34 (34.00)	201	2.01	VII
7	Soaking of concentration	03 (3.00)	47 (47.00)	50 (50.00)	153	1.53	VIII
8	Offering the concentrate to animals	07 (7.00)	37 (37.00)	56 (56.00)	151	1.51	IX
9	Feeding of young calf	36 (36.00)	43 (43.00)	21 (21.00)	215	2.15	VI
10	Watering the animals	45 (45.00)	47 (47.00)	8 (8.00)	237	2.37	II

Note : Figures in parenthesis indicate percentage

Participation of the dairy women regarding chaffing fodder revealed more than half of the dairy women were in the category of 'not participated'

With regard to feeding the animals, it was found that 62.00 per cent tribal dairy women participated fully and 32.00 per cent participated. Only 6.00 per cent were found having no participation which is in consonance with the findings of Gupta *et.al.* (1986) and Toppo *et.al.* (2004).

It is evident from Table 1 that equal percentage of the dairy women fell under 'fully participated, not participated and participated group for taking animals for grazing by dairy women

In soaking of concentration, 56.00 per cent of dairy women were found in the category 'not participated', whereas 47.00 per cent were found 'participated' group. Only 3.00 per cent of dairy women were fully participated.

Same as review in offering the concentration to animal that exactly half (50.00 per cent) of the dairy women were felt under ‘not participated’ whereas 37.00 per cent and 7.00 per cent of respondents were in the group of ‘participated’ and ‘fully participated’, respectively.

In case of feeding of young calf, 43.00 per cent of dairy women were found in the category “participated” followed by 36.00 per cent with “fully participation” and 21.00 per cent with “not participated”.

In the activity of watering animals, it was found that 47.00 per cent tribal dairy women were in the group of participated and 45.00 per cent were fully participated. Only 8.00 per cent women found having no participation.

According to item wise participation related to nutrient practices feeding the animal ranked first with mean score 2.56 followed by watering the animals(2.37), storage of feed & fodder(2.30), fodder collection(2.28), harvesting

the fodder crops(2.16), feeding of young calf(2.15), taking animals for grazing(2.01), chaffing fodder(1.53) and soaking of concentration (1.53) and offering the concentrate to animals(1.51) with ranked II, III, IV, V, VI, VII, VIII, and IX, respectively.

**(b) Breeding Practices**

Proper and better care of breeding stock helps in developing good dairy herd and getting good returns too. Rural women participation in breeding activities was found to be least among all the selected activities of animal husbandry due to social moves and taboos in society.

The roles of toda women in the context of genetic resources include exotic breeds husbandry (4.52) (for example Toda buffalo, a unique buffalo breed named after toda community), livestock maintenance (4.50) and cultivating domesticated crop varieties (4.03).

**Table 2: Distribution of the dairy women according to their item wise participation in breeding practices**

n=100

Sr. No.	Breeding Practices	Fully participated	Participated	Not at all	Total score	Mean Score	Rank
1	Detection of heat	25 (25.00)	54 (54.00)	21 (21.00)	204	2.04	III
2	To call AI Worker for AI	15 (15.00)	45 (45.00)	40 (40.00)	175	1.75	V
3	Taking animals for A.I./ Natural service	14 (14.00)	35 (35.00)	51 (51.00)	163	1.63	VI
4	Taking animal for pregnancy diagnosis	19 (19.00)	48 (48.00)	33 (33.00)	186	1.86	IV
5	Care during pregnancy	46 (46.00)	40 (40.00)	14 (14.00)	232	2.32	II
6	Involvement during parturition	34 (34.00)	36 (36.00)	30 (30.00)	204	2.04	III
7	Giving warm water bath after calving	48 (48.00)	39 (36.00)	13 (13.00)	235	2.35	I

Note : Figures in parenthesis indicate percentage

With regards detection of heat from data presented in Table-2, it is observed that majority of the dairy women(54.00 per cent) were grouped in ‘participation’ while 25.00 per cent and 21.00 per cent of the dairy women were categorized under ‘fully participation’ and ‘not participation’ group.

The data with respect to call AI Worker for AI, 45.00 per cent of dairy women were participated followed by 40.00 per cent with ‘not participation at all’ and 15.00 per cent with fully participated.

Data presented in Table-2, reveal that more than half

(51.00 per cent) of dairy women were not taking animal for AI/ Natural Services while less than half (48.00 per cent) of dairy women participated in the activity of taking animal for pregnancy diagnosis.

With regards to care during pregnancy, it was found that 46.00 per cent dairy women were having fully participated, whereas 40.00 per cent participated and only 14.00 per cent were fully not participated.

The data presented in Table-2, revealed that 36.00 per cent of dairy women have participated during parturition, while

34.00 per cent and 30.00 per cent with fully participated and not participated during parturition, respectively.

Majority (48.00 per cent) of dairy women fully participated in giving warm water bath after calving, followed by 39.00 per cent with participation and 13.00 per cent with not participation.

According to item wise participation on breeding practices, giving warm water bath after calving ranked first with mean score 2.35 followed by care during pregnancy (2.32), detection of heat and involvement during parturition(2.04), taking animal for pregnancy diagnosis (1.63), to call AI Worker for AI (1.75) and taking animals for A.I./ Natural service (1.63) with rank of II, III, IV, V and VI, respectively. These findings are in conformity with Tripathi and Bhanja (2000), Singh (2003) and Rathod *et al.* (2011).

## CONCLUSION

It is necessary that encourage of tribal farm women for development of his family by appropriate decision and it is a task for government, policy makers and for all to empower the tribal farm women from each and everywhere. Overall observation on participation of tribal farm women in animal husbandry and dairy farming with special reference to feeding practices, majority of tribal dairy women were most important areas ranked first and second, respectively. In breeding related activities, majority of women were more participated in giving warm water bath after calving and care during pregnancy with first and second rank.

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## ATTITUDE OF FARMERS ABOUT SOIL HEALTH CARD PROGRAMME

A. M. Pandya<sup>1</sup> and C. K. Timbadia<sup>2</sup>

1 Postgraduate student (Extension Education)

2 Programme Co-ordinator, KVK, Navsari - 396450

Email : abhipandya566@gmail.com

### ABSTRACT

*This paper examined Navsari district of Gujarat state to access the attitude of farmers about soil health card programme. This study has conducted in five villages' viz, Matvad, Aat, Partapor, Karadi, and Mora. A scale developed by department of extension education to measure attitude of 50 farmers was approached personally by the investigators for the collection of data. From the data it can be revealed that slightly more than half (66 per cent) of respondents had most favourable attitude towards soil health card programme. While, 22 per cent, 10 per cent, 2 per cent, respondent had favourable, neutral, and unfavourable attitude towards soil health card programme, respectively.*

**Keywords :** attitude, soil health card programme

### INTRODUCTION

Attitude refers to the “degree of positive or negative feeling associated with some psychological object” In the present study, attitude is conceptualized as most unfavourable, unfavourable, neutral, favourable and most favourable feeling of farmers towards soil health card programme. Injudicious and haphazard use of chemical fertilizer in agriculture is a matter of concern in recent times. To avoid deterioration of soil in long run and visualizing the importance of balance nutrient in crop production, government of Gujarat commence soil health card programme. The soil health card provides soil health data to get appropriate guidance to the farmers for the efficient use of fertilizer to cultivate crop based on soil health analysis. The soil health card is a simple document, which contains useful data on soil based on chemical analysis of the soil describe soil health in terms of its nutrient availability and its physical and chemical properties. The soil health card is made available online also for the farmers. To understand the feelings of the farmers against this system, there was an urgent need to study the degree of positive or negative disposition associated with farmer towards the usefulness and application of soil health card.

### OBJECTIVE

To know the attitude of farmers about soil health

card programme

### METHODOLOGY

The present investigation was conducted in Navsari district of Gujarat state. All the five villages of Navsari district under were select for the study. Ten respondents from each village were selected randomly and thus total 50 farmers were selected as respondent. For collecting the data from the respondent, personal interview method was used. The statistical tool like Frequency. Percentages, correlation of coefficient were used to analyze the data.

### RESULTS AND DISCUSSION

Attitude are frequency described in terms of personal consistency, as a “latent concept” that is individual-dependent”. Attitude strength is an important determinant of attitude behavior relationship. The attitude construct, as a person’s degree of evaluate affect toward target behavior. Attitude as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor. Individual might hold multiple attitudes about an object. To measure attitude of the respondents towards soil health card programme, scale developed by patel and chauhan (2012) was applied.

**Table 1: Distribution of the respondents according to their attitude towards soil health card programme**

n= 50

Sr. No.	Category	Frequency	Percent
1	Most unfavourable ( up to 20 score )	00	00
2	unfavourable ( 21– 25 score )	01	02
3	Neutral ( 26 – 30 score )	05	10
4	favourable ( 31 – 35 score )	11	22
5	Most favourable ( above 35 score )	33	66

The Table 1 shows that data regarding attitude of the respondents towards soil health card programme. The data given in table illustrated that slightly less than three fourth (66 per cent) of respondents had most favourable attitude towards soil health card programme. While, 22 per cent, 10 per cent, 2 per cent respondents had favourable, neutral and unfavourable attitude towards soil health card programme, respectively.

**Relationship between attitude of farmers towards soil health card programme and their selected characteristics**

Soil health card programme is not a unit act but a complex process involving sequence and thought of action. The action of individual farmers is governed by personal, social, psychological and cultural factors involved in situation. Some farmers manage new cultivation technology more quickly than others because of the difference in personal, socio-economical, Psychological, situational and communication characteristics.

Similarly if there is difference in economic factors, process of action is changed, there by changing the pattern of management. Thus, it may be stated that the degree of attitude of the respondents towards soil health card programme differs with their personal, social-communicational, economic and psychological characteristics. Hence considering the importance of these characteristics and review of past research studies, an attempt has been made in this investigation to ascertain the relationship if any, between personal, social, economic, communicational and psychological characteristics of the respondents and their attitude towards soil health card programme.

Correlation coefficient was used to calculate

relationship between the characteristics of respondents and their attitude towards soil health card programme. The results obtained are presented in Table 2.

**Table 2: Relationship between the characteristics of respondents and their attitude towards soil health card programme**  
n=50

Sr. No.	Independent Variables	Correlation Coefficient ('r' value)
X <sub>1</sub>	Age	-0.019NS
X <sub>2</sub>	Education	-0.035NS
X <sub>3</sub>	Mass media exposure	0.104NS
X <sub>4</sub>	Extension contact	0.536**
X <sub>5</sub>	Social participation	0.122NS
X <sub>6</sub>	Land holding	0.359**
X <sub>7</sub>	Annual income	0.248*
X <sub>8</sub>	Scientific orientation	0.658*
X <sub>9</sub>	Economic motivation	0.055NS
X <sub>10</sub>	Innovativeness	0.055NS
X <sub>11</sub>	Cosmopolitaness	-0.017NS
X <sub>12</sub>	Knowledge regarding soil health card programme	0.290**

\* = significant at 5% level of probability

\*\*= significant at 1% level of probability

NS= non significant

The Table-2 shows that age, education, mass media exposure, social participation, economic motivation, innovativeness and cosmopolitaness are non significant with attitude about soil health card programme and extension contacts, land holding and knowledge regarding soil health card programme are highly significant with attitude about soil health card programme and annual income and scientific orientation is significant with attitude about soil health card programme.

**CONCLUSION**

The majority (66 percent) respondent had most favourable attitude towards soil health card programme as it is just new entrant in farming community and on other hand lot of publicity was made by extension functionary about soil health card programme might be the possible reason, and age, education, mass media exposure, social participation, economic motivation, innovativeness and cosmopolitaness are non significant with attitude about soil health card programme and extension contacts, land holding and knowledge regarding soil health card programme are highly significant with attitude about soil health card programme and annual income and scientific orientation is significant

with attitude about soil health card programme.

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## RELATIONSHIP BETWEEN THE PROFILE OF SMALL SCALE HORTICULTURAL NURSERY GROWERS AND THEIR MANAGEMENT EFFICIENCY

A.G.Patel<sup>1</sup> and H.U.Vyas<sup>2</sup>

1 P.G. Student, NMCA, NAU, Navsari - 396450

2 Associate Professor, DEE, NAU, Navsari - 396450

Email : patelankit07477@gmail.com

### ABSTRACT

*The present investigation was carried out in the Navsari and Valsad districts of south Gujarat. Vandsa taluka and Valsad taluka were selected purposively from Navsari and Valsad district, respectively. Doldha and Kamboya villages from Vandsa taluka while Bhomapardi and Ronvel villages from Valsad taluka were purposively selected for the study. A random sampling technique was followed for selection of respondents from selected village. Thereafter, 25 farmers from each village were selected randomly. Thus, total 100 small scale horticultural nursery growers were selected as respondents from four selected villages. A result of a study revealed that only age was negatively and non-significantly correlated with management efficiency of small scale horticultural nursery growers. Social participation, extension contact, mass media exposure and market orientation were positively and significantly correlated at 0.05 level of probability with management efficiency of small scale horticultural nursery growers. Education, experience, land holding, annual income, economic motivation, risk orientation and scientific orientation were positively and highly significantly correlated at 0.01 level of probability with management efficiency of small scale horticultural nursery growers.*

**Keywords:** management efficiency, small scale horticultural nursery growers

### INTRODUCTION

Nursery is a place where plants are cultivated and grown to usable size. The nursery management gained a status of commercial venture where retailer nurseries sell planting materials to the general public, wholesale nurseries which sell only to the other nurseries and to commercial landscape gardeners and private nurseries which supply the needs of the institutions or private estates, since most of the horticultural crops all the related aspects to nursery for production of quality planting materials.

Management is an important factor to utilize these available resources and accumulate capital in effective manner. Gradual but steady development of society required the development of this agency management. Today, we find management is playing an immense role at every place. In future the growth of different sectors including agriculture and society depends upon the efficiency of management. That is why; we find that the pace of management development is faster than the other disciplines.

### OBJECTIVE

To ascertain the relationship between selected

characteristics of small scale horticultural nursery growers and their management efficiency

### METHODOLOGY

The present study was conducted in South Gujarat region. Out of seven districts of South Gujarat, Navsari and Valsad districts were purposively selected for the study because these two districts are the leading horticulture nursery crops growing districts of South Gujarat. Vandsa taluka and Valsad taluka were selected purposively from Navsari and Valsad district, respectively because in these talukas, villages farmers were engaged in small scale horticultural nursery business. Doldha and Kamboya villages from Vandsa taluka while Bhomapardi and Ronvel villages from Valsad taluka were purposively selected for the study because in these villages of Vandsa and Valsad taluka most of the farmers doing small scale horticultural nursery business. A random sampling technique was followed for selection of respondents from selected village. Thereafter, 25 farmers from each village were selected randomly. Thus, total 100 small scale horticultural nursery growers were selected as respondents from four selected villages.

**RESULTS AND DISCUSSION**

Considering the important characteristic of small scale horticultural nursery growers and review of past research studies, an attempt has been made in this investigation to ascertain the relationship if any, between characteristics of respondents and their management efficiency. The data are presented in Table 1.

**Table 1: Relationship between the characteristics of small scale horticultural nursery growers and their management efficiency**

n = 100

Sr. No.	Independent Variables	Correlation-Coefficient ('r' value)
X <sub>1</sub>	Age	-0.0095 <sup>NS</sup>
X <sub>2</sub>	Education	0.5535 <sup>**</sup>
X <sub>3</sub>	Experience	0.8340 <sup>**</sup>
X <sub>4</sub>	Social participation	0.2027 <sup>*</sup>
X <sub>5</sub>	Land holding	0.3524 <sup>**</sup>
X <sub>6</sub>	Annual income	0.2839 <sup>**</sup>
X <sub>7</sub>	Extension contact	0.2316 <sup>*</sup>
X <sub>8</sub>	Mass media exposure	0.2202 <sup>*</sup>
X <sub>8</sub>	Economic motivation	0.2650 <sup>**</sup>
X <sub>10</sub>	Risk orientation	0.2633 <sup>**</sup>
X <sub>11</sub>	Scientific orientation	0.3445 <sup>**</sup>
X <sub>12</sub>	Market orientation	0.2299 <sup>*</sup>

\* Significant at 5% (0.196),

\*\* Significant at 1% (0.256),

NS = Non Significant

From Table 1, it could be seen that only age (-0.0095<sup>NS</sup>) was negative and non-significant correlated with management efficiency of small scale horticultural nursery growers. Thus, it accepts the null hypothesis. So it can be concluded that age is not influencing in the management efficiency of respondents toward the small scale horticultural nursery cultivation.

Social participation (0.2027<sup>\*</sup>), extension contact (0.2316<sup>\*</sup>), mass media exposure (0.2202<sup>\*</sup>) and market orientation (0.2299<sup>\*</sup>) were positively and significantly correlated at 0.05 level of probability with management efficiency of small scale horticultural nursery growers. Thus, it rejects the null hypothesis. So it can be concluded that

Social participation, extension contact, mass media exposure and market orientation are influencing in the management efficiency of respondents toward the small scale horticultural nursery cultivation.

However, education (0.5535<sup>\*\*</sup>), experience (0.8340<sup>\*\*</sup>), land holding (0.3524<sup>\*\*</sup>), annual income (0.2839<sup>\*\*</sup>), economic motivation (0.2650<sup>\*\*</sup>), risk orientation (0.2633<sup>\*\*</sup>) and scientific orientation (0.3445<sup>\*\*</sup>) were positively and highly significantly correlated at 0.01 level of probability with management efficiency of small scale horticultural nursery growers. Thus, it rejects the null hypothesis. So it can be concluded that education, experience, land holding, annual income, economic motivation, risk orientation and scientific orientation are influencing in the management efficiency of respondents toward the small scale horticultural nursery cultivation.

The result presented here is partially matched with the previous results of Patel *et al.* (2011) and Baria *et al.* (2012).

**CONCLUSION**

Only age was negatively and non-significantly correlated with management efficiency of small scale horticultural nursery growers. Social participation, extension contact, mass media exposure and market orientation were positively and significantly correlated at 0.05 level of probability with management efficiency of small scale horticultural nursery growers. Education, experience, land holding, annual income, economic motivation, risk orientation and scientific orientation were positively and highly significantly correlated at 0.01 level of probability with management efficiency of small scale horticultural nursery growers.

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## TRAINING NEEDS OF TRIBAL FARM WOMEN IN SOYBEAN PRODUCTION TECHNOLOGY

G.J.Patel<sup>1</sup>, S. G. Vahora<sup>2</sup> and G. N. Thorat<sup>3</sup>

1 Professor and unit head, Tribal Research Cum Training Centre, AAU, Devgadhi Baria - 389 380.

2 Associate Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadhi Baria - 389380

3 Assistant Professor, Pashu Vigyan Kendra, TRTC, AAU, Devgadhi Baria - 389380

Email : girish\_agri2005@aau.in

### ABSTRACT

*Training is a central component of human resource development which can generate desirable changes in the behavioral component such as knowledge, skill and attitude. In the farming sector, training forms an important tool to sharpen and hone the skills of farmers to aid them in the effective adoption of improved soybean production technologies. Soybean is such a crop for which the farmers of Gujarat are showing interest and area under the crop is increasing gradually. The demand of soybean seed also increased because of remunerative price they getting from the crop. Hence, the study entitled "Training Needs of tribal farm women in Soybean production technology in Dahod district of Gujarat" was undertaken. 100 Tribal farm women randomly selected from two talukas and 10 villages of Dahod district as sample for the study. Majority of tribal farm women were expressed that identification of disease of Soybean crop ranked first with mean score (2.70), followed by selection of variety (2.60) identification of pest with mean score 2.58, fertilizer management with score 2.3 and seed treatment with mean score 2.28, and ranked with II, III, IV and V, respectively.*

**Keywords:** training need, tribal women soybean and production technology

### INTRODUCTION

Soybean has an important place in world's oilseed cultivation scenario, due to its high productivity, profitability and vital contribution towards maintaining soil fertility. Presently soybean contributes 43 % to the total oilseeds and 25% to the total oil production in the country. Currently, India ranks fourth in respect to production of soybean in the world. Soybean is a short duration cash crop.

Dahod has a large tribal population having agriculture as major source of livelihood. Soybean is introduced in Dahod district of Gujarat state because of Soybean has largely been responsible in uplifting farmer's economic status in many pockets of the country. It usually fetches higher income to the farmers owing to the huge export market for soybean de-oiled cake. Moreover the land of this district is most suitable for the crop. The productivity of Soybean in the state at present is 810 kg ha<sup>-1</sup> which is less than the national Average (983 kg ha<sup>-1</sup>). This may be due to reason that Soybean is a new crop, all scientific cultivation

practices may not have reached to the farmers and hence may not have adopted by the farmers. therefore the present study "Training needs of tribal farm women in Soybean production technology in Dahod district" was undertaken.

### OBJECTIVE

To know the training needs of tribal farm women in soybean production technology

### METHODOLOGY

The present study was conducted in Devgadhi Baria and Limkheda talukas of Dahod district of Gujarat. Five villages were selected randomly from each Taluka and 10 tribal farm women were randomly selected from each village, thus making the total sample of 100 tribal farm women. To assess the training need of tribal farm women, a well structured pre tested Gujarati version interview schedule was prepared. Each respondent was asked to mention their response against the training needs on three point continuum viz 'most needed', 'needed', and 'not needed' for which a

score of 2, 1 and 0 respectively was given. Training need index (TNI) was also computed with help of following formula (Kanaga 1988, Patil and Kokate, 2011). Frequency was worked out and ranking was given to each based on the relative score.

$$TNI = (\text{Total obtained score} / \text{Maximum obtainable score}) \times 100$$

The training need index was also used to prioritize the training need of tribal farm women in relation to Soybean production technology.

**RESULTS AND DISCUSSION**

**Table 1: Training need of tribal farm women in soybean production technology**

n=100

Sr. No.	Item	Most needed	Needed	Not needed	Total Score	Mean Score	Rank
1	Selection of variety	03	34	63	260	2.60	II
2	Land management	33	41	26	193	1.93	XIV
3	Seed Treatment	09	54	37	228	2.28	V
4	Sowing	23	35	42	219	2.19	VII
5	Weed management	35	26	39	204	2.04	XI
6	Fertilizer management	10	49	41	231	2.31	IV
7	Irrigation Management	28	43	29	201	2.01	XIII
8	Use of Biofertilizer and chemical fertilizer	18	41	41	223	2.23	VI
9	Integrated Diseases management						
	Identification of Disease	04	22	74	270	2.70	1
	Bio-control	22	53	25	203	2.03	XII
	Chemical control	14	55	31	217	2.17	VIII
10	Integrated Pest management						
	Identification of Disease	06	30	64	258	2.58	III
	Bio-control	24	46	30	206	2.06	X
	Chemical control	24	40	36	212	2.12	IX
11	Harvesting, Threshing and storage	54	39	07	153	1.53	XV

It is observed from the data presented in Table-1, that more than three-fifth (63.00 per cent) of the tribal farm women opted the training on selection of variety as “not needed”, while 34.00 per cent and 3.00 per cent of the tribal farm women opted it as “needed” and “most needed”, respectively. Data pertaining to training needs of tribal farm women regarding land management reveal that slightly more than two-fifth (41.00 per cent) tribal farm women were grouped into ‘needed’ category while 33.00 per cent and 26.00 per cent were grouped under ‘most needed’ and ‘not needed’ category, respectively.

As far as training need with respect to seed treatment is concerned, more than half of tribal farm women fell under the category “needed”, whereas 37.00 per cent and 9.00 per cent of them were found in the “not needed” and “most needed” training group, respectively.

Further, in case of sowing, more than two-fifth (42.00 per cent) of the tribal farm women belonged to ‘Not needed’ group while 35.00 per cent and 23.00 per cent dairy

farmer were found under “needed” and “most needed” group, respectively.

It is evident from Table-1 that more than 39.00 per cent of the tribal farm women in weed management fell under ‘not needed’ training group followed by 35.00 per cent with “Most needed” and 26.00 per cent with “Needed” group. Data pertaining to training needs of the tribal farm women regarding fertilizer management revealed that nearly half (49.00 per cent) of tribal farm women ‘needed’ category while 41.00 per cent of respondents were grouped under ‘not needed’ category.

Training needs of the tribal farm women regarding irrigation management 43.00 per cent were fell under ‘needed’ training group followed by equal percentage of tribal farm women felt under the “Not needed” and “Most needed” training group. From data in Table: 3, it can be observed that equal percentage (41.00 per cent) of the tribal farm women opined for the training on use of bio-fertilizer and chemical fertilizer as “needed” and “not needed” .

As far as training need with respect to integrated disease management is concerned, vast majority of tribal farm women felt under “not needed” group for identification of disease while more than half of the tribal farm women felt under the “needed” group for disease control.

With regard to training need in integrated pest management, majority of tribal farm women felt under “not needed” group for identification of disease while more than two-fifth of the tribal farm women felt under the “needed” group for pest control.

Training needs of the tribal farm women regarding harvesting, threshing and storage management more than half (54.00 per cent) of tribal farm women were felt under ‘Most needed’ training group followed by 39.00 per cent with “needed” and only 7.00 per cent were felt under the “Not needed” training group.

According to item wise training needs related to Soybean production technology hierarchy, identification of disease of Soybean crop ranked first with mean score (2.70), followed by selection of variety (2.60) identification of pest with mean score 2.58, fertilizer management with score 2.3 and seed treatment with mean score 2.28, and ranked with II, III, IV and V, respectively. Similar results was reported by Prajapati et al. (2015). Majority of respondents prefer to receive training on Oil engine repairing and Micro irrigation systems followed by Seed production and Control measures of pest and disease reported by Patel et al., (2015).

## **CONCLUSION**

From the foregoing discussion, it can be concluded that areas of training needs expressed by tribal farm women

in the field of agriculture were identification of disease, identification of pest, selection of variety and seed treatment. Based on the training need of Tribal farm women in Soybean production technology suitable extension programme should be formulated and implemented in scientific dairy farming. The training strategies can be formulated and course syllabus can be redesigned to impart knowledge and skill to the tribal farm women by various training institutes and state department of Agriculture and state agricultural universities. Emphasis must be given up identification of disease of Soybean crop, selection of variety, identification of pest, fertilizer management and seed treatment.

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## ICT- ENABLED SERVICES FOR ANAND AGRICULTURAL UNIVERSITY

S.H. Bhojani<sup>1</sup>, R.S. Parmar<sup>2</sup> and D.R. Kathiriya<sup>3</sup>

1 Assistant Professor, Office of DIT, AAU, Anand - 388110

2 Associate Professor, College of AIT, AAU, Anand - 388110

3 Principal & Dean, College of AIT, AAU, Anand - 388110

Email : shitalbhojani@aau.in

### ABSTRACT

*ICT technology has had an enormous impact on Anand Agricultural University. This paper aimed at ascertaining the ICT-enabled services in Anand Agricultural University, Anand, Gujarat, India. The study employed a case study design. The study found that some services such as Web Site, Web Mail Service, Online Tour Program , Mobile Based Application for Farmers, Online Bill Processing System, internet and internet services were ICT-enabled or driven. The critical constraints to ICT-enabled services include poor funding, inadequate ICT infrastructure and inadequate ICT staff. To address these problems, it was suggested that there should be budget provision for ICT projects and series and that private sector investment should be promoted in university. Based on these findings, some recommendations were made. Anand Agricultural University, as platform for innovation and creativity requires proper understanding of the status of services, project implementation and ICT applications including services that are ICT driven. This understanding will not only improve ICT-enabled services but also provide opportunities for innovative services. This paper provides a framework for understanding the status of ICT-enabled services due to developments in ICT in Anand Agricultural University.*

**Keywords:** information, communication, technology, services.

### INTRODUCTION

Information and Communications Technologies (ICTs), broadly defined, facilitate by electronic means the creation, storage, management and dissemination of information. ICT is both a vehicle for communication and a means of processing information. ICTs are part of the economic infrastructure that supports global production, trade, investment and capital flows. ICTs are means by which individuals, institutions and organizations network, undertake activities, and participate in the development process at local, national and global levels. Specifically the ICT industry is the main driver of the economies of countries like India and China. Technology is fuelling innovation and productivity, and there are signs of fundamental change in markets and user behavior, as countries move towards a knowledge-based economy.

The Information and Communication Technology (ICT) in this era of globalization has accentuated new modes of knowledge transformation and communication patterns. ICT has opened up uncommon opportunities for developing countries in terms of providing low cost access to information. This is the fastest growing tool of communication ever with

the number of users growing from 150 million in 1998 to more than 700 million in 2001 ( Brown, 2002 ). Considering this, use of ICT in agricultural university is of strategic importance in a country like India. ICT have tremendous potential in timely collection of data and distributing it to the potential users even in developing countries, thus, providing low cost access to information.

While the term 'ICT' can be interpreted as including a wide variety of media, ICT is used to denote "the use of computers and the communication systems between computers (Anon, 1999). ICT, however have the potential of getting vast amount of information for Agricultural University in a more timely, comprehensive and cost effective manner. The ICT are becoming more accessible and users can obtain information from various sources, one computer could meet the needs of a large community. These modern technologies offer new and multiple perspectives, such as faster and better-focused access to information. Electronic mail is the most commonly used ICT that has brought a cultural revolution in the way individuals and organizations interact, in terms of time, cost and distance. Another most significant use of ICT is the World Wide Web, which enables user to access

information on millions of computers.

In a broad sense, ICT enabled services can be defined as: “Systems that enable value co-creation through the development and implementation of information and communication technology enabled processes that integrate system value propositions with user value drivers.”

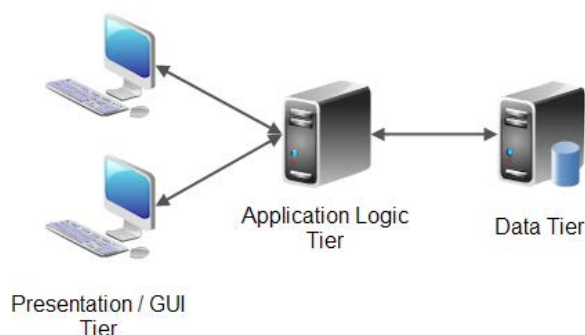
## METHODOLOGY

ICT enabled services has been implemented as a layered structure having three layers viz., User Interface layer (UIL), Application layer (APL) and Database layer (DBL). Each layer has its own specific functions. Applications are usually broken into logical chunks called “tiers”, where every tier is assigned a role. Traditional applications consist only of 1 tier, which resides on the client machine, but web applications lend themselves to an n-tiered approach by nature. Though many variations are possible, the most common structure is the three-tiered application. In its most common form, the three tiers are called presentation, application and storage, in this order. A web browser is the first tier (presentation), an engine using some dynamic Web content technology (such as ASP, ASP.NET, CGI, ColdFusion, JSP/Java, PHP, Perl, Python, Ruby on Rails or Struts2) is the middle tier (application logic), and a database is the third tier (storage).

The web browser sends requests to the middle tier, which services them by making queries and updates against the database and generates a user interface. In a three-tier architecture (also known as a multi-tier architecture), there are three or more interacting tiers, each with its own specific responsibilities (see Fig. 1).

## RESULTS AND DISCUSSION

Anand Agricultural University (AAU) was



**Fig. 1: Three-Tier Architecture**

(<http://tutorials.jenkov.com/software-architecture/n-tier-architecture.html>)

established in 2004 at Anand with the support of the Government of Gujarat, Act No.(Guj 5 of 2004) dated April 29, 2004. Caved out of the erstwhile Gujarat Agricultural University (GAU), the dream institution of Sardar Vallabhbhai Patel and Dr. K. M. Munshi, the AAU was set up to provide support to the farming community in three facets namely education, research and extension activities in Agriculture, Horticulture ,Engineering, Product Processing and Home Science. At present there seven colleges, seventeen Research Centers and six Extension Education Institute working in nine districts of Gujarat namely Ahmedabad, Anand, Dahod, Kheda, Panchmahal, Vadodara, Mahisagar, Botad and Chhotaudepur.

The Directorate of Information Technology at Anand Agricultural University caters the demand for the use of Information Technology for the Anand Agricultural University. Internet, Intranet, ERP, AAU Web-mail, E-Library, CAB Database, J-Gate, Science Direct Personalizing Research, Annual Reviews, Springer Link and Consortium for e-Resources in Agriculture services at Anand Agricultural University have been provided and maintained through Local Area Network (LAN) having broadband connectivity. Some ICT-enabled services for Anand Agricultural University are as follows:

### Web Site

Directorate of Information Technology has prepared a Web Site for Anand Agricultural University; the domain name is <http://aau.in>. This web site includes various aspects and activities of Anand Agricultural University like administration, faculties, colleges, education, and extension, e-library, tender, Right to Information Act etc (see Fig. 2).



Fig. 2: Home Page of Web Site

### Web Mail Service

A web mail service (<http://mail.aau.in>) has been incorporated in the Web Site enabling the users to read and reply their e-mail from any computer of LAN. There are more than 1594 e-mail users. The web site has been maintained and updated regularly (see Fig. 3).

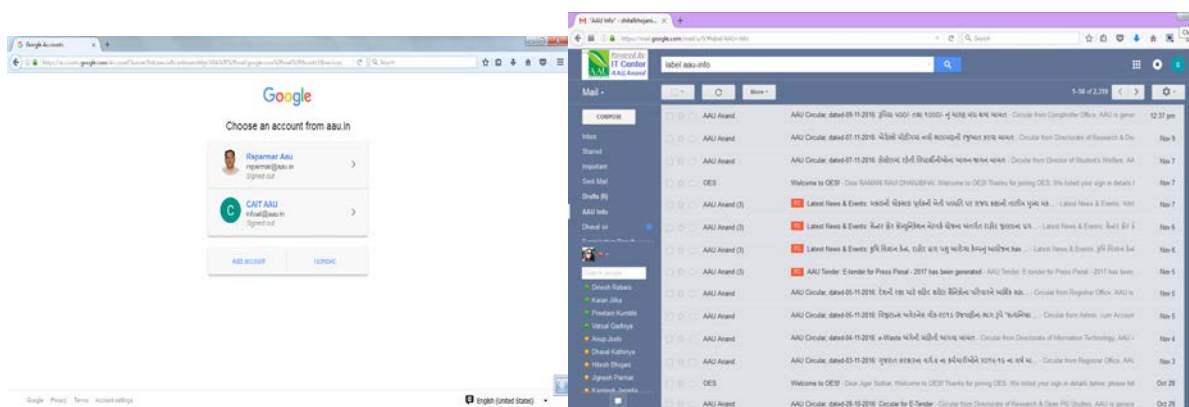


Fig. 3: Home Page of Web Mail Service

### Online Tour Program

An online tour program (<http://tour.aau.in/signin>) is designed to manage the tour program and its schedule. Using this web based User Interface University officers will create tour online and manage their profile and manage the tours. Authorized user is able to do the appropriate operation on tour program like approve and reject. After recommendation from authorized

user it will displays for Approval or at next level recommending user. After successfully created tour, user will get SMS or E-mail. User can see various reports like tentative report, tour list report, TA-DA report, analysis report etc. User can also search the tour program (see Fig. 4).

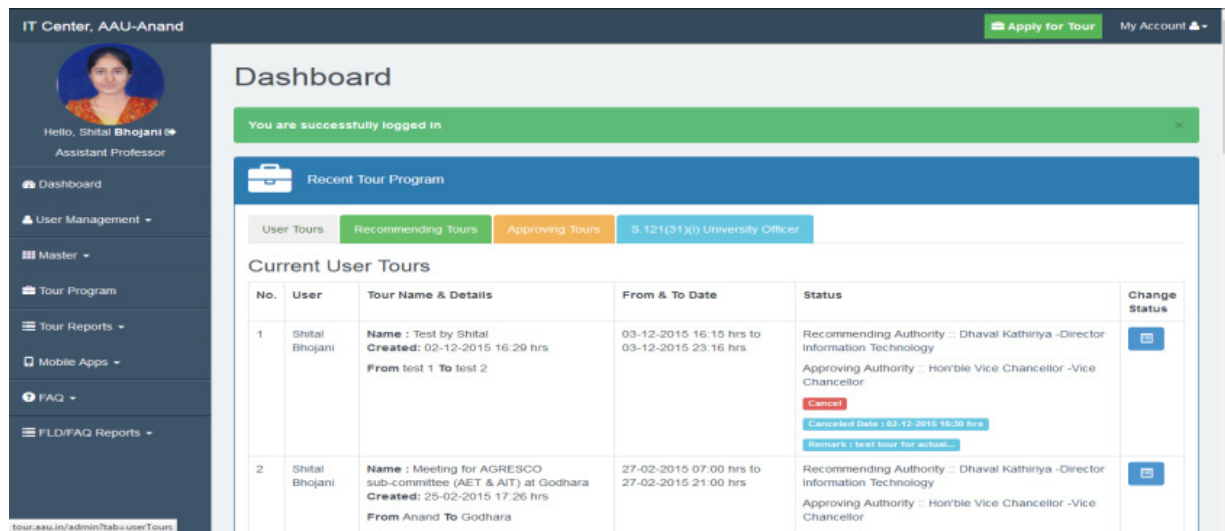


Fig. 4: Dashboard of an Online Tour Program

### Online Bill Processing System

The Online Bill Processing System gives financial report of University. The system user (accountant) enters all scheme entry and grant allocated unit wise. Unit wise account officer user enters pay allowances and contingency. System user (accountant) can check bill and pass bill and can also see various report. Admin can generate various report as well as they able to print and export to excel (see Fig. 5).

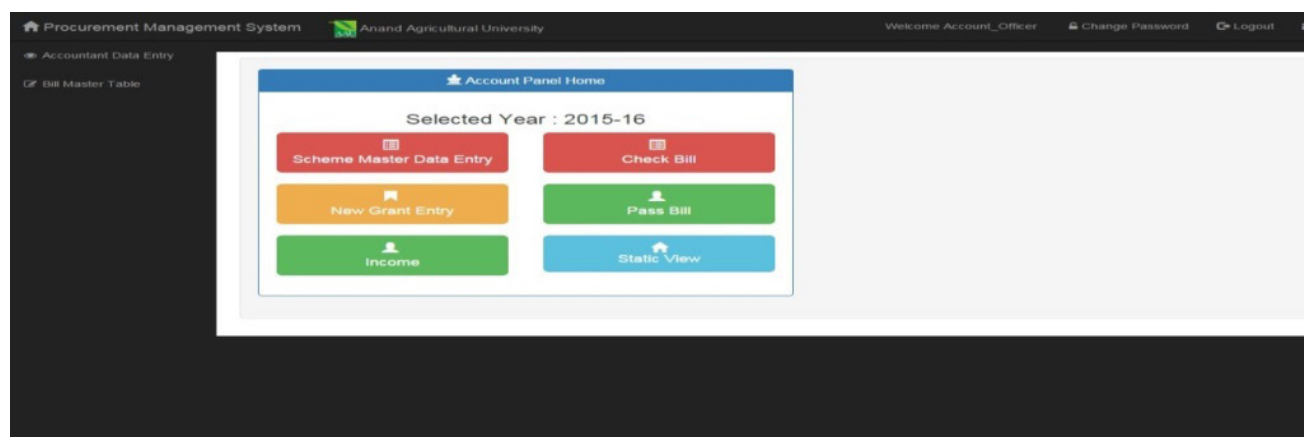


Fig. 5: Account user functionality

### Mobile Based Application for Farmers

The mobile based application system (<http://ikhedut.aau.in>) gives the information of farming and animal husbandry for farmers. Farmers can ask question related of crops and animal husbandry and scientist give their answer. Farmers can download the application from Google Play apps and they can see this application offline when and where required. Admin can create various categories (see Fig. 6).



Fig. 6: Home page of Mobile Based Application

### Document Management System

The Document Management system ([http://172.16.31.232/DMS\\_AAU](http://172.16.31.232/DMS_AAU)) manages the document version hierarchy within the department/university. The system is based on the departmental authority levels. User can manage different versions of any document. User can search and download any version document. The system can have admin module and user module. Admin can manage all the activities for the system. User can print and download the different kind of reports as per their needs (see Fig. 7).

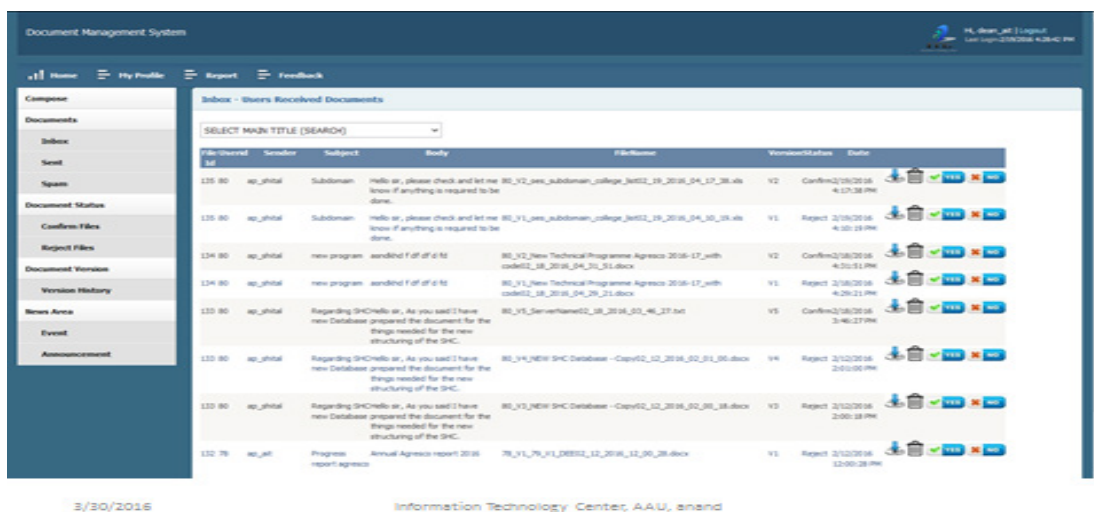


Fig. 7: Dashboard of Document Management System

### CONCLUSION

- ◆ Over the past decade, access to ICT in agricultural university has grown rapidly, a development enabled by changes in technologies, policies, and markets.
- ◆ Technological innovations and policy reforms over the past decade have opened opportunities for the agricultural university, which has been critical to the expansion of access.
- ◆ The increase in ICT access and use has been accompanied by some important issues and constraints.
- ◆ Anand Agricultural University has to adapt policies and regulations to the rapid changes in technology and market structure.
- ◆ ICT now make it possible to collect and leverage huge amounts of critical data at minimal costs—thus making agricultural university operations more insight driven, and potentially more productive and efficient.
- ◆ Innovative use of ICT in the agricultural university service will deliver better value for users by creating efficiencies through integration, consolidation and sharing of common infrastructure, systems and resources.



- ♦ Adoption and facilitation of ICTs will increase productivity, improve the relationship between scientists, students and farmers and will deliver social and economic benefits for agricultural university.
- ♦ Integrated services and increased data sharing will drive significant efficiencies; will facilitate insight driven decision making; will increase openness and transparency between agricultural university and the farmers; and will provide a much higher user experience and quality of service.

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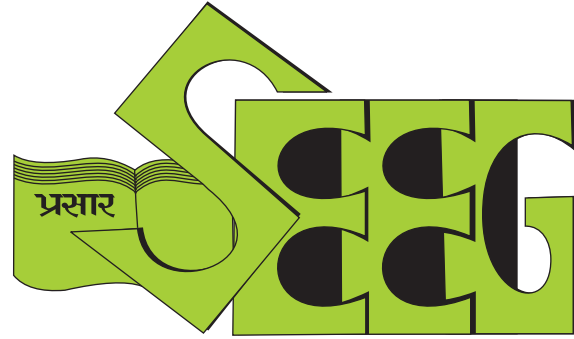
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