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Editorial

Dear colleagues

Ensuring a thriving agricultural economy is critical for reducing poverty, enabling food security, and managing natural resources in a sustainable fashion. Many observers are concerned that public extension is not doing enough, not doing it well, and is not always relevant. In developing countries, bureaucratic inefficiency and poor program design and implementation have led to poor performance and incoherent links with client farmers and the research sector. As they seek solutions, policymakers must confront clashing views of what extension should do, and choose among a number of extension priorities, products, mandates, and models. Given fiscal restraint, there is extreme pressure to demonstrate the payoff to investment in extension and explore alternatives to public financing by involving the private sector, local authorities, and producer groups. The generic problems of agricultural extension are bound to its diverse functions, as well as the bureaucratic, political, and social operating environments within which extension systems operate. We believe that focusing on these generic problems-regardless of the management system or approach to extension-highlights the areas that should form the agenda for future directions in extension.

I got immense pleasure to release the current issue of Journal of Extension Education to the community. I am sure the literature shall be a fruitful document for the research in behavioural sciences.

With all my best wishes

Dr. Rabindra K.Raj
Chief Editor

JOURNAL OF EXTENSION EDUCATION

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Knowledge level of the tribal people towards functioning of Watershed Development Programme

S. R. Dash¹, S.D. Mukhopadhyay² and R.K. Raj³

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Abstract

Watershed Development Programme based on participatory approach and bottom-up planning. Good understanding about the guideline will help in effective implementation of the programme to achieve the end results. Considerable gaps were observed on various aspects of implementation of the programme such as institutional arrangement, community organization, objectives, programme formulation and implementation, funding pattern, monitoring and evaluation. Further exposures are essentially required for the detail understanding of the watershed people to the guideline for clear understanding of the operational procedures for effective implementation of the programme.

Key words : Watershed, development, programme, guideline.

Introduction

Participatory watershed development programme was implemented in Odisha after introduction of the revised watershed guidelines of 2001 developed by the Ministry of Rural development and “JANASAHABHAGITA” guideline of the Ministry of Agriculture, Government of India. The guideline envisages clear-cut institutional arrangements, operational procedure, programme designing, programme implementation, fund utilization, monitoring and evaluation. It is purely based on the concept of bottom-up planning with single window, integrated, participatory as well as sustainable area development programme.

The watershed people have to actively participate in the programme starting from planning to implementation, fund utilization and evaluation of the activities. These are clear understanding of the watershed people towards operational procedure in the pre-requisite towards effective implementation of the programme with this hypothesis in view; the present study has been designated to assess the knowledge level of the watershed people towards functioning of the programme.

Materials and Methods

The study was undertaken in tribal dominated Nuapada and Kalahandi district under western undulating Agro-climatic zone of

Odisha. Six watershed from two blocks of each district were selected for the purpose of investigation. Watershed president, secretary, chairman, six from user group, three each from landless and women category and one from watershed committee from each watershed were selected as the respondents with total sample size of 192.. Information collected on scale point of strongly agree, agree and disagree were analyzed with score value of 2,1 and 0

respectively. Mean score, gap percentage and multiple regression analysis were made to reveal the results.

Results and Discussion

The Watershed guideline envisages clear cut institution arrangements for executive implementation of the programme. It is revealed from (Table -1) that the respondents of both the districts were somewhat aggression.

Table 1: Knowledge about institutional arrangements

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Village consulted before implementation	1.09	1.25	12.80	1.17	41.50
2 Analysis of priorities	1.07	1.60	33.13	1.34	33.00
3 Formation of users and Self Help Groups	1.13	1.39	18.71	1.26	37.00
4 Volunteers employed on common agreement	0.83	1.13	26.55	0.98	51.00
5 Contribution of users in each activity	0.99	1.33	25.56	1.16	42.00
6 Sufficient training to develop confidence	0.49	0.79	36.97	0.64	68.00
7 PIA & WDT guide sufficiently	0.96	1.33	27.83	1.15	42.50

The analysis of priorities, formation of users and Self Help Groups, village consulted before implementation, contribution of users in each activity, programme implementation Agency (PIA) and watershed Development Team (WDT) members guide sufficiently. The respondents had poor knowledge about

sufficient training to develop confidence and volunteers employed on common agreement.

All the watershed people should have detailed understanding about community organization as well as role and responsibility of each individuals in the watershed area.

Table 2: Knowledge about Community Organization.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Association formed before implementation	1.30	1.41	7.80	1.36	32.00
2 All people to be the member of association	1.17	1.48	20.95	1.33	33.50
3 Watershed Committee formed with common decision	1.18	1.32	10.60	1.25	37.50
4 Conducting regular meeting of the association	0.91	1.05	13.23	0.98	51.00
5 Association approve accounts, monitor and review progress	0.78	1.41	21.58	0.96	52.00
6 Watershed secretary maintains all accounts	1.22	1.22	0.00	1.22	39.00
7 Contribution deposited in the account of development fund	1.09	1.20	9.17	1.15	42.50
8 Development fund exclusively used for post project activities.	1.36	1.15	15.44	1.26	37.00

Analysis of data (Table-2) revealed that the respondents had better knowledge about watershed association formed before implementation and membership mandatory, development fund used exclusively for post project activities, committee members selected with common decisions, watershed secretary maintain all accounts and beneficiaries contribution deposited in the revolving fund account. Poor knowledge

observed on regular meeting of the association, association approve accounts, monitor and review progress needs further exposure to guidelines.

Watershed development programme has clear cut objectives for the all round development of the watershed. Detail understanding of the objectives will facilitate for effective implementation of the programme. As observed from Table-3 that the respondents had poor knowledge towards.

Table-3 : Knowledge about objectives of the programme.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Covers all developmental activities	1.06	0.97	8.49	1.02	14.00
2 Employment generation	1.13	1.59	28.93	1.36	32.00
3 Management of adverse situation	1.34	1.27	5.22	1.31	34.50
4 Conservation of soil and water	1.65	1.86	11.29	1.76	12.00
5 Restoration of ecological balance	1.27	1.82	30.22	1.55	22.50
6 Emphasis on indigenous knowledge	0.76	0.73	3.95	0.75	62.50
7 Optimum use of available resources	0.93	0.98	5.10	0.96	52.00
8 More attention towards poverty alleviation	0.90	1.05	14.29	0.98	51.00
9 Empowerment of rural poor	0.92	1.02	9.80	0.97	51.50

Emphasis on indigenous knowledge, optimum use of available resources, more attention towards poverty alleviation and empowerment of rural poor which are emphatically indicated in the guideline for sustainability of the livelihood system. However, better knowledge was observed on conservation of soil and water, restoration of

ecological balance, employment generation, management of adverse situation as well as cover all developmental activities.

The programme purely based on participatory approach where the watershed people activity involved in the process of programme development.

Table – 4:: Knowledge about programme development.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Involvement in problem diagnosis	1.14	1.52	25.00	1.33	33.50
2 Participation in programme formulation	0.96	1.32	27.27	1.14	43.00
3 Participatory decision for programming in Govt. land	1.01	1.23	17.89	1.12	44.00
4 Adequate programme for each family	0.72	0.92	21.74	0.82	59.00
5 Emphasis on plantations	1.27	1.34	5.22	1.31	34.50
6 Adequate programme for conservation of soil and moisture	1.09	1.17	6.84	1.13	43.50
7 Repair, restoration and upgradation of community assets	1.20	1.18	1.67	1.19	40.50
8 Renovation of water resources	1.20	1.11	7.50	1.16	42.00

As revealed from the (Table-4), the respondents had better participation in problem diagnosis, programme formulation, programming in Govt. land with emphasis on plantations, conservation of soil and moisture, renovation of water resources, repair, restoration and up gradation of community assets. Poor Knowledge observed on

adequate programme for each family will definitely demand for further exposure to the guideline.

Programme implementation is the sole responsibility of the watershed people. The individual beneficiary has to received the funds from the Watershed association, purchase inputs, materials etc. and implement the approved programme.

Table –5: Knowledge about programme implementation.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1. Each family implement own programme	1.27	1.34	5.22	1.31	34.50
2. Technical expertise by WDT	1.38	1.34	2.90	1.36	32.00
3. Immediate action on field problem	1.01	1.07	5.61	1.04	48.00
4. Timely monitoring of progress	1.17	1.04	11.11	1.11	44.50
5. Close supervision by WDT	1.26	1.06	15.87	1.16	42.00
6. Timely use of inputs and materials	1.11	1.01	9.01	1.06	47.00
7. Regular review of progress	1.14	0.94	17.54	1.04	48.00

It is observed from the (Table-5) that the respondents had better knowledge about programme implementation. However, further exposure is necessary for their clear understanding on regular review of the progress, immediate action on field problems, timely use of inputs and materials.

The guideline clearly spelled out the details of procedure for release of funds, utilization pattern and maintenance of accounts. The watershed beneficiaries should have detail understanding about all the aspects since he has to utilize the funds and maintain all records.

Table – 6.: Knowledge about funding pattern.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Adequate fund for developmental activities	0.46	0.53	13.21	0.50	75.00
2 Funds for community organization	1.19	1.33	10.53	1.26	37.00
3 Adequate fund for capacity building	0.75	1.07	29.91	0.91	54.50
4 Freedom to people in fund utilization	0.99	1.00	1.00	1.00	50.00
5 Compulsory contribution to development fund	1.50	1.28	14.67	1.39	30.50
6 Scope for credit facilities	0.10	1.36	25.74	1.19	40.50
7 Revolving fund for SHGs	0.96	1.08	11.11	1.02	49.00
8 Well defined procedure in fund utilization	1.11	1.24	10.48	1.18	41.00

It is observed from the (Table-6) tha the respondents had poor knowledge on adequate funds for developmental activities, capacity building, and freedom in fund utilization and revolving fund facilities for self help group activities which needs further exposure as envisage in the guideline.

Regular monitoring and evaluation of the progress in participatory made have also been emphasized in the guideline. Participatory mode have also been emphasized in the guideline

Table –7: Knowledge about monitoring and evaluation.

Sl. Knowledge	Mean Score			Pooled mean score	Gap (%)
	Nuapada district (N=96)	Kalahandi district (N= 96)	Diff. (%)		
1 Capacity building for record maintenance	1.08	1.49	27.52	1.29	35.50
2 Regular meeting by WDT	1.33	1.18	11.28	1.26	37.00
3 Close supervision of each activity	1.15	1.14	0.87	1.15	43.00
4 Timely technical guidance	1.07	0.97	9.35	1.02	49.00
5 Documentation of each activity	1.02	0.86	15.69	0.94	53.00
6 Solving problems and difficulties	0.89	0.86	3.37	0.88	56.00
7 Participatory evaluation of progress	0.94	0.71	24.47	0.83	58.50
8 Raising Watershed Development Fund	1.33	1.10	17.29	1.22	39.00

It is observed from the (Table-7) that the respondents were lacking in knowledge on documentation of each activity, solving problems and difficulties, participatory

evaluation of progress and timely technical guidance for which further exposure are required for effective monitoring and evaluation of the programme.

Table –8: Comparative analysis of the knowledge level.

Sl. Knowledge No.	Mean Score		C.R. Diff. (%)	value	Pooled mean score (N=192)	Gap (%)	
	Nuapada district (N=96)	Kalahandi district (N= 96)					
1	Institutional arrangement	0.94	1.26	25.40	0.148	1.10	45.00
2	Community organization	1.13	1.25	9.60	0.053	1.19	40.50
3	Objective	1.11	1.25	11.20	0.063	1.18	41.00
4	Operational procedure	1.17	1.09	6.84	0.037	1.13	43.50
5	Programme development	1.07	1.22	12.30	0.068	1.15	42.50
6	Programme implementation	1.19	1.11	6.72	0.036	1.15	42.50
7	Funding pattern	1.00	1.11	9.91	0.052	1.06	47.00
8	Monitoring and evaluation	1.10	1.04	5.45	0.028	1.07	46.50
Average		1.09	1.17	6.84	0.037	1.13	43.50

Comparative analysis of the knowledge as revealed from table-8 indicated that the knowledge level of the respondents of both Nuapada and Kalahandi district were at par. Significant gaps of 40.5% to 47.00% were

observed on various aspects of implementation of the watershed development programme with maximum in funding pattern (47.00%). Average gap of 43.50% had suggested for further exposure towards detail understanding of the guideline.

Table-9 -Regression Analysis of socio economic variables on knowledge

Sl.	Variables	Un standardized Co-efficient		Standardized Co-efficient		T value	Significance
		Beta	Std. Error	Beta	Std. Error		
1	Age	3.1214	1.9839	0.0930	0.045	1.5733	0.1174
2	Education	0.9330	1.1942	0.0612	0.081	0.7812	0.4357
3	Family type	-1.6683	2.6482	-0.0400	0.071	-0.6300	0.5295
4	Family size	5.3798	2.6196	0.1329	0.052	2.0536	0.0415
5	Social participation	0.4774	0.5903	0.0495	0.045	0.8088	0.4197
6	Cosmopoloteness	-0.2249	0.4219	-0.0390	0.079	-0.5330	0.5947
7	Extension contact	2.2958	0.4235	0.4249	0.081	5.4213	0.0000
8	Communication materials use	1.0594	0.5324	0.1734	0.058	1.9899	0.0481
9	Type of House	-0.5441	1.8962	-0.0232	0.083	-0.2869	0.7745

10	Land holding	5.8836	1.6824	0.3027	0.067	3.4972	0.0006
11	Occupation	-5.7323	2.1825	-0.1558	0.065	-2.6265	0.0094
12	Annual Income	-4.1981	1.7560	-0.2282	0.062	-2.3908	0.0179
R ² =0.465		Adj. R ² =0.429		S.E.= 14.846			

The best fitted regression analysis (Table-9) could explain

CONCLUSION

The study revealed that though the respondents had some knowledge on implementation of the Watershed Development programme, the respondents were lacking knowledge on various important aspects particularly on adequate funds for developmental activities, training for community organization, emphasis on indigenous knowledge, adequate programme for each family, participatory evaluation of progress, documentation of each activities, freedom to people in fund utilization, timely technical guidance, regular review of

progress, more attention, towards poverty alleviation etc. single, the watershed development programme based on participatory approach with bottom up planning, detail knowledge of the beneficiaries about operational procedure are very much essential.

The findings therefore conclude that the project authorities have to further exposed the watershed people for a detail understanding of the operational procedures for effective implementation of the programme for all round development of the watershed.

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Reading Habit of High School Students: A Cross Sectional Study

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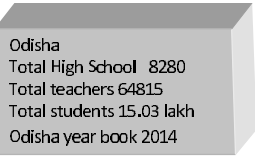
Abstract

The study entitle, 'Reading habit of high school student: A cross section study' was conducted in districts of Mayurbhanj, Keonjhar, Rayagada and Kandhamal. Randomized samples of 138 students of class VIII to class X representing urban and rural schools were selected and interviewed. The objectives were to determine (1) reading habit of students belonging to rural and urban areas, (2) time devoted in reading text and non-text books, (3) intensity of reading non-text books, (4) source of non-text materials (5) facilities available in schools and (6) suggestions to improve reading habit. The students were found to have more interest for watching T.V, play and less interest in reading newspaper & magazines. The urban & rural student differs significantly in reading habit and the better is with urban students. Cartoon, colored picture, adventure stories and title of book are the attractions for reading non text materials. The urban students differ significantly over rural students in reading of books, magazines and newspapers. The parents & school library are the major sources of reading materials for urban students while it is not the case in rural areas. The students read local newspaper (Oriya) and hardly read English ones. The students in general exhibit preference in M.I.L, Math and English in order over other subjects. In text book reading, urban students' exhibit preference for M.I.L followed by science, Hindi or Sanskrit while in rural areas preference goes in favour of Math, Eng. & M.I.L About 36.23% read text book everyday followed by at the time of examination to the tune of 37.68%. The students do good interaction among them after reading non-text books. Suggestions for increasing reading of non-text books include extra-mark in examination, annual prize, and certificate.

Key Words: *Non-text books, text books, intensity of reading, reading facilities, attraction for reading.*

Introduction:

Now much emphasis is given for quality education. Quality education is qualified in terms of reading and writing followed by acquisition of knowledge, skill and understanding. The education at high school level prepares students for professional life. The teachers as well as parents expect children should gain enough knowledge on subjects as well as in general knowledge. Education is a critical input in human resource development and is essential for economic growth. The major indicator of socio economic development are inter related and inter woven with quality of education. The goal of universal literacy what government has decided as national policy essentially implies improvement in quality of teaching and learning. There are also minimum levels of learning which primary, upper primary and high school students should attain. The main indicators of quality of education are associated with enhancement of knowledge of the students at the concerned subjects. The issues relating to quality of education is directly related with reading and writing habit of the students. It is an established fact that more reading leads to better acquisition of education, retention of knowledge and quality as a whole. At present the reading habit of the students has been declined due to frequent exposure to audio visual system like T.V. computer and radio which has declined the reading habit of the students. The general observation is that students are unwilling to read more of literature of any kind. Keeping these hypotheses in back ground the study was planned to investigate into the following objectives.



Odisha
Total High School 8280
Total teachers 64815
Total students 15.03 lakh
Odisha year book 2014

Objective:

1. To find out hobbies and general liking of the students towards reading of different books magazines and related literatures
2. To find out time devoted by students in reading text and non text books on week basis.
3. To determine reading intensity of students in case of non text materials like books, news paper, magazines etc.
4. To determine sources of non text materials for the students for reading.
5. To find out facilities available in the respective high schools to increase reading habit of the students and
6. To suggest possible means and ways to improve reading habit of the students at high school level.

Review of Literature

There have been a number studies in India and abroad on reading habit of the students of different educational levels.

Reading has increasingly been the object of empirical and theoretical investigations since past. Norvell (1950) conducted the most comprehensive study on the reading interests of high school students over a period of twelve years. His research concentrated on the factors affecting reading choices of adolescents and reports that sex and age are the two principal factors affecting reading habits.

According to Stuart (1952) newspaper reading is more widespread and intensive among men whereas periodical reading is more widespread among women.

Sahai (1970) conducted a study on newspapers and magazines reading interests of library users in Patna. The results reveal that more than 90% of the users read newspapers and magazines and the percentage of women is higher than the men.

Blackwood (1991) indicates that both male and female students are reading about 2.5 hours each week for pleasure during academic session and slightly more during vacations.

Kendrick (1999) based on his study reports that over half of the middle grade boys do not enjoy reading and 86% of them compliant that parents do not read with them nor give encouragement for reading.

In a comprehensive study Moyes (2000) finds that boys read less than girls as they spend their leisure time doing things like sports and outdoor activities.

Stenberg (2001) reported that women read more than men and highly educated people

read more than less educated individuals.

Ross (2002) that females more heavy readers than males and younger rather than older

Clark & Foster (2005) reports that girls enjoy reading greater than boys and boys tend to hold more negative attitudes towards reading than girls.

Hassell & Rodge (2007) identified that females more likely read for pleasure than males. The findings of the study conducted by Hopper (2005) in England depict that more girls have better reading habits than boys.

Materials and Methods

The study was designed to ascertain the reading habit of the students of high school level irrespective of sex and place of study whether rural and urban areas. The students were selected from class VIII, IX & X who personally interviewed to provide required information. The sample size of the study is as follows.

Universe Sample Class	Students
Urban students	High school students VIII, IX, and X
Rural students	72
Total	66
	138

Table-1: Sample size of the study

District	Urban			Rural			Total	%
	Class VIII	Class IX	Class X	Class VIII	Class IX	Class X		
1. Mayurbhanj	5	5	5	6	6	6	33	23.91
2. Keonjhar	7	7	7	5	5	5	36	26.09
3. Rayagada	5	5	5	6	6	6	33	23.91
4. Kandhamal	7	7	7	5	5	5	36	26.09
Total	24	24	24	22	22	22	138	100.00

A total sample of 138 students was finally selected and interviewed from urban and rural areas to meet the requirements of investigation.

The sample was interviewed by means of a standard schedule developed on the basis of objectives of the study.

Results:

1. Hobby and general liking of the students for reading

(i). **Hobby:** The students at young age develop hobbies depending upon their living condition, environment and friend circle. The liking for hobbies differs from individuals to individuals. The differential hobbies of students belonging to urban and rural areas were determined as follows.

Table-2: Hobby of the students

Hobby	Urban	Rural			Total	%
	(N=72) f	(N=66) Rank f	Rank	Rank		
1. Play/ Sports	13	III	16	I	29	21.01
2. Reading of Magazine & Newspaper	9	IV	4	V	13	9.42
3. Watching T.V.	20	I	16	I	36	26.09
4. Listening music	8	V	7	IV	15	10.87
5. Visiting new Place	15	II	11	III	26	18.84
6. No specific hobby	7	VI	12	II	19	13.77
Total	72	-	66	-	138	100.00

Data reveal that watching TV is most preferred hobby of urban and rural students followed by play/sports, visiting new places, music and reading of news paper and magazines. About 13.77% sample could not reveal specific hobby as preference in particular. In case of urban students, watching TV, visit of new place are most preferred while in rural areas, sports and watching TV occupies same position.

2. Liking for reading:

The students of high school level and below exhibit interest for reading and knowing new stories, events and happenings around them. In finding out interest for reading of news paper, magazines and other literatures in a three point continuum of very much, much and little, the following results were obtained.

Table-3: Likingness for reading new literatures

Class	Urban	Rural	Difference
VIII	2.25	1.81	19.56*
IX	2.83	2.18	25.79*
X	2.08	2.00	3.85

*significant

Data reveal that there is significant difference between rural and urban students on liking for reading news papers and magazines to enhance knowledge level. The students of class IX have more liking over VIII and X class students. In short the liking for reading of new literatures is higher with urban students of class IX than others.

3. Attraction for reading: The students of high school standard are attracted to are attracted to read non-text literatures on the basis of their own liking and interest. Matters that attract students to read non-text materials are cited in table given below.

Table-4: Preference of attraction for reading non-text materials

Attraction Factor	Urban (N=72)		Rural (N=66)		Total	%
	f	%	f	%		
1. Attractive cover	5	6.94	4	6.06	9	6.52
2. Colored picture	10	13.89	13	19.70	23	16.67
3. Title of the book	8	11.11	6	9.09	14	10.15
4. Full of adventure stories	6	8.33	7	10.61	13	9.42
5. Carton	18	25.00	12	18.18	30	21.74
6. Ghost and spirit	12	16.67	10	15.15	22	15.94
7. Discoveries	5	6.95	6	9.09	11	7.97
8. Film stories	8	11.11	8	12.12	16	11.59
Total	72	100.00	66	100.00	138	100.00

The analysis reveals that preferred attraction for reading of non-text books are, cartoon, colored picture stories, stories on ghost, spirit and film in order. Both the urban and rural sample exhibit similar preference to the characters like cartoon, ghost/spirit and colored picture.

4. Intensity of reading habit: The students differ in devoting time for reading of non text materials. It depends up on availability of reading materials, time and facilities. The intensity of reading of non text material was measured in a four point continuum consisting of very frequently, frequently, some times and never assigning scores of 3, 2, 1 and 0 respectively.

Table-5: Intensity of reading books

Types of reading materials	Urban students	Rural students	Mean	Difference (%)
Books	1.73	1.48	1.60	14.45
Magazines	1.37	1.21	1.29	11.67
News Papers	1.80	1.58	1.69	12.22

Analysis reveals that urban students are better in position for reading of books, magazines and news paper over the rural students. The difference is significant revealing the poor is the reading habit of the rural students compared to urban which need attention of the educational authorities.

5. Sources of reading materials:

The sources of reading materials in rural areas are subject to a number of limitations. Absence of school library, community center and education of parents are the important limitations for availability of reading materials. The response of the sample in this regard is contained in table given below.

Table-6: Sources of reading materials

Sources	Urban (N=72)	Rural (N=66)	Total	%
1. School library	8	20	28	20.29
2. Community library	10	0	10	7.25
3. Teachers	12	12	24	17.39
4. Parents	28	12	40	28.98
5. Relatives	8	13	21	15.22
6. School mates	6	9	15	10.87
Total	72	66	138	100.00

A look at the data reveals that parents are the main source for providing reading materials followed by school library, teachers, relatives and school mates. The role of community library is found to be very negligible as it hardly exists. In case of urban students, parents, teachers and community library is found to be major sources of reading materials while school library, relatives, parents and teachers are found to be sources of supplying reading materials to the students in rural areas. Community library in rural

areas plays no role. In short urban students are in advantageous position over rural based students so far as availability of non-text reading materials is concerned.

6. Reading of news paper: News paper has occupied top most position in providing up to date information. There are number of Oryia dailies are published in the state. The highest circulation is observed with Dharitri, Samaja and Sambad. The students are expected to read local and English news papers to gain knowledge about the world around them. The study determined the names of news papers read by the sample students as follows.

Table-7: Reading of different types of newspaper

Names of news paper	Class VIII	Class IX	Class X	Total	%
1. Sambad	2	3	3	8	20.51
2. Samaj	2	2	3	7	17.95
3. Dharitri	3	3	4	10	25.64
4. Prajatantra	1	2	2	5	12.82
5. Pragatibadi	1	2	2	5	12.82
6. Anupam Bharat	1	1	1	3	7.69
7. Times of India	0	0	1	1	2.57
Total	10	13	16	39	100.00

The sample as whole read local news papers like Dharitri, Sambad and Samaj. None of the students is found to be the readers of English News papers. The possible reason is that TV has reduced reading of news paper to a great extent.

7. Reading of Text books: As student the sample has to read text books prescribed for their respective classes. There are about nine important subjects in high school level that each and every student has to read and appear examination. In finding out the interest of students in reading their text prescribed books the following results were obtained.

Table-8: Interest to read text books

Subject	Interest		Mean score				Mean Average	Rank
	8th class		9th class		10th class			
	Score	Rank	Score	Rank	Score	Rank		
1. M.I.L	2.28	I	2.15	IV	2.34	I	2.26	I
2. English	2.15	IV	2.13	V	2.29	II	2.19	III
3. Math	2.20	II	2.19	II	2.26	III	2.22	II
4. Science	2.28	I	2.22	I	2.18	V	2.13	V
5.Hindi/Sanskrit	2.18	III	2.05	VI	2.22	IV	2.15	IV
6. History	2.08	V	2.17	III	2.04	VII	2.09	VII
7. Geography	2.15	IV	2.04	VII	2.11	VI	2.11	VI

A critical look at the table reveals that so far as text subjects are concerned, the sample exhibit more interest for M.I.L, followed by Math, English, Hindi, Science, Geography and History respectively. In case of class 8th, highest interest is found with M.I.L. & Science followed by Math and Hindi, while in class 9th, Science receives more attention followed by Math and History. In 10th standard, interest for M.I.L stands first

followed by Hindi. The overall picture depicts that liking of students varies from class to class in reading of prescribed test books.

8. Interest of reading text book on area basis:

Further analysis was made to determine the reading habit of students of urban and rural areas on text book which yielded the following results.

Table 9: Interest score in text book reading

Subject	Urban (N=72)	Rural (N=66)	Pooled	Rank	%
1. M.I.L	17	12	29	I	21.01
2. English	08	12	20	III	14.50
3. Math	09	13	22	II	15.94
4. Science	12	06	18	V	13.04
5.Hindi/Sanskrit	11	08	19	IV	13.77
6. History	05	09	14	VII	10.15
7. Geography	10	06	16	VI	11.59
Total	72	66	138	-	100.00

Analysis reveals that there is significant difference between urban and rural students in exhibiting interest to read text books. In urban area M.I.L, English, Math & Science are found to be more interesting for the students while in rural areas Hindi, History, M.I.L are of greater interest of study. In overall cases, MIL tops in interest followed by Math & English for reading of text books.

9. Frequency of reading text book: Students have to make every day reading of their text books in order to be up date in the class. As the course contents are changing at a faster rate it is necessary that students are to be in constant touch with text books. The frequency of reading text books as responded by the sample is given herewith.

Table-10: Frequency of reading text books

Frequency of reading	Class VIII	Class IX	Class X	Total	%
1. Every day	10	12	28	50	36.23
2. On pressurization	8	8	4	20	14.49
3. Examination time	18	22	12	52	37.68
4. As per need	10	4	2	16	11.60
Total	46	46	46	138	100.00

Out of the total sample 36.23% make every day reading of text books while as much as 37.68% make reading at the time of examination only and 14.49% read only on pressure.

10. Post reading feeling about reading of non text books: Non- test books, magazines and other materials have impact on the mind of the young students. Once they enjoy reading they are tempted to read more and more. The study examined the post reading effect of non text books as contained in table.

Table 11: Suggestions to increase reading habit.

Feeling	Total	%
1. Exciting	45	32.61
2. Develop interest to read more	21	15.22
3. Narrate to others	38	27.54
4. Talk about book	10	7.24
5. Influence others to read	24	17.39
Total	138	100.00

As seen in the table about 32.61% feel excited after reading books of their preference. As much as 27.54% share with friends about the content of the book, 17.39% influence others to read and 15.22% develop interest to read more and more.

Keeping physical and situational factors aside the sample were asked to respond as what steps can motivate them to read more of books to increase their reading habit. The responses are recorded in the table below.

Table-12: Reward for reading of non text book

Expected Rewards	Total	%
1. Extra mark in the examination	43	31.16
2. Annual prize	43	31.16
3. Books as gift	21	15.22
4. Certificate as token of appreciation	31	22.46
Total	138	100.00

The suggestions of the students are, awarding of extra mark, annual prize and certificate for reading habit and books as gift can increase the reading habit of the students at high school level.

Conclusions:

The study “Reading habit of high school students: A cross sectional study “ was conducted in the district of Keonjhar, Mayurbhanj, Rayagada and Kandhamal districts with a randomized sample of 138 students of class VIII to X representing urban and rural areas. The study focused on hobbies, liking of students, time spend for text and non text books, sources of non-text materials, facility available and suggestion to improve reading habit of students at high school level.

The findings of the study lead to arrive at the following conclusions.

1. The hobby of the student is found to be watching T.V, play, sports and visiting of new places.
2. There is significance difference between and among the students of class VIII to IX belong to urban and rural areas so far as reading habit is concerned

3. The attributes like cartoon, coloured picture, study of ghost and spirit, film stories and coloured picture become attraction of the students of high school level for reading of non- text books.
4. The intensity of reading indicates that newspapers was found to be highest followed by books and magazine among the sample students.
5. Parents, school library, teachers and relatives are the sources to provide reading materials to the students. In rural areas community library hardly work or does not exist.
6. Three important Odisha dailies like Dharitri, Sambad and Samaj are popular among the students. However, only Times of India is read by 2.57% of the sample where as other English newspapers are unknown to the sample.
7. Interest to read text books indicates maximum liking is found for M.I.L followed by Math, English and Science in order. The students of urban and rural areas differ significantly in reading intensity of M.I.L, Math, English and Science. Most of the student read text books at the time of examination followed by everyday.

8. The post reading feeling about reading of non-text books reveals excitement among the students, interest to narrate the story to other and influencing others to read non-text books.
9. The sample are in view, extra mark in examination, annual prize, certificate and book as gift can increase reading habit of student at high school level.

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Effect of Climate Change on Environment and Agriculture and some Action Programmes identified by the Scientists of Central Rice Research Institute (CRRI), Cuttack, Odisha.

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Abstract

Climate change can adversely affect the environment, agriculture and allied sectors. A study was conducted to find out some action programmes as suggested by the scientists of CRRI. For this purpose 35 items (activities) have been selected and presented to the 40 scientists in a three point continuum viz. most important, important, not so important with weightage 3, 2 and 1 respectively. Data were collected in the month of October to December 2011 by questionnaire method. To find out the important action programme, Factor Analysis with Principle Component Method was done and 12 factors were identified to explain these action programmes. The important action programmes derived through factor analysis were application of e-extension, promotion of bio-fertilizer, awareness about non-conventional energy sources, natural resource monitoring, pollution control and weather forecasting, dissemination of meteorological information, changing cropping pattern, promotion of stress resistant varieties etc. have been suggested by the scientists of CRRI, Cuttack.

Keyword: *climate change, action programme, factor analysis.*

Introduction

Climate change is a periodic modification of Earth's climate brought about as a result of changes in the atmosphere as well as interactions between the atmosphere and various other geologic, chemical, biological and geographic factors within the Earth system. Climate change is a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature.

By the late 1970s global temperatures had begun to rise again. Many climate scientists

had become convinced that the rise was likely to continue as greenhouse gases accumulated. By around 2000, some predicted and an unprecedented global warming would become apparent. Their worries first caught wide public attention in the summer of 1988, the hottest on record till then. An international meeting of scientists warned that the world should take active steps to cut greenhouse gas emissions. The world's governments had created an Intergovernmental Panel on Climate Change (IPCC) to give them the most reliable possible advice, as negotiated among thousands of

climate experts and officials. Adaptation to rising temperatures and changing weather patterns is crucial to the food security of millions of people (Ringler, 2010). Climate change and its impact are additional pressure on natural resources like water, soil and biodiversity (Chand, 2010). According to Manjunath et al, 2010, the climate variability and climate change are likely to affect the agriculture of entire world. The extension services in addressing climate change adaptation have a vital role in enhancing farmer's adaptive capacity for sustainable livelihood. There is a need to create awareness about the benefits of carbon credit and carbon trade among the farming community.

The Central Rice Research Institute (CRRI), Cuttack is playing an important role in the development of climate resilient agriculture particularly in development of drought tolerances, submergence and salinity resistance rice varieties. The Institute has 4 division viz. crop improvement, crop production, crop protection and social science including extension, communication and training. There are about 77 scientists working under different division of CRRI, Cuttack.

Objective

1) To identify some important action programmes as perceived by scientists of Central Rice Research Institute (CRRI) to mitigate the adverse effect of climate change on environment and agriculture.

Materials and Methods

By review of literature and after discussion with the scientist of Bidhan Chandra Krishi Viswa Vidyalyaya (B.C.K.V.), a large number

of items were collected relating to the climate change and action programmes for reducing the global warming. Initially 45 items have been collected and edited as per criteria set up by Edwards (1969). The items have been pretested with the scientists of B.C.K.V. to judge their relevance relating to global warming and climate change.

Final Selection of Items

Out of 45 items, 35 items have been finally selected and presented to the scientists of Central Rice Research Institute (CRRI) with a 3-point continuum- most important, important, and not so important with weightage of 3,2 and 1 respectively.

Data Collection

The present study was conducted from the scientists of CRRI, Cuttack, Odisha by the questionnaire method as the scientists of CRRI were working under the control of Directorate of CRRI. The set of questionnaire was distributed to all the scientists of CRRI in the month of October 2011 and the filled questionnaire were collected from the scientists in the month of November and December 2011. Out of seventy seven scientists only forty scientists responded within the stipulated period of time.

Statistical Analysis of Data

For analysis of data Factor analysis using Principal Component method was used. Factor analysis involves Eigenvalues extraction of factors, rotation and interpretation of factor.

Principal component analysis

The principal component analysis extracts *m*-eigenvalues (principal component axes) and

corresponding m-eigenvalues (the variance measured along the eigenvector), from $m \times m$ symmetrical matrix of correlation. The eigenvectors obtained from this principal component analysis are all orthogonal (i.e. inter-column correlations are near zero). The eigenvalues account for all of the original data variiances in decreasing order such that each has variance or eigenvalue less than the previous ones. The total of the eigenvalues $\lambda_1 + \lambda_2 + \dots + \lambda_m$ which is the same as the sum of the variiances constituting the diagonal or trace of the correlation matrix before transformation. The principal components are then converted into factors by multiplying each element of the principal components or eigenvectors (V) by the square-root of the corresponding eigenvalues ($\lambda_i^{1/2} \cdot V$). Factors, thus, besides the direction also represent the variiances.

Extraction of Factors

The principal component method, as is known, is a method of ‘breaking down’ a covariance or correlation matrix into a set

of orthogonal components or axes equal in number of variates concerned (Kothari, 1996). The number of factors extracted from 35 variables was 12.

Result and Discussion

The most important action programme to mitigate the adverse effect of climate change is “**Application of E-extension**” which explained 10.84 per cent of the total data variance. The scientists perceived that establishing network of village knowledge centre with internet and satellite connectivity for early warning on storm, cyclone (variable X_{30}), application of remote sensing techniques, application of GIS application and development of crop simulation model (X_{26}) helps mitigate the adverse effect of climate change. E-extension is a virtual network of ICT. It provides a viable method of transfer of technology to the traditional extension systems for the development of agriculture, fisheries, natural resources etc.

Table 1: Factor analysis for clubbing of variables into factor based on factor loading.

Factors	Variables with factor loading	Variance (%)	Action Programmes
Factors 1	Establishing network of village knowledge centre with internet and satellite connectivity for early warning on storm, cyclone (X_{30})=0.850 ;Use of multipurpose adopted livestock species and breeds (X_{35})=0.682; Application of remote sensing techniques, application of GIS application and development of crop simulation model (X_{26})=0.643	10.84%	Application of E-extension
Factors 2	Less use of synthetic fertilizer and pesticides (X_{11}) ; More use of natural fertilizers and pesticides (X_{12})	9.06%	Promotion of bio-fertilizer

Factors 3	Raising awareness of people about global warming and climate change (X_{23}); Increasing the use of renewable sources like solar energy, wind energy etc. (X_{19})	7.66%	Awareness for non- conventional energy sources
Factors 4	Intensive bamboo cultivation which can absorb oxides of nitrogen in addition to CO_2 (X_{25})=0.808 ; Continuous monitoring of pollution levels of air, river and sea water (X_{20})=0.686 ; Bringing more areas and more crops under organic farming (X_{13})=0.680	7.60%	Natural resources monitoring
Factors 5	Regulating level of pollution in all manufacturing industries (X_{17})=0.887; Short, medium, long term weather forecast for reducing production risk (X_{32})=0.648	6.69%	Pollution control and weather forecasting
Factors 6	Improving quality of meteorological information and their quicker and rapid dissemination (X_{22})=0.907	6.67%	Dissemination of meteorological information
Factors 7	Practising minimum tillage or zero tillage where applicable (X_5)=0.620 ; Soil and water conservation (X_6)=0.714	6.65%	Conservation practices
Factors 8	Altering dates of planting / sowing, spacing and input management (X_3)=0.825 ; Changing cropping pattern (X_{24})=0.764	6.20%	Changing cropping pattern
Factors 9	Developing HYV crops which requires less water (X_1)=0.744 ; Enhancing storage and use of rain water (X_9)=0.728	5.62%	Water management
Factors 10	Introduction of climate field school to improve the basic knowledge of farmers (X_{31})=0.680; Manipulating crop-microclimate (X_{34})=0.773	5.50%	Knowledge management
Factors 11	Preventing forest fire and charcoal making (X_{15})=0.892; Rationalized felling of trees and forest plants (X_{14})=0.613	5.00%	Rationalization of falling of trees and forest disaster mgt
Factors 12	Developing crop varieties which can withstand some water stress and high temperature (X_2)=0.719	4.31%	Promotion of stress resistant varieties

Total % of variance explained by the 12 factors = 81.8%

The second important action programme to mitigate the adverse effect of climate change is “**Promotion of bio-fertilizer**” which explained 9.06 per cent of the total data variance. Bio-fertilizer promotes growth by increasing the supply or availability of primary nutrients to the host plant and bio-fertilizer

are also cost-effective relative to chemical fertilizers.

The third important action programme to mitigate the adverse effect of climate change is “**Awareness for non- conventional energy sources**” which explained 7.66per cent of the total data variance. The scientists

perceived that the non-conventional energy sources are infinite, natural, restorable, pollution free, inexhaustible thus, reducing the CO₂ and other gases into the atmosphere causing environmental damage.

The fourth important action programme to mitigate the adverse effect of climate change is “**Natural resources monitoring**” which explained 7.60per cent of the total data variance. The scientists perceived that intensive bamboo cultivation, continuous monitoring of pollution levels of air, river and sea water and growing crops under organic farming helps in maintaining or conserving the natural resources to mitigate the adverse effect of climate change.

The fifth important action programme to mitigate the adverse effect of climate change is “**Pollution control and weather forecasting**” which explained 6.69per cent of the total data variance. Weather forecast gives ideas about rainfall patterns and other weather parameter which helps or aware the farmers to take up appropriate farm decisions.

“**Dissemination of meteorological information**” is the sixth important action programme to mitigate the adverse effect of climate change which explained 6.67per cent of the total data variance. Meteorological information such as weather forecasts and warning are highly perishable so, it must be disseminated rapidly in the most efficient way to the intended audience, to be of any use. Most common means of dissemination is the mass media, mainly T.V., radio and newspaper. The internet is increasing gaining importance.

The seventh important action programme to mitigate the adverse effect of climate change is “**Conservation practices**” which explained 6.65per cent of the total data variance. Conservation practices are done to sustain and conserve water quality and soil stability on croplands, woodlands, grassland, wetlands and waterways.

“**Changing cropping pattern**” is the eighth important action programme to mitigate the adverse effect of climate change which explained 6.20per cent of the total data variance. Change in cropping pattern helps in increasing the soil fertility, nutrient management, production of grains, control disease and pest and also combat unfavourable effect of climate change.

“**Water management**” is the ninth important action programme to mitigate the adverse effect of climate change which explained 5.62 per cent of the total data variance. The available surface and ground water resources are inadequate to meet all the water requirements for all purposes like agriculture, industry, household, recreational and environmental activities. So, water management is very much required to conserve water for future use.

The tenth important action programme to mitigate adverse effect of climate change is “**Knowledge management**” which explained 5.50 per cent of the total data variance. Knowledge management refers to the acquisition, organizing, storage, dissemination and retrieval of information. It is the collection and management of information from one or more sources and distribution of that information to one or more audiences. Good knowledge management has been described as getting the right

information to the right person in the right format at the right time.

The eleventh important action programme to mitigate adverse effect of climate change is “**Rationalization of falling of trees and forest disaster management**” which explained 5.00 per cent of the total data variance. It helps in reducing the long term impacts of a natural disaster which also helps in maintaining or conserving the natural resources mitigating the adverse of climate change.

The last important action programme to mitigate adverse effect of climate change is “**Promotion of stress resistant varieties**” which explained 4.31 per cent of the total data variance. The scientists perceived that promotion of stress resistant varieties helps to meet the water demands of the crops during the growing period.

Conclusion

The study was conducted to identify the action programme to mitigate the effect of global warming and climate change. For this purpose factor analysis was done with 35

items relating to the climate change and after factor analysis 12 factors have been derived relating to the action programme for mitigating harmful effect due to climate change. The important action programmes as perceived by the scientists of CRRI, Cuttack to mitigate global warming and adverse effect of climate change are :

1. Application of E- extension
2. Promotion of bio-fertilizer
3. Awareness for non-conventional energy sources
4. Natural resources monitoring
5. Pollution control and weather forecasting
6. Dissemination of meteorological information
7. Conservation practices
8. Changing cropping pattern
9. Water management
10. Knowledge management
11. Rationalisation of failing trees and forest disaster management
12. Promotion of stress resistant varieties.

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A Study on the Technical Information System among the Extension Professionals of Odisha

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Abstract

An information system is a collection of message that transforms data into knowledge and methods desired by and useful for individual and group users in organizations and other entities. Several studies have been conducted regarding information use by Extension agents. These studies suggest that extension specialists, agricultural experiment station bulletins, Extension publications, and farm magazines are major information sources consulted by Extension agents. It was concluded that print media, radio, poster, charts, computer, co-employee and scientists as sources of technical information had created awareness among the extension professionals. Seminar, group discussion, model and specimen had created interest among the extension professionals regarding technical information. On the other hand group meeting, exhibition, television, video, demonstration and campaign, as sources of technical information had motivated the extension professionals for action orientation on technology.

Key Words: Information, Extension professional

Introduction

The exchange of information is vital to the existence of society, organizations, and other social groups. Given its importance, it is hardly surprising that this topic has received considerable research attention. It is of particular importance in agriculture, having the large number of people involved in this activity and its importance to society and national economy. The literature on information exchange is divided into several strands, each emphasizing a different set of theoretical relationships or practical problems. Agricultural Knowledge System is complex

and diverse. It involves large number of people and organizations involved in generating, disseminating and using information related to multifarious tasks in crop and livestock production, input supply, commodity processing and marketing, consumption, and regulation.

Agricultural Knowledge and Information System (AKIS) comprises of systematic collection, analysis, synthesis, processing and dispersing data and information to within and outside the organization. The flow of information is vital to the smooth functioning of such systems. Without information about

likely markets and prices, the producer cannot make decisions about what crops to grow and when to buy and sell. Without information about the location and size of a crop or the quality of produce, the processor cannot plan how much finished product to supply to consumers. In order to compete with each other and to maintain production in a sometimes hostile environment, producers need information about new technologies, most often developed by researchers at universities, research institutes, and private companies.

Objective

1. To identify the sources of technical Information among the respondents
2. To identify the perception of the respondents on the role and importance of these sources for addressing extension issues

Materials and methods

The study was conducted with 101 numbers of extension professionals of Odisha state. The sample comprised of extension faculty from SAU, field extension agents, extension trainers, and Subject Matter Specialists. The study was conducted with ex-post-facto survey design with a structured interview schedule.

Result and Discussion

Sources of technical information used by respondents

The extension professionals used various sources of information for their knowledge and skill up-gradation. Some sources are very often used whereas some are rarely used. Hence an attempt was made to identify the sources of information used by the sample respondents.

Table .1:Sources of information used by the respondents (N = 101)

Sl.	Source category	Mean score	Percentage of contact	Percentage of gap	Rank order
1.	Print media	0.81	81	19	I
2.	Spoken media	0.70	70	30	VI
3.	Visual media	0.71	71	29	V
4.	Audio-visual media	0.79	79	21	II
5.	Electronic media	0.76	76	24	III
6.	Personal media	0.73	73	27	IV

The data from Table.1 revealed that the extension professionals mostly used print media (81% of contact) like books, magazines and farm journals for getting the professional information. They had also used audio-visual media (79% of contact) like television, video, campaign, and exhibition for technical information.

It was observed that, the electronic media like computer, telephone and internet had also impact on extension professionals with 76% of contact. The extension professionals had 73 percent contact with the personal media like friend, co employee and scientists. However, the respondents had comparatively less contact with visual media (71% of

contact) like poster, flash cards, hoardings, display board etc. They had also least contact

(70%) with spoken media like meetings, seminars etc. for getting technical information.

Opinion of Extension Professionals on most preferred media:

Table.2: Most Preferred information media of the Extension professionals

Sl No	Extension professional	Most Preferred media
1	Extension faculty	Print Media, Electronic media
2	District level Extension Personnel	Electronic Media, Print media
3	Subject Matter Specialists	Personal Media, Print media
4	Extension trainers	Audio-visual media, Print media
5	Grassroot Extension Agents	Audio-visual media, Personal media

It was concluded from the above table data that, the extension professionals were mostly preferred audio-visual media and print media mostly with respect to supply of technical information. They had moderate dependency on electronic and personal media for getting technical information.

However, it was observed that, the preference of extension professionals towards visual and spoken media was limited due to personal choice and superior fidelity of other media over spoken and visual media.

Role and Importance of Media for Addressing Extension Issues

An information system is a collection of message that transforms data in to knowledge and methods desired by and useful for individual and group users in organization and other entities. Different information sources play different roles in diffusion of information within a social. The electronic media plays mainly dissemination of information and

through cyber space. Audio – visual media like television, video, demonstration and campaign have motivational roles among the heterogeneous audiences. Similarly spoken media has a limited scope for visual effect but can be suitable for ear minded audiences.

Visual form of communication like poster, display board, exhibition and model has strong contrived experience for the audience. The print media plays a very vital role for elite and literate audience for dissemination of information. Majority of personnel particularly lay audience however, depend up on the personal media for information sharing.

Sometimes the professional share information with friends, co-workers and experts as far as the technical information is concerned. Keeping these lines in mind, the researcher had tried to identify the perception of respondents on the role and importance of various sources of information for technical diffusion purpose.

Table.3: Role of Media in Information diffusion

Awareness Creation	Interest Creation	Promoted to Action
Folder/Pamphlet/leaflet	Seminar/workshop	Group meeting
Booklet	Group Discussion	Exhibition
Journal/Magazine	Display Board	Television
Book	Model/Specimen	Video
News paper		Demonstration
Radio		Campaign
DVD		
Poster		
Charts/graphs		
Computer		
Friend/co-employee		
Scientist		

From the observation it was concluded that print media, radio, poster, charts, computer, co-employee and scientists as sources of technical information had created awareness among the extension professionals. Seminar, group discussion, model and specimen had created interest among the extension professionals regarding technical information. On the other hand group meeting, exhibition, television, video, demonstration and campaign, as sources of technical information had motivated the extension professionals for action orientation on technology.

Importance of media in Technical Information dissemination

The role of a medium is not enough to diffuse information within a social system. An individual receiver should perceive the relative importance of a particular source of information. The degree of sensitization of individual towards a source of information would create positive attitude for learning and cognitive behavior. Keeping this in mind the researcher had tried to identify and analyse the perception of the extension professionals on relative importance of various media.

Table.4: Importance of Media in Information diffusion

Important	Less Important	Not Important
Folder/leaflet	Book	Input dealer
Booklet	Radio	Progressive farmer
Journal/magazine	Chart/Graph	CD/DVD
News Paper	Display Board	
Group meeting	Video	
Seminar/workshop	Telephone	
Group Discussion	Fax	
Poster	Scanned information	
Exhibition		
Model/Specimen		
Television		
Demonstration		
Campaign		
Computer		
Friends/co-employer		
Scientists		

The data in table.4 revealed that, except book, the other print media sources like booklet, journal, folder, leaflet, news paper were considered as important information sources of technical information for the extension professionals.

Except radio all other source of spoken media were considered important for the respondents. As far as visual media was considered charts and display board were considered less important information sources.

Television, campaign and demonstration were considered as important technical information sources as audio-visual media. Similarly, telephone, fax information and scanned information were considered as less important by the extension professionals. The information sources like input dealer, progressive farmer and DVD were considered as not important sources of technical information by the extension professionals.

Conclusion

The extension professionals mostly used print media like books, magazines and farm journals for getting the professional information. They had also used audio-visual media like television, video, campaign, and exhibition for technical information. Seminar,

group discussion, model and specimen had created interest among the extension professionals regarding technical information. On the other hand group meeting, exhibition, television, video, demonstration and campaign, as sources of technical information had motivated the extension professionals for action orientation on technology.

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Knowledge of Rural Women on Functioning of Self Help Groups

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Abstract

The Government of Odisha has embarked on a campaign named Mission Shakti since 2001 to integrate all women Self Help Groups (SHGs) and provide uniform guidelines. It strengthens the SHGs through capacity building support, credit linkage for vocational activities and federating them. It has been observed that the members had poor knowledge on functioning of Self Help Groups particularly on documentation of the proceedings and circulating all concerned for needful action, audit of accounts, action against members violating decisions, community welfare, selection of vocational enterprise, infrastructure development, maintenance of stock and store, social and educational activities, credit mobilization, revision of membership fees, maintenance of cash book, reports and returns for which further exposure are required to enrich their knowledge proficiency in effective management of group activities leading to empowerment.

Key words : Self Help Group, rural women, knowledge

Introduction

Self Help Groups (SHGs) is about people coming together with others who are affected by a particular issue i.e. experience, disadvantages, discrimination etc. to support each other and work together to change the disadvantages affecting them. It is the self governed, peer controlled, small and informal association of the poor, usually from socio-economically homogenous families who are organized around savings and credit activities. They offer them organizational base, large resources and access to modern technology

leading to employment and income generation. The aim of the Self Help Groups is to enable the members with neither educational nor industrial nor entrepreneurial background but to become Self dependent and self reliant by developing and enhancing the decision making capacity of the members as well as instilling in them the strength and confidence to solve their problems. It is presumed that the Self Help Group members have a clear understanding about various aspects of the functioning of SHG.

Objective

Attempt was therefore made to assess the knowledge level of the members towards functioning of Self Help Groups.

Materials and Methods

The study was undertaken in two districts of Odisha during 2013. The coastal and developed district and the other Kalahandi as interior, relatively underdeveloped and tribal dominated district were selected purposively for the study. Satyabadi and Nimapara blocks in Puri district and Bhawanipatna as well as Kesinga blocks in Kalahandi district were randomly selected. Four Self Help Groups from three panchayats were also randomly selected. The president and secretary and two members from each Self Help Groups randomly selected as the respondents of the study making the total sample size 192.

Knowledge about guidelines, record keeping, conducting meeting, membership fee and discussions made in the meeting were selected as the variables for assessing the knowledge level. Information were collected on scale point of strongly agree, agree and disagree and weightage given as 2, 1 and 0 respectively. Statistical tests such as mean score, critical ratio.

Results and Discussion

Women Self Help Groups are usually informal groups who have a common perception of the need and importance towards collective action. These groups promote savings among themselves and use the pooled resources to meet their urgent need. It is observed from Table – 1 that the respondents of both the district were of similar opinion except concept of SHG.

Table – 1 : Extent of knowledge on guidelines (N=192)

Sl. No.	Knowledge	Mean Score		Diff. (%)	C.R. Value	Pooled mean score	Gap (%)
		Kalahandi district	Puri district				
1.	Concept of SHG	0.80	1.29	37.98	0.233*	1.05	47.50
2.	Objectives of SHG	0.89	1.06	16.04	0.084	0.97	51.50
3.	Formation of SHG	1.72	1.56	9.30	0.061	1.64	18.00
4.	Functioning of SHG	0.98	1.05	6.67	0.034	1.02	49.00
5.	Credit mobilization	0.82	1.00	18.00	0.091	0.91	54.50
6.	Selection of vocation	0.69	0.90	23.33	0.113	0.79	60.50

(Maximum obtainable score-2)

*Significant at 0.05 level

However; significant gaps observed on selection of vocational enterprise (60.50%), credit mobilization (54.50%), objectives of SHG (51.50%), functioning of SHG (49.00%) and concept of SHG (47.50%) indicating poor knowledge. However the respondents had

better knowledge about formation of Self Help Groups.

Self Help Groups have to maintain simple records and books of accounts to document the group operation and transactions. The data on Table – 2 revealed that the

respondents had comparatively better attendance register. knowledge on maintaining meeting and

Table – 2 : Knowledge about record keeping (N=192)

Sl. No.	Knowledge	Mean Score		Diff. (%)	C.R. Value	Pooled mean score	Gap (%)
		Kalahandi district	Puri district				
1.	Stock and store	0.85	0.95	10.53	0.051	0.90	55.00
2.	Meeting register	1.83	1.68	8.20	0.055	1.76	12.00
3.	Cash book	1.06	0.96	9.43	0.048	1.01	49.50
4.	Receipt book	1.34	1.47	5.63	0.033	1.38	31.00
5.	Payment register	1.31	1.36	3.68	0.021	1.34	33.00
6.	Loan register	1.35	1.29	4.44	0.025	1.32	34.00
7.	Attendance register	1.73	1.71	1.16	0.006	1.72	14.00
8.	Audit of accounts	0.42	0.63	33.33	0.140	0.52	74.00

(Maximum obtainable score – 2)

The respondents had some degree of knowledge on maintenance of receipt book, loan and payment register. But; the respondents had poor knowledge on maintenance of stock and store, audit of accounts and cash books.

Group cohesiveness is essential to create uniformities and facilitate to develop common

goods and similar view points. The group members therefore need to conduct meetings regularly to discuss various issues, progress of activities undertaken as well as further course of action. It is evident from Table -3 that no significant differential opinions were observed on the opinions among the respondents of both the district.

Table – 3 : Knowledge about conducting meeting (N=192)

l. o.	Knowledge	Mean Score		Diff. (%)	C.R. Value	Pooled mean score	Gap (%)
		Kalahandi district	Puri district				
	Conducting meeting regularly	1.72	1.78	3.37	0.022	1.75	12.50
	Regular attendance of the members	1.35	1.25	7.41	0.042	1.30	35.00
	Documentation of proceedings	0.98	0.83	15.31	0.049	0.91	54.50
	Circulating proceedings to all concerned	0.14	0.08	42.86	0.087	0.11	94.50
	Action taken on recommendation	0.92	0.94	2.13	0.010	0.93	53.50
	Assigning responsibility to each member	1.40	1.32	5.71	0.033	1.36	32.00
	Action against members violating decisions	0.72	0.69	4.17	0.017	0.70	65.00

(Maximum obtainable score – 2)

The respondents had poor knowledge on circulating proceedings to all concerned, action against members violating decisions, documentation of proceedings, action taken on the recommendations and to some extent on regular attendance of the members as well

as assigning responsibility to each members.

The primary purpose of SHG is to facilitate the members to save and extend them credit as necessary. Each member has to subscribe membership fee as decided by the group members. As observed from Table – 4.

Table – 4 : Knowledge about membership fee (N=192)

Sl. No.	Knowledge	Mean Score		Diff. (%)	C.R. Value	Pooled mean score	Gap (%)
		Kalahandi district	Puri district				
1.	Membership fee decided with common agreement	1.70	1.75	2.86	0.019	1.72	14.00
2.	Fees to be collected regularly	1.39	1.44	3.47	0.021	1.41	29.50
3.	Membership fee revised time to time	1.13	0.85	24.78	0.137	0.99	50.50
4.	Due consideration to genuine defaulters	0.72	0.65	9.72	0.041	0.68	66.00
5.	Collected fee reflected in cash book	1.67	1.65	1.20	0.008	1.66	17.00
6.	Collected fee deposited in bank account regularly	1.61	1.45	9.94	0.063	1.53	23.50

(Maximum obtainable score – 2)

The respondents had better knowledge about membership fee decided with common agreement and collected fee reflected in cash book. The respondents had some knowledge on collected fees deposited in bank account regularly and fees collected regularly. But the respondents had poor knowledge on membership fees to be revised from time to time depending on the needs and due consideration to the genuine defaulters.

The Self Help Groups have to share its objectives and frame rules for effective functioning. The group has to meet regularly on specified dates on days at the specified place and time to discuss various issues pertaining to the activities. The data reflected in Table – 5 revealed that the respondents of both

Table – 5 : Knowledge about discussions in the meeting (N=192)

Sl. No.	Knowledge	Mean Score		Diff. (%)	C.R. Value	Pooled mean score	Gap (%)
		Kalahandi district	Puri district				
1.	Collection of membership fee	1.48	1.49	0.67	0.004	1.48	26.00
2.	Financial position	1.86	1.86	0.00	0.00	1.86	7.00
3.	Sanctioning loan to members	1.83	1.78	2.73	0.018	1.81	9.50
4.	Problem relating to the vocation	1.15	1.21	4.96	0.027	1.18	41.00
5.	Social and educational activities	0.86	0.93	7.53	0.046	0.90	55.00
6.	Infrastructure development	0.64	0.98	34.69	0.032	0.81	59.50
7.	Community development	0.83	0.89	6.74	0.031	0.86	57.00
8.	Resource mobilization	1.06	1.11	5.00	0.023	1.09	45.50
9.	Expansion of vocation	1.0	1.26	20.63	0.119	1.13	43.50
10.	Marketing of the produce	1.08	1.07	0.93	0.05	1.08	46.00

(Maximum obtainable score – 2)

Kalahandi and Puri district had poor knowledge about the discussions in the meeting on problem relating to the vocation, social and educational activities, infrastructure and community development, resource mobilization, expansion of vocation and marketing of the produce. The discussions

made in the meeting on collection of membership fee, financial position and sanctioning loan to members indicate that the Self Help Groups and not much of vocational activities.

Comparative analysis of the knowledge reveal that (Table – 6)

Table – 6 : Comparative analysis of the knowledge level (N=192)

Sl. No.	Knowledge	Mean Score		Diff. (%)	Pooled mean score	Gap (%)
		Kalahandi district	Puri district			
1.	Guidelines of SHG	0.98	1.14	14.04	1.06	47.00
2.	Record keeping	1.24	1.26	1.59	1.25	37.50
3.	Membership fee	1.37	1.30	5.11	1.34	33.00
4.	Conducting meeting	1.03	0.98	4.85	1.01	49.50
5.	Discussion in the meeting	1.18	1.26	6.35	1.22	39.00

(Maximum obtainable score – 2)

the knowledge level of the respondents Kalahandi and Puri district were at par. Significant gaps on knowledge level indicated that the respondents of both the district have to be exposed sufficiently on various aspects as mentioned in the table for effective functioning of Self Help Groups.

Further analysis made through correlation reveal that (Table-7) socio-economic attributes of the respondents had not much influence in increasing the knowledge level of the respondents on various aspects of functioning of Self Help Groups. However; education and extension contact may be taken into account while exposing the members on various aspects of functioning of Self Help Groups.

Table – 7 : Influence of socio-economic variable on increasing knowledge.

Sl. No.	Variable	Correlation Value		
		Kalahandi district	Puri district	Pooled
1.	Age	0.075	-0.020	0.026
2.	Education	0.286**	0.262**	0.271**
3.	Caste	-0.011	0.024	0.012
4.	Family type	0.037	-0.113	-0.043
5.	Family size	0.116	-0.105	0.002
6.	House type	0.100	-0.061	0.005
7.	Occupation	0.016	-0.061	0.005
8.	Holding size	0.121	-0.193*	-0.080
9.	Communication materials	0.066	-0.017	0.045
10.	Household articles	0.019	-0.020	0.014
11.	Social participation	0.053	-0.143	0.138
12.	Cosmopolitaness	0.053	-0.182	-0.080
13.	Extension Contact	0.301**	0.296**	0.283**
14.	Annual income	0.124	0.071	0.067

**Significant at 0.01 level

*Significant at 0.05 level

Conclusion

The Government of Odisha has embarked on a campaign named Mission Shakti since 2001 to integrate all women Self Help Groups and provide uniform guidelines, strengthening SHG through capacity building support, credit linkage and by federating them. But the study revealed that the group members had poor knowledge about functioning of Self Help Groups and particularly on documentation of proceedings of the meeting and circulating to all concerned, audit of accounts, action against members violating decisions, community

welfare, selection of vocational enterprise, infrastructure development, maintenance of stock and store, social and educational activities, credit mobilization, revision of membership fees, social and educational activities, credits mobilization, revision of membership fees, maintenance of cash books, reports and returns.

It is therefore suggested that the SHG members need to be exposed sufficiently to enrich their knowledge for effective functioning of their groups which will make them empowerment by self dependent with income generation.

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Sustainability of alternative livelihood options perceived by the fishermen communities of Odisha

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ABSTRACT

Because of increasing population growth rate, sustainable alternative livelihoods are seen as essential for both the development of coastal communities and for the conservation of marine and coastal biodiversity and ecosystems. The present study was conducted during 2011 taking 120 respondents from six villages namely, Gopalpur, Sana Arjipalli, Bada Arjipalli, Haripur, New Buxipalli and Purunabandha along Gopalpur coast of Odisha. Four alternative livelihood options such as dry fish preparing and marketing, livestock rearing, vegetable farming and marketing and establishment of grocery shop as perceived by the fishermen community were analyzed for their sustainability. The factors of sustainability of different alternative livelihood options were assessed with respect to economic viability, ecological soundness, social accessibility, adaptability and humaneness. The economic viability factor was found to surpass all other factors while studying the sustainability of the alternative livelihood options. The average score of factors of sustainability of dry fish processing and marketing was 16.08 while that of livestock rearing, establishing grocery shop and vegetable farming and marketing were 15.67, 15.17 and 8.62 respectively. Since the average score of factors of sustainability of vegetable farming and marketing was significantly lower than other three alternative livelihood options ($p < 0.05$), that was not considered for further analysis of sustainability. The ranking of factors of sustainability in alternative livelihood options under rank-order correlation did not reveal any significant relationship among level of perception of low, medium and high groups. From the correlation of sustainability factors, it was found that all the five factors have direct relationship with formation of perception about sustainability in all the three alternative livelihood options by fishermen respondents.

Key Words: Sustainability, livelihood, fishermen.

Introduction

Livelihoods are defined as the way people combine their capabilities, skills and knowledge with the assets at their disposal to create activities that will enable them to make a living (Chamber and Conway, 1992).

Sustainable coastal livelihoods are referred to the process through which current and future generations of coastal stakeholders realize their potential by meeting basic needs and improving their quality of life whilst maintaining diverse, healthy and productive

marine and coastal ecosystems (Ireland, 2004). Pattnaik (2006) has reported that in fishing communities, there is often a particular need to support diversification of economic activities. In addition to strategies for accommodating “excess” fishers and help them engage in alternative activities like fisheries based activities which can contribute towards improve fisheries management. Watts and Oatley (2004) reported on the socio economic status of fishers and alternative livelihood options for the poor fishermen and women of Philippines and Pomeroy *et al.* (2006) studied that of India, Indonesia, Sri Lanka and Thailand and suggested the alternative livelihood options for their sustenance.

Allison and Ellis (2001) and Ireland (2004) studied the need for sustainable livelihoods for coastal communities. Alternative livelihoods are seen as essential for both the development of coastal communities and for the conservation of marine and coastal biodiversity and ecosystem. The concept of alternative livelihood has emerged where natural resources such as the coast have come under increasing pressure. Alternative livelihood is seen as the most appropriate intention to ensure the ecological, economical and social sustainability of coastal livelihood.

Objective

The present study deals with the sustainability of alternative livelihood options as perceived by the fishermen community.

Materials and Methods

The study was conducted during 2011 along Gopalpur coast of Ganjam district, Odisha. Six villages namely Gopalpur, Sana Arjipalli,

Bada Arjipalli, Haripur, New Buxipalli and Purunabandha and 120 respondents were selected through proportionate random sampling technique. The data were collected through personal interview method administering a pre-tested structured interview schedule.

The level of perception was decided taking difference between maximum and minimum score obtained by the sample considering the independent variables such as personal, social, economic, communication behaviour, marketing behaviour, fishing behaviour and training.

Alternative livelihood options of the fishermen community was considered taking into account of their preference towards those options. This was studied assigning rank as first preference, second preference and third preference with assigned scores of 3, 2, and 1 respectively. The perception on sustainability of the selected alternative livelihood options was analysed. The ranking of factors of sustainability of alternative livelihood options such as ecological soundness, economic viability, social accessibility, humaneness and adaptability was calculated by assigning 5 marks to first position and 1 to last position.

Results and Discussion

The fishermen samples under the present study was classified into three categories of low, medium and high perception level as shown in Table 1. As much as 15.8% of the samples are of low and high perception levels individually leaving the rest in between under medium level.

Table 1: Classification of sample based on level of perception (n = 120)

Level of Perception	Score range	Frequency	Percentage (%)
Low	up to 43	19	15.83
Medium	44 to 67	82	69.34
High	68 and above	19	15.83
Total		120	100

Among the 23 alternative livelihood options selected, only 4 numbers have been perceived by the respondents of six coastal villages of different category household as sustainable. They are dry fish preparing and marketing, livestock rearing, vegetable farming and marketing and establishment of grocery shop. When looked to the household livelihood system, all the fisher households were interested to take up dry fish preparation and dry fish marketing.

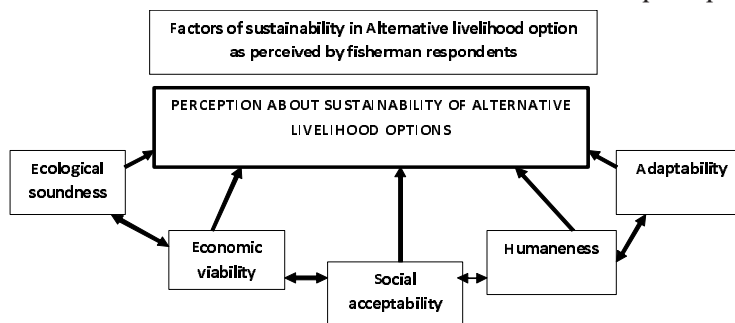
Sustainability essentially means management, and conservation of resource base in relation to orientation of technological and institutional changes to ensure satisfaction in meeting human needs. Sustainability normally covers the meaning of conservation of natural resources like, sea (fish, crabs, shrimp, shell etc), land (crops, coconut, and cashews), livestock and forest. To work on sustainability the poor fisherman in general ought to develop a positive perception to various alternative

livelihood options particularly in the field of dry fish preparation and marketing, livestock rearing, vegetable farming and marketing and establishment of grocery shop.

Factors of sustainability of alternative livelihood options

After thorough review of literature and consultation with experts five important factors namely ecological soundness, economic viability, social acceptability, humaneness and adaptability of technology were identified in the present study to find out the relative position of these factors in assessing the perception score about sustainability of alternative livelihood options. The interdependency of the factors at micro level to form the perception of the poor fishers about the sustainability in selected alternative livelihood options is given in Figure 1.

Figure 1: Relationship among factors of sustainability in Alternative livelihood options with formation of perception.



The ranking of factors in accordance with their relative influence on sustainability in

alternative livelihood options, as rated by the respondents, are presented here within.

Table 2: Ranking of factors in sustainability in alternative livelihood options

Sl. No.	Factors of sustainability	Low	Medium	High	Average	Rank
1	Ecological soundness	3.25	3.5	3.62	3.45	II
2	Economic viability	3.95	3.9	3.88	3.9	I
3	Social acceptability	2.64	2.66	2.75	2.68	III
4	Humaneness	2.04	2.12	2.01	2.06	V
5	Adaptability	2.50	2.41	2.23	2.38	IV

A glance of the table reveals that all the respondents under varied perception levels, rated economic viability followed by ecological soundness, social acceptability, adaptability, and humaneness as the important factors of sustainability in order. However, in all the cases “Humaneness” as a factor of sustainability of alternative livelihood option is ranked last indicating that in the case of development, the weightage of humaneness is not counted much. The sample under study considers economic viability as the single most important factor that decides what kind of sustainability is required to sustain the present alternative livelihood options, perceived by the fisher respondents.

Next to economic viability, ecological soundness is ranked second as it covers natural resources like sea, land, livestock and

forest which are life supporting system of poor fishermen. The social acceptability does not affect much as all the respondents belong to fishermen families having similar accessibility to natural resources. However, the adaptability of recent recommendations to restore sustainability occupies 4th position indicating its position among the five important factors. This factor is related to economic viability as fisherman weigh the profit and loss before taking up measures to sustain natural resources which forms the core aspect of the study. Further, the ranking of factors of sustainability are viewed equally by the sample respondents under study irrespective of their perception level.

The average scores of different factors of sustainability of different selected alternative livelihood options as presented by respondents are mentioned in the Table 3.

Table 3: Ranking the factors of sustainability of different alternative livelihood options.

Sl.	Factors of sustainability	Dry fish preparation & marketing	Livestock rearing	Vegetable farming and marketing	Establishing Grocery shop
1	Ecological soundness	3.65 ^a	3.52 ^a	2.11 ^b	3.47 ^a
2	Economic viability	4.18 ^a	3.92 ^a	2.05 ^b	3.95 ^a
3	Social acceptability	3.07 ^a	3.01 ^a	1.87 ^b	2.98 ^a

4	Humaneness	2.34 ^a	2.27 ^a	1.05 ^b	2.15 ^a
5	Adaptability	2.84 ^a	2.95 ^a	1.54 ^b	2.62 ^a
Total		16.08	15.67	8.62	15.17

a , b : Superscripts in rows show significant difference.

The average score of factors of sustainability of dry fish preparation and marketing is 16.08 while that of livestock is 15.67, establishment of grocery shop is 15.17, and vegetable farming and marketing is 8.62. Although there is no significant difference in average score of factors of sustainability in dry fish preparation and marketing, livestock rearing and establishing grocery shop ($P>0.05$), the average score of factors of sustainability of vegetable farming and marketing (8.62) is significantly different than other three alternative livelihood options ($P<0.05$). Besides, among all 5 factors of sustainability, economic viability is rated first followed by ecological soundness, social acceptability, adaptability and humaneness in all the three cases of alternative livelihood options.

Therefore, among all these four alternative livelihood options, three alternative livelihood options such as dry fish preparation and marketing, livestock rearing, establishment of grocery shop were considered for their sustainability.

Correlation of sustainability factors:

The sustainability factors like ecological soundness, economic viability, social acceptability, humaneness and adaptability are found to have relationship on overall perception of sample under study. As has been indicated earlier, the samples are categorized into high, medium, and low level. The possible relationship between factors of sustainability and perception was worked out as reflected in the following tables.

A. Dry fish preparation and marketing:

Table 4: Factors and perception of sustainability in dry fish preparation and marketing

Sl. No.	Factors of sustainability	r – value				R ² x 100
		Low	Medium	High	Total	
1	Ecological soundness	0.078	0.325	0.463	0.417*	17.39
2	Economic viability	0.273	0.407	0.685	0.624*	38.94
3	Social acceptability	0.241	0.398	0.435	0.503*	25.30
4	Humanness	0.394	0.086	0.197	0.546*	29.81
5	Adaptability	0.062	0.198	0.576	0.518*	26.83

* Significant at 5 % level of probability.

As revealed in Table 4, the perception score at high level is found to be positively associated with ecological soundness, economic viability, social acceptability and adaptability ($p < 0.05$) whereas humaneness was found to be non significant.

In case of medium level perception economic viability, social acceptability and ecological soundness were found to be correlated, while at lower level it is economic viability, social acceptability and humaneness. In other words, economic viability and social acceptability at all the different levels are found to be positively associated with perception. At overall level, all the factors exhibited positive correlation indicating that all the 5 factors as described above have direct relationship with formation of perception about sustainability in dry fish preparation and marketing by poor fisherman.

Further, attempt was made to find out relative contribution of factors of sustainability in dry fish preparation and marketing with overall perception level.

For forming perception, the factors like economic viability contributes maximum (38.94%) followed by humaneness (29.81%), adaptability (26.83%) and social acceptability (25.3%). However, the contribution of ecological soundness was observed to be minimum (17.39%). The reasons for such findings account for (i) profitability, (ii) humaneness in terms of living (iii) adoption of technology of alternative livelihood option for sustainable livelihood and (iv) social acceptability for use of common resources. All these 4 factors are directly or indirectly concern with human beings in profitability to alternative livelihood option. Therefore, while forming perception, the economic viability factor surpassed all other factors of sustainability.

B. Livestock rearing:

Table 5: Factors and perception of sustainability in livestock rearing

Sl. No.	Factors of sustainability	r – value			Total	(n=120)
		Low	Medium	High		R ² x 100
1	Ecological soundness	0.094	0.195	0.584	0.507*	25.91
2	Economic viability	0.305	0.413	0.605	0.598*	35.76
3	Social acceptability	0.217	0.386	0.337	0.503*	25.31
4	Humanness	0.082	0.287	0.417	0.408*	16.65
5	Adaptability	0.495	0.094	0.148	0.523*	27.35

* Significant at 5% level of probability

From the Table 5, it was observed that the perception score at high level is found to be positively associated with ecological soundness, economic viability, social acceptability and humaneness whereas adaptability was found to be not significant. In case of medium level of perception, it is only economic viability, social acceptability and humaneness. In other words, adaptability at high and medium level is not found to be positively associated. In case of low level, ecological soundness and humaneness are not found to be positively associated. However, at overall level all the factors exhibited positive correlation indicating that all the 5 factors as described above have direct relationship with formation of perception about sustainability in livestock rearing by poor fishermen. The relative contribution of factors of sustainability in livestock rearing with overall perception level was also found out.

For forming perception, the factors like economic viability contributes maximum (35.76%) followed by adaptability (27.35%), ecological soundness (25.91%), and social acceptability (25.31%). However, the contribution of humaneness was observed to be minimum (16.65%). The reasons for such findings account for (i) profitability (ii) adoption of technology for sustainable livelihood (iii) ecological soundness in terms of availability of natural resources (iv) social acceptability for use of common resources. All these four factors are directly or indirectly concerned with fishermen for adopting sustainable alternative livelihood in living system. Therefore, while forming perception, economic viability factor surpassed the factor of humaneness.

C. Establishment of grocery shop:

Table 6: Factors and perception of sustainability in establishment of grocery shop

Sl. No.	Factors of sustainability	r – value				R ² x 100
		Low	Medium	High	Total	
1	Ecological soundness	0.089	0.278	0.338	0.402*	16.16
2	Economic viability	0.388	0.426	0.654	0.607*	36.84
3	Social acceptability	0.245	0.385	0.505	0.497*	24.7
4	Humanness	0.278	0.112	0.327	0.511*	26.11
5	Adaptability	0.073	0.187	0.583	0.505*	25.5

* significant at 5% level of probability.

The perception score at high level is found to be positively associated with all the factors of sustainability (Table 6). In case of medium level perception, it is only ecological soundness, economic viability and social acceptability and in case of low level of perception it is economic viability, social acceptability and humaneness. In other words, adaptability is not found to be positively associated with low and medium level respondents. However, at overall level, all the factors exhibited positive correlation indicating that all the 5 factors described as above have direct relationship with formation of perception about sustainability in establishing grocery shop by poor fishermen. Further attempt was made to find out the relative contribution of factors of sustainability in establishment of grocery shop with overall perception level.

For forming perception, the factors like economic viability contributed maximum (36.84%) followed by humaneness (26.11%), adaptability (25.5%), and social acceptability (24.7%). However, the contribution of ecological soundness was observed to be

minimum (16.6%). The reasons for such findings account for (i) profitability (ii) humaneness in terms of honorable living (iii) adaption of technology for sustainable alternative livelihood (iv) social accessibility for use of common resources. All these four factors are directly or indirectly concern with fishermen for adopting alternative livelihood option such as establishing grocery shop as income generating activity. Therefore, while forming perception, the economic viability factor surpassed all the factors.

Thus, from all the above study, it was observed that among all the alternative livelihood options as perceived by fishermen respondents, only 3 alternative livelihood options such as dry fish preparation and marketing, livestock rearing, and establishing the grocery shop were found to be sustainable looking to the different factors of sustainability such as economic viability, social acceptability, ecological soundness, humaneness and adaptability. However, economic viability factor was found to surpass all other factors in all the three selected alternative livelihood options.

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Attitude of Agricultural Labourers towards Childcare in Gender Perspective

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Abstract

Parental role and their attitude towards childcare are very important for the overall development of the child. To find out different attitude parent possess towards childcare activities a study was conducted on 160 agricultural labourer households having at least one child in the age group of 1-5 years from 8 villages randomly selected from four blocks, which were purposively selected from four districts of Orissa. The mean attitude score of WALs and MALs towards childcare was found to be 3.47 and 3.16 respectively. The mean attitude score of WALs was higher than that of MALs indicating that the women possess significantly higher favourable attitude towards childcare than men.

Key words: Attitude, Childcare activities, Agricultural labourers

Introduction

Teeming millions of the world to provide all the living beings with essential commodities to eat and live are the poor farmers and agricultural workers. The condition of women agricultural labourers with respect of their work pattern, knowledge level, need priority and social status on one hand and to take care of their young children on the other have been neglected ones specially in the developing countries. Child rearing practices are a product of ideas, beliefs and attitude

prevalent in a community on how to bring up the children. The whole burden of child bearing is laid upon the woman in the family. Man can only stand by reverently while the creation of new life proceeds. Upon the woman falls the greater part of the task of rearing the child. Her contact with the child during the most plastic period of his development sets up his behaviour pattern. In this the father's influence will be more potent in later years, but the fundamental fixations are made under the mother's

influence (Devadas *et al.*, 1984). An individual's later health and nutritional status, behaviour and personality largely depend on the care received by him during this period. In this period the child is totally dependent upon his/her parents especially mothers for gratification of most of his/her needs (Bhuyan, 1988). Parents are the primary socializing agents; they are helpful in providing intellectual pursuits to their young children. Bradbard and Endsley

(1980) revealed that adults can be instrumental in fostering and maintaining children's curiosity by being attentive, sensitive, supportive of children's need to explore by answering children's questions and by displaying the positive characteristics of curious people. Parental support to children may however decline, when parents are themselves highly stressed, depressed or demoralized (Longfellow *et al.*, 1982). Even though some of the mothers are aware of child care practices but not implementing them appropriately because they are overburdened with their work, poverty, ignorance, lack of their decision making power and support from family members. The individuals being the embodiment of many virtues or qualities differ in their behaviour. One's affective, cognitive and psycho-motor state tells largely the capability of the individuals. The faculties of the individual corresponding to the above state may be strong or weak depending on their experiences, exposure, training etc.

Objective

We observed that women take care of child more than men which need to be explained. It is in this context, an analysis of their inner capability (attitude) is taken into consideration.

Materials and Methods

Two districts each of coastal and inland region of Odisha were randomly selected for the study. One block of each district was selected purposively based on the highest percentage of agricultural labourers. From each block, two villages were randomly selected. By adopting proportionate random sampling technique agricultural labourer households were selected from each village. So, the total numbers of sample households from 8 villages were 160. Care was taken to ensure that the labourer household should have women agricultural labourer and at least one child in the age group of 1-5 years. In each household the major income must come from agricultural labour and wages.

In the present study an attempt was made to develop a scale to measure the attitude of agricultural labourers towards childcare practices. Likert's technique was followed for constructing the instrument to measure this attitude.

Results and Discussion

Household background:

The parameters under household background included under study were caste, family type & size, number of children, age and education of parents, which are presented in Table 1. The percentage of scheduled caste, scheduled tribe and other backward caste families were 46.87, 40.63 and 12.50 respectively. None of the respondents were from higher castes. The data collected on type of family indicated that 60.0 % were nuclear and 40.0 % were joint families.

Majority (66.87 %) families had six or more members, only 5.0 % families were very small

families with three members. The remaining families (28.13 %) had members of 4-5. Only very limited percentage of labourers had followed very small family norms. Among the respondents 23.12 % families had only one child.

The families with 2-3 and 4-5 children were 38.75 and 30.0 per cent respectively. Few families (8.13 %) had six or more children.

Table 1. Household background of the respondents

Sl. No.	Categories	Frequency, n=160	Percentage
1	Caste		
	SC	75	46.87
	ST	65	40.63
	OBC	20	12.50
	Others	-	-
2	Type of family		
	Nuclear	96	60.0
	Joint	64	40.0
3	Family size, members		
	Up to 3	8	5.0
	4 to 5	45	28.13
	6 and more	107	66.87
4	No. of children		
	1	37	23.12
	2 to 3	62	38.75
	4 to 5	48	30.0
	6 and above	13	8.13

Individual profile of men and women labourers:

The data on age and education of the men and women labourers were recorded and presented in Table 2. All the labourers were categorized into three age categories like less than 25, 25-40 and more than 40 years. The percentage of MALs (Men Agricultural Labourers) in the age group of less than 25, 25-40 and more than 40 were 8.75, 81.25 and 10.0 respectively. It was observed that more

than four fifth (81.25 %) of men respondents were in the age group of 25-40 years. With regards to the women labourers like men majority 54.38 % were in the age group of 25 to 40 years and the rest 45.62 % belonged to the age group of less than 25 years.

Data on education revealed that percentage of illiterate MALs and WALs (Women Agricultural Labourers) were 40.62 and 80.0 respectively. Out of 59.38 % literate MALs, majority (41.88 %) had educational level up

to primary where as 6.25 and 11.25 % were up to middle school and high school and above respectively. Out of 20.0 % literate WALs, only 1.25 % had education up to middle school. None of the women labourers had

educational level up to high school and above. The result indicated that women illiteracy was twice than that of men. This was in congruence with the study conducted by Hann and Dubey (2005) that the deprived groups have much lower literacy than other groups.

Table 2. Individual profiles of men and women labourers

n=160

Sl. No.	Profiles	MALs		WALs	
		Frequency	Percentage	Frequency	Percentage
1	Age, years				
	Less than 25	14	8.75	73	45.62
	25-40	130	81.25	87	54.38
	More than 40	16	10.0	-	-
2	Education				
	Illiterate	65	40.62	128	80.0
	Primary	67	41.88	30	18.75
	Middle school	10	6.25	2	1.25
	High school and above	18	11.25	-	-

Attitude:

Attitude is the degree of positive or negative affect towards a psychological object. An individual who is associated with positive affect or feeling with some psychological object is said to have a favourable attitude towards the object. In case of negative affect or feeling, it is just the reverse. People varying with personality traits behave

differently towards various tasks/objects they have to perform or deal with. Childcare being the important task for the parents under investigation, analysis of attitude towards childcare will tell their psychological make-up. The attitude of women who assumed to have prime responsibility of childcare may also vary than that of men. In this study, the attitude of MALs and WALs were assessed and is presented in Table 3.

Table 3. Attitude of the parents towards childcare

		n=160	
Sl. No.	Statements	Weighted score	
		MAL	WAL
1	With proper childcare being taken, every child is expected to become an effective adult in future	4.05	4.28
2	Children are God's gift and need no special care	3.50	3.59
3	Childcare may lead to develop child's intelligence in education as well as in social dealings	4.30	4.00
4	Childcare practices need more monetary involvement, so not affordable on the part of the parents	3.18	3.09
5	Childcare practices are so much cumbersome that parents may fail to meet the requirements	3.05	3.31
6	The parents will be free from tension arising from child mortality if proper care of children is taken	4.12	3.46
7	The family may get a rich dividend in terms of bringing good name and fame in future from children if brought up under proper care from childhood	3.95	4.21
8	As childcare is an unpaid work, parents should not bother much for it	3.87	3.90
9	It is very difficult for the parents to take up childcare practices, who live in rural areas and are socio- economically backward	3.08	3.34
10	Childcare practices are not feasible in rural areas where the basic amenities are lacking	3.03	2.81
11	Each and every parent has capability to adopt the childcare practices	3.15	3.03
12	Childcare always pays in terms of time, and costly resources management of the family	3.24	3.65
13	Childcare is not possible as it requires good knowledge and understanding of the subject.	2.12	2.21
14	Investment in children is only useful (fruitful) when children are brought up with care	3.87	3.62
15	Childcare is monotonous and difficult and the parents may not derive pleasure from it	3.28	3.40
16	Childcare is only thinkable (possible) for small and nucleus family, others may face multiple socio-economic problems	2.75	2.68
17	Childcare practices bring about strong emotional bond between parents and their children.	3.64	3.84
18	As childcare is a regular activity it is impossible to follow it	3.81	3.68
19	Childcare practices are simple which can create wonder for growth and development of the children	2.90	3.59
20	Childcare practices provides opportunity to the parents to enjoy family living and forget the worries of the family	4.34	4.37

Vital statistics:

The vital statistics of the data on attitude are presented in Table 4. The mean attitude score of WALs and MALs was found to be 3.47 and 3.16 with standard deviation of 0.20 and 0.37 respectively. The variance of the two samples was computed

as 0.039 for women and 0.136 for men. This indicated that variability in attitude scores of MALs was more than WALs. The per cent of coefficient of variation was found to be 5.76 and 11.71 for MALs and WALs respectively i.e. the variability in attitude scores was almost double in case MALs than WALs.

Table 4. Vital statistics of attitude scores towards childcare

Sl. No.	Vital statistics	WALs	MALs
1	Mean	3.47	3.16
2	Standard Error	0.016	0.029
3	Standard Deviation	0.20	0.37
4	Sample Variance	0.039	0.136
5	Coefficient of Variation, %	5.76	11.71

ANOVA and 't' test:

The data on attitudes of women and men agricultural labourers towards childcare were subjected to F-test to find whether there is any significant difference between two variances. It was found that the variances of the attitudes of men and women labourers were significant at 0.01 level.

Then the data were subjected to t-test for two-sample assuming unequal variances to find out the differences in their mean attitudes. It was found that the mean attitude scores of

men and women towards childcare were significant at 0.01 level ($t = 2.341$). As the mean attitude scores of WALs were more than MALs, it could be concluded that the women possess significantly higher favourable attitude towards childcare.

Conclusion

The mean attitude score of WALs and MALs was found to be 3.47 and 3.16 respectively. The mean attitude score of WALs was higher than that of MALs indicating that the women possess significantly higher favourable attitude towards childcare than men.

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Role of Frontline demonstrations in increasing pearl millet productivity and adoption of scientific cultivation in Barmer District

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Abstract

The Rajasthan is largest producer of pearl millet in India. In Rajasthan it was grown on 5206162 ha with average productivity of 825 kg ha⁻¹ while in Barmer district it was grown on 1011401 ha with average productivity of 130 kg ha⁻¹ (Kharif 2008-09). To increase the productivity of pearl millet, 30 frontline demonstrations in 12 ha of land using hybrid CZP 9802 was conducted on farmer's field during 2009-10 in arid region of western Rajasthan to evaluate the economic feasibility of technology transfer and adoption via Front Line Demonstration with basic two objectives on speedy spread of the newly introduced HYV of Bajra and acquaint extension functionaries and local farmers with front line varieties and management technologies. The FLD produced a significant positive result on both the demonstration and non-demonstration farmers. 63 Percent of demonstration farmers and 31 non-demonstration farmers were changed in their attitude towards the improved technology. This different in attitude change might be attributed to their frequent direct contact with the supervising scientist,

Key Words : Pearl millet, FLD, Adoption

Introduction

Pearl millet (*Pennisetum typhoideum*) is an important low value cereal crop grown in rainfed areas of country. The Indian hot arid zone is spread over 0.32 m km² area and 65% of it is in the western district of Rajasthan. The climate induces frequent droughts, making arable cropping difficult and uncertain. Rajasthan has cultivated area of almost 20 million hectares but due to some unavoidable circumstances on 20% of the

total cultivated area is irrigated. The economy of state is mostly depended on agriculture and 22.5 percent of state's GDP comes from agriculture. The Rajasthan is largest producer of pearl millet in India. In Rajasthan it was grown on 5206162 ha with average productivity of 825 kg ha⁻¹ while in Barmer district it was grown on 1011401 ha with average productivity of 130 kg ha⁻¹ (Kharif 2008-09). The yield of pearl millet crop is adversely affected by traditional cultivation

without fertilizer application especially phosphatic fertilizer. This a good sign as bajra is scanty rainfall crop and it provides grain for humans and fodder for animals. Bajra had lowest yield of 7 kg per hectare in 2002-03.

Objectives

To increase the productivity of pearl millet, 30 frontline demonstrations in 12 ha of land using hybrid CZP 9802 was conducted on farmer's field during 2009-10 in arid region of western Rajasthan to evaluate the economic feasibility of technology transfer and adoption via Front Line Demonstration with basic two objectives on speedy spread of the newly introduced HYV of Bajra and acquaint extension functionaries and local farmers with front line varieties and management technologies. The farmer's selection was made as per guidelines provided by Zonal Project Directorate Zone VI to bridge the gap existing between state productivity and district productivity. The whole package approach demonstrated to farmers through FLD trials included component such as variety, seed rate, seed treatment, weed management and irrigation through sprinkler, fertilizers and plant protection measures. Under strict supervision of KVK scientists study was conducted from sowing to harvesting.

Materials and Methods

Data on crop yield was recorded by per sq. meter observation method randomly from 3 to 4 places from an acre. Also side by side study was conducted from a random sample of 30 non demonstration farmers of Barmer districts. Thus the sample of the present study consisted of 60 respondent's farmers. The non-demonstration farmers were from the adjacent localities that joined in the pre

seasonal training (kisan goshti) (whose names were registered on the day). The present study focused on changes in attitude, skill and knowledge level the recommended Bajra practices of the demonstration and non-demonstration farmers. Similar exercise was also made to measure the adoption score of the recommended practices. Data were collected personally by using pre-tested interview schedule from all respondent farmers (60). The attitude change in both categories of farmers was measured on three response categories (good, don't know and disagree) towards the FLD's programme. Skill performance was assessed on sowing of improved seeds and seed treatment by assigning one score each for those who followed the recommendations. The knowledge level of the recommended bajra practices was also determined by assigning one score for each correct answer and zero score for each wrong answer of the recommended practices viz. seed rate, seed treatment, sowing method, optimum spacing, correct doses of NPK fertilizers and time & method of fertilizer application, diseases and pests management.

Results and discussion

The study revealed that improved technology (10.94 q ha^{-1}) registered 63.3 per cent increase in seed yield over the farmers practice (6.70 q ha^{-1}). The most favorable one for pearl millet when the highest yields of 12.2 and 8.4 qha^{-1} in FLD and farmer's practice, respectively were recorded. It was evident from the yield levels recorded in demonstrations that the improved package of practices can boost the yield to the tune of even 4.24 qha^{-1} . These results confirm those obtained by conducting in FLD trials on

various pulse crops (Das and Willey, 1991). Overall, the yield of demonstration plots exceeds that of farmer's plots in all FLD. This was attributed to the quality seed used, adequate seed rate, management practices and judicious use of fertilizers. In terms of monetary return the net gain per hectare was Rs. 6660/- and was Rs. 45.6/- higher by investing additionally Rs. 400/-. With the improved package of practices fetch a higher B:C ratio of 2.23 while farmers practice gave 1.60 (Table 2).

The FLD produced a significant positive result on both the demonstration and non-demonstration farmers. 63 Percent of demonstration farmers and 31- non-demonstration farmers were changed in their attitude towards the improved technology. This different in attitude change might be attributed to their frequent direct contact with the supervising scientist, Different extension activities like training programs, field days, practical demonstration on farmers fields, frequent and regular field visits and contact supervising scientist at all important and critical stages of the crop, quick response on farmers request increased yields. Availability of the critical inputs like treated seeds, biofertilizers, fertilizers and plant protection chemical with sprayers were also another reason. The positive attitude gained by the non-demonstration farmers would be from the good results of the demonstration and participation to the field day programme at crop maturity stage.

From knowledge level point of view, the demonstration farmers had shown significantly higher scores than the non-demonstration farmers. Knowledge gains were higher by the demonstration farmers

on the practices like seed rate, seed treatment, spacing and doses of fertilizers and IPM were only followed and noticed by the demonstration farmers.

The demonstrations influenced the adoption pattern of the recommended practices. The demonstration farmers had significantly higher score than the non demonstration farmers in the adoption of the recommended practices (Table 2).

Some of the major constraints reported by the demonstration and non-demonstration farmers were: timely non availability of plant protection chemicals, high cost of fertilizers, high incidence of pests and diseases and difficulty in getting improved seeds of HYV of Bajra.

Conclusions

FLD programme was effective in changing attitude, skill and knowledge of improved/recommended practices of HYV of Bajra including adoption. This also improved the relationship between farmers and scientist and built confidence between them. The demonstration farmers acted also as source of information and pure seeds for wider dissemination of the HYV of Bajra for other farmers.

The concepts of FLD may be applied to all farmers-categories including progressive farmers for speedy and wider dissemination of the recommended practices to other members of the farming community. This will help in the removal of the cross-sectional barrier of the farming population. Extension functionaries may be invited in the program to follow the same procedure in their future demonstration programme to achieve success.

Table 1: Area, production and productivity of Pearl millet in Rajasthan Kharif 2008-09

Districts	Area(ha)	Production (tonnes)	Productivity (kg/ha)
Barmer	1011401	131202	130
Jaipur	295678	455910	1542
Sikar	306517	444771	1451
Jhunjhunu	279816	329619	1178
Alwar	226349	380460	1681
Bharatpur	100146	157434	1572
Bikaner	256896	155778	606
Churu	427985	335074	783
Jalore	332531	138981	418
Jodhpur	608851	247504	407
Nagaur	492278	335074	783
Rajasthan	5206162	4294938	825

Source: Vital Agriculture Statistics 2009-10, Commissionaire of Agriculture, Govt. of Rajasthan

Table: 2 Impact of improved technology on the economics of Bajra cultivation (Rs/ ha)

S. No.	Particulars	Year 2009-10
1.	Production cost	
	Improved practice (IP)	5400
	Farmers practice (FP)	5000
2	Additional cost over FP	400
3	Gross return	
	IP	12060
	FP	8040
4	Net return	
	IP	6660
	FP	3040
5	B:C ratio	
	IP	2.23
	FP	1.60
6	Additional return	3620
7	Increase in net return (%)	63.3
8	B:C on additional input in demonstration	905

IP- Improved practice; FP- Farmers practice

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Participatory Problem Identification of Manual Pumps in Odisha

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Abstract

Manual pumps are generally used by the small and marginal farmers, those who cannot afford diesel pumps or electrical power operated pumps, for irrigating their fields. Sometimes they face problems due to unavailability of spare parts of pumps and lack of repairing facilities within their reach. A study was conducted to identify the problems being faced, both mechanical and ergonomical, by the farmers for using the manual irrigation pumps in the state of Odisha. Farmers expressed their dissatisfaction about performance of other indigenous water lifts and manual operated pumps like tenda, bucket lifts, chain washer pumps on the basis of their discharge and drudgery. Leg fatigue during KB pump operation and muscular fatigue in arm, shoulder and waist pain while working with LLH pump were some of their problems, although they widely use these two pumps for their use. Modification of those manual pumps or development of new pump with respect to their problems faced and availability of repairing facility with spare parts will ultimately be very much useful to weaker section of the farming community in irrigating and growing crops.

Key Words: *Marginal farmers, LLH pump, KB pump, mechanical problems, ergonomic problems*

Introduction

In Odisha, much of the land is family-owned and is in fragmented small holdings. Around 58.4 per cent farming lands are less than 2 ha in Odisha as per the Odisha Agriculture Statistics (Govt. of Odisha, 2013). Irrigation is one of the principal ways to increase the production in agriculture and for that irrigation using appropriate, locally maintainable technology that is directly controlled by the

farmer is of great use to them. Eighty per cent of the farmers in the state of Odisha are small and marginal farmers. Their economic conditions do not allow them to go for the advanced type of irrigation pump for their lands. Srivastava (2001) reports that irrigation alone requires maximum energy, which is 40% of the total energy requirements for different agricultural activities. As such the power consumption in the state of Orissa

for agriculture purposes continues to be low and is hardly 1.71 per cent of the total power consumption (Govt. of Odisha, 2013). The only practical solution within the financial limit of such small and marginal farmers for lifting irrigation water, are efficient indigenous and manual water pumps.

Various models of indigenous manual pumps are being used by the farmers. The performance parameters of these pumps can help a buyer or farmer to choose the suitable one for his pumping need. The selection of suitable manual pumps for a particular situation generally depends on the amount of water to be lifted, the depth of water table, types of crops to be grown, human energy available and economic status of the farmers. In the state of Odisha, Implement Factory, Department of Agriculture, Govt. of Odisha, M/S Jhalani Agro Industries Pvt. Ltd., M/S Prachi Engineering Works, M/S Kalinga Engineers, M/S Shekhar Engineers Pvt. Ltd., Orissa Agro Industries Corporation etc. have also developed manual pumps. The International Development Enterprise (IDE) have developed low cost, simple treadle pumps and developed several models in the brand name Krishak Bandhu (KB) Pump. Due to their popularity these pumps have been adopted in different states of Uttar Pradesh, Orissa, North Bengal, Bihar, Assam, Tripura and Andhra Pradesh of our country. As per Orissa Agriculture Statistics, a total of 36,917 nos of low lift pumps have been sold in the state during the years 1996-2003 (Anonymous, 2004). Out of those 24,968 nos. are KB pumps and 11,949 nos. are low lift diaphragm hand pumps. The discharge of these pumps range between 3000-6000lph at

an optimum suction head of 10ft. These pumps are also operated by the family members of a farmer irrespective of male or female, although the human factors like tiredness and fatigue affect the efficiency of a pump and its acceptability.

For efficient operation of manual pumps the operator should be comfortable in his working position. Iqbal (2009) conducted survey and assessed farmers' adaptability of manual pumps, which are popular among small and marginal farmers of Bangladesh. Among the manual pumps the farmers predominantly use treadle pumps. It was found from study that the present structural design, the operation of the pump is tedious and at the same time very ineffective, which needs necessary modifications.

Objectives

To identify acceptable pumps being used by the farmers and collect the information on different mechanical and ergonomical problems related to the manual irrigation pumps and their suggestions for further improvement.

Materials and Methods

In order to identify acceptable pumps being used by the farmers and problems faced during operation of the manual irrigation pumps, the survey was conducted in some selected villages of Odisha. Farmers were interviewed and their problems were ascertained regarding different mechanical and ergonomical problems related to the two most popularly used manual pumps i.e. low lift hand pump (LLH pump) and Krishak Bandhu pump (KB pump).

Selection of villages and farmers

For the purpose of decision making regarding pump study a total of 19 numbers of villages (varying from 2 to 5) in the districts of Khurda, Puri, Bhadrak, Balasore, Dhenkanal and Bolangir were selected. In selection of villages, population of manual pumps in the village and its' use was considered as the main criteria. Preference was given for village selection where the numbers of manual pumps being actually used by the farmers was more. In selecting the villages,

the help of officers of Agriculture Departments and Block officers was taken. After selection of villages, local progressive farmers, VAWs were consulted and taken into confidence for their help.

In total 150 numbers of respondents consisting of 101 males and 49 females, who were either owner of the pump or pump operators (LLH pump and KB pump), were interviewed regarding the performance of pumps and ergonomic problems faced by them during operation (Table 1).

Table 1 Particulars of the districts and farmers selected for survey work related to manual pumps

Sl.No.	District	Nos. of villages	No. of farmers/ farm workers surveyed		
			Male	Female	Total
1.	Khurda	3	18	7	25
2.	Puri	5	22	8	30
3.	Bhadrak	4	19	11	30
4.	Balasore	3	16	9	25
5.	Dhekanal	2	11	4	15
6.	Bolangir	2	15	10	25
Total		19	101	49	150

Identification of problems

A survey proforma was prepared and the farmers using the manual pumps were interviewed. The technical difficulties and facilities experienced by the farmers during operation of improved manual pumps like LLH pump and KB pumps were collected through the questionnaire of survey proforma. Besides the machine aspects, the drudgery associated and faced by the users during operation of pump

was listed. The problems such as breakdown of the pump while in operation, priming problems, wearing out of washers and other body parts of the pump assembly, fouling problem in pedal operation, muscular fatigue during operation, chest pain, back pain and waist pain faced by them were carefully recorded and analysed. The views of the users regarding reduction of drudgery and their suggestions for further improvement of the pump and its

operation and modification of pump dimensions were recorded for investigation.

Results and Discussion

It was observed that the farmers showed dissatisfaction about performance of other indigenous water lifts and manual operated pumps like tenda, bucket lifts, chain washer pumps on the basis of their discharge and drudgery. During survey it was found that the manual pumps like LLH pump and KB pump are being widely used by the farmers to irrigate their lands for growing mainly paddy and vegetables. The mechanical and ergonomical problems related to LLH pump and KB pump were identified for analysis.

The detailed information on operation of pump and ergonomical problems as reported by the male and female agricultural workers and farmers experiencing during operation of these pumps are presented in Table 2 and 3. It is revealed from the table that all the agricultural workers complained about the muscular fatigue in arm, shoulder and waist pain while working with LLH pump. Some males and majority of female workers also

complained about the chest pain after operation. They also expressed that the cause of their waist pain is mainly due to the bending posture adopted while reciprocating the handle during discharge stroke of each cycle. On an average 59.3 per cent of the farmers reported about the hand abrasion and boil formation due to friction between handle and the palm during operation of LLH pump. Most of the workers reported that they feel tired after a continuous pump operation of 10 to 15 minutes. Forty per cent of the users expressed that they have to take the pump to the local artisan or company for repair, replacement of diaphragms and valves. More than 98 per cent of the users pointed out that it becomes difficult to operate the LLH pump when the water table depth is more than 3.66m (12 ft) in their wells. About 12.7 per cent, those who have used the pump at 3.66m head or more reported that LLH pump needs priming. Other minor problem such as noise and vibration of barrel when operated at greater depths was expressed by 6 per cent of the farmer operators. More than 91 per cent of the users agreed that hand operation is inconvenient and only 8.7 per cent reported that it is convenient.

Table 2 Diagnostic observations regarding problems related to LLH pump

Sl. No.	Pump and ergonomical parameters	Farmer's opinion in per cent						Average N=150
		Name of districts						
		Khurda N=25	Puri N=30	Bhadrak N=30	Balasore N=25	Dhenkanal N=15	Bolangir N=25	
1	Priming requirement before operation	8.0 (2)	6.7 (2)	6.7 (2)	16.0 (4)	13.3 (2)	28.0 (7)	12.7 (19)
2	Noise and vibration of barrel	4.0 (1)	3.3 (1)	3.3 (1)	4.0 (1)	13.3 (2)	12.0 (3)	6.0 (9)
3	Breakage of pins and other moving parts	4.0 (1)	0 (0)	10.0 (3)	8.0 (2)	13.3 (2)	20.0 (5)	8.7 (13)

4	Repair and maintenance problems	20.0 (5)	26.7 (8)	43.3 (13)	56.0 (14)	46.7 (7)	52.0 (13)	40.0 (60)
5	Muscular fatigue in arms, waist, shoulder and chest pain due to hand operation	100.0 (25)	100.0 (30)	100.0 (30)	100.0 (25)	100.0 (15)	100.0 (25)	100.0 (150)
6	Hand abrasion and boil formation	56.0 (14)	53.3 (16)	66.7 (20)	60.0 (15)	53.3 (8)	64.0 (16)	59.3 (89)
7	Operation difficult at suction heads above 3.66m	100.0 (25)	100.0 (30)	93.3 (28)	96.0 (24)	100.0 (15)	100.0 (25)	98.0 (147)
8	Convenience of operation	8.0 (2)	6.7 (2)	10.0 (3)	8.0 (2)	6.7 (1)	12.0 (3)	8.7 (13)

N.B.: N= total nos. of farmers and figures in parenthesis indicate the number of farmers' opinion

The pump survey observations revealed that 23.3 per cent users complained about leg fatigue due to pedaling operation in Krishak Bandhu pump. Majority of them also expressed that due to prolonged continuous operation they feel stress in the legs, however it is very convenient to operate KB pump than LLH pump. Around 95.3 per cent gave the opinion of ease of operation of KB pump. Some of the workers around 12.0 per cent reported about the fouling during operation, which include mainly the female workers. All the farmers and workers reported about the slipping of the plunger in the cylinder after a short span of use. They also complained that washer is not available in the market and each time they had to contact the dealer for replacement of washer. On an average 58.0 per cent reported about the repair and maintenance problems. Due to wear and tear

of plunger washers in KB pump, frequent priming requirement before operation was the major inconvenience faced by 90.0 per cent of the farmers. Besides these, 14.7 per cent indicated about the play in the treadles and 10.0 per cent the breaking of pins during operation. When asked about the difficulties in operation at higher suction heads, 95.3 per cent agreed to that and mentioned that higher force is required to apply during pedaling of KB pump.

Availability of spare parts like washers, diaphragm at suitable outlets, good quality washers, reduction in operating height of handle in LLH pump, reduction of drudgery in operation, operation without priming, after sales service, subsidy in purchase, training in pump operation and maintenance are some of the suggestions of the farmers.

Table 3 Diagnostic observations regarding problems related to KB pump

Sl. No.	Pump and ergonomical parameters	Farmer's opinion in per cent						Average N=150
		Name of villages						
		Khurda N=25	Puri N=30	Bhadrak N=30	Balasore N=25	Dhenkanal N=15	Bolangir N=25	
1	Priming requirement before operation	88.0 (22)	80.0 (24)	90.0 (27)	92.0 (23)	100.0 (15)	96.0 (24)	90.0 (135)
2	Noise and vibration of barrel	16.0 (4)	10.0 (3)	13.3 (4)	20.0 (5)	20.0 (3)	32.0 (8)	18.0 (27)
3	Breakage of pins and other moving parts	8.0 (2)	3.3 (1)	10.0 (3)	8.0 (2)	20.0 (3)	16.0 (4)	10.0 (15)
4	Repair and maintenance problems	44.0 (11)	53.3 (16)	60.0 (18)	64.0 (16)	60.0 (9)	68.0 (17)	58.0 (87)
5	Slipping of plunger in cylinder due to wear and tear of washer	100.0 (25)	100.0 (30)	100.0 (30)	100.0 (25)	100.0 (15)	100.0 (25)	100.0 (150)
6	Fouling during pedaling	8.0 (2)	3.3 (1)	6.7 (2)	8.0 (2)	26.7 (4)	28.0 (7)	12.0 (18)
7	Play in the pedal	16.0 (4)	13.3 (4)	20.0 (6)	8.0 (2)	13.3 (2)	16.0 (4)	14.7 (22)
8	Leg fatigue due to pedaling	28.0 (7)	20.0 (6)	30.0 (9)	16.0 (4)	20.0 (3)	24.0 (6)	23.3 (35)
9	Operation difficult at suction heads above 3.66m	68.0 (17)	66.7 (20)	73.3 (22)	72.0 (18)	53.3 (8)	80.0 (20)	70.0 (105)
10	Convenience of operation	92.0 (23)	100.0 (30)	100.0 (30)	96.0 (24)	86.7 (13)	92.0 (23)	95.3 (143)

N.B.: N= total nos. of farmers and figure in parenthesis indicates the number of farmers' opinion

Conclusion

Mechanical lifting devices are underutilized mainly due to unavailability and expensive spare motor parts, lack of minor repairing

facilities within the reach of the farmers. Even loss of a nut keeps the pump idle for months together. From the study, it was observed that farmers were mostly

interested in the use of low LLH pump and KB pumps for irrigating their fields for growing paddy and vegetables. Farmers expressed their dissatisfaction about performance of other indigenous water lifts and manual operated pumps like tenda, bucket lifts, chain washer pumps on the basis of their discharge and drudgery. However, the farmers also expressed their problems regarding leg fatigue during KB pump operation and muscular fatigue in arm, shoulder and waist pain while working with

LLH pump although they widely use these two pumps for their use. This indicates that there is need of modification of manual pumps such as LLH pump and KB pump those are being used by the small and marginal farmers incorporating the problems faced by the farmers, which will ultimately be very much useful to the small and marginal farmers and weaker section of the farming community in growing the crops at their wish.

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A pilot study on socio-economic status of goat farmers of Odisha

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Abstract

A study was made during 2013-14 taking 1340 farm families, rearing goats from eight districts of Odisha having high concentration of goats in the state using a structure survey schedule containing various aspects on socio-economic profile, land holding, livestock position, grazing protocol, managerial practices, labour input and income source of goat owners. Contribution of women in goat husbandry was found to be 44.77%. The average annual income of Ganjam, Bengal type and local goat farmers were Rs.37632/-, Rs.26164/- and Rs.23686/-, respectively. But per animal income per year ranged from Rs.1254/- on Ganjam to Rs.2842/- on Bengal type goats.

Key words: Goat, Socio-economic, Annual income

Introduction

Goat contributes significantly to the total income of farmers and provides better nutrition even of the poorest. Goat farmers maintain their stock on community grazing land by employing family/self labour with negligible economic input and marginal output (Chauhan and Moorti, 1999). Goat productivity varies greatly in all respects in different agro-climatic zones in India. Odisha possesses 5973919 goats as per 17th livestock census, 2003. For enhancing productivity and effective transfer of technology targeted towards enhanced livelihood, it is very important to know the socio-economic status of farming community rearing the animals.

The productivity of different production systems depends on the socio-economic background of the community responsible for respective production systems.

Materials and Methods

A study was made during 2013-14 using primary data collected from 1340 farm families from the field. The information was obtained using a structure survey schedule containing various aspects on location, family details, land holding, livestock position, grazing protocol, labour input and income source of goat owners spread over Ganjam, Gajapati, Nayagarh, Khurda, Keonjhar, Sundargarh, Balasore and Kalahandi districts of Odisha having maximum concentration of goats in

the state. The data thus collected were put to simple statistical analysis (Snedecor and Cochran, 1989).

Results and Discussion

It was observed that at an average, 3.08 males and 2.59 females constitute the family size of goat farmers in Odisha. The overall percentage of literate members was found to be 13.40. However, in goat farmers of Ganjam goat and Gola community the corresponding value was the lowest (7.9%). Similarly 84.99% of farmers in Ganjam district and 46.04% in total sample were found to be from Gola community, which reveals that, this community is mostly responsible in rearing Ganjam goats. The tribal community and other backward caste were found to be the major goat keepers of local varieties of goats in the state. Only 5.4% of goat farmers belonged to general caste (Table 1). This agrees with the findings of Riyazuddin *et al.* (2001), studied in sheep farmers in Rajasthan state.

The average land holding of goat farmers in the state ranged from 0.32 acre (Kalahandi) to 1.02 acre (Ganjam) with overall mean of 0.76 acre. Though all the categories of farmers keep goats, only 9.70% of them are large farmers. None of the farmers grow fodder for rearing goat. Mostly they depend on natural vegetations for feeding the animals. The average contribution of women in the goat rearing was found to be 44.77% (Table 2).

Considerably large flock size of more than 25 animals were seen in 65.01% of all the flocks in Ganjam goats, whereas small flock size of less than 10 animals were seen in 67.42 and 68.0% of flocks in Bengal type

and local varieties, respectively. Expenditure on health ranged from 20 to 40 rupees per animal per year in all the three types of goats, irrespective of the flock size. Self labour, utilized towards browsing of goats was calculated with respect to time spent. The average flock size was calculated as 6 does towards profit per animal per year, in flock size of 5-10. Corresponding figure for herd size of 10-25 and >25 was 15 and 25, respectively. The average annual income of Ganjam, Bengal type and local goat farmers were Rs.37632/-, Rs.26164/- and Rs.23686/-, respectively. But per animal income per year ranged from Rs.1254/- on Ganjam to Rs.2842/- on Bengal type goats. The disparity in annual income and per animal income per year is attributed to size of the flock and labour cost (Table 3). The income generated from goat rearing showed that large flocks yielded relatively less income compared to small units. This was because the large units incurred expenditure on either hired labour or utilised their full time own labour which was calculated in terms of recurring expenditure.

The present study of socio-economic status of goat farmers as major component of livelihood security clearly indicates that goat rearing is one of the main subsidiary occupations of resource poor farmers in the coastal districts and the most dependable source of income for the tribal farmers of the state. Since goats are raised under low input system, it is always identified with the resource poor farmers. Any attempt to increase the productivity of this valuable possession of economically struggled farming community of the state will go a long way for sustainable development of the socio-

economic status of the major section of the farming community closely associated with

the rearing of this small animal ruminant since generations.

Table 1. Socio-economic status of goat farmer of Odisha based on goat types

Sl.No.	Particulars	Ganjam	Bengal Type	Non-descript	Overall
1	Total no. of households surveyed	726	264	350	1340
2	House hold size & literacy rate				
a	Average no of males	3.2	3.4	2.6	3.08
b	Average no. of females	2.6	2.8	2.4	2.59
c	Average literate member (%)	7.9	19.8	20.0	13.40
3	Community rearing goats (%)				
a	Gola	46.04	-	-	46.04
b	SC/OBC	8.13	15.83	10.00	33.96
c	Tribal	-	3.51	11.04	14.55
d	General (others)	-	0.37	5.07	5.45

Table. 2 Classification of goat farmers based on land holding

District	No. of household Surveyed	Average Land holding (acre)	Farmer (%)				Fodder grown	Share (%) of women
			Land less	Marginal	Small	Large		
Ganjam	603	1.02	8.62	32.34	39.47	19.57	Nil	42
Gajapati	111	0.78	19.82	38.74	38.74	2.70	Nil	40
Nayagarh	134	0.68	10.45	41.79	44.78	2.98	Nil	36
Khurda	77	0.79	20.78	36.36	40.26	2.60	Nil	48
Sundergarh	73	0.45	31.51	43.84	24.65	-	Nil	45
Kalahandi	180	0.32	42.22	42.78	14.44	0.56	Nil	52
Keonjhar	162	0.42	48.15	48.15	8.64	1.23	Nil	56
Total/Overall	1340	0.76	37.24	20.97	32.09	9.70	Nil	44.77

Table 3. Income and expenditure of different goat varieties

Particulars	Flock size								
	Ganjam			Bengal type			Non-descript		
Folk size	5-10	10-25	>25	5-10	10-25	>25	5-10	10-25	>25
Farmers (%)	3.03	31.96	65.01	67.42	24.62	8.71	68.0	26.86	5.14
Labour pattern on grazing	Part time	Self (share)	Self/ Hired	Part time	Self (share)	Self/ Hired	Part time	Self (share)	Self/ Hired
Expenditure on health per animal (Rs)	20	30	24	30	30	40	24	20	30
Approx. Expenditure on grazing per annum per animal(Rs)	200	800	1000	200	800	1000	200	800	1000
No. of animals sold per year	4.23	10.42	24.57	7.68	22.41	32.32	7.53	20.47	30.34
Receipt from sale of animals per year (Rs)	12690	31260	73710	18432	53784	77568	18072	49128	72816
Income (Rs)	11370	18810	48110	17052	41334	51568	16728	36828	47066
Profit per animal per year (Rs)	1895	1254	1924	2842	2756	2063	2788	2455	1882

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A Study on flagship programme for Drinking Water Supply in Rural Odisha

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Abstract

To emphasize on ensuring sustainability of water availability in terms of portability, adequacy, convenience, affordability and equity with decentralized approach of involving Panchayati Raj Institutions and community organizations, the fourth generation programme viz. National Rural Drinking Water Programme (NRWDP) has come into force since 01.04.2009 with a vision "Safe Drinking Water for all, at all times in rural areas". While the programme is in operation across the country, it needs to address the basic issues of demand responsiveness, community ownership and post-project operational aspects based on the lessons learnt from earlier programmes implemented for providing drinking water in rural areas. The current paper based on the empirical studies undertaken in three districts of Odisha analyses the extent of participation of primary stakeholders in planning, designing and accessing the benefits of water supply programme meant for them. It is observed that sustainability of drinking water project is sensitivity to the extent of community involvement at the planning and designing stage. The study finally recommends to reckon the local concerns like drinking water availability, willingness of local community for post-project maintenance, capacity building of the Village Water & Sanitation Committees, timely flow of fund, participation of women and convergence among related departments in order to provide "Safe Drinking Water for all, at all times in rural areas" in true spirit.

Key Words : Demand Responsiveness, Sustainability, Partnering, Stakeholder, Sensitivity

Introduction

Drinking Water is considered to be one of the basic necessities of life. It is also the key to health, economy and development of human society. Recognising the need of safe drinking water, Govt of India and State Government at Odisha have been trying to provide safe drinking water to rural

population since the implementation of First Five Year Plan.¹

It was during 1972-73 i.e. the fourth five year plan serious thought was given to the problem of rural drinking water supply. Govt of India introduced the Accelerated Rural Drinking Water Supply (ARWSP) in 1972-73 with a focus on universal physical coverage of all

rural habitations. Identification of problem villages and accelerating the drinking water coverage in those areas were the two pronged strategies adopted in ARWSP. Considering the enormity and urgency, ARWSP was given the shape of the National Drinking Water Mission in 1986. In 1991, it was renamed as Rajiv Gandhi National Drinking Water Mission (RJNDWM) with some major

reforms to bring about sustainability in the water sector in rural India. Again in order to ensure the benefits of public spending on drinking water supply, ARWSP was restructured in 1999 and reforms in drinking water supply were adopted in the country through a set of pilot projects under *Swajaldhara* through a set of selected districts in the country.²

II

Swajaldhara in Odisha

In Odisha, the sector reform pilot projects for rural drinking water supply were launched in Ganjam, Sundargarh and Balasore districts during 2001 and these projects have been completed by 31st May 2004. Based on experience of sector reform projects, the reforms were scaled up in the entire state with the launch of *Swajaldhara* on 25th December 2002. Following were the basic principles of the programme.

- Adoption of demand responsive, adaptable approach along with community participation based on empowerment of village level institutions to ensure their full participation through a decision making role in the choice of drinking water

schemes, planning, designing, implementation, control of finance and management arrangements.

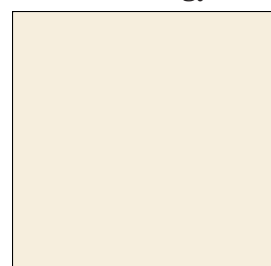
- Full ownership of drinking water assets with Village Water and Sanitation Committees and Panchayats.
- Partial Cost Sharing either in cash or in kind including labour or both, 100 per cent responsibility of Operation and Maintenance (O & M) by the users.

As on 1st April 2005, 877 schemes were taken up in the state with fund provisioning of Rs 13.72 crores. Out of 877 projects, 109 (12.42%) were completed and the remaining 768 projects(87.5%) were in progress.³

III

Study Objectives and Methodology

The study was undertaken during 2005-06 to assess the extent of community involvement in planning, implementation, Cost-Sharing, Operation and Maintenance of rural drinking water supply created under *Swajaldhara* in tune with the programme objective. Three districts were chosen on the basis of good,



Shaded portions are the study districts

moderate and poor performance.

The parameters used to assess the performance under the programme were the following:

- i. Percentage of utilisation of funds against the allotment received from Govt of India.
- ii. Number of projects completed against the sanctioned strength.

Bolangir, Mayurbhanja and Khurda districts were selected as the good, moderate and poor performing on the basis of above parameters.

Series of Individual Interview and Focus Group Discussions were conducted in the field to know their responses in line with the study objectives. 100 respondents were selected purposively to participate in five FGDs in each district. 30 per cent of the respondents were women who participated in FGDs.

IV

Institutional Arrangements for *Swajaldhara*

Govt of Odisha has a co-ordinating agency at the state level known as Odisha State Water and Sanitation Mission chaired by the Chief Secretary where as the District Water and Sanitation Missions are headed by District Collectors. The Village Water and Sanitation Committees implement the project at village level. VWSC is a community level grass root institution responsible for ensuring the following:

- Organising decision making through Gram Sabha in a transparent manner.
- Opening and managing Bank Accounts to receive the project and community fund against Capital Cost and Operation & Maintenance Expenses to be incurred during the Post-Project period.
- Planning and managing the project such as commissioning, procurement, collection of tariff, maintenance of accounts etc.

V

Stakeholders Participation in the Programme

The responses of 300 people who participated in the FGDs were captured and presented below with reference to table-1. The stakeholders participation have been categorised as follows.

1. Informing-Local People were informed about certain aspects of a scheme.
2. Consulting-Local community were consulted on a particular aspect of a scheme.
3. Partnering-Certain aspects of a scheme were carried out in partnership with local community.
4. Delegating-Specific aspect of a scheme was entirely left to the local community.

In the current study, responses of local community were collected on their involvement in planning, implementation and monitoring of *Swajaldhara* programme.

It can be seen from the table that in all three districts, the percentage of involvement of people in planning process under *swajaldhara* programme is more. People informed and consulted in planning process like grounding of the scheme, site selection and location mapping of stand posts etc. In Mayurbhanja district, the trend has been quite encouraging. But with regard to partnering and delegating the planning process to people i.e. sharing of people's ideas, envisioning the

long term implication of the project by people themselves, no district came out with positive responses. In implementation process, the responses varied from 22 to 35 per cent across all the districts where people have been informed and consulted. In case of monitoring of the project like procurement of raw materials, quality of construction and suitability of location of stand posts, only 11 to 26 per cent of the respondents opined that they were either informed or consulted.

Table-1: Level of Community Participation in Swajaldhara

District	Level of Participation(%)			
	Planning	Implementation	Monitoring	Total
Kalahandi	72(1)	26(1)	16(1)	100
	65(2)	22(2)	11(2)	100
	21(3)	3(3)	13(3)	100
	12(4)	4(4)	6(4)	100
Mayurbhanja	89(1)	35(1)	15(1)	100
	81(2)	34(2)	26(2)	100
	32(3)	29(3)	17(3)	100
	16(4)	15(4)	10(4)	100
Khurda	76(1)	32(1)	18(1)	100
	74(2)	30(2)	14(2)	100
	26(3)	22(3)	13(3)	100
	15(4)	13(4)	11(4)	100

N.B: 1-Informing, 2-Consulting, 3-Partnering, 4-Delegating

This can further be depicted from the table that in case of community and implementing agency partnership, less than 30 per cent responses could be collected in all districts starting from planning to implementation aspects. So far as delegation of the scheme activities to local community is concerned, hardly 10 per cent of the respondents opined that there has been community involvement in any stage of the project. When enquired further, it was revealed from the field that a

local contractor was selected who was depositing the 10 per cent so called "Community Contribution" on behalf of the local community and the work was awarded to him by the Rural Water Supply & Sanitation Department in consensus with the villagers. Ultimately, it became a contractor driven project and the executants implement the project as per the direction of executing department like any other programme. The special feature of *Swajaldhara* i.e. demand

responsive, adaptable approach along with community participation based on empowerment of village level institutions is

seldom reflected at any stages of the project implementation.

VI

Sensitivity of Project Sustainability to Stakeholder’s Participation

The study was undertaken in five completed projects to assess the impact of community involvement on sustainability of the project. The low, moderate and higher extent of community participation was analysed with respect to the post-project sustainability of drinking water assets created under *swajaldhara*. The community response within the range of 30 to 40 per cent, 40 to 60 per cent and above 60 per cent participation during informing and consulting stage of the planning process were considered as low, moderate and higher extent of community participation respectively. Coefficient of co-relation was applied to know sensitivity of community participation during planning process on long run sustainability of the projects.

Coefficient of correlation has been calculated by applying the following formula.

$$r^2 = \frac{\sum (XY) - \frac{\sum X \sum Y}{n}}{\sum X^2 - \frac{(\sum X)^2}{n}} \times 100$$

Where,

r^2 =Simple coefficient of determination

a=y-intercept

b=Slope of the best-fitting estimating line

n=number of years

X=Values of independent variable i.e. community participation during planning process.

Y= Values of dependent variable i.e. sustainability of the project. Sustainability factor was arrived based on annual average community contribution for Operation and Maintenance of the assets created under *Swajaldhara* during the post-project period. Post-project period for three consecutive years after completion of the project were taken into consideration for the study.

%

Y=Mean of observed values of the dependent variable i.e. sustainability of the project

The value of r is the coefficient of correlation.

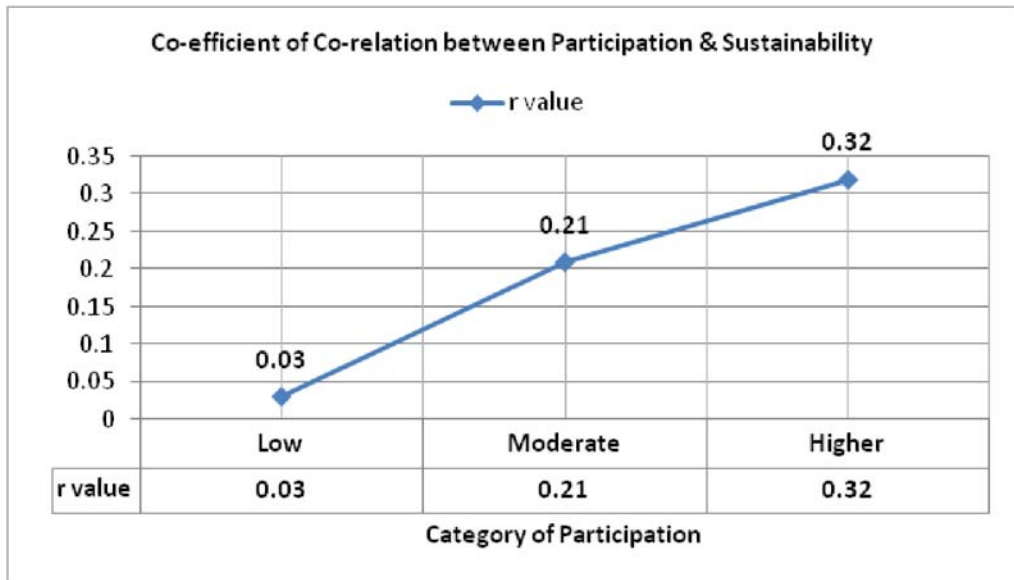
Table-2: Co-relation between participation and Sustainability

SI No	Category of participation	“r” value
1	Low	0.03
2	Moderate	0.21
3	Higher	0.32

After applying the formula, it was observed that there is positive co-relation between stakeholders participation and post-project sustainability. Higher the level of community participation leads to sustainability of drinking

water scheme in long run. On the contrary, more executant centric implementation ends in low community ownership and the project suffers in long run.

Figure-1: Co-relation between participation and Sustainability



VII

Suggestions and Policy Recommendations

To emphasize on ensuring sustainability of water availability in terms of portability, adequacy, convenience, affordability and equity with decentralized approach of involving Panchayati Raj Institutions and community organizations the fourth generation programme viz. National Rural Drinking Water Programme (NRDWP) has come into force since 01.04.2009 with a vision “Safe Drinking Water for all, at all times in rural areas”. The programme is under operation across the country. In view of the lessons learnt during the course of study,

following are recommended for effective implementation of drinking water programmes in rural areas.

- i. The areas which suffer from acute shortage of drinking water need to be taken up on priority basis under the current programme i.e. National Rural Drinking Water Programme.
- ii. Before selection of villages, there should be proper assessment by Rural Water Supply and Sanitation Department on willingness of local people to contribute

to the project for operation and maintenance during the post-project period.

- iii. Contractors may not be encouraged to implement the projects in the name of Village Water and Sanitation Committees. If villagers are not willing to pay for the partial capital cost, they may be sensitised to contribute labour and material to the extent possible.
- iv. There should be timely flow of fund from District Water and Sanitation Missions to the village committees to avoid delay in the project implementation and cost escalation. Technical guidance may be rendered to the village committees to ensure durability in the project.
- v. Regular training programmes need to be organised for the members of village committees for operation, maintenance, water quality, water sharing, implementation and other operational aspects of the programme. The committee members should also be taken

to successful projects for exposure visit in order to increase their understanding and confidence. The villagers should be sensitised through continuous training programmes, informal discussions, audio visual shows and other forms of social mobilisation for voluntary contribution in order to bring about their belongingness for the project.

- vi. Women's participation may be ensured while designing of the scheme, estimating the cost-implications, location mapping of stand posts and water requirement of the village. They should be allowed to participate freely in discussion, control of finance and decision making process. Local Self Help Groups and Panchayats may be involved to mobilise the women community.
- vii. There should be co-ordination at the field level among all related departments like Health, Water Supply, Panchayati Raj, Education etc so that safe drinking water can be linked to community hygiene and mass awareness.

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Differential Need Perception In Kvk Adopted And Non-Adopted Villages: An Agro-Economic And Socio-Personal Analysis

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Abstract

The perception of need is the basic psychological input to generate demand for training intervention through KVK. Once the needs are properly perceived and effectively mobilized for the socialization of technology the performance of KVK becomes more meaningful and goal-oriented. The present paper has examined the differential need perception for KVK intervention in a dichotomized respondents system i.e. adopted and non-adopted villages. The results suggest that the direct impact of the variables media exposure (X_{12}), Scientific aspiration (X_{11}) and social participation (X_{10}) have been substantial, while in non-adopted villages, the variables income (X_8), education (X_2) and age (X_6) have recorded substantial direct impacts on training need perception.

Key words : Need, perception, direct effect, income, media exposure.

Introduction:

Krishi Vigyan Kendra (KVK) has been conceived as the lighthouse of agriculture and rural development in India. This is Comprehensive Institutional arrangement to catalyse the Transformation Process, a process that transform a state and still rural society into a vibrant and economically strong community.

In India right now more than 584 KVKs are working as centered for capacity building, specially for women. It also synthesizes humane capacity with technology viability. It is basically a technology socialization process.

Any technology socialization process, again, assumes the characters of the Kinetic of Social Osmosis.

In any phenomenon of social osmosis technology passes through accommodation, assimilation and acculturation process (Acharaya, S & Pradhan, K2002).

The Technological Socialization Process for farm women through KVK has turned to be a unique social process. In the first stage KVK accommodate the innovations or adoptable technologies in the micro-farming system through a capacity building of farm women. It is better branded as reconina or cognitive phase of technology socialization process. After that the assimilation process will go on happening by a self governed osmosis process where in the "exotic" ideas would be internalized in gender term and perspectives the role for women in India in agriculture are so far been Polymorphic which

is ranging from child care to seed sowing, nutritional care of the family to post harvest operation.

The word “training” as referred in Webster (1947) means: as an act, process, or method of one who trains. Training is a specialized and practical form of education (Plenty *et al.* 1948). He further stated that training in commerce and industry is a specialized and very practical form of education. Basically, it prepares people to do their jobs well. To accomplish this it develops the skills that make for rapid, effective work, the knowledge. That is meant for intelligent actions and attitudes that bring willing cooperation with fellow employees and with management.

Sobha (2001) emphasized that training and technologies information has to be provided to the farm women to improve their skills, level of decision making and effective participation.

Padmanabhan (2001) emphasized the need for empowerment of rural women in agriculture through effective training and extension services arises from the gradual decrease in the availability of cultivable land, increasing population pressure and growing environmental degradation which have far reaching implications for food and nutritional security.

Majhi and Patra (1996) suggested that special training programme should be conducted to develop the scientific orientation, entrepreneurial abilities and working knowledge of farm women on agricultural activities. Programmes on sericulture, lac cultivation, mushroom cultivation apiculture etc. may be incorporated particularly for tribal farm women to develop the livelihood.

Materials and Methods

The researcher took the assistance of the concerned training organiser and programme co-ordinator of the ten selected K.V.K's for the identification of trained and untrained farm women from the available record of the village adopted under women empowerment from the adopted village 15 trained and from the non-adopted village 15 untrained farm women were selected with help a random sampling technique. Thus from the ten KVKs 150 trained and 150 untrained framwomen were selected as sample respondent of the study

Statistical Tools

The Mann-whitneyu-test, Rank order correlation, Regressionanalysis, Canonical discriminant analysis has been done.

Variables:

Twelve predictor characters were selected viz. Age(x_1), Education(x_2), Occupation(x_3), Family size (X_4), Holding size(x_5), House status (x_6), Material possession (x_7), Income (x_8), Farm power (x_9) social participation(x_{10}), Scientific aspiration (X_{11}), Media exposure(x_{12}), for assessing the relationship withthe predicted character Training need(y_1).

Results and Discussion:

Table-1Presents the Mann-Whitney U - test for comparing between two sets of data from adopted and non-adopted villages in terms of perceived training need.

It has been found that the adopted and non-adopted villages distinctly, differ, while the comparison is based on perceived training need, components of crop-production, Horticulture, plant protection Argil. Engineering, Fishery, Extension Education.

TABLE -1: Perceived Training Need (Yi): Impact OfKvk On Both Adopted And Non-Adopted Villages

Variable	NA	A	Test Statistics					
			Mann-Whitney U	Wilcoxon W	Z	Sig	Kolmogorov-smirnov Z	Sig.
Crop Production (Y ₁)	1.83	2,08	928.00	2203.00	-2.23	0.03	1.00	0.27
Horticulture. (Y ₂)	1.74	2,07	754.50	2029.50	-3.43	0.00	1.80	0.00
Plant protection (Y ₃)	1.63	2.00	762.50	2037.50	-3.38	0.00	1.80	0.00
Ag. Engineering (Y ₄)	1.58	1.88	922.50	2197.50	-2.27	0.02	1.20	0.11
Animal Husbandry (Y ₅)	1.77	1.91	1049.00	2324.00	-1.39	0.17	1.30	0.07
Fishery(Y ₆)	1.26	1.68	899.50	2174.50	-2.42	0.02	1.10	0.18
Forestry (Y ₇)	2.08	2.03	1001.50	2276.50	-1.72	0.09	1.20	0.11
Extension Education (Y ₈)	4.11	2.46	889.50	2164.50	-2.51	0.01	1.50	0.02
Home Science (Y ₉)	2.11	2.14	1136.00	2411.00	-0.79	0.43	0.90	0.39
Training need Score (y ₁)	2.01	2.03	859.50	2134.50	-2.69	0.01	1.30	0.07

(The level of significance have accepted as less than 0.05)

Rank order correlation: adopted and non-adopted villages: components of perceived training need (y₁) and 12 predictor characters.

Table 2: Present the Rank order correlation (Spearman’s rho) to display the correlation between the sub components and the predictor variables.

It has been found that the predictor variable age has been significantly correlated with the subcomponents (Training Need): Crop production, Horticulture, Plant protection, Fishery, Extension Education and perceived training need score.

Education has been found to be correlated with forestry components, occupation has been tuned to age.

Family size has recorded no such significant correlation with any other component. So training need has become a universal

perception below the farm size category per cent.

Holding size has been significant for associating a training need in Horticulture and Animal husbandry.

The House status has been predominately tuned to plant protection, Agril. Engineering, Forestry and Training need score.

The Material possession has been significantly tuned Horticulture. Income has come significantly attuned to plant protection and Agril. Engineering to imply that an optimum income support is essential to elicit the need for training in these two areas.

Scientific aspiration has well been tuned to crop production and Horticulture in terms of eliciting the training need.

Media exposure has gone significantly attuned to all the sub components excepting crop production and Home sieve science.

**TABLE-2: Rank Order Correlation: Components Of Perceived Training Need (y_1)
And 12 Predictor Characters:**

Variable	Spearman's rho											
	CROPPRDN	HORT	PLANT PROT	AGENG	ANIMHUS	FISHERY	FORESTRY	EXT-EDU	HOMESC			
Age (x_1)	0.297	0.3	0.302	0.069	0.096	0.208	0.18	0.205	0.17			
Education (x_2)	-0.035	0.092	0.012	0.178	0.107	0.044	0.235	0.074	0.033			
Occupation (x_3)	0.319	0.054	0.091	-0.05	0.047	-0.021	-0.072	-0.07	-0.002			
Family size (x_4)	0.016	-0.02	-0.05	0.096	0.188	0.077	0.128	0.181	-0.128			
Holding size (x_5)	0.171	0.218	0.14	0.078	0.23	0.044	0.054	-0.001	0.038			
House status (x_6)	-0.021	0.141	0.247	0.269	0.172	0.101	0.363	0.097	0.163			
Material possession(x_7)	-0.016	-0.202	-0.063	0.029	0.108	0.025	0.121	-0.028	0.07			
Income(x_8)	0.148	0.149	0.273	0.197	0.107	0.039	0.124	0.19	0.034			
Farm power(x_9)	0.142	-0.001	0.027	0.156	0.142	-0.188	0.177	0.1	0.004			
Social -participation(x_{10})	-0.038	-0.132	0.042	0.018	-0.115	-0.014	-0.04	0.126	0.04			
Scientific aspiration(x_{11})	0.203	0.206	0.093	-0.022	0.133	0.001	0.132	-0.126	0.168			
Media exposure(x_{12})	0.178	0.397	0.0212	0.361	0.35	0.265	0.292	0.198	0.047			

P<0.01, PO.05

Regression coefficient: perceived training need (y_1) and the causal variables:

and has depicted that the variables Family size and Income have exerted significant impact on the perception of training need in both adopted and non-adopted village.

Table 3 Present the regression co-efficient

Table 3 Regression Coefficient: Perceived Training Need (y_1) And The Causal Variables:

Variable	Un standardized		Standardized coeffi		Sig
	B	Std Error	Beta		
Constant	0.958	0.506	-	1.894	0.061
Family Size	0.320	0.226	0.141	1.417	0.160
Income	0.191	0.111	0.171	1.720	0.089

Dependent variable training need score:

Model Summary:

R	R.Sq.	Adj.Rsq	Se (Est)
0.216	0.046	0.027	1.115

Family size and income behave as binary impulse of resource- diode to characterize the perception of training need and subsequently goes on operationally impacting on the generation of training need from amongst the farmwomen.

Function (CDF) to imply that the variables, Social participation, Media exposure and Horticulture are selectively impacting in generating better perception of training need in adopted villages.

Canonical Discriminant function: unstandardized coefficients:

In non-adopted villages not a single variable does build up a strategic relation for generating training new part.

Table 4 Depicts the canonical discriminant

Table4 :canonical Discriminant unstandardized coefficients Function

Variable	Function
Social participation	0.355
Media exposure	1.193
Horticulture	1.515
Constant	-4.520
Eigenvalue	0.275
% of variance	100.000
Canonical correlation	0.464
Wilks lambda	0.784
Chi -square	23.425
Significant	0.000

Function At Group Centroids

CODE	FUNCTION
NA	-0.519
A	0.519

Unstandardized canonical discriminate functions evaluated at group means

Table-5 presents that the path analysis for detecting the impact of exogenous variable on perceived training need (y_1) in adopted villages. It has been found that the variables Age (x_1), House status (X_6) Scientific Aspiration (x_{11}) and Media Exposure (x_{12}) have recorded substantial correlation with the perceived training needs.

This indicates that the training needs have been perceived in terms of chronological age of the respondent or the training needs have been perceived by different age categories of the farmers.

The training needs have been bestowed upon by the respective scientific aspiration nurtured by the farmer's respondent. Generally the training on technologies, complex and advanced, should be prescribed for those having higher level of scientific aspiration.

It has also been found that the training needs have shown a perceptual variation

incompliance with the media exposure experienced by the respondent.

The variable Age (x_1) Social participation (x_{10}) Scientific Aspiration (x_n) and Media exposure (X_{12}) have exerted discreet direct effect on the perception of training need in adopted villages.

Social participation (x_{10}) has exerted the highest indirect effect on the perception of training need to imply its tremendous associational viscosity for imbibing the effect of other variable.

The variable House status (X_6) has routed the highest indirect effect on as many as three variables to characterise the perception of training need in the adopted village.

The residual effect being 0.5576, It is to conclude that even with the combination of twelve exogenous variable 55.76 per cent of the variance embedded in the consequent variable could not be explained.

Table - 5 path analysis: total effect of exogenous variables on perceived training need (y_1) kvk adopted villages

Exogenous variables	Total effect (τ) (TDE)	Total indirect effect (TIE)	
		I	II
Age (X_1)	0.314	0.089	0.051 (x_6)
Education (X_2)	0.046	0.103	0.057(x_1)
Occupation (X_3)	-0.109	-0.177	0.078(x_{10})
Family size (X_4)	0.068	0.105	0.077 (x_{11})
Holding size (X_5)	0.046	0.018	0.110(x_{10})
House status (X_6)	0.332	0.161	0.171 (X_6)
Material possession (X_7)	-0.040	-0.019	0.047 (x_1)
Income (X_8)	0.102	0.107	0.052(x_6)
Farm power (X_9)	-0.036	-0.065	0.077(x_1)
Social participation (X_{10})	0.003	-0.236	0.106 (X_{12})
Scientific Aspiration (x_{11})	0.379	0.058	0.093(x_{12})
Media Exposure (X_{12})	0.459	0.050	0.073(X_{11})

Residual effect 0.5576; Highest indirect effect (x_6) (3 times)

Conclusion:

The whole text of the research unleashes the measure that each of the adopted and non-adopted villages need unique approaches and interventions, to generate proper and adequate need for perception while adopted villages can make a head way in technology socialization through media exposure, income

remains as a crude and crucial need for generating better need for perception. Besides the villages having morphological and metabolic differences, should be comprehensively analysed to derive the unique requirements for training intervention and perception therefrom.

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Opinion of the tribal farmers about KVK training programme

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ABSTRACT

Training is one of the integral components of development. The study conducted with 240ns of tribal farmers from Nuapada, Sundergarh and Keonjhar district of odisha revealed that the respondents had poor opinion towards planning, duration, venue & method of training conducted by kvks for the tribal farmers. The study also suggested further strengthening of the participatory analysis of the situation, assessing knowledge and skill deficiencies, continuity in learning, participatory decision on training needs, creating good environment, avoiding class room teaching, sufficient interaction and fully engagement of the trainees for conducting training programmes effectively for the benefit of the tribal people.

Key words:-Training, respondents, effectively, trainees

Training is regarded as one of the integral components of developmental programmes. Training is most effective when various methodologies are incorporated in to the training session. The training must exert influence on the learner to change the knowledge, skills& attitudes to adopt the changed practices. Therefore, content, method, venue, duration & feedback mechanisms are some important considerations of successful training. Krishi Vigyan Kendra has been considered as the light house of agriculture & rural development. Learning by doing , the motto of KVKs are always kept in mind while imparting training. Good environment such as well furnished training hall with teaching aids, residential

accommodation, food arrangement etc, have also been created in KVKs. Emphasis has also been made for capacity building of weaker communities particularly tribal people.

It is therefore apprehended that KVK training programmes are well designed, higher resourcefulness, greater media exposure, higher level of technical inventory leading to capacity building of tribal people. With this hypothesis, the present study has been designed to assess the effectiveness of KVK training programmes for the benefit of the tribal people.

Materials and Methods

The tribal dominated district i.e, Nuapada, under Western Undulating, Sundergarh under

North Western Plateau and Keonjhar under North Central Plateau Agro-climatic zone were selected. List of trainees undergone training during last five years i.e, 2008-09 to 2012-13 were collected from KVKs of these districts. A sample of 10 tribal farmers & tribal farmwomen each from two panchayats of two blocks from each KVK were selected randomly consisting of 80 from each district totally to 240. Planning, venue, duration, content & method of training were selected as the variables for the study.

The data was collected personally with a semi-structured scheduled on scale point of strongly agree, agree, somewhat agree & disagree over the framed statements & analysed with score value of 4,3,2,1 & 0 respectively. Mean score, gap percentage & correlation co-efficient statistical tests were employed to reveal the results.

RESULTS & DISCUSSION

Resource analysis, need assessment & basic knowledge have to be analysed for better planning of the training programmes. The results obtained from the analysis of data

Table-1: Procedure followed in planning training programmes

Sl. No.	Procedure	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score n=240	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Agro-ecological analysis of the area	2.60	35.00	2.40	40.00	2.45	38.75	2.48	38.00
2	Participatory analysis of the situation	2.40	40.00	2.25	43.75	2.20	45.00	2.28	43.00
3	Participatory problem identification	3.15	21.25	3.0	25.00	2.70	32.50	2.95	26.25
4	Prioritization of problem	3.30	17.50	2.95	26.25	3.0	25.00	3.08	23.00
5	Assessing intervention with root cause analysis	3.10	22.50	2.90	27.50	3.0	25.00	3.00	25.00
6	Assessing knowledge and skill deficiency	2.40	40.00	2.15	46.25	2.30	42.50	2.28	43.00
7	Participatory decision on training needs	2.50	37.50	2.40	40.00	2.40	40.00	2.43	39.25

(Maximum obtainable score=4)

(Table-1) revealed that considerable percentage of gaps were observed on participatory analysis of the situation(43.00%) assessing knowledge and skill deficiency

(43.00%), participatory decision on training needs(39.25%) and agro-ecological analysis of the area(36.00%). Without analysis of these aspects, need based priority areas could

not be assessed & training conducted may be on casual approach. Hence, KVK scientists have to analyse all these aspects while planning for the training programmes.

Good environment and learning atmosphere with required teaching aids facilitate effective learning. KVKs are conducting both on and off-campus training programmes for which ideal venue with required facilities to be

ensured. Analysis of data on venue of the training indicated that (Table-2) the respondents of all the three districts were not much agreed for the good environment & learning atmosphere. Differential opinion observed on good sitting arrangements, ideal place & good teaching material arrangements indicated that all these facilities were not ensured in all the KVKs. It is therefore suggested that KVK

Table – 2: Opinion towards venue of the training

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Good environment	2.35	41.25	2.60	35.00	2.45	38.75	2.47	38.25
2	Learning atmosphere	2.90	27.50	2.95	26.25	2.75	31.25	2.87	28.25
3	Good sitting arrangement	3.10	22.50	2.85	28.75	2.65	33.75	2.87	28.25
4	Mostly conducted at KVK	2.10	47.50	2.25	43.75	2.20	45.00	2.18	45.50
5	Ideal place in village	2.85	28.75	3.0	25.00	2.95	26.25	2.93	26.75
6	Cordial and friendly behaviour	3.25	18.75	3.30	17.50	3.40	15.00	3.32	17.00
7	Staff cooperative	3.40	15.00	3.25	18.75	3.05	23.75	3.23	19.25
8	Good teaching material arrangements	3.10	22.50	2.75	31.25	2.40	40.00	2.75	31.25

(Maximum Obtainable score=4)

scientists have to ensure good learning environment, sitting arrangements & appropriate logistic facilities while selecting the venue for the training.

Training is mostly skill oriented. Interactive lecturettee and demonstration, role playing as well as participatory discussions were some

of the effective methods used in kvk training programmes. Since, all these methods are time consuming process, appropriate duration has to be designed. As revealed from Table-3 ,the respondents of all the three districts had favourably opined for the duration fixed as per the training module and to some extent

Table – 3: Opinion towards duration of the training

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Appropriate to the course syllabus	2.90	27.50	2.70	32.50	2.75	31.25	2.78	30.50
2	Fully engagement of the trainees	2.55	36.25	2.65	33.75	2.70	32.50	2.63	34.25
3	Sufficient interaction	2.75	31.25	2.55	36.25	2.50	37.50	2.60	35.00
4	Systematic procedure followed	3.10	22.50	3.0	25.00	3.15	21.25	3.08	23.00
5	Scope to clarify double	2.85	28.75	2.75	31.25	2.88	28.00	2.83	29.25
6	Continuity in learning	2.40	40.00	2.35	41.25	2.25	43.75	2.33	41.75
7	Fixed as per the module	3.50	12.50	3.30	17.50	3.15	21.25	3.32	17.00

(Maximum obtainable score=4)

systematic procedure followed. But, poor opinions observed on continuity in learning, sufficient interaction, scope to clarify doubts will definitely affect the effectiveness of training & suggested for necessary refinement.

Different training methods with procedures are clearly mentioned in the KVK guideline

for reference of the scientists. Since; tribal farmers are comparatively less educated and low level of understanding, participatory methods will be beneficial for enrichment of their knowledge & skills. It is observed from Table-4 that though the respondents favourably

Table – 4: Opinion towards duration of the training

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Appropriate to the course syllabus	2.90	27.50	2.70	32.50	2.75	31.25	2.78	30.50
2	Fully engagement of the trainees	2.55	36.25	2.65	33.75	2.70	32.50	2.63	34.25
3	Sufficient interaction	2.75	31.25	2.55	36.25	2.50	37.50	2.60	35.00
4	Systematic procedure followed	3.10	22.50	3.0	25.00	3.15	21.25	3.08	23.00
5	Scope to clarify double	2.85	28.75	2.75	31.25	2.88	28.00	2.83	29.25
6	Continuity in learning	2.40	40.00	2.35	41.25	2.25	43.75	2.33	41.75
7	Fixed as per the module	3.50	12.50	3.30	17.50	3.15	21.25	3.32	17.00

(Maximum obtainable score=4)

opined for the associationship of the related scientists, avoiding monotony, supplying reference materials & skill enhancement, but reacted towards interactive lecturettee, group discussion & participatory approach. These are the methods emphatically mentioned in

the guideline & suggested to follow strictly by the scientists of KVKs.

Content of the training should be very specific with the prime need & capability of the trainees to understand as well as for immediate use. Opinion of the respondents.

Table – 5 : Opinion towards content of the training

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Need based	3.60	10.00	3.25	18.75	3.15	21.25	3.33	16.75
2	Immediate use	2.95	26.25	2.85	28.75	2.95	26.25	2.92	27.00
3	Address to the present problem	3.05	23.75	2.85	28.75	3.10	22.50	3.00	25.00
4	Easy to understand	3.40	15.00	3.30	17.50	3.45	18.33	3.38	15.50
5	Within capabilities to use	3.25	18.75	3.05	23.75	3.10	22.50	3.13	21.75
6	Related to available resources	3.35	16.25	3.0	25.00	3.10	22.50	3.15	21.25
7	Emphasis on skill enhancement	3.40	15.00	3.20	20.00	3.25	18.75	3.28	18.00

(Maximum obtainable score=4)

revealed (Table-5) that the respondents of the study districts had more or less agreed towards various aspects of the content mentioned in the table. However, further refinement towards their capability to use, relating to available resources, and address to the current problem & for immediate use may be planned for better adoption by the trainees.

It is always advisable to assess the effectiveness of each training for further refinement by the scientists in their future training programmes. As observed from Table-6, the respondents of all the three districts had good opinion towards feedback mechanism followed by the kvk scientists on their training programmes.

Table – 6 : Opinion towards feedback mechanism

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Avg. Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Evaluation after training	3.20	20.00	3.15	21.25	3.30	17.50	3.22	19.50
2	Contact through mobile	3.50	12.50	3.35	16.25	3.50	12.50	3.45	16.25
3	Visiting to the village and discussed	3.75	6.25	3.70	7.50	3.75	6.25	3.73	6.75
4	Organizing ex-trainees Samelan	3.65	8.75	3.75	6.25	3.70	7.50	3.70	7.50
5	Collecting information through extension personnel	3.30	17.50	3.20	20.00	3.35	16.25	3.28	18.00
6	Collecting information through village leaders	3.30	17.50	3.15	21.25	3.25	18.75	3.23	19.25

(Maximum obtainable score=4)

Comparative analysis of the opinion of the respondents revealed from Table-7 indicated

that, comparatively more percentage of gaps were observed on planning (34.00%) followed

Table – 7 : Comparative analysis of the procedures followed

Sl. No.	Opinion	Keonjhar (n=80)		Sundargarh (n=80)		Nuapada (n=80)		Average Mean Score (n=240)	Gap (%)
		Mean Score	Gap (%)	Mean Score	Gap (%)	Mean Score	Gap (%)		
1	Planning	2.78	30.50	2.58	35.50	2.58	35.50	2.64	34.00
2	Venue	2.88	28.00	2.87	28.25	2.73	31.75	2.83	29.25
3	Duration	2.86	28.50	2.76	31.00	2.77	30.75	2.80	30.00
4	Method	3.30	17.50	2.98	25.50	3.09	22.75	3.09	22.75
5	Content	3.29	17.75	3.07	23.25	3.16	21.00	3.17	20.75
6	Feedback	3.45	13.75	3.38	15.50	3.48	13.00	3.44	14.00

(Maximum obtainable score=4)

by duration (30.00%), venue(29.25%) and method(22.75%) in comparison to feedback(14.00%) and content of the training(20.75%), It is therefore suggested that KVK scientists have to refined their training programmes with necessary modification on these aspects for better reception and adoption by the tribal farmers.

CONCLUSION

Analysis of the opinions towards KVK training programmes revealed that the respondents of all the three districts were almost of similar opinions. The respondents had favourably opined towards feedback mechanism & content in comparison to planning, duration, venue & method of

training, The findings therefore suggested that KVK scientists have to further strengthen the weak areas identified and particularly on participatory analysis of the situation, assessing knowledge and skill deficiencies, continuity in learning, participatory decisions on training needs, creating good environment,

avoiding class room teaching, sufficient interaction and fully engagement of the trainees for conducting training programmes effectively towards betterment of the tribal farmers.

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Knowledge of the farmers on Sugarcane cultivation under Contract farming

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Abstract

Contract farming in sugarcane cultivation has gained momentum after establishment of sugar Industries in Odisha. Knowledge and skill competency of the sugarcane growers are essentially required for quality production with desired quantity as required by the sponsoring firms. The data collected from 240 sugarcane farmers from two districts of Odisha revealed that the respondents were lacking knowledge on planting method, pests and diseases, suitable soil, treatment of seed cane, manure and fertilizers which required further exposure to gain good knowledge and understanding. Social participation, extension contact, cosmopolitaness, sources of information, annual income and social aptitude of the respondents exhibited significant influence in increasing the knowledge of the farmers on sugarcane cultivation under Contract farming.

Key words - Contract farming, knowledge, sugarcane, cultivation.

Contract farming system offers numerous advantages and able to enhance the quality of life of small farm holders. With increasing in debt burden and soaring cost of inputs, contract farming appears as a blessing for the farmers, since all the inputs alongwith technical know-how as well as procurement of the produce with pre-agreed price provided by the contracting firms. However; the contracted growers have to produce desired quantity with quality parameters for which the farmers have good knowledge and understanding about the recommended practices in sugarcane cultivation. Therefore,

a study has been designed to assess the knowledge level of the farmers on sugarcane cultivation under contract farming.

Materials and Methods

The study was undertaken in Dhenkanal and Khurdha district of Odisha during 2013 under the jurisdiction of Sakthi Sugar Ltd. and Nayagarh Sugar Complex Ltd. respectively undertaking contract farming in sugarcane cultivation. A sample size of 120 sugarcane growers from six Gram Panchayats of two blocks from each district were randomly selected as the respondents of the study

covering total sample size of 240. Information was collected from the respondents personally through a semi-structured schedule on various practices of sugarcane cultivation. Statistical tools like mean score and gap percentage were employed to reveal the results.

RESULTS AND DISCUSSION

Sugarcane crop perform better in well drained clay loam soils. It can be grown in loamy, alluvial and sandy loam soils. As observed from Table-1, the respondents had stated that clay loam soils were most suitable for sugarcane cultivation followed by sandy loam and loamy soils. It is therefore

Table – 1: Knowledge about suitable soils for sugarcane (N=240)

Sl. No.	Soil	Dhenkanal district		Khurdha district		Total	
		Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Alluvial	2.43	IV	2.30	IV	2.37	IV
2.	Sandy	2.06	VI	1.83	VII	1.95	VII
3.	Loamy	2.88	I	2.46	III	2.67	III
4.	Clay	2.18	V	2.21	V	2.20	VI
5.	Sandy loam	2.59	III	2.87	II	2.73	II
6.	Clay loam	2.64	II	3.18	I	2.91	I
7.	Sandy clay	2.43	IV	2.03	VI	2.23	V

concluded that the respondents had some knowledge about suitable soils for sugarcane cultivation.

Good varieties have been developed by the Sugarcane Research Station, Nayagarh suitable to Odisha condition. The farmers were also exposed to all these varieties through training, demonstrations and

other extension approaches. The respondents were therefore asked for indicating three varieties which were analysed as full knowledge for 3 varieties, less than three varieties as partial knowledge. As observed from Table-2, majority of the respondents had good knowledge on suitable varieties of sugarcane.

Table – 2 : Knowledge about varieties of sugarcane (N=240)

Sl. No.	Knowledge	Dhenkanal district		Khurdha district		Total	
		F	%	F	%	F	%
1.	Fully known	77	64.17	81	67.50	158	65.84
2.	Partially known	32	26.67	33	27.50	65	27.08
3.	Not known	11	9.16	6	5.00	17	7.08

Furrow and trench method of planting is usually recommended for sugarcane. The Scientists are now advocating pit method

found to be better than furrow and trench method. The data in the Table – 3 revealed that the respondents of both the district had

Table – 3 : Knowledge about planting method of sugarcane (N=240)

Sl. No.	Method	Dhenkanal district		Khurdha district		Total	
		Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Flat method	1.00	III	1.08	III	1.04	III
2.	Trench/Furrow method	2.69	I	2.63	I	2.66	I
3.	Pit method	1.16	II	1.19	II	1.18	II
4.	All the above methods	1.00	III	1.00	IV	1.00	IV

(Maximum obtainable score – 3)

opined for trench and furrow method as most suitable. But poor knowledge observed on pit method recently recommended might be due to their ignorance and suggested for sufficient exposure to adopt pit method of planting.

Better germination and quality production are ensured through selection of quality seed cane. Upper 2/3rd portion from health and erect eight months of sugarcane crop is usually advocated for seed cane. As observed from Table - 4,

Table – 4 : Knowledge about selection of seed cane (N=240)

Sl. No.	Seed cane	Dhenkanal district		Khurdha district		Total	
		Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Top portion having high bud viability	2.68	III	2.63	IV	2.66	III
2.	High germination from upper portion	2.73	II	2.69	II	2.71	II
3.	Selecting erect and healthy cane	2.62	IV	2.67	III	2.65	IV
4.	Plant not more than 12 months old	2.52	V	2.55	V	2.54	V
5.	Ratoon crop not suitable	2.85	I	2.73	I	2.79	I

(Maximum obtainable score – 3)

the respondents of both the districts had stated for high germination ensured from upper portion of the cane, with high bud viability, selecting erect and healthy cane of not more than twelve months old and ratoon crop not suitable for seed cane. It is therefore assessed that the respondents had good knowledge about selection of seed cane.

Seed cane treatment is the most important management practices for controlling various diseases of sugarcane crop. It is observed from Table – 5 that the respondents had good knowledge of cutting three budded sets of

Table - 5 : Knowledge about treatment of seed cane (N=240)

Sl. No.	Treatment	Dhenkanal district		Khurdha district		Total	
		Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Removal of dry leaves by hand	2.28	III	2.07	II	2.18	II
2.	Cutting 3 budded sets	2.88	I	2.57	I	2.73	I
3.	Cutting 1-1.5ft sets	2.36	II	1.99	III	2.18	II
4.	Treating with fungicide	1.77	IV	1.81	IV	1.79	III
5.	Drying under shed before planting	1.59	V	1.77	V	1.68	IV

(Maximum obtainable score – 3)

1-1.5ft length and removal of dry leaves by hand. But, poor knowledge were observed on treating with fungicides and drying under shed before planting for which the respondents have to be exposed sufficiently through training, demonstration etc. to enrich their knowledge as seed treatment is one of

the important practices in sugarcane crop.

Sugarcane crop required 10 tonnes of farm yard manure, 250kg nitrogen, 100kg P₂O₅ and 60kg K₂O per hectare. The respondents were asked to mention the quantity and form of all these fertilizers. Analysis of data revealed (Table-6)

Table – 6 : Knowledge about manures and fertilizers (N=240)

Sl. No.	Fertilizer	Dhenkanal district			Khurdha district		
		More than recommended	Recommended	Less than recommended	More than recommended	Recommended	Less than recommended
1.	Nitrogen	81 (67.50)	29 (24.17)	10 (8.33)	74 (61.67)	31 (25.83)	15 (12.50)
2.	Phosphorous	69 (57.50)	33 (27.50)	18 (15.00)	59 (49.17)	42 (35.00)	19 (15.83)
3.	Potash	25 (20.83)	46 (38.33)	49 (40.83)	11 (9.17)	42 (35.00)	67 (55.83)
4.	Manure/ FYM	18 (15.00)	35 (29.17)	67 (55.83)	12 (10.00)	26 (21.67)	82 (68.33)

(Figures in parenthesis indicate percentage)

that majority of the respondents of both the districts had expressed more than recommended dose of nitrogen and phosphorous. Poor knowledge was observed on manures and potassic fertilizers. It is therefore concluded that the respondents had very poor knowledge on manures and fertilizers which needs sufficient exposure through training, demonstration, exposure visits etc. since quality production and productivity largely depend on application of recommended manures and fertilizers.

Numbers of pests are damaging sugarcane crop, out of them; early and top shoot borer, termites and pyrilla are the common pests causing heavy damage. The data collected on the scale point of very serious, serious, not serious and no idea about the selected pests were analysed with score value of 4, 3, 2 and 1 respectively. The data in the Table-7 revealed that the respondents had

Table – 7 : Knowledge about pests of sugarcane (N=240)

Sl. No.	Insect/Pest	Dhenkanal district		Khurdha district		Total	
		Mean Score	Rank	Mean score	Rank	Mean score	Rank
1.	Early shoot borer	3.53	II	3.10	I	3.32	I
2.	Internode borer	3.18	III	2.51	IV	2.85	IV
3.	Top shoot borer	3.67	I	2.54	III	3.11	II
4.	Scale insects	1.63	VII	2.04	V	1.84	VII
5.	Termites	2.94	IV	3.04	II	2.99	III
6.	Pyrilla	2.62	V	2.54	III	2.58	V
7.	White fly	2.27	VI	1.87	VI	2.07	VI

(Maximum obtainable score – 4)

good knowledge about top and early shoot borer and internode borer. Poor knowledge observed on other pests like pyrilla, white fly, termites and scale insects required further training and exposure since considerable damages were occurred due to these pests.

Sugarcane crop is also affected by number of diseases like red rot, smut, wilting, leaf scalds, yellow leaf spots etc. Knowledge level of the respondents analysed with same scale

point of very serious, serious, not serious and no idea revealed that (Table – 8) the respondents had opined red rot, wilting as the serious diseases; smut, ratoon stunting grassy root diseases, somewhat serious; pine apple, yellow leaf spot and scald diseases not serious. Since, all the diseases are serious on different circumstances; the respondents have to be exposed sufficiently for a detail understanding about the diseases of sugarcane crop.

Table – 8 : Knowledge about diseases of sugarcane (N=240)

Sl. No.	Disease	Dhenkanal district		Khurdha district		Total	
		Mean Score	Rank	Mean score	Rank	Mean score	Rank
1.	Red rot	3.68	I	3.32	I	3.50	I
2.	Smut	2.82	II	2.72	II	2.77	III
3.	Pine apple disease	1.33	VII	1.43	VIII	1.38	VIII
4.	Wilting	3.68	I	2.58	IV	3.13	II
5.	Ratoon stunting	2.61	III	2.70	III	2.66	IV
6.	Grassy shoot disease	2.59	IV	1.59	VII	2.59	V
7.	Yellow leaf spot	1.83	VI	2.19	V	2.01	VI
8.	Leaf scald	2.03	V	2.03	VI	2.03	V

(Maximum obtainable score – 4)

Top dressing, earthing up, tying, irrigation and drainage management are the cultural practices essentially required for desired

production. It is observed from Table-9 that the respondents of both the districts had better knowledge on various cultural

Table – 9 : Knowledge on cultural practices (N=240)

Sl. No.	Practice	Dhenkanal district		Khurdha district		Total	
		Mean Score	Rank	Mean score	Rank	Mean score	Rank
1.	Three top dressing in one month interval	3.69	I	3.38	IV	3.54	II
2.	Providing 8-10 irrigation	3.40	IV	3.48	II	3.44	III
3.	Earthing up after final top dressing	3.65	II	3.46	III	3.56	I
4.	Herbicide application after 25-30 days	3.33	V	3.51	I	3.42	IV
5.	Drainage during rainy season	3.51	III	3.27	V	3.39	V
6.	Tying at 2mts height	3.19	VI	3.13	VI	3.16	VI
7.	Harvesting after gradual withering of lower leaves	3.18	VII	2.97	VII	3.08	VII

(Maximum obtainable score – 4)

practices in sugarcane cultivation. However; further exposure are required for good understanding about harvesting after gradual withering of lower leaves and tying at 2mts height.

Comparative analysis of the knowledge level of the respondents on sugarcane cultivation revealed that (Table-10) the respondents had better knowledge about variety, selection of seed cane and cultural practices. Significant gaps observed on other aspects needs further exposure particularly on planting method,

Table – 10: Comparative knowledge level on sugarcane cultivation

Sl. No.	Practice	Dhenkanal district		Khurdha district		Total	
		Mean Score	Gap (%)	Mean score	Gap (%)	Mean score	Gap (%)
1.	Suitable soil	2.46	38.50	2.41	39.75	2.44	39.00
2.	Variety	2.55	15.00	2.63	12.33	2.59	13.67
3.	Optimum time of planting	1.69	43.67	1.78	40.67	1.74	42.00
4.	Planting method	1.46	51.33	1.48	50.67	1.47	51.00
5.	Selection of seed cane	2.68	10.67	2.65	11.67	2.67	11.00
6.	Treatment of seed cane	2.18	27.33	2.04	32.00	2.11	29.67
7.	Manure and fertilizer	2.34	22.00	1.91	36.33	2.13	29.00
8.	Pests of sugarcane	2.83	29.25	2.52	37.00	2.68	33.00
9.	Diseases of sugarcane	2.57	35.75	2.32	42.00	2.51	37.25
10.	Cultural practices	3.42	14.50	3.31	17.25	3.37	15.75

suitable soil, pests and diseases of sugarcane, manures and fertilizers and seed cane treatment.

Multiple regression analysis of socio-economic variables (Table-11) revealed that the best fitted regression equation could explain 86.40% of the total variance

exhibiting influence in increasing the knowledge level of the respondents. Among sixteen variables, social participation, extension contact, cosmopolitaness, sources of information, income and social aptitude of the respondents significantly influence the knowledge level of the respondents on sugarcane cultivation.

Table-11: Regression analysis of socio-economic variables on knowledge

Sl.No.	Variable	Regression coefficient	Standard error	Student T value	Probability
x ₁	Age	1.54	5.67	0.271	0.787
x ₂	Caste	-4.93	4.78	-1.031	0.307
x ₃	Education	-3.63	3.05	-1.192	0.238
x ₄	Family type	-9.03	9.52	-0.948	0.347
x ₅	Family size	4.41	7.65	0.577	0.566
x ₆	Social participation	-16.35	3.59	-4.556	0.010
x ₇	Extension contact	-5.59	2.11	-2.656	0.010
x ₈	Cosmo politeness	-20.48	3.60	-5.692	0.019
x ₉	House type	-4.45	5.05	-0.881	0.382
x ₁₀	Holding size	-2.20	4.74	-0.464	0.645
x ₁₁	Occupation	-5.54	3.97	-1.396	0.168
x ₁₂	Use of farm implements	4.29	5.36	0.8	0.427
x ₁₃	Sources of information	4.50	1.10	4.096	0.021
x ₁₄	Average annual income	12.38	2.34	5.293	0.017
x ₁₅	Social character	-10.03	3.88	-2.583	0.012
x ₁₆	Economic character	-4.19	6.83	-0.612	0.543

$R^2=0.864$, Adj $R^2 = 0.814$, S.E = 10.003

Conclusion

Contract farming in sugarcane cultivation has gained momentum after establishment of Sugar Industries in Odisha both at private and corporate sectors. Farmers have also developed interest to grow sugarcane under contract farming. Knowledge and skill competency in various aspects of sugarcane cultivation are essential for quality production

as desired by the contracting firms. Though the study revealed that the farmers had good knowledge on seed cane selection, variety and various cultural practices, deficiencies were observed mostly on planting method, pests and diseases, suitable soil, treatment of seed cane, manure and fertilizers. Social participation, extension contact, cosmopolitaness, sources of information,

annual income and social aptitude of the respondents exhibited influence in increasing the knowledge level on sugarcane cultivation.

It is therefore suggested to expose the farmers through training, demonstration, exposure visit etc. particularly on planting

method, pests and diseases, suitable soil, treatment of seed cane, manures and fertilizers to enrich their knowledge and understanding on sugarcane cultivation under contract farming to ensure quality production with desired quantity to meet the requirement of the sponsoring firms.

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Professionalism towards field extension among volunteers of Grass-root Development Organizations in Odisha

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Abstract

Field Extension Professionalism is of paramount importance among the volunteers of grass-root development organizations of Odisha considering their lack of technical exposure, availability of able leadership as well as expertise on village extension work. A study was conducted with a sample size of 104 respondents equally drawn from the category of field, supervisory and administrative staff from 17 nos. of grass-root development organizations in Balasore and Kendrapara district of Odisha. The volunteers were interviewed through an interview schedule and the responses were analysed following standard statistical measure. It was found that extension professionalism was dependent on work interest, rapport making ability, team approach and leadership trends. However, the volunteers of all organizations under study were found to lack orientation, skill, potential, interpersonal relation, mutual co-operation for delivering the right aspirations. The study concluded that mutual co-operation, friendly atmosphere, adherence to established rules and procedures following staff development efforts by the management could be able to restore trust and among the volunteers of these development agencies engaged in agriculture and rural development work throughout the state of Odisha.

Key Words: *Professionalism, Volunteers*

Introduction

Voluntary organisations have the objective of serving rural people particularly weaker and disadvantaged sections of the community. Therefore, they are working mostly in unreached areas which are mostly neglected by the public extension system. The staffs employed in the organisation should have interest and attitude to work in these unreached areas with very limited working facilities. The organisation has to establish such a climate so that the staffs will not

resist to work at field level. Attempt was therefore made to study the extent of professionalism prevalent among field extension workers of voluntary development organizations of Odisha for efficient discharge of technology transfer mandates as assigned.

Materials and Methods

The study was conducted with 17 voluntary organizations each in Kendrapara and Balasore districts of Odisha during 2010. One personnel each from the cadre of administrative, supervisory

and field staffs were selected as respondents covering total sample size of 102. Random sampling technique was followed to select voluntary organizations and respondents. Information were collected on a five point continuum i.e. strongly agree, agree, undecided,

disagree and strongly disagree. Mean score, critical ratio and co-efficient correlation tests were used for analysis of data. Results obtained in the professionalism towards field extension are tabulated hereunder.

Table1. Factors responsible for inculcating professional attitude among development volunteers

Sl. No.	Management	Kendrapara district		Balasore district		Pooled mean score	Rank
		Mean score	Gap (%)	Mean score	Gap (%)		
1.	Interest to work in rural areas	3.41	14.75	2.08	48.00	2.75	I
2.	Opportunity to get acquainted will all kinds of people	3.24	19.00	2.00	50.00	2.62	II
3.	Comparative and team approach	3.22	19.50	1.55	61.25	2.39	IV
4.	Aim to contribute for development of rural people	3.18	20.50	2.22	44.50	2.70	II
5.	Opportunities for development of leadership ability	2.65	33.75	1.59	60.25	2.12	V
6.	Sufficient scope to show the talents	2.45	38.75	1.55	61.25	2.00	VI

(Maximum obtainable score-4)

Mixed opinions were observed from the above table on extent of professional attitude. The respondents of the voluntary organisations in Kendrapara district suggested essentialities of interest to work in rural areas, opportunity to get acquainted with all kinds of people, competitive and team spirit as well as aim to contribute for the development of people. The respondents of Balasore district might not expressed the essentialities since the same system already exists in their organisations for which further strengthening is not required. However the

respondents of both the districts did not suggest for the essentialities of opportunity for development of leadership ability and sufficient scope to show the talents which are also equally important. It is therefore concluded that interest to work in rural areas, opportunity to get acquainted with all kinds of people, competitive and team approach and aim to contribute for the development of rural people were the essential criteria in developing professional attitudes towards good organizations health among volunteers of grass-root development organization.

Further attempt has been made to make comparative analysis of the suggestions of the respondents towards establishing good organizational health by cultivating extensive

field professionalism. The responses received under each management approach have been pooled together and mean score calculated. The results have been presented in table 2.

Table 2. Comparative analysis of approaches towards professional attitude

Sl. No.	Management	Kendrapara district		Balasore district		Pooled Mean Score	Rank
		Mean score	Gap (%)	Mean score	Gap (%)		
1.	Orientation	3.17	20.75	3.14	21.50	3.16	I
2.	Interpersonal relationship	2.81	45.50	2.98	25.50	2.90	VIII
3.	Supervision	2.98	25.50	3.05	23.75	3.02	IV
4.	Problem Management	3.11	22.25	3.14	21.50	3.13	II
5.	Mistake management	2.91	27.25	3.08	23.00	3.00	V
6.	Conflict management	3.02	24.50	2.90	27.50	2.96	VII
7.	Communication	2.98	25.50	3.10	22.50	3.04	III
8.	Decision making	3.12	22.00	2.84	29.00	2.98	VI
9.	Trusteeship	3.10	22.50	3.11	22.25	2.98	VI
10.	Rewards	2.60	35.00	2.24	44.00	2.42	X
11.	Risk taking	3.02	24.50	3.05	23.75	3.04	III
12.	Innovation and change	2.65	33.75	2.77	30.75	2.71	IX
13.	Professional attitude	3.02	24.50	1.76	56.00	2.39	XI

(Maximum obtainable score-4)

Comparative analysis of the various approach variables as reflected in the table revealed that the respondents had more essentialities of the management approaches on orientation, problem management, communication, supervision and mistakes management followed by decision making process, trusteeship, conflict management and interpersonal relationship for establishing good organisational health through field professionalism in the development

organizations. Hence it is concluded that the voluntary organisations in both Kendrapara and Balasore districts have to further strengthen the management approaches on orientation, problem management, communication, supervision, mistake management, decision making process, trusteeship, conflict management and interpersonal relationship on priority and take all possible measures to strengthen the suggestions of the respondents on these

approaches for developing field professionalism in the grass-root development organisations.

Further attempt was made to locate the essential management approaches for estimating field extension professionalism in the voluntary organisations. Selection made on the basis of mean score value have been presented in table 3.

Table 3. Statement analysis for developing extension professionalism at grassroots

Sl. No.	Management system	Mean Score
1.	Friendly atmosphere in the organisation	3.50
2.	Regular flow of technological information	3.50
3.	Maintaining friendly relationship with people	3.42
4.	Helping each other for skill competency	3.22
5.	Considering suggestions of people in risk situations	3.22
6.	High Trust to the staffs having good perform once	3.22
7.	Providing guidance and suggestions	3.21
8.	Analysis and acknowledgement of mistakes by the staffs	3.18
9.	Following established rules and procedures	3.18
10.	Advocating feasible situations	3.17
11.	Interpersonal and interdepartmental conflict for higher	3.17
12.	Performance taking decisions for betterment of people and staffs	3.17
13.	Relevant information available to all	3.16
14.	Supervisors guiding in correcting mistakes	3.14
15.	Trusting and friendly relations highly values	3.12
16.	Consulting experts for solutions	3.12
17.	Mutual trust for helping each other	3.10

(Maximum obtainable score-4)

For developing field professionalism of voluntary workers on management of grass-root extension work, the voluntary organisations have to establish all these management approaches on priority basis and establish in their management systems

towards succeeding in better functioning and better service to the rural people.

Further attempt was made on the study to assess the extent of management systems available to the staffs of the organisations. Same organisational variables

like orientation, communication, decision making, trusteeship, incentives and rewards, risk taking, innovation and change as well as professional attitude development were selected for analysing the management systems available to the staffs of the

voluntary organisations. Information were collected on the scale point of available, some what available and not available with weightage of 3.2 & 1 for positive and reverse for negative statements. The results of the analysis are presented in table 4.

Table 4. Contributing management factors towards field extension professionalism

Sl. No.	Availability	Kendrapara district		Balasore district		Pooled Mean Score	Gap (%)
		Mean score	Gap (%)	Mean score	Gap (%)		
1.	Following established rules and procedures	2.59	13.67	2.82	6.00	2.74	8.67
2.	Helping each other for competency development	2.35	21.67	2.78	7.33	2.57	14.53
3.	Main concern to achieve specific goals	2.24	25.33	2.76	8.00	2.50	16.67
4.	Due regards friendly atmosphere in organisation	2.29	23.67	2.78	7.33	2.54	13.33
5.	Creating friendly atmosphere in organisation	2.29	23.67	2.78	7.33	2.54	15.33
6.	Think for developing expertise of employees	2.39	20.33	2.82	6.00	2.61	13.00

(Maximum obtainable score-3)

The above analysis reveals better responses being observed from the respondents of the voluntary organisations of Balasore district in comparison to Kendrapara district and expressed availability of all the management systems of orientation covered under the study. The respondents of the voluntary organisations of Kendrapara district stated for better approaches available in following established rules and procedures and due regards to each individuals in comparison to others.

Conclusion

The above study revealed that the volunteers of grass-root development organizations (NGOs) of both the districts opined for better involvement in following established rules and procedures, giving due regards to each individuals in the organisations and developing expertise of the extension workers in developing right professional attitude. The findings therefore suggested

that the voluntary organisations have to further involve the staffs in the orientation/skill trainings particularly with the development organisations of Kendrapara district in all the process and more emphasis

on working towards achieving specific goals, helping each other for competency development and creating friendly atmosphere in the organizations of Balasore district of Odisha.

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Socio-economic Usefulness of Self Propelled Vegetable Transplanter in Deogarh and Mayurbhanj District of Odisha

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Abstract

India is a large country with wide agro-ecological diversity. Farm holdings are small due to very high population density. Land fragmentation continues due to 'laws of inheritance' and 'Hindu succession Act'. In Odisha there are 43.56 lakh farm holdings with 50.19 lakh ha of operational area in the spread over 51,349 villages (Orissa Reference Annual-2005). The land holdings are mostly marginal and small, accounting for 86.2% in number but 58.4% of the area. 97% of the holdings are below 4 ha. Large holdings account for only 13.8% of the holdings, covering 41.6% of the area. The average size of marginal holdings is 0.52 ha, that of small holdings is 1.37 ha and the large holdings are 3.47 ha. Per capita land is 0.12 ha, Operational holding is 1.15 ha. The productivity is the lowest in these holdings of size 4 ha and below and no improved implements are used. Only 0.5% of the holdings i.e. 0.21 lakh with operating 6.35% of total area, i.e. 3.18 lakh ha, are having tractors, power tillers, pump sets and sprayers. Therefore, utilization of even improved bullock drawn implements is very low and use of power operated machinery is almost negligible.

Key Words: Vegetable Transplanter

Choudhury et al. (2001) observed that Andhra Pradesh, Bihar, Odisha, West Bengal are the states foremost amongst the transplanted vegetable growing states of India. Rai and Pandey (2006) reported that West Bengal ranks first in the total production of vegetables in the country contributing one-fifth of the country's total vegetable production followed by Uttar Pradesh, Bihar and Odisha. In Odisha vegetables are cultivated in 554 thousand hectares of land with a production of 7.8 MT annually. Mechanization is immediately necessary to ensure timeliness of operation, and to reduce human drudgery and cost of operation in

vegetable transplanting operation. Inefficiency of bullock farming system, inadaptability of tractors and their matching implements to small and fragmented plots and poor socio economic condition of the farmers are the main hindrances of mechanization.

Bell and Cedillo (1999) observed that true needs of the target community should be known for identifying appropriate mechanization. Though a farm operation can be performed with more sophisticated and efficient machines, the level of socio-economic development will determine the viable option. They concluded that countries

with few agricultural workers and well-developed economies need higher level of mechanization, whereas, countries with abundant labour and poor economic condition need different kind of mechanization, the focus being on improving the existing systems.

Shanmugasundaram (2005) observed that most vegetable farmers in India were small farmers with 0.2 - 5.0 hectares of land holding. With more than 77% of holdings being small and marginal, bullock drawn improved manual operated implements and small hp engine powered machinery would be the right approach for mechanization and large size holdings may be provided with high capacity machines.

In this study an attempt was made to correlate size of land holdings with availability of power sources and preference of vegetable transplanters according to power source with power source available with farmers.

Materials and Methods

The study was conducted in four locations namely; Tileibani, Barkote block of Deogarh district and Shamakhunta, Bangiriposi block of Mayurbhanj district of Odisha between September, 2011 and December, 2012. The study used two methods of purposive data collection. First, a farm visit was conducted to view and sample field information through oral interviews from four hundred vegetable farmers on the impacts of modern technologies on vegetable cultivation. Similarly, a questionnaire was designed and purposively administered to vegetable farmers in the study area. A sample survey was conducted through farmers' participation and discussion to assess the farmers' need as regards mechanization of vegetable cultivation. Two hundred farmers were

selected in each district using simple random sampling without replacement (SRSWOR) from a prepared list of vegetable farmers in five villages each of two blocks of Deogarh and Mayurbhanj district as mentioned. Information regarding their size of land holding, power source they possess and the type of vegetable mechanization they need were collected through participatory discussion.

To study the preference of the farmers on power source with reference to land holdings the hypotheses were formed as follows:

H_0 : Power source possessed by farmers are independent of the size of holding.

H_1 : Power source possessed by farmers are dependent on the size of holding

To study the preference of the farmers for a suitable vegetable transplanter, the data collected was analyzed by taking preference against power source possessed by the farmers and the hypotheses were formed as follows:

H_0 : Power source possessed by farmers are independent of the preference for a suitable vegetable transplanter.

H_1 : Power source possessed by farmers are dependent on the preference for a suitable vegetable transplanter.

A two-tailed chi square test of independence was applied to determine whether or not a test item had any significant association with the response (power source or size of land holdings and power source with preference of vegetable transplanters). The computed chi square (χ^2) was next compared with critical chi square (χ^2) values for the chosen level of significance ($p < .01$) [Das and Das, 1993].

Results and Discussion:

It was found from survey of 200 vegetable farmers each in two blocks of Deogarh and two blocks of Mayurbhanj district that 49.5 % in Deogarh and 45.5 % in Mayurbhanj district possessed land holding of less than 1 ha and 20.5 % of Deogarh and 19.5 % of Mayurbhanj district possessed a land holding

of 1-2 ha. Similarly 16% of Deogarh and 20 % of Mayurbhanj district possessed a land holding of 2-3 ha. Only 14 % of Deogarh and 10 % of Mayurbhanj district possessed a land holding of 3-4 ha.

The information collected from the Tileibani block of Deogarh district was classified and has been presented in the Table 1.1.

Table 1.1 Different types of farm power possessed by farmers of of Tileibani block of Deogarh district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	1	3	4
Power tiller	0 (1)*	1	5	8	14
Bullocks	52	20	9	1	82
Total	52	21	15	12	100

Calculated $\chi^2 = 53.24$, Table value $\chi^2_{6, 0.01} = 16.8$

* Figure within parentheses is transformed data. Data has been transformed to avoid error due to heterogeneity by applying Yates' correction for finding χ^2 value (Singh *et al.*, 1991).

As the calculated value (= 53.24) is more than table value (= 16.8), H_0 was rejected

and H_1 was accepted. It was found that the source of power possessed by the farmers was dependant on their size of land holding.

The data from Barkote block have been presented in Table 1.2. The same result was obtained from this block too. The calculated value (= 79.14) is more than table value (= 16.8).

Table 1.2 Different types of farm power possessed by farmers of Barkote Block of Deogarh district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	2	10	12
Power tiller	1	3	11	6	21
Bullocks	46	17	4	0 (1)*	67
Total	47	20	17	16	100

Calculated $\chi^2 = 79.14$, Table value $\chi^2_{6, 0.01} = 16.8$

The information collected from the Shamakhunta and Bangiriposi block of Mayurbhanj district was classified and has been presented in the Table 1.3 and 1.4.

Table 1.3 Different types of farm power possessed by farmers of Shamakhunta block of Mayurbhanj district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	4	6	10
Power tiller	0 (1)*	12	8	4	24
Bullocks	41	18	6	1	66
Total	41	30	18	11	100

Calculated $\chi^2 = 53.65$, Table value $\chi^2_{6, 0.01} = 16.8$

Table 1.4 Different types of farm power possessed by farmers of Bangiriposi Block of Mayurbhanj district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	1	7	8
Power tiller	0 (1)*	7	18	2	27
Bullocks	50	12	3	0 (1)*	65
Total	50	19	22	9	100

Calculated $\chi^2 = 101.41$, Table value $\chi^2_{6, 0.01} = 16.8$

As the chi square value is greater than the critical value, we conclude that we have sufficient evidence to reject null hypothesis and to accept alternate hypothesis in Mayurbhanj district. Thus we conclude that source of farm power possessed by farmers is interrelated with the size of the land holdings.

The combined data from both the blocks of Deogarh and Mayurbhanj district have been presented in Table 1.5 and 1.6. The results also establish that the size of holding and possession of power sources are interrelated.

Table 1.5 Different types of farm power possessed by farmers of two blocks (combined) of Deogarh district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	3	13	16
Power tiller	1	4	16	14	35
Bullocks	98	37	13	1	149
Total	99	41	32	28	200

Calculated $\chi^2 = 139.697$, Table value $\chi^2_{6, 0.01} = 16.8$

Table 1.6 Different types of farm power possessed by farmers of two blocks (combined) of Mayurbhanj district

Power source possessed	Holding size (ha)				Total
	0-1	1-2	2-3	3-4	
Tractor	0 (1)*	0 (1)*	1	13	18
Power tiller	0 (1)*	19	26	6	51
Bullocks	91	30	9	1	131
Total	91	39	40	20	200

Calculated $\chi^2 = 179.34$, Table value $\chi^2_{6, 0.01} = 16.8$

From the above values we conclude that we have sufficient data to reject null hypothesis. Therefore we accept alternate hypothesis. This shows that the source of power possessed by the farmers was dependant on their size of land holding.

From Table 1.5 and 1.6 it was found that out of 99 farmers having 0-1 ha of land, almost all i.e. 98 farmers depend on bullock power and only one possessed power tiller. Similarly 41 farmers having 1-2 ha of land, out of which 37 depend on bullock power and 4, depends on power tiller. From 32 farmers having 2-3 ha of land 13 depends on bullock power and 16 possessed power tiller.

Comparatively big farmers who have 3-4 ha of land preferred both tractor and power tiller. Thirteen possessed tractor and 14 have power tiller from total of 28 farmers as per the survey conducted in the Deogarh district of Odisha. Same trends have been revealed in Mayurbhanj district. Here out of 91 farmers having 0-1 ha of land, all farmers possessed bullocks for farm operation. Similarly out of 39 farmers having 1-2 ha of land 30 nos. are bullock farmers and 19 having power tiller. There are 40 farmers having 2-3 ha of land and 26 farmers possessed power tiller and 9 depends on bullock power. Thirteen farmers out of 20 farmers having 3-4 ha of land possessed tractor and six have power tiller.

So clearly it was revealed from the survey that with increase in the size of land holding, power availability with farmers also increases. So it is interrelated. From the χ^2 test it was

confirmed that both are interrelated. The information collected on the preference of a suitable vegetable transplanter against power source possessed has been presented in Table 1.7 and 1.8.

Table 1.7 Preference of different category of farmers for a suitable vegetable transplanter in two blocks (combined) of Deogarh district

Power source possessed	Preference For					Total
	TOVT	PTOVT	SPVT	BDVT	MDVT	
Tractor	16	0 (1)*	0 (1)*	0 (1)*	0 (1)*	16
Power tiller	0 (1)*	35	0 (1)*	0 (1)*	0 (1)*	35
Bullocks	0 (1)*	4	74	48	23	149
Total	16	39	74	48	23	200

Calculated $\chi^2 = 300.17$, Table value $\chi^2_{8, 0.01} = 20.09$

Table 1.8 Preference of different category of farmers for a suitable vegetable transplanter in two blocks (combined) of Mayurbhanj district

Power source possessed	Preference For					Total
	TOVT	PTOVT	SPVT	BDVT	MDVT	
Tractor	18	0 (1)*	0 (1)*	0 (1)*	0 (1)*	18
Power tiller	0 (1)*	51	0 (1)*	0 (1)*	0 (1)*	51
Bullocks	0 (1)*	6	89	29	7	131
Total	18	57	89	29	7	200

Calculated $\chi^2 = 308.17$, Table value $\chi^2_{8, 0.01} = 20.09$

The data from the Deogarh and Mayurbhanj district revealed that the calculated χ^2 is more than the table value. So here also H_0 is rejected and H_1 is accepted. That confirms that power source possessed and preference of suitable vegetable transplanter is interrelated.

All the sixteen tractor owners of Deogarh district and 18 tractor owners of Mayurbhanj district expressed their desire for a tractor operated vegetable transplanter (TOVT). All the 35 power tiller owners of Deogarh district and 51 power tiller owners of Mayurbhanj district felt that a power tiller operated vegetable transplanter (PTOVT) would

provide immense benefit to them. Farmers having bullocks as their power source were divided in their opinion. Out of 149 bullock owners of Deogarh district and 131 bullock owners of Mayurbhanj district under survey, 23 owners of Deogarh and 7 owners of Mayurbhanj district favoured manually drawn (MDVT) vegetable transplanter while 48 in Deogarh and 29 in Mayurbhanj district expressed their desire for bullock drawn vegetable transplanter (BDVT) and 74 in Deogarh and 89 numbers of bullock owners in Mayurbhanj district showed their interest for low cost self propelled vegetable transplanter. Again only 4 in Deogarh and 6 bullock owners in Mayurbhanj district showed interest for Power tiller operated vegetable transplanter (PTOVT). It was learnt that these bullock farmers use power tiller on custom hiring basis for their field preparation. It was also learnt that farmers having bullocks also use tractor and power tiller for their use when they need additional power. Thirty-seven percent farmers of

Deogarh and 44.5 percent farmers of Mayurbhanj district covered under the survey were in favour of self propelled low cost vegetable transplanter.

Conclusion:

Finally it is concluded from the door-to-door survey of 200 vegetable farmers each in two blocks of Deogarh district and two blocks of Mayurbhanj district of Odisha that 47.5 per cent of the vegetable farmers possessed land holding of less than one hectare and 49.5 per cent farmers of Deogarh district and 45.5 per cent of Mayurbhanj district possessed a land holding of 1-2 hectare. The size of land holding and the power source possessed by the farmers were found interrelated. It was also revealed from the survey that the size of land holding and preference for a suitable vegetable transplanter are interrelated. Thirty-seven percent farmers of Deogarh and 44.5 percent farmers of Mayurbhanj district covered under the survey were in favour of self propelled low cost vegetable transplanter.

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Crop-Vegetable-Dairy Farming System: A profitable enterprise mix for marginal and small farmers

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ABSTRACT

Farming system is a potential approach to address the problems of small and marginal farmers and manage key natural resources in an eco-friendly manner while contributing to sustainability, increased productivity, growth and employment of farming community in developing countries like India in the 21st century. The present study was carried out with 36 marginal and 19 small farms adopting crop-vegetable farming system (FS-I) and 28 marginal and 22 small farms adopting crop-vegetable-dairy farming system (FS-II). The results revealed that the benefit cost ratio was 1.98 and 2.10 in case of marginal and small farmers respectively in crop-vegetable farming system (FS-I). But in crop-vegetable-dairy farming system (FS-II), the benefit cost ratio was 2.12 and 2.17 in case of marginal and small farmers respectively. The expenditure on hired human labour constituted a lion share in the total cost. It was 47 to 48% and 35 to 39% in FS-I and FS-II respectively in both the categories of farmers. The per hectare gross income was Rs.95,289/- and Rs. 1,18,357/- in case of marginal and small farmers respectively in FS-I, where as in FS-II, it was Rs.1,38,919/- and Rs. 1,57,672/- in case of marginal and small farmers respectively. The findings of the study revealed that gross income as well as net income was increasing with the increase in size of holding and also with the inclusion of dairy enterprise along with crop-vegetable production.

Key Words : *Farming system, enterprise mix*

Introduction

The declining trend in the size of land holding poses a serious challenge to the sustainability and profitability of farm business. In view of the declining per capita availability of land from 0.5 hectare during 1950-51 to 0.15 hectare by the turn of this century and further decline to less than 0.1 hectare by 2020 AD,

it is essential to develop such strategy and agricultural technology to be able to generate adequate income and employment, especially for small and marginal farmers who constitute nearly 83% of the farming community. No single farm enterprise shall be able to sustain, predominantly the small and marginal farmers, without resorting to integrated farming systems that generates adequate

income and gainful employment round the year. The farming system, therefore, is a potential approach to address the problems of small and marginal farmers and management of key natural resources in an eco-friendly manner while contributing to sustainable growth of farming community of developing countries including India in the 21st century.

Objectives

This research study entitled “Economic Analysis of Farming Systems in Puri district, Odisha” was conducted during calendar year 2012-2013 where main emphasis was given for finding out the different farming systems adopted in the area and profitability of different systems.

Table-1

Average size of holding, enterprise mix and cropping intensity in different categories of farms in different farming systems

Farming System	Enterprise mix and categories of farms	Average size of holding (ha)	No of Farmers	Crops – Vegetables (in ha)						Dairy			
				Paddy	Pulses	Ground nut	Brinjal	Cole crops	Cucurbits	(Average no of milch cattle)	Gross Cropped Area (ha)	Cropping Intensity (CI) (in %)	
FS-I	Crop-Vegetable												
	Marginal	0.62	36	0.5	0.05	0.2	0.15	0.15	0.08	0	1.13	182.3%	
	Small	1.84	19	1.9	0.1	0.6	0.5	0.2	0.15	0	3.45	187.5%	
FS-II	Crop- Vegetable- Dairy												
	Marginal	0.65	28	0.6	0.07	0.2	0.12	0.16	0.1	2	1.25	192.3%	
	Small	1.74	22	1.8	0.1	0.5	0.48	0.3	0.2	4	3.38	194.3%	

Materials and Methods

Multistage stratified random sampling technique was used for selection of sample households. Two blocks, namely Astarang and Delang of Puri district were selected at random. A total of 227 farmers having different farming systems were randomly selected from 12 villages of these blocks. For the present study, 36 marginal farmers (0.62 ha) and 19 small farmers (1.84 ha) adopting crop-vegetable farming system (FS-I) and 28

marginal farmers (0.65 ha) and 22 small farmers (1.74 ha) adopting crop-vegetable-dairy farming system (FS-II) were taken into consideration.

Results and Discussion

Cropping pattern and enterprise mix of marginal and small farms under different farming systems

Farming System-I (FS-I) comprises of crop-vegetable enterprise. The results from Table-

1 revealed that the average size of holding in case of marginal farms was 0.62 hectare and for small farms it was 1.84 hectares. The marginal farms under FS-I had grown crops and vegetables like paddy in 0.5 ha, pulses in 0.05 ha, groundnut in 0.2 ha, brinjal in 0.15 ha, cole crops in 0.15 ha and cucurbits in 0.08 ha. The gross cropped area (GCA) was 1.13 ha with a cropping intensity of 182.3%. The small farms under FS-I had grown crops and vegetables like paddy in 1.9 ha, pulses in 0.1 ha, groundnut in 0.6 ha, brinjal in 0.5 ha, cole crops in 0.2 ha and cucurbits in 0.15 ha with a gross cropped area (GCA) of 3.45 hectare having cropping intensity of 187.5%. Farming System-II (FS-II) comprises of crop, vegetable and dairy enterprise. The average size of holding in case of marginal farms was 0.65 hectare and for small farms it was 1.74 hectare. The marginal farms under FS-II cultivated crops and vegetables like paddy in 0.6 ha, pulses in 0.07 ha, groundnut in 0.2 ha, brinjal in 0.12 ha, cole crops in 0.16 ha and cucurbits in 0.1 ha along with dairy enterprise with 2 milch cattle. The gross cropped area (GCA) was 1.25 ha with a cropping intensity of 192.3%. The small farms under FS-II adopted cropping enterprises like paddy in 1.8 ha, pulses in 0.1 ha, groundnut in 0.5 ha, brinjal in 0.48 ha, cole crops in 0.3 ha and cucurbits in 0.2 ha along with dairy enterprise having 4 milch cattle. In this case the gross cropped area (GCA) was 3.38 ha with a cropping

intensity of 194.3%. It was evident from the results that the cropping intensity was increasing due to increase in size of holding in both the farming systems.

Costs, returns and benefit-cost ratio of marginal and small farms in different farming systems

The costs and returns along with the benefit cost ratio of marginal and small farms in Farming System-I i.e. crops and vegetables are presented in Table-2. It was observed that the per hectare operational cost i.e. cost-A1 of marginal farms in crop-vegetable farming system was Rs.48,151/-. The expenditure on hired human labour was the highest of Rs.22,841/- i.e. 47% of the total expenses followed by Rs.5,924/- (12%) in case of manures and fertilizers.

The expenses on seed, bullock, labour and plant protection were 7.2, 8.6 and 6.9 percentage of the total cost respectively. The marginal farmers received a gross income of Rs.95,289/- with the benefit cost ratio of 1.98. In case of small farms, the cost-A1 was Rs.56,471/- in which the lion share of 48.9% was due to hired human labour followed by 11.5, 9.2, 6.8 and 5.6 percentage of cost-A1 in case of manure & fertilizer, bullock labour, plant protection and seed cost respectively. In case of FS-I, the small farmers received a gross income Rs.1,18,357/- with the benefit cost ratio of 2.1.

Table-2

Per hectare cost and return in Crop-Vegetable Farming System (FS-I) (in rupees)

Crop-Vegetable Farming System (FS-I)	Marginal farmer	Small farmer
I Crops & Vegetables		
a) Seed	3470.6 (7.2%)	3179.3 (5.6%)
b) Manure/ Fertilizer	5924.4 (12.3%)	6480.2 (11.5%)
c) Hired human labour	22841.6 (47.4%)	27593.3 (48.9%)
d) Bullock labour	4138.8 (8.6%)	5205.8 (9.2%)
e) Hired Machinery	1848.1 (3.8%)	3306.7 (5.9%)
f) Plant Protection	3319.8 (6.9%)	3867.2 (6.8%)
g) Irrigation	1948.4 (4.0%)	2093.1 (3.7%)
h) Miscellaneous Expenses	513.9 (1.1%)	594.4 (1.1%)
i) Interest on working capital	3080.4 (6.4%)	3662.4 (6.5%)
j) Land Cess	25 (0.1%)	25 (0.0%)
k) Depreciation on implements & machinery	1040.3 (2.2%)	464.7 (0.8%)
Cost-A1 (C-V)	48151.2 (100%)	56471.99 (100%)
Gross Income (C-V)	95289.6	118357.9
Net Income (C-V)	47138.4	61885.9
Benefit Cost Ratio (BCR)	1.98	2.10

(Figures in parentheses indicate the percentage)

Table-3

Per hectare cost and return in Crop-Vegetable-Dairy Farming System (FS-II) (in rupees)

C-V-D Farming System	Marginal farmer	Small farmer
I Crops & Vegetables		
a) Seed	3467.7 (5.3%)	3384.4 (4.7%)
b) Manure/ Fertilizer	5945.4 (9.1%)	7056.2 (9.7%)
c) Hired human labours	23334.1 (35.6%)	28763.7 (39.5%)
d) Bullock labour	4444.7 (6.8%)	5499.7 (7.6%)
e) Hired Machinery	2152.7 (3.3%)	3289.1 (4.5%)
f) Plant Protection	3519.8 (5.4%)	3979.2 (5.5%)
g) Irrigation	1973.5 (3.0%)	2208.1 (3.0%)
h) Miscellaneous Expenses	574.9 (0.9%)	693.5 (1.0%)
i) Interest on working capital	3178.9 (4.8%)	3841.2 (5.3%)
j) Land Cess	25 (0.04%)	25 (0.03%)
k) Depreciation on implements & machinery	1010.8 (1.5%)	483.9 (0.7%)
Total Cost (C-V)	49627.5 (75.7%)	59224.1 (81.4%)
Gross Income (C-V)	95275.5 (68.6%)	118795.3 (75.3%)
II Dairy	(2 milch cattle)	(4 milch cattle)
a) Dry Fodder	7200 (11.0%)	6754.6 (9.3%)
b) Green Fodder	3984.62 (6.1%)	3367.82 (4.6%)
c) Health care and other Expenses	2823.08 (4.3%)	1768.97 (2.4%)
d) Interest on working capital	1961.08 (3.0%)	1664.79 (2.3%)
Total Cost (Dairy)	15968.8 (24.3%)	13556.2 (18.6%)
Gross Income (Dairy)	43644 (31.4%)	38876.9 (24.7%)
Cost-A1	65596.3 (100.0%)	72780.2 (100.0%)
Total Gross Income	138919.5	157672.2
Net Income (C-V-D)	73323.2	84892.0
Benefit Cost Ratio (BCR)	2.12	2.17

(Figures in parentheses indicate the percentage)

The per hectare cost and return in crop-vegetable-dairy farming system (FS-II) of marginal and small farmers was depicted in Table-3. The marginal farmers invested 75.7% of the total operational cost i.e. Cost-A1 in crops and vegetables and in dairy it was 24.3%. The expenditure was Rs.49,627/- in crops and vegetables and in case of 2 milch cattle it was Rs.15,968/-. The cost of hired human labour was the highest of Rs.23,334/- (35.6%) followed by Rs.5,945/- (9.1%) for manure and fertilizers.

The marginal farmers in this farming system obtained the gross return of Rs.95,275/- and Rs.43,644/- from crop enterprise and dairy enterprise respectively. The benefit-cost ratio was 2.12. The small farmers of this farming system incurred Rs.59,224/- in crop production and Rs.13,556/- in dairy enterprise having 4 milch cattle. The cost of hired human labour was the highest of Rs.28,763/- (39.5%) in crop-vegetable production. Cost of dry fodder was Rs.6,754/- (9.3%) for dairy enterprise. The per hectare gross income for crop enterprise was Rs.1,18,795/- and it was Rs.38,876/- from dairy enterprise. In this

system, the per hectare cost was Rs.72,780/- with the gross income of Rs.1,57,672/- having the benefit cost ratio of 2.17.

It was observed from the above analysis that the marginal farmers received a net income of Rs.47,138/- in FS-I where as it was Rs.73,323/- in case of FS-II. The net income of small farmers in FS-I was Rs.61,885/- and in FS-II it was Rs.84,892/- It was evident from the study that the inclusion of dairy enterprise in crop-vegetable farming system added more net income to both the categories of farmers.

Conclusion

The findings of the study conclude that the net income is increasing with the increase in size of holding in both the systems. Inclusion of dairy enterprise along with the crop-vegetable production was quite remunerative as compared to crop-vegetable enterprise alone. It is recommended that the crop production along with other enterprise combination is advisable for marginal and small farmers for higher income and employment opportunity.

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Evaluation of a bullock drawn single row multi crop seed-cum-fertilizer drill in Farmers' field for line sowing of oilseed and pulse in Odisha

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Abstract

A bullock drawn single row multi crop seed cum fertilizer drill has been developed through the AICRP on UAE for line sowing of different seeds under upland condition by which the opening of furrow, placement of seed and fertilizer and covering the furrow are achieved simultaneously. The operation of this device is comparatively simple and acceptable for the small farmers because of its light weight and is attached to the local plough with ease. This process results in completion of sowing operation with greater accuracy in less time without additional labour, drudgery and cost involvement. This bullock drawn single row multi crop seed-cum-fertilizer drill was demonstrated in farmers' fields of different districts. The total saving in case of line sowing of groundnut, green gram and black gram seed by the seed cum fertilizer drill was found out to be Rs 4221.25/ha, Rs 3524.75/ha and Rs3319.74/ha against the conventional method of manual hill dropping behind the plough which include the cost of seeds saved and the cost of laborers saved.

Keywords : seed cum fertilizer drill, metering mechanism, furrow opener, actual field capacity.

Introduction

The production and productivity of oilseeds and pulses in the state of Odisha is far behind the national average. One of the reasons for this is certainly the improper method of sowing the seeds which results in undesirable higher plant population, poor crop stand and productivity below par. In Odisha, generally farmers follow manual hill dropping of seeds

in the furrow behind the plough for line sowing of bold seeds like groundnut and arhar where labour, time and cost involvement is quite high. Furthermore, availability of labour for agricultural operation during peak hours of need is further a problem apart from the drudgery involvement. The farmers generally go for manual hand broadcasting in case of small seeds like green gram and black gram where the seed rate becomes quite high. The

introduction of tractor and power tiller operated seed-cum-fertilizer drill, developed elsewhere in the country could not be exploited wide spread because of the poor socio-economic status of farmers and their fragmented land holdings. Furthermore, the land has to be prepared with high of pulverization and leveling so that the seed-cum-fertilizer can be operated easily. However some research works have been conducted on seed drills for line sowing of different crops.

Shelke, (2011) reported the results of Front Line Demonstrations on bullock drawn planter in Maharastra for line sowing of soybean which indicated that the time and cost involvement could be reduced by 62.5 percent and 28.57 percent as compared to conventional method of manual hill dropping behind the plough. Jesudass *et al.* (1996) have developed a bullock drawn seed drill to sow dry paddy in dry tilled soil having orifice flow metering device and runner type furrow opener. The performance of the prototype was tested in black cotton soil in comparison with mechanical broadcaster and manual sowing. The germination of paddy in plot-sown using direct paddy seed drill was 49% and 33% higher than that of manual broadcasting and mechanical broadcasting respectively. Behera *et al.* (1995) evaluated different bullock drawn seed-cum-fertilizer drills to select the most suitable for dry land agriculture in Orissa. From the observations it has been found that the Naveen seed cum-fertilizer drill having aluminum fluted roller (12 nos.) was most suitable considering seed distribution efficiency and benefit cost ratio. Magar *et al.* (2010) developed and tested a

bullock drawn seed drill for groundnut. The results indicated that the field efficiency was 76.5% with field capacity of 0.0612 ha/h at average operating speed of 2.4 kmph. They further reported that the average seed spacing was 12 cm while the average depth of placement was 55 mm. The saving of man-hour and cost of drilling / planting was quite substantial and justified with the use of seed drill.

Incidentally, about 76 % of the farmers of the state are under small and marginal categories and they depend mostly on bullock power for doing various farm operations. About 86 % of the total cultivable land is under the command of the draught animal power and the rest is under tractors and power tillers. So there is a need to develop a bullock drawn multi crop seed drill matching to the draught power for its versatile use in line sowing of various crops and thereby, enhancing the production and productivity in the bullock farming system. As a result, the annual use of the bullocks will increase and reduce the economic burden of owning bullocks on the farmers. Promotion of a suitable seed drill will thus enhance the mechanization level in bullock farming system. Keeping the draught ability of a pair of small bullocks and the field condition prior to sowing in view, a bullock drawn single row multi crop seed-cum-fertilizer drill has been developed incorporating few modifications in the Plough planter of Central Research Institute for Dry land Agriculture (CRIDA) design. The developed single row bullock drawn multi-crop seed-cum-fertilizer drill was evaluated in farmers' fields of different districts for line sowing of oilseeds and pulses

with effective support from the Krishi Vigyan Kendras, operating in Odisha under OUAT and ICAR and Department of Agriculture, Govt. of Odisha. The results on performance evaluation of this bullock drawn single row multi crop seed-cum-fertilizer drill in farmers' fields have been discussed in the present study.

Materials and methods

The bullock drawn single row multi crop seed-cum-fertilizer drill is as such a simple device and is attached with the indigenous *GOJI*(secondary tillage)plough for line sowing of different seeds along with fertilizer while the plough is utilized to open the furrow. This device has got an inclined plate metering mechanism suitable for sowing different seeds and gravity fed mechanism for dropping the fertilizer and a light weight planker for covering the furrow. The device has got a drive wheel on the left side for operating the metering mechanism through a pair of bevel gears and a free wheel on the right side for balanced movement during field operation. Thus the opening of furrow, placement of seed and fertilizer and covering the furrow are achieved simultaneously with the help of this device. The operation of this device is comparatively simple and acceptable for the small farmers because of its light weight and is attached to the local plough with ease. This process results in completion of sowing operation with greater accuracy in less time without additional labour, drudgery and cost involvement. Thus, three to four laborers, engaged in conventional sowing operation are saved while using the this device for line sowing. This bullock drawn single row multi crop seed-cum-fertilizer drill was

demonstrated in farmers' fields of different districts. The following modifications were incorporated following the reactions of the farmers during the demonstrations.

1. It was observed that a flexible hitching arrangement was essential for attachment of the device with the local wooden ploughs of different districts because of the variations in shape and size.
2. Further, a handle was also fitted on the rear side of the main frame as an additional attachment to facilitate controlling of the device during field operation.
3. A locking arrangement was also made on the rear left side of the device to control the fertilizer application rate.

After incorporating the above modifications, the performance of the developed single row Seed- cum-fertilizer drill was demonstrated in farmers' fields in different districts of the state for

line sowing of groundnut, green gram and black gram seeds.

Results and discussion

The results on performance of the single row bullock drawn seed cum fertilizer drill have been presented in Table 1&2. The average speed of operation during the demonstrations was found to be 1.6 kmph while the actual field capacity was found to be 0.036, 0.0.038 and 0.042 ha/hr respectively for line sowing of black gram, green gram and groundnut respectively. The average seed to seed distance was found to be 10.55 cm in case of groundnut against the recommended value of 10 cm. The average seed to seed distance

in case of green gram and black gram were found to be 5.22 and 6.22 cm respectively while the recommended value for both these crops is 5.00 cm. The average row to row distance was found to be 24.78, 25.31 and 27.62 cm for black gram, green gram and groundnut crop respectively although the recommended value for the black gram and green gram is 20 cm while it is 25 cm for ground nut crop. The average depth of placement of black gram, green gram groundnut seeds were found to be 3.54, 3.20 and 5.2 cm respectively. However the desired depth of placements for black gram and green gram is around 3.0 cm and for groundnut it is 5.0 cm. The average observed seed rate for green gram and black gram were found to be 20.65 and 20.71 kg/ha respectively as against the desired value of 20 kg/ha for both the crops. The average observed seed rate for groundnut was found to be 103.15 kg/ha against the desired value of 100 kg/ha.

The draft requirement during the sowing operation was recorded by a digital dynamometer which indicated the average values of 28.65, 25.68 and 24.95 kg for line sowing of groundnut, green gram and black gram respectively. The draft requirements in case of the developed single row seed-cum-fertilizer drill were found to be well within the draftability of small size bullocks. The higher draft requirement in case of groundnut may be attributed to higher depth of placement as compared to green gram and black gram which are sown at comparatively shallow depth because of small seeds. The average effective field capacity of the seed

cum fertilizer drill for line sowing was found out to be 0.042 ha/hr with 72.64 % field efficiency. The average effective field capacity were observed to be 0.038 ha/hr with 69.54 % field efficiency and 0.036 ha/hr with 66.54% field efficiency in case of green gram and black gram respectively. The average number of plants in case of groundnut was calculated as 1.02 while in case of green gram and black gram it was 1.68 and 1.71 respectively. The total saving in case of line sowing of groundnut seed by the seed cum fertilizer drill against the conventional method of manual hill dropping behind the plough was found out to be Rs 4221.25/ha which include the cost of seeds saved and the cost of labourers saved. Similarly, total savings in case of line sowing of green gram and black gram were calculated to be Rs 3524.75 and Rs3319.74 which includes saving in seed cost and labour cost as compared to line sowing behind the plough method. These results are in confirmation with that reported by Magar, *et. al.*, (2010) and Shelke (2011). Apart from saving in labour and seed cost, reduction of drudgery is remarkable and the problem of non-availability of labour during peak hours can be smoothly tackled by the intervention of this simple technology. The cost of operation was considerably cheaper as compared to conventional method. The farmers were highly satisfied with the performance of developed bullock drawn single row seed-cum-fertilizer drill for sowing of groundnut, green gram and black gram apart from its simplicity in operation and technology.

Table 1 Results on Field performance (Functional Parameters) of Single row bullock drawn seed drill for groundnut.

Sl. No.	Particulars	Observed values		
1	Crop	Groundnut	Green gram	Black gram
	Variety	Smruti	PDM 54	Parvati
2				
3	Date of sowing	08.01.13	26.12.12	21.12.12
4	Type of soil	Sandy loam	Sandy loam	Sandy loam
5	Soil moisture, % (db)	20.65	21.02	21.02
6	Mean weight diameter of clods, mm	0.36	0.38	0.37
7	Average speed, km/hr	1.60	1.60	1.60
8	Average seed to seed distance, cm	10.55	5.22	6.22
9	Average row to row distance, cm	27.62	25.31	24.78
10	Depth of seed placement, cm	5.20	3.20	3.54
11	Actual seed rate observed, kg/ha	103.15	20.65	20.71

Table 2. Results on Field Performance and Economics of use of Single row bullock drawn seed-cum-fertilizer drill.

Sl. No.	Particulars	Observed values		
1	Crop	Groundnut	Green gram	Black gram
1	Draft, kg	28.65	25.68	24.95
2	Effective field capacity, ha/hr	0.042	0.038	0.036
	Hrs/ha	23.81	26.32	27.78
3	Field efficiency, (%)	72.64	69.54	66.85
4	Average number of plants /hill	1.02	1.68	1.71
5	Saving in labour against local practice (man days/ha)	27.92	19.64	18.47
6	Saving in seed against local practice (kg/ha)	11.25	19.45	19.45
7	Total savings against local practice (Rs./ha)	4221.25	3524.75	3319.75

Conclusion

The single row bullock drawn multi crop seed cum fertilizer drill is a simple device and is attached with the local wooden plough for line sowing of different seeds and fertilizer under upland condition. The demonstrations conducted in different locations for line sowing of groundnut, green gram and black gram seeds were appreciated

by the farmers because of saving in time, labour and cost along with reduction in drudgery as compared to conventional method of manual hill dropping behind the plough. The overall performance was found to be satisfactory and the technology seems to be too simple, appropriate and useful to be adopted by the small farmers of the state.

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Dietary Pattern Of Kolha, Kharia And Bhuinya Tribes Of Odisha : A Comparative Study

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ABSTRACT

Tribals being a substantial portion of total population of the country, their betterment necessitates Herculean efforts in different directions. In the present investigation an attempt has been made to study dietary pattern, food preferences and food practices of Kolha, Kharia, and Bhuinya tribes of two interior tribal villages named Balichua and Kaithagadia. The dietary pattern of hundred families selected randomly was assessed by schedule cum questionnaire method. "Kolha" families form a major group and 68.09% people were Agriculture labourers. Parboiled rice was the staple food of the people. Different uncommon vegetables such as Putugudi, Tulunka, Jhiliriphool, Dimbu etc. and uncommon leafy vegetables such as Nahada leaves, Narada leaves, Narudu dunka etc. were consumed by them. Different types of meat and egg consumed by them were, shell and snail meat, Kochia (a type of snake) rat meat, bat meat, red ants egg etc. Country chicken was their principal meat. Besides mustard oil they also use "pagoda oil" for preparation of their food. Most common beverage was "Handia" which was prohibited for children below 3 years. The dietary intake was deficient in-comparison to ICMR standard. 83% families were giving special dishes for curing illness such as urine of calf for mouth disease, meat of Kochia for piles, Boiled snail meat for dysentery etc. The cooking methods and handling of foods was improper. They were drinking water from "Chua" (a small shallow pool) which was very unhygienic.

Key words: *Dietary pattern, Tribes*

Mayurbhanj district, situated at the top of the hill, named 'Sarisua'. The tribals of 'Balichua' are named as 'Kolha' where as in Kaithagadia there are 3 tribal groups namely 'Kharia, Bhuinya along with Kolha'. These villages are selected for study because those are relatively untouched by others for survey works and are also present in an interior area of the district. For the present study 100 families were selected on the basis of random

purposive sampling. The data are collected by schedule cum interview method by door to door visit. Diet-survey is done by using 24 hours recall method. Information regarding their food habits, food consumption pattern, special foods taken during festive occasions and illness, preparation of foods from unedible portions of food stuff, use of uncommon vegetables, fruits, oils and animal food stuff were also collected.

Results and Discussion

It was observed that there were total 506 members in 100 families. The male population was 51.19% and female population was 48.81%. The total percentage of children was more in comparison to other age group i.e. 43.08%.

It was seen that Kolha forms the majority of the tribal population i.e. 60% and the other caste of the population was only 1% which includes para, Lodha, Paudi, Soura etc.

The education level of the families

Table – 1: Distribution of families according to education (N=100)

Sl.No.	Educational level	Males %	Females %	Total %
1.	Illiterate	80-69 (209)	95.95 (236)	87.94 (445)
2.	Literate upto 4 th	10.42 (27)	3.64 (9)	7.11 (36)
3.	Literate upto 7 th	2.33 (6)	0.4 (1)	1.38 (7)
4.	Literate upto 10 th	6.56 (17)	0.4 (1)	3.56 (18)
Total		99.99% (259)	99.99% (247)	99.99% (506)

From the above table, it was observed that most of the people were illiterate (87.94%). The percentage of illiteracy was high (95.55%) among females. Only 3.56% of the population was studied upto class 10th.

population were wood cutters and vegetable vendors. More percentage of male were involved in business, service and other occupation which included technician, carpenter, painter etc.

It was observed that maximum number of male and female were agriculture workers. About 20.17 people of total

The distribution of families based on average monthly income

Table – 2 : Distribution of families according to monthly income (N=100)

Sl.No.	Income range	Number	Percentage
1.	1000 - 2000	6	6%
2.	3001 – 6000	62	62%
3.	6001 – 9000	26	26%
4.	9001 – 12000	4	4%
5.	Above Rs. 12000	2	2%

It was observed from the above table that most of the families belong to low income group. 62% of the families were earning Rs. 3000-6000 month and 6% of the people were earning Rs. 1000-3000 month whereas only 4% people were earning Rs. 9000-12000 month and 27 people earning above Rs. 12000 month.

Condition of Houses:

100% of the population surveyed were staying in Kutcha houses made of bamboo and straw.

Land owned by families :

41% of the families had no land at all 53% families had less than 2.5 acres of land but most of them had ½ acre to one acre land. Only 6% of the families owned 2.5 to 5 acres of land.

Kitchen garden, poultry and farm animals:

It was observed that 79% of the families were having kitchen gardens, 44% of families were having poultry and 79% of families were having farm animals. The eggs and vegetables were marketed to get rice. The Kolhas were usually not milching their cows, because they did not use the cows milk and also worshipped cows as their goddess.

Food consumption pattern:

During the survey of the families, the head / housewife were asked about their food consumption pattern the data was compiled and is discussed below.

a) Cereals and pulses consumption of families:

Paraboiled rice was the staple food of tribals taken in the form of “Pakhals” (Waterdrice).

Wheat was consumed by 28% of families fortnightly and 12% of families consumed wheat rarely i.e. during festivals or sickness. Maize was consumed by 12.70% families rarely.

Though pulses are chief sources of proteins, 59% of families were not taking pulses at all and rest of the families consumed rarely, mainly due to poverty.

According to Ali (1987) the principal food of Lanjia Saora is gruel prepared out of rice, ragi and some other millets.

(b) Vegetables:

It was observed that leafy vegetable were taken by 100% families weekly. Most common leafy vegetables were drumstick and Narada. Narududunka and Narada Leaves were available during rainy season. Only. Other uncommon leafy vegetables used by the tribals includes Sunisuni, Kalama, Rajbij, Maresh, Neem leaves, Pitua, Harsaa etc. They usually collect those from forest or from kitchen garden.

Most common vegetables consumed by the tribals were brinjal and pumpkin. Other seasonal vegetables consumed by them according to availability were mushrooms, putugudi, tulunka, Jhiliri Phool, during rainy season and Dimbu during winter season.

(c) Roots and Tubers and Fruits:

None of the families could afford daily consumption of roots and tubers and fruits. Potato and onion were taken by 58% and 33% of families weekly. Other roots and tubers which were available in the forest were also consumed by them, such as bitter potato, bai-potato, etc.

Pagoda was one of the uncommon berries which was available during rainy season other fruits include guava, palm, black berries, jack fruit, mango etc.

According to Pore (1985) pulses, leafy vegetables, aubergines, potatoes and onion were most commonly eaten by tribals.

(d) Milk and meat products:

Milk was consumed by only 8% of families daily during the period of survey. Dry fish was consumed by 98% of families weekly and shell and snails were taken by 78% families weekly. 100% people consumed crab daily during rainy season. Eggs of (40%) Red ants, Kochia a type of snake (44%) Meat of rats, bat and also different types of birds were consumed by the families according to availability. According to Ali, mutton, beef, buffalo meat, chicken are their principal meat but consumption was low.

(e) Fats and Oils:

100% families were consuming mustard oil daily whereas 46% of the families using tula oil fortnightly and 60% of the family were using pagoda oil for their preparation of meals. During survey it was observed that some families were preparing their foods without oil.

(f) Sugar and Jaggery:

None of the families were using sugar or jaggery daily or weekly. 76% of families were using sugar and jaggery during festivals or during special occasions.

(g) Beverages:

Most common beverage was “Handia” a type of drink prepared out of rice and bakhara (Yeast) locally consumed by 77% of families weekly, 12% of families consuming “Taddi” juice of date palm tree i.e. during summer season due to the popular belief that it is cooling for stomach.

(h) Miscellaneous:

It was found that all families were using chilli, turmeric, masalas, mango slices and tamarind during cooking.

94% of the families were having habit of chewing tobacco, 57% has habit of smoking tobacco, and 4% and habit of chewing beetal leaves.

10. Dietary pattern of the families:

(i) It was observed that 9% of families were non-vegetarian 62% of families were found to be having 3 meals pattern.

Table-3: Dietary pattern of the families:

Breakfast	-	Watered rice + salt and Chili or Roasted dry fish or Tamarind leaves chutney
Lunch	-	Water rice (Pakhal)+ Drumstick leaves fry Or Nahada leaves Or any available leafy vegetable
Dinner	-	Rice + Tulunka sabji Or any other vegetable.

It was observed that in most of the families (62%) adults were taking pakhal (water rice i.e one type fermented rice) twice a day and hot rice at the time of dinner. There was no restriction for children in taking number of meals. The inclusion of dal or milk product was found to be nil in the meal. The food from animal sources was found to be only once in meal that also depends on availability. Information regarding inclusion of veg-

etables in the diet indicated that mostly seasonal vegetable were include in meals. Sometimes it was also observed that people were taking only pakhal with salt chili without any side dish.

(ii) Composition of the average diet of an adult activity tribe during the period of survey compared with the ICMR recommended diet (RDA).

Table-4 : Composition of the average diet

Sl No.	Food stuff	ICMR recommended quantity (Gms)	Average take of an adult tribe in GRm.	Percentage deficiency %
1.	Cereals	650	350	46.15
2.	Pulses	65	-	100
3.	Green leafy vegetable	125	100	20
4.	Other vegetable	100	20	80
5.	Roots and tubers	100	-	100
6.	Fruits	30	-	100
7.	Milk	100	-	100
8.	Fats and Oils	50	5	90
9.	Meat and fish	30	10	66.6
10.	Egg	30	-	100
11.	Sugar and jaggery	55	-	100
12.	Groundnuts	50	-	100

The above table showed that an adult of Kharia, Bhuinya and Kalha tribe, consumed an average 350gms of cereals per day which is 40.15% deficient than the ICMR recommended allowance. The tribes were taking lots fo green leafy vegetables but they were 20% deficient in-comparison to ICMR standard. Other vegetables, fats and oils, meat and fish were found to be 80%, 90% and 66.6% deficient than the ICMR recommended allowances respectively. Pulses, Roots and tubers, fruits milk, egg,

sugar and jiggery, groundnuts were 100% deficient in their diet during the period of survey.

According to Tandon, nearly 250million people in India consume less than $\frac{3}{4}$ of the needed calories and another 55 million taken even less than that of their requirement.

(iii) Composition of average nutrient intake of an adult during the period of survey compared with the ICMR recommended diet (RDA)

Table-4 : Average Nutrient intake of an Adult as compare to RDA

SI No.	Nutrients	ICMR Recommended Quantity in gm.	Average intake of an adult in gm.	Percentage of deficiency %
1.	Protein	55	27.7	53.3
2.	Fat	50	7.1	85.8
3.	Carbohydrate	440	262.84	40.3
4.	Calories	3900	1220.8	68.69
5.	Carotene	3000mg	2726.8	9.1
6.	Vit B1	20mg	0.7mg	65.0
7.	Vit C	50mg	90.9mg	-
8.	Fe	20mg	16.11	19.6%

The nutrient composition of an average tribal diet showed calorie and protein deficit of 68.69%, 53.3% respectively. The Vit. C content of the diet was more than the RDA besides this the diet was lacking in other minerals and vitamins.

According to Ali, the nutrient composition of an average lanjia saora diet showed, calorie and protein deficit of 62.68 and 56.877 respectively.

11. Special foods taken during illness:

It was observed that 83% of families were giving special dishes or food during illness to recover from specific diseases

Table-5: Special foods taken during illness

SI No.	Diseases	Food given
1.	Cold	Raw egg
2.	Malaria fever and indigestion	Kanji Pani
3.	Diarrhea	Bail leaves juice
4.	Dysentry	Boiled snail meat
5.	Piles	Kochia (One type of snake)
6.	Any mouth diseases	'Peja' (Water of cooked rice) and urine of female calf

12. Special dishes from unedible portion of food stuffs:

67% families were preparing different dishes from non-edible portions of food stuffs

Table – 6: Utilisation of Unedible portion of Food Stuff

Sl.No.	Ingredients	Dishes
1.	Banana Skin	Banana skin Patua
2.	Torani	Torani Kanjii
3.	Ridge gourd skin	Chutney
4.	Pumpkin, Bottle Gourd	Fried sabjii
5.	Drumstick flower	Patua

13. Method of cooking and handling foods:

The method of food preparation of the surveyed tribals was improper. They were found to wash vegetables after cutting and eat fruits without washing. During preparation of rice the practice of using extra water for cooking and drawing the excess wooden was found. It was observed that 79% of families were cooking food without lid and only 21% of families with lid.

14. Food Preferences:

It was observed that 59% of the families preferred boiled foods, whereas 39% of the families preferred roasted foods. Spiced food was preferred by 8% of families only and none of the families preferred baked foods.

15. Food sharing practices:

First of all the food was taken by the head of family in 71% of families whereas in 18% families there was no restriction for taking

foods and in 11% families food was taken first by the children.

16. General surroundings:

The source of water at village “Balichua” was very unhygienic, which was perhaps the main root of infectious diseases. Water from “Chua” (a small shallow pool), was used for drinking purpose. Lighting and ventilation conditions of houses were also inadequate.

SUMMARY AND CONCLUSION:

An attempt was made to study the dietary pattern, food preferences food practices of Kolha, Kharia and Bhuinya tribes of Orissa.

The tribal population consisted of 51.19% males and 48.81% females, ‘Kolha’ families form a major group i.e. 60%, 87.94% of the tribal population was illiterate. Maximum populations (68.09%) were Agriculture labourers. 94% families belonged to low income group. 100% of families had their own houses. 53% of families had less than 2.5 acres of land.

Parboiled rice was the staple food of the people. Consumption of pulses was very less. Different uncommon vegetables and leafy vegetables such as Nahada leaves, Narada leaves, Naradu dunka, Putugudi, Tulunka, Jhiliriphoor, Dimbu etc. were taken by 100% people according to availability. Only 8% people were consuming milk. Fish, Dryfish, Snail, Shell, Redant'segg, Kochia, Crab etc. were consumed by maximum number of people fortnightly and weekly. All families were consuming mustard oil, most common beverage was 'Handia'. The dietary intake of tribals was deficient in comparison to

ICMR standard 83% families were giving special dishes for curing illness. 67% families preparing different dishes from unedible portions of food stuffs. The cooking methods and handling of foods was improper. Sanitary conditions of tribal villages needed to be improved.

Thus, it can be concluded that poverty, ignorance, and illiteracy and prevailing unhygienic conditions were found to be the major factors affecting the food consumption pattern and nutritional status of the community.

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Farmers' Preference and Feedback on Drip Irrigation System with Single and Double Inlet Laterals

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Abstract

Drip irrigation is considered as the most advanced and efficient method of irrigation system wherein water is applied precisely to the root zone of plants as per their requirement resulting in enhancement of yield. In the conventional drip system, laterals are generally connected to the sub-main and run along the rows of crop and are closed at the extreme end by end cap or line end. As lateral is connected to the sub-main at one end, water moves through the lateral from that end, hence termed as single inlet type drip system. But when the laterals are connected to the sub-main pipe at both the ends allowing water to flow from sub-main to the laterals from the two connecting ends or inlets, it is termed as double inlet drip system. In double inlet drip system, the frictional head loss becomes less resulting more uniformity of discharge along the lateral.

Key Words: *Drip Irrigation System , Farmers*

In drip irrigation system, length of laterals is much more and diameter of laterals is much less in comparison to the length of sub-main and main pipe lines. Laterals being more in length and less in diameter pose a major concern of frictional head loss in the system. Methodology to reduce this head loss in the laterals would certainly be the area of interest. Installation of double inlet drip system is an effort to reduce frictional head loss which would result in reduction of pump capacity and / or main and sub-main pipe sizes thus reducing the cost of the drip system. This would also increase the uniformity of discharge along the drip laterals along with uniformity in application of fertilizer, if fertigation is done through the system, thus resulting in enhancement of crop yield.

Though double inlet drip irrigation system seems to be more efficient and cost-effective in comparison to single inlet system, not much research work has been done in that direction to verify its impact in the field condition. However, theoretical analysis of both double and single inlet system has been done to compute and compare head loss in both the systems (Nayak, 2007). He found that the head loss is around 7.216 times more in single inlet systems than the double inlet systems. Field studies also show substantial decrease in head loss (16% - 17%) in double inlet systems than single inlet systems (Mohanty, 2011). Giving special emphasis to farmers' view point on single and double inlet drip system, a study has been conducted with the following objectives.

Objectives:

1. To know the farmers' preference on drip irrigation system with single and double inlet laterals.
2. To know the farmers' reaction on single and double inlet drip irrigation system and derive the feedbacks for further refinement of the system.

Materials and Methods:

A field experiment was conducted to study the hydraulic performance and crop yield in drip irrigation system with single and double inlet laterals in village Jamunali of Chendipada block in Angul district of Odisha. Brinjal crop of variety *Tarini* was grown in the experimental plots of farmer's field continuously for three years i.e. during 2011, 2012 and 2013. The soil of the area is sandy loam. To record the farmers' preference / perception and feedback on single and double inlet drip system a semi structure interview was conducted involving 70 nos. of farmers segregated into three categories. The owner of the farmer's field, where drip experimentation was conducted, namely Mr. Madan Sundar Majhi along with nine (9) no of labourers (farmers) working in his field during last three years were grouped under Category-I. Thirty (30) nos. of vegetable farmers from Jamunali village those visiting the drip plot frequently during the different stages of cropping period were selected randomly and taken under Category-II. Thirty (30) vegetables growers from nearby villages apart from Jamunali those who have visited the experimental plot were selected randomly and grouped under Category-III. A total of nine parameters pertaining to operation, maintenance, fertigation, intercultural

operation, application efficiency, crop growth, yield and other parameters under both the drip irrigation system were considered for the interview. The respondents were asked to opine on a three point continuum such as very good, good and poor over the statement mentioned under each parameter/ variables. Score was assigned as 3, 2 and 1 for very good, good and poor respectively and the weighted mean score was calculated for each parameter / variable.

Results and Discussions:

Farmers' perception or preference

Farmers' perception or preference on both single and double inlet system with respect to different aspects have been collected in terms of scores and the weighted mean scores have been calculated to generate inference on the two kinds of systems which has been presented in Table-1. Results show that single inlet system is at par with double inlet system in ease in operation and maintenance with 2.6 score value, lateral management (shifting) during off season with score value of 2.4, fertigation having score value of 2.8, cleaning of filters with 2.8 score. Farmers expressed their problem and difficulty in inter culture operation in drip plots. In case of double inlet system they experience more difficulty in working with a score value of 2.2 than single inlet system with 2.4 score value. But with regard to uniformity in irrigation water application they prefer double inlet system with score value of 2.8 indicating very good option over single inlet system with 2.3 score as they observe less moisture towards the far end of the lateral in case of single inlet system. But in case of double inlet system they observe uniform

moisture throughout the length of lateral. Farmers observe more growth of crop with 2.7 score and more brinjal yield with 2.9 score in case of double inlet system than single inlet

system with 2.3 score for both crop growth and yield confirming that the double inlet system is very good though single inlet system is approaching very good.

Table 1: Farmers preference in use of single and double inlet drip system

Sl. No.	Parameters	Mean score						Weighted mean score	
		Category-I		Category-II		Category-III		SI	DI
		SI	DI	SI	DI	SI	DI		
1.	Ease in operation Ease in maintenance	2.6	2.5	2.5	2.4	2.7	2.6	2.6	2.5
2.	Cleaning of filters	2.8	2.8	2.8	2.7	2.7	2.7	2.8	2.7
3.	Flushing of main, sub main and laterals pipes	2.7	2.5	2.6	2.4	2.7	2.2	2.7	2.3
4.	Lateral management during season/off-season	2.5	2.4	2.5	2.5	2.3	2.2	2.4	2.4
5.	Ease in fertigation	2.8	2.8	2.8	2.7	2.7	2.7	2.8	2.7
6.	Ease in inter culture operation in the drip plot	2.4	2.3	2.4	2.2	2.3	2.2	2.4	2.2
7.	Uniformity of water application	2.3	2.9	2.3	2.8	2.2	2.8	2.3	2.8
8.	Crop growth	2.3	2.9	2.4	2.7	2.3	2.6	2.3	2.7
9.	Yield / Income	2.2	3.0	2.4	2.8	2.3	2.9	2.3	2.9

SI: Single Inlet, DI: Double Inlet

Farmers’ feedback / reaction:

Data on feed back / reaction of farmers on different aspects of single and double inlet systems and their suggestions have been collected and presented in Table-2. Farmers perceive both single and double inlet system at par with respect to operation and

maintenance except inter culture operation where they experience more discomfort in case of double inlet system. As regards to crop growth and yield, farmers are more satisfied with double inlet system than single inlet system. Regarding adoption of drip irrigation technology farmers see both single and double inlet system at par. Both systems

require high expenditure and awareness level of farmers is very low which needs more extension approach for strengthening their willingness to adopt the systems for irrigation. Insufficient credit availability and financial constraint of the farmers are some areas which inhibits wide adoption of the technology

amongst farmers. Farmers suggest the necessity of strengthening advisory support system, credit facility with easy availability, awareness campaign of the drip system of cultivation at the field level for better adoption of both the technologies by the farmers and thus increasing the production level.

Table 2: Farmers’ feedback / reaction in single inlet and double inlet drip system

Sl. No.	Parameters	Single inlet	Double inlet
1.	Operation	Operation is easy.	Operation is easy.
2.	Maintenance	<ul style="list-style-type: none"> • Lateral shifting in off season / kharif season is bit cumbersome. • Manual fertilizer application is difficult • Interculture operation is difficult. • Flushing of main, sub-main pipes and lateral is easy. 	<ul style="list-style-type: none"> • Lateral shifting in off season / kharif season is more cumbersome. • Manual fertilizer application is difficult • Interculture operation is very difficult. • Flushing of main, sub-main pipes is easy but flushing of lateral is difficult.
3.	Cost	<ul style="list-style-type: none"> • Costly technology. 	<ul style="list-style-type: none"> • Costly technology with slight more cost than single inlet system
4.	Crop growth	<ul style="list-style-type: none"> • Crop growth is good. 	<ul style="list-style-type: none"> • Crop growth is excellent with visible difference than that of single inlet system.
5.	Yield	<ul style="list-style-type: none"> • Yield is good. 	<ul style="list-style-type: none"> • Yield is very good.
6.	Adoption	<ul style="list-style-type: none"> • Can be easily adopted. • Farmers have very low awareness level and knowledge. • Insufficient credit facility and lack of financial resource with farmer. 	<ul style="list-style-type: none"> • Can be adopted after conviction. • Farmers have very low awareness level and knowledge. • Insufficient credit facility and lack of financial resource with farmer.

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|---------------|--|--|
| 7. Suggestion | <ul style="list-style-type: none"> • More number of training / demonstration programmes should be conducted. • Credit availability should be ensured. • Advisory support should be strengthened. • Massive awareness programmes should be taken up with distribution of reading materials like leaflets, booklets etc. | <ul style="list-style-type: none"> • More number of training / demonstration programmes should be conducted. • Credit availability should be ensured. • Advisory support should be strengthened. • Massive awareness programmes should be taken up with distribution of reading materials like leaflets, booklets etc. |
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Conclusion:

From the study, it is evident that farmers perceive single and double inlet system at par with respect to workability and they also consider double inlet system superior to single inlet system with respect to yield and income. The farmers find relatively more difficulty in working specifically in inter-culture operation and flushing of laterals in drip plot with double inlet system than drip plot with single inlet system, but this compensates with more yield. There is no significant difference in adoptability in terms of potential for adoption of both the systems

amongst farmers. Overall, farmers prefer double inlet system over single inlet system for getting more yield and they can cover more area as the head loss is less in this. They can also go for less diameter pipe line and / or less capacity pump which in turn reduces the cost of cultivation. Of course, the farmers could perceive these things even better after their orientation about the difference and impact of both single and double inlet drip system and they will be spontaneously willing to adopt the systems for irrigating their crops and to get higher yield and benefits.

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Mid-Term Evaluation of ACA Watersheds in Nuapada District

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Abstract

Mid-term evaluation of ACA watersheds in Nuapada district of Odisha were conducted in all the 10 watersheds spread over 5 blocks of Nuapada district to study the impact assessment of different watershed activities implemented by Watershed Development Mission, Govt. of Odisha, Bhubaneswar. The evaluation was carried out in two phases: (i) information were gathered from project implementation agency (PIA) and detailed discussion were made with members of watershed committee and watershed development team (ii) field study was conducted to examine suitable site selection, appropriateness of layout and structures, ravine and gully channel treatment etc. and also to examine seedlings/ grafted plants or both supplied to develop horticultural, bio-fuel and agro-forestry plantation.

Interaction was also made with the SHGs and UGs of ACA watersheds in order to study the impact of the programme. Simple random sampling technique was used to study the community participation in implementing the watershed activities. From the field study and interaction made with the beneficiaries, it was observed that the watersheds are becoming greener and there is a great improvement in moisture regime of the watershed areas. It is noted that there is a good increase in ground water level, which helps the farmers to get their yield even in summer without any water scarcity. Moreover, soil erosion is controlled by the activities of watershed development programme like loose boulder structure, brushwood check dam, filed bunding and retaining walls. Afforestation and pasture development is another promising activity implemented under this programme, which made the watershed area ecologically and environmentally balanced. The SHGs and UGs of the watershed also rate the impact of the programme as very good.

Key words: SHG, Watershed

Introduction

Indian agriculture is predominantly rainfed agriculture. Out of 143 million hectare of total cultivated area in the country, 101 million

hectare (nearly 70 percent) is rainfed and about 42 percent of rainfed areas contribute for total food grain production. Variation in the amount of rainfall and its spatio-temporal

distribution influence the crop production and socio-economic conditions of the farmers. According to Society for Promotion of Waste land Development, out of 329 million hectare of total geographical area of India, 93.7 million hectare falls under waste land. In the face of rapid increase in population, industrialization, urbanization and consequent demand for food grains, the reduction of productivity of the land due to deficient rainfall from south-west monsoon in the recent years and ground water depletion have become the major concern in the development of our country. The phenomenon of ground water exploitation is much pronounced in India and Odisha. So holistic and sustainable development of degraded/waste lands can be achieved through watershed approaches, afforestation and adopting suitable technologies, when people participate in the programmes. The conservation, development and efficient utilization of the natural resources namely wasteland and water for sustainable agriculture has assumed greater significance in the present context of their misutilisation. The development and management of waste lands through integrated watershed management with active participation of local community is a successful proposition (Madhu *et al.*, 2004). At majority of watersheds the benefits was moderate and in a few it was conspicuous by absence of people's participation (Singh *et al.*, 2010).

Objective

The study was conducted to assess the rate of people's participation in planning, decision making, site selection, execution of work and people's representation from different communities in the watershed.

Materials and Methods

Mid-term evaluation of 10 ACA watersheds was conducted spreading over 5 blocks of Nuapada district in two phases. i) information were gathered from Project Implantation Agency and discussions were made with the members of the watershed committee and watershed development team members. ii) field study was conducted to examine suitable site selection, appropriateness of layout and structures, ravine and gully channel treatment etc. and also planting materials like seedlings and grafted plants supplied to develop horticultural, bio-fuel and agro-forestry plantations. Interactions were also made with 100 numbers of beneficiaries of revised long term action plan (RLTAP) – additional central assistance (ACA) watersheds in order to study the impact of the watershed development programme. Simple random sampling technique was used to select 100 nos. of beneficiaries for studying the community participation in implementing the watershed activities.

Different watershed treatments activities were taken up to conserve soil and moisture, to develop water resources and to increase vegetation cover in the watershed area so as to maintain the ecological and environmental balance. These activities are broadly classified under six heads such as renovation of existing water harvesting structures, water resources development, gully development, afforestation and pasture development, soil and moisture conservation and other associated activities (Table 1).

Table 1 Watershed activities taken up in ACA watershed of Nuapada district

Watershed activities	Watershed development structures
Renovation of existing water harvesting structures	Renovation of farm pond, village tank, supply channel and canal systems, dug wells etc.
Water resources development	New farm ponds, open wells, percolation tank, sunken pond, cattle pond, gabion structures, check dams, loose boulder structures etc.
Gully development	Brush wood check dam, loose boulder check dam, check dam, vegetative barriers, and plantations on gully sides.
Afforestation and pasture development	Agro-forestry plantations, agro-horti plantations, silvipastoral units development etc.
Soil and moisture conservation	Peripheral bunds around fields, contour bunding, graded bunding, staggered trenching, stone walling etc.
Other associated activities	Vermi-compost pit, simple compost pit, kitchen garden, backyard plantation, pisciculture ponds and grain storage structures, broiler sheds, cowsheds etc.

Results and Discussion

Peoples' participation is the key factor in success of the watershed development programme. Peoples' participation is not only critical during the implementation phase of watershed but also ensures conservation and development of common property resources. People's involvement in watershed development programme plays a major role for its success. The action plan of the watershed was prepared by the community through participatory rural appraisal exercise. Participation of community in planning, decision making, execution of work and problems faced by the community were presented in respective tables.

Peoples' participation is the key factor in success of the watershed development programme. Peoples' participation is not only critical during the implementation phase of watershed but also ensures conservation and development of common property resources. People's involvement in watershed development programme plays a major role for its success. The action plan of the watershed was prepared by the community through participatory rural appraisal exercise. Participation of community in planning, decision making, execution of work and problems faced by the community were presented in respective tables.

Table 2. Participation of village community in planning

Name of the watershed with code No.	Participation in percentage		
	Full participation	Moderate participation	No participation
Jharianal	43.0	57.0	Nil
(03-09-05-01-02)			
Tailaret Nala	51.6	48.4	Nil
(03-09-05-02-02)			
Chil Nala	77.3	22.7	Nil
(01-09-05-01-02)			
Sundar Nala	25.4	74.6	Nil
(01-09-09-01-02)			
Kusumal Dumerjore	64.0	36.0	Nil
(01-08-05-01-03)			
Kendupati	60.2	39.8	Nil
(01-08-15-01-03)			
Makarbirli	60.4	39.6	Nil
(01-09-23-01-01)			
Farsara	53.5	46.5	Nil
(05-01-21-01-02)			
Litiguda	56.0	44.0	Nil
(05-01-12-02-02)			
Barapadar- checheralahata	56.4	43.6	Nil
(05-01-12-02-01)			
Average	54.78	45.22	Nil

Table 2 indicates that maximum participation of 77.3% was found in Chil Nala watershed followed by Kusumal Dumerjore (64.0%), Makarbirli (60.4%) and Kendupati (60.2%). The minimum participation of 25.4% was found in Sundar Nala watershed with regard to full participation of the village community in planning stage of the watershed works. The average of full participation was found

to be 54.78% in 10ACA watershed of Nuapada block. It was observed that the highest and lowest of moderate participation was found to be 74.6% and 22.7% in Sundar Nala and Chil nala watersheds respectively. The average of moderate participation was found to be 45.22%. Non-participation of people was never found in all the 10 watersheds.

Table 3. Participation of village community in decision making process

Name of the watershed with code No.	Participation in percentage		
	Full participation	Moderate participation	No participation
Jharianal	80	20	Nil
Tailaret Nala	60	40	Nil
Chil Nala	90	10	Nil
Sundar Nala	40	60	Nil
Kusumal Dumerjore	85	15	Nil
Kendupati	80	20	Nil
Makarbirli	77	33	Nil
Farsara	65	35	Nil
Litiguda	70	30	Nil
Barapadar-checheralahata	68	32	Nil
Average	71.5	29.5	Nil

Decision making plays a vital role in implementing any developmental intervention. From Table 3 it was noted that the highest and lowest in full participation was found to be Chil Nala and Sundernala watershed respectively. The average of full participation as found to be 71.5% in decision making process of 10 ACA watersheds. Similarly the highest and lowest in moderate participation category was found to be 60% and 15% in Sunder Nala and Kusumal Dumerjore watersheds respectively with average value

of 29.5%. However no one was found to be defaulter in decision making process of the watersheds.

On the whole it was found that the decision making process such as site selection, execution of work, time duration to complete the work etc. helped the Project Implementation Agency (PIA) to implement the work at proposed site, at proposed time following the right method of execution of proposed works in the watersheds.

Table 4. Participation of village community in site selection

Name of the watershed with code No.	Participation in percentage		
	High participation	Moderate participation	Low participation
Jharianal	60	30	10
Tailaret Nala	40	50	10
Chil Nala	80	20	0
Sundar Nala	30	60	10
Kusumal Dumerjore	70	25	5
Kendupati	70	30	0
Makarbirli	80	15	5
Farsara	75	25	5
Litiguda	60	40	0
Barapadar- checheralahata	50	40	10
Average	61.5	33.5	5.5

Proper site selection is highly essential for implementing the watershed programme in a holistic way, which in term makes the programme more successful. It was observed that highest and lowest participation percentage in high participation category was 80% and 30% in (Chil Nala and Makarbirli) watershed and Sunder Nala watershed respectively. Similarly in moderate participation category, the highest and lowest participation percentage was found to be 60% and 15% in Sunder Nala and Makarbirli watersheds re-

spectively. The average participation percentage with regard to high, moderate and low participation was found to be 61.5%, 33.5% and 5.5% respectively (Table 4). It was observed that almost all the watershed beneficiaries from all the villages were very much interested in site selection since they were exposed to the benefits of the programmes through exposure visits to other watersheds of same or different districts and their participation in different training programmes conducted by PIAs.

Table 5. SC, ST and women representation in the watershed committee

Name of the Block	Name of the Watershed	SC Men (%)	ST Men (%)	All Women (%)	Others (%)
Nuapada	Jharianal	20	30	40	10
	Tailaret Nala	20	40	40	-
Komana	Chil Nala	19	44	27	10
	Sundar Nala	46	23	31	-

Komana	Chil Nala	19	44	27	10
	Sundar Nala	46	23	31	-
Khariar	Kusumal Dumerjore	15	10	15	60
	Kendupati	8	16	20	56
Boden	Makarbirli	25	20	25	-
	Farsara	16	59	25	-
Sinapali	Litiguda	9	27	18	46
	Barapadar-Checheralahata	25	17	17	41

Nuapada District	Average	20.3	31.6	25.8	22.3
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It was observed that maximum and minimum percentage of women representation in watershed committee was found to be 40% in Jharianal and Tailaret Nala and 15% in Kusumer Dumerjore watershed respectively. With regard to ST representation, the maximum and minimum percentage of representation was found to be in Farsara

and Kusumal Dumerjore respectively with average of percentage of 31.6%. The percentage of SC representation was found to be maximum in Sunder Nala (46%) and minimum in Kendupati (8%) with average value of 20.3%. The average women representation in the watershed activities was 25.8% (Table 5).

Table 6. Participation of village community in execution of work

Name of the watershed with code No.	Participation in percentage		
	High participation	Moderate participation	Low participation
Jharianal	20	80	Nil
Tailaret Nala	25	75	Nil
Chil Nala	25	75	Nil
Sundar Nala	15	85	Nil
Kusumal Dumerjore	25	75	Nil
Kendupati	30	70	Nil
Makarbirli	30	70	Nil
Farsara	20	80	Nil
Litiguda	10	90	Nil
Barapadar-checheralahata	15	85	Nil
Average	21.5	78.5	Nil

It was realized that the average participation was 21.5% under high participation category and 78.5% under moderate participation category. The highest percentage of participation was found to be 30% in Makarbirla and Kendupati and 90% in Litiguda under high and moderate participation category respectively.

Conclusion

From the evaluation study it was found that the people from all the watersheds were actively participated in process of planning of the watershed development programme since they were exposed to the different

watershed activities implemented in different districts of the state. Decision making process of the village community helped the PIAs to implement the work successfully at the proposed time. Watershed beneficiaries of all the watersheds were very much enthusiastic in site selection as evidenced from their full participation. SC, ST and women representation was quite satisfactory in most of the watersheds. Majority of the soil and water conservation structures were properly executed with appropriate planning, layout and design in stipulated time frame due to high interest and active involvement of watershed beneficiaries.

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Health Status of College going Adolescent Girls and Fast Food

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Abstract

Due to industrialization number of working individuals are increasing day by day. Mothers have no time to look after their children as well as to cook traditional food. So ready to eat meal is an alternative. Thus it could be suggested that special health camps should be organised for the college going girls and they should be educated regarding the nutritive value of different food stuffs and their effect in future. 'Say no to fast food and accept balance food' should be the slogan for the adolescent girls - the future mothers of the nation.

Key words: Adolscnt girl, fast food

Introduction

Fast food became a part and parcel of modernization. Eating fast food and preparing fast food and offering fast food is a fashion among the youngsters. Even though most of us are aware about the fact that frequent eating of fast food leads to obesity, cardiac problems and diabetes because of its high calorie, high sodium and high fat content still then it is impossible to give a brake to the use of fast food.

Due to industrialization number of working individuals are increasing day by day. Mothers have no time to look after their children as well as to cook traditional food. So ready to eat meal is an alternative. Use of fast food is not only bound to cities and towns but also it has been reached to each and every corner

of rural areas. Pizza, Burger, Maggi, Pasta, Pettis, Cake, Roll etc. have become a part of day to day life. Children and adolescents are more victimized. As adolescent girls are the would be mothers of future generation and their poor health status will ultimately affect the growth and development of nation, the present study has been designed to study the "Health status of college going Adolescent girls and fast food in Bhubaneswar City."

The objectives of the study are :

- To study the demographic profile of adolescent girls.
- To study the food consumption pattern of adolescent girls.
- To assess nutritional status of adolescent girls.

To study the health condition of adolescent girls.

Materials and Methods

The present study was conducted in Rama Devi Women's College, Bhubaneswar, Two hundred adolescent college going girls within the age group of 16 - 20 years were selected randomly for the present study. Personal interview cum questionnaire method was used to collect data. Twenty four hour recall method was carried out to know the food Intake of the subjects. Anthropometric measurements such as height and weight of the respondents were taken by using measuring tape and weighing machine respectively then BMI was calculated. The collected data was analyzed, tabulated & discussed below.

Results and Discussion

i) Demographic profile

The survey covered two hundred College going adolescent girls. Out of which 42% belonged to 16 to 18 years where as 58% belonged to 18-20 years. Nuclear family system was found to be more prevalent i.e. 56%. Majority of the families belong to general caste (78%) followed by (OBC) (20%). Regarding the occupation of the parents it was observed that 93.8% fathers were working in private sector where as 11.42% mothers were working in Govt. Office. It was also interesting to note that majority of the parents were highly educated i.e. 47.35% where as only 8.98% parents were educated up to 5th standard. Majority of the adolescent girls belong to middle income group i.e. 44% where as 36% girls belong to high income group family.

ii) Food consumption Pattern

It was observed that majority of the respondents were non-vegetarian 68%.

Whereas 32% were vegetarian. Taking four meals per day was found to be more among the girls i.e. 56%. Parboiled Rice, Wheat flour, Chowmin, Maggi were common cereals used by them. Vegetable consumption was found to be very less. Fruit consumption was found to be almost nil. Non vegetarian food like Egg, Chicken, Fish were commonly taken by the girls i.e. twice / thrice per week. It was observed that 56% girls liked to eat spicy food 30% liked to eat fried food, 8% liked to eat roasted food & only 6% girls liked boiled food.

iii) Fast food

92% adolescent girls like fast food like Pizza, Berger, Maggi, Roll, Pastries, cake, Pattis etc. whereas only 8% did not like that. Out of 92%, 20% eat fast food daily, 62% weekly, and 10% monthly.

iv) Mean Nutrient in take of the respondents

The datas on mean nutrient intake of respondents showed that the intake of Calorie (15.2%), and fat (20.2%) were more than RDA whereas intake of Iron (16%), Vitamin C (6%) were less than RDA.

v) Anthropometric Measurements

In present study anthropometric measurements such as weight, height of the respondents were taken. The mean and standard deviation of all the measurements were calculated. The results obtained are expressed as follows:-

1. Weight

Weight is the simplest measurement of growth and nutritional status.

Mean weights of 16-20 years adolescents girls is shown in table no. 1

Table No.1 : Distribution of the adolescents girls according to weight

SI No.	Age	Mean weight in Kg	Reference weights	Percentage of Deficiency
1.	16 years	47.36 □ 11.61	55.9	84.72
2.	17 years	45.63 □ 5.96	56.7	80.48
3.	18 years	49 □ 5.56	56.8	86.27
4.	19 years	51.22 □ 13.04	56.8	90.18
5.	20 years	49.87 □ 12.56	56.8	87.00

It was observed from the above table that actual mean weight of adolescent girls was less than the reference weight of NCHS standard in all the age groups. However the

percentage of deficiency was found to be more in the age group of 17 i.e. 20% whereas it was less in the age group of 19 which was 10% of the NCHS students

2. Height

Table No. 2 : Distribution of the adolescents girls according to height.

SI.No.	Age	Mean Height of girls	Reference heights NCHs in cm	Percentage of Deficiency
1.	16	154.89□5.66	162.4	95.3%
2.	17	157.66□3.31	163.1	96.7%
3.	18	157.11□6.27	163.7	96.0%
4.	19	158.157□4.06	163.7	96.6%
5.	20	159.67□12.63	163.7	97.5%

The above Table shows that the mean height of girls was less than the NCHS standard irrespective of all the age groups and the percentage of deficiency was found to be

more in the age group of 16 years girls i.e. 4.7% less in the age group of 20 years i.e. 3.5 % of the NCHS standard.

3. Body Mass Index (BMI)

The body mass index (BMI) is a measure for human body shape based on individuals

weight and height. It is defined as the individuals body weight divided by the square of their height. The unit of measure of BMI is Kg/m².

Table 3 : Distribution of adolescent girls according to BMI is shown Table No.3

Sl. No.	Class	Number	%
1	<16.0 (chronic energy deficiency-grade3)	12	6%
2.	16.0-17.0 (chronic energy deficiency -grade-2)	-	-
3.	17.0-18.5 (Chronic energy deficiency-grade-1)	32	16%
4.	18.5-20.0 low weight	2	2%
5.	20.0-25.0 Normal	124	62%
6.	25.0-30.0 obese-grade-1	24	12%
7.	>30 obese- grade-2	4	2%
		200	100%

Table No. 3 shows the BMI of the adolescent girls. It was observed that majority of the adolescent girls (62%) having normal BMI, 16% girls having chronic energy, deficiency

grade - 1, 6% girls having chronic energy deficiency grade - 3, 2% girls having low weight and other 12% girls belonged to obese grade-1, 2% girls belonged obese grade-2.

Table No.4 :Clinical assessment

SI No.	Number	Total
1.	face	
	Pimple	24 12%
	Patches	4 2%
	Normal	172 86%
2.	Hair	
	Easily plucked	24 12%
	Dry and sparse	24 12%
	Normal	152 76%
3.	Skin	
	Dry	28 14%
	Pallor	
	Normal	172 86%

Table No. 4 shows that 86% adolescents girls having normal face, 12% girls having pimples and only 2% girls having patches.

76% adolescent girls were having normal hair, 12% having dry and sparse hair & other 12% having easily plucked hair.

It is seen that 86% adolescent girls having normal skin and 14% adolescents girls having dry skin.

5. Health Problem

Table No. 5 : Distribution of the adolescent girls according to health problems is shown table No. 5

SI No.	Health problem	Number	Percentage
1	Edema	16	8%
2.	Joint pain	36	18%
3.	Muscle pain	44	22%
4.	Period problem	80	40%
5.	Normal	24	12%

Table No.5 shows that the majority of the 40% adolescent girls having period problem, 22% having muscle pain, 18% having joint pain, and only 8% having edema.

Conclusion

All of us know that fast food is unimportant for our body and considered as harsh food as they are high in fat, sugar & salt components. But teenagers like to take junk food out of fantasies which ultimately creates health problem like obesity, diabetes, hypertension and cardiac problem as well as anaemia. Adolescence is the most dynamic period of human life as all sorts of development and changes take place during this period. But specially food habits of college going girls include tendency to skip meals, consumption of fast food like candies, ice cream, pasta, pizza etc. & serious dieting place them in dietary & nutritional risk.

Therefore the present research is designed to study the Health status of college going adolescent girls and fast food in Bhubaneswar City.

Two hundred college going adolescent girls were selected at random between the age group of 16 - 20 years. Nuclear family system was found to be more prevalent and majority girls (78%) belonged to general caste. It was interesting to note that majority of the parents were highly educated and 93.8% fathers were working in private sectors, only 20% girls belonged to low income group family.

Majority of the respondent relish (68%) non - vegetarian food. Taking four meals per day was found to be common. Parboiled rice, wheat flour, Chawmin were common cereals used by them. Vegetable consumption was found to be very less and fruit consumption was found to be almost

nil. Most of the girls like spicy food. 92% adolescent girls liked to eat fast food and 20% of them took fast food daily. Calorie & fat intake of respondents was found to be more than RDA. 58% girls skip meals to maintain their body & 33% girls do yoga to keep themselves fit & exercise regularly. Datas on anthropometric measurements of girls shows that actual mean height and weight of the girls was less than the NCHS standard in all the age groups. Studies of BMI of adolescent girls showed that 62% girls were having normal weight, 16% girls showed chronic energy deficiency grade -

1 and 12% girls belonged to obese - grade - 1 category. Health problem like periods problem (40%) joint pain, muscle pain, pimples, easily plucked hair was found to be most common among the girls.

Thus it could be suggested that special health camps should be organised for the college going girls and they should be educated regarding the nutritive value of different food stuffs and their effect in future. 'Say no to fast food and accept balance food' should be the slogan for the adolescent girls - the future mothers of the nation.

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Assessment of Growth of Children by Anthropometry

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Abstract

A longitudinal study was conducted among 102 children up to the age of 2 years in rural areas of Jagatsinghpur district to determine their nutritional status and some factors like socio-economic status and supplementary feeding and morbidity etc. in order to observe the growth status of 0-2 years children. It was observed that the mean weight of study children showed lower value at different ages as compared to 50th percentile of World Health Organization (WHO) standard and higher to Indian Council of Medical Research (ICMR) standard. Growth faltering started after 6 months of age and decreased after 18 months. Though the mean weight doubled their birth weight at 6 months of age but did not show 4 times at the age of 2 years. Maximum malnourished children belonged to lower socio economic group(48.4%) where as maximum normal children belonged to middle (85.7%) followed by high SES (71.4%). Nutritional status of children depends on feeding practices. Prevalence of malnutrition was more in early and optimum age of introducing supplementary feeding.

Key words: Malnutrition, Nutritional status, feeding practice, morbidity, ICDS, Socio- economic status (SES)

Introduction

Children are the wealth of the nation, being the future human resources of a country. Adequate nutrition is one of the fundamental rights, which a child demands from the society. No other disease compares in importance with Protein-energy-Malnutrition (PEM) in the field of nutrition on public health in general. It stunts the mental & physical growth of one in three children in the developing world. Protein-energy-

malnutrition is a factor in one third of the 13 million under fives deaths each year worldwide (UNICEF, 1994)

Malnutrition affects 2/3rd of under five children due to faulty feeding practices which starts from 6 months to 18 months of life. About 70% of infants are not provided with additional solid food when it is nutritionally required. So even at the age of 1 year the infants remains partially starved (Dhaneswari, 1997) exclusively mother's milk

protects considerably from diarrhoeal diseases and respiratory tract infections. The protective effect of mother's milk gets reduced when it gets coupled with other hygienically prepared food supplements. Therefore, exclusively mother's milk is ideal nutrition for the 1st 6 months of birth. Once the child becomes the victim of PEM it is very difficult in his/ her part to come out of the vicious cycle & the child is vulnerable at the time of weaning (UNICEF,1990)

In our country with poverty, population explosion, low female literacy rate & environmental degradation, PEM contributes majority to infant & under-five mortality.

With the above facts in mind the present study was undertaken to determine the prevalence of PEM in children under 2 years of age & its statistical relationship with SES feeding habits, morbidity, which is the key factors of child mortality, and morbidity.

Materials and Methods

The study was carried out in Biridi block of Jagatsinghpur district where 121 Anganwadi centers are functioning. Out of 121 AWCs, 18 AWCs were selected on the basis of simple random sampling techniques. From 18 AWCs, 120 new born were registered within 4 months period. Subsequently, 18 infants were dropped out due to death (3) migration (12) & parents unwillingness of taking weight measurements of their children (4). Finally 102 children were considered for taking observations from birth to 2 years of age. The tools in this study were predesigned & pre tested interview schedule & weight measurement was taken with the help of salter weighing machine. General information

concerning the children under study subjects were obtained by interviewing mothers only, the weight, feeding pattern, morbidity status were recorded at one months interval. As the study has been conducted in an ICDS block, classification of children into different grades of malnutrition were done by using ICDS growth chart. Further weight was expressed as per percentage of 50th centile weights as per WHO standard (WHO,1983).

Results and discussions

The overall mean weight of male children was slightly higher than that of female children from 0-24 months (Table-I). Though the children doubled their birth weight at 6 months irrespective to sex should trebling at one year of age and did not show four times at the age of two years. It was found that growth faltering started after 6 months of age in both the cases. But the mean weight at 3,6,9,12 and 24 months of age of both male and female children were higher side in comparison to ICMR standard (1984). Similar trend was observed by *Leela et al* (1990) that beyond 5 months there was a faltering in the weight curve while the infants doubled their birth weight at 4 months they did not show a trebling even at the age of 1 year.

Limited impact of ICDS on the nutritional status of infants was evidenced in the present investigations (Table-II). The overall growth pattern of infants in the ICDS block remained unsatisfactory particularly in the later part of infancy (*Kumar et al,1997*). Unlike pre school children, there is no provision of appropriate weaning food for infants in the ICDS. Therefore, these infants remain excluded from the scope of Nutrition Intervention Programme.

Malnutrition prevents worldwide ranging from 14.5% in developing countries to 50.0% in least developed countries (World Health Report 1996). By incidence (spell) rate increased with increased in prevalence of malnutrition of the study children (Table III). Maximum incidence (Spell) rate of 10.3 times diarrhoea was observed in children with Grade IV malnutrition followed by Grade III(10.0), Grade II(8.9) and Grade I(8.2). Other diseases like fever, vomiting and constipation etc were found to be 1.4 in case of normal children whereas increased rate

was observed in case of malnourished 2.7. Maximum malnourished children belong to lower SES (48.4%) whereas maximum normal children belong to middle (85.77%) followed by high SES (71.4%). Table-5 showed that the prevalence of malnutrition in early was more (60.0%) and late (51.6%) introduction of supplementary feeding .The highest incidence among them may be due to too little or too much of food which was itself a risk factor for children to adjust under nourished in more exposure to diarrheal diseases.

Table-I Mean weight (Kg) of children up to 2 years of age

Age in month	Mean weight of male children	ICMR standard	WHO standard	Mean weight of female children	ICMR standard	WHO
Birth	2.7±0.2	-	3.3	2.6±0.2	-	3.2
3	4.7±0.6	4.5	6.0	4.6±0.3	4.2	5.4
6	6.0±0.6	5.7	7.8	6.0±0.6	5.6	7.2
9	7.1±0.8	6.9	9.2	7.1±0.7	6.2	8.6
12	8.0±0.9	8.4	10.2	8.0±0.9	7.8	9.5
24	10.2±1.0	11.1	12.6	10.0±1.0	9.6	11.5

Table-II Nutritional status of children as per ICDS growth chart

Age in month	Normal	Malnourished				Subtotal
		Grade-I	Grade-II	Grade-III	Grade-IV	
3	83(81.4)	16 (15.7)	2(1.9)	1(0.9)	-	19(18.6)
6	62 (60.8)	29(28.4)	8(7.8)	3(2.9)	-	40(39.2)
9	55 (53.9)	29(28.4)	13(12.7)	3(2.9)	2(1.9)	47(46.1)
12	56 (54.9)	26.(25.5)	15(14.7)	3(2.9)	2(1.9)	46(45.1)
15	58 (56.9)	29(28.4)	8(7.8)	5(4.9)	2(1.9)	44(43.1)
18	57 (55.9)	28(27.5)	11(10.8)	3(2.9)	3(2.9)	45(44.1)
21	60 (58.8)	26(25.5)	11(10.8)	2(1.9)	3(2.9)	42(41.2)
24	66 (64.7)	20(19.6)	10(9.8)	2(1.9)	4(3.9)	36(35.3)

X--2=24.17 Significant at 5% level.

Table III: morbidity (spell) rate & nutritional status at two years of age.

Nutritional status	Diarrhoea	Cold	Skin disease	Measles	Other diseases
Normal (n=66)	5.3	4.9	0.8	0.06	1.4
	Malnourished				
Grade-I (n=20)	8.6	5.8	1.1	0.2	1.7
Grade-II (n=10)	8.9	6.1	1.1	0.4	2.2
Grade-III (n=2)	10.0	6.0	2.5	0.5	2.5
Grade-IV (n=4)	10.3	6.2	3.7	0.7	2.7
Total	8.5	5.8	1.8	0.37	2.1

Table-IV: Nutritional status of children in relation to SES at two years of age

Socioeconomic status	Nutritional status					Normal
	Grade-I	Grade-II	Grade-III	Grade-IV	Subtotal	
High (n=7)	2 (28.6)	-	-	-	2 (28.6)	5 (71.4)
Middle (n=33)	5 (14.3)	-	-	-	5 (14.3)	30 (85.7)
Low (n=60)	13 (21.7)	10 (16.7)	2 (3.3)	4 (6.7)	29 (48.4)	31 (51.7)
N=102	20 (19.6)	10 (9.8)	2 (1.9)	4 (3.9)	36 (35.3)	66 (64.7)

Figures in the parenthesis indicate the percentage value

c2 =14.28**: ** Significant at 1% level

Note: For computation of c2 only normal and total malnourished children were taken into account.

Table-V: Nutritional status at two years of age and supplementary feeding

Supplementary feeding	Nutritional status					Normal
	Grade-I	Grade-II	Malnourished		Subtotal	
			Grade-III	Grade-IV		
Early (n=24) (3 months)	5 (20.8)	4 (16.7)	-	3 (12.5)	12 (50.0)	12 (50.0)
Optimum (n=47) (4-6 months)	3 (6.4)	4 (8.5)	1 (2.1)	-	8 (17.0)	39 (83.0)
Late (n=31) (>6 months)	12 (38.7)	2 (16.5)	1 (3.2)	1 (3.2)	16 (51.6)	15 (48.4)
Total	20 (19.6)	10 (9.6)	2 (1.9)	4 (3.9)	36 (35.3)	66 (64.7)

Figures in the parenthesis indicate the percentage value
 $\chi^2=12.8^{**}$: ** Significant at 1% level

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Effect of Technological Intervention on yield and Economics of Taro

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Abstract

Taro (*Colocasia esculenta* L.) is mostly grown in Odisha, Andhra Pradesh, Tamilnadu, Kerala and Madhya Pradesh. In Odisha, taro root is known as *saru*. Dishes made of taro include *saru besara* (taro in mustard and garlic paste). It is also an indispensable ingredient in preparing the heart of Oriya cuisine, the *dalma*, where vegetables are cooked with dal. Taro is grown in India in an area of 51,724 ha producing 810995 t with a productivity of 15.68 t ha⁻¹ during 2009-10. Taro is a popular vegetable in Mayurbhanj district. The climate of the district is also suitable for the crop. This is mostly grown in the soil rich in organic matter. It is nutritious and contains 11.6gm of protein, 6.3gms of minerals, 78.5gms of carbohydrate per 100gm of dry weight basis. Farmers mostly grow local varieties of Taro which are affected by leaf blight (*Phytophthora colocasiae*) resulting lower yield. Muktakeshi variety of Taro being a high yielding variety and tolerant to leaf blight disease was included in the Front Line Demonstration (FLD).

Key Words: *Technological Intervention, Taro*

Introduction

FLD is an introduction by the Indian Council of Agricultural Research, New Delhi with inception of technology Mission on different crops. The field demonstrations are usually conducted under the close supervision of the scientists. The basic objectives of FLD are to spread the recent new technologies speedily to extension functionaries and local farmers with latest developments. Frontline demonstrations on Taro had been conducted

in all the districts of Odisha and particularly in tribal community.

Objective

A study was therefore designed to assess its effect on yield and economics of Taro particularly in Mayurbhanj district of Odisha.

Materials and Methods

Front line Demonstrations of Muktakeshi variety of Taro was conducted by Krishi Vigyan Kendra, Mayurbhanj, Odisha in the

fields of 10 farmers of Badasahi, Kaptipada and Shyamakhunta blocks each of 0.005 ha during *khariif* 2011. The components under demonstration of Frontier technologies in Taro are introduction of improved variety Muktakeshi, use of balanced dose of fertilizers @ 80:60:80 N:P₂O₅:K₂O per ha and use of *Trichoderma viridi* @ 5 g/kg of seed as seed treatment against fungal disease. Taro was planted by using corms in between 25th May to 10th June 2011 at a distance of 60 x 30cm in all the 10 locations. The soil type in all the location was sandy loam with average organic carbon content (g kg⁻¹) of the soil is 5.3. One control plot was also kept by the side of the demonstration plot where farmer's practices were carried out. All the production technologies other than

observations were applied in similar manner both in demonstration and farmer's practices. Evaluation was made with focus group discussions, field days, training programmes during crop harvesting and collecting information from individual farmer to assess the impact of the technological interventions on productivity and yield economics. All the 10 farmers were involved in the evaluation process.

Results and Discussion

Demonstrations were conducted on frontier technologies on the interventions assessed through participating approach. Various technological interventions undertaken during Kharif 2011 have been reflected in Table-1.

Table – 1 : Technological Intervention and Farmers Practices on Taro.

Sl	Component	Technological intervention	Farmer's Practice
1	Variety	Muktakeshi	Local
2	Seed treatment	<i>Trichoderma viridi</i> @ 5 g/kg of seed	No seed treatment
3	Fertilizer dose	80:60:80 kg N:P ₂ O ₅ :K ₂ O /ha	80:30:30 kg N:P ₂ O ₅ :K ₂ O /ha

Muktakeshi, released by Regional Centre, CTCRI (ICAR), Bhubaneswar had the production potentialities, tolerant to leaf blight disease. *Trichoderma Viridi*, a bio-fungicide had been introduced as seed treatment @ 5 g/kg of seed. Similarly fertilizer does of 80:60:80 kg N:P₂O₅:K₂O per ha were applied in band at a depth of 2-3 cm on either side of the lines. There was good rainfall from June to September 2011 (June-134.3 mm, July-189.0 mm, August-158.2 mm, September-236.7 mm) crop was irrigated once/twice

after cessation of rainfall during October 2011 as the requirement of most of the critical period of moisture in Taro. Cropping is in the 1st 5 months of planting. These were the important interventions obtained through participating discussion and as perceived important by the farmers. Other management practices followed on both demonstration and control plots were (Table-2) – Seed rate, sowing method, weed management and PP-measures.

Table – 2 : General Production Technologies applied

Sl No	Technology	Specification
1	Seed rate	1000 kg per ha
2	Line sowing	60 x 30cm
3	Weed management	3 hand weedings at 30,60 & 90 days after planting
4	Plant protection	One spray with imidacloprid against aphid infestation

The crop was sown in line with the spacing of row to row 60cm and plant to plant 30cm. Three hand weeding at 30, 60 and 90 days after planting had been demonstrated. Spraying of imidacloprid (1ml/10 lit water) was found very effective against aphids. All these practices were followed both in demonstration and controlled plots. Sufficient moisture was available in the soil during maximum vegetative growth and leaf

production period. However, a short term drought was supplemented by irrigation during the crop season. The crop was not affected by leaf blight. Even during cloudy condition with intermittent rains, the disease was not seen in the field. There was no major insect pest seen in the crop excepting aphids. The growth and yield attributes have been analyzed and presented in Table-3.

Table – 3 : Growth and Yield attributes

Sl	Interventions	No of corms/ cormels	Size of the corm (gm)
1	Technological intervention	03	67
2	Farmer's practice	03	54

Results obtained during the period Kharif 2011 have been analyzed and presented in Table 4

Table - 4 : Results on the Front Line Demonstration

Sl	Farmer's name	Area (ha)	Average yield (t/ha) Technological intervention through Front Line Demonstration (FLD)	Farmers Practice (FP)	Increase in yield over Farmer's Practice (%)
1	Prashanta Mohanta	0.005	11.4	7.6	50.0
2	Sushanta Mohanta	0.005	9.9	9.6	3.1
3	Ratikanta Mattaraj	0.005	10.3	7.7	33.8
4	Ranjan Sahu	0.005	12.1	7.0	72.9
5	Krupasindhu Sethy	0.005	12.6	9.9	27.3

6	Nityananda Bindhani	0.005	11.7	9.8	19.4
7	Paban Naik	0.005	11.8	8.9	32.6
8	Arjun Behera	0.005	11.6	9.4	23.4
9	Nityananda Das	0.005	11.0	8.4	31.0
10	Arjun Behera	0.005	12.9	9.7	33.0
Total Average		0.005	11.5	8.8	30.7

The crop was harvested where most of the leaves begin to turn yellow in between 15th December to 16th December 2011 (7 months). The average duration of the crop was 211 days. The farmers could have harvested the crop at least 10-12 days before actual harvesting. This delay of 10-12 days was done looking to the market price.

It can be seen from the Table-4 that the yield range was 9.9-12.9 t/ha with an average yield of 11.5 t/ha in the Front Line Demonstration (FLD) plots as compared to yield range of 7.0-9.9t/ha with an average yield of 8.8t/ha as Farmer's practice (FP). The results revealed that 30.7% higher yield obtained over

Farmer's Practice (FP). The findings therefore conclude that technological intervention of variety Muktakeshi, seed treatment with Trichoderma Viridi and soil test based fertilizer application found to increase the productivity of Taro on an average by 30.7%. As compared to farmer's practice. It is concluded that these three interventions are the important factors of production technology in taro.

The economic analysis, cost of cultivation, gross return, B:C ratio of the demonstrated plot and Farmer's Practice (FP) are given below in the Table-5.

Table- 5 : Economic analysis of the Front Line Demonstration

Front line Demonstration Plots (Rs/ha)				Farmer's Practice (Rs/ha)			B:C ratio	Excess expenditure over farmer's practice (Rs/ha)	Effective gain (Rs/ha)
Expenditure	Return	Profit	B:C ratio	Expenditure	Return	Profit			
31000/-	69,180/-	38,180/-	2:23	26,000/-	52800/-	26800/-	2:0	5000/-	16300/-

*Taro farm gate sale price Rs 6/kg

The economic analysis presented in the Table-5 revealed that highest effective gain under demonstration plot was Rs.16,380/- and excess expenditure over Farmer's practice

was Rs.5,000/-. Profit recorded Rs.38,180/- in front line demonstration plot whereas it was Rs.26,180/- in Farmer's practice.

Sufficient interactions were also made with the farmers to enlist the constraints faced in Taro cultivation. The important constraints identified on priority were –

1. Non-availability of quality planting materials in time.
2. High cost and non-availability of potassium fertilizers.
3. Heavy weed infestation.
4. Severe infestation of pest and diseases.

The Front Line Demonstration (FLD) therefore conclude that the technological interventions i.e. introduction of improved variety of Muktakeshi, maintaining desired plant population (spacing of 60x30 cm), timely

weed management (weeding at 30,60 & 90 days after planting), use of soil test based fertilizer application (80:60:80 kg N:P₂O₅:K₂O per ha), seed treatment with *Trichoderma viridi* (@ 5 g/kg seed) and control of aphids resulted in getting higher yield and income. The extension system requires to assess the technological interventions through participatory approach, ensure availability of essential inputs, establish relationship with farmers and conduct demonstration with need based extension support so that the farmers will develop confidence with the technology and continuously adopt this practice and increase production, productivity and income.

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“Dietary Management of Diabetes Patients – A study in Bhubaneswar City”

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ABSTRACT

The prevalence of diabetes has been increased dramatically during the last 20 years in many parts of the world and the disease is now a world wide public health problem. It is a disorder which can never be cured but can only be under control with the proper maintenance of a balanced and healthy diet. Keeping these facts in mind the present research is designed to study the **“Dietary Management of Diabetes Patients – A study in Bhubaneswar City”**. One hundred diabetes patients of different age groups were selected randomly from KIDS (Kanungo Institute of Diabetes Specialites, Bhubaneswar). Questionnaire cum interview method was adopted for collection of data. The result of the present study reveals that majority of patients were male (62%) belonging to the age group of 50-70 years and having high Income level and engaged in sedentary work. BMI of the patients showed that 30% of them were obese Grade-I, 50% of them in obese Grade-II and only 2% of them were in chronic energy deficiency Grade-I. Majority (84%) of the respondents were having family history of diabetes and all the patient were showing different types of symptoms of the disease. 80% of the them were health conscious and did regular health check up. 68% of the patients were doing regular eye check up, 38% check their feet regularly and 92% respondents obey doctor’s advice regarding diet. It was observed that 78% patients were non-vegetarian & 48% of them consumed tea and coffee and 26% consumed alcohol and 16% consumed cigarette. Before knowing the onset of disease 56% respondents were taking heavy rich food / fast food, 24% spicy food and 14% too much sweets. But after knowing about their disease condition most of them consulted doctor immediately and followed doctor’s advice. 38% and 26% respondents were gaining knowledge about diabetes from friends and from television respectively. But it was observed that 56% of the respondents satisfied with dietary restriction where as 44% were unsatisfied with their dietary restriction. Though advised by the Physician to restrict the diet, still large number of patients (78%) could not control their temptation and used to take sweets, cakes, calorie rich foods on various occasions and parties. However majority of the respondents (88%) believed that nutritional intervention is the main strategy for controlling diabetes.

Key Words : *Diabetes mellitus, BMI, Food Habits, Nutritional Intervention, WHO*

During the last twenty years, prevalence of diabetes has increased dramatically in many parts of the world and the disease is now a world wide public health problem. Diabetes often referred by Doctors as diabetes mellitus, describe a group of metabolic diseases in which the person has high blood glucose (blood Sugar), either because insulin production is inadequate or because the body's cells do not respond properly to insulin, or both. Patients with high blood sugar will typically experience polyuria (frequent urination), they will become increasingly thirsty (polydipsia) and hungry (polyphagia). There are three types of diabetes 1. Type 1 diabetes, 2. Type 2 diabetes, 3. Gestational diabetes. People can often have diabetes and be completely unaware. However the earlier the diabetes is diagnosed the greater the chances are that serious complication, which can result from having diabetes can be avoided. Diabetes is no longer a dreaded disease. A well managed diabetes has a life expectancy. Thus mild to moderate diabetes mellitus can be controlled by nutritional intervention and exercise.

Objectives

- To study the demographic profile of the respondents.
- To assess the BMI of the respondents.
- To assess the nutritional status of the respondents.
- To know the dietary practices of the respondents.
- To know the health problems of the respondents.

Materials and Methods

- The topic was selected because now a day's diabetes is a very common and serious metabolic disorder.
- Selection of Study area – Selection of Study area is Kanungo Institute of Diabetes Specialties, Bhubaneswar.
- Selection of Sample – The sample size is 100 respondents, from different areas of Bhubaneswar and outside of Bhubaneswar.
- Selection of Methods of Study- Datas were collected by random purposive sampling method.
- Source of Data collection- The researcher has collected the maximum data from field source.

Tools and techniques of data collection – From various tools of data collection such as questionnaires, case study interview schedule, the researcher had taken interview schedule technique for collection of data.

- Analysis of Data - Data collected was tabulated and appropriate statistical measures were adopted to analyse the data.

Result and Discussion

The results of the present study are discussed below:

1. Demographic Profile - It was observed that majority of the patients were male (62%) and belonged to the age group of 50-70 years i.e 60% , 90% of the patients were Hindu by religion and staying in urban areas (66%), 24% patients belonged to 5000 – 10000 income group where as 30% patients belonged to 10,000 to 30000 and 46% patients

belonged to high income group i.e 30,000 and above per month. 84% respondents had family history of diabetes.

Table - I : Daily activity of diabetes patients

Sl. No.	Daily Activity	No. of respondents	Percentage
1.	Sedentary	62	62%
2.	Moderate	28	28%
3.	Heavy	10	10%
Total		100	100%

Table No. 1 indicates the daily activity of diabetes patients .10% of patients are doing heavy work, 28% are doing moderate work

and the rest 62% of patients are engaged in sedentary work.

2.BMI of the Respondents

Table – II : BMI of the respondents

Sl. No.	BMI of the respondents	No. of respondents	Percentage
1.	Normal	18	18%
2.	Obese Grade-I	30	30%
3.	Obese Grade – II	50	50%
4.	Chronic energy deficiency grade-I (mild)	02	2%
Total		100	100%

Table No. II shows that the BMI of respondents are different from each other 18% of respondents had normal BMI , 30%

were obese grade - I and 50% were in obese grade-II and only 2% were chronic grade-I mild group.

3. Types of Diabetes

Table – III : Types of Diabetes

Sl. No.	Types of Diabetes	No. of respondents	Percentage
1.	Type –I	16	16%
2.	Type –II	30	30%
3.	Gestational	02	2%
4.	Not sure	52	52%
Total		100	100%

Table No. III reveals that 52% of the patients were not sure about which type of diabetes affect them 30% of the patient affected by

Type –II diabetes and 16% patient affected by Type-I diabetes and rest 2% of patients are affected by Gestational diabetes.

4. Symptoms of Diabetes

Table – IV : Major Symptoms of Diabetes

Sl. No.	Symptoms	No. of respondents	Percentage
1.	Polyuria	22	22%
2.	Polyphagia	14	14%
3.	Polydispsia	18	18%
4.	Weakness	44	44%
5.	Weight loss	12	12%
6.	Visual disturbance	10	10%
Total		100	100%

Table No. IV shows different symptoms of diabetes like Poly uria, polyphagia, Polydispsia, weakness, weightloss and visual

disturbance were found among the patients. 5. Diet of the patients.

Table –V : Diet before onset diabetes

Sl. No.	Diet before diabetes	No. of respondents	Percentage
1.	Too much sweets	14	14%
2.	Spicy food	24	24%
3.	Heavy rich food	36	36%
4.	Fast food	20	20%
5.	Soft drink /Ice-cream	06	6%
Total		100	100%

Table No. V shows that most of the patients were having preference for spicy food, rich food, fast food and too much sweets etc. This

shows that faulty food habits & irregular diet were the main cause of onset of diabetes.

6.Food Habits

Table –VI: Food Habits

Sl. No.	Food intake	No. of respondents	Percentage
1.	Vegetarian	22	22%
2.	Non-vegetarian	78	78%
Total		100	100%

Table No. VI shows that 22% diabetes patients were vegetarian where as 78% were non vegetarian.

7.Advice given by the doctors

Table –VII : Suggestion given by the Doctor

Sl. No.	Suggestion	No. of respondents	Percentage
1.	Diet	24	24%
2.	Medicine	36	36%
3.	Exercise / Yoga	06	6%
4.	Hormone Therapy	02	2%
5.	Insulin	12	12%
6.	Regular Checkup	14	14%
7.	Rest	06	6%
Total		100	100%

Table No. VII reveals that 36% patients were taking medicine, 24% patients were taking proper diet advise by the doctor, 14% doing regular checkup , 12% were taking insulin regularly. . But it was observed that 56% of the respondents satisfied with dietary restriction where as 44% were unsatisfied

with their dietary restriction. Though advised by the Physician to restrict the diet, still large number of patients (78%) could not control their temptation and used to take sweets, cakes, calorie rich foods on various occasions and parties.

8.Nutritional Intervetion

Table –VIII : Nutritional Intervention

Sl. No.	Reaction	No. of respondents	Percentage
1.	Yes	88	88%
2.	No	12	12%
Total		100	100%

Table No. VIII indicates 88% patients believe that the main strategy for control of diabetes is nutritional intervention where as 12% give negative response.

CONCLUSION :

From this research the researcher came to the conclusion that diabetes is a metabolic disorder, which can never be cured but can only under control with the proper maintenance of a balanced and healthy diet. There is no other disease which calls for a greater thought on diet than diabetes. Thus the diet needs to be modified by a dietician according to the age, sex, economic status, social and religious background of the patient . Diabetes is disease which required proper care. It requires proper management, understanding and daily attention. It is suggested that awareness camp, regular health check-up information about the causes of diabetes would be an extending hand to the higher society. This initiation should be taken from grass root level to the higher

society by the Govt. and non government organization.

Suggestion and Recommendation :-

The patients should follow certain guidelines such as

- Carbohydrates - It is maintain up to 50% and avoid the monosaccharide and disacchariedes, such as sweets, chocolates and soft drinks.
- Protein- A good amount of dietary protein is required by the patient. It was also balance the carbohydrate need.
- Fat – Low fat is advisable for the patient and it should be 15-25% of the total calories.
- Dietary fiber- Dietary fiber is mainly responsible for weight control and lowering bold pressure.
- Eat as much natural foods as far as possible.
- Eat but not over eat.

- Avoid excessive salt and spices.
- Eat foods that contain carbohydrates, especially starch and fiber.
- Avoid foods that contain large amounts of cholesterol.
- Avoid same kind of foods all the time, eat a variety of foods.

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Functioning of Women Self Help Groups and Knowledge of the members

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ABSTRACT

Self Help Groups concept is not only concerned with economical progress but, all round development of the rural women. The study conducted with 160 members and 80 non-members of Women Self Help Groups from the four blocks of Kendrapara district in Odisha revealed that the groups were functioned casually and mainly concerned with membership fee. Adequate training and exposure are required on the concept, guidelines, benefits and record maintenance for a detailed understanding of the rural women towards sustainable functioning of the Women Self Help Groups.

Key words : Self Help Group, functioning, knowledge, rural women.

Introduction

Women Self Help Groups are mostly informal groups where the members pool savings as a thrift deposit. The groups have common perception of need and improvise towards collective activity. The group has to maintain simple records such as proceedings of the meeting, resolution passed, attendance of the registrars, stocks and store. The financial transactions related to savings, loans, income and expenditure need to be recorded in the books of accounts. The group members have to conduct meetings, discuss common problems, share information, plan solutions and make efforts for their improvements. Therefore, the members of the Women Self Help Groups should have knowledge and skill competency in sustainable functioning of the groups. A study therefore been designed to analyse the various aspects of the functioning of Women Self Help Groups.

Materials and Methods

The study was undertaken in Kendrapara district of Odisha during 2012. Forty Self Help Groups from the blocks of Aul, Derabis, Marshaghai and Mahakalapara were selected randomly. President, Secretary purposively and two members of the Self Help Groups were selected randomly making the sample size of 160. Besides; 80 rural women from the same study area were also selected randomly as non-member respondents for comparison. Knowledge about SHG, benefits, guidelines, record keeping, membership, meetings and discussions were selected as the variables. That data collected on scale point of strongly agree, agree and disagree over the framed statements were analysed with score value of 3, 2 and 1 respectively. Mean score, gap percent and multiple regression analysis were made to reveal the results.

Results and Discussion

Women Self Help Group Concept is not only concerned with economical progress but, around

development of the group members. Opinion of the respondents towards benefits of SHG (Table -1) revealed that.

Table – 1 : Opinion towards benefits of SHG

Sl. No.	Opinion	Mean Score (N = 180)		Gap Percentage (N = 80)	
		Mean Score	Gap (%)	Mean Score	Gap (%)
1.	Community welfare	1.19	60.33	0.63	79.00
2.	Income generation	2.92	2.67	1.86	38.00
3.	Social identify	1.95	35.00	1.25	58.33
4.	Personal empowerment	1.94	35.33	1.35	55.00
5.	Compulsion	0.34	88.67	1.21	59.67
6.	Productive utilisation of leisure time	1.65	45.00	1.48	50.67

(Maximum Obtainable Score – 3)

The respondents had opined favourably towards income generation. Poor opinion observed on community welfare, social identity, personal empowerment and productive utilization of leisure time revealed that the respondents had not clear concept about Self Help Groups and suggested for further training and exposure.

The developmental organisations promoting Women Self Help Groups are taking all efforts to make clear understanding of the group members about various aspects of formation of the groups. Analysis of data in Table – 2 revealed that the respondents had

Table – 2 : Opinion about functioning of WSHG

Sl. No.	Opinion	Mean Score		Gap Percentage	
		Members (N = 160)	Non-members (N = 80)	Members	Non-members
1.	Memorandum and bye-law	1.08	1.03	64.00	65.67
2.	Membership fee	2.96	1.90	1.33	36.67
3.	Meeting details	2.51	1.35	16.33	55.00
4.	Vocational activities	1.73	1.58	42.33	47.33
5.	Record maintenance	1.18	0.82	60.67	72.67
6.	Accounting	1.39	0.69	53.67	77.00
7.	Report and return	1.29	0.15	57.00	95.00

(Maximum Obtainable Score – 3)

Good knowledge of meeting details and membership fee. The respondents had poor knowledge about memorandum and bye-laws, vocational activities, record maintenance, accounting, report and return which require further training and exposure.

A typical rural women's Self Help Group is a good example of capacity building for the prospective entrepreneurs. The aim includes enabling the members to become self dependant and self reliant by enhancing decision making capability of the members. It is therefore apprehended that the members have a clear understanding about the guidelines. But the findings of the study

Table – 3 : Opinion towards guidelines of SHG

Sl. No.	Opinion	Mean Score (N = 160)		Gap Percentage (N = 80)	
		Mean Score	Gap (%)	Mean Score	Gap (%)
1.	Concept of SHG	1.29	57.00	0.90	70.00
2.	Objectives of SHG	1.59	47.00	0.89	70.33
3.	Formation of SHG	2.58	14.00	1.56	48.00
4.	Functioning of SHG	1.58	47.33	0.98	67.33
5.	Credit mobilisation	1.50	50.00	0.82	72.67
6.	Selection of vocation	1.35	55.00	0.69	77.00

(Maximum Obtainable Score – 3)

indicated (Table– 3) that though the members had better knowledge than the non-members, but lacking adequate knowledge except formation of SHG. Further exposure are essentially required to enrich their knowledge on the concept, objectives, functioning, credit mobilization and selection of vocations for sustainable functioning of the Women Self Help Groups.

Record keeping is another important aspects of proper functioning of Women Self Help Groups. The group have to maintain various records for documenting various activities. As observed from Table-4, both the members and

Table – 4 : Opinion about record keeping

Sl. No.	Opinion	Mean Score (N = 160)		Gap Percentage (N = 80)	
		Mean Score	Gap (%)	Mean Score	Gap (%)
1.	Stock and store maintenance	1.42	52.67	0.85	71.67
2.	Meeting register	1.83	39.00	1.29	57.00
3.	Cash book	1.06	64.67	0.63	79.00
4.	Payment register	1.36	54.67	0.90	70.00
5.	Bank account	1.46	51.33	1.36	54.67
6.	Loan register	1.35	55.00	0.69	77.00
7.	Attendance register	1.73	42.33	1.42	52.67
8.	Audit of accounts	0.63	79.00	0.42	86.00

(Maximum Obtainable Score – 3)

non-members had poor knowledge about record keeping. Adequate training and exposure are further required to enrich their knowledge on the maintenance of stock store, meeting register, audit of accounts etc. for maintaining transparency in the record maintenance.

Group cohesiveness are very much required to create uniformities which facilitates common goals and similar view points. Each member therefore have competency in conducting meetings, resolve solutions on issues alongwith future course of action. The results obtained from the analysis of data (Table- 5) revealed that the

Table – 5 : Opinion towards conducting meeting

Sl. No.	Opinion	Mean Score (N = 160)		Gap Percentage (N = 80)	
		Mean Score	Gap (%)	Mean Score	Gap (%)
1.	Meeting conduct regularly	2.58	14.00	1.78	40.67
2.	Regular attendance of the members	2.03	32.33	1.25	58.33
3.	Documentation of the proceedings	1.47	51.00	0.83	
4.	Circulating proceedings to all concerned	0.21	93.00	0.08	
5.	Action taken on recoomendations	1.38	54.00	1.04	
6.	Assigning responsibility to each member	2.10	30.00	1.32	
7.	Action taken against members violating devisions	1.08	64.00	0.94	

(Maximum Obtainable Score – 3)

member respondents had better opinion of conducting meetings regularly, assigning responsibility to each member and regular attendance of the members. Poor opinions observed on documentation of the proceedings, circulating proceedings to all concerned and action taken on the recommendations required further exposure to realize the importance of documentation of the detail discussion in the meetings.

The primary purpose of Women Self Help Group is to facilitate the members to save and extend credit as necessary. Each member therefore have to subscribe membership fee regularly as decided by the group members. As observed from Table – 6, both the member and non-member respondents had better opinion towards fees decided on common agreement, collected fees reflected

Table – 6: Opinion towards discussion in the meeting

Sl. No.	Opinion	Mean Score (N = 160)		Gap Percentage (N = 80)	
		Mean Score	Gap (%)	Mean Score	Gap (%)
1.	Collection of membership fee	2.22	26.00	2.24	25.33
2.	Financial position	2.79	7.00	1.82	39.33
3.	Sanctioning loan to members	2.75	8.33	2.67	11.00
4.	Problems of the vocations	1.82	39.33	1.73	42.33
5.	Diversification to other vocations	1.88	37.33	1.70	43.33
6.	Social and education activities	1.40	53.33	1.29	57.00
7.	Family affairs	1.92	36.00	1.79	40.33
8.	Marketing of the produce	1.62	46.00	1.61	46.33
9.	Infrastructure development	1.47	51.00	0.96	68.00
10.	Community development	1.34	55.33	1.25	58.33
11.	Resource mobilisation	1.67	44.33	1.59	47.00
12.	Expansion of vocational activities	1.89	37.00	1.50	50.00

(Maximum Obtainable Score – 3)

in cash book and deposited in bank account regularly. However; the respondents have to be further exposed to realize the importance of voluntary contribution, revision of fees time to time as demanded, collection of fees with receipt and to some extent due consideration to genuine defaulters for the continuance of the functioning of Women Self Help Groups.

Each Women Self Help Groups have to state their objectives and frame rules for effective functioning. Such rules includes savings, lending, group meeting, penalty for any deviant behavior, selection and rotation of leader etc.

Table – 7 : Better opinion of the respondents towards functioning of SHG

Sl. No.	Opinion	Mean Score		Pooled mean score
		Member (N = 160)	Non-member (N = 80)	
1.	Income generation	2.92	2.67	2.80
2.	Sanctioning loan to members	2.75	2.67	2.71
3.	Collection of membership fee	2.96	1.90	2.43
4.	Collected fee reflected in cash book	2.51	2.18	2.35
5.	Membership fee decided on common agreement	2.55	2.12	2.34
6.	Discussion on financial position	2.79	1.82	2.31
7.	Collected fee deposited in bank regularly	2.42	2.18	2.30
8.	Conducting meeting regularly	2.58	1.78	2.18
9.	Formation of SHG	2.58	1.56	2.07
10.	Meeting details	2.51	1.35	1.93
11.	Fees collected regularly	2.09	1.70	1.90
12.	Assigning responsibility to each member	2.10	1.32	1.71
13.	Regular attendance of members	2.03	1.25	1.64

(Maximum Obtainable Score – 3)

The data collected on the discussions in the meeting revealed (Table – 7) that the respondents had better opinion on the discussions of collection of membership fee, financial position and sanctioning loan to members. Poor opinions observed toward discussions on the problems of vocational

activities, diversification to better vocations, social and educational activities, family affairs, marketing of the produce, infrastructure and community development, resource mobilisation as well as expansion of vocational activities may be due to their ignorance and further exposure required

taking in to account of the empowerment of the rural women.

Multiple regression analysis (Table-8) revealed that the best fitted regression equation could explain 43.5% of the total variance in increasing the knowledge level

of the respondents. Among the fourteen variables, education, extension contact and social participation could help in enhancement of the knowledge level which may be taken into consideration while organising rural women to form Self Help Groups.

Table –8 : Regression analysis of socio-economic variables influencing knowledge.

Sl. No.	Variable	Unstandardised co-efficient		Standardised coefficient		't' value	Probability
		Beta	Std. error	Beta	Std. error		
1.	Age	0.557	1.402	0.028	0.076	0.397	0.692
2.	Education	2.715	0.681	0.290	0.087	3.986	0.001
3.	Caste	0.207	0.835	0.018	0.073	0.249	0.804
4.	Family type	-1.594	1.576	-0.077	0.076	-1.012	0.313
5.	Family size	0.616	1.103	0.042	0.069	0.558	0.577
6.	House type	-0.743	1.128	-0.050	0.077	-0.659	0.511
7.	Occupation	0.087	0.285	0.022	0.082	0.350	0.760
8.	Holding size	-0.612	0.530	-0.084	0.068	-0.155	0.0250
9.	Communication materials	0.068	0.309	0.016	0.087	0.222	0.825
10.	Household articles	-0.040	0.104	-0.027	0.074	-0.380	0.704
11.	Social participation	1.421	0.684	0.145	0.104	2.077	0.039
12.	Cosmopoliteness	-0.024	0.904	-0.002	0.063	-0.026	0.979
13.	Extension contact	1.457	0.396	0.276	0.175	3.684	0.002
14.	Annual income	-0.153	0.558	-0.019	0.204	-0.273	0.785
		R ² -0.435	Adj. R ² -0.125	S.E. -8.728			

Conclusion

There are many success stories about the benefits of Women Self Help Groups. There are also many concerns about the future SHG movement in India towards women empowerment. The study revealed that the

Self Help Groups are functioning on casual basis without aims and objectives. Collection of membership fees were the only concern of the members. The members lacked knowledge on benefits of SHG, objectives, guidelines, record keeping and documentation of the proceedings of the meetings.

Deficiencies were also observed on various aspects of discussions in the meeting for empowerment of rural women. Education, extension contact and social participation could help in enhancement of the knowledge level which may be taken in to account while organizing rural women for Self Help Groups.

The findings of the study therefore suggested for adequate training and exposure of the rural women for a clear understanding of the concept of Self Help Groups while organising them towards formation of groups.

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Adoptability of a manual coconut dehusker

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Abstract

Coconut belongs to palm family grown in the coastal areas. Odisha is a major producer of coconut with 2.5 lakh metric ton from the area of 0.54 lakh metric ton. Dehusking of coconut is a most important job for marketing as well as consuming purpose. The coconuts are partially or may be fully husked. During the visit to three villages of Puri district it was observed that traditionally coconut dehusking is done by using tong, shythe and munna. Tong and shythe can be used by both male and female but munna can be operated by only man. During the operation they undergoes many problems and injuries for which they remain 5 to 60 days absent from the work leads to loss in their income. To reduce the injury a manually operated coconut dehusker was developed at OUAT which is demonstrated and compared with the traditional methods. Comparison was done by taking 62 healthy male and female workers with weight of 53 ± 5 kg and 45 ± 4 kg, height of 163 ± 11 and 158 ± 9 cm and BSA of 1.55 ± 0.03 m² and 1.4 ± 0.04 m². It was observed that cardiac cost of OUAT developed coconut dehusker was very low as compared to tong, shythe and munna. The working heart rate and energy expenditure rate was 118 beats/min and 10.1 kJ/min which is the lowest among four. The output capacity was highest in case of OUAT dehusker (205 nuts/h). During the operation with tong, shythe and munna, pain in different body parts is observed to be more. During field evaluation it was observed that 80 per cent female accepted the use of the dehusker. Female can do the job easily with the OUAT dehusker.

Key Words: *Manual coconut dehusker*

Introduction

The word coconut means the sitting sensation in the island paradise. To a more scientific mind, coconuts are known to belong the arecacea family also known as the palm family which is comprised of about 2500 species. India, Philippines, Srilanka are the major exporters of coconut in the world. The area under coconut cultivation in our country in the year 2011-2012 is around twenty lakh

hectare with productivity of 10736 kg of nuts per hectare. The leading coconut growers states are Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. The area coverage under coconut palm in our state Odisha stands to be 0.54 lakh hectare with an annual production of 2.5 lakh metric ton. Dehusking is the process of removing the outer covering called husk from the coconut to get two important commercial products such as copra

or dried kernel and fibre or coir. Copra yields oil and oil cake where as fibre produces carpets/mattresses and coir pith briquettes. Coconut shell obtained after dehusking is also a very useful industrial product to get coconut shell charcoal, activated carbon and coconut shell powder which have a good market value (Jacob and Bastian, 1998). Dehusking is therefore, an important operation for coconut processing industry. The coconuts reaching markets are either partially husked or dehusked as per demand and requirement in distant markets. Coconuts meant for distant market places are left with some fibres covering the eyes or on all around the nuts. Such partially husked coconut minimizes the breakage during transportation and attains longer keeping quality. It is also observed that even when coconuts are fully husked, a tuff of husk is left at the end of the nut over the eyes as it is considered to be auspicious and believed to preserve the nuts from spoilage. It has been reported that about 20 percent (a) of the total coconut produced in Odisha are consumed as tender nuts and 5 percent (b) are retained by the farmers for seed nut purposes (Anonymous, 2012). About 40 percent(c) of the coconut produced is consumed in the state itself and 35 percent(d) are exported to the other states like Bihar and Madhya Pradesh, Uttar Pradesh etc (Kumar and Kapoor, 2010), where cultivation of coconut is not favorable. Hence, dehusking of coconut needs to be done not only to increase the bulk density for easy transportation but also to progress quickly for industrial purposes (Ghosal *et al*, 2014). Mechanization of dehusking operation is needed in the state like Odisha as coconut is one of the most important plantation crops of the state.

The activity is traditionally carried out by the socio-economically backward communities who are minority in our society. With social status becoming a major concern in to-day world, the percentage of population taking up coconut dehusking as their means of living is steadily decreasing. The most frequently used dehusking method in the state is by the use of pointed metal spike, secured in the ground in a slightly slanting position, with the pointed ends upwards (Mishra and Sutar, 2010). The nuts are brought down with force on the spike, followed by twisting the husk. Care is taken for the desired entry of the sharp end of the spike into husk so as to avoid the damaging of shell. It is, therefore, clear that dehusking is a hard work, and may cause frequent injury to the operator.

Materials and methods

As one of the mandate the authors visited some coconut growing areas of Odisha and interacted with the coconut growers. From those areas three villages of Puri district (Munida, Baral, Bhaula) were selected for the study. They discussed about the work, equipments used for the operation, purpose for dehusking, problems during the operation, injury they are suffering etc. It was reported that the absent from work (Coconut dehusking) varies in the range of 5 to 60 days due to injury. While interacting with 62 workers (dehusker) it was noticed that every alternate worker had faced with minor/ major injury resulting laceration/ wound in hand, palm, thigh and chest. The bending posture they adopt during local method of dehusking is full of drudgeries. This job is not very popular as it is often difficult to find labour for this operation due to the every possibility

of accidents. Again if during the operation the hand or the body of the worker falls on the pointed spike or sharper iron shovel called “MUNNA” resulting accident which might inflict irreparable damage to him as well as his family as he might be the only bread earning member. It involves a lot of drudgery and needs precaution against injury. The average dehusking capacity is observed 60-70 nuts/h. Keeping this in view a study was conducted in three villages namely **Munida, Baral, Bhaula** of Puri district which are major producer of coconut. About 95% of people

of these villages are directly or indirectly engaged in coconut cultivation. They do marketing of both dehusked and husked coconut. It was observed that tong, shythe, munna are used for the dehusking coconuts. The coconut dehusker developed by OUAT was compared with the traditional methods of coconut dehusking with respect to physical and physiological parameters. The physiological parameters of selected subjects (N=62) is presented in Table-1.

Table-1: Physiological parameters of selected workers (N=62) for coconut dehusking

Sl No	Specification	Male		Female	
		Mean	SD	Mean	SD
1	Weight, kg	53	5	45	4
2	Height, cm	163	11	158	9
3	BSA, m ²	1.55	0.03	1.4	0.04
4	HR _{rest} , beats/min	75	4	71	3
5	VO _{2rest} , l/min	0.65	0.05	0.6	0.03
6	HR _{max} , beats/min	123	6	120	7
7	VO _{2max} , l/min	0.83	0.03	0.81	0.02
8	PI, kg/m ³	12.23	0.11	11.4	0.24
9	Experience in coconut dehusking years	8	5	4	3

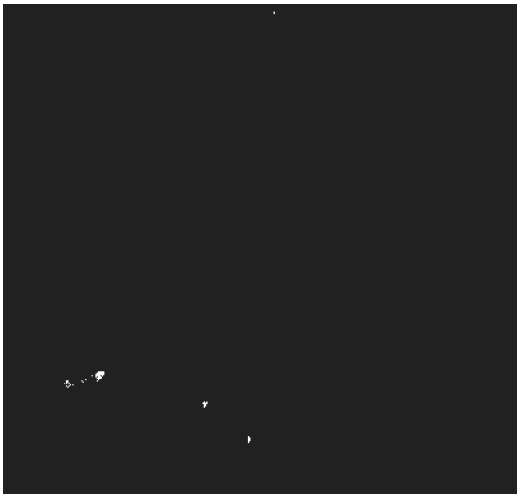
Results and discussion

It is observed that the workers use tong in sitting position, shythe in both sitting and squatting posture and munna in standing posture. OUAT dehusker can be operated both in sitting and standing posture. Cardiac cost required to operate with tong is less than munna and shythe and least cardiac cost is

required while operating with the OUAT dehusker due to presence of the handle. While operating with the tong the worker gets some time to rest and the speed of operation is less. To operate the shythe large cardiac cost is required and the worker has to apply frequently on the coconut. So more energy is required for the operation. At the time of working with munna the workers required

higher cardiac cost and they do the job in a competitive manner. So more energy is required for the operation. For the operation of the OUAT coconut dehusker energy expenditure is less. The working heart rate and energy expenditure for the operation are observed to be 122, 125, 132, 118 beats/min and 10.7, 11.2, 12.3, 10.1 kJ/min in case of tong, shythe, munna and OUAT developed coconut dehusker respectively. Similarly the dehusking capacity of tong, shythe, munna and OUAT ESA dehusker are found to be

41, 65, 163 and 205 nuts/h respectively. During the operation the workers suffered from some body parts discomfort and pain. They undergoes pain in hands, palms, fingers, arms while operating in sitting posture, pain in thigh, legs during the operation in squatting posture and in standing posture neck shoulder, lower back, thigh, leg undergoes severe pain because they work in bending posture for long hours continuously without taking rest while dehusking with munna (Halim and Omar, 2011).



Dehusking with shythe



Dehusking with coconut dehusker (standing type)



Dehusking with munna



Dehusking with coconut dehusker (standing type)

Table-2: Physiological parameters of coconut dehusker

	Tong		Shythe		Munna		ESA	
	Mean	SD	Mean	SD	Mean	SD	MEAN	SD
WHR (beats/min)	122	6.4	125	7.3	132	8.2	118	4.4
OCRC (l/min)	0.52	0.06	0.54	0.07	0.59	0.03	0.5	0.03
EER (kJ/min)	10.7	0.8	11.2	1.1	12.3	1.2	10.1	0.9
Capacity (nuts/h)	41	5	65	10	163	13	205	18
Postural adopt	sitting		sitting/ standing		Standing		standing/ sitting	
Body parts feeling discomfort	Both hand arms, palms, fingers, elbow,		Right upper arm, palms, fingers, thigh, leg		Neck, both hands, shoulder, back, both thigh and legs		Neck, both hands, shoulder, thigh and legs	

During the demonstration programme 213 workers (both male and female) of three villages were trained to use the dehusker. Among those workers some of them

accepted and some have not accepted the use of the dehusker. Adoptability of the workers were observed and listed in the table 3.

Table 3: Adoptability/ Ouat developed coconut dehusker

	Munida (N=85)		Baral (N=67)		Bhaura (N=61)		Total (N=213)	
	M	F	M	F	M	F	M	F
Operated	51	34	36	31	37	24	124	89
Adoption	39	31	29	27	32	19	100	77
% of adoption	76.4	91.2	80.6	87	86.5	79.2	80.6	86

It was observed that among the workers 76.4 per cent male and 91.2 per cent female of Munida village accepted the use of the Ouat developed coconut dehusker. From Baral village 80.6 per cent male and 87 per cent female accepted the use of the dehusker. Similarly 86.5 per cent male and 79.2 per cent female accepted the use of the dehusker from

Bhaura. On the whole 80.6 per cent male and 86 percent female workers appreciated and they were satisfied with the coconut dehusker. Traditional methods of dehusking (tong, shythe, munna) lead to injury very often. In the villages female workers only use tong and sometimes shythe. But they cannot use munna. Male workers use munna due to

high capacity than shythe and tong. But they suffer many injuries during the operation with munna because of bending forward while working with a munna as there is every chance of falling on the cutting tool. They operate this in a competitive manner. Generally coconut contains 10-15 percent moisture content at the time of dehusking. But sometimes coconut containing 7-8 percent moisture content also dehusked which generally becomes slippery and causes accidents. At the time of dehusking with shythe accident occurs due to unconsciousness and slip of the shythe. But OUAT coconut dehusker prevents all these accidents. It requires less cardiac cost due to presence of the handle. It prevents slip on the ground due to presence of its pegs/nails under the stand which keeps firm with the ground. However it slips on the hard surface

like cemented ground. So there we have to put our foot on the stand for the stability of the dehusker. Easily we can dehusk the coconut in more amounts safely due to the biforcated knife.

Conclusion

During the participatory discussion with the workers it was observed that the coconut dehusker (OUAT make) was accepted by both male and female workers in coastal district of Odisha. About 40% of farmers are our target group. Lots of drudgery and fatigue can be reduced if this dehusker is used. Coconut dehusking was mostly done by male workers (by munna and shythe), but the introduction of coconut dehusker will be a boon for the female members of the family which will be used for family consumption as well as selling in the local market.

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Availability and use of Financial, Technological and Social Support for Self Help Groups leading to Women Empowerment

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Abstract

The study examined the financial, technological and social supports available and used by the Self Help Groups leading to Women empowerment. The particular research study was conducted in three districts of Odisha namely, Cuttack, Puri and Khurda. About 240 women were selected randomly as respondents being member of SHG. Data were collected through survey method by using a pre-tested interview schedule and attempt was made to know the availability and use of financial, technological and social supports for SHGs leading to women empowerment.

Key words: Technological, Financial, Social Support, Empowerment, SHG, women

Introduction:

Availability and use of financial, Technological and social support plays an important role for self help groups leading to women empowerment. The population of India is more than 1210.2 million out of which 833 million lives in rural areas. 48.6 percent of it is women (2011 Census). Till date the most economically and socially suffered are the women. Women bear almost all responsibility for meeting basic needs of the family but still they are not economically independent. To

promote savings and credit activities, and to promote employment of women leading to women empowerment, women can be organized in to self help group. This will encourage these women to participate and contribute in general social and political matters in their respective villages, including women's rights. In this present study, an attempt has been made to determine Availability and use of financial, Technological and social support for self help groups leading to women empowerment as reflected in the following tables.

Objectives of the Study:

The overall objective of the study was to examine the availability and use of technological, financial and social support for SHGs members to increase income and social status.

Review of Literature:

1. The first official interest in informal group lending in India took shape during 1986-87 when NABARD supported and funded an active research project on “Savings and Credit Management of SHGs” (NABARD, 1995) of Mysore Resettlement and Development Agency (MYRDA).
2. Cheston and Kuhn (2004) in their study concluded that micro-finance programmes have been very successful in reaching women. It gave micro-finance institutions an extraordinary opportunity to act intentionally to empower poor women and to minimize the potentially negative impacts some women experiences.
3. According to with Preeti, S. and Shashi, K.V. (2008) Entrepreneurship education and trainings can be helpful in inducing positive self concept, self reliance, self confidence and independence in rural women.
4. SHG is an organization of rural poor, particularly of women that deliver micro credit to undertake the entrepreneurial activity (Kapoor, N. (2013)).

Materials and Methods

The study was undertaken in three districts (Cuttack, Puri and Khurdha) of Odisha covering six blocks two in each. About 240 SHG members were randomly selected as sample respondents @ one from each SHG, Criteria as fixed for the respondents having experience as group member and having three years experience as a housewife with children in family. The interview schedule was developed, pre-tested and modified and use for data collection in the field. The collected data were processed and analyzed with the help of statistical tools and techniques which are reflected in the findings.

Results and Discussion:

SHG in Action:

The action of SHG is very much essential to study the availability and use of financial, technological and social support for SHG leading to women empowerment. Many researchers have found that action of a SHG have a great influence on SHG members to take up any entrepreneurial activities. The finding has conformity with Jha (2000) SHG is a small economically homogeneous affinity group of the rural poor voluntarily coming together to save small amount regularly, which are deposited in a common fund to meet member's emergency needs and to provide collateral free loans as decided by the group. . This present study has made an attempt to collect data on action and activities of a SHG as reflected in the table below.

Table-1 SHG in Action

SI No.	SHG parameters	Salient factors
1	Age of SHG	6-10 years
2	Registration of SHG	Registered
3	Present status of SHG members	10-15 members
4	Number of members discontinued	No discontinuance
5	Motives of SHG formation	Seemed profitable
6	Initial specific activity	Inter-loaning
7	Place of meeting	In house of some members
8	Maintaining records of SHG	President / Secretary
9	Awareness regarding government schemes	Not aware

The outcome of analysis shows that as age of SHG is an important parameter for empowerment of its members, average age of SHGs were 6 to 10 years old, where as almost all are registered. As the achievement of SHG largely depends on the membership status, majority of SHGs were consisted of 10-15 members and not facing discontinuance of members as the discontinuance shows the non-cooperation among members. The dream to get profit was the most powerful motivating factor behind SHG formation. With regard to first specific activities, a large number of

SHGs were involved in inter-loaning as initial activity. Because of household responsibilities, women prefer to stay at home and limited their mobility. Therefore, during survey it was found that maximum SHGs were fixed house of some members for place of meeting. With context to maintaining records of SHG, average no of records are maintained by president / secretary and almost all sample respondents were not aware of any government schemes whereas very few are aware.

Table-2 Availability and Use of financial Support

SI No.	Variables	f	Percentage (%)
1	Amount of loan available		
	Upto Rs. 50000	153	63.75
	Rs. 50001 - Rs.1 lakh	18	7.51
2	Awareness on rate of interest on bank loan		
	Aware	25	10.42
	Not aware on interest rate	146	60.83
3	Repayment period of loan		
	Timely paid	162	94.73
	No time limit	7	4.09
	Waiving out loan	2	1.16

4	Steps against non-repayment		
	Bank notice	5	2.92
	Given specific time for corrective measures	15	8.78
5	Finance by other agency than bank		
	Yes	8	3.33
	No	232	96.67
6	Receiving subsidized inputs		
	Yes	17	7.08
	No	223	92.92

Getting loan is strength for any enterprise or organization. It is the resource and need of the present. A look at the table above reveals that most of the SHGs (63.75%) were sanctioned loan amount upto Rs. 50,000 which is not sufficient against 7.51% who are getting sufficient amount (above Rs. 1 lakh). 60.83% of the respondents were not aware of interest rate they pay on sanctioned loan against 10.42% who had idea about it. Every government scheme / program has some norms or guidelines which have to be followed by the beneficiary, so majority respondents (94.73%) repaid their loans in time than others (5.25%). The reactions of

the respondents on Bank steps against non-repayment of loan is bank will send notice (2.92%) for repayment and given specific time for corrective measures (8.78%). According to the Census of India (2011) 70.00% of the total rural population does not have access to banking services (savings or credit and loans through the formal banking system). Above table reveals that only 3.33% reported to have availed financial help from other agencies other than bank whereas 96.67% did not. Data in the above table shows that only 7.08% of total respondents were provided with subsidized inputs whereas 92.92% did not.

Table-3 Availability and Use of Technological Support (n=240).

Sl No.	Variables	f	Percentage (%)
1	Training undergone		
	Yes	76	31.67
	No	164	68.33
2	Areas of training		
	Tailoring	8	10.52
	Crop production	9	11.85
	Incense making	11	14.48
	Coir work	5	6.58
	Paper bag	6	7.90
	Chalk / phenyl / candle etc.	13	17.10
	Value addition to agricultural produce	15	19.73
	Vermi compost	3	3.94
	Embroidery	6	7.90

3	Training Need		
	Yes	206	85.83
	No	34	14.16
4	Access to skill training		
	Yes	33	13.75
	No	204	85.00
	No need	3	1.25

Training is an integral part for entrepreneurship development. Capacity building is essential for enhancement of knowledge, skills and attitude of the people. The data in above table depicts that for capacity building, 68.33% of the respondents had not availed any skill training against 31.67% who had undergone it through government departments, NGOs, companies and other agencies. The major areas of training are value addition to agriculture produces (19.73%) followed by chalk / phenyl / candle making (17.10%), incense making (14.48%), crop production (11.85%) and tailoring (10.52%). The other areas having least importance are embroidery, paper bag making, coir work and vermin compost production. About 85.83% of the women respondents had opined for need of training while only 14.16% did not feel the need of it. With regard to access to any skill training 85.00% of SHGs did not have any access to skill training while only 13.75% had access. Here, motivation should be created among SHG women members to undergo capacity building programmes for development of their skill and efficiency.

To enhance the outlook of a person, outside exposure is a must. It seems from above table that 95.83% women are much behind of

exposure as only 4.17% had exposure. The table infers that very negligible percentage (1.67%) of SHGs was visited and encourage by political leaders against 98.33% who were not. In our society women need help and cooperation of male members especially in the outdoor activities. The cooperation of male members in promotion of SHG activities appears 84.58% against 15.42% who are no need of cooperation of male members. In our context, after marriage husband is the first guardian of a woman. The investigator had collected information on role of husband in promotion of SHG work, where 97.92% are supportive against 2.08% who are not. Conflict management is one of the important considerations for success of a group because it initiates group dynamics. The data in above table shows 49.17% SHGs had no conflict and informal interaction with other group members is 100% which help group members to gaining knowledge about demand, exposure, problems and sources in the market. Group leaders are the key liaison and main contact points in the group. The data in the above table conclude that about 92.50% of the total groups took their decisions through group discussion method which means groups are not dominated by the group leaders against 7.50% groups who's decision are took by their group leader. Social stigma has been

playing an important role in our society and mainly it affects the women mentally, physically and socially. Data in the above table reveals that 98.33% of SHGs did not suffer due to Social stigma against 1.67% who suffered.

It is found that most of the SHGs remain disfunc after formation whatever may be the

reason. Studies also indicate that SHG members have experienced higher improvement in their economic conditions vis-à-vis non-members (Puhazhendi, V. C. and K. C. Badatya, 2002). Therefore, the SHG members were asked for some suggestions for better functioning of groups as described in table below.

Table 5 Suggestions for better functioning of SHG (n=240)

SI No	Suggestions	Average Score	Rank
1	Awareness of farm women regarding govt. schemes	1.74	VI
2	Loan facility	2.28	I
3	Group leader	1.73	VII
4	Group advisor	1.79	IV
5	Market facility	1.67	VIII
6	Sustainable income generating programmes	1.62	X
7	Produce as per demand	1.66	IX
8	Group unity	1.82	III
9	Self motivation	1.75	V
10	Own Infrastructure	1.85	II

The table is indicative that the SHG members suggested for increasing loan facility (2.28), own infrastructure (1.85), group cohesiveness (1.82), group advisor (1.79), self motivation (1.75), awareness of government schemes (1.74) as ranked I, II, III, IV, V and VI respectively. In other way, least importance was given for sustainable income generating programmes (X), produce as per demand (IX), market facility (VIII) and group leader (VII) in order of importance.

Conclusion:

In the context of empowerment of women through SHG, majority SHGs are 6 to 10 year

old, registered and containing a good number of member with the motive of seemed profitable by doing some income generating activities without any awareness regarding Government schemes. Amount of loan, Rate of interest on loan, Time period for repayment of loan, Cooperation of male members, Support of husband, Informal interaction with others are not the influential factors for the SHGs. While finance by other agency, receiving subsidized inputs, training undergone by SHG members, need of training, criteria for production, exposure visit, visit by political leader and conflict management are not the supported factors

to be fulfilled. Therefore, the government as well as the NGOs should consider these factors to improve the socio-economic

conditions of the women and to empower them to meet the challenges in future years.

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