Baseline Survey for Agricultural Biodiversity in Anantapuramu and Kurnool Districts of Andhra Pradesh, India 2014

Dr. Y.S.R. HORTICULTURAL UNIVERSITY

Horticultural Research Station

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Andhra Pradesh

Project Investigators

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Dr. Y.S.R. HORTICULTURAL UNIVERSITY

FOREWORD

Dr. B.M.C Reddy
Vice-Chancellor

Bioversity International, a member of CGIAR consortium is a global research development organization that delivers scientific evidence, management practices and policy options to use and safeguard agricultural bioversity to attain global food and nutrition security.

Agricultural Biodiversity (ABD) assessment by Bioversity International plays a pivotal role in identifying entry points for designing and implementing interventions that contribute to improve well-being of rural populations. The information generated on biological diversity, dietary diversity, market diversity and general socio-economic conditions will be of great help to develop and deploy interventions that bring out significant change in standards of living through intensification, diversification, better risk management, improved linkages and participation in markets, improved diets and enhanced food security.

The ABD baseline survey carried out by Horticultural Research Station, Anantapuramu in 2 villages each of Anantapuramu and Kurnool districts of A.P with the financial assistance of Bioversity International will certainly help in formulating future programmes and implementing needful interventions that contribute to improve the living standards of rural households in the action sites.

I feel immense pleasure to mention that Dr. Y.S.R. Horticultural University's association with Bioversity International on the use of agricultural biodiversity will help and contribute to improved nutrition of rural households for a food secure future.

I congratulate the scientists and project staff of HRS, Anantapuramu for their participation in baseline survey and sincere efforts in collecting the information from rural households and presenting the report in time to the Bioversity International.

Date: 28-02-2015
Place: Venkataramannagudem

(B.M.C. Reddy)

PREFACE

S.B. Dandin, Liaison Officer
Bioversity International, Bangaluru

Biodiversity is the gift of nature to the humankind. The contribution of our rich agricultural biodiversity to the food security challenges is a critical component of sustainable and resilient agriculture for our future. The importance of nutrition, climate change adaptation, resilience and sustainability have risen on the global agenda as demonstrated by new movements and initiatives such as the scaling up Nutrition movement, Climate-Smart Agriculture and the Rio+20 Declaration on "The Future We Want". Sustainable agricultural systems and biodiversity are going to figure prominently in the emerging UN Sustainable Development Goals.

Several anthropogenic factors are contributing for the fast decline in the biodiversity over a period of time. Important reasons for the decline of biodiversity include rapid expansion of large-scale agriculture production and more globalized food systems. Further large scale deforestation to meet the ever increasing human needs mega hydroelectric projects ,large scale mining activities, heavy industrialization etc., have contributed for loss of biodiversity.

Agricultural Biodiversity (ABD) assessment by Bioversity International plays a pivotal role in identifying entry points for designing and implementing interventions that contribute to improve well-being of rural populations. The information generated on biological diversity, dietary diversity, market diversity and general socio-economic conditions will be of great help to develop and deploy interventions that bring out significant change in standards of living through intensification, diversification, better risk management, improved linkages and participation in markets, improved diets and enhanced food security.

Keeping the above in mind, two rainfed agriculture regions one each in Karnataka and Andhra Pradesh were identified under the ongoing C.R.P 1.1 programme. Seven villages were selected with 50 households for all the selected villages and the survey was conducted

by Horticultural Research Station, Thidagundi, Vijayapur under the edges of University of Horticultural Sciences, Bagalkot, Karnataka, India and Horticultural Research Station, Anantapuramu under the edges of Dr. Y.S.R. Horticultural University, Tadepalligudem, Andhra Pradesh, India respectively. The survey was accomplished over the period of nine months covering both Kharif and Rabi seasons. Well-structured questioner developed by Dr. Mouritio Bellon, Bioversity International were used for ABD survey focused group discussion and analysis and interpretation of the data. The highlights of the findings, lessons learnt, views of the farmers and the way forward are included in this final report. The intrinsic value of crop biodiversity and its impact in diet nutrition and health were also discussed besides its relevance to the economic sustainability if the house holds

I take this opportunity to thank Dr. Prem Narayan Mathur, Sub regional Co-ordinator for south Asia for his guidance and encouragement. The technical guidance, expert advice and well-structured questioner provided by Dr. M. Bellon besides his visit to the project sites and critically going through the final report with his valuable suggestions are gratefully acknowledged. I place on record with appreciation the cooperation extended by both the Vice-Chancellors of University of Horticultural Sciences, Bagalkot and Dr. YSRHU, Tadapalligudem for their support and cooperation extended. Last but not the least, the pains taken and an excellent efforts put in by the Project Investigators, Dr. K. Subramanyam and Dr. B. Srinivasulu of Horticultural Research Station, Anantapuramu and all the project staff and Dr. H.B. Patil and his colleagues, Horticultural Research Station, Thidagundi, Vijayapura in conducting, the compilation, analysis and interpretation of the findings of the survey are duly acknowledged.

It is sincerely hoped that the survey report will serve as a resource information for the needy organization and personnel. I once again thank the Bioversity International and all those who have contributed for the successful implementation of the programme.

Feb 28, 2015 **S.B. Dandin**

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Introduction

Biodiversity is the gift of nature to the humankind. The contribution of our rich agricultural biodiversity to the food security challenges is a critical component of sustainable and resilient agriculture for our future. The importance of nutrition, climate change adaptation, resilience and sustainability have risen on the global agenda as demonstrated by new movements and initiatives such as the Scaling Up Nutrition movement, Climate-Smart Agriculture and the Rio+20 Declaration on "The Future We Want". Sustainable agricultural systems and biodiversity are going to figure prominently in the emerging UN Sustainable Development Goals. Several anthropogenic factors are contributing for the decline in the biodiversity over a period of time. Important reasons for the decline of biodiversity include rapid expansion of large-scale agriculture production and more globalized food systems. Another important reason for the disappearance of biodiversity is, lack of in-depth understanding of the contribution of the biodiversity in improving nutrition, enhancing risk reduction and resilience. Nearly 40 per cent of the world's total arable land is dedicated to the cultivation of crops like wheat, rice and maize which also account for around 50 per cent of the world's global caloric intake from plants even though there are an estimated 7000 plant species cultivated or harvested in the wild for food we have focused on few. In light of this, there is a need to take action for the reintroduction of neglected and underutilized species and such an intervention can transform the lives of marginalized rural people as can help them to grow more nutritious food for their families and for the communities. The biodiversity is a critical tool in adaptation, providing the 'natural insurance' to climate change, a key theme in light of the recent report from the Intergovernmental Panel on Climate Change (IPCC). There is a need to work with the local farmers who are the real custodians of biodiversity. Such efforts will also help in finding biodiversity-based solutions for agriculture especially to limit the spread of pests and diseases, conserve biodiversity and ecosystem services and protect the food production base of the planet.

Bioversity International is a global research-for-development organization belonging to CGIAR consortium with a vision that agricultural biodiversity nourishes people and sustains the planet. It delivers scientific evidence, management practices and policy options to use and safeguard agricultural biodiversity to attain sustainable global food and nutrition security. Bioversity works with partners all over the world including India. In its effort to empower farmers through various interventions for conserving and utilizing the

native/local biodiversity for sustaining the efforts of conservation and management and ensuring nutritional security on long-term basis, it has started programmes with Dr. Y.S.R. Horticultural University, Tadepalligudem, Andhra Pradesh, India which has a similar vision. A survey was planned and implemented in four villages namely, Mallapuram and Kurlapalli of Anantapuramu district and V. Bonthiralla and Yerraguntla of Kurnool district. A total 200 households were identified among the four villages for the this survey work. Focussed Group Discussions (FGD) were carried out to elicit the indegenous and traditional local knowledge about agriculture biodeversity, dietery biodiversity and market biodeversity available in the study areas. This was mainly aimed at generating complete inventary of useful plant, animal, acquatic species used by local communities, particularly for food and income. It also aimed at preparing the inventary of variety of food consumed and the species and products bought and sold in the market by the people in the study villages. The surevy was undertaken to understand and document the crop biodiversity in the area with the following objectives.

Objectives:

1. To identify and quantify the diversity in the production system including on-farm and in common lands.
2. To identify the diversity in wild plant and animal species (wild and domesticated).
3. To identify the dietary diversity and market diversity.
4. Characterization of the objectives of production and uses for identified species.
5. Characterization of the seed systems associated with key crops grown (both informal and formal).
6. Gender aspects of the management and uses of the diversity of identified species.
7. Risk consideration associated with the diversity of identified species.
8. Key socio-economic and food security data.
9. To understand the marketable and purchased crop biodiversity.

The knowledge and information generated by the current survey will be utilized for identifying the entry points for designing and implementing interventions that contribute to improve the well-being of rural households.

Project staff:

S.No.	Name	Designation
1.	Dr. K. Subramanyam	Principal Investigator
2.	Dr. B. Srinivasulu	Co-Principal Investigator
3.	Kumari N. Jayasree	Data Operator
4.	Sri. S. Shafi	Survey Personnel
5.	Kumari D. Priyanka	Survey Personnel
6.	Sri. D. Veerendhra	Survey Personnel
7.	Kumari Nikhila	Survey Personnel
8.	Kumari N. Narayanamma	Survey Personnel
9.	Sri. K. Sudhakar	Survey Personnel
10.	Kumari S. Anasuya	Survey Personnel

PROJECT AREA DETAILS:

Anantapuramu District – Kalyandurgam Mandal	Kurnool District – Dhone Mandal
1. Kurlapalli	1. V. Bonthiralla
2. Mallapuram	2. Yerraguntla

Kalyandurgam Mandal, Anantapuramu district

S.No.	Particulars		Villages	
		::	**Mallapuram**	**Kurlapalli**
1.	**Population**			
	a) No. of Households	::	422	250
	b) Male	::	957	621
	c) Female	::	870	553
	Total	**::**	**1827**	**1174**
2.	**Caste (Households)**			
	a) Schedule caste	::	90	70
	b) Backward caste	::	332	180
	c) Other caste	::	--	--
3.	**Schedule caste**			
	Male	::	178	270
	Female	::	190	249
4.	**Backward caste**			
	Male	::	779	351
	Female	::	680	304
5.	**Other caste**		--	
	Male	::	--	--
	Female	::	--	--
6.	Children below 5 Years (included in the above population)	::	100	90
	Male	::	52	39
	Female	::	48	51
	Land (acres)			
7.	Total land	::	1750	1050
8.	Cultivated land	::	1300	1007
9.	Un-cultivated land	::	450	43
10.	**Major crops**			
			Redgram	Redgram
			Groundnut	Groundnut
11.	**Minor Crops**			
			Rice	Rice
			Cowpea	Horse gram
			Greengram	Greengram
			Cotton	Chilli
			Bajra	Tomato
			Ragi	Melons
				Cow pea

12.	**Panchayat Bore wells**			
	Bore wells	::	3	3
	Tap Connections	::	Present	Present
13.	**Schools**			
	Aganwadi Schools		2	2
	a) Student strength	::	100	60
	b) Teachers	::	2	2
	c) Care takers	::	2	2
	d) Toilet	::	NIL	NIL
14.	**Govt. Schools**		1	2
	a) Student strength	::	125	114
	b) Teachers	::	6	5
	c) Care takers	::	3	NIL
	d) Toilets	::	1 for boys and 1 for girls	1 for boys & girls
	Problems			
15.	Fodder	::	Shortage	Shortage
16.	Cultivation -borewells	::	Shortage	Shortage
17.	Dhobi Ghat	::	--	--
18.	Drainage	::	--	--
19.	**Animals**			
	Bullocks	::	50	60
	Cows	::	80	150
	Goat	::	450	2,000
	Sheep	::	1100	6,500
	Hens & Cocks	::	3000	300
	Buffalos	::	18	40
20.	**Weather data (2013)**			
	a) Annual Rainfall (mm)	::	504	504
	b) Temperature (°C)	::	26.5	26.5
	c) Minimum (°C)	::	16.9	16.9
	d) Maximum (°C)	::	37.2	37.2
21.	**Hospital**	::	No hospital facilities. Doctor visits once in a month. Hospital facilities available at kalyandurgam mandal which is 5 km away from the village	No hospital facilities. Doctor visits once in a month. Hospital facilities available at kalyandurgam mandal which is 7 km away from the village
22.	**Veterinary**	::	No veterinary hospital facilities. Doctor visits once in a week. Veterinary hospital available at kalyandurgam mandal which is 5 km away	No veterinary hospital facilities. Doctor visits once in a week. Veterinary hospital available at kalyandurgam mandal which is 7 km away

			from the village	from the village
23.	**Transportation**			
	a) Bus frequency	::	For every 2 hours	For every 2 hours
	b) Auto	::	Frequently available	Frequently available
	c) Own vehicles	::	Cycle, Motor cycle	Cycle, Motor cycle
24.	**Selling**	::	Available at Kalyandurgam (5 km) and Anantapuramu (65 km)	Available at Kalyandurgam (7 km) and Anantapuramu (65 km)
25.	**Seeds, plant material, fertilizers and plant protection chemicals**	::	Available at Kalyandurgam (5 km) and Anantapuramu (65 km)	Available at Kalyandurgam (7 km) and Anantapuramu (65 km)
26.	**Drinking water facility**	::	Tap water (Through Borewell, tank) Private Drinking water cans	Tap water (Through Borewell, tank) Private Drinking water cans

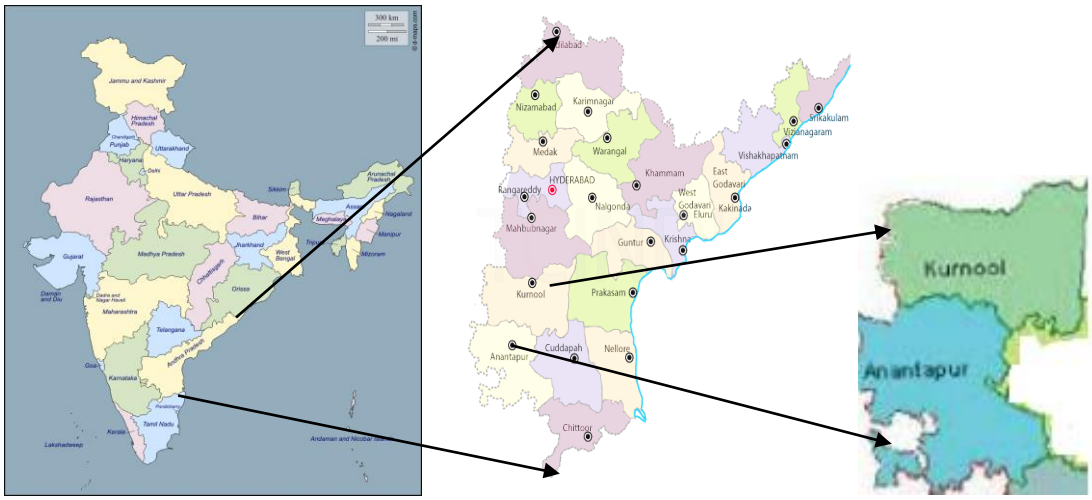
Dhone Mandal, Kurnool district:

S.NO.	Particulars		Villages	
		::	**V.Bonthiralla**	**Yerraguntla**
1.	**Population**			
	a) No. of Households	::	151	367
	b) Male	::	296	1,086
	c) Female	::	290	1,127
	Total	**::**	**586**	**2,213**
2.	**Caste (Households)**			
	a) Schedule caste	::	18	86
	b) Backward caste	::	132	135
	c) Other caste	::	1	146
3.	**Schedule caste**	::		
	Male	::	27	276
	Female	::	21	295
4.	**Back ward caste**	::		
	Male	::	267	392
	Female	::	266	402
5.	**Other caste**	::		
	Male	::	4	418
	Female	::	1	430
6.	5 Years below children (included in the above population)	::	24	135
	Male	::	10	63
	Female	::	14	72
	Land (acres)			430
7.	Total land	::	972	1800
8.	Cultivated land	::	940	1573
9.	Un-cultivated land	::	32	227
10.	**Major crops**			
			Redgram	Redgram
			Groundnut	Foxtail millet
			Castor	
11.	**Minor Crops**			
			Foxtail millet	Bajra
			Paddy	Castor
			Cotton	Jowar
			Tomato	Groundnut
			Green chilli	Tomato
			Bajra	Chilli
				Cotton
12.	**Panchayat Bore wells**			
	Bore wells	::	15	4
	Open wells		10	3
	Tap Connection	::	Present	--
13.	**Schools**			
	Aganwadi Schools		1	1
	a) Student strength	::	24	46
	b) Teachers	::	--	1
	c) Care taker	::	1	1

	d) Toilets	::	--	--
	Govt. Schools		1	1
	a) Student strength	::	54	190
	b) Teachers	::	1	8
	c) Care taker	::	--	--
	d) Toilet	::	1 for both girls and boys	1 for boys and 1 for girls
	Problems			
14.	Fodder	::	Shortage	Shortage
15.	Cultivation -borewells	::	Shortage	Shortage
16.	Dhobi Ghat	::	Nil	Nil
17.	Drainage	::	Nil	Nil
18.	**Animals**			
	Bullocks	::	66	160
	Cows	::	60	28
	Calves	::	--	6
	Goats	::	280	420
	Sheep	::	NIL	380
	Hens &Cocks	::	150	640
	Buffalos	::	18	54
	Peacock	::	--	1
19.	**Weather Data (2013)**			
	a) Annual Rainfall (mm)	::	**944**	**944**
	b) Temperature (°C)	::	Average 37	Average 37
	c) Minimum (°C)	::	27	27
	d) Maximum (°C)	::	42	42
20.	**Hospital**	::	• No hospital facilities. Hospital facilities available at Dhone mandal which is 10 km away from the village • Doctor visits once in a month. • Asha worker is available regularly • 104 is available monthly	No hospital facilities. Hospital facilities available at Dhone mandal which is 10 km away from the village
21.	**Veterinary**	::	• No veterinary hospital facilities. Veterinary hospital available at Dhone mandal (10 km away from the village). • Doctor visit once in a month.	No veterinary hospital facilities. Veterinary hospital available at Dhone mandal which is 10 km away from the village

22.	**Transportation**			
	a) Bus frequency	::	Available 2 times per day at a distance of 1 km away from the village	Available
	b) Auto	::	Available at a distance of 1 km away from the village	Available
	c) Own vehicles	::	Cycle, Motor cycle	Cycle, Motor cycle,Tractor
23.	**Selling**	::	Available at Dhone mandal (10 km) and Kurnool (60 km)	Available at Dhone mandal (8 km) and Kurnool (60 km)
24.	**Seeds, plant material, fertilizers and plant protection chemicals**	::	Available at Dhone mandal (10 km) and Kurnool (60 km)	Available at Dhone mandal (8 km) and Kurnool (60 km)
25.	**Drinking water facility**	::	Tap water (Through Borewell, tank)	Tap water (Through Borewell, tank)

The Geographical location of the selection is given in the map as shown below.



Methodology/Activities:

Baseline survey for Agricultural Biodiversity planned and conducted in two districts namely Anantapuramu and Kurnool of Andhra Pradesh. Two villages in each district were selected Kurlapalli and Mallapuram in Anantapuramu district and Yerraguntla and V. Bonthiralla in Kurnool district were selected for the survey. Earlier, these villages were selected by ICRISAT to implement dry land systems programme.

The sample consisted of 50 households per village drawn from 70 households which were already selected by ICRISAT. The household survey contained two sections: one that elicit information on the Agriculture Bio diversity (ABD) used by the household and second that elicits information on food consumed by specific members of the household. Before interviewing the individual households, Focus Group Discussions (FGD) were held.

Focus Group Discussions (FGD) Focus Group Discussions (FGD) were carried out to elicit the indegenous and traditional local knowledge about agriculture biodeversity, dietery biodiversity and market biodeversity available in the study areas. This was mainly aimed at generating complete inventary of usefull plan.Focus Group Discussions (FGD) were held to elicit information on (a) biological diversity in the production system – on the farm as well as harvested from forest and community land; (b) dietary diversity – consumed in house and also purchased from market; and (c) diversity of species and products sold and bought from markets. Few important principles were kept in mind namely (a)aim to capture the collective knowledge of the community, not of the specific participants in the group (b) aim to capture as much diversity as possible, i.e. to identify as many species as possible, particularly for those species used by few people or even rarely.

Focus Group Discussions (FGD) were organized in the following manner

There were two groups: one of males and one of females

- Each group dealt with three aspects for discussion:
  - Useful biological diversity in the production system
  - Dietary diversity
  - Market diversity
- There were approximately15 participants in each group.
- Each group included a cross-section of individuals involved in agricultural production or at least collecting useful plants from common lands and the wild, representing different levels of access to land (land owners, local land renters and migrant land renters),

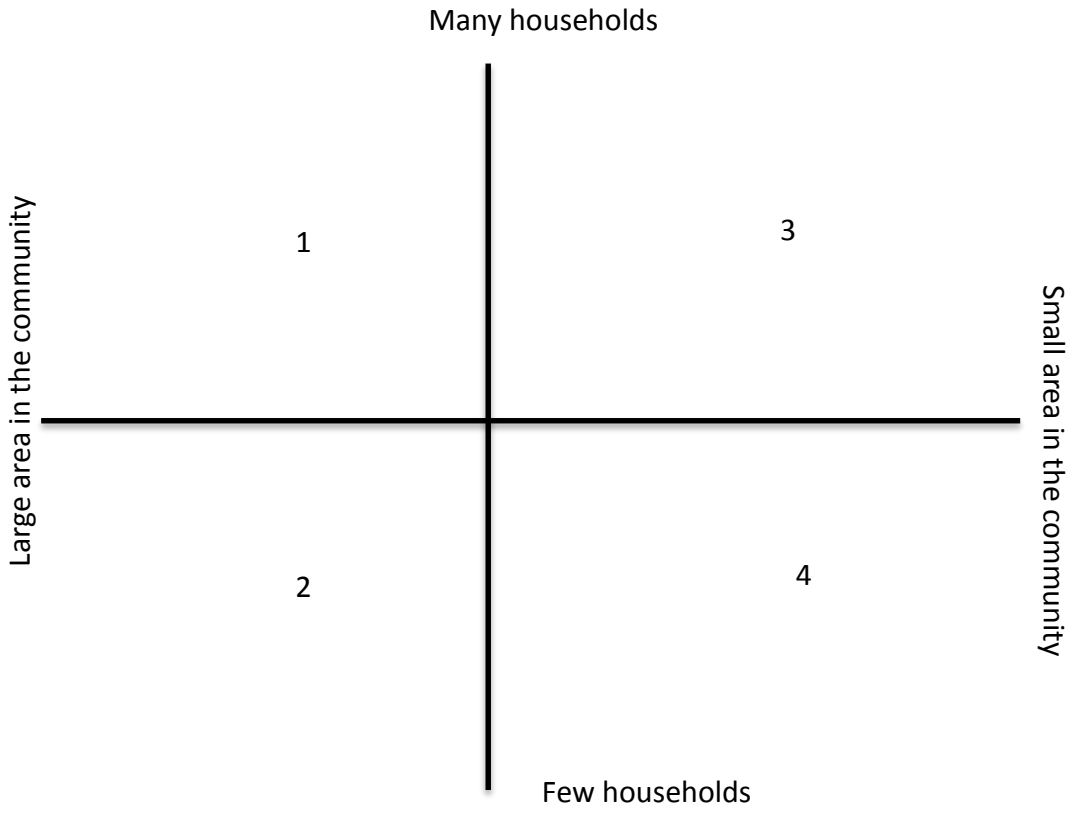
different religion groups present in the village and different age groups (special emphasis made to include younger farmers).

- For each group there were two facilitators, one to guide the exercise and the other to document the process.
- In the case of male groups, the facilitator was male and for female groups facilitator was female.

At the beginning of the exercise, the facilitator explained to the group that there were many species of plants and animals that were used by people there. However, some were grown by many farmers in the community, while others were by just a few and at the same time some of these same species were grown in a large area within the community, while others were usually grown in a small area within the community. The facilitator then drew the four squares in a large piece of paper on the floor (Figure 1). The four squares are:

(1) many households and large area in the community;
(2) few households and a large area in the community;
(3) many households and a small area in the community;
(4) few households and a small area in the community.

Figure-1: Four squares for ABD in production systems



Agricultural Biodiversity (ABD) in production systems

The work was carried out in the following sequence:

1. Participants were asked to make a list of all relevant species (e.g. free listing of species). A list with all the names of species was compiled.
2. Since information asked also in terms of whether a species is available during the lean season or season of scarcity, the facilitator asked the participants to name the seasons that they recognize and what months each season include. Then they were asked to describe each season and which one(s) they consider the off/lean season(s) and why. The exercise of placing each species in a particular square was done.
3. After the completion of listing and defining seasons, the facilitator asked the participants to place each species in the list in the appropriate square. It was emphasized that the decision to place a species in a particular square should be a group decision, not just made by one member.
4. For each species once it has been placed in a square, participantswere asked the following questions about the species. One of the facilitators marked the answers in appropriate column.
   (a) Is the species (parts of it or products derived from it) used as food for their own consumption?
   (b) Is the species (parts of it or products derived from it) sold by community members?
   (c) Is the species (parts of it or products derived from it) bought by community members?
   (d) Is the species available during the season of food scarcity?
5. Continued with the next species and repeated the process until all species in the list have been classified.
6. After the classification of species, participants were asked for general reasons for placing the species in a particular square and repeated this for each of the four squares.

Results of the Focus Group Discussions using the four-square method were tabulated and one table for each category of species (e.g. annual species, perennial species, animals, etc.) was presented.

The exercise was done with annual and biannual plant species grown on farm, kitchen/home gardens. The facilitator probed for different categories of species including

cereals, roots, tubers, legumes, vegetables, oil crops, fruits and industrial crops (e.g. cotton). The exercise was repeated for each of these categories:

1. Annual and biannual crop species.
2. Useful tree and shrub species in individual and common lands (perennial). These include both cultivated (e.g. mango) and agro-forestry species. Many of these species are multi-purpose, e.g. providing fruits, leaves, wood, fodder, etc.
3. Useful wild or semi-wild species used for food harvested from farms, forest areas or communal lands (annual or perennial).
4. Domesticated animals.
5. Wild animals.
6. Fish and other aquatic resources.

In case of useful tree and shrub species in individual lands (perennial) including both cultivated and agro-forestry species, the four squares were:

(1) Many households with many trees/shrubs within their individual farms.
(2) Many households with a few trees/shrubs within their individual farms.
(3) Few households with many trees/shrubs within their individual farms.
(4) Few households with few trees/shrubs within their individual farms.

In case of useful tree and shrub species in common lands (perennial) including both cultivated and agro-forestry species, the four squares were:

(1) Many households utilize the species and there is high availability in common lands;
(2) Few households utilize the species and there is high availability of the species in common lands.
(3) Many households utilize the species and there is little availability of the species in common lands.
(4) Few households utilize the species and there is little availability of the species in common lands.

In the case of domesticated animals the four squares were:

(1) Many households own many animals.
(2) Few households own many animals.
(3) Many households own few animals.
(4) Few households own few animals.

In the case of wild animals the four squares were:

(1) Many households utilize the species and there is high availability of the species within the community and surrounding areas;
(2) Few households utilize the species and there is high availability of the species within the community and surrounding areas;
(3) Many households utilize the species and there is little availability of the species within the community and surrounding areas;
(4) Few households utilize the species and there is little availability of the species within the community and surrounding areas.

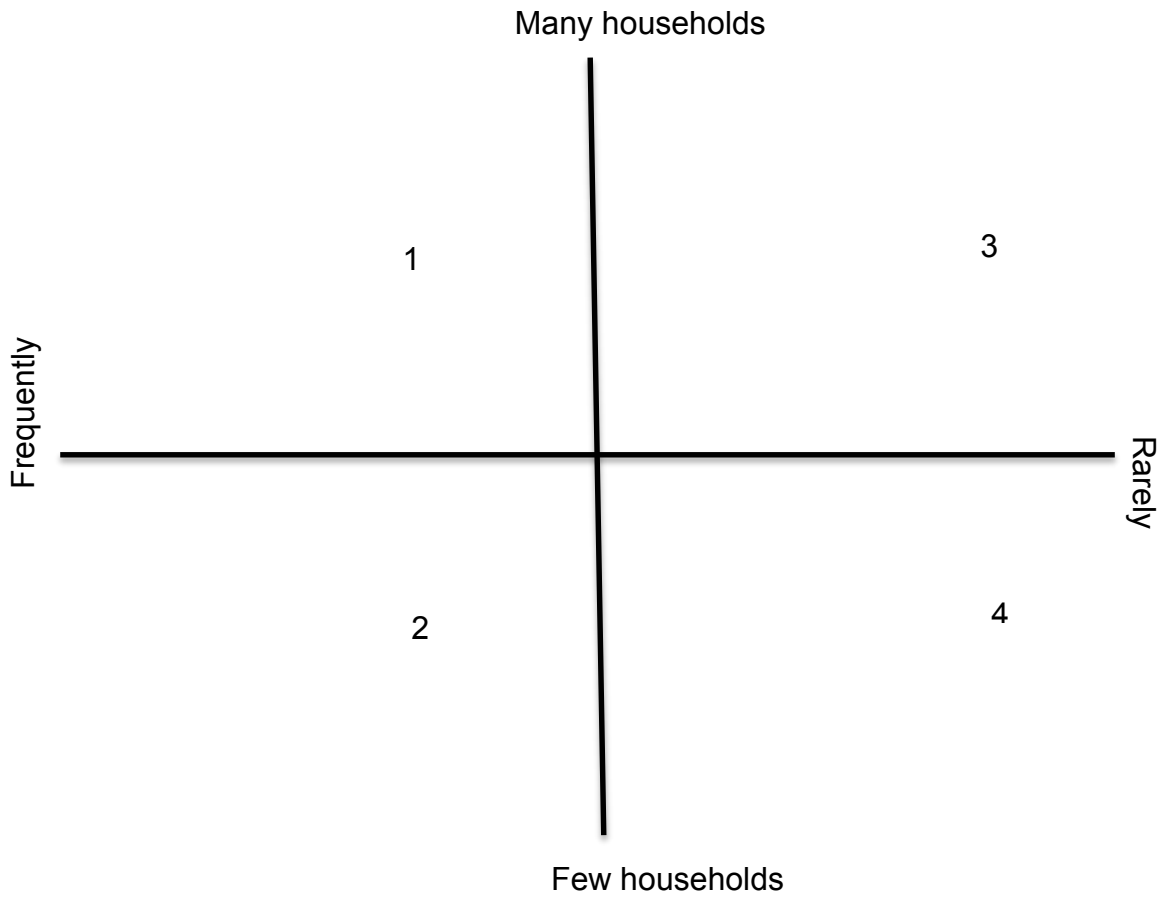
In the case of fish and other aquatic resources the four squares were:

(1) Many households utilize the species and there is high availability of the species within the community and surrounding areas;
(2) Few households utilize the species and there is high availability of the species within the community and surrounding areas;
(3) Many households utilize the species and there is little availability of the species within the community and surrounding areas;
(4) Few households utilize the species and there is little availability of the species within the community and surrounding areas.

ABD in markets

The facilitator explained how important are the species that were identified in the previous exercise in terms of their marketing, both for sale and for purchase. The facilitators already have the list of species that were both sold and purchased. First, the facilitator examined those species that were sold. As in the previous exercise, the facilitator explained that species can be sold by many farmers or by just a few, and some may be sold frequently and others rarely, thus the facilitator drew a four square diagram (Figure 2). The facilitator asked participants to place the species in one of the four squares. Once all species have been classified, the facilitator probed for additional species that may have been omitted, particularly for those that were sold by few farmers rarely. Finally, the facilitator asked participants about the general reasons for placing species in a particular square, for each of the four squares.

Figure-2: Four squares for ABD in markets



After the completion of exercise, the facilitator repeated the same procedure with the list of species that were purchased, drawn also a four square diagram with species and foods that were purchased by many household, by few, and being purchase frequently or rarely (same as Figure 2). After the diagram was drawn, the facilitator read aloud from the list of species that were purchased, one species at a time, asking participants to place the species in one of the four squares. Once all species in the list have been classified, the facilitator asked the participants to list other foods and food products (e.g. sugar, salt, bread, tea, canned foods, etc.) that were purchased but were not be produced locally. After this new list has been compiled, the facilitator asked participants to place the foods and food products in one of the four squares. Once all species in the list have been classified, the facilitator probed for additional species that may have been omitted, particularly for those that were sold by few farmers rarely. Finally, the facilitator asked participants about the general reasons for placing species in a particular square, for each of the four squares.

ABD and dietary diversity

The facilitator explained about the diversity of foods consumed by the community, particularly about those species that were consumed as foods directly or as food products. Now there is a list with all the locally-available species that are used as foods (derived from the exercise on ABD in production systems), as well as another list with the foods and food products that are not locally available but are purchased (derived from the exercise on purchased foods and food products). The facilitator asked the group to provide information on:

- What parts of the species are consumed?
- What are the cooking methods or methods of transformation used to prepare foods derived from that species?
- What products are derived from the species (through processing)?

This information was noted by the second facilitator in following table. The information was the basis for developing the dietary diversity questionnaire.

Species	Parts of the species consumed	Forms of preparation/ transformation	Products

Questionnaire

The survey was divided into two questionnaires. One elicits information on biological diversity, markets and general socio-economic information (ABD questionnaire). The second one elicits information on dietary diversity of a woman and a child (Dietary Diversity questionnaire).

The ABD questionnaire was applied together to the male head of household and to the women selected according to the criteria explained below. The Dietary Diversity questionnaire was applied only to the woman. The selection criterion for woman is as follows: (1) a mother in the household between 15-49 years old with a child aged between 6-59 months. Where if more than one member of the household has these characteristics then they were selected randomly. (2) If no mother in the household has a child of that age, a mother within the age group 15-49 years was chosen. If none was available, the woman who customarily prepares the food in the household irrespective of age was chosen.

ABD questionnaire

The ABD questionnaire elicits information on the following aspects:

- Useful biological diversity in the production system by specific season (on farm, and those species harvested from forest and community lands as well as rivers and ponds)
    - Species characterization in terms of
        - seasonality, water regime, objective of production, importance, parts used, uses
        - Seed systems
        - sources, transactions, social relations, locations
        - Intra-specific diversity
        - number and types of varieties
        - Gender: management and decision-making

Most questions about species refer to a specific season of reference (Kharif, 2013 and Rabi, 2013-14).

- Markets: purchase and sale, in terms of:
    - agricultural products
    - foods
    - seeds and planting material

  - inputs
  - other consumer goods
- General socio-economic information, in terms of:
  - Age
  - Formal education
  - Ethnicity
  - Family size
  - Type of household
  - Assets (house building material, transportation, consumer items)
  - Land holdings
  - Animal holdings
  - Water management
  - Sources of income
  - Knowledge and participation in formal and informal organizations
  - Participation in government programs

Dietary diversity questionnaire

The Dietary diversity questionnaire comprises three sections: (1) women and child dietary diversity; (2) infants and young child feeding practices; (3) household food security. It includes the following information:

- Foods and ingredients consumed specifically by a mother and a child 6 and 59 months in the previous 24 hours; includes information on sources: self-produced, purchased, bartered, payment in kind, collected.
- Information on infant and young child feeding practices.
- Household food security (this questions do refer to the whole household not just to the women being interviewed, but it should be who provides the information).

For undertaking the household survey, a team of men and women interviewers worked together. The questionnaires in English were translated to local language Telugu. The ABD questionnaire section was done with both the men and women participants together and aimed at eliciting information on ABD maintained by both. The Dietary Diversity questionnaire was done by the women enumerator interviewing only the woman respondent.

Table-1: Focus Group Discussions organized at Anantapuramu

S.No	Villages	Date			
		22-07-2014	09-09-2014	10-09-2014	28-09-2014
1.	Mallapuram				
	Participants				
	Men	14	12	12	31
	Women	36	10	10	9
	Total:	**50**	**22**	**22**	**40**
2.	Kurlapalli				
	Participants				
	Men	28	14	14	10
	Women	30	12	10	12
	Total:	**58**	**26**	**24**	**22**
3.	**Scientists attended**	Dr. K. Subramanyam Dr.B.Srinivasulu G.Adinarayana	Dr. K. Subramanyam	Dr. K. Subramanyam	Dr. K. Subramanyam Dr.B.Srinivasulu Dr.S.B.Dandin G.Adinarayana

Table-2: Focus Group Discussions organized at Kurnool

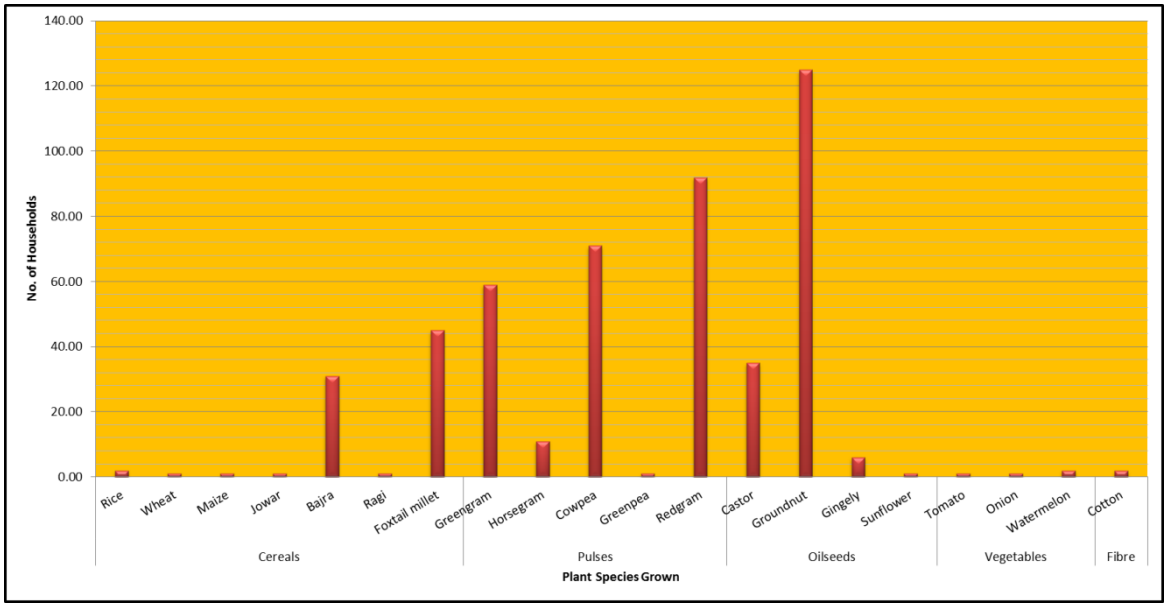
S.No	Villages	Date			
		14-07-2014	08-09-2014	10-09-14	16-09-14
1.	Bonthiralla				
	Participants:				
	Men	45	10	10	30
	Women	37	13	13	30
	Total:	**82**	**23**	**23**	**60**
2.	Yerraguntla				
	Participants:				
	Men	36	12	12	24
	Women	36	10	10	13
	Total:	**72**	**22**	**22**	**37**
3.	**Scientists attended**	Dr. K. Subramanyam Dr.B.Srinivasulu Dr.S.B.Dandin G.Adinarayana	Dr.B.Srinivasulu	Dr.B.Srinivasulu	Dr. K. Subramanyam Dr.B.Srinivasulu G.Adinarayana

Survey findings and Discussions

Table-3: Annual plant species grown on the farm during Kharif, 2013

S.No.	Name of the Species	Botanical Name	No. of Years (Average)	No. of House holds (out of 200)	Percentage (%)
I.	**Cereals**				
1.	Rice	*Oryza sativa*	4.50	2.00	1.00
2.	Wheat	*Triticum aestivum*	4.00	1.00	0.50
3.	Maize	*Zea mays*	20.00	1.00	0.50
4.	Jowar	*Sorghum vulgare*	10.00	1.00	0.50
5.	Bajra	*Pennisetum glaucun*	11.23	31.00	15.50
6.	Ragi	*Eleusine coracana*	20.00	1.00	0.50
7.	Foxtail millet	*Setaria italica*	9.56	45.00	22.50
II.	**Pulses**				
1.	Greengram	*Vigna radiata*	15.59	59.00	29.50
2.	Horsegram	*Macrotyloma uniflorum*	15.45	11.00	5.50
3.	Cowpea	*Vigna unguiculata*	14.17	71.00	35.50
4.	Green pea	*Pisum sativum*	3.00	1.00	0.50
5.	Redgram	*Cajanus cajan*	11.61	92.00	46.00
III.	**Oilseeds**				
1.	Castor	*Ricinus communis*	9.66	35.00	17.50
2.	Groundnut	*Arachis hypogaea*	18.19	125.00	62.50
3.	Gingely	*Sesamum indicum*	13.17	6.00	3.00
4.	Sunflower	*Helianthus annuus*	5.00	1.00	0.50
IV.	**Vegetables**				
1.	Tomato	*Solanum lycopersicum*	3.00	1.00	0.50
2.	Onion	*Allium cepa*	5.00	1.00	0.50
3.	Watermelon	*Citrullus lanatus*	2.00	2.00	1.00
V.	**Fibre**				
1.	Cotton	*Gossypium hirsutum*	3.00	2.00	1.00

Figure-3: Annual plant species grown on the farm during Kharif, 2013



- Twenty annual species (cereals-7, pulses-5, oilseeds-4, vegetables-3, and fibre-1) were maintained on the farm by households during kharif season, 2013.
- Groundnut (62.5%) and Redgram (46%) were the most commonly grown species in all the four surveyed villages followed by Cow pea (35.5%), Greengram (29.5%) and Foxtail millet (22.5%).
- Maize, Ragi, Groundnut, Greengram, Horsegram, Cowpea, Gingely, Redgram, Bajra and Jowar were the traditional crops grown for more than ten years.
- Watermelon, Tomato, Green pea and Cotton were the new crops grown by the households for the past 2-3 years.

Crops grown under rainfed situation

Figure-4: Groundnut sole crop

Figure-5: Redgram sole crop

Figure-6: Cotton sole crop

Figure-7: Foxtail millet sole crop

Crops grown under Rainfed situation

Figure-8: Gingely sole crop

Figure-9: Jowar (Sorghum) sole crop

Figure-10: Pearl millet sole crop

Figure-11: Groundnut + Castor

Crops grown under Rainfed situation

Figure-12: Redgram + Castor

Figure-13: Castor + Foxtail millet

Figure-14: Pearl millet sole crop

Crops grown under protective irrigation

Figure-15: Tomato

Figure-16: Tomato sole crop

Figure-17: Marigold sole crop

Figure-18: Curry leaf sole crop

Crops grown under protective irrigation

Figure-19: Beans (Dolichos) sole crop

Figure-20: Cluster bean sole crop

Figure-21: Mango + Tomato + Marigold

Figure-22: Tomato + Marigold

Table-4: Objective of production of annual species (No. of households that stated the objective for a species, both objectives could have been stated by the same household) and subjective mean rating of the contribution of each species to the food supply and income of the house hold Kharif, 2013

S.No.	Name of the Species	Botanical Name	Objective			Contribution (out of 200 households)							
						Food				Income			
			Self	Selling	Both	Major	Medium	Minor	No	Major	Medium	Minor	No
I.	**Cereals**												
1.	Rice	*Oryza sativa*	0	0	2	1	0	1	0	2	0	0	0
2.	Wheat	*Triticum aestivum*	0	0	1	1	0	0	0	0	0	1	0
3.	Maize	*Zea mays*	0	0	1	0	0	1	0	0	1	0	0
4.	Jowar	*Sorghum vulgare*	0	0	1	0	0	1	0	0	0	1	0
5.	Bajra	*Pennisetum glaucun*	25	0	5	8	4	18	0	0	2	6	22
6.	Ragi	*Eleusine coracana*	1	0	0	0	0	1	0	0	0	0	1
7.	Foxtail millet	*Setaria italica*	5	12	28	3	11	27	4	0	6	35	4
II.	**Pulses**												
1.	Greengram	*Vigna radiata*	54	0	4	0	2	56	0	1	2	33	22
2.	Horsegram	*Macrotyloma uniflorum*	3	0	8	1	4	6	0	0	3	5	3
3.	Cowpea	*Vigna unguiculata*	63	0	7	3	1	66	0	0	3	36	31
4.	Green pea	*Pisum sativum*	1	0	0	0	0	1	0	0	0	0	1
5.	Redgram	*Cajanus cajan*	42	2	48	4	36	51	1	4	14	72	2
III.	**Oilseeds**												
1.	Castor	*Ricinus communis*	6	17	11	2	6	14	12	2	2	25	5
2.	Groundnut	*Arachis hypogaea*	0	0	124	2	92	30	0	42	26	55	1
3.	Gingely	*Sesamum indicum*	0	0	0	0	0	0	0	0	0	0	0
4.	Sunflower	*Helianthus annuus*	0	1	0	1	0	0	0	1	0	0	0
IV.	**Vegetables**												
1.	Tomato	*Solanum lycopersicum*	0	0	1	0	0	1	0	1	0	0	0
2.	Onion	*Allium cepa*	0	0	1	0	1	0	0	0	0	1	0
3.	Watermelon	*Citrullus lanatus*	1	0	1	1	0	1	0	1	0	1	0
V.	**Fibre**												
1.	Cotton	*Gossypium hirsutum*	0	2	0	0	1	0	1	0	1	1	0

- Among the annual species, Cowpea, Greengram, Redgram and Bajra were grown mainly for self-consumption whereas, Castor and Foxtail millet were grown for the purpose of sale.
- Majority of households grew Groundnut for both the purposes of self-use and sale followed by Redgram, Foxtail millet and Castor.
- None of the crops were the major contributors for the food. Groundnut and Redgram contributed medium to food and Cowpea, Greengram, Redgram, Groundnut and Foxtail millet were the minor income contributors for majority of households.
- Groundnut was the major income contributing crop for 42 households, medium for 26 households and minor for 55 households.
- Redgram was a minor income contributor for 72 households.

Table-5: Sources of seed/planting material of annual species (number of households that obtained seed/planting material for a particular species and from a particular source in kharif, 2013)

		Source		If obtained outside from whom								Type of transaction					
Name of the Species	Scientific Name	Saved	Outside	Family	Neighbor	Friend	Public seed Trader	Private seed trader	Local selling	Government emergency	NGO	Purchase	exchange of seed	Barter for other goods	Credit	Gift	Purchase (%)
Cereals																	
Rice	*Oryza sativa*	0	2	0	0	0	0	2	0	0	0	1	0	0	1	0	50
Wheat	*Triticum aestivum*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Maize	*Zea mays*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Jowar	*Sorghum vulgare*	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	100
Bajra	*Pennisetum glaucun*	7	24	3	1	2	6	10	0	0	4	23	0	0	0	1	74
Ragi	*Eleusine coracana*	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	100
Foxtail millet	*Setaria italica*	28	17	1	3	6	10	5	1	0	1	15	0	0	0	2	33
Pulses																	
Greengram	*Vigna radiata*	21	38	7	2	0	13	9	0	0	7	32	0	0	2	4	54
Horsegram	*Macrotyloma uniflorum*	4	7	1	1	0	3	1	1	0	0	7	0	0	0	0	64
Cowpea	*Vigna unguiculata*	27	43	7	3	0	14	11	1	0	8	37	0	0	2	4	52
Green pea	*Pisum sativum*	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Redgram	*Cajanus cajan*	33	59	1	3	8	17	19	8	0	11	54	0	0	0	5	59
Oilseeds																	
Castor	*Ricinus communis*	4	31	0	0	1	7	19	2	0	3	29	0	0	0	2	83
Groundnut	*Arachis hypogaea*	17	108	2	5	1	76	27	0	0	0	100	0	0	8	0	80
Gingely	*Sesamum indicum*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sunflower	*Helianthus annuus*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Vegetables																	
Tomato	*Solanum lycopersicum*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Onion	*Allium cepa*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Watermelon	*Citrullus lanatus*	0	2	0	1	0	0	1	0	0	0	1	0	0	0	1	50
Fibre																	
Cotton	*Gossypium hirsutum*	0	2	0	0	0	0	2	0	0	0	2	0	0	0	0	100

- Most of the households obtained seed or planting material of Groundnut(108), Redgram (59) and Cowpea (43) followed by Greengram, Castor, Bajra and Foxtail millet from outside source.
- Few households cultivated the farm from saved seed or planting material (Redgram (33), Foxtail millet (28), Cowpea (27) followed by Greengram, Groundnut, Bajra, Horsegram and Castor).
- Most of the households prefered to obtain seed of Groundnut and Redgram from public seed traders followed by private seed traders.
- Majority of households obtained seed from family, friends, neighbours and NGO's when seed material was not available from Government sectors.
- The main mode of transaction of seed by most of the households was through purchases only which was followed by credit means.
- Hundred per cent purchase was for seeds of Wheat, Maize, Jowar, Ragi, Sunflower, Tomato, Onion and Castor.

Table-6: Frequency of seed/planting material replacement (number of households that replace seed/ planting material for a particular species at a particular frequency) Kharif, 2013

S.No.	Name of the Species	Botanical Name	Every year	Every 2 years	Every 3 years	Never
I.	**Cereals**					
1.	Rice	*Oryza sativa*	2	0	0	0
2.	Wheat	*Triticum aestivum*	1	0	0	0
3.	Maize	*Zea mays*	1	0	0	0
4.	Jowar	*Sorghum vulgare*	1	0	0	0
5.	Bajra	*Pennisetum glaucun*	21	4	3	3
6.	Ragi	*Eleusine coracana*	1	0	0	0
7.	Foxtail millet	*Setaria italica*	6	7	19	13
II.	**Pulses**					
1.	Greengram	*Vigna radiata*	52	0	0	7
2.	Horsegram	*Macrotyloma uniflorum*	8	0	0	3
3.	Cowpea	*Vigna unguiculata*	59	0	1	10
4.	Green pea	*Pisum sativum*	1	0	0	0
5.	Redgram	*Cajanus cajan*	44	11	29	8
III.	**Oilseeds**					
1.	Castor	*Ricinus communis*	32	3	0	0
2.	Groundnut	*Arachis hypogaea*	115	7	3	0
3.	Gingely	*Sesamum indicum*	0	0	0	0
4.	Sunflower	*Helianthus annuus*	1	0	0	0
IV.	**Vegetables**					
1.	Tomato	*Solanum lycopersicum*	1	0	0	0
2.	Onion	*Allium cepa*	1	0	0	0
3.	Watermelon	*Citrullus lanatus*	2	0	0	0
V.	**Fibre**					
1.	Cotton	*Gossypium hirsutum*	2	0	0	0

- Majority of households replaced seed every year.
- Among the crops, Groundnut was changed every year followed by Cowpea, Greengram, Redgram, Castor and Bajra.

Table-7:Annual domesticated species grown by households and their demand for planting material during Kharif, 2013

S.No.	Name of the Species	Botanical Name	No. of Households grown	No. of HH maintained Desi varieties	No. of HH maintained Improved	Demand for seed/planting material by type					
						No	Yes	Local	Improved	Both	% Yes
I.	**Cereals**										
1.	Rice	*Oryza sativa*	2	1	1	0	2	1	1	0	100
2.	Wheat	*Triticum aestivum*	1	0	1	0	1	0	1	0	100
3.	Maize	*Zea mays*	1	1	0	0	1	1	0	0	100
4.	Jowar	*Sorghum vulgare*	1	1	0	0	1	1	0	0	100
5.	Bajra	*Pennisetum glaucun*	31	28	4	1	30	6	6	18	97
6.	Ragi	*Eleusine coracana*	1	1	0	0	1	1	0	0	100
7.	Foxtail millet	*Setaria italica*	45	48	2	7	38	2	2	34	84
II.	**Pulses**										
1.	Greengram	*Vigna radiata*	59	52	7	4	55	19	5	31	93
2.	Horsegram	*Macrotyloma uniflorum*	11	10	1	0	11	5	2	4	100
3.	Cowpea	*Vigna unguiculata*	71	66	7	4	66	18	8	40	93
4.	Green pea	*Pisum sativum*	1	1	0	0	1	1	0	0	100
5.	Redgram	*Cajanus cajan*	92	58	40	10	82	0	0	82	89
III.	**Oilseeds**										
1.	Castor	*Ricinus communis*	35	15	21	0	35	7	7	21	100
2.	Groundnut	*Arachis hypogaea*	125	53	77	1	123	34	22	67	98
3.	Gingely	*Sesamum indicum*	0	0	0	0	0	0	0	0	0
4.	Sunflower	*Helianthus annuus*	1	0	1	0	1	0	1	0	100
IV.	**Vegetables**										
1.	Tomato	*Solanum lycopersicum*	1	1	0	0	1	1	0	0	100
2.	Onion	*Allium cepa*	1	1	0	0	1	0	0	1	100
3.	Watermelon	*Citrullus lanatus*	2	2	0	0	2	1	0	1	100
V.	**Fibre**										
1.	Cotton	*Gossypium hirsutum*	2	0	2	0	2	0	0	2	100

- Majority of the households maintained desi varieties of Groundnut, Redgram, Cowpea and Greengram.
- Improved varieties were maintained in case of Groudnut, Redgram and Castor.

- The demand for seed or planting material in most of the households was for local seeds as well as for both local and improved.
- Hundred percent demand for seed/planting material was there for Rice, Wheat, Maize, Jowar, Ragi, Horsegram, Greenpea, Castor, Sunflower, Tomato, Onion, Watermelon and Cotton.

Table-8: Distribution of responsibility for caring of annual plant species (No. of households) during Kharif, 2013

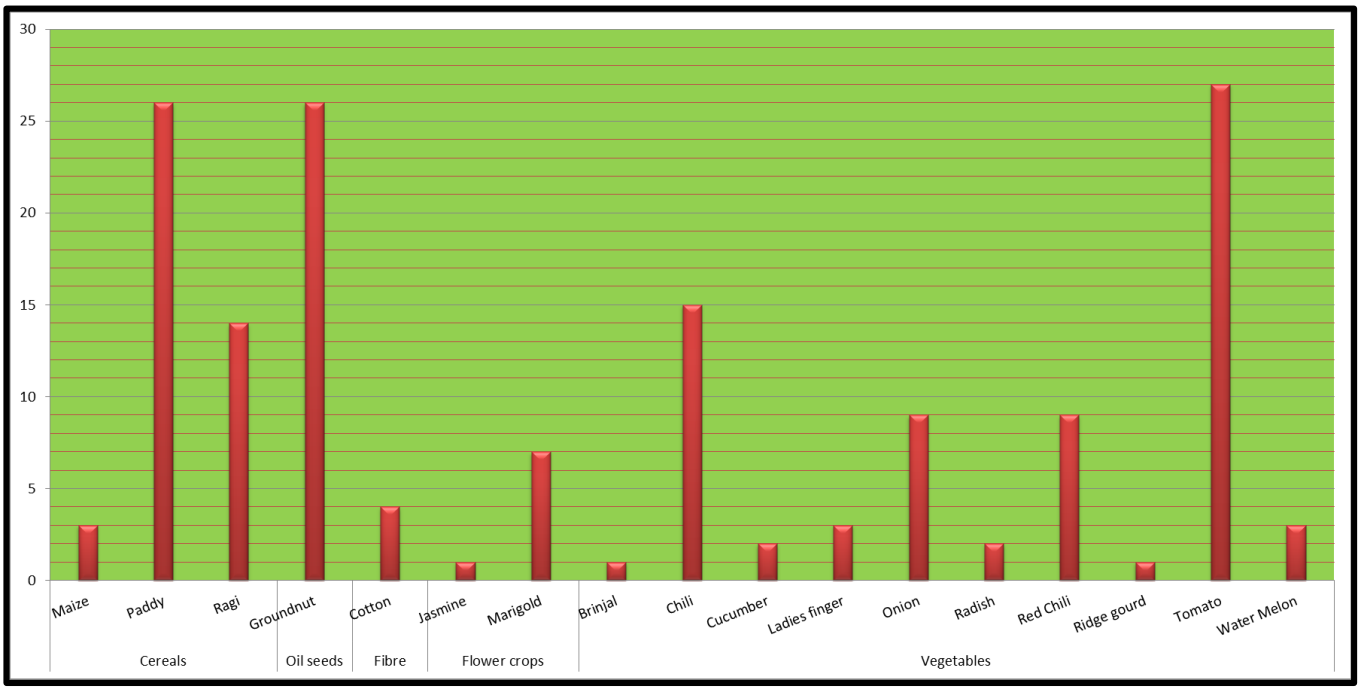
Q.No.	Decision	Husband	Wife	Both	Children
ABD.1.25	Who takes care of the species?	37	53	394	65
ABD.1.26	Who makes the decisions about the seed that was planted?	289	93	91	16
ABD.1.27	Who makes the decisions about the field management of this "species"?	44	30	390	62
ABD.1.28	Who makes the decisions about the consumption of the "species"?	267	44	166	16
ABD.1.29	Who makes the decisions about the selling of the "species"?	302	52	41	15
ABD.1.30	Who makes the decisions about how to use the revenue from the sale of the "species"?	257	12	128	30
	Total:	**1196**	**284**	**1210**	**204**
	Average:	**341.7**	**81.1**	**345.7**	**58.3**
	Percentage:	**41**	**10**	**42**	**7**

- Most of the decisions were made collectively by both husband and wife (42%) closely followed by husband alone (41%).
- Husbands were in the forefront to make decisions about selling of the species.
- The decisions about the seed that was planted were taken mostly by wives.
- Children takes care of the species and makes the decisions about field management.

Table-9: Annual plant species grown on the farm during Rabi, 2013-14.

S.No.	Name of the Species	Botanical Name	No. of years (Average)	No. of House holds (out of 200)	Percentage (%)
I.	**Cereals**				
1.	Maize	*Zea mays*	2.3	3.0	1.5
2.	Paddy	*Oryza sativa*	8.5	26.0	13.0
3.	Ragi	*Eleusine coracana*	7.6	14.0	7.0
II.	**Oil seeds**				
1.	Groundnut	*Arachis hypogaea*	5.7	26.0	13.0
	Fibre				
1.	Cotton	*Gossypium hirsutum*	3.3	4.0	2.0
III.	**Vegetables**				
1.	Brinjal	*Solanum melongina*	2.0	1.0	0.5
2.	Chili	*Capsicum annuum*	1.6	15.0	7.5
3.	Cucumber	*Cucumis sativus*	1.0	2.0	1.0
4.	Ladies finger	*Abelmoschus esculantus*	1.3	3.0	1.5
5.	Onion	*Allium cepa*	2.6	9.0	4.5
6.	Radish	*Raphanus sativus*	1.5	2.0	1.0
7.	Red Chili	*Capsicum annuum*	3.6	9.0	4.5
8.	Ridge gourd	*Luffa acutangula*	2.0	1.0	0.5
9.	Tomato	*Solanum lycopersicum*	2.0	27.0	13.5
10.	Water Melon	*Citrullus lanatus*	2.0	3.0	1.5
IV.	**Flower crops**				
1.	Jasmine	*Jasminum grandiflorum*	10.0	1.0	0.5
	Marigold	*Jasminum auriculatum* *Tagetes erecta*	5.0	7.0	3.5

Figure-23: Annual plant species grown on the farm during Rabi, 2013-14.



Plant species grown

- Seventeen annual species (cereals-3, oilseeds-1, fibre-1, vegetables-10 and flower crops-2) were maintained on the farm by households during Rabi season.
- Tomato (13.5%), groundnut (13.0%) and paddy (13.0%) followed by chili, ragi, red chili, onion and marigold were the most common species maintained by households in all the four surveyed villages.

Table-10: Objective of production of annual species (No. of households that stated the objective for a species, both objectives could have been stated by the same household) and subjective mean rating of the contribution of each species to the food supply and income of the house hold Rabi, 2013-14

S.No.	Name of the Species	Botanical Name	Objective			Contribution							
						Food				Income			
			Self	Selling	Both	Major	Medium	Minor	No	Major	Medium	Minor	No
I.	**Cereals**												
1.	Maize	*Zea mayz*	0	1	2	0	0	2	1	2	1	0	0
2.	Paddy	*Oryza sativa*	4	0	22	18	6	2	0	15	6	4	1
3.	Ragi	*Eleusine coracana*	1	0	13	6	7	1	0	5	5	3	1
II.	**Oil seeds**												
1.	Groundnut	*Arachis hypogaea*	0	0	26	2	15	9	0	17	8	1	0
III.	**Fibre**												
1.	Cotton	*Gossypium spp.*	0	4	0	0	0	1	3	3	1	0	0
IV.	**Vegetables**												
1.	Brinjal	*Solanum melongina*	0	0	1	0	0	1	0	0	0	1	0
2.	Chili	*Capsicum spp.*	0	1	14	0	4	11	0	2	10	3	0
3.	Cucumber	*Cucumis sativus*	0	2	0	0	0	1	1	0	1	1	0
4.	Ladies finger	*Abelmoschus esculantus*	0	0	3	0	0	3	0	0	0	2	1
5.	Onion	*Allium cepa*	0	0	9	0	7	2	0	1	5	3	0
6.	Radish	*Raphanus sativus*	0	0	2	0	0	2	0	0	0	2	0
7.	Red Chili	*Capsicum annuum*	0	0	9	0	6	3	0	1	4	4	0
8.	Ridge gourd	*Luffa acutangula*	0	0	1	0	0	1	0	0	0	1	0
9.	Tomato	*Solanum lycopersicum*	0	1	26	0	9	18	0	7	14	5	1
10.	Water Melon	*Citrullus lanatus*	0	0	3	0	2	1	0	1	0	2	0
V.	**Flower crops**												
1.	Jasmine	*Jasminum grandiflorum* *Jasminum auriculatum*	0	1	0	0	0	0	1	0	0	1	0
2.	Marigold	*Tagetes erecta*	1	6	0	0	0	0	7	5	2	0	0

- Main objective of producing these annual species was for both self and selling purposes.
- Paddy was the major contributor for food. Groundnut contributed medium to food followed by tomato.
- Major income source for majority of households was groundnut followed by paddy. Tomato and chilli were the medium income contributors.

Table-11: Sources of seed/planting material of annual species (number of households that obtained seed/planting material for a particular species and from a particular source in Rabi 2013-14

Name of the Species	Scientific Name	Source		If obtained outside from whom								Type of transaction					
		Saved	Outside	Family	Neighbor	Friend	Public seed Trader	Private seed trader	Local selling	Govt. emergency	NGO	Purchase	Exchange of seed	Barter for other goods	Credit	Gift	Purch-ase (%)
Cereals																	
Maize	*Zea mays*	0	3	0	0	0	0	3	0	0	0	3	0	0	0	0	100
Paddy	*Oryza sativa*	3	23	0	0	0	1	22	0	0	0	21	0	0	2	0	88
Ragi	*Eleusine coracana*	3	10	0	0	0	0	9	0	0	1	8	0	0	1	1	71
Oil seeds																	
Groundnut	*Arachis hypogaea*	11	11	4	1	0	1	3	1	0	0	11	0	0	0	0	42
Fibre																	
Cotton	*Gossypium hirsutum*	0	4	0	0	0	1	2	0	0	0	4	0	0	0	0	100
Vegetables																	
Brinjal	*Solanum melongina*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Chili	*Capsicum spp.*	0	15	1	0	0	0	12	0	0	0	15	0	0	0	0	100
Cucumber	*Cucumis sativus*	0	2	0	0	0	0	2	0	0	0	2	0	0	0	0	100
Ladies finger	*Abelmoschus esculantus*	0	3	0	0	0	1	3	0	0	0	3	0	0	0	0	100
Onion	*Allium cepa*	0	9	0	0	0	0	6	0	0	0	9	0	0	0	0	100
Radish	*Raphanus sativus*	0	2	0	0	0	1	2	0	0	0	2	0	0	0	0	100
Red Chili	*Capsicum annuum*	1	8	0	0	0	0	7	1	0	0	8	0	0	0	0	89
Ridge gourd	*Luffa acutangula*	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0	100
Tomato	*Solanum lycopersicum*	1	26	0	0	0	1	23	1	0	0	26	0	0	0	0	96
Water Melon	*Citrullus lanatus*	0	3	0	0	0	0	3	0	0	0	3	0	0	0	0	100
Flower crops																	
Jasmine	*Jasminum grandiflorum* / *Jasminum auriculatum*	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	100
Marigold	*Tagetes erecta*	1	6	0	0	0	0	5	1	0	0	5	0	0	1	0	86

- Most of the households obtained seed or planting material of tomato, paddy, chillies, groundnut and ragi from outside source and few households cultivated the farm from saved seed or planting material of groundnut, ragi, red chillies and tomato.
- Most of the households preferred to obtain seed (tomato, paddy, chilli) from private seed traders.
- The type of transaction by most of the households was through purchases and few by credit. Hundred per cent purchase was made for all the crops except, tomato (96%), Red chilli (89%), Paddy (88%), Marigold (86%) and Groundnut (42%).

Table-12: Frequency of seed/planting material replacement (number of households that replace seed planting material for a particular species at a particular frequency) Rabi, 2013-14

S.No.	Name of the Species	Botanical Name	Every year	Every 2 years	Every 3 years	Never
I.	**Cereals**					
1.	Maize	*Zea mays*	3	0	0	0
2.	Paddy	*Oryza sativa*	24	1	0	0
3.	Ragi	*Eleusine coracana*	10	1	0	2
II.	**Oil seeds**					
1.	Groundnut	*Arachis hypogaea*	21	0	2	0
III.	**Fibre**					
1.	Cotton	*Gossypium hirsutum*	3	1	0	0
IV.	**Vegetables**					
1.	Brinjal	*Solanum melongina*	1	0	0	0
2.	Chili	*Capsicum annuum*	15	0	0	0
3.	Cucumber	*Cucumis sativus*	2	0	0	0
4.	Ladies finger	*Abelmoschus esculantus*	3	0	0	0
5.	Onion	*Allium cepa*	7	1	0	0
6.	Radish	*Raphanus sativus*	2	0	0	0
7.	Red Chili	*Capsicum annuum*	9	0	0	0
8.	Ridge gourd	*Luffa acutangula*	1	0	0	0
9.	Tomato	*Solanum lycopersicum*	26	1	0	0
10.	Water Melon	*Citrullus lanatus*	3	0	0	0
V.	**Flower crops**					
1.	Jasmine	*Jasminum grandiflorum* *Jasminum auriculatum*	1	0	0	0
2.	Marigold	*Tagetes erecta*	6	0	0	1

- Households replaced seed every year during Rabi, 2013-14 and the seeds of Tomato, Paddy, Groundnut and Chilli were replaced by more households.

Table-13: Annual species grown by households and their demand for planting material during Rabi 2013-14

S.No.	Name of the Species	Botanical Name	No. of Households grown	No. of HH maintain Desi varieties	No. of HH maintain Improved	Demand for seed/planting material by type					
						No	Yes	Local	Improved	Both	% Yes
I.	**Cereals**										
1.	Maize	*Zea mays*	3	1	2	0	3	1	2	0	100
2.	Paddy	*Oryza sativa*	26	14	12	0	26	9	9	8	100
3.	Ragi	*Eleusine coracana*	13	13	0	0	13	10	2	1	93
II.	**Oil seeds**										
1.	Groundnut	*Arachis hypogaea*	26	7	19	0	24	3	4	17	92
III.	**Fibre**										
1.	Cotton	*Gossypium hirsutum*	4	1	3	0	4	0	2	2	100
IV.	**Vegetables**										
1.	Brinjal	*Solanum melongina*	1	0	1	0	1	0	1	0	100
2.	Chili	*Capsicum annuum*	15	4	11	1	14	0	3	11	93
3.	Cucumber	*Cucumis sativus*	2	0	2	0	2	0	1	1	100
4.	Ladies finger	*Abelmoschus esculantus*	3	0	3	0	3	1	2	0	100
5.	Onion	*Allium cepa*	9	6	3	1	8	1	3	4	89
6.	Radish	*Raphanus sativus*	2	0	2	0	2	0	2	0	100
7.	Red Chili	*Capsicum annuum*	9	4	5	0	9	1	5	3	100
8.	Ridge gourd	*Luffa acutangula*	1	0	1	0	1	0	1	0	100
9.	Tomato	*Solanum lycopersicum*	27	6	21	2	25	4	6	15	93
10.	Water Melon	*Citrullus lanatus*	3	0	3	0	3	0	1	2	100
V.	**Flower crops**										
1.	Jasmine	*Jasminum grandiflorum* *Jasminum auriculatum*	1	1	0	0	1	0	1	0	100
2.	Marigold	*Tagetes erecta*	7	4	3	0	7	3	4	0	100

- Most of the households maintained both improved and local seed types.
- There was more demand for seed/planting material of both local and improved varieties.

Table-14: Distribution of responsibility for caring of annual domesticated plant species (No. of households) during Rabi, 2013-14

Q.No.	Decision	Husband	Wife	Both	Children
ABD.2.25	Who takes care of the species?	13	7	132	24
ABD.2.26	Who makes the decisions about the seed that was planted?	123	8	17	4
ABD.2.27	Who makes the decisions about the field management of this "species"?	2	4	139	24
ABD.2.28	Who makes the decisions about the consumption of the "species"?	91	6	53	1
ABD.2.29	Who makes the decisions about the sellinging of the "species"?	127	10	13	5
ABD.2.30	Who makes the decisions about how to use the revenue from the sale of the "species"?	124	3	23	1
	Total:	**480**	**38**	**377**	**59**
	Average:	**137.1**	**10.9**	**107.7**	**16.9**
	Percentage:	**50**	**4**	**40**	**6**

- Most of the decisions were made by Husband alone (50%) followed by Both (40%) with respect to the crops grown during Rabi, 2013.
- Both husband and wife took care of the species and made the decisions about the field management.
- The decisions about consumption of species were taken by Husband (91/200) and both husband and wife (53/200).
- The decisions about how to use the revenue from the sale of the species were taken by husbands in most of the households (124/200 households).

Table-15: Perennial plant species (food – fruit, leaves, pods and agro-forestry – fodder, fuel, house construction, industry, etc.) maintained during 2013

S.No.	Name of the Species	Botanical Name	No. of Years (Average)	No. of House holds		Total	Percentage (%)
				Farm	Kitchen		
I.	**Fruits**						
1.	Aonla	*Phyllanthus emblica*	3.8	4	1	5	2.5
2.	Acid Lime	*Citrus aurantifolia*	3.5	5	3	8	4
3.	Banana	*Musa paradisiaca*	0.3	0	1	1	0.5
4.	Ber	*Zizyphus mauritiana*	8.4	44	1	45	22.5
5.	Custard apple	*Annona squamosa*	8.7	39	1	40	20
6.	Fig	*Ficus carica*	5	1	0	1	0.5
7.	Guava	*Psiduam guajava*	7.5	4	2	6	3
8.	Jack fruit	*Artocarpus heterophyllus*	5.3	1	2	3	1.5
9.	Jamun	*Syzygium cumini*	7	4	0	4	2
10.	Mango	*Mangifera indica*	10.7	61	1	62	31
11.	Papaya	*Carica papaya*	1.2	1	1	2	1
12.	Pomegranate	*Punica granatum*	4	0	1	1	0.5
13.	Sapota	*Achras zapota*	9.6	9	2	11	5.5
14.	Tamarind	*Tamarindus indica*	14.5	37	4	41	20.5
15.	Coconut	*Cocos nucifera*	10.5	17	25	42	21
II.	**Vegetables**						
1.	Drumstick	*Moringa ptergosperma*	2	0	1	1	0.5
2.	Curry leaf	*Murraya koenigii*	5.9	0	12	12	6
III.	**Forest species**						
1.	Acacia	*Acacia arabica*	9.3	8	0	8	4
2.	Ashok tree	*Polyalthia longifolia*	15	0	1	1	0.5
3.	Banyan	*Ficus relisiosa*	15	1	0	1	0.5
4.	Henna	*Lawsonica inermis*	4	0	1	1	0.5
5.	Eucalyptus	*Eucalyptus spp.*	7.6	3	2	5	2.5
6.	Indian rose wood/Anjam	*Mentha spp.*	9.5	4	0	4	2
7.	Neem	*Azadirachta indica*	9.8	28	11	39	19.5
8.	Pongamia	*Pongamia pinnata*	8.1	10	12	22	11
9.	Soap nut	*Sapindus spp.*	8	3	0	3	1.5
10.	Saint Thomas bean	*Leucaena leucocephala*	1.3	1	2	3	1.5
11.	Apple blossom	*Cassia auriculata*	8	1	0	1	0.5
12.	Poon tree	*Sterculia urens*	9.7	11	0	11	5.5
13.	Teak	*Tectona grandis*	2.8	7	1	8	4
14.	Togari wood of Madaras	*Dodonaea viscosa*	3	0	1	1	0.5
15.	Glue berry	*Cordiadichotom*	10	1	0	1	0.5
16.	Wheel tree	*Albizia amara*	10	6	0	6	3
17.	Miswak	*Salvadora persica*	6	1	0	1	0.5
18.	Round-leaved Grewia/Round sage Indian linden	*Grewia orbiculata*	6.4	7	0	7	3.5
19.	Cluster croton	*Carissa carrindus*	8.7	39	0	39	19.5
20.	Dog's teak	*Cordia dichotoma*	12	0	1	1	0.5
21.	Ceylon ebeny	*Diospirous chloroxylan*	10	1	0	1	0.5
IV.	**Flowers**						
1.	Jasmine	*Jasminum grandiflorum* *Jasminum auriculatum*	3	2	6	8	4
2.	Rose	*Rosa spp.*	0.3	0	1	1	0.5
3.	Hibiscus	*Hibiscus spp.*	3.9	1	11	12	6
4.	Yellow trumpet bush/ Yellow bells	*Tecoma argentea*	7	0	1	1	0.5
V.	**Medicinal/aromatic**						
1.	Aloevera	*Aloe vera*	5.3	3	0	3	1.5
2.	Sweet basil / Sabja	*Ocimum basilicum*	7	0	1	1	0.5

- Forty four perennial plant species were maintained in the farm as well as in the backyards.
- Mango (31.0%), ber (22.5%), coconut (21.0%), tamarind (20.5%) and custard apple (20.0%) were the important perennial crops maintained during 2013.
- Self-consumption was the common objective for all these species.

Table-16: Distribution of responsibility for caring of perennial plant species (No. of households) during 2013

Q.No.	Decision	Husband	Wife	Both	Children
ABD.3.17	Who takes care of the species?	37	76	340	55
ABD.3.18	Who makes the decisions about the seed that was planted?	62	64	327	34
ABD.3.19	Who makes the decisions about the field management of this "species"?	227	117	96	28
ABD.3.20	Who makes the decisions about the consumption of the "species"?	262	57	120	12
ABD.3.21	Who makes the decisions about the selling of the "species"?	249	31	120	31
ABD.3.22	Who makes the decisions about how to use the revenue from the sale of the "species"?	230	28	145	17
	Total:	**1067**	**373**	**1148**	**177**
	Average:	**177.8**	**62.2**	**191.3**	**29.5**
	Percentage:	**39**	**13**	**42**	**6**

- Most of the decisions were made by both Husband and wife (42%) followed by Husband alone (39%) with regard to the perennial crops maintained during, 2013.

- Both husband and wife took decisions about the seed that was planted and they took care of the species. Children also took care of the species planted.

Table-17: Wild or Semi-wild species harvested from natural vegetation

S.No.	Name of the Species	Botanical Name	No. of House holds	Percentage (%)
I.	**Fruits**			
1.	Ber	*Zizyphus mauritiana*	2	1
2.	Custard apple	*Annona squamosa*	1	0.5
3.	Jamun	*Syzygium cumini*	3	1.5
4.	Mango	*Mangifera indica*	1	0.5
5.	Tamarind	*Tamarindus indica*	13	6.5
II.	**Vegetables**			
1.	Drumstick	*Moringa oleifera*	1	0.5
III.	**Forest species**			
1.	Acasia	*Acacia arabica*	27	13.5
2.	Togari wood of Madaras	*Dodonaea viscosa*	3	1.5
3.	Banyan	*Ficus benghalensis*	5	2.5
4.	Peepal tree	*Ficus glanorata*	1	0.5
5.	Toddy palm	*Borassus flabellifera*	11	5.5
6.	Wheel tree	*Albizia amara*	6	3
7.	Axle wood tree	*Anogyssis latifolia*	6	3
8.	Eucalyptus	*Eucalyptus spp.*	3	1.5
9.	Indian rock fig	*Ficus arnottianaa*	1	0.5
10.	Ceylon tea	*Gymnosporia emerginata*	11	5.5
11.	Round-leaved Grewia/ Round sage Indian linden	*Grewia orbiculata*	4	2
12.	Algarobu	*Artocarpus heterophyllus*	3	1.5
13.	Black plum	*Prosopis cineraria*	3	1.5
14.	Cluster croton	*Carissa carandas*	1	0.5
15.	Common emetic nut	*Catunaregam spinosans*	1	0.5
16.	Indian rose wood/Anjam	*Hardwickia binate*	7	3.5
17.	Neem	*Azadirachta indica*	67	33.5
18.	Country date	*Phonex silvestrus*	5	2.5
19.	Pongamia	*Pongamia pinnata*	16	8
20.	Indian Red wood	*Soymida fexbrifuga*	4	2
21.	Saint Thomas bean	*Leucaena leucocephala*	22	11
22.	Apple blossom	*Cassia auriculata*	11	5.5
23.	Teak	*Tectona grandis*	2	1
24.	Poon tree	*Sterculia urens*	10	5
25.	Ceylon ebeny	*Diospirous chloroxylan*	29	14.5

- Most common species were Neem (33.5%), Acacia (13.5%), Saint Thomas bean (Soobabool) (11.0%) and Pongamia (8.0%) with the highest contribution to fire wood supply.
- Wild or semi wild species were used for fire wood, agricultural instruments, construction material.

Existing wild plant species

Figure-24: Agave

Figure-25: Cactus

Figure-26: Country Date

Figure-27: Toddy Palm

Figure-28: Thulasi

Figure-29: Calotropis

Table-18: Distribution of responsibility for caring of wild and semi-wild species (No. of households) during 2013

Q.No.	Decision	Husband	Wife	Both	Children
ABD.4.6	Who Harvested the species?	233	22	53	12
ABD.4.7	Who makes the decisions about the use of the "species"?	215	40	53	4
ABD.4.8	If sold, who makes the decisions about how to use the revenue from the sale of the "species"	194	22	49	11
	Total:	**642**	**84**	**155**	**27**
	Average:	**214.0**	**28.0**	**51.7**	**9.0**
	Percentage:	**71**	**9**	**17**	**3**

- Most of the decisions were made by Husband (71%) alone with regard to responsibility for caring of wild and semi-wild species.

Table-19: Distribution of responsibility for caring of wild and semi-wild species (No. of households) during 2013

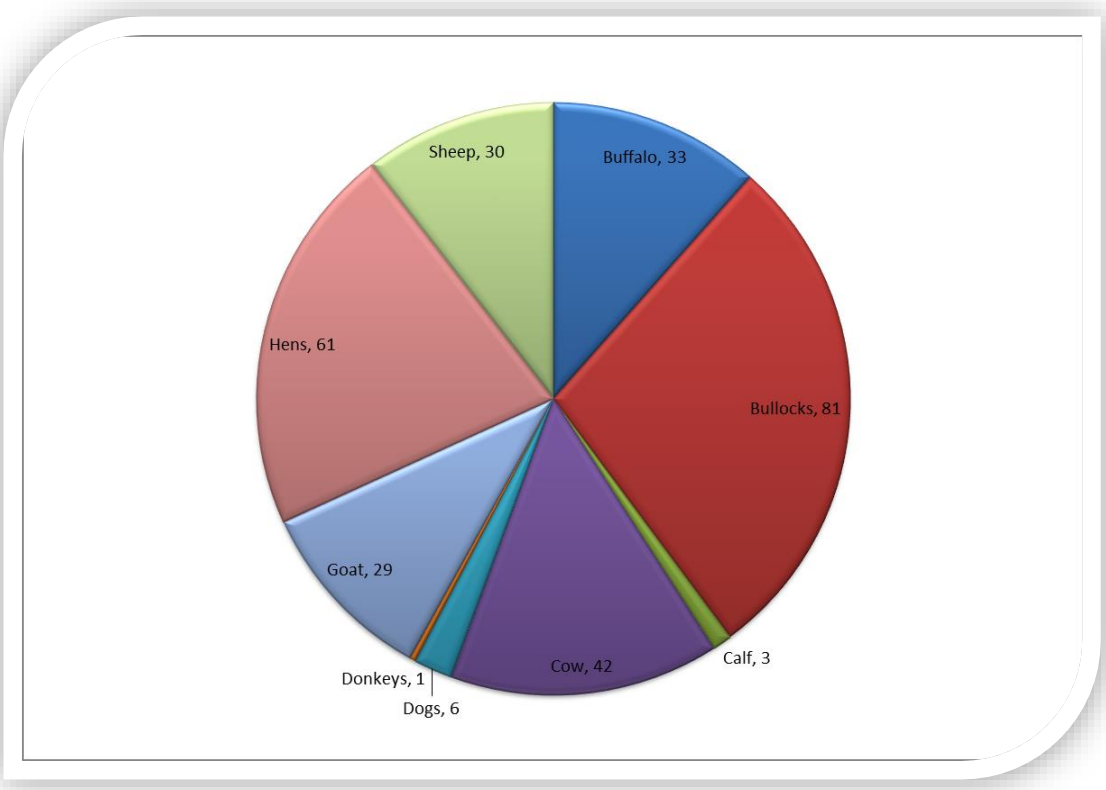
Q.No.	Decision	Husband	Wife	Both	Children
ABD.4.14	Who Harvested the species?	136	18	12	4
ABD.4.15	Who makes the decisions about the use of the "species"?	145	18	6	4
ABD.4.16	If sold, who makes the decisions about how to use the revenue from the sale of the "species"	135	18	12	6
	Total:	**416**	**54**	**30**	**14**
	Average:	**138.7**	**18.0**	**10.0**	**4.7**
	Percentage:	**81**	**11**	**6**	**3**

- Most of the decisions were made by Husband (81%) followed by Wife (11%) related to the caring of wild and semi-wild species.

Table-20: Domesticated animal species maintained by households (number of households that maintained a species and number of villages where the species was present) during, 2013

S.No.	Name of the Species	Scientific Name	Years of Rearing (Average)	Total no. of Animals	No. of House holds	Percentage (%)
1.	Buffalo	*Bubalus bubalis*	7.30	94	**33**	16.5
2.	Bullock	*Bos taurus*	7.25	174	**81**	40.5
3.	Calf	*Bos dometicus*	3.50	5	**3**	1.5
4.	Cow	*Bos dometicus*	7.31	81	**42**	21.0
5.	Dog	*Canis lupus familiaris*	5.83	6	**6**	3.0
6.	Donkey	*Equus assinus*	15.00	3	**1**	0.5
7.	Goat	*Capra hircus*	9.12	1841	**29**	14.5
8.	Hen	*Gallus gallus domesticus*	4.74	416	**61**	30.5
9.	Sheep	*Ovis aeries*	6.22	316	**30**	15.0

Figure-30: Domesticated animal species maintained by households (number of households that maintained a species and number of villages where the species was present) during, 2013



- Nine domestic animal species were maintained by households.
- The most common species were bullocks (40.5%), hen (30.5%), cow (21.0%), buffalo (16.5%), sheep (15.0%) and goat (14.5%).

- For most of the domestic animal species and their products, self-consumption was the common objective.

Table-21: Objective of production of the species and/or products derived from them and uses (number of households that stated the objective and a particular use for a species)

S.No.	Name of the Species	Scientific Name	Objective			Products and uses			
			Home use	Sale	Both	Milk	Dung fuel	Dung fertilizer	Hides
1.	Buffalo	*Bubalus bubalis*	11	1	21	26	0	30	0
2.	Bullock	*Bos taurus*	46	3	35	1	1	73	0
3.	Calf	*Bos dometicus*	2	0	1	0	0	1	0
4.	Cow	*Bos dometicus*	19	1	22	39	0	39	0
5.	Dog	*Canis lupus familiaris*	0	0	0	0	0	0	0
6.	Donkey	*Equus assinus*	1	0	0	0	0	0	0
7.	Goat	*Capra hircus*	9	4	16	14	0	19	3
8.	Hen	*Gallus gallus domesticus*	50	0	10	0	0	3	0
9.	Sheep	*Ovis aeries*	3	7	22	8	0	16	1

- All the animal species and their products were maintained for home consumption and income generation.
- Goat, sheep and hen were the most common species with the highest contribution to food supply.

Table-22: Breeds of species maintained by households

S.No.	Name of the Species	Scientific Name	No. of HH maintained Breeds	No. of HH maintained Local breeds	No. of HH maintained Improved breeds	No. of HH maintained Mixture of local and improved	No. of HH maintained Mixture of local
1.	Buffalo	*Bubalus bubalis*	33	31	1	1	0
2.	Bullock	*Bos taurus*	85	65	18	2	0
3.	Calf	*Bos dometicus*	3	2	0	0	1
4.	Cow	*Bos dometicus*	42	27	12	3	0
5.	Dog	*Canis lupus familiaris*	6	6	0	0	0
6.	Donkey	*Equus assinus*	1	1	0	0	0
7.	Goat	*Capra hircus*	29	29	0	0	0
8.	Hen	*Gallus gallus domesticus*	60	60	0	0	0
9.	Sheep	*Ovis aeries*	30	30	0	0	0
		Total:	**289**	**251**	**31**	**6**	**1**

- All the households maintained atleast one breed of the species and the most common are local breeds.
- Few households maintained improved breeds of bullocks and cows.

Table-23: Distribution of responsibility for caring of annual domesticated animal species (No. of households) during 2013

Q.No.	Decision	Husband	Wife	Both	Children
ABD.5.19	Who takes care of the species?	26	21	237	16
ABD.5.20	Who makes the decisions about the seed that was planted?	19	25	237	15
ABD.5.21	Who makes the decisions about the field management of this "species"?	108	25	147	9
ABD.5.22	Who makes the decisions about the consumption of the "species"?	148	21	80	9
ABD.5.23	Who makes the decisions about the sellinging of the "species"?	165	13	74	10
	Total:	**466**	**105**	**775**	**59**
	Average:	**155**	**35**	**258**	**20**
	Percentage:	**33**	**7**	**55**	**4**

- Most of the decisions were made by both husband and wife (55%) followed by husband alone (33%) with regard to caring of annual domesticated animal species.

Figure-31: Buffaloes

Figure-32: Bullocks (Ongole)

Figure-33: Cow (Jersy)

Figure-34: Sheep and Goat

Figure-35: Hen & Cock

Table-24: Education of the household Head

Literacy Rate	No.	%
A. Illiterate	93	46.5
B. Literate		
1st class	1	0.5
2nd class	8	4.0
3rd class	7	3.5
4th class	7	3.5
5th class	32	16.0
6th class	3	1.5
7th class	17	8.5
8th class	3	1.5
9th class	3	1.5
10th class	16	8.0
Inter	7	3.5
Degree	3	1.5
PG	0	0.0
TOTAL:	**200**	

- 46.5% of the household heads were illiterate and 53.5% were literates.
- Among literates, 16% of the households studied upto 5th class.
- About 8.0% studied upto 10th class and degree studied household heads were only 1.5%.

Table-25: Education of the spouse

Literacy Rate	No.	%
A. Illiterate	141	70.5
B. Literate		
1st class	0	0.0
2nd class	10	5.0
3rd class	0	0.0
4th class	1	0.5
5th class	19	9.5
6th class	3	1.5
7th class	6	3.0
8th class	2	1.0
9th class	1	0.5
10th class	11	5.5
Inter	4	2.0
Degree	1	0.5
PG	1	0.5
TOTAL:	**200**	

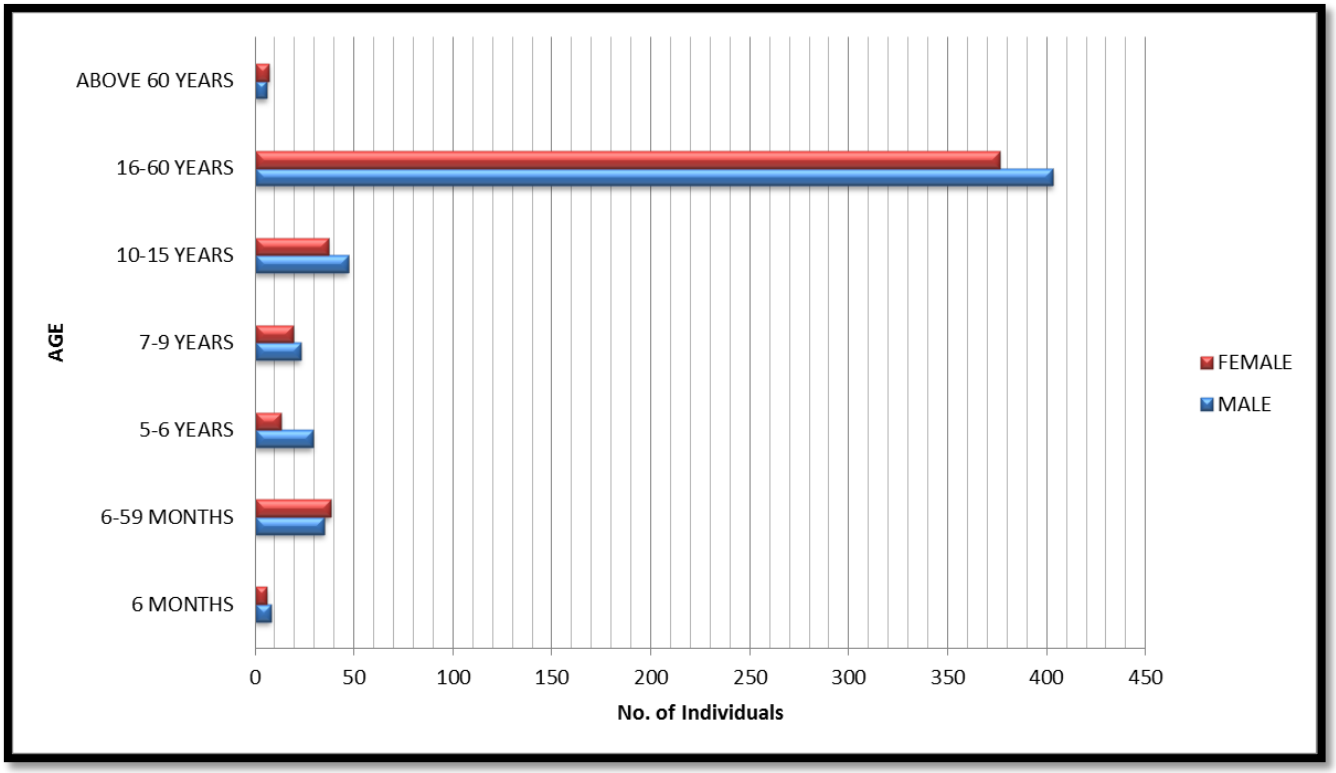
- 70.5% spouses were illiterate.
- 19.5% spouses studied upto 5th class.
- Spouses with 10th standard were only 5.5%.
- Only one degree holder and PG degree holder among all the spouses.

SOECO.7: Socio-economic data

Table-26: Family size

	AGE	MALE	FEMALE
SOECO.7.1.1	6 MONTHS	8	6
SOECO.7.1.2	6-59 MONTHS	35	38
SOECO.7.1.3	5-6 YEARS	29	13
SOECO.7.1.4	7-9 YEARS	23	19
SOECO.7.1.5	10-15 YEARS	47	37
SOECO.7.1.6	16-60 YEARS	403	376
SOECO.7.1.7	ABOVE 60 YEARS	6	7
	Total:	**551**	**496**

Figure-36: Family size

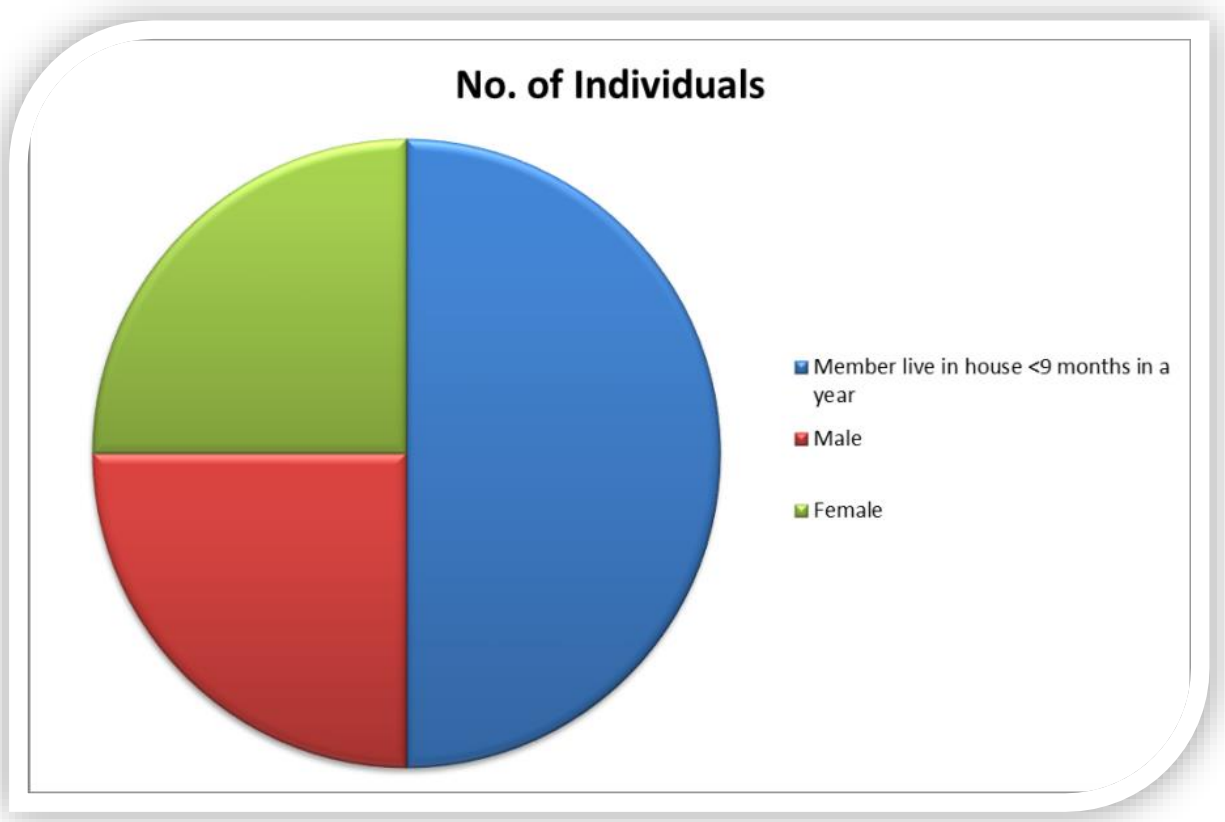


- Majority of the males (403) and females (376) are in the age group of 16-60 years.
- The population of a family has an average of 5.2 individuals.

Table-27: Migration

	Migration	No.
SOECO.7.1.7	Member live in house <9 months in a year	88
SOECO.7.1.8	Male	44
SOECO.7.1.9	Female	44

Figure-37: Migration



- 88 members out of 200 households migrate to other places for work.
- Equal number of male and female are migrating to other places for work.

Table-28: Land owned and cultivation (acres)

		Husband	Wife	Joint	Total
SOECO.7.2.1	Owned	796.28	133.69	23	952.97
SOECO.7.2.2	Shared in	2.5	0	0	2.5
SOECO.7.2.3	Shared out	0	0	0	0
SOECO.7.2.4	Rented in	55.9	0	0	55.9
SOECO.7.2.5	Rented out	34.5	0	12	46.5
SOECO.7.3.1	Fallow	13.8	4	0	17.8
SOECO.7.3.2	Waste land	38	8	0	46
SOECO.7.3.3	Grazing land	1	0	0	1
SOECO.7.3.4	Trees/forest	0	0	0	0
	Total	**941.98**	**145.69**	**35**	**1122.67**

- Most of the cultivated land was controlled by household heads (Husband) and few were rented in, rented out, waste land, fallow land and grazing land.
- Wife and Joint hold small amount of cultivated land in the village.

Figure-38: Land owned and cultivation (acres)

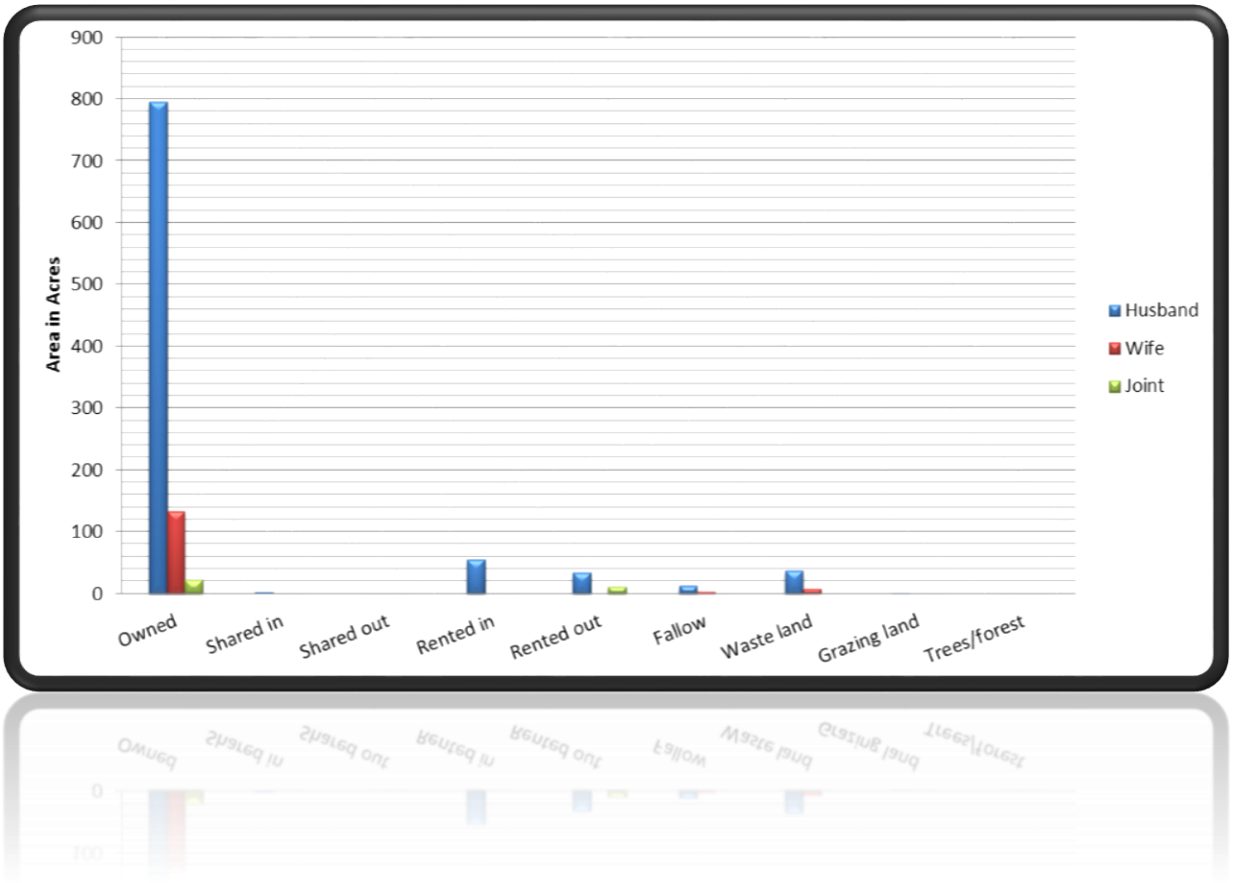


Table-29: Access, quality, quantity and management of water resources

		Canals	Open wells	Bore wells	Streams	Rivers	Dams
		7.4.1	7.4.2	7.4.3	7.4.4	7.4.5	7.4.6
A. Privately own	Husband	0	9	64	0	0	0
	Wife	0	1	7	0	0	0
	Joint	0	1	13	0	0	0
B. Communally own	Husband	0	0	0	0	0	0
	Wife	0	0	0	0	0	0
	Joint	0	0	1	0	0	0
C. Who own Male/Female /Joint	Husband	0	0	0	0	0	0
	Wife	0	0	0	0	0	0
	Joint	0	0	0	0	0	0

- Most of the households in the villages depend on rainfed irrigation.
- 42.5% of the households depend on bore wells, which were mostly owned by Husband himself and few were by wife and Joint.
- In kharif season, most of the families depend on monsoon rain for irrigation and in Rabi season there is scarcity of ground water in bore wells.

Table-30: Housing

SOECO.7.5.1 Type of Floor	No. of Houses
Earth floor	12
Stone	176
Cement	8
Tile	0
Wood	0
Others (Granite)	4

SOECO.7.5.2 Type of Wall	No. of Houses
Wood	0
Earth wall	82
Iron sheet	0
Stone	105
Others (Brick and Granite)	13

SOECO.7.5.3 Type of Roofing material	No. of Houses
Straw/grass	0
Iron sheet	11
Tile	0
Others (RC roof)	189

SOECO.7.5.4 Electricity	No. of Houses
No	0
Yes	200
Generator	0

- In most of the households, the type of floor was made up of stone followed by earthen floor and cement.
- In all the households, the type of wall was made up of stone followed by earth wall, bricks and granite.
- RC roof was most common type of roofing in the village followed by iron sheet.
- All the household have electricity in their houses.

Figure-39: Housing

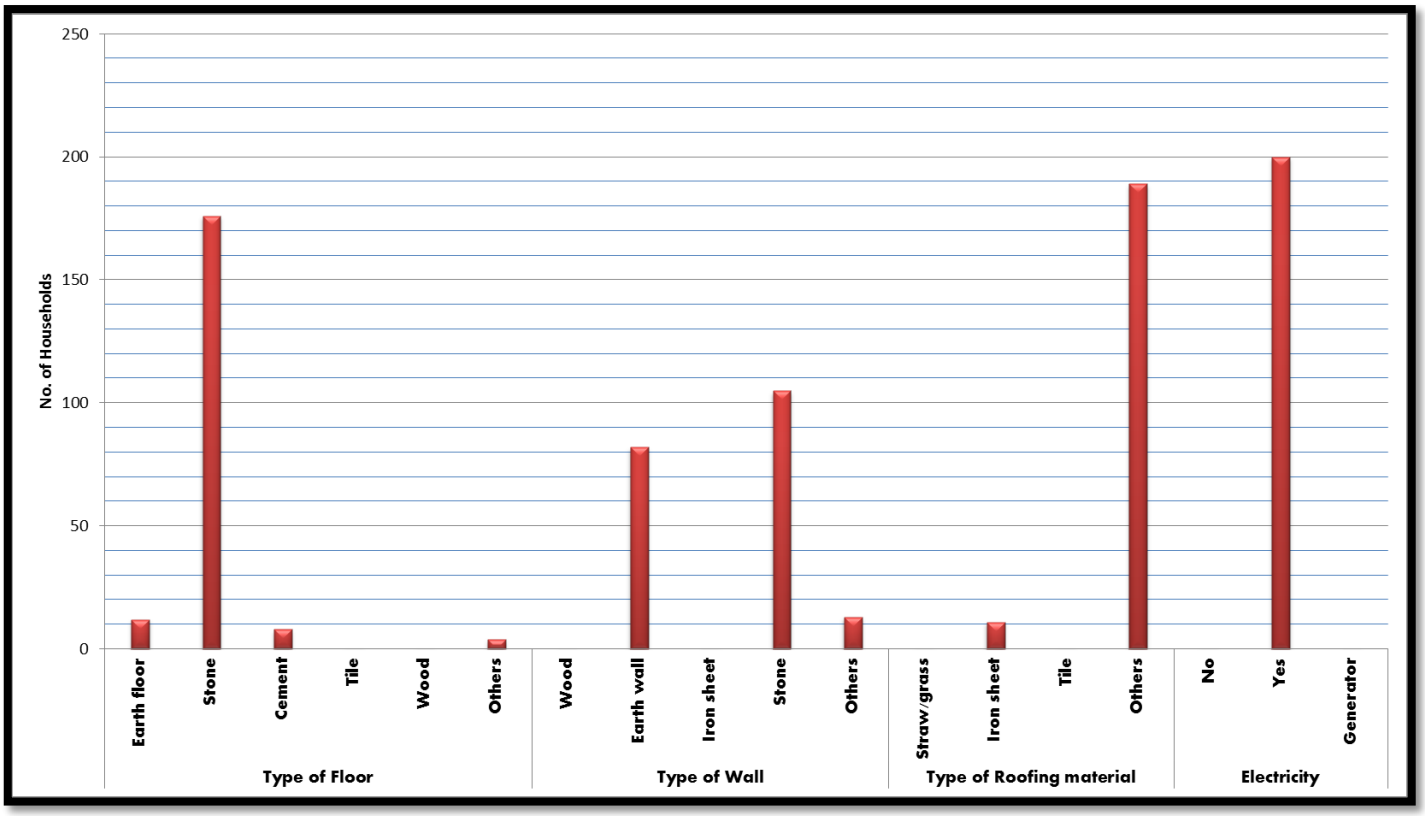


Table-31: Ownership of consumer goods

	Items	No. of Households	% (100/200XNo.)
SOECO.7.6.1	Bicycle	74	**37**
SOECO.7.6.2	Motorbike	48	**24**
SOECO.7.6.3	Car	0	**0**
SOECO.7.6.4	Radio	8	**4**
	CD player	43	**21.5**
	Television	174	**87**
	Cell/Mobile	185	**92.5**
	Refrigerator	6	**3**
SOECO.7.6.5	Business vehicle	15	**7.5**
SOECO.7.6.6	Paraffin stove	133	**66.5**
SOECO.7.6.7	Gas cooker	115	**57.5**

- 92.5% of households possessed mobile phones.
- 66.5% households were having paraffin stoves and 57.5% were having Gas cookers.
- 87% households possessed television sets.
- 37% of households owned bicycles and 24% owned motor bikes.

Figure-40: Ownership of consumer goods

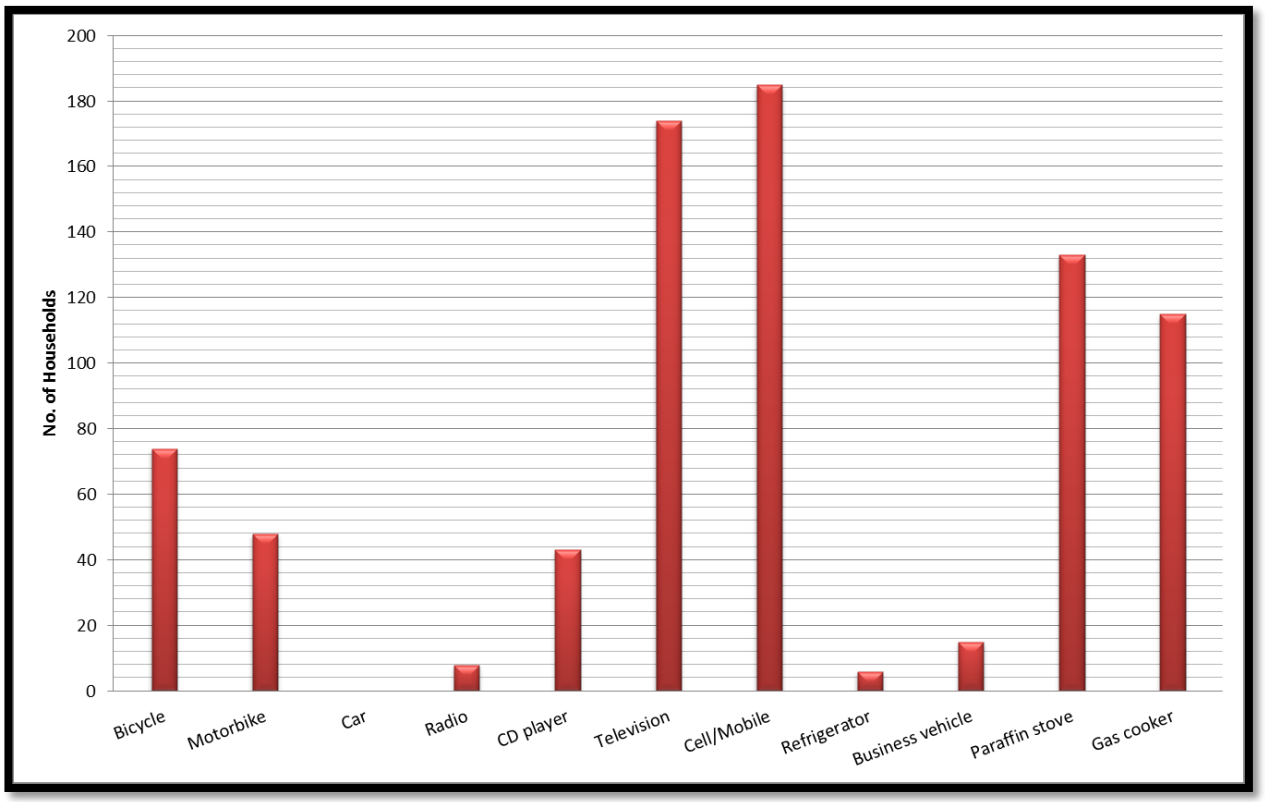
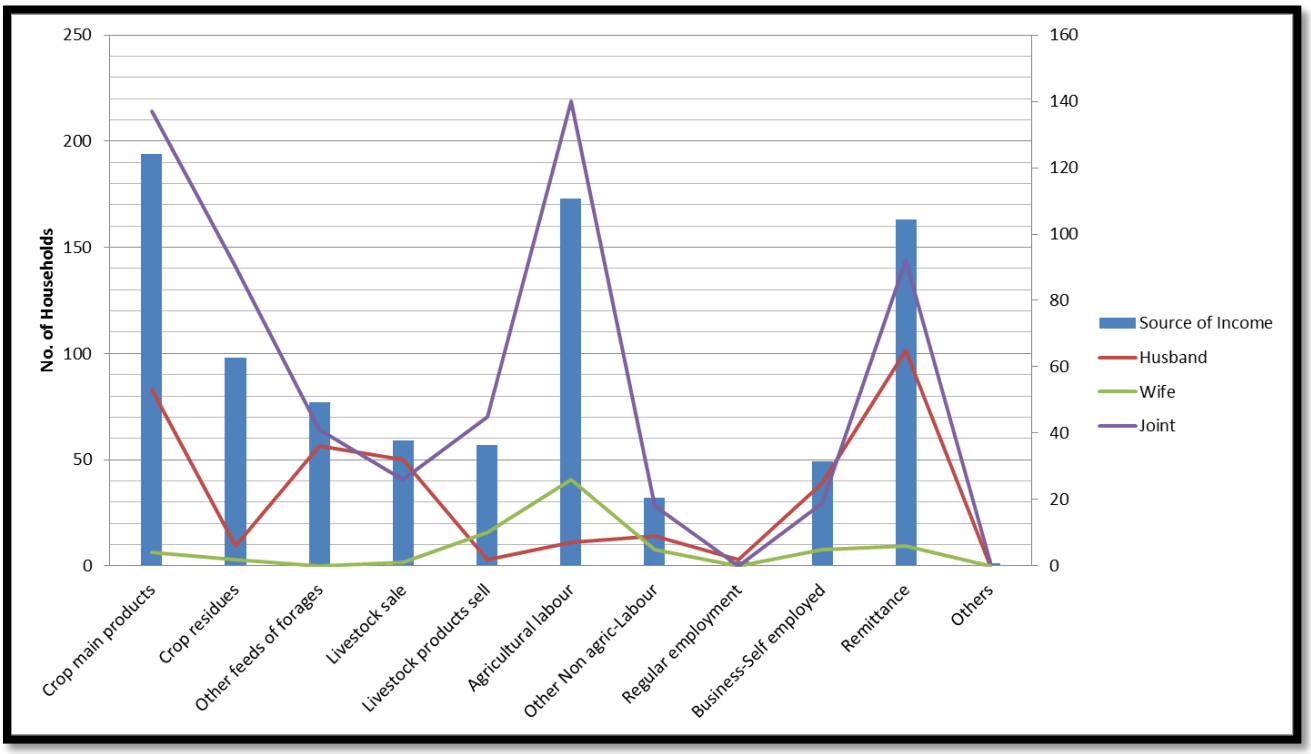


Table-32: Household source of income and their contribution

	Activities	Source of Income	Contribution		
			Husband	Wife	Joint
SOECO.7.7.1	Crop main products	194	53	4	137
SOECO.7.7.2	Crop residues	98	6	2	90
SOECO.7.7.3	Other feeds of forages	77	36	0	41
SOECO.7.7.4	Livestock sale	59	32	1	26
SOECO.7.7.5	Livestock products sale	57	2	10	45
SOECO.7.7.6	Agricultural labour	173	7	26	140
SOECO.7.7.7	Other Non agric-labour	32	9	5	18
SOECO.7.7.8	Regular employment	2	2	0	0
SOECO.7.7.9	Business-Self employed	49	25	5	19
SOECO.7.7.10	Remittance	163	65	6	92
SOECO.7.7.11	Others	1	0	0	1

Figure-41: Household source of income and their contribution

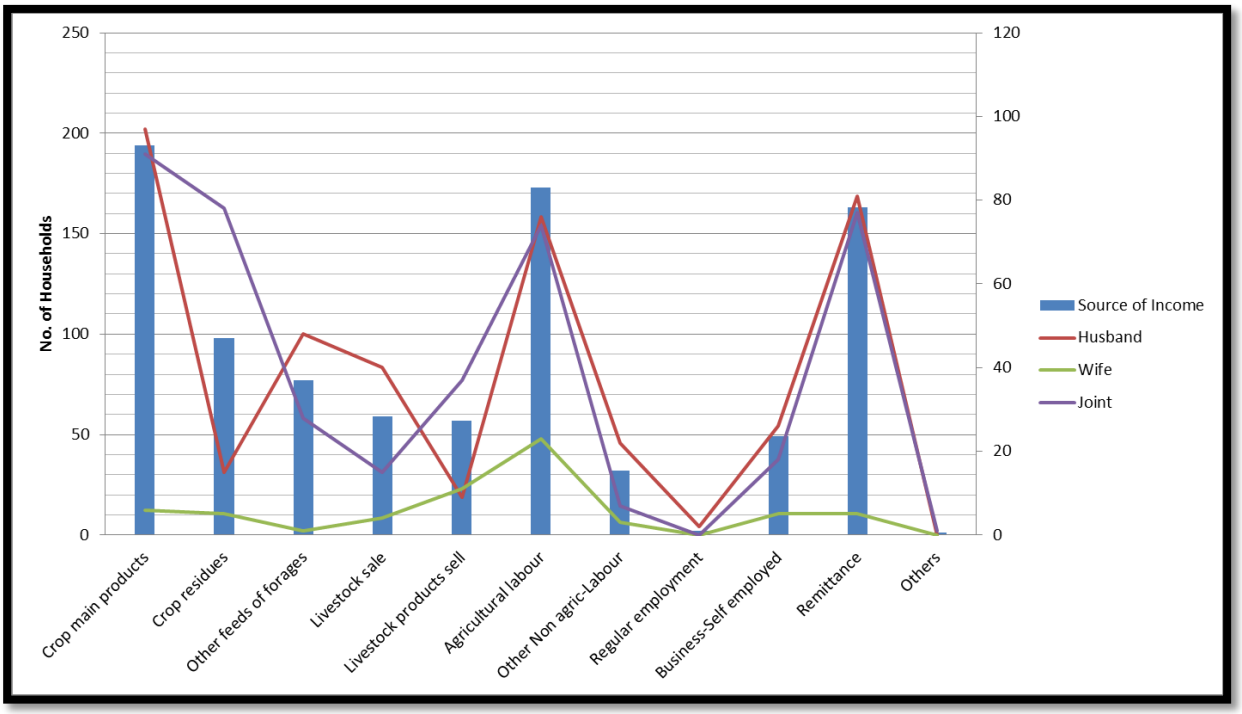


- Main source of income for households (194/200) was crop products and was a joint contribution (137/200). This was followed by Agricultural labour (173/200) with a joint contribution (140/200).

Table-33: Household source of income and their management

	Activities	Source of Income	Management		
			Husband	Wife	Joint
SOECO.7.7.1	Crop main products	194	97	6	91
SOECO.7.7.2	Crop residues	98	15	5	78
SOECO.7.7.3	Other feeds of forages	77	48	1	28
SOECO.7.7.4	Livestock sale	59	40	4	15
SOECO.7.7.5	Livestock products sale	57	9	11	37
SOECO.7.7.6	Agricultural labour	173	76	23	74
SOECO.7.7.7	Other Non agric-labour	32	22	3	7
SOECO.7.7.8	Regular employment	2	2	0	0
SOECO.7.7.9	Business-Self employed	49	26	5	18
SOECO.7.7.10	Remittance	163	81	5	77
SOECO.7.7.11	Others	1	0	0	1

Figure-42: Household source of income and their management



- With regard to household's source of income and their management, husband took a lead for most of the activities.

Table-34: Selling participation – Kurnool district

		From Yerraguntla						From Bonthiralla			
		Dhone		Nandhyal		Yerraguntla		Dhone		Kurnool	
		Buy	Sell	Buy	Sell	Buy	Sell	Buy	Sell	Buy	Sell
SOECO.7.8.1	Food	49	0	11	2	1	0	50	41	50	46
SOECO.7.8.2	Seed and plants	45	0	12	1	0	0	49	4	48	4
SOECO.7.8.3	Other inputs	46	0	6	1	0	0	47	5	16	1
SOECO.7.8.4	Animals	5	1	23	10	0	0	48	47	0	0
SOECO.7.8.5	Other (specify)	0	0	2	0	1	1	0	0	0	0
SOECO.7.8.6	Transportation	Bus/Auto/ Bike		Bus/Auto/ Bike		Bus/Auto/ Bike		Bus/Auto/Bike		Bus/Auto/Bike	
SOECO.7.8.7	Distance	8 km		70 km		--		12 km		60 km	
SOECO.7.8.8	Time	20 min		2 hrs		--		30 min		1.30 hrs	
SOECO.7.8.9	Frequency (15 days)	2 or 3 times		6 months or 1 year		--		2 or 3 times		6 months or 1 year	

- In Yerraguntla, the households bought their food, seed & plants, other inputs & animals from Dhone and Nandhyal markets which were 8 km and 70 km away from the village, respectively.
- Households from Bonthiralla bought and sold their produce from Dhone market which was 12 km away from the village.

Table-35: Selling participation – Anantapuramu district

		From Mallapuram				From Kurlapalli			
		Kalyandurgam		Anantapuramu		Kalyandurgam		Anantapuramu	
		Buy	Sell	Buy	Sell	Buy	Sell	Buy	Sell
SOECO.7.8.1	Food	49	48	1	1	50	31	2	1
SOECO.7.8.2	Seed and plants	47	46	3	3	49	33	2	2
SOECO.7.8.3	Other inputs	45	44	2	2	50	31	3	3
SOECO.7.8.4	Animals	18	16	0	0	10	7	29	28
SOECO.7.8.5	Other (specify)	1	1	0	0	35	29	1	0
SOECO.7.8.6	Transportation	Bus/Auto/Bike		Bus/Auto/Bike		Bus/Auto/Bike		Bus/Auto/Bike	
SOECO.7.8.7	Distance	4 km		65 km		4 km		65 km	
SOECO.7.8.8	Time	10 min		2 hrs		10 min		2 hrs	
SOECO.7.8.9	Frequency (15 days)	2 or 3 times		6 months or 1 year		2 or 3 times		6 months or 1 year	

- For both Mallapuram and Kurlapalli households, Kalyandurgam was the major market to buy and sell their produce.

Figure-43: A shop for snacks and other household needs

Figure-44: Vegetable Market at Kalyandurgam

Figure-45: Vegetable Market at Anantapuramu

Figure-46: Bullocks Trade

Table-36: Caste category

Caste	No. of Families
SC	40
ST	0
BC	142
OC	18
TOTAL	**200**

- Out of 200 families, 142 belongs to Backward community followed by Schedule caste (40 families) and other category (18).

Table-37: Roles in the community

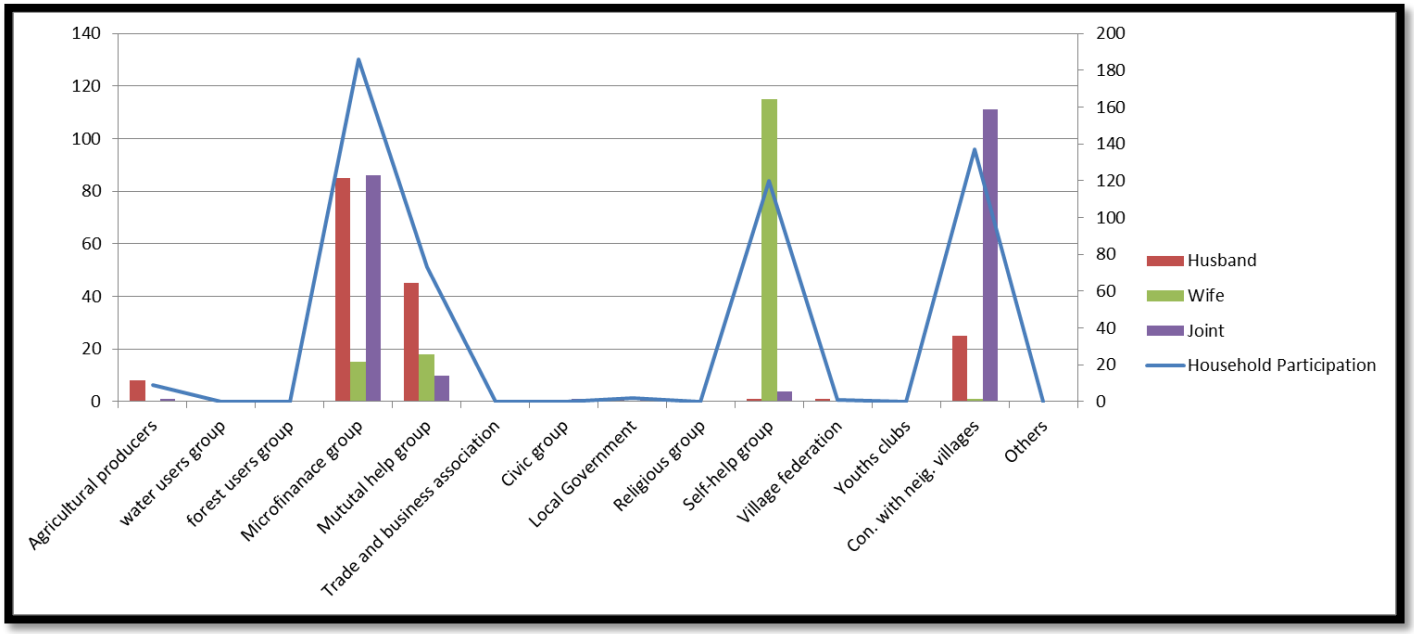
Role	No. of Families
Leadership	9
Social activists	84
Environmental activist	0
No role	107
TOTAL	**200**

- 107/200 families do not have any role in community.
- 84 families have their role in social activities.

Table-38: Social networking

	Category	Groups in the Community	Household Participation	Husband	Wife	Joint
7.10.1	Agricultural/Livestock/fisheries producers group, including selling	YES	9	8	0	1
7.10.2	Water users group	NO	0	0	0	0
7.10.3	Forest users group	NO	0	0	0	0
7.10.4	Credit or microfinance group	YES	186	85	15	86
7.10.5	Mutual help/Insurance group (including burial societies	YES	73	45	18	10
7.10.6	Trade and business association	NO	0	0	0	0
7.10.7	Civic group	NO	0	0	0	1
7.10.8	Local Government	YES	2	1	0	1
7.10.9	Religious group	NO	0	0	0	0
7.10.10	Self-help group	YES	120	1	115	4
7.10.11	Village federation	YES	1	1	0	0
7.10.12	Youth sanghams/clubs	NO	0	0	0	0
7.10.13	Connection with neighboring villages	YES	137	25	1	111
7.10.14	Other (Specify)	--	--	--	--	--

Figure-47: Social networking



- The main source of income was crop products for most of the households followed by agricultural labour, self-employment business and non-agricultural labour.
- Livestock and their products sale were source of income for few households only.

Table-39: Participation in Government and Non-Government programmes

S.No.	Scheme	No. of families	%
1.	104(Emergency Medical Service)	2	1.0
2.	108(Emergency Medical Service)	2	1.0
3.	Crop loan	173	86.5
4.	Aarogyashree	15	7.5
5.	Aganwadi	14	7.0
6.	Bangaru Thalli (Girl child)	7	3.5
7.	Crop Insurance	153	76.5
8.	Fee Re-imbursement	3	1.5
9.	Indiramma gruhakalpana	5	2.5
10.	Madhyana Bhojana pathakam (Mid-day meal)	44	22.0
11.	NGO's	140	70.0
12.	NREGS	127	63.5
13.	Pension	10	5.0
14.	Ration subsidy	200	100.0
15.	SHG	120	60.0
16.	Student scholarship	20	10.0
	Total:	**1207**	

- Most of the households benefited by Government schemes .
- Ration subsidy (100%), Crop loan (86.5%), Crop insurance (76.5%), NGO's (70%), NREGS (63.5%), SHG (60%) were the major Government programmes wherein majority of households participated.

Figure-48: Participation in Government and Non-Government programmes

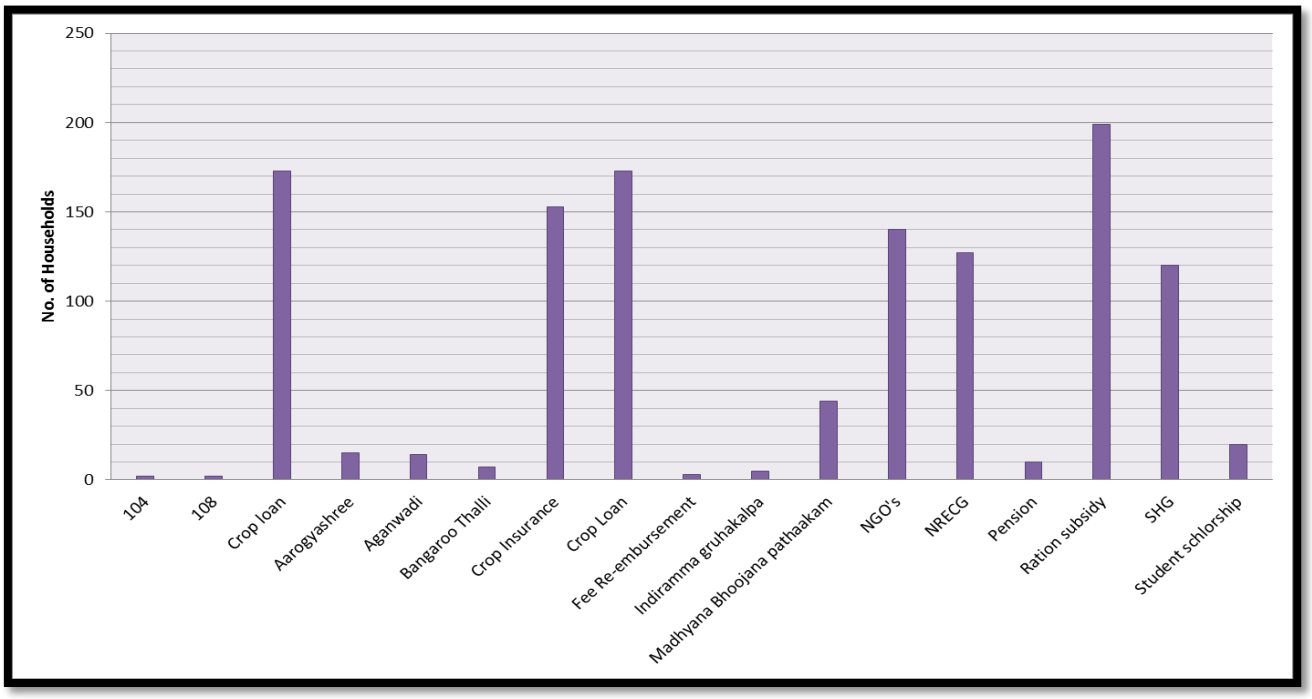


Table-40: Risk attitude

	Risk Attitudes	No. of Households (Out of 200)	Percentage (%)
Risk 1.1	I adopt a new crop, even if nobody else has done it	61	30.5
	I adopt a new crop, if I have seen others taken before me	109	54.5
	I never adopt a new crop, even if I have seen others doing	30	15.0
Risk 1.2	One should be extremely careful about making changes in life	18	9.0
	Caution is more important than risk-taking in order to be successful	31	15.5
	Risk-taking is more important than caution in order to be successful	64	32.0
	You will never achieve anything in life unless you act boldly and take risks	87	43.5

- 109/200 (54.5%) households emphasized that they do not take risk in adopting a new crop unless until they see the crop grown by others.
- 87/200 (43.5%) households expressed that bold action and risk bearing ability are needed to achieve anything in life.

Table-41: Women Dietary Diversity – V. Bonthiralla village

Items	Own Production	Bought	Borrowed	Aid/ assistance of relatives	Harvest/Picked from the wild	Food Aid (Government, NGO's)
Bajra	6	19	0	0	0	0
Beans	0	1	0	0	0	0
Bitter gourd	0	4	0	0	0	0
Black gram	0	1	0	0	0	0
Boiled Rice	1	0	0	0	0	0
Brinjal	0	1	0	0	0	0
Carrot	0	2	0	0	0	0
Chakkilam (Snack)	0	1	0	0	0	0
Chicken	0	1	0	0	0	0
Chilli powder	0	2	0	0	0	0
Cloves	0	2	0	0	0	0
Coconut copra	0	30	0	0	0	1
Coconut powder	0	1	0	0	0	0
Coffee powder	0	25	0	0	0	0
Coriander leaves	1	2	0	0	0	0
Coriander powder	0	19	0	0	0	0
Coriander seeds	0	1	0	0	0	0
Cumin seeds	0	48	0	0	0	0
Curd	4	0	0	0	0	0
Curry leaf	2	47	0	1	0	0
Decan hemp(Gongura)	1	2	0	0	0	0
Dhania	0	5	0	0	0	0
Dhontlayaka	1	0	0	0	0	0
Drumstick	0	1	0	0	0	0
Egg	1	0	0	0	0	0
Fenugreek leaf	0	2	0	0	0	0
Fenugreek seeds	0	2	0	0	0	0
Garlic	0	42	0	0	0	0
Ginger	0	1	0	0	0	0
Garam Masala	0	8	0	0	0	0
Green chillies	0	8	0	0	0	0
Green pea	0	8	0	0	0	0
Grigaku	0	0	0	1	0	0
Groundnut kernel	4	4	0	0	0	0
Groundnut powder	1	0	0	0	0	0
Jaggery	0	2	0	0	0	0
Ladies finger	0	6	0	0	0	0
Lentil powder	0	2	0	0	0	0
Maize	0	3	0	0	0	0
Mango chutney	0	1	0	0	0	0
Mango pickle	0	1	0	0	0	0

Milk	14	13	0	0	0	0
Milk powder	0	9	0	0	0	0
Mustard	0	11	0	0	0	0
Oil (Sunflower and Groundnut)	0	46	0	0	0	1
Onion	1	20	0	1	0	0
Lentil	0	1	0	0	0	0
Potato	0	3	0	0	0	0
Ragi powder	1	1	0	0	0	0
Rasam powder	0	2	0	0	0	0
Red Chilli powder	0	41	0	0	0	0
Red Chilli	0	48	0	0	0	0
Redgram	25	16	0	0	0	1
Rice	7	38	0	0	0	5
Ridge gourd	0	6	0	0	1	0
Salt	0	46	0	0	0	6
Sorghum powder	0	1	0	0	0	0
Sorrel leaf	1	0	0	0	1	0
Sugar	0	38	0	0	0	2
Tamarind	1	44	0	1	0	0
Tea powder	0	14	0	0	0	0
Tomato	1	44	0	0	0	0
Turmeric powder	0	49	0	0	0	0
Water	7	4	0	0	0	48
Watermelon	1	0	0	0	0	0
Whole Wheat Flour	0	6	0	0	0	0
TOTAL:	**81**	**806**	**0**	**4**	**2**	**64**

- In V. Bonthiralla village, among all dialy dietary items, redgram and milk were obtained mostly from their own production.
- Households bought almost all the items required for their dietary need and turmeric powder, red chilli, cumin seed, curryleaf, oil (Sunflower and Groudnntu), salt, tamarind, tomato and garlic were bought by majority of households.
- For drinking water 48 (96%) households took government aid.
- Majority of households bought rice and salt and few households obtained government aid for these items.

Table-42: Women Dietary Diversity – Yerraguntla village

Items	Own Production	Bought	Borrowed	Aid/ assistance of relatives	Harvest/ Picked from the wild	Food Aid (Government, NGO's)
Amaranth leaves	1	0	0	0	0	0
Bajra flour	0	1	0	0	0	0
Burfee (snack)	0	1	0	0	0	0
Biscuits	0	1	0	0	0	0
Bitter gourd	1	6	0	0	0	0
Brinjal	0	9	0	0	0	0
Chicken	0	0	0	1	0	0
Chilli powder	0	2	0	0	0	0
Chutney	0	1	0	0	0	0
Cloves	0	2	0	0	0	0
Cluster bean	0	3	0	0	0	0
Coconut copra	0	26	0	0	0	0
Coffee powder	0	23	0	0	0	0
Coriander seed powder	0	5	0	0	0	0
Coriander leaves	1	2	0	0	0	0
Cumin seeds	0	6	0	0	0	0
Curd	1	5	0	0	0	0
Curry leaves	1	48	1	3	0	0
Dosa	0	1	0	0	0	0
Eggs	0	2	0	0	0	1
Fenugreek seed	0	1	0	0	0	0
Garlic	0	32	0	0	0	0
Ginger	0	3	0	0	0	0
Green chilli	1	39	0	0	0	0
Green pea	0	1	0	0	0	0
Groundnut	0	3	0	0	0	0
Jaggery	0	1	0	0	0	0
Jowar flour	0	31	0	0	0	0
Ladies finger	0	2	0	0	0	0
Mango fruits	0	6	0	0	0	0
Masala	0	1	0	0	0	0
Milk	3	28	0	0	0	0
Milk powder	0	17	0	0	0	0
Mixture	0	1	0	0	0	0
Mustard seed powder	0	2	0	0	0	0
Mustard seeds	0	3	0	0	0	0
Oil (Sunflower & Groudnut)	0	50	0	0	0	1
Onion	0	38	0	0	0	0
Potato	0	1	0	0	0	0
Puffed rice	0	1	0	0	0	0
Red chilli powder	0	33	0	0	0	0
Red chillies	0	6	0	0	0	0

Redgram	23	23	0	0	0	1
Rice	1	39	0	0	0	10
Ridge gourd	0	2	0	0	0	1
Salt	0	49	0	0	0	1
Sambar powder	0	1	0	0	0	0
Sorrel leaves	3	2	1	0	0	0
Sugar	0	45	0	0	0	2
Tamarind	4	40	0	1	0	0
Tea powder	0	17	0	0	0	0
Tomato	0	47	0	0	0	0
Turmeric	0	47	0	0	0	0
Water	4	0	0	0	0	46
Whole wheat flour	0	5	0	0	0	1
Total	**44**	**761**	**2**	**5**	**0**	**64**

- In Yerraguntla village, redgram was obtained mostly from their own production.
- All the required items for dietary need were bought by householders.
- For drinking water, 46/50 (92%) of households took government aid.
- Twenty percent of (10/50) of households obtained government aid for rice and the rest of 80% households bought the rice for their daily need.

Table-43: Women Dietary Diversity – Mallapuram village

Items	Own Production	Bought	Borrowed	Aid/ assistance of relatives	Harvest/ Picked from the wild	Food Aid (Government, NGO's)
Banana fruits	0	2	0	0	0	0
Beans	0	0	0	0	1	0
Bengal gram	0	2	0	0	0	2
Black gram	0	1	0	0	0	0
Boiled Rice	1	0	0	0	0	1
Boiled egg	0	1	0	0	0	2
Bread	0	1	0	0	0	0
Brinjal	0	14	0	0	0	0
Cabbage	0	1	0	0	0	0
Cardamom	0	1	0	0	0	0
Chicken	0	3	0	0	0	0
Chillies	1	4	0	0	0	0
Chilli powder	0	30	0	0	0	0
Chukkaku	0	2	0	0	0	0
Cinnamon	0	1	0	0	0	0
Cloves	0	7	0	0	0	0
Cluster bean	0	1	0	0	0	0
Coconut copra	0	18	0	0	0	0
Coffee powder	0	21	0	0	0	2
Coriander	0	45	0	1	0	2
Coriander powder	0	23	0	0	0	0
Cumin seeds	0	50	0	0	0	0
Curd	0	6	0	0	0	0
Curry leaf	13	33	0	0	4	0
Drumstick	2	4	0	0	0	0
Egg	1	1	0	0	0	0
Fenugreek leaves	5	50	0	0	0	0
Garam masala	0	1	0	0	0	0
Garlic	0	50	0	0	0	0
Ginger	0	4	0	0	0	0
Sorrel leaves	1	0	0	0	0	0
Green leafy vegetables	0	1	0	0	0	0
Green chillies	0	50	0	0	0	0
Green pea	2	0	0	0	0	0
Groundnut kernel	10	37	0	0	3	0
Groundnut powder	0	1	0	0	1	0
Celesia leaves	0	6	0	7	0	2
Jaggery	0	3	0	0	0	0
Cluster bean	0	1	0	0	0	0
Jowar powder	0	1	0	0	0	0
Karji kayalu (sweet item)	0	1	0	1	0	0
Ladies finger	0	13	0	0	0	0

Maize flour	0	1	0	0	0	0
Fenugreek leaves	0	1	0	0	0	0
Milk	4	46	0	0	0	0
Mustard	0	50	0	0	0	0
Oil (Sunflower, Groundnut and Palm oil)	0	3	0	0	0	2
Onion	2	38	0	0	0	0
Papaya	0	1	0	1	0	0
Fried Bengalgram	0	2	0	0	0	0
Pomegranate	0	1	0	0	0	0
Pondaku	1	0	0	0	0	0
Potato	0	2	0	0	0	0
Puffed Rice	0	6	0	1	0	0
Radish	0	2	0	0	0	0
Ragi powder	2	28	0	0	0	0
Rasam powder	0	1	0	0	0	0
Red chili	3	50	0	2	0	0
Red chilli powder	0	3	0	0	0	0
Red gram	2	24	0	0	0	49
Rice	2	49	0	0	0	50
Rice flour	0	2	0	0	0	0
Ridge gourd	2	2	0	0	0	0
Wheat powder	0	2	0	0	0	2
Salt	1	14	0	2	0	50
Sambar powder	0	3	0	0	0	0
Sugar	0	5	0	0	0	31
Tamarind	7	49	0	7	2	2
Tea powder	0	6	0	0	0	0
Tomato	1	48	0	0	0	0
Turmeric	1	50	0	0	0	4
Upmaravva	0	7	0	0	0	0
Water	15	13	0	0	0	47
Wheat flour	0	0	0	0	0	1
Total	**79**	**1000**	**0**	**22**	**11**	**249**

- In Mallapuram village, most of the dietary items were bought by the households except for items viz., curry leaf, groundnut and water for which they met some of their requirements from their own production.
- Majority of the households bought cumin seeds, fenugreek leaves, garlic, green chilli, mustard, red chilli, turmeric, tamarind, rice and tomato for their daily dietary needs.
- All the households (50/50) obtained government aid for rice and salt followed by redgram (49/50), water (47/50) and sugar (31/50).

Table-44: Women Dietary Diversity – Kurlapalli village

Items	Own Production	Bought	Borrowed	Aid/ assistance of relatives	Harvest/ Picked from the wild	Food Aid (Government, NGO's)
Acid lime	0	1	0	0	0	0
Bitter gourd	0	3	0	0	0	0
Boiled rice	0	1	0	0	0	0
Brinjal	2	11	0	0	0	0
Buttermilk	0	2	0	0	0	0
Carrot	0	1	0	0	0	0
Cluster bean	0	2	0	0	0	0
Cinnamon	0	6	0	0	0	0
Coconut copra	0	30	0	0	0	0
Coffee powder	0	18	0	0	0	0
Coriander	0	20	0	0	0	0
Cowpea	2	0	0	0	0	0
Cumin seeds	1	22	0	0	0	0
Curd	10	6	0	1	0	0
Curry leaf	15	35	0	0	0	0
Cinnamon	0	7	0	0	0	0
Eggs	0	1	0	0	0	0
Fenugreek leaves	2	0	0	0	0	0
Garlic	0	49	0	0	0	1
Poppy seeds	0	5	0	0	0	0
Gilebee (sweet)	0	1	0	0	0	0
Green chilli	5	32	0	1	0	0
Groundnut	10	2	0	0	0	0
Gurraku	4	0	0	0	0	0
Jaggery	0	10	0	0	0	0
Ladies finger	0	2	0	0	0	0
Mango pickle	0	8	0	0	0	0
Masala powder	0	1	0	0	0	0
Milk	12	15	0	1	0	0
Muskmelon	0	0	0	1	0	0
Mustard	0	39	0	0	0	0
Mutton	0	1	0	0	0	0
Oil (Sunflower & Groundnut)	0	50	0	0	0	0
Onion	2	48	0	0	0	0
Palak	1	1	0	0	0	0
Pickle	0	2	0	0	0	0
Pomegranate	0	1	0	0	0	0
Poppy seeds	0	6	0	0	0	0
Radish	0	1	0	0	0	0
Ragi powder	2	28	0	0	0	3
Rasam powder	0	1	0	0	0	0
Red chilli powder	0	4	0	0	0	0

Red chilli	2	17	0	0	0	0
Redgram	13	24	0	0	0	9
Rice	1	12	0	0	0	47
Ridge gourd	1	6	0	0	0	0
Sabja leaf	1	0	0	0	0	0
Salt	0	48	0	0	0	2
Sambar powder	0	6	0	0	0	0
Soda powder	0	2	0	0	0	0
Sorrel leaves	1	1	0	0	0	0
Sugar	0	26	0	0	0	1
Tamarind	0	50	0	0	0	0
Tea powder	0	5	0	0	0	0
Turmeric	0	17	0	0	0	0
Tomato	2	45	0	2	0	0
Tomato pickle	0	2	0	0	0	0
Turmeric	0	22	0	0	0	0
Upma ravva	0	1	0	0	0	0
Water	0	1	0	0	0	49
Whole wheat flour	0	2	0	0	0	0
Total:	**89**	**760**	**0**	**6**	**0**	**112**

- In Kurlapalli village, most of the dietary items were bought except curd, curry leaf, groundnut, milk and redgram which were obtained from their own production.
- Oil, tamarind, garlic, onion, salt and tomato were bought by most of the households.
- 47/50 (94%) and 49/50 (98%) of households took government aid for rice and drinking water, respectively.

Table-45: Child Dietary Diversity – V. Bonthiralla village

Items	Own Production	Bought	Borrowed	Aid/ assistance of relatives	Harvest/ Picked from the wild	Food Aid (Government, NGO's)
Bajra	1	2	0	0	0	0
Banana	0	3	0	0	0	0
Bengal gram flour	0	1	0	0	0	0
Biscuits	0	11	0	0	0	0
Bitter gourd	0	1	0	0	0	0
Bread	1	0	0	0	0	0
Brinjal	0	1	0	0	0	0
Bun	0	2	0	0	0	0
Buttermilk	1	0	0	0	0	0
Chilli powder	0	1	0	0	0	0
Chocolate	0	7	0	0	0	0
Coconut copra	0	5	0	0	0	1
Coconut powder	0	1	0	0	0	0
Coffee powder	0	6	0	0	0	0
Coriander seed	1	3	0	0	0	0
Coriander powder	0	3	0	0	0	0
Cow milk	0	1	0	0	0	0
Cumin seeds	0	14	0	0	0	0
Curd	2	0	0	0	0	0
Curry leaf	0	14	0	0	0	0
Sorrel leaf	1	0	0	0	0	0
Drumstick	0	1	0	0	0	0
Egg	0	1	0	0	0	1
Garlic	0	12	0	0	0	0
Green chilies	0	1	0	0	0	0
Green pea	0	2	0	0	0	0
Groundnut	1	1	0	0	0	0
Boiled Bengal gram	0	0	0	0	0	0
Kichdi	0	0	0	0	0	0
Kurkure	0	11	0	0	0	0
Laddu	0	1	0	0	0	0
Ladies finger	0	1	0	0	0	0
Lentil powder	0	1	0	0	0	0
Masala	0	5	0	0	0	0
Milk	8	3	0	0	0	0
Milk powder	0	2	0	0	0	0
Foxtail millet	0	1	0	0	0	0
Mixture	0	1	0	0	0	0
Mother's milk	6	0	0	0	0	0
Mustard	0	14	0	0	0	0
Oil (Sunflower & Groundnut)	0	14	0	0	0	0

Onion	0	6	0	0	0	0
Potato	0	1	0	0	0	0
Rasam powder	0	2	0	0	0	0
Red chilli	1	14	0	0	0	0
Redgram	7	3	0	0	0	0
Rice	5	11	0	0	0	1
Ridge gourd	0	1	0	0	0	0
Salt	0	15	0	0	0	2
Spring rice	0	1	0	0	0	0
Sugar	0	9	0	0	0	0
Tamarind	0	10	0	0	0	0
Tea powder	0	3	0	0	0	0
Tomato	1	11	0	0	0	1
Turmeric	0	13	0	0	0	0
Water	0	5	0	0	0	15
Watermelon	1	0	0	0	0	0
Wheat flour	0	3	0	0	0	0
Total	**36**	**256**	**0**	**0**	**0**	**21**

- In V. Bonthiralla village, most of the child dietary items were bought by the householders. Among these items, salt, cumin, curry leaf, mustard, oil, red chilli, turmeric were important items.
- Milk, redgram, mother milk and rice were obtained from their own production.
- Dirking water facility was obtained with government aid.

Table-46: Child Dietary Diversity – Yerraguntla village

Items	Own Production	Bought	Borrowed	Aid/assistance of relatives	Harvest/Picked from the wild	Food Aid (Government, NGO's)
Banana	0	2	0	0	0	0
Biscuits	0	12	0	0	0	0
Bread	0	3	0	0	0	0
Brinjal	0	1	0	0	0	0
Cerelac	0	3	0	0	0	0
Chicken	0	0	0	1	0	0
Chocolates	0	2	0	0	0	0
Coconut copra	0	2	0	0	0	0
Coffee powder	0	4	0	0	0	0
Coriander seed powder	0	1	0	0	0	0
Cumin seeds	0	10	0	0	0	0
Curd	0	2	0	0	0	0
Curry leaf	1	9	1	0	0	0
Eggs	0	0	0	0	0	1
Garlic	0	2	0	0	0	0
Green chilli	0	7	0	0	0	0
Jowar flour	0	3	0	0	0	0
Kurkure	0	9	0	0	0	0
Ladies finger	0	1	0	0	0	0
Mango fruit	0	1	0	0	0	0
Masala	0	1	0	0	0	0

Milk	0	4	0	0	0	0
Milk powder	0	5	0	0	0	0
Mixture	0	1	0	0	0	0
Mother's Milk(breast feeding)	12	0	0	0	0	0
Mustard seeds	0	9	0	0	0	0
Oil (Sunflower & Groundnut)	0	12	0	0	0	0
Onion	0	7	0	0	0	0
Rasam powder	0	1	0	0	0	0
Red chilli	0	8	0	0	0	0
Redgram	6	4	0	0	0	1
Rice	0	7	0	0	0	3
Rice flakes	0	1	0	0	0	0
Salt	0	12	0	0	0	0
Sorrel leaves	1	0	0	0	0	0
Sugar	0	8	0	0	0	1
Tamarind	0	10	0	0	0	0
Tea powder	0	5	0	0	0	0
Tomato	0	10	0	0	0	0
Turmeric	0	10	0	0	0	0
Water	0	0	0	0	0	24
Total	**20**	**189**	**1**	**1**	**0**	**30**

- At Yerraguntla village, children were fed with mother's milk.
- All most all the items for children diet were bought by the households. Major items were biscuits, oil, salt, cumin, tamarind, tomato and turmeric.
- For drinking water they took government aid.

Table-47: Child Dietary Diversity – Mallapuram village

Items	Own Production	Bought	Borrowed	Aid/assistance of relatives	Harvest/Picked from the wild	Food Aid (Government, NGO's)
Cashew	0	1	0	0	0	0
Banana	0	1	0	0	0	0
Biscuit	0	4	0	0	0	0
Bread	0	1	0	0	0	0
Snack	0	1	0	0	0	0
Chilli powder	0	1	0	0	0	0
Curd	0	1	0	0	0	0
Idly	0	3	0	0	0	0
Jaggery	0	1	0	0	0	0
Milk	0	5	0	0	0	0
Mother's Milk (breast feeding)	13	0	0	0	0	0
Oil (Sunflower & Groundnut)	0	1	0	0	0	0
Potato	0	1	0	0	0	0
Ragi powder	0	2	0	0	0	0
Rice	0	7	0	0	0	3
Salt	0	1	0	0	0	1
Sugar	0	0	0	0	0	1
Water	1	0	0	0	0	5
Total	**14**	**31**	**0**	**0**	**0**	**10**

- In Mallapuram village, children were fed with mother's milk.
- Among dietary items bought, rice, milk, biscuits and idly were important.
- For drinking water and rice, they took government aid.

Table-48: Child Dietary Diversity – Kurlapalli village

Items	Own Production	Bought	Borrowed	Aid/assistance of relatives	Harvest/ Picked from the wild	Food Aid (Government, NGO's)
Apple	0	2	0	0	0	0
Banana	0	1	0	0	0	0
Biscuit	0	6	0	0	0	0
Bread	0	1	0	0	0	0
Buttermilk	0	0	0	1	0	0
Cluster bean	0	1	0	0	0	0
Chocolates	0	1	0	0	0	0
Coconut copra	0	4	0	0	0	0
Coffee powder	0	2	0	0	0	0
Coriander	0	3	0	0	0	0
Cow's milk	1	0	0	0	0	0
Cumin seeds	1	1	0	0	0	0
Curd	3	1	0	0	0	0
Curry leaf	2	0	0	0	0	0
Dhal	0	0	0	0	0	1
Cinnamon	0	1	0	0	0	0
Coriander powder	0	1	0	0	0	0
Egg	0	0	0	0	0	1
Garlic	0	6	0	0	0	1
Poppy seeds	0	1	0	0	0	0
Green chilies	0	4	0	0	0	0
Groundnut	2	0	0	0	0	0
Jaggery	0	1	0	0	0	0
Snack	0	2	0	0	0	0
Kurkure	0	6	0	0	0	0
Lalli pop	0	1	0	0	0	0
Lemon	0	1	0	0	0	0
Milk	8	8	0	0	0	0
Milk kova	0	1	0	0	0	0
Mother's milk	5	0	0	0	0	0
Mustard seeds	0	5	0	0	0	0
Sweet	0	2	0	0	0	0
Snack	0	3	0	0	0	0
Oil (Sunflower & Groundnut)	0	6	0	0	0	1
Onion	0	8	0	0	0	0
Ragi powder	0	6	0	0	0	1
Red chili powder	0	1	0	0	0	0
Red gram	3	2	0	0	0	1
Rice	4	2	0	0	0	20
Ridge gourd	1	0	0	0	0	0
Salt	0	11	0	0	0	0
Bengal gram	0	0	0	0	0	1

Boiled Bengal gram	0	0	0	0	0	0
Sugar	0	4	0	0	0	0
Tamarind	0	16	0	0	0	0
Tea powder	0	1	0	0	0	0
Tomato	0	4	0	0	0	0
Turmeric	0	4	0	0	0	1
Upma ravva	0	1	0	0	0	0
Water	0	3	0	0	0	11
Water melon	1	0	0	1	0	0
Total	**31**	**135**	**0**	**2**	**0**	**39**

- At Kurlapalli village, children were fed with milk from their own production followed by mother's milk.
- Most of the items for child diet were bought by the householders. Among these salt, milk, onion, biscuits, garlic, kurkure, oil and ragi powder were important.
- For drinking water, they took government aid.

Table-49: Infant and young child feeding practices (IYCF):

Questions	(Answer options) No. of Households	
	YES	NO
HHFS.1.Has ever been Breastfed	48	4
HHFS.2.Till Breast feeding	45	7
HHFS.3.Breastfed yesterday during the day or at night	45	7
HHFS.4.No. of times did child eat solid or semi-solid foods other than liquids yesterday during the day or night		
One time	4	
Two times	11	
Three times	12	
Four times	7	
Five times	2	
Six times	1	
Seven times	0	
Eight times	1	
Nine times	0	
Ten times	1	
Not known	7	

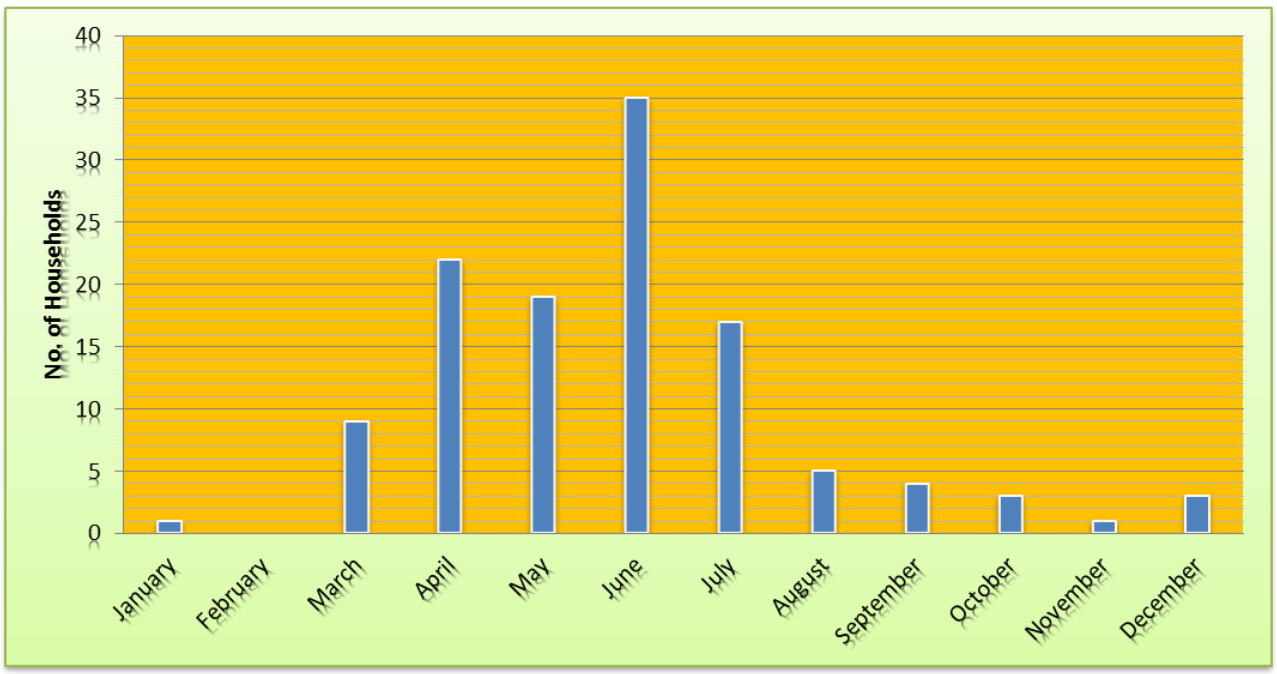
- 48/52 (92%) mothers breast fed their children.
- 45/52 (86.5%) mothers are still breast feeding their children.
- 12/45 (27%) children took solid and semi-solid foods other than liquids.
- 12/45 (27%) and 11/45 (24%) children took solid & semi solid foods three and two times day^{-1}, respectively.

Table-50: Household food security

Questions	(Answer options) No. of Households		
	YES	NO	Don't Know
HHFS.1. Do not have enough food to meet the family's needs	74	97	29
HHFS.2. If Yes, mention the months			

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	9	22	19	35	17	5	4	3	1	3

Figure-49: Household food security

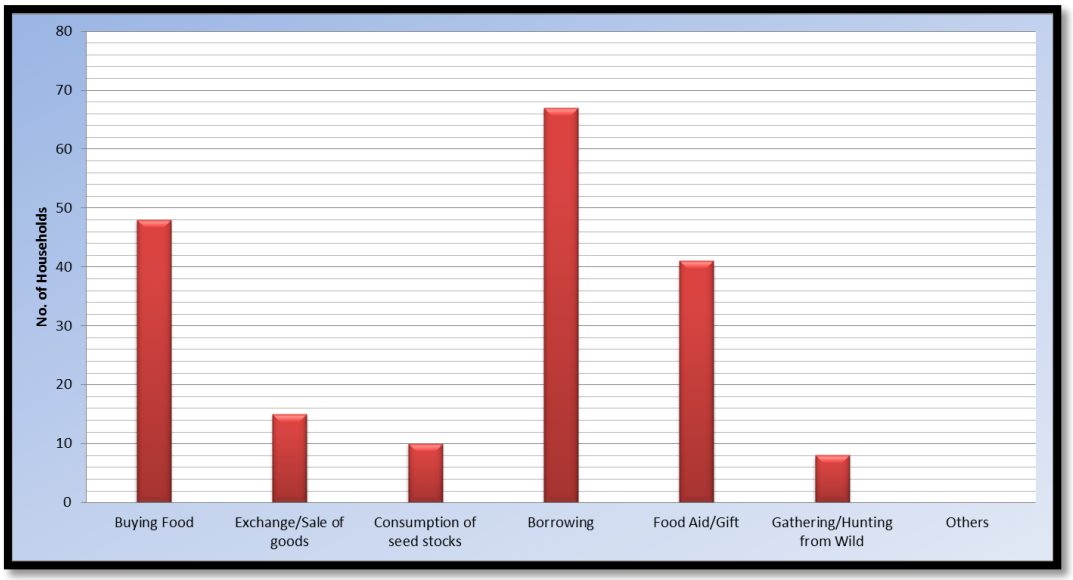


- 74/200 households (37%) stated that they did not had enough food to meet the family needs.
- Nearly half-of-the households (97/200) said that they had enough food to meet family's needs.
- 29/200 (14.5%) households expressed that they did not know about this aspect.
- 35/200 (17.5%) families did not have enough food to meet family needs during June month followed by 22/200 (11%) families during April and 19/200 (9.5%) families during May.

Table-51: Measures taken during the period of low food availability / lack of food over the past 12 month:

Measures taken	No. of Households	Percentage
1.Buying Food	48	25
2.Exchange/Sale of goods	15	8
3.Consumption of seed stocks	10	5
4.Borrowing	67	35
5.Food Aid/Gift	41	22
6.Gathering/Hunting from Wild	8	4
66.Others	0	0

Figure-50: Measures taken during the period of low food availability/lack of food.

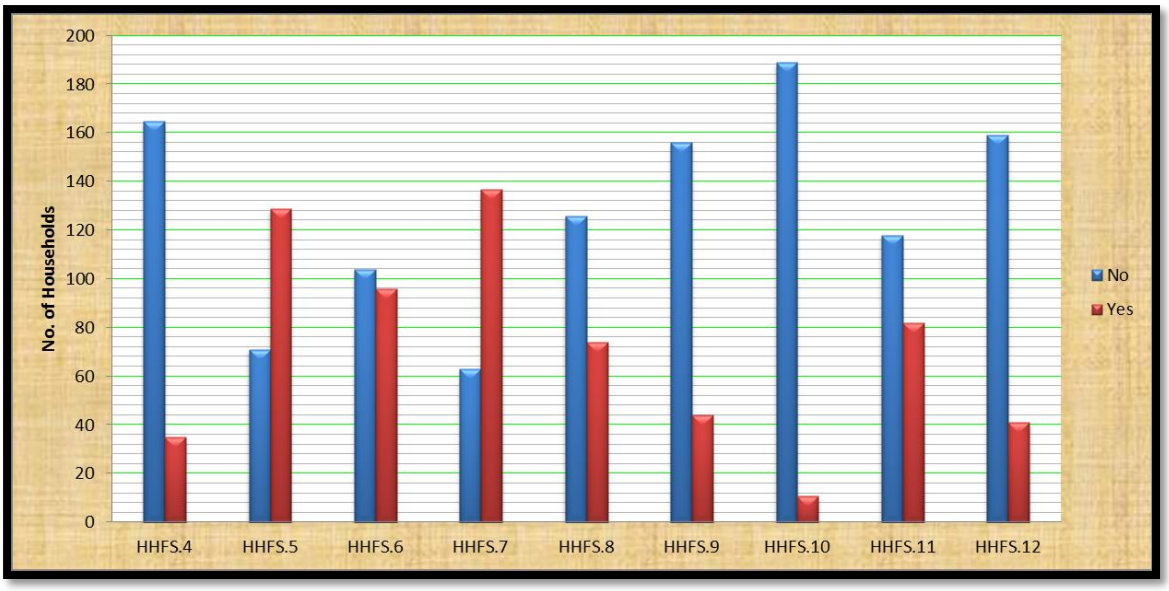


- During the period of low food availability, majority of the households (35%) borrowed food from others.
- Buying food (25%) and getting food by aid/gift (22%) were the other means by which they got food.

Table-52: Household food security….. Continued

		No	Yes	Rarely	Sometimes	Often
HHFS.4.	Over the past 4 weeks, did you or someone else in your household worry that your household would not have enough food ?	165	35	19	15	1
HHFS.5.	Over the past 4 weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	71	129	36	82	11
HHFS.6.	Over the past 4 weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	104	96	36	38	22
HHFS.7.	Over the past 4 weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	63	137	69	55	13
HHFS.8.	Over the past 4 weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food ?	126	74	38	34	2
HHFS.9.	Over the past 4 weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	156	44	20	23	1
HHFS.10.	Over the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food ?	189	11	6	5	0
HHFS.11.	Over the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	118	82	43	39	0
HHFS.12.	Over the past 4 weeks, did you or any household member go a whole day and night without eating anything because there was not enough food ?	159	41	34	7	0

Figure-51: Household food security….. Continued



- 129/200 (64.5%) household members failed to eat food which they prefer to eat, because of lack of resources.
- 137/200 (68.5%) household members ate some food that they really did not want to eat because of lack of resources.
- 96/200 (48%) household members ate limited variety of foods due to lack of resources.
- 82/200 (41%) household members went to sleep at night hungry because of no enough food.
- It was often that 22/200 (11%) household members had to eat a limited variety of foods due to lack of resources.

Table-53: Risk attitudes

	Risk Attitudes	No. of Households	Percentage (%)
Risk 1.1	I adopt a new crop, even if nobody else has grown it	15	7.5
	I adopt a new crop, if I have seen others growing it before me	163	81.5
	I never adopt a new crop, even if I have seen others growing it	22	11.0
Risk 1.2	One should be extremely careful about making changes in life	12	6.0
	Caution is more important than risk-taking in order to be successful	20	10.0
	Risk-taking is more important than caution in order to be successful	9	4.5
	You will never achieve anything in life unless you act boldly and take risks	159	79.5

- 81.5% households stated that they adopted a new crop after observing others growing it.
- 79.5% households felt that bold action and risk taking are necessary to achieve anything in life.

Lessons learnt and experience derived:

1. Majority of households readily shared the information and requested for an immediate implementation of the programme.
2. Focus Group Discussions helped to extract more information from households.
3. Illiterate households readily shared more information than literate households.
4. Households expected some kind of help from the organization whenever meetings were organized.
5. Male households readily shared the information than female households.
6. All the households expressed that lack of irrigation facilities is the major constraint in cultivation of crops.
7. Majority of households expressed that there is a need to provide market facility to dispose their produce.
8. Low and erratic distribution of rainfall, drastic depletion of ground water resulting in frequent occurrence of droughts and crop failures forcing the farmers to shift from agriculture to other professions to make their livelihood.
9. Increased cost of cultivation and market glut often resulting in poor returns to the farmers.
10. Ground water recharge measures are need to be taken up by renovation of the all the rechargeable structures like check dams and percolation ponds.
11. The utilization of created ground water potential has to be improved by limiting over-exploitation and efficient use. This can be achieved by improved irrigation methods like drip and sprinklers.
12. Survey staff gained confidence in extracting information, compilation and analysis of the data.
13. Confidence of the survey staff was boosted in handling such socio-economic related projects.
14. All the staff has understood the intrinsic values of biodiversity and its impact on nutrition, health and economic sustainability.

Views and aspirations of the farm households:

- Benefits from Bioversity should be given to all households of the villages, irrespective of households surveyed.
- Development of common grazing lands for providing fodder to domesticated animals.
- Sheep growers requested to provide common watering points for their sheep.
- Creating self-employment opportunities by providing sewing machines to talented young educated women.
- Establishment of village level health care centres.
- Improvement of village sanitation by construction of drains, toilets etc.
- Transport facility for the sale of farm produce and other products in nearby markets.
- Providing self-employment opportunities at village level to stop people migrating to other places for work.
- Crop growers need technical advices on crop cultivation and animal rearing.

Way Foreword and Interventions suggested:

1. Wide diversity of wild and medicinal plants existed in all action sites of Anantapuramu and Kurnool districts which can be utilized for sustainable economy use.
2. In the action sites (V. Bonthiralla and Yerraguntla) of Kurnool district, most of the households were not using milk and milk products in their routine diet because of lack of milching animals and intervention is needed to rear the milch animals. Farmers should be encouraged to grow forage crops by providing improved varieties and irrigation facilities.
3. The households were rearing local poultry breeds and there is a need to introduce improved poultry breeds like Rajasree, Giriraja, Vanaraja etc.
4. Most of the households were consuming grain and pulse crops in their regular diet. To improve the nutritional standards of daily diet, fruits and vegetables can be included.
5. Few households of V. Bonthiralla (Kurnool district) earning their lively hood by selling honey which is being collected from nearby forests. There is a need to establish village cottage industries to improve their economic status. Honey bee rearing can be encouraged.
6. In all the action sites, majority of households migrate to towns for works during summer months. Providing works at village level during lean period is very much essential.
7. Households requested for financial assistance to purchase goat, sheep and cows through subsidized programmes.
8. Farming systems approach is needed for overall development of households in all the four villages.
9. Since the size of land holding is decreasing day-by-day, rain water harvesting is essential to provide drinking water to both livestock and wild animals besides giving lifesaving irrigation to crops during long dry spells.
10. Because of the large scale cultivation of single variety due to non-availability seeds of local varieties and land races, some interested farmers shall be encouraged to grow the land races and local varieties with some financial assistance.

Conclusions and Inference:

- Four villages namely Kurlapalli and Mallapuram in Anatapuramu district and V. Bonthiralla and Yerraguntla in Kurnool district were surveyed for agricultural biodiversity. Fifty households in each village covering all social groups were selected for the survey.
- The crop diversity on cultivated fields, government land and also home gardens, animal diversity and dietary diversity were surveyed and documented.
- The villages were characterized by red sandy soil, high temperature with annual rainfall of 450-500mm. Rainfed agriculture is predominant in all the four villages surveyed.
- Majority of households derived their livelihood from agriculture and allied activities.
- Twenty eight annual and perennial species were maintained on the farm by the households.
- Among annual crops groundnut, redgram, cowpea, greengram, foxtail millet, bajra, castor and horsegram and among fruit crops mango, ber and sapota were the major cultivated crops.
- Tamarind, Neem and Pongamia were commonly found wild trees.
- Cows, buffalos, sheep, goat and poultry birds were the common domestic animal biodiversity present in villages and serve as a source of milk, milk product, meat and manure for both household consumption and marketing.
- Bajra and foxtail millet served as diet items along with red gram and horse gram.
- Groundnut and dairy products and goat were found as main source of income.
- Most of the households obtained seed or planting material from outside source and they replaced seed of groundnut, redgram, cowpea, greengram, castor and bajra every year.
- Seed system indicated inadequacy, non-availability and non-desirable use of seeds.
- In majority of the households stereo type of dietary system was noticed leading to malnutrition especially among women and children.
- Men were found major decision makers whereas, women were putting more family labour for the sustenance of the household.
- 46.5% of household heads and 70.5% of spouses were illiterate in the surveyed villages.
- Majority of males and females were in the age group of 16-60 years and the size of a family has an average of 5.2 individuals.
- In most of the households, the type of floor was made up of stone followed by earthen floor and cement.

- 35/200 (17.5%) of families did not have enough food to meet their family needs during April – June months (summer).
- About 92.5%, 37% and 24% households possessed mobile phones, bicycles and scooters, respectively.
- Ration subsidy (100%), Crop loan (86.5%), Crop Insurance (76.5%), NGO's (70%) NREGS (63.5%), SHG (60%) were the major Government programmes in which majority of households participated.
- Eighty eight members out of 200 (44%) households migrated to other places for work during lein season.
- Due to continuous land fragmentation, number of small and marginal households were on increase affecting the employment and income of the households.
- Improved seed supply and diversified crop use appeared to be the major interventions.

Inference:

The baseline survey has provided a vibrant platform for identifying the entry points for the sustainable improvement of living standards of households in all the four action sites. As majority of households derived their lively hood from agriculture and allied activities, the availability of irrigation water is of prime concern to which a feasible and potential intervention needs to be identified. Rich crop diversity was observed on cultivated fields, forestlands and home gardens. Cows, buffaloes, sheep, goat and poultry birds served as a source of milk, milk products, meat and manure for both household consumption and marketing. The replacement of crop and livestock land races with improved and high performance cultivars and breeds needs prioritization in order to improve the yield and quality of produce. Seed system indicated inadequacy and non-availability and majority of households depended on private companies for the seed. "Own seed concept" has to be included into indicator sets to overcome this problem.

Figures

Figure – 52: Interface with households at Kurlapalli

Figure – 53: Interface with households at V. Bonthiralla

Figure – 54: Quadrangular analysis for Agri biodiversity for women

Figure –55: Quadrangular analysis for Agri biodiversity for men

Figures

Figure – 56: Focus group discussion for women

Figure – 57: Focus group discussion for men

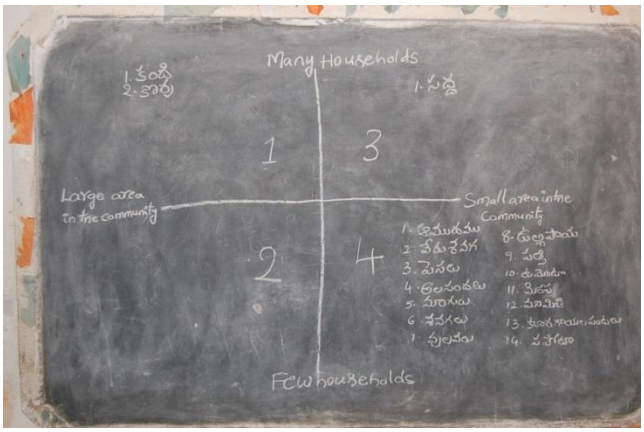


Figure – 58: Quadrangular analysis for Agri biodiversity

Figure –59: Meeting with Survey Staff

Acknowledgements

We take this opportunity in acknowledging our deep sense of gratitude to Bioveristy International for providing financial assistance for conducting "Baseline Survey for Agricultural Biodiversity in Anantapuramu and Kurnool Districts of Andhra Pradesh, India". We are very much grateful to Dr. Prem Narain Mathur, Regional Director, Asia, Pacific and Oceania & South Asia Coordinator, Bioversity International, Sub-Regional Office for South Asia for his expertised guidance and valuable advices to carryout the survey work in efficient manner. We are grateful to Dr. Mauricio Bellon, Principal Scientist for providing methodology and ABD and dietary questionnaires for the survey and encouragement given for effective functioning of survey team. Acknowledgments are due to Dr. S. B. Dandin, Liaison Officer, Bioversity International, Southern Centre of Sub-regional Office for South Asia for his meticulous planning, critical reviewing and providing valuable suggestions and remarks throughout the project work and bringing out this report. We are highly grateful to our beloved Hon'ble Vice-Chancellor Dr. B.M.C. Reddy the guiding force to take up this project for his valuable advises and support. Our thanks are also due to the Director of Research, Dr. Dilip Babu for his support and providing timely administrative sanctions for effective functioning of the project. The co-operation rendered by Sri. G. Adinarayana, Scientific Officer, ICRISAT for his involvement in organizing Focus Group Discussions is greatly acknowledged. The co-operation extended by Dr. H.B. Patil, Principal Investigator and his colleagues, Horticultural Research Station, Tidagundi, Bijapur district, Karnataka in preparation of this report is thankfully acknowledged. The co-operation extended by various Departments at village level for providing the basic information is greatly acknowledged. The excellent work and co-operation rendered by the Survey Personnel and Date Entry Operator of this project for collecting the valuable information through schedules, processing and tabulation of the data is highly acknowledged. Thanks are also due to Sri. Shaik Taher Ibrahim, Senior Technical Assistant for processing, tabulation, scanning of photographs and typing of the report.

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