

Success Stories
on
Ensuring Food and Livelihood Security of Farmers
of Western Uttar Pradesh Through Farmer FIRST Approach



**P C Jat, A S Panwar, A K Prusty, Poonam Kashyap, Nisha Verma,
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भारतीय कृषि अनुसंधान परिषद
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MESSAGE

The increasing number of people on the planet, the shifting climate, and the depletion of natural resources all pose ongoing challenges to the food production system. The bright side is that there might already be technological solutions for some of the issues. Science, technology, and innovation will continue to have a significant impact on the environment, economy, and society. Additionally, the Indian government has launched several programs, such as the Rastriya Krishi Vikas Yojna (RKVY), National Mission on Sustainable Agriculture (NMSA), National Programme on Organic Production (NPOP) and Mission Organic Value Chain Development for North Eastern Regions (MOVCDNER) which promotes natural, organic and integrated farming systems.

The ICAR-Indian Institute of Farming Systems Research, Modipuram, has developed 25 success stories on integrated farming systems models through farmers participation approach under a ICAR flagship programme such as Farmers FIRST. These success stories are suitable for the Western Plain Zones of Uttar Pradesh and offer opportunities to reduce the use of mineral fertilizers, increase employment and increase income by two to three-fold, all while leaving less environmental impact.

I extend my heartfelt gratitude to those who graciously shared their stories and experiences for the benefit of the entire community. I am sure that this document “**Success Stories on Ensuring Food and Livelihood Security of Farmers of Western Uttar Pradesh through Farmer FIRST Approach**” will be helpful for farmers, developmental departments, researchers, policy makers and other stake holders to implement the sustainable farming practices in the state.

I convey my best compliments to the authors for their efforts in bringing out this useful publication.

27th March 2024
New Delhi


(Himanshu Pathak)



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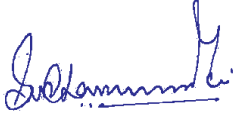
FOREWORD

Small farm agriculture (upto 2ha) holds the key for ensuring food and nutritional security of Indian burgeoning population and acts as key for rural prosperity. These farms are characterized by low income and are more vulnerable to weather vagaries like flood, drought, and other natural calamities. To minimize these challenges, integrated farming systems are most suitable farm practices which addresses the multiple objectives of increased production, maximizing profit by minimizing cost through recycling of waste, family nutrition, sustainability, ecological security, employment generation, economic efficiency and social equity.

Each story based on success of farmers practicing integrated farming systems represents not just an individual's accomplishment, but also a testament to the power of hard work, perseverance, and the unwavering belief in oneself. These tales are a celebration of diverse paths leading to success, proving that there is no one-size-fits-all formula for achievement. In the ever-evolving landscape of personal and professional growth, these stories stand as a reminder that setbacks are not road blocks but rather stepping stones toward greatness. They highlight the importance of embracing challenges, learning from failures and adapting to change.

I extend my deepest gratitude to the farmers who shared their stories, and best wishes to the team of Farmers FIRST project of ICAR-Indian Institute of Farming Systems Research, Modipuram for bringing out this document “**Success Stories on Ensuring Food and Livelihood Security of Farmers of Western Uttar Pradesh Through Farmer FIRST Approach**” depicting success, overcoming obstacles and charting a course towards future filled with achievement and fulfillment.

27th March 2024
New Delhi


(S.K.Chaudhary)



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PREFACE

The most effective method for increasing farming systems' profitability is the integrated farming systems (IFS) approach, particularly for small and marginal farmers. The state of Uttar Pradesh has an abundance of natural resources, including fertile land, water for irrigation, and a suitable climate that is ideal for raising fields as well as horticultural crops. To ensure nutritional security at the household level and to achieve maximum productivity at the farm level, better and scientifically managed integrated farming systems must be implemented. In this regard, it gives me great pleasure to inform you that the ICAR-Indian Institute of Farming Systems Research has developed 38 integrated farming systems models at the farmer field that are appropriate for Western Plain Zone of Uttar Pradesh.

I am happy to note that team of Farmers FIRST project of ICAR-IIFSR, Modipuram, has put all the efforts to bring this very crisp and concise success stories of integrated farming systems for Uttar Pradesh which will be certainly helpful for developmental departments, policy makers and other stake holders to implement the sustainable farming practices in the state.

(Sunil Kumar)

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Introduction

Farmer First Programme (FFP), a flagship programme of the Indian Council of Agricultural Research (ICAR) funded under the ICAR-KVK scheme is an initiative to move beyond production and productivity, to privilege the small holder agriculture and complex, diverse, and risk-prone realities of majority of the farmers through enhancing farmers-scientists interface. The focus is on farmer's Farms, Innovations, Resources, Science and Technology (FIRST). Farmers tend to face problems related to production and natural resource management but they might not have found solutions to overcome them. In such situations, Farmer FIRST is an opportunity for researchers, extension professionals and farmers to work together and find appropriate ways to assess different solutions. It is a concept in which the farmers participate in the research process with scientists. Two terms 'enriching knowledge' and 'integrating technology' qualify the meaning of Farmer FIRST in the Indian context. Farming systems intervention proved to be a useful tool for leveraging the small and marginal farmers for their livelihood security. The Indo-Gangetic plains (IGP) exhibit the most fertile land however, extensively cultivated and densely populated region in the country. The major cropping system are sugarcane-wheat system. Crop-livestock interaction has been a unique feature of the region. However, the agrarian community is facing multi-faceted challenges arising from high cost of market inputs, defragmented landholdings making farm operations difficult, depletion in ground water table and climatic vagaries requiring attention to address the intensity of the problem.

The prime objective of the project is to understand the constraints and opportunities available in the region along with designing and implementing holistic farming systems interventions for ensuring food and nutritional security through increasing farm productivity and profitability with small and marginal farmers in focus. Farming systems can act as a useful tool for maintaining ecological sustainability and bringing out economic viability while enhancing agricultural productivity along with the reduction of negative environmental impacts. The basic need for the farming systems approach is the requirement of homogenous farmer groups. Thus, clustering farm households into homogenous clusters, benefits targeted intervention of integrated set-off activities of different components of farming systems. This also takes the resource constraints into account for the optimal use of available resources for achieving the desired goal.

Description of study and location

FFP is being implemented by ICAR-Indian Institute of Farming Systems Research (IIFSR), Modipuram. The study area encompasses farming systems of western plain zone of Uttar Pradesh. The farming system study locations were purposively selected based on agro-climatic and socio-economic status, landholding pattern, and farming practices representing western plain zones of Uttar Pradesh. It is characterized by average altitudes ranging 195-268 m AMSL. Under this programme, 1036 households in a cluster belonging to 3 contiguous villages i.e. Bhangi-Bhangela, and Satheri in Khatauli block of

Muzaffarnagar district were chosen for technological intervention in different modules of the farming system (Figure 1).

Farm households of the adopted villages comprised of 1,036 households have been categorized into different categories of farmers based on land holding size which revealed a significant presence of land less farmers (36.29%) while marginal, small, and land less farmers together constitute about 87.45

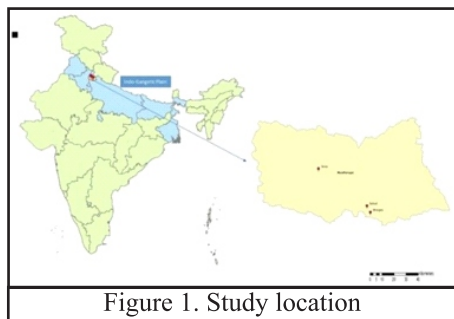


Figure 1. Study location

Figure 1. Study location % of the farming community. Overall percentage representation of medium farmers was very meagre (2.1%) while large farmers were absent in the adopted villages suggesting defragmentation of land holdings.

Constraints identified : The detailed benchmark survey was carried out during 2016-17 through abase line survey which could form a basis for identifying the constraints and subsequent planning of module-wiseintegrated farming system interventions.

Major constraints identified in the region were found to beim balanced crop nutrient application, lack of crop diversification, improper management of insect pests, scarcity of quality fodder for animals and a dearth of improved agricultural practices. Based on constraintanalysis and the requirement needs of different categories of farmers modules technological interventions were planned and implemented in the field. For holistic development of farm households' food, fodder and other requirements of households for ensuring food and nutritional security besides enhancing farm income, were considered in the planning of inter ventions.

Table 1. Module-wise technological interventions

Modules of IFS	Technological interventions
Crop and cropping systems	<ul style="list-style-type: none"> · Cropping intensification and diversification. · Use of improved production technology, HYV, Intercropping, INM, IPM, and IWM. · Emphasis on oilseeds and pulses.
Livestock	<ul style="list-style-type: none"> · Fertility and nutrition management in milch animals. · Livestock health care/vaccination/deworming/calcium supplementation. · Introduction of improved breeds of poultry, goat, and swine. · Feed and fodder management through cropping systems diversification
Horticulture	<ul style="list-style-type: none"> · Demonstration of the improved package of practices in vegetable crop production. · Exotic vegetable cultivation for higher income. · Multitier cropping of vegetables and promotion of nutritional kitchen garden. · Low-cost nursery for off-season vegetable production/low-cost polyhouse
Secondary Agriculture	<ul style="list-style-type: none"> · Composting and vermicomposting · Improved small farm tools for the reduction in drudgery of farm women · Value addition of farm produce (pickle/jam/jaggery making) and SHG formation for marketing
Capacity building	<ul style="list-style-type: none"> · Skill enhancement training (Compost/vermicompost preparation/nursery raising/on-farm processing/mushroom production/prunning/good agricultural practices etc training) · Exposure visits to Agrifair/Krishi Unnati Mela/ awareness programs/kisan gosthi etc. · Literature distribution in local languages and agro-advisory services for risk management

These technological interventions were implied as per the farmer's situation, socio-economic characteristics, and resource endowments continuously from the year 2017-2021. The effect of interventions/awareness programmes/capacity building programmes were studied in the year 2022. Some of the successful cases as a champion farmer are represented as follows, so that these may be taken as examples for the research/extension functionaries/farmers for further research, extension and development purposes.

Success Story1: Intensification of Sugarcane-Wheat Cropping System Integrated with Improved Crop and Livestock Management Practices



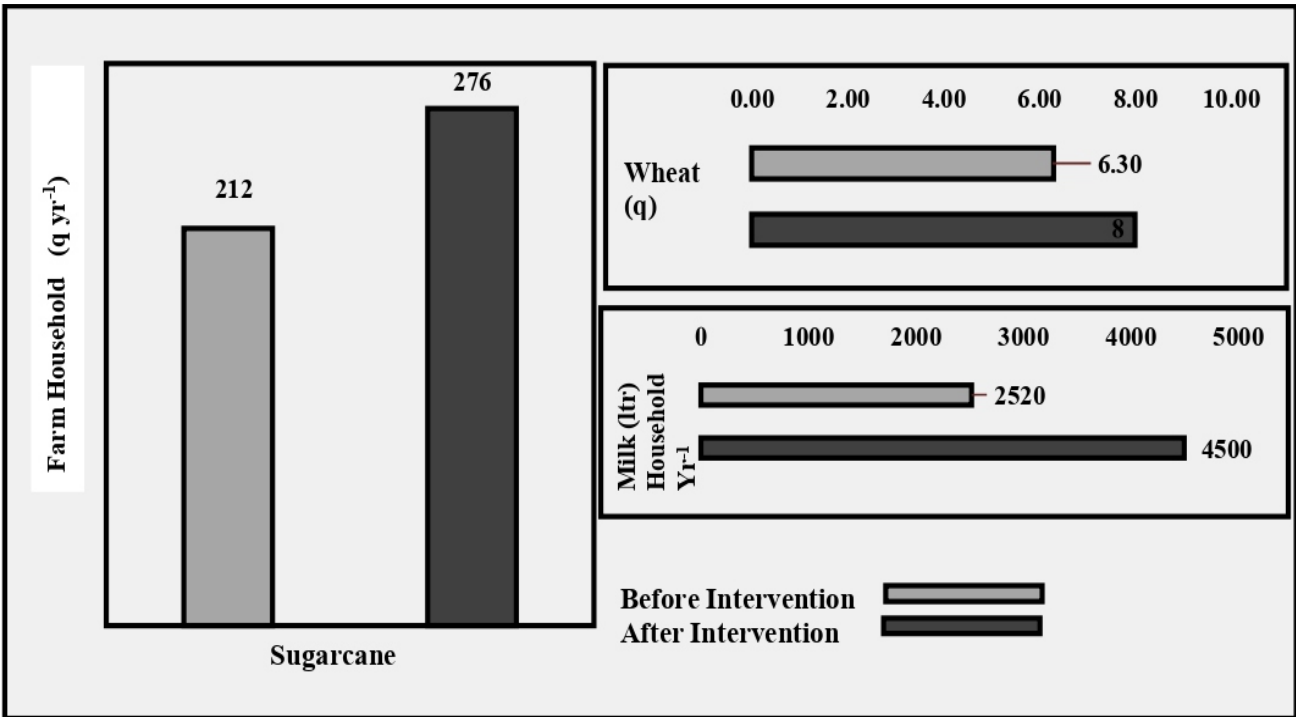
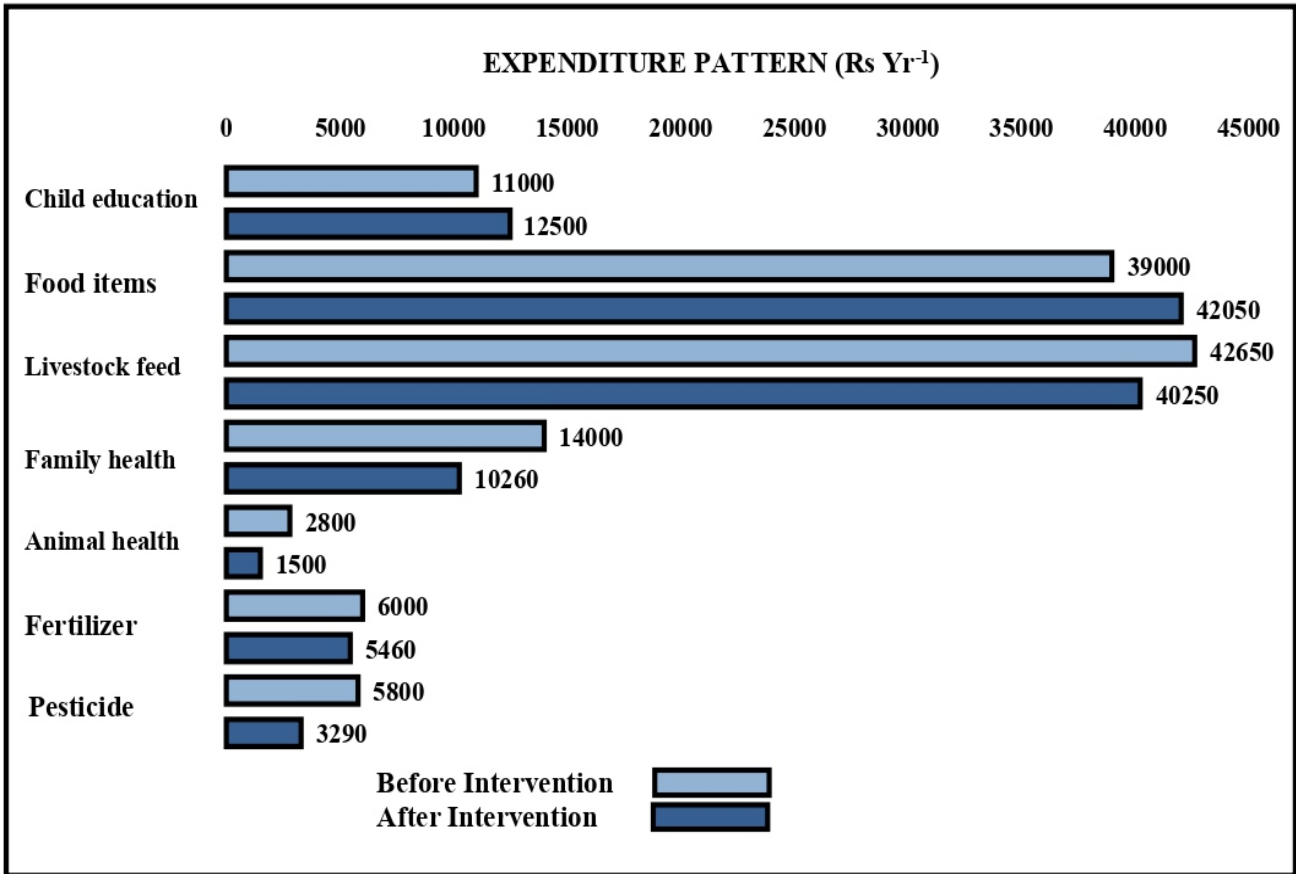
Name - **Ali Hasan**
Village - **Bhangi Bhangela**
Age - **70**
Education - **5**
Size of Land Holding (ha) - **0.32**

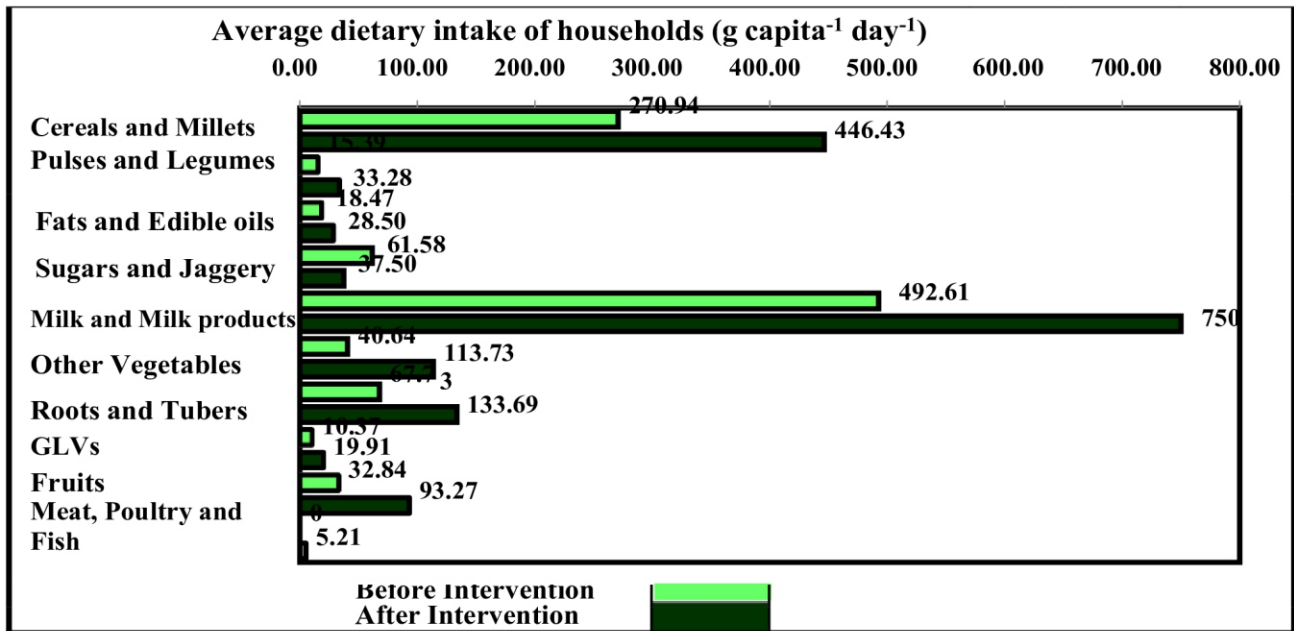
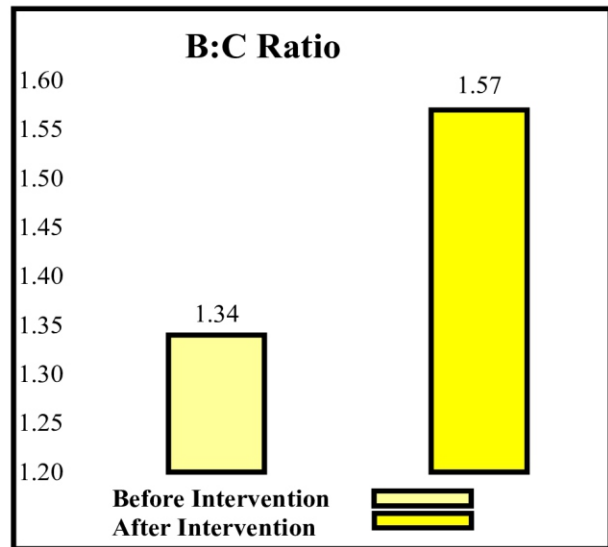
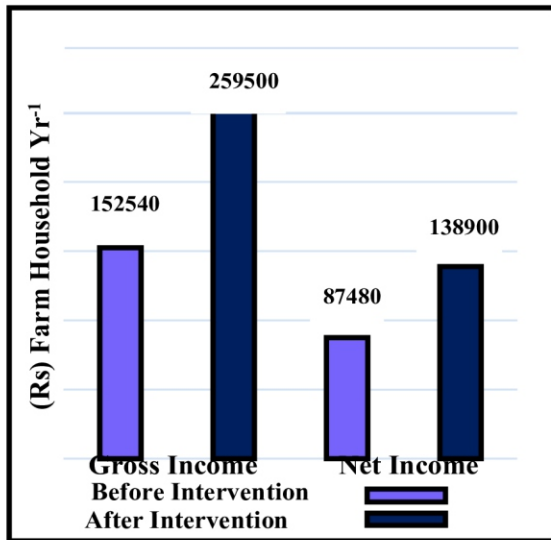
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Name	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226, HD 2967	0.16	6.3	13080	9880
Field Crop 2	Sugarcane Co0238	0.32	212	68900	42100
Livestock 1	Cow	2	2520	70560	35500
Total				152540	87480

Status in 2020-21

Component Description		Period (2020-21)				
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net income (%)
Field Crop 1	Wheat PBW 658, HD 3086	0.16	8.0	19200	17000	81.6
Field Crop 2	Sugarcane Co 0238	0.32	276	89700	60900	
Hort. Crop 1	Vegetables	0.01	0.50	1200	1000	
Livestock 1	Buffalo, cow	2.0	4500	149400	80000	
Total				259500	158900	





Brief: The farmer's earlier generating an annual net income of Rs.87480 from crops and livestock, later with the interventions like improved management practices of crops and livestock, high yielding varieties, animal health management (mineral mixture, calcium, vitamin mixture) and kitchen gardening, he is now getting an annual net income of Rs 158900 (81.6% higher). The benefit: cost ratio was improved from 1.35 to 1.57. The average dietary intake of the household was much lower in terms of cereals and millets, pulses and legumes, other vegetables, roots and tubers, green leafy vegetables (GLVs) and fruits, than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 47, 15, 37, 33, 10, 93, and 17% from RDI, respectively, after DFI interventions. The expenditure on family health had been reduced by 27%.

Success Story2 :Doubling Marginal Farmer's Incomeby Crop Diver sification through Intercropping of Legumes, HYVs and Improved Management Practices

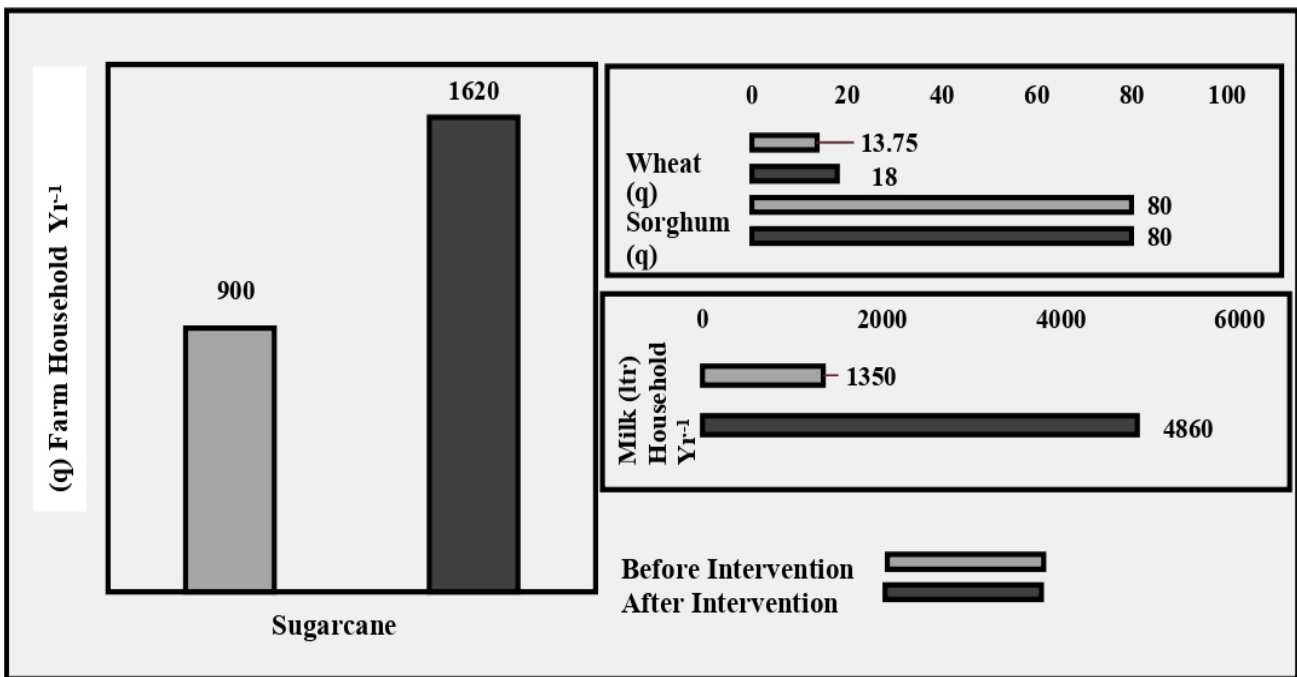
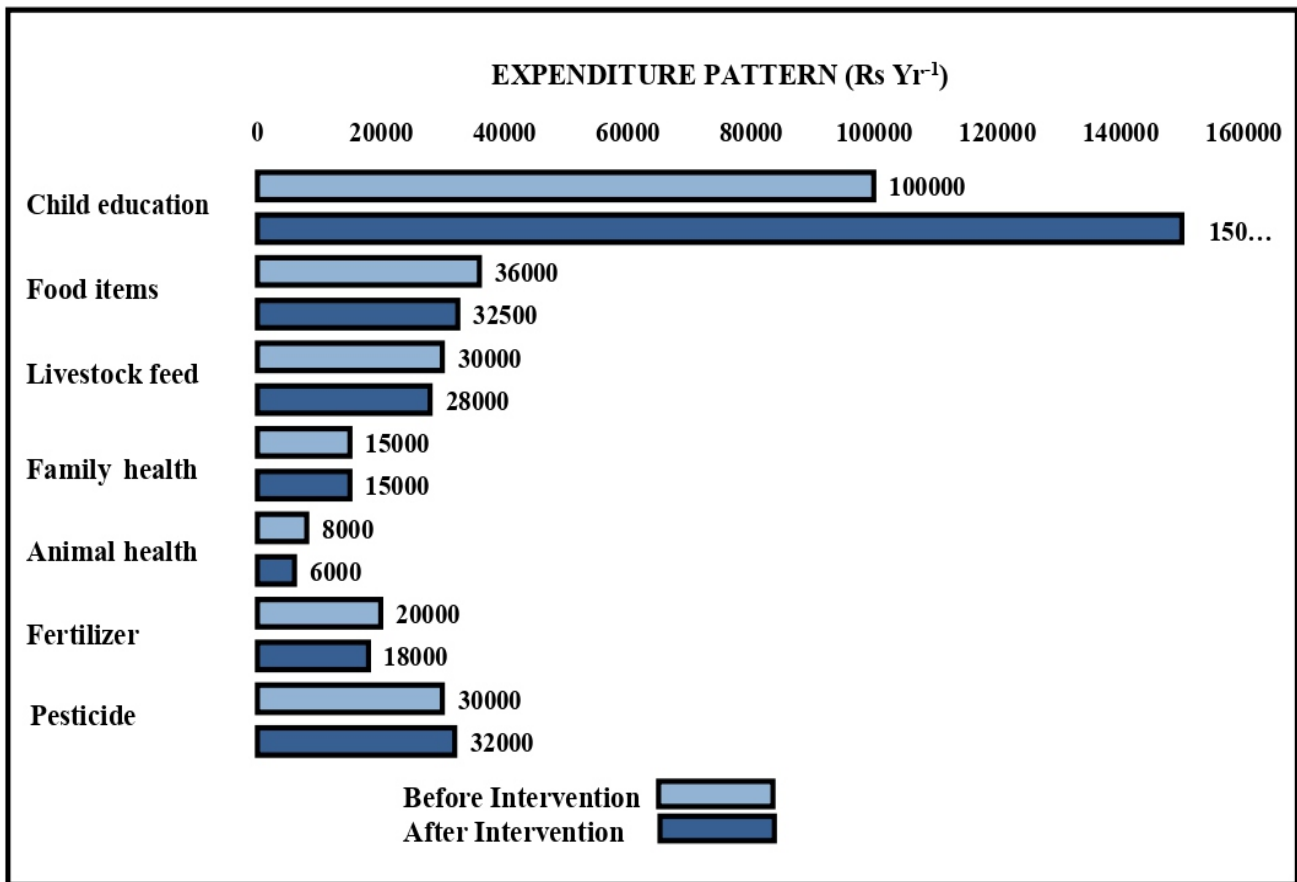
	Name	-	Amar Singh
	Village	-	Bhangi Bhangela
	Age	-	40
	Education	-	10
	Size of LandHolding(ha)	-	1.62

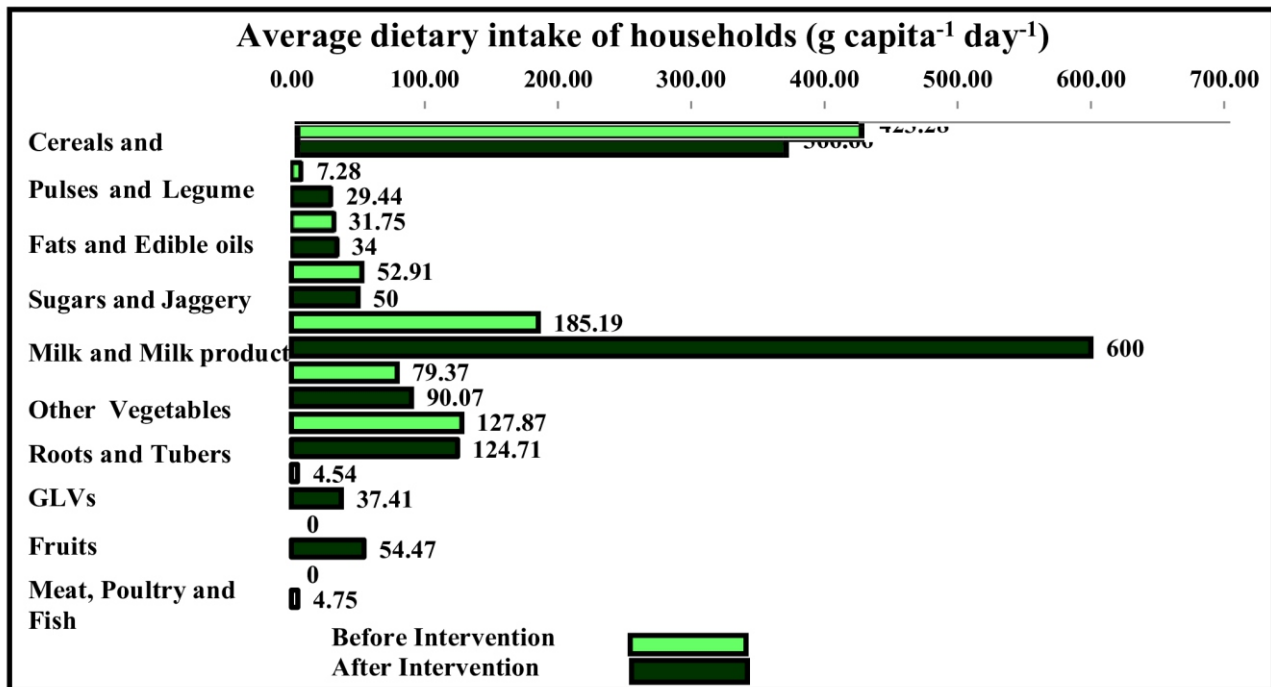
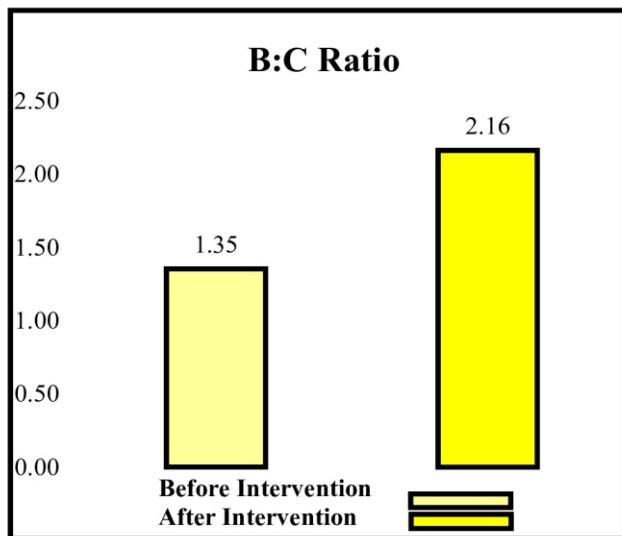
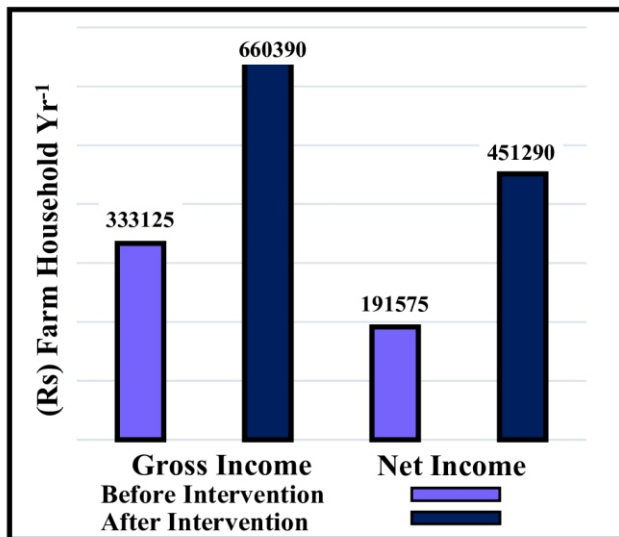
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226	0.40	13.75	23875	17875
Field Crop 2	Sugarcane Co 0238	1.44	900	252000	148500
Field Crop 3	Sorghum	0.16	80	10000	8200
Livestock 1	Buffalo	1.00	1350	47250	17000
Total				333125	191575

Status in 2020-21

Component Description		2020-21				
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net income (%)
Field Crop 1	Wheat PBW 658 DBW 71	0.40	18	43550	35550	136.9
Field Crop 2	Sugarcane Co 0238	1.44	1620	486000	360000	
Field Crop 3	Black gram	0.08	0.4	3200	2500	
Field Crop 4	Sorghum	0.16	80	12500	10500	
Hort. Crop 1	Vegetable	0.02	0.80	2500	2000	
Livestock 1	Cow	2.0	2700	52000	25000	
Livestock 2	Buffalo	1.0	2160	63840	18240	
Total				663590	453790	





Brief: The annual income of the farmers was Rs. 191575 from mixed crops and livestock earlier, but with interventions like improved management of crops and livestock, high yielding varieties, and legume inter cropping, he is now getting an annual net income of Rs. 453790 (136.9% higher). The benefit: cost ratio was improved from 1.35 to 2.16. The average dietary intake of the household was much lower in terms of pulses, milk and milk products, other vegetables, green leafy vegetables, fruits, meat, poultry and fish than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 39, 100, 45, 37, 54, and 16% from RDI, respectively after farming system interventions. The expenditure on children's education had improved by 50% due to improved purchasing power.

Success Story3 : Diversification of Sugarcane-based Cropping System into Crop + Vegetables + Dairy Farming System



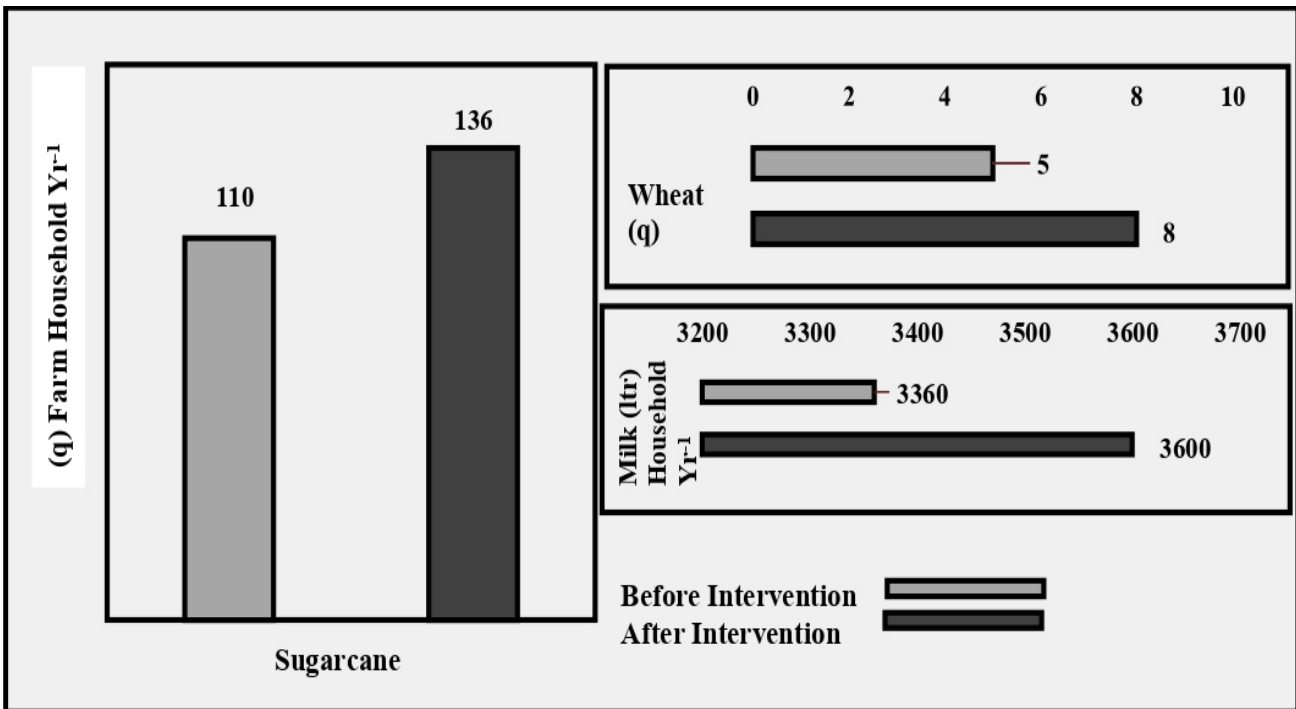
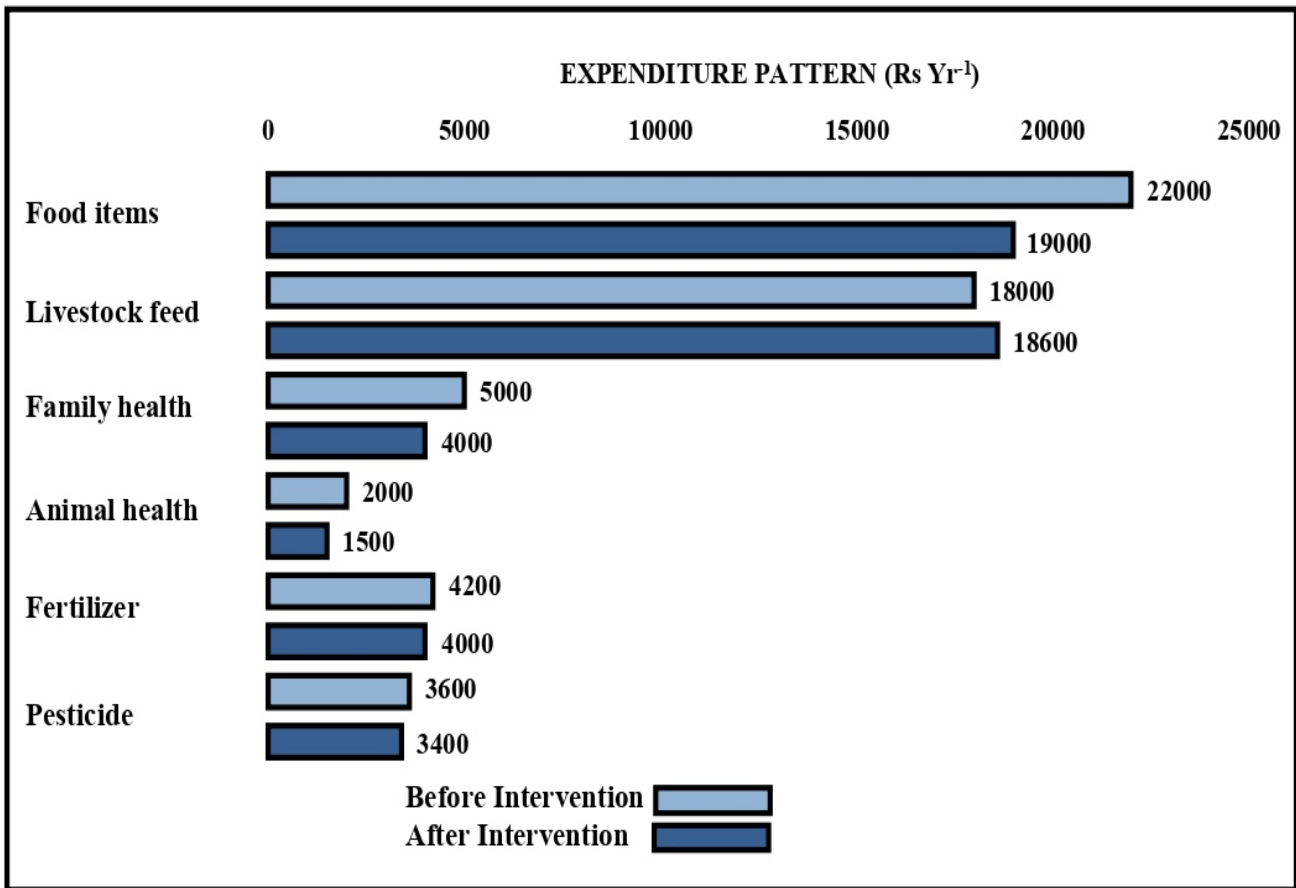
Name	-	Ashok
Village	-	Bhangi Bhangela
Age	-	59
Education	-	5
Size of LandHolding(ha)	-	0.32

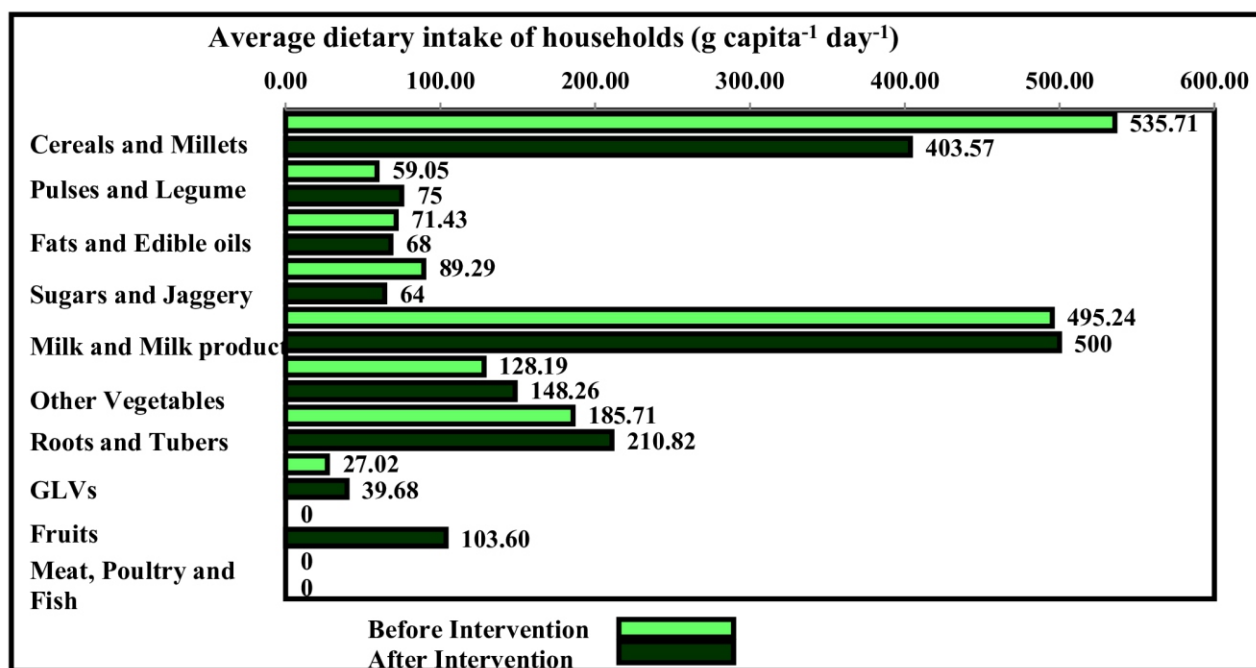
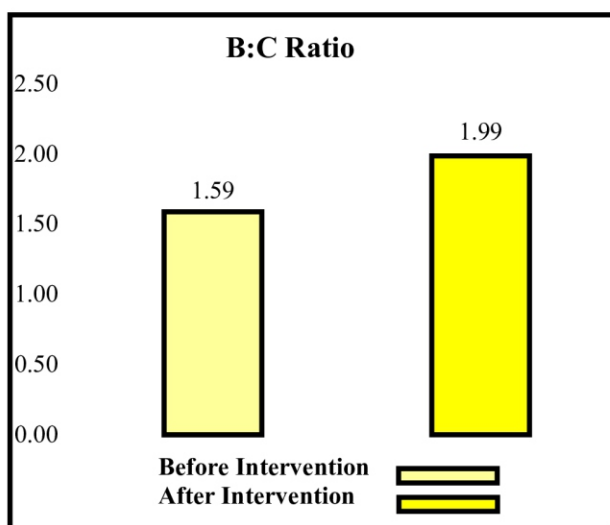
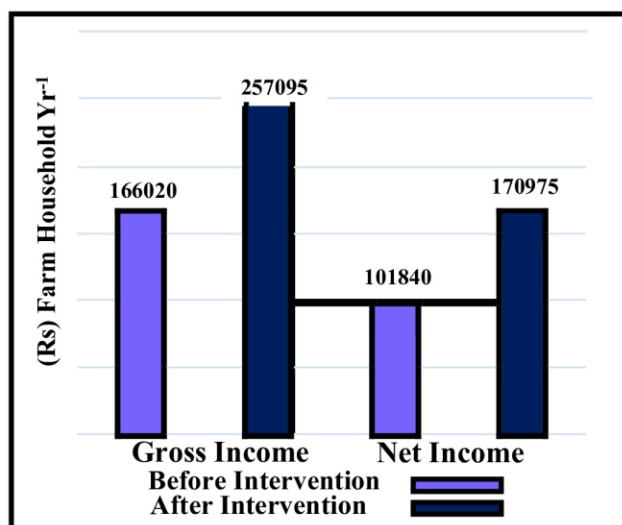
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 550 PBW 226	0.16	5	8750	6750
Field Crop 2	Sugarcane Co 0238	0.16	110	35750	23750
Field Crop 3	Mustard local	0.16	4	14000	11820
Hort. Crop 1	Vegetables	0.01	0.10	220	200
Livestock 1	Buffalo	2.0	3360	107520	59520
Total				166240	102040

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550	0.16	8	18800	15600	
Field Crop 2	Sugarcane Co 0238	0.16	136	44200	31200	
Field Crop 3	Mustard RH 749	0.08	1.25	9375	7875	67.6
Field Crop 4	Black gram	0.16	37	2220	2000	
Hort. Crop 1	Vegetables	0.01	0.85	2500	2000	
Livestock 1	Buffalo	1.0	3600	180000	112300	
Total				257095	170975	





Brief: The initial net income of the farmer's was Rs.102040 from mixed crops and livestock systems before intervention. After necessary interventions like improved management practice (crops and livestock), high yielding varieties, diversification through legume intercrops and kitchen gardening, he is getting an annual net income of Rs 150975 (67.6% higher). The benefit: cost ratio was improved from 1.59 to 1.99. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, green leafy vegetables, and fruits, than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 21, 10, 13, and 100% from RDI, respectively after farming system interventions. The spending on food items purchased from outside has decreased by 14%.

Success Story 4: Diversification and Intensification of Horticulture-based Farming System with Exotic Vegetables, Vermicomposting and Animal Health Management



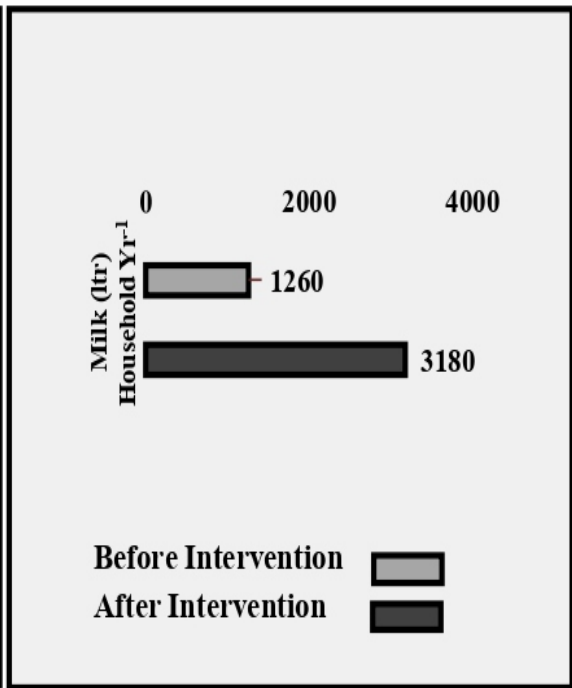
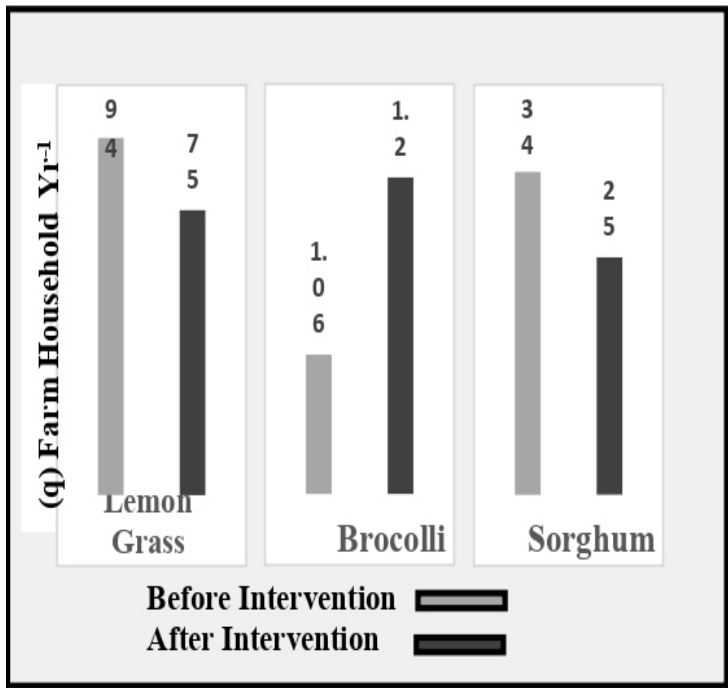
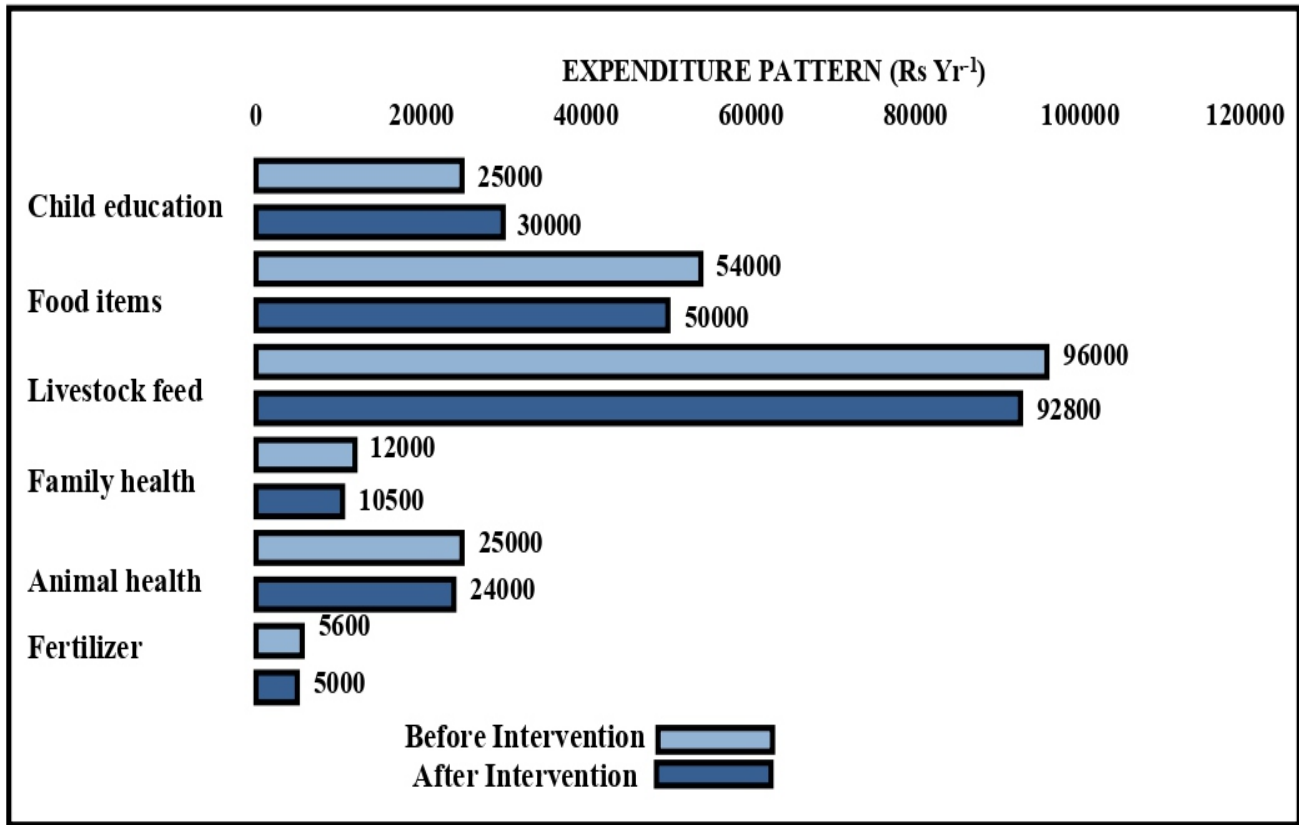
Name	-	Charan Singh
Village	-	Bhangi Bhangela
Age	-	59
Education	-	10
Size of LandHolding(ha)	-	0.64

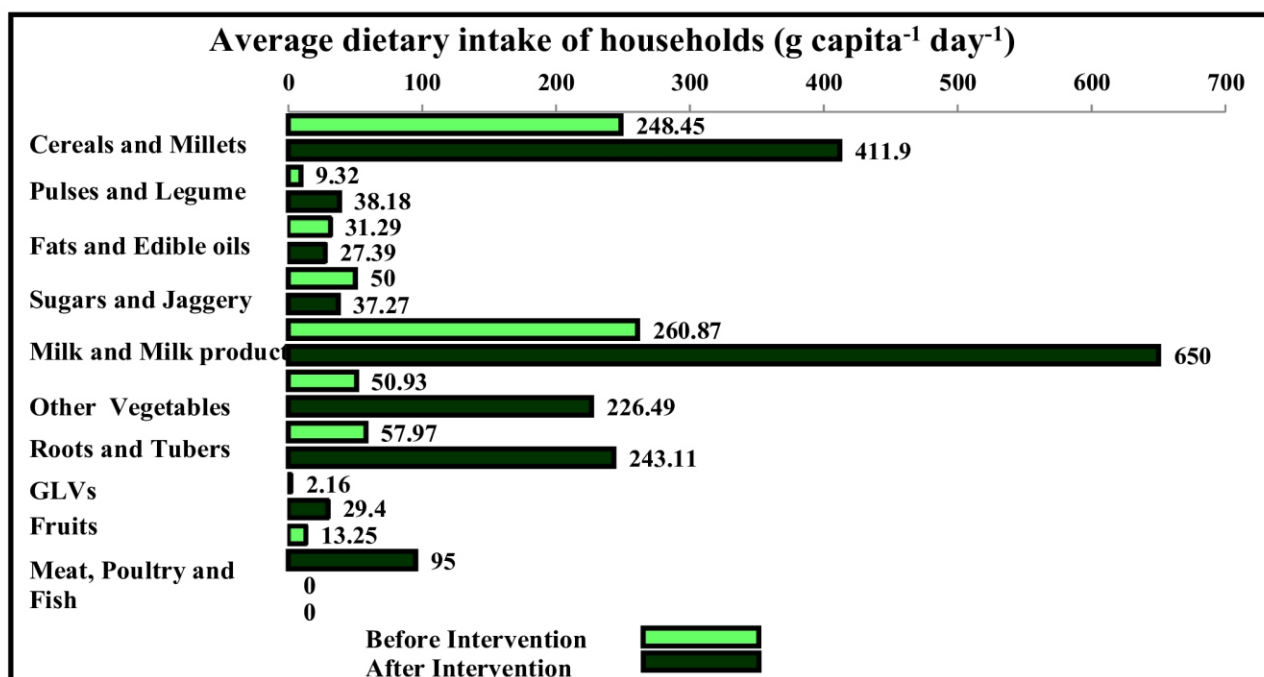
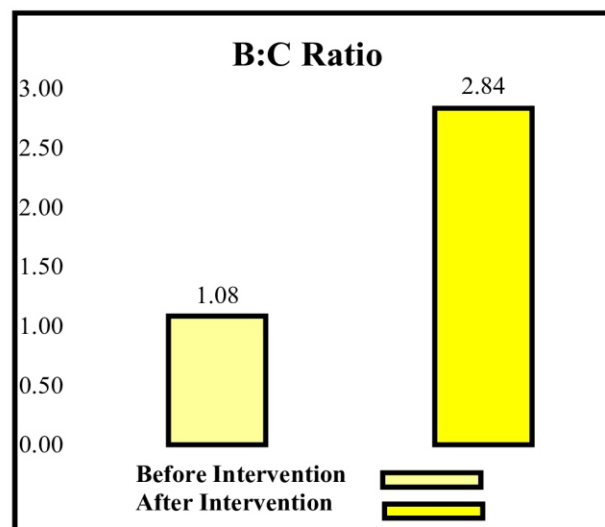
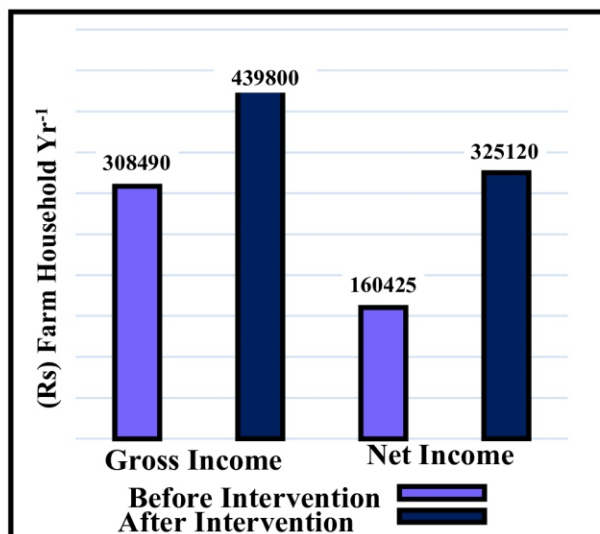
Before intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field crop 1	Lemon Grass	0.40	94	250000	126000
Field crop 2	Broccoli	0.16	1.06	21250	14800
Field crop 3	Sorghum	0.08	34	6000	5125
Field crop 4	Vegetable	0.01	0.3	1000	1000
Livestock 1	Cow	1.00	1260	30240	13500
Total				308490	160425

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field crop 1	Lemon Grass	0.28	75	275000	210000	102.7
Field crop 2	Broccoli	0.16	1.2	18000	16500	
Field crop 3	Sweet Sorghum	0.04	25	8000	7000	
Field crop 4	Leak	0.016	1.0	2000	1500	
Field crop 5	celery	0.01	1.5	2250	1800	
Field crop 6	Parsley	0.01	0.2	600	450	
Field crop 7	Iceberg	0.017	3.0	6000	5000	
Field crop 8	Lettuce red yellow	0.017	1.5	2250	1450	
Hort. Crop 1	Red cabbage	0.023	8.0	8000	5120	
Hort. Crop 2	Bok-choy	0.017	5.0	5000	2500	
Hort. Crop 3	Vegetable	0.01	0.3	1000	1000	
Livestock 1	Cow	0.08	1920	57600	34500	
Livestock 2	Buffalo	0.08	1260	44100	28300	
Other enterprise	Compost	0.011	10	10000	10000	
Total				439800	321920	





Brief: The farmer's earlier annual net income of Rs.160425 from horticultural-livestock activity, but with suitable interventions like diversification of horticulture through exotic vegetable cultivation and livestock management, he is generating an annual net income of Rs. 325120 (102.7% higher). The benefit: cost ratio was improved from 1.08 to 2.84. The average dietary intake of the household was much lower in terms of cereal and millets, pulses, milk and milk products, other vegetables, green leafy vegetables, roots and tubers fruits than the recommended dietar intake (RDI) which improved significantly by reducing the gap by 43, 38, 100, 100, 100, 27, and 82% from RDI, respectively after interventions. The expenditure on children's education increased by 20% and the purchase of food items has decreased by 7%.

Success Story 5 : Sustainable Intensification of Sugarcane-based Farming System through Crop Diversification, and Improved Management Practices



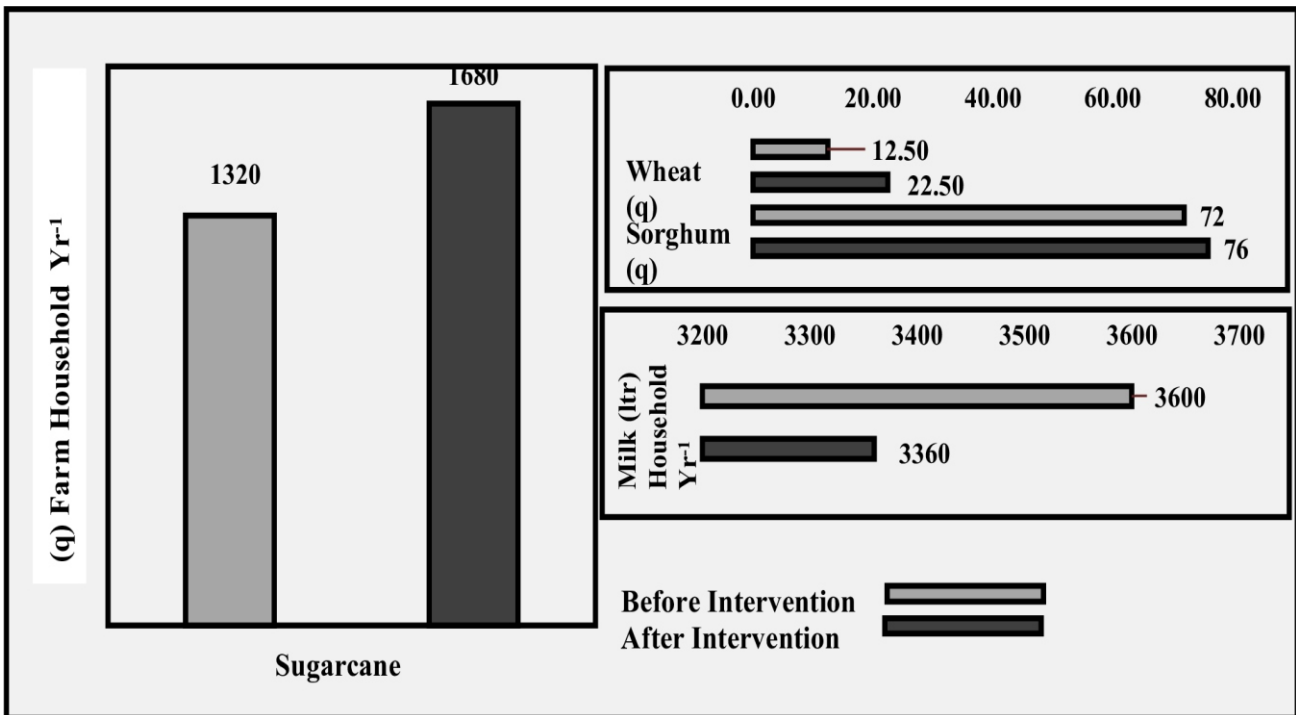
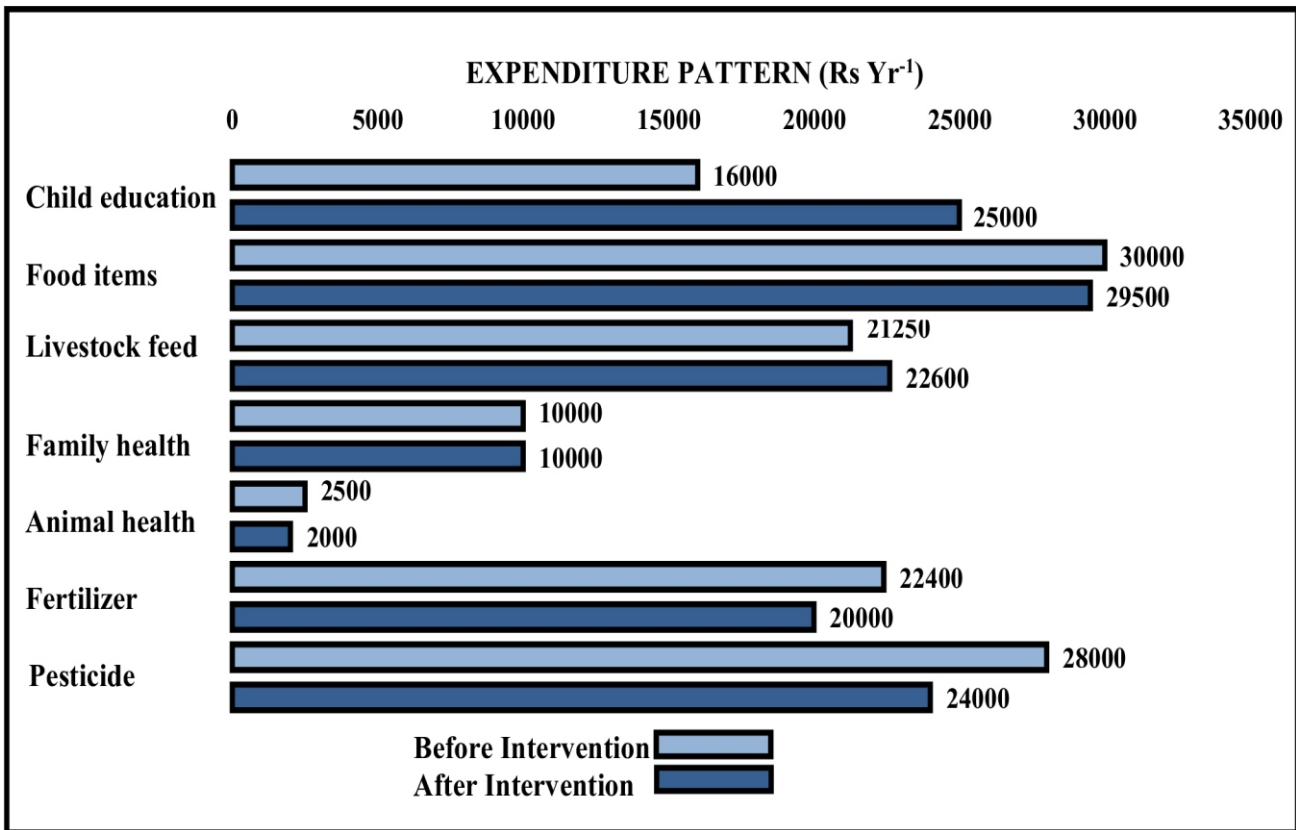
Name	-	Jai Pal
Village	-	Bhangi Bhangela
Age	-	71
Education	-	8
Size of LandHolding(ha)	-	2.07

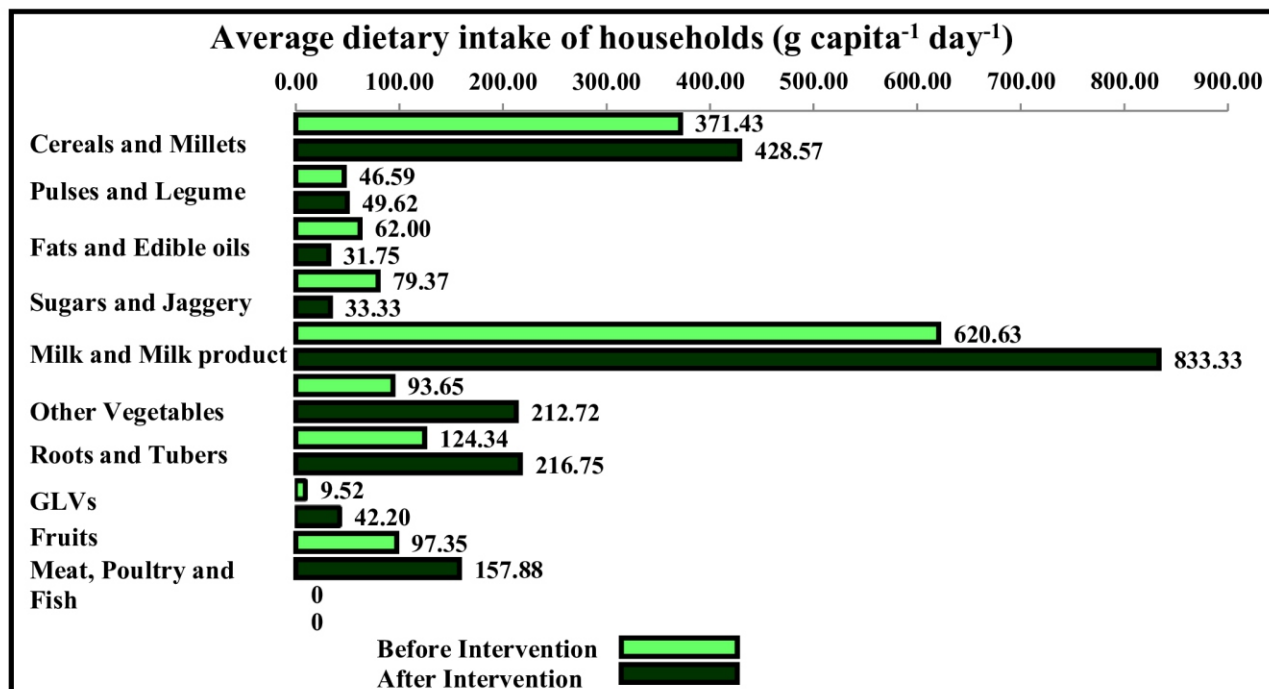
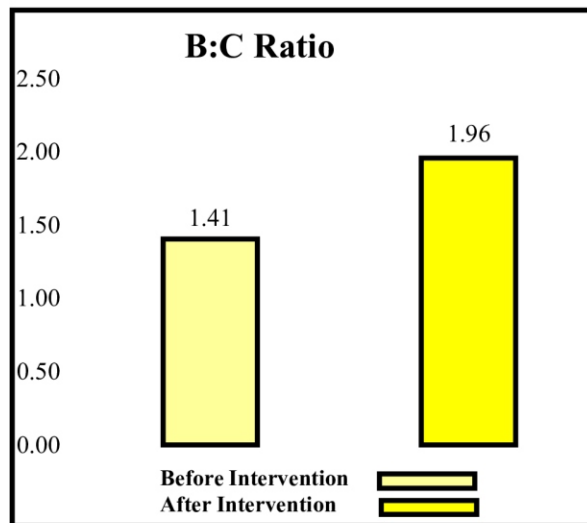
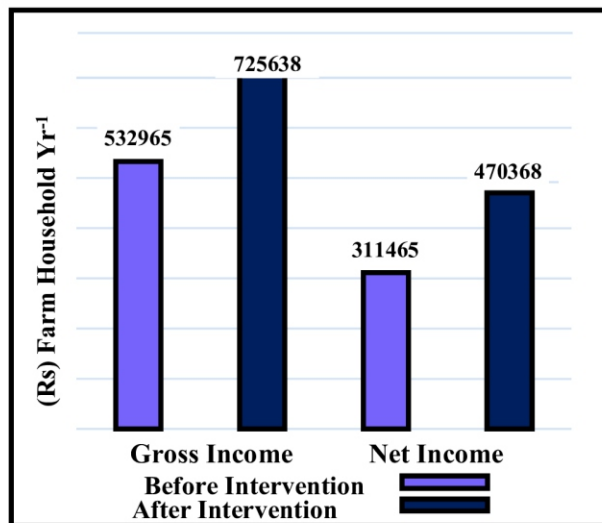
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 75 PBW 226	0.40	12.5	21625	16625
Field Crop 2	Sugarcane Co 0238	1.92	1320	396000	242400
Field Crop 3	Sorghum	0.16	72	11600	9000
Field Crop 4	Berseem	0.04	8	1500	1200
Livestock 1	Cow	1.0	2160	56160	26160
Livestock 2	Buffalo	1.0	1440	46080	16080
Total				532965	311465

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550 DBW 71	0.40	22.5	52968	40968	
Field Crop 2	Sugarcane Co 0238	1.92	1680	546000	366000	
Field Crop 3	Sorghum	0.16	76	15000	11800	54.2
Field Crop 4	Black gram	0.16	40	2850	2400	
Hort. Crop 1	Vegetable	0.01	0.35	1300	1200	
Livestock 1	Cow	2.0	3360	107520	58000	
Total				725638	480368	





Brief: The farmer's earlier annual net income of Rs. 311465 came from a mixed crops and livestock-based farming systems and with interventions like improved management practices (crops and livestock), high yielding varieties, integration of legume intercroops and kitchen gardening, his annual net income increased to Rs 480368 (54.22% higher). The benefit: cost ratio was improved from 1.41 to 1.96. The average dietary intake of the household was much lower in terms of pulses, other vegetables, green leafy vegetables, roots and tubers, green leafy vegetables than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 4, 59, 46, and 33% from RDI, respectively after interventions. The expenditure patterns on children's education improved by 56% and expenditure on pesticides has reduced by 14%.

Success Story 6: Diversification of Sugarcane-based Marginal Farming System with Basmati Rice, HYVs and Improved Management Practices



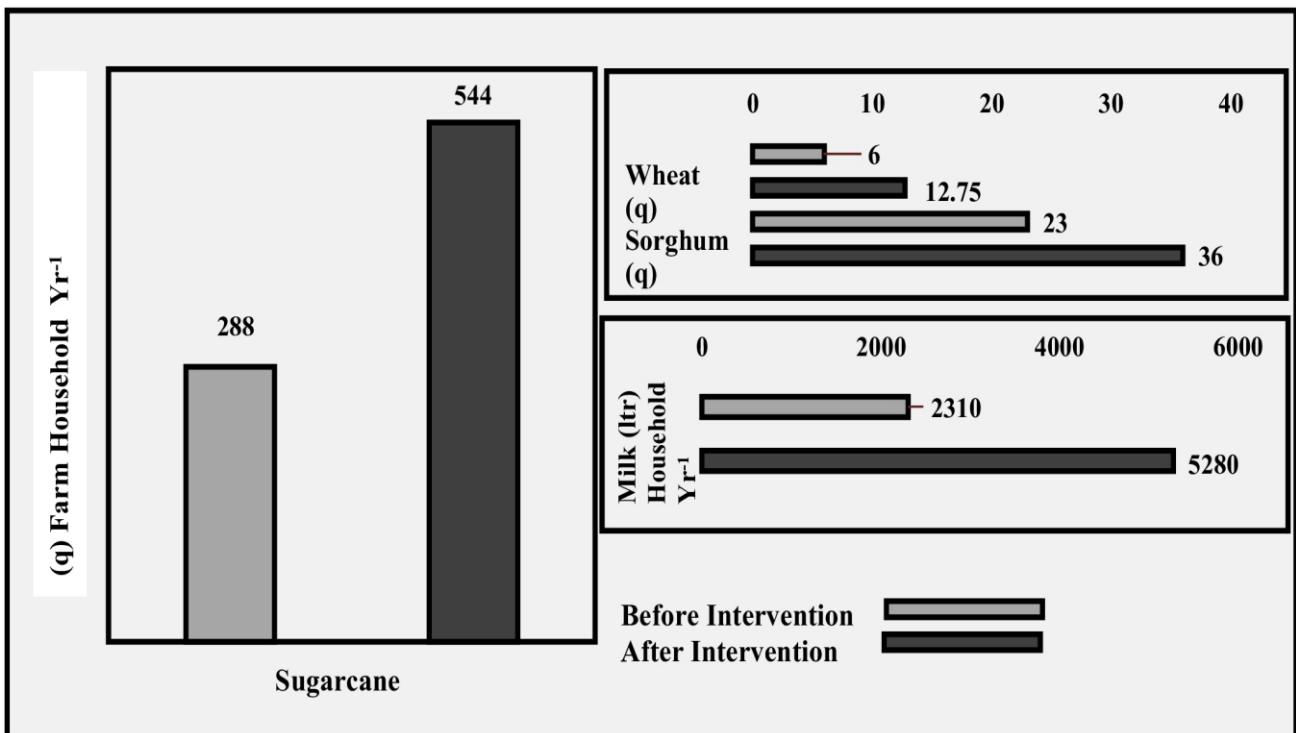
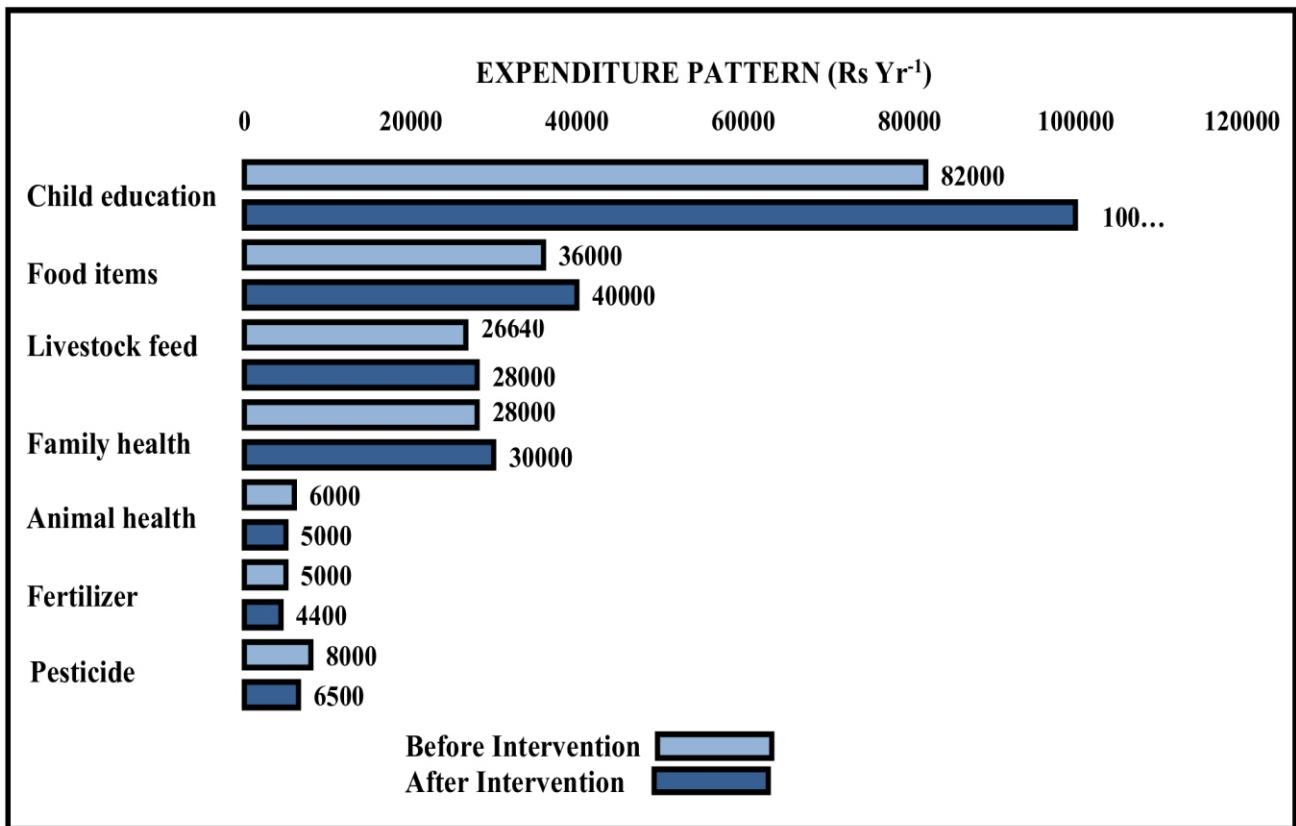
Name	-	Jaiveer Singh-7
Village	-	Bhangi Bhangela
Age	-	46
Education	-	10
Size of LandHolding(ha)	-	0.72

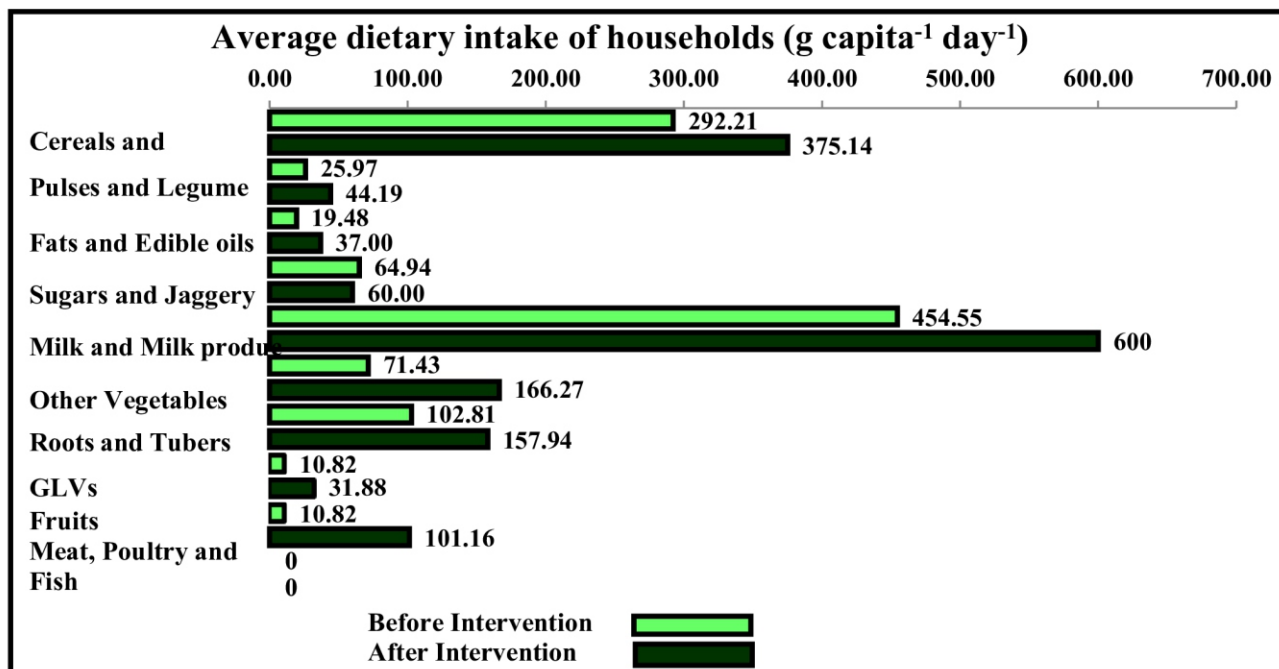
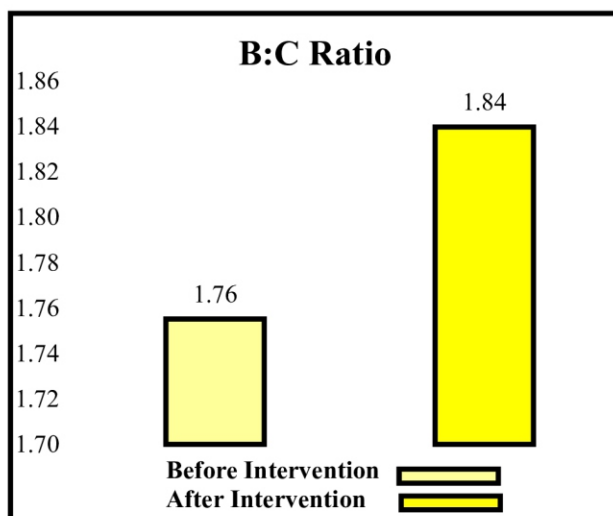
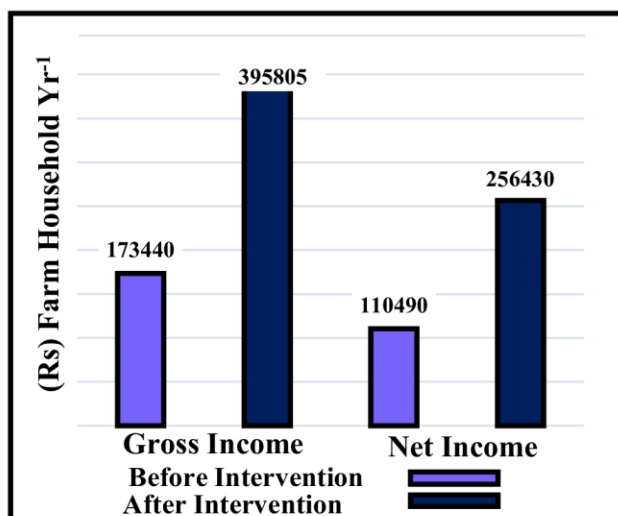
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226	0.16	6	12000	9350
Field Crop 2	Sugarcane Co 0238	1.48	288	93600	70100
Field Crop 3	Sorghum	0.04	23	2800	2450
Field Crop 4	Berseem	0.08	17	2450	
Livestock 1	Cow	1.0	1050	30350	10350
Livestock 2	Buffalo	1.0	1260	32240	18240
Total				169140	110490

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/ No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 550, HD 3086	0.24	12.75	24245	18500	
Field Crop 2	Sugarcane Co 0238	0.48	544	176800	135200	
Field Crop 3	Paddy 1121	0.16	6	15000	11680	132.1
Field Crop 4	Sorghum	0.04	36	4600	2800	
Hort. Crop 1	Vegetable	0.01	0.50	1800	1500	
Livestock 1	Cow	1.0	2160	64800	24400	
Livestock 2	Buffalo	2.0	3120	108560	62350	
Total				395805	256430	





Brief: The farmer used to get an annual net income of Rs 110490 from a mixed crops and livestock systems but with interventions like improved management of crops, livestock, integration of high value basmati rice, nutritional kitchen gardening, he is now generating an annual net income of Rs. 256430 (132.1% higher). The benefit: cost ratio was improved from 1.76 to 1.84. The average dietary intake of the household was much lower in terms of pulses, other vegetables, green leafy vegetables, roots and tubers, and green leafy vegetables than recommended dietary intake (RDI) which improved significantly by reducing the gap by 22, 24, 47, 28, 21, and 90% from RDI, respectively after farming system interventions. The expenditure on children's education increased by 22% and expenditure on pesticides has reduced by 19%.

Success Story 7 : Multi-tier Horticulture-based Farming System Ensures Higher Farm Income

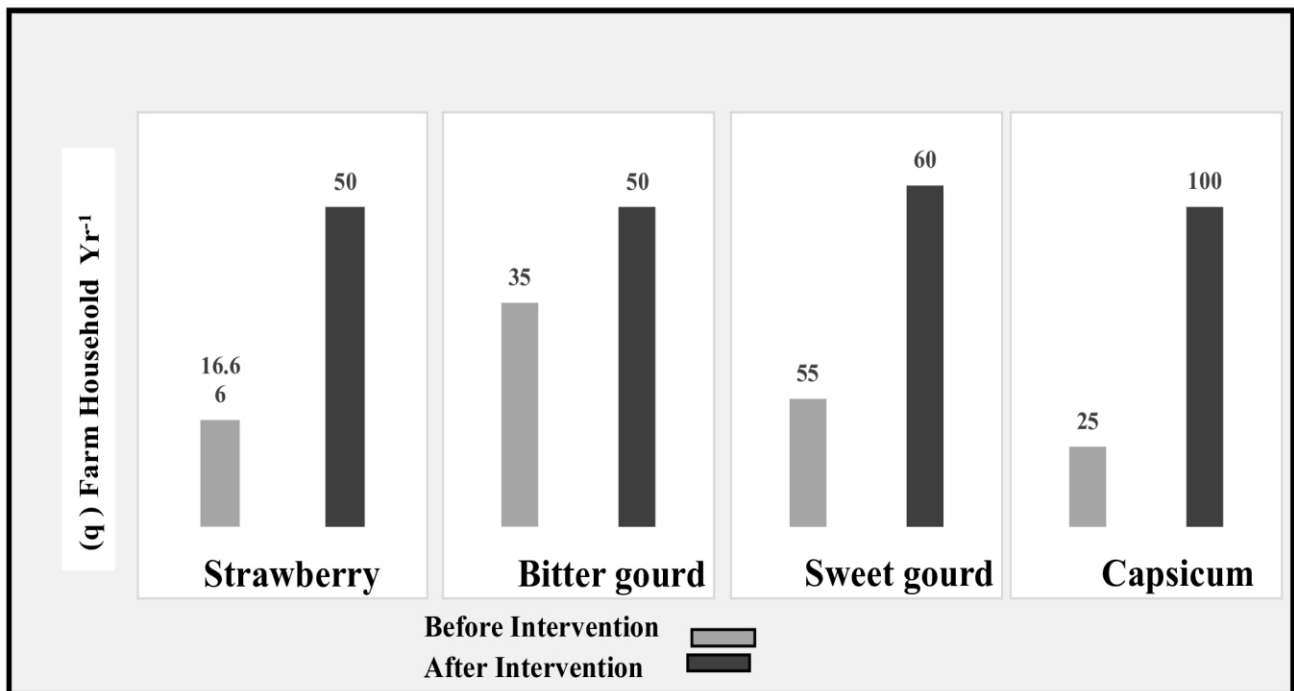
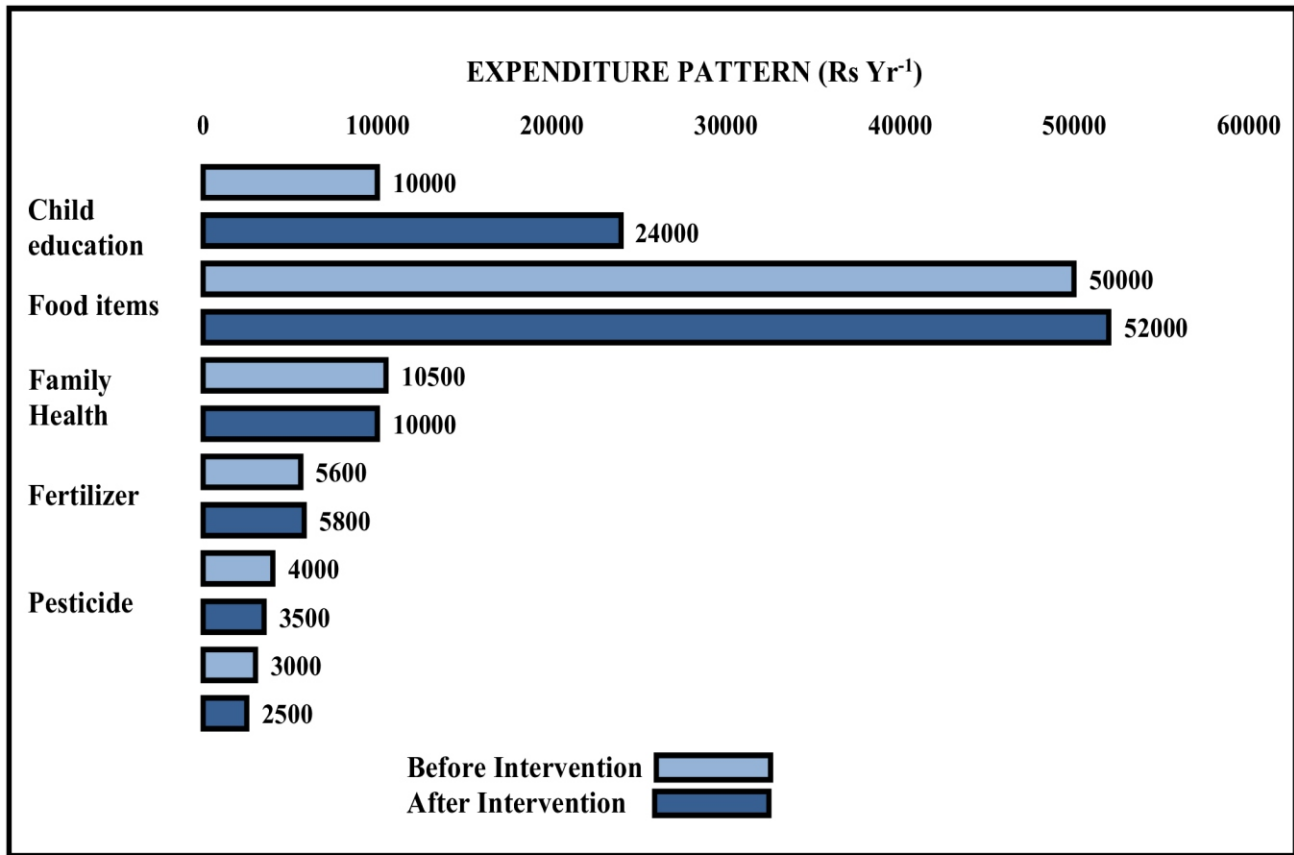
	Name	-	Joginder Singh
	Village	-	Bhangi Bhangela
	Age	-	48
	Education	-	8
	Size of LandHolding(ha)	-	0.20

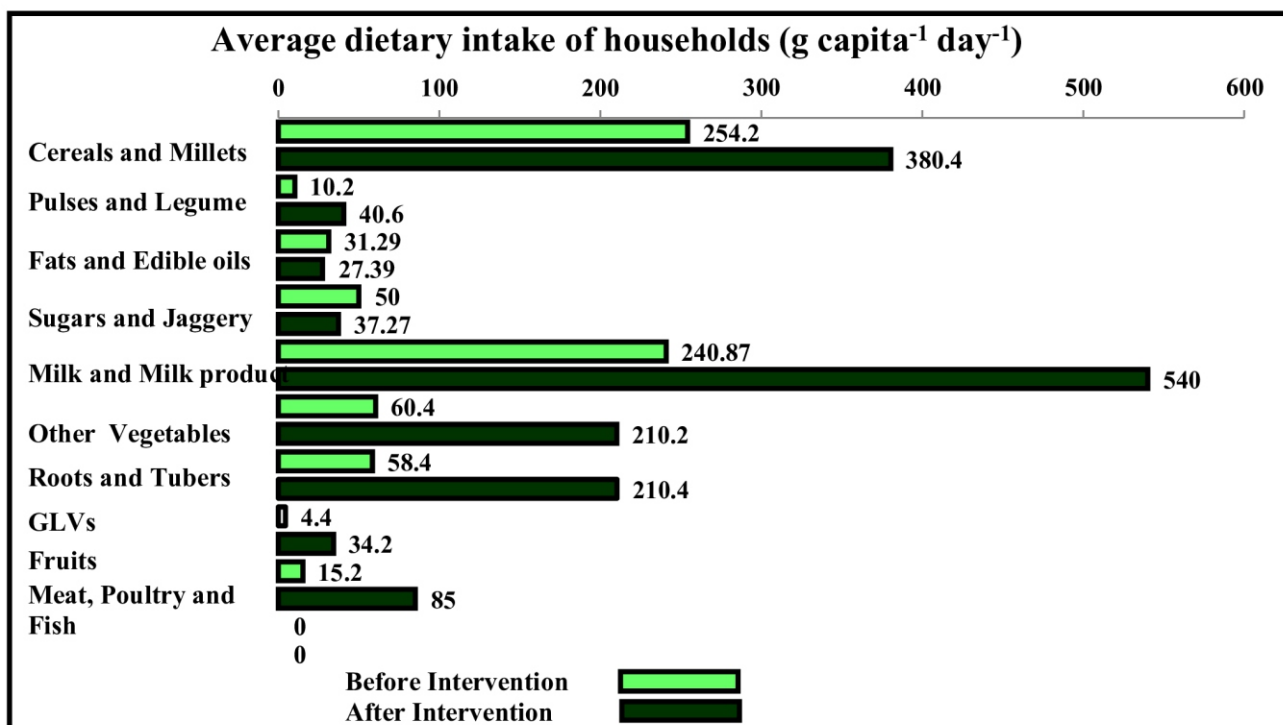
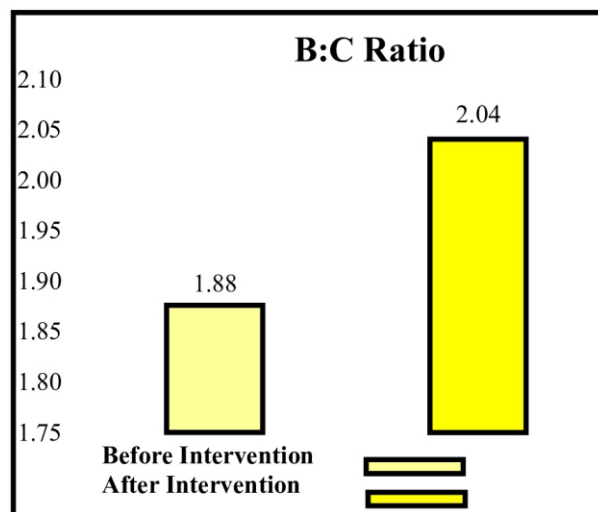
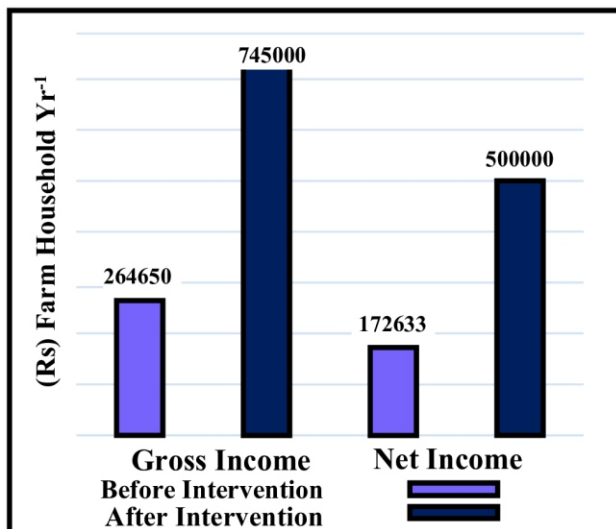
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Hort. Crop 1	Strawberry	0.20	16.66	100000	70000
Hort. Crop 2	Chili	0.20	11	19650	13050
Hort. Crop 3	Bitter gourd	0.20	35	52500	26250
Hort. Crop 4	Sweet gourd	0.20	55	55000	27500
Hort. Crop 5	Capsicum	0.20	25	37500	35833
Total				264650	172633

Status in 2020-21

Component Description		Period 2020-21				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Hort. Crop 1	Strawberry	0.20	50	520000	322000	189.6
Hort. Crop 2	Capsicum	0.20	100	100000	85000	
Hort. Crop 3	Bitter gourd	0.20	50	60000	38000	
Hort. Crop 4	Sweet gourd	0.20	60	30000	30000	
Hort. Crop 5	Garlic	0.20	8	35000	25000	
Total				745000	500000	





Brief: The farmer used to get an annual net income of Rs.172633 from horticulture farming, after interventions like improved HYVs seed and nutrition management in the multi-tier method with high value fruit crops, he is now getting annual net income of Rs. 500000 (189.6% higher). The B:C ratio was improved from 1.88 to 2. The average dietary intake of the household was much lower in terms of cereal and millets, pulses, milk and milk products, other vegetables, green leafy vegetables, roots and tubers fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 34, 41, 75, 76, 29, and 70% from RDI, respectively after farming systems interventions. The expenditure on children's education has increased by 140%.

Success Story 8 : Elevation of Leased Farmer with Goatary Integration, HYVs, IPNM and Animal Health Management



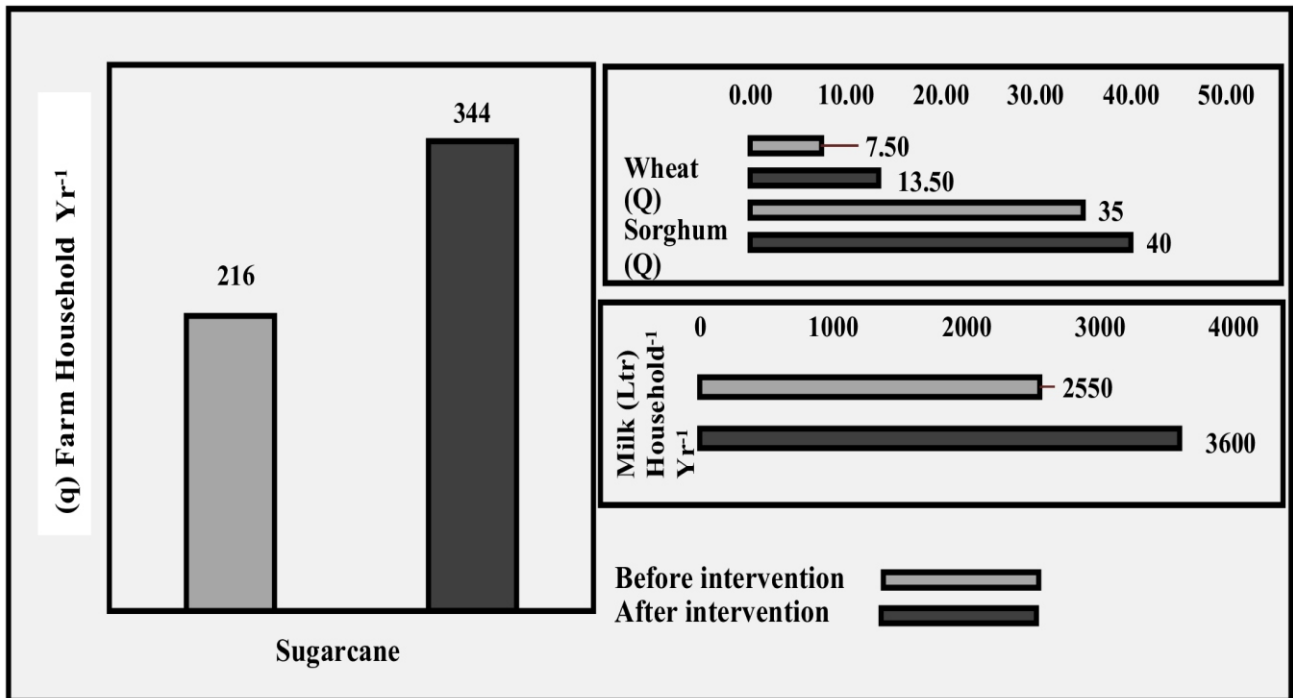
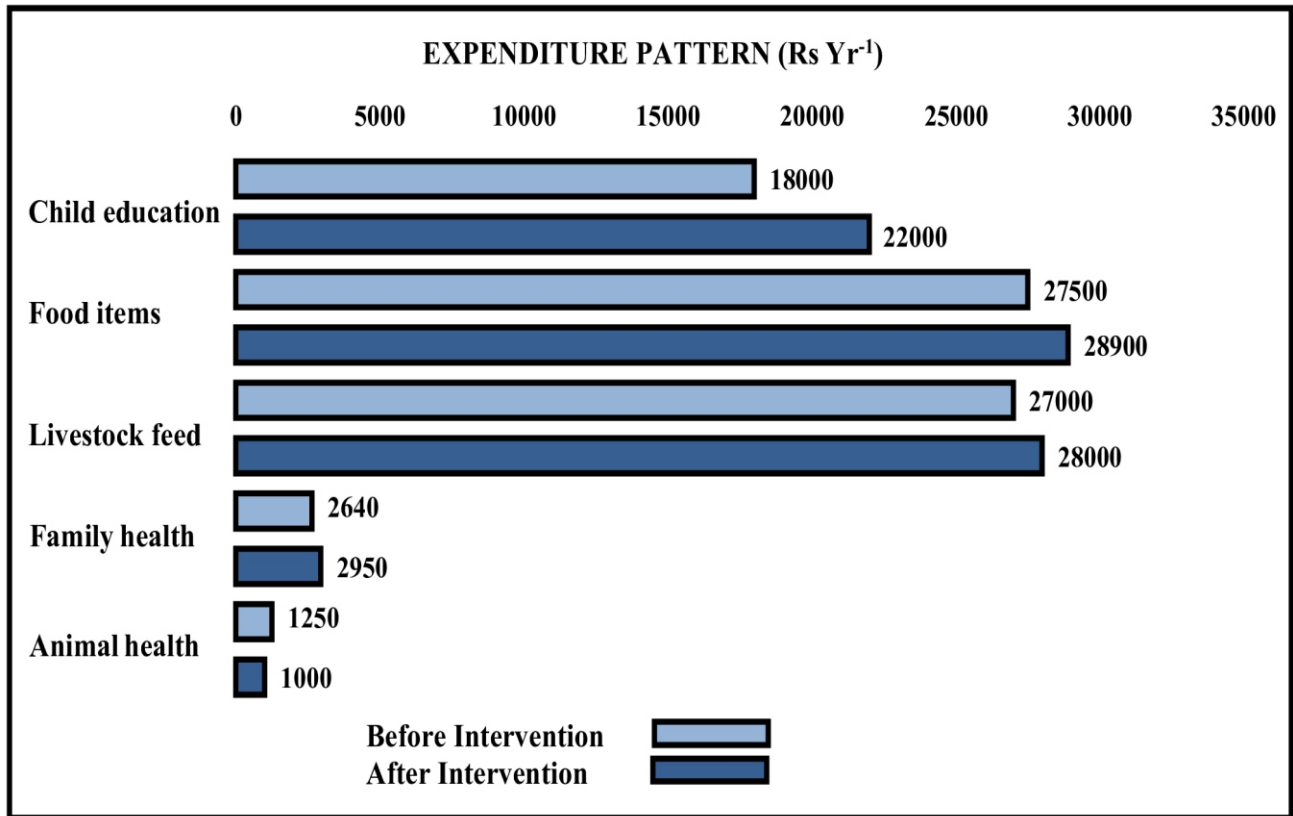
Name	-	Nishar-12
Village	-	Bhangi Bhangela
Age	-	34
Education	-	8
Size of LandHolding(ha)	-	0.71 (rent)

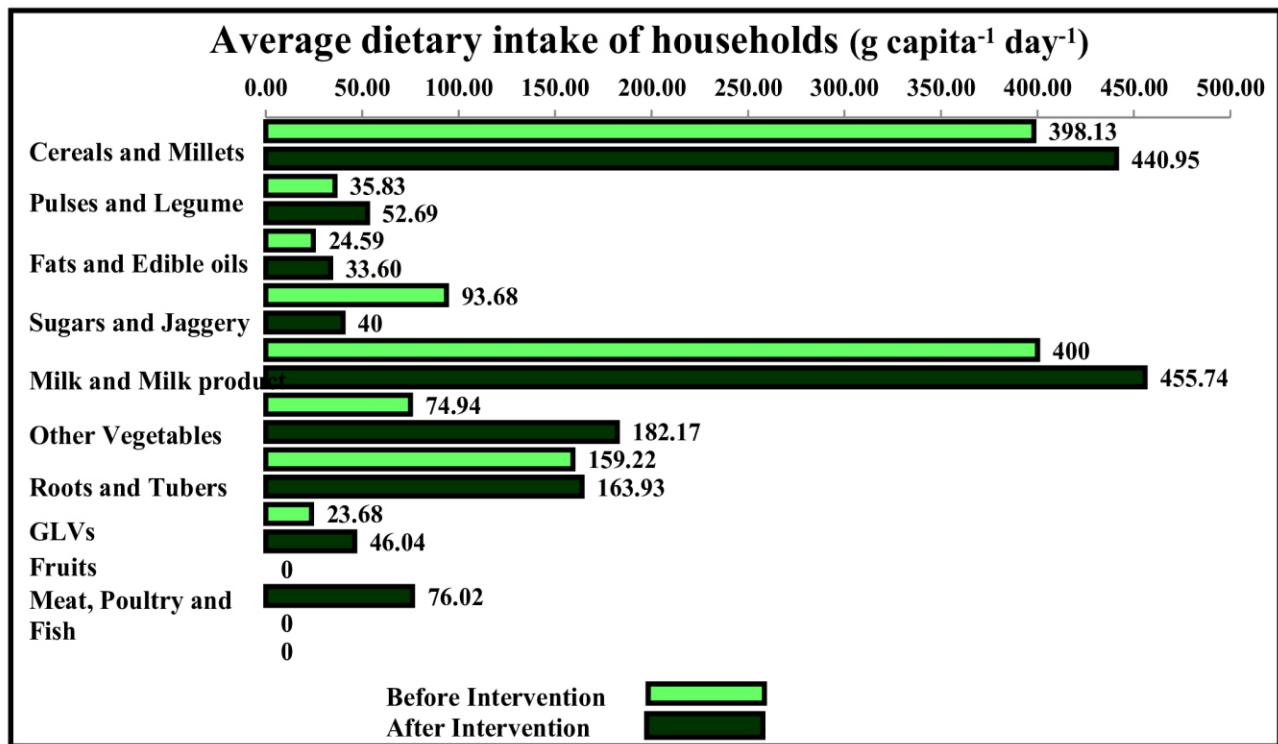
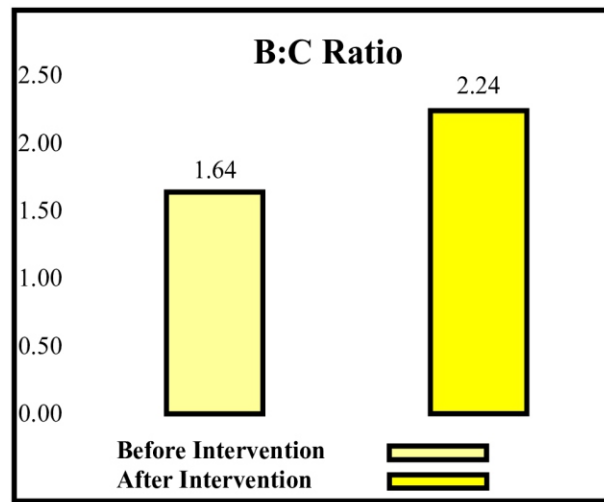
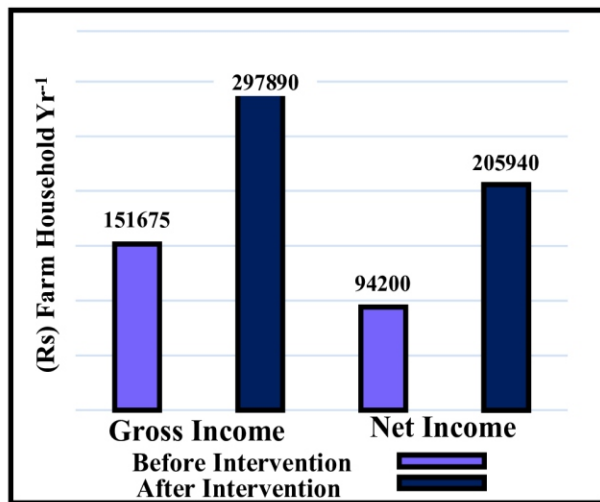
Before Intervention

Component Description			Benchmark (Baseline period 2016-17)		
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226, HD 2967	0.24	7.5	12975	10000
Field Crop 2	Sugarcane Co 0238, Co 67	0.32	216	59400	39400
Field Crop 3	Sorghum	0.08	35	5200	4300
Livestock 1	Buffalo	2.0	2550	74100	40500
Total				151675	94200

Status in 2020-21

Component Description				Period 2020-21		
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net income (%)
Field Crop 1	Wheat PBW 658 HD 3086	0.24	13.5	27650	22000	
Field Crop 2	Sugarcane Co 0238	0.32	344	106640	80640	
Field Crop 3	Sorghum	0.08	40	7000	5800	
Hort. Crop 1	Vegetables	Kitchen Garden	0.2	1200	1000	118.6
Livestock 1	Goat	2.0	2	14200	12000	
Livestock 2	Buffalo	2.0	3600	141200	84500	
Total				297890	205940	





Brief: The farmer used to get an annual income of Rs. 94200 from crops and livestock activity, but with farming system interventions like crops and livestock management, high yielding varieties of wheat and sorghum, goatary integration and kitchen gardening, he is getting an annual net income of Rs 205940 (118.6% higher net income). The benefit: cost ratio was improved from 1.64 to 2.24. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, green leafy vegetables and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 22, 54, 36 and 76% from RDI, respectively after farming system interventions. The expenditure on children's education has increased by 22%.

Success Story 9: Food and Nutritional Security of Marginal Household through Diversification and Intensification of Sugarcane-based Farming System



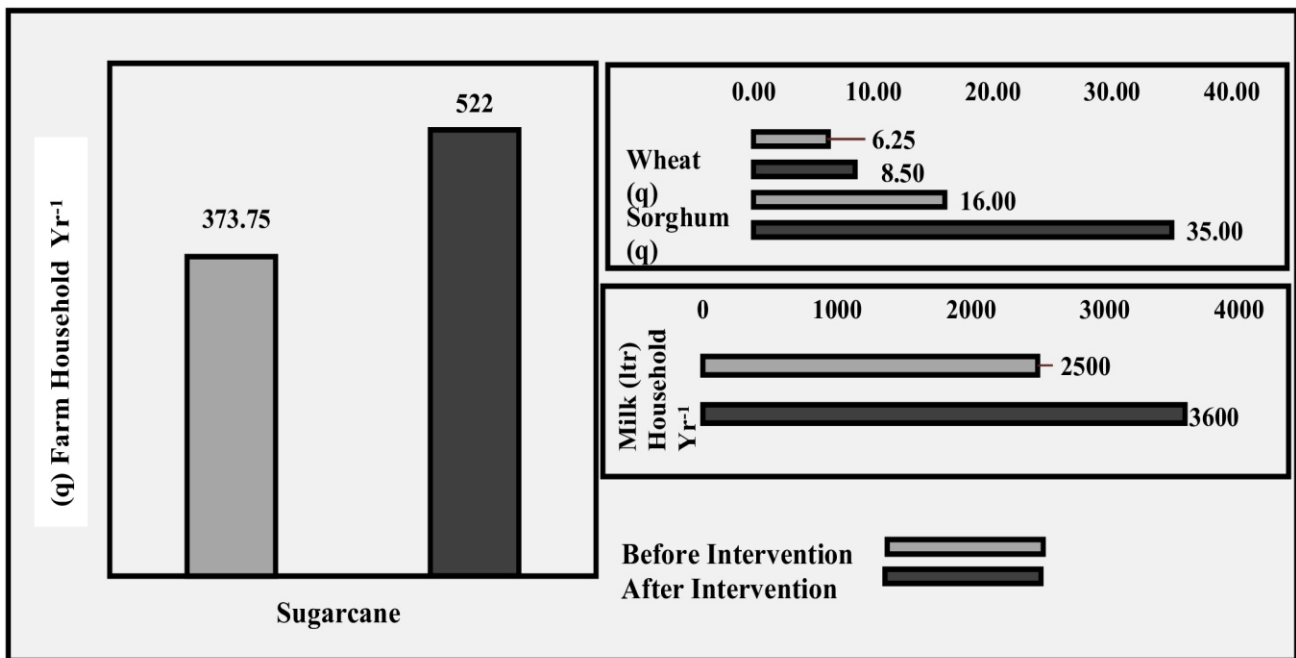
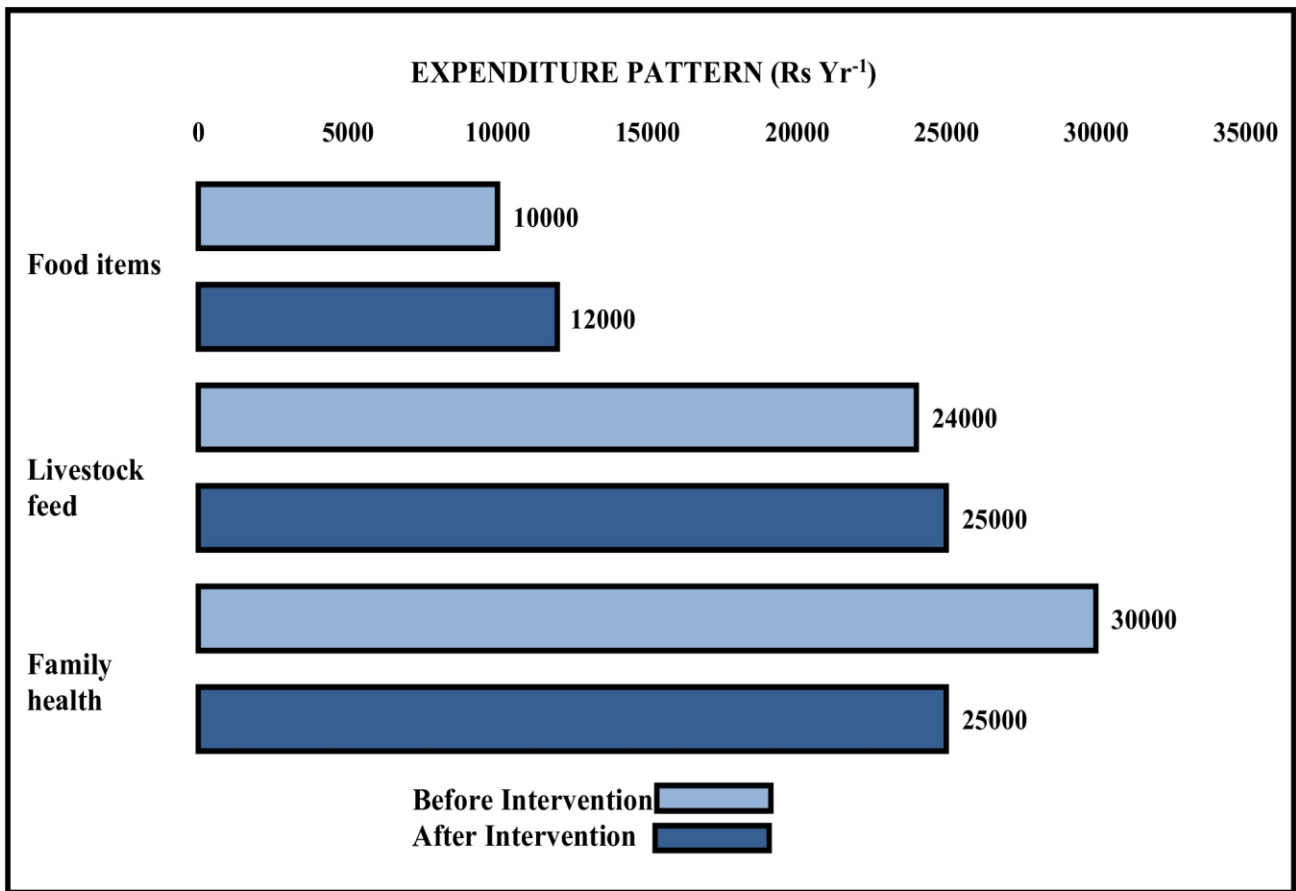
Name	-	Om Prakash-13
Village	-	Bhangi Bhangela
Age	-	80
Education	-	12
Size of LandHolding(ha)	-	0.63

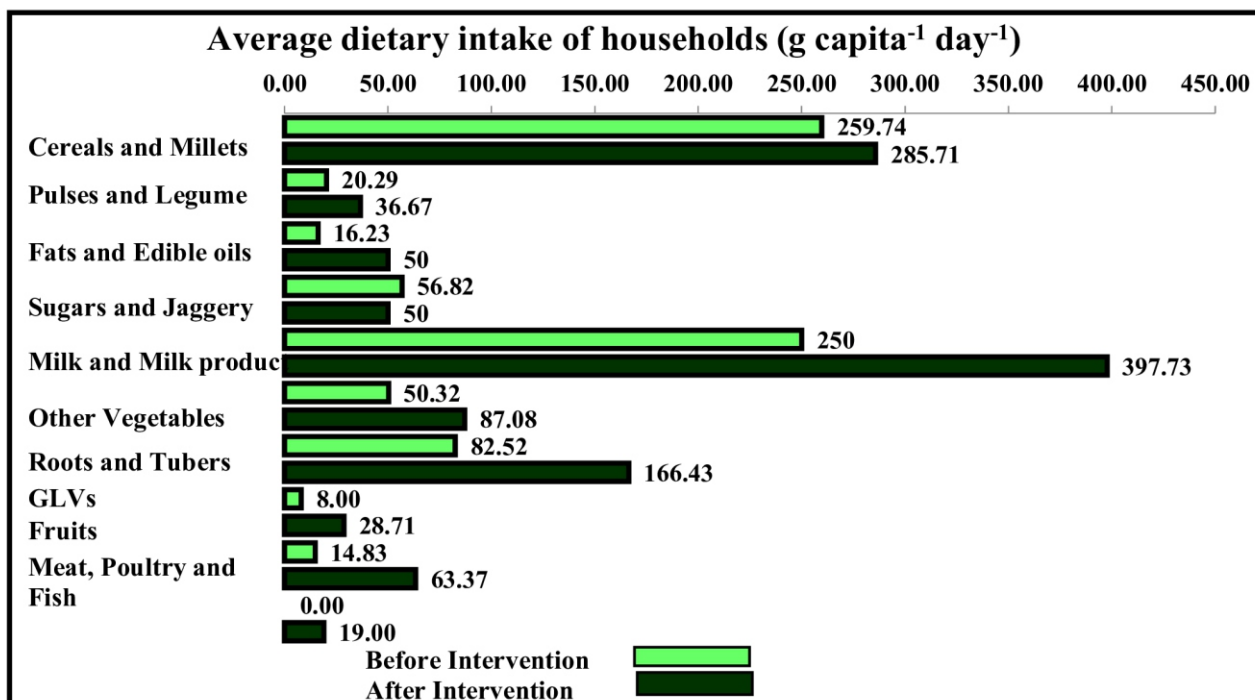
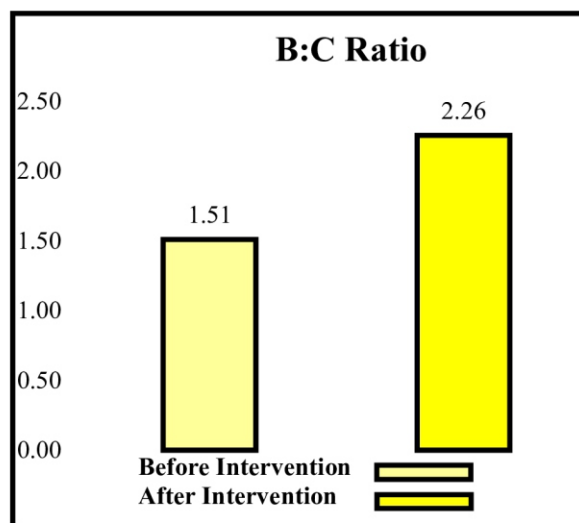
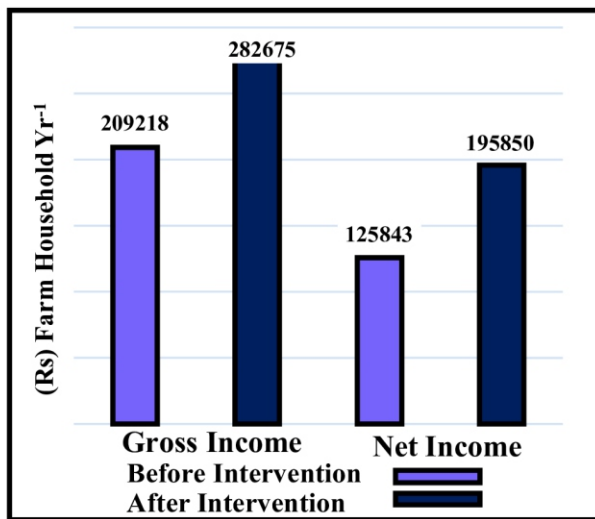
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 75 PBW 226	0.20	6.25	11875	8875
Field Crop 2	Sugarcane Co 0238	0.52	373.7	121468	81168
Field Crop 3	Sorghum	0.04	16	6500	5200
Field Crop 4	Paddy	0.08	2.75	6875	5000
Livestock 1	Cow	2.0	2500	62500	25600
Total				209218	125843

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550 PBW 71	0.16	8.5	20775	16750	
Field Crop 2	Sugarcane Co 0238	0.48	522	156600	117600	
Field Crop 3	Sorghum	0.08	35	7200	6000	56.6
Hort. Crop 2	Vegetable	0.01	0.80	2000	1800	
Livestock 1	Cow	2.0	3600	93600	51600	
Crop (new)	Black gram	0.16	30	2500	2100	
Total				282675	195850	





Brief: The farmer used to get an annual income of Rs.125843 from mixed crops and livestock-based farming systems and with farming system interventions like improved management practice of crops and livestock, high yielding varieties, legume integration and kitchen gardening, he is getting annual net income of Rs 195850 (56.6% higher net income). The benefit: cost ratio was improved from 1.51 to 2.26. The average dietary intake of the household was much lower in terms of cereals and millets, pulses and legumes, fats and edible oils, milk and milk products, other vegetables, roots and tubers, green leafy vegetables, fruits, meat poultry and fish than recommended dietary intake (RDI) which improved significantly by reducing the gap by 7, 22, 100, 49, 18, 40, 21, 48 and 63% from RDI, respectively after farming system interventions. The expenditure on family health has decreased by 16%.

Success Story 10: Improvement of Marginal Farmer through Intensification of Sugarcane-based Farming System with High Yielding Varieties, IPNM and Animal Health Management



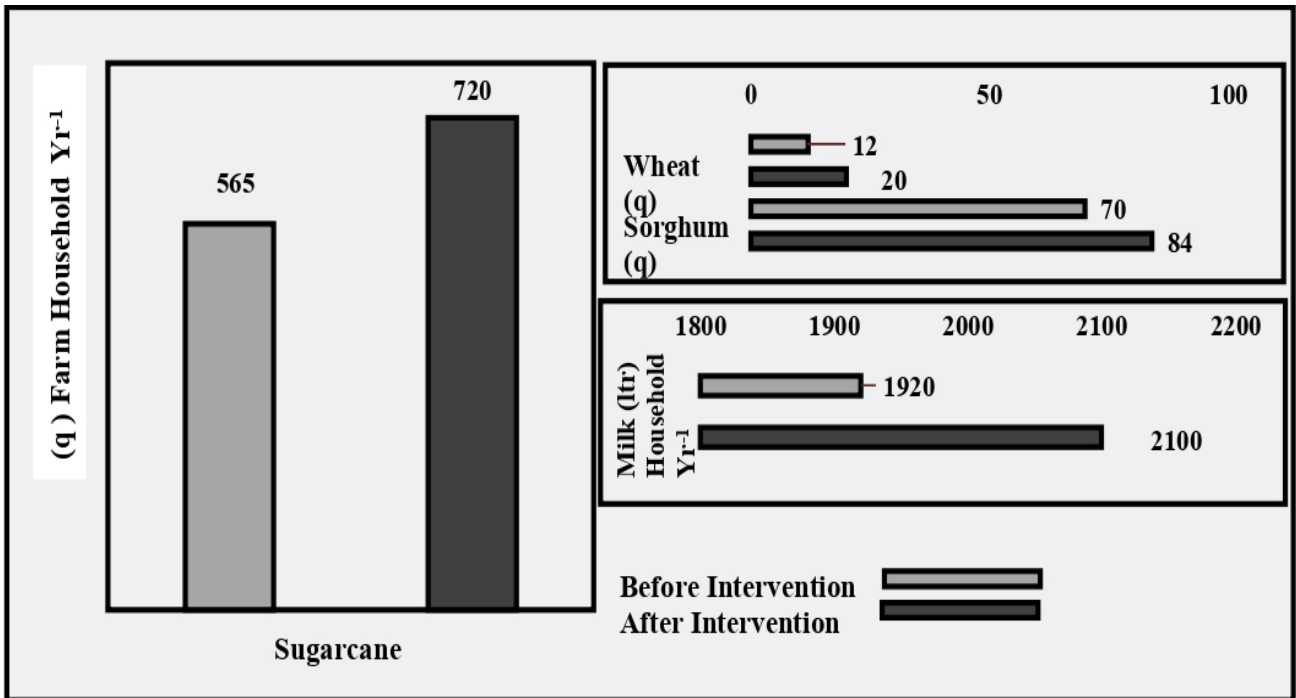
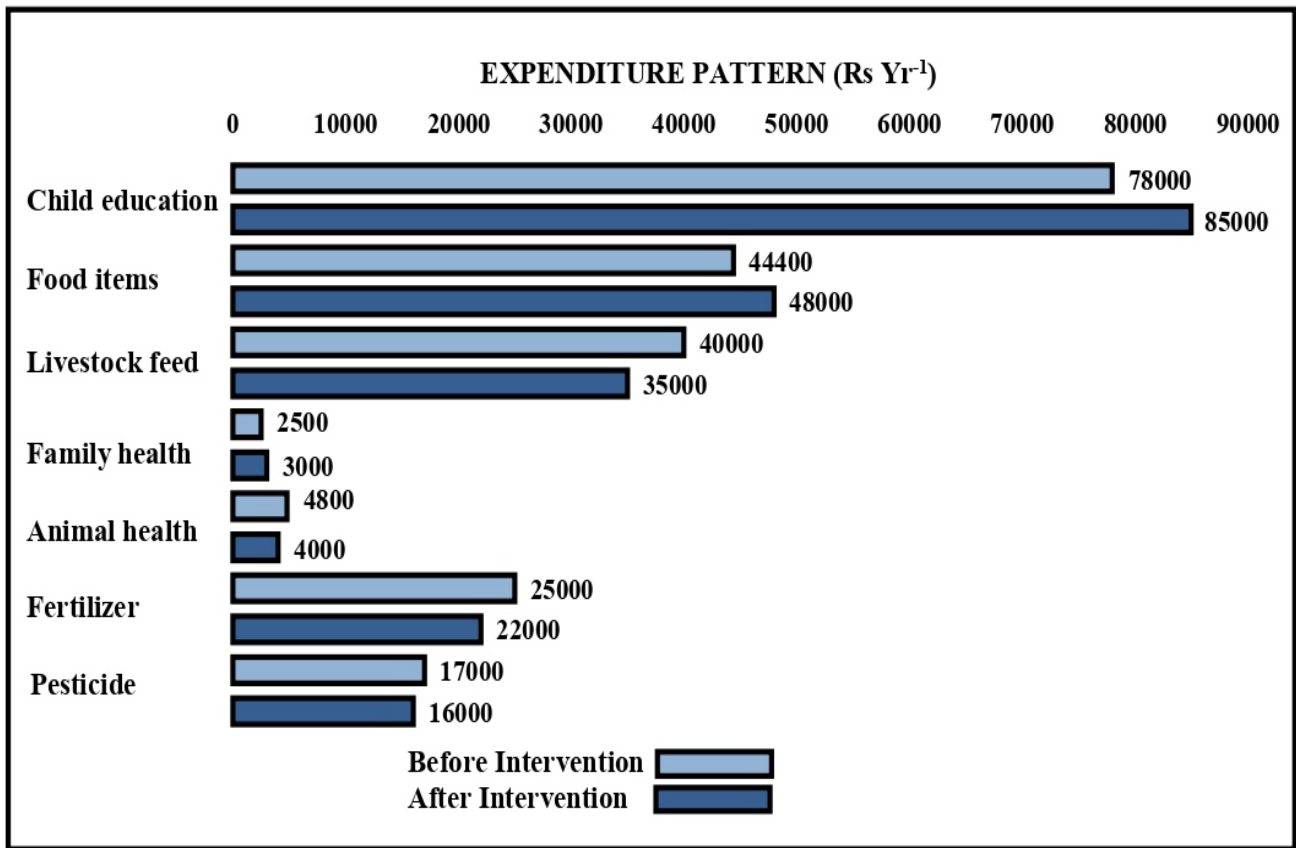
Name	-	Pawan Kumar
Village	-	Bhangi Bhangela
Age	-	48
Education	-	B.A.
Size of Land Holding (ha)	-	0.95

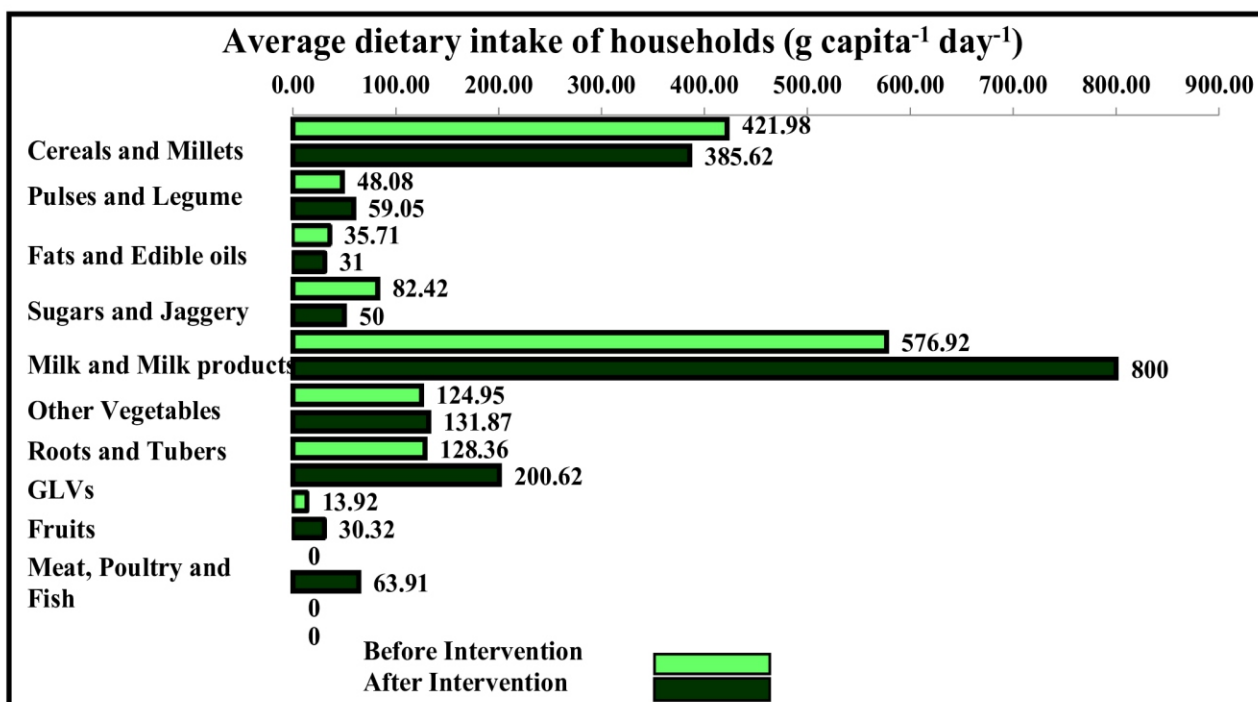
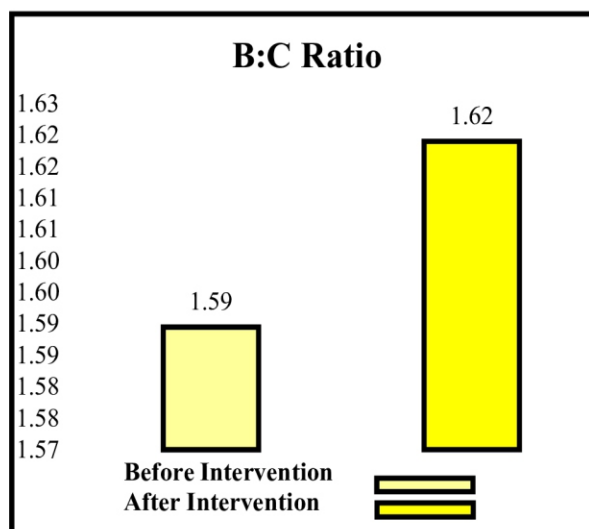
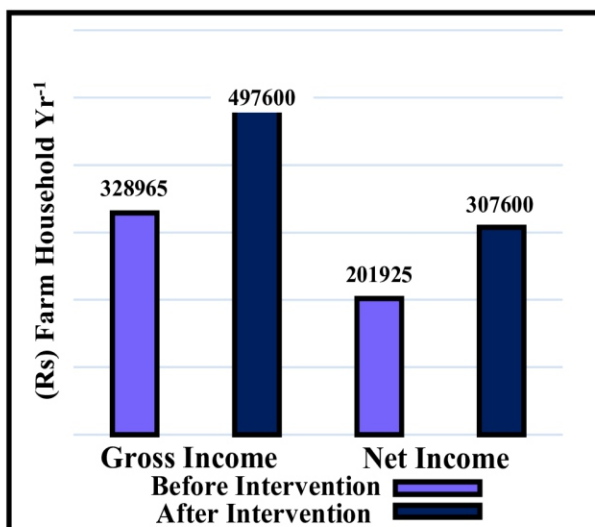
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat 2329, PBW 226	0.32	12	20600	17000
Field Crop 2	Sugarcane Co 0238	0.80	565	183625	116425
Field Crop 3	Sorghum	0.16	70	11500	10000
Livestock 1	Cow	1.0	2160	51840	27000
Livestock 2	Buffalo	1.0	1920	61400	31500
Total				328965	201925

Status in 2020-21

Component Description		Period (2020-21)				
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net income (%)
Field Crop 1	Wheat PBW 658, PBW 550	0.40	20	47000	39000	52.3
Field Crop 2	Sugarcane Co 0238	0.80	720	234000	154000	
Field Crop 3	Sorghum	0.16	84	14000	12400	
Hort. Crop 1	Vegetables Kitchen Garden		0.90	2800	2400	
Livestock 1	Cow	1.0	2500	120000	62000	
Livestock 2	Buffalo	1.0	2100	79800	37800	
Total				497600	307600	





Brief: The farmer used to get an annual net income of Rs. 201925 from mixed crops and livestock-based systems and with farming system interventions like improved management practice, high yielding varieties, diversification, and kitchen gardening, he is getting an annual net income of Rs. 307600 (52.3% higher). The benefit: cost ratio was improved from 1.59 to 1.62. The average dietary intake of the household was much lower in terms of pulses, other vegetables, roots and tubers, green leafy vegetables, and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 15, 3, 36, 16, and 68 % from RDI, respectively after farming system interventions. The expenditure on livestock feed have reduced by 12.5% and on children's education has increased by 9%.

Success Story 11: Diversification and Intensification of Crop+Dairy Farming System with Agronomic Manipulation and Animal Health Management



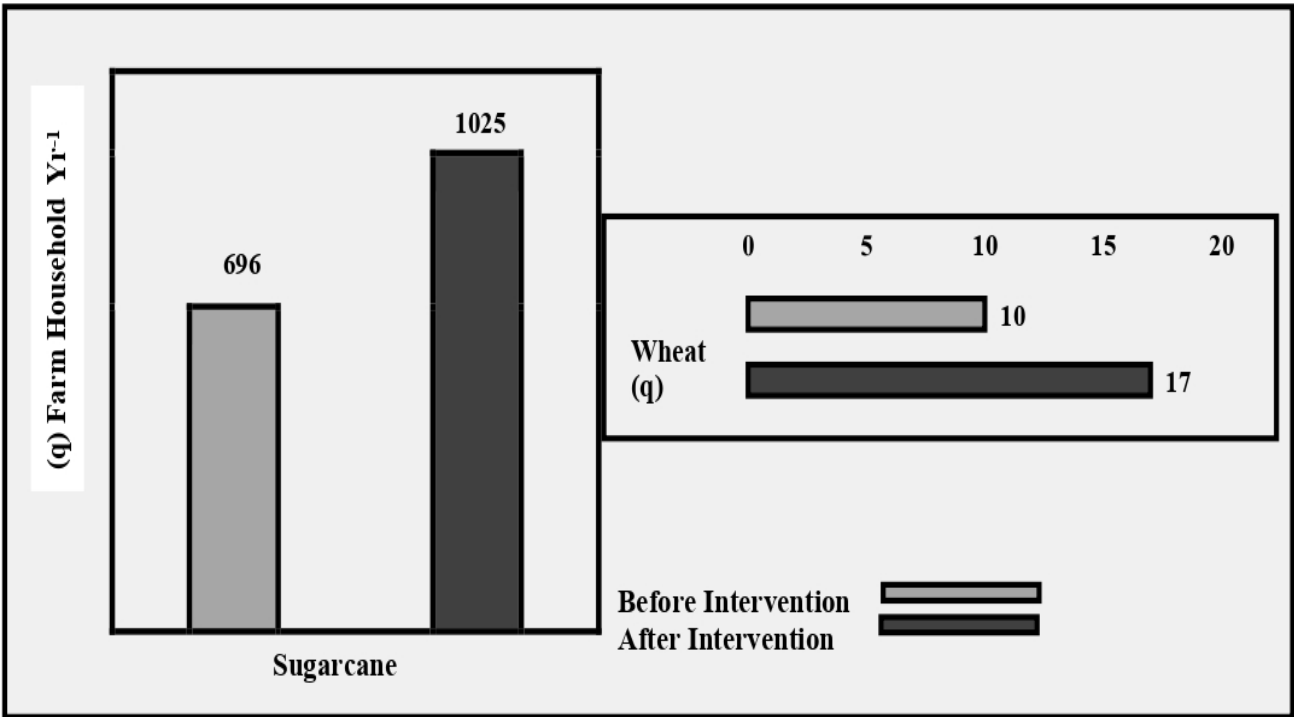
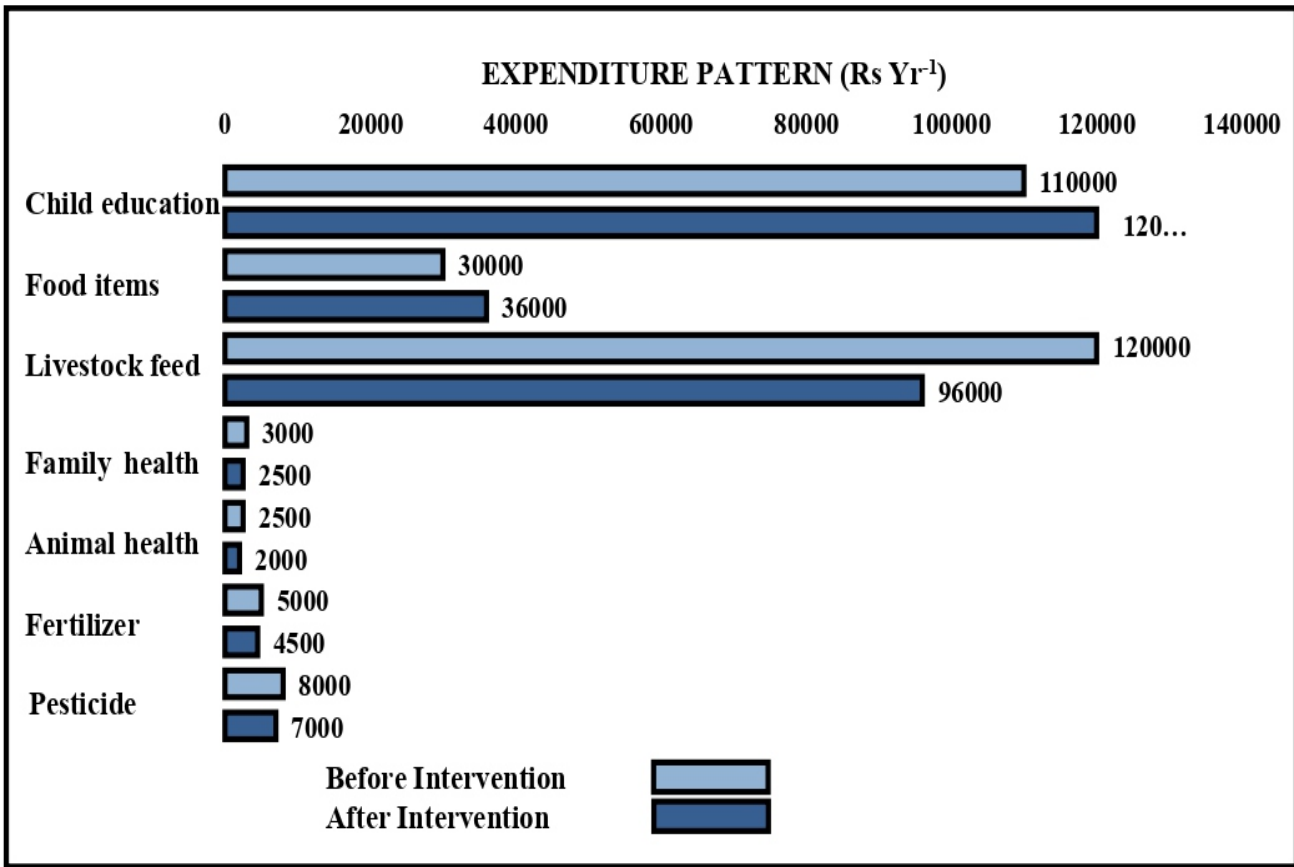
Name - **Raj Kumar**
Village - **Bhangi Bhangela**
Age - **43**
Education - **8**
Size of LandHolding(ha) - **1.12**

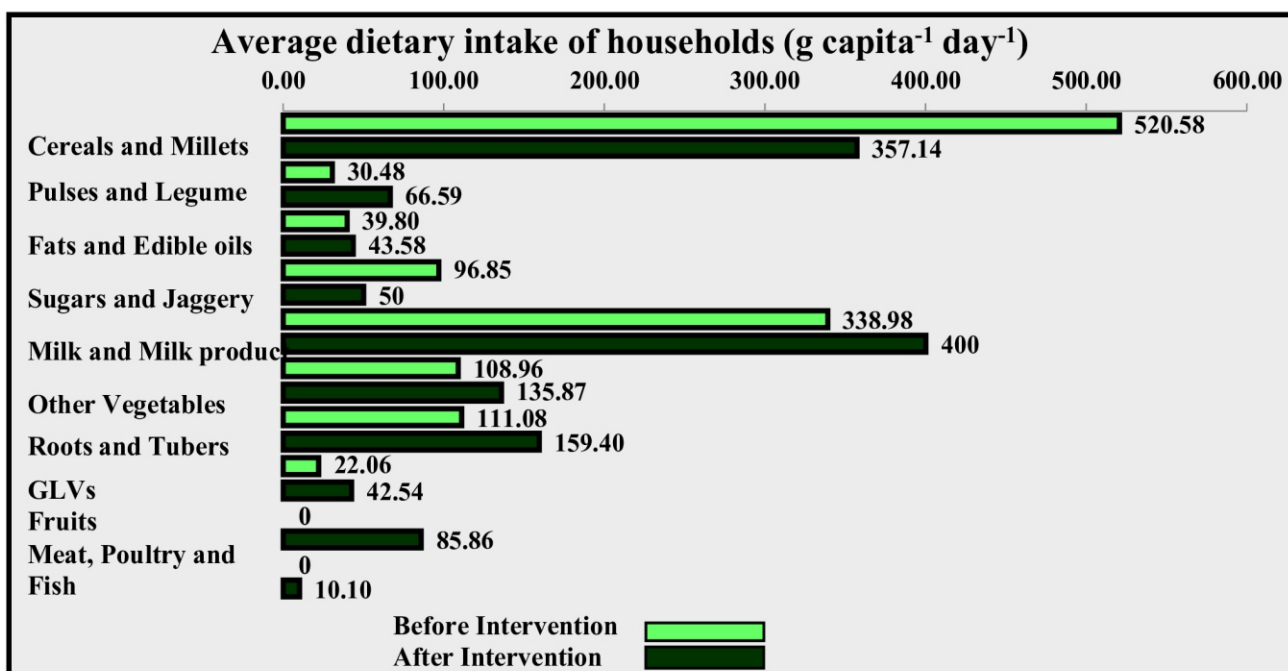
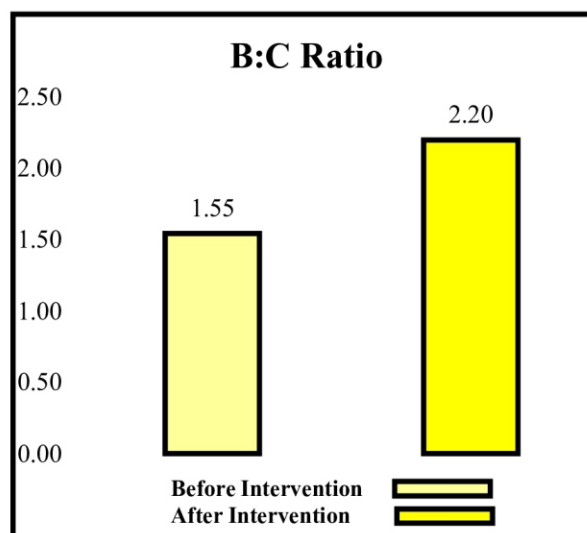
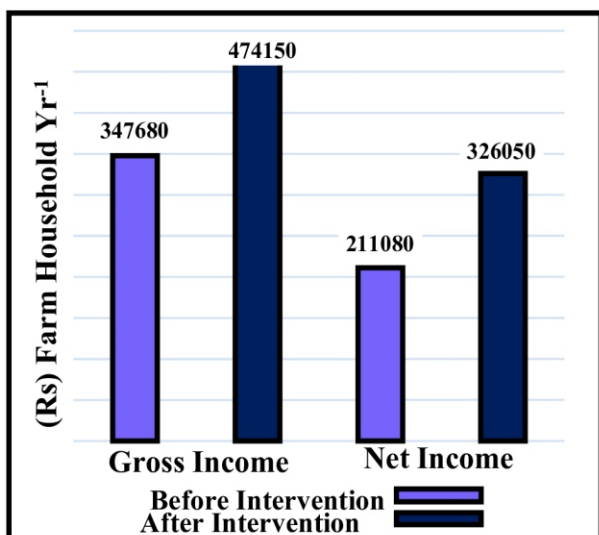
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 75 PBW 226	0.32	10	18000	14000
Field Crop 2	Sugarcane Co 0238	0.96	696	226200	150000
Field Crop 3	Sorghum	0.16	74	13000	10600
Livestock 1	Buffalo	2.0	3120	90480	36480
Total				347680	211080

Status in 2020-21

Component Description		Period (2020 -21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550 PBW 71	0.32	17	33575	26175	54.5
Field Crop 2	Sugarcane Co 0238	1.0	1025	333125	246875	
Field Crop 3	Sorghum	0.12	63	11250	8750	
Field Crop 4	Black gram	0.16	44	3800	3250	
Hort. Crop 1	Vegetable	0.01	0.35	1200	1000	
Livestock 1	Buffalo	2.0	2400	91200	40000	
Total				474150	326050	





Brief: The farmer was generating an annual income of Rs. 211080 from mixed crops and livestock-based farming systems and with interventions like improved management practices (crops and livestock), high yielding varieties, diversification through legume intercropping and kitchen gardening, his annual net income increased to Rs. 326050 (54.5% higher). The benefit: cost ratio was improved from 1.55 to 2.20. The average dietary intake of the household was much lower in terms of pulses, other vegetables, roots and tubers, green leafy vegetables and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap of 48, 13, 24, 20, 86 and 33 % from RDI, respectively after farming system interventions. The expenditure on livestock feed have reduced by 20% and expenditure on children's education have increased by 9%.

Success Story 12: Diversification and Intensification of Sugarcane-based Farming System with Oilseed Integration and Animal Health Management



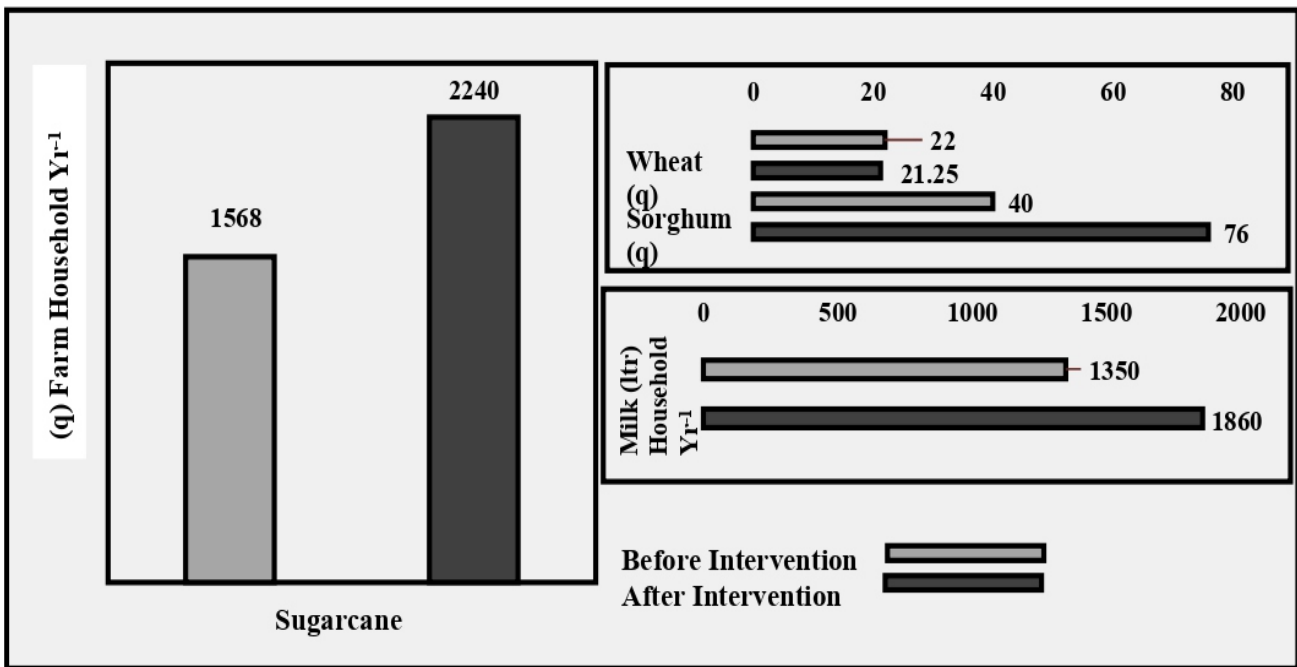
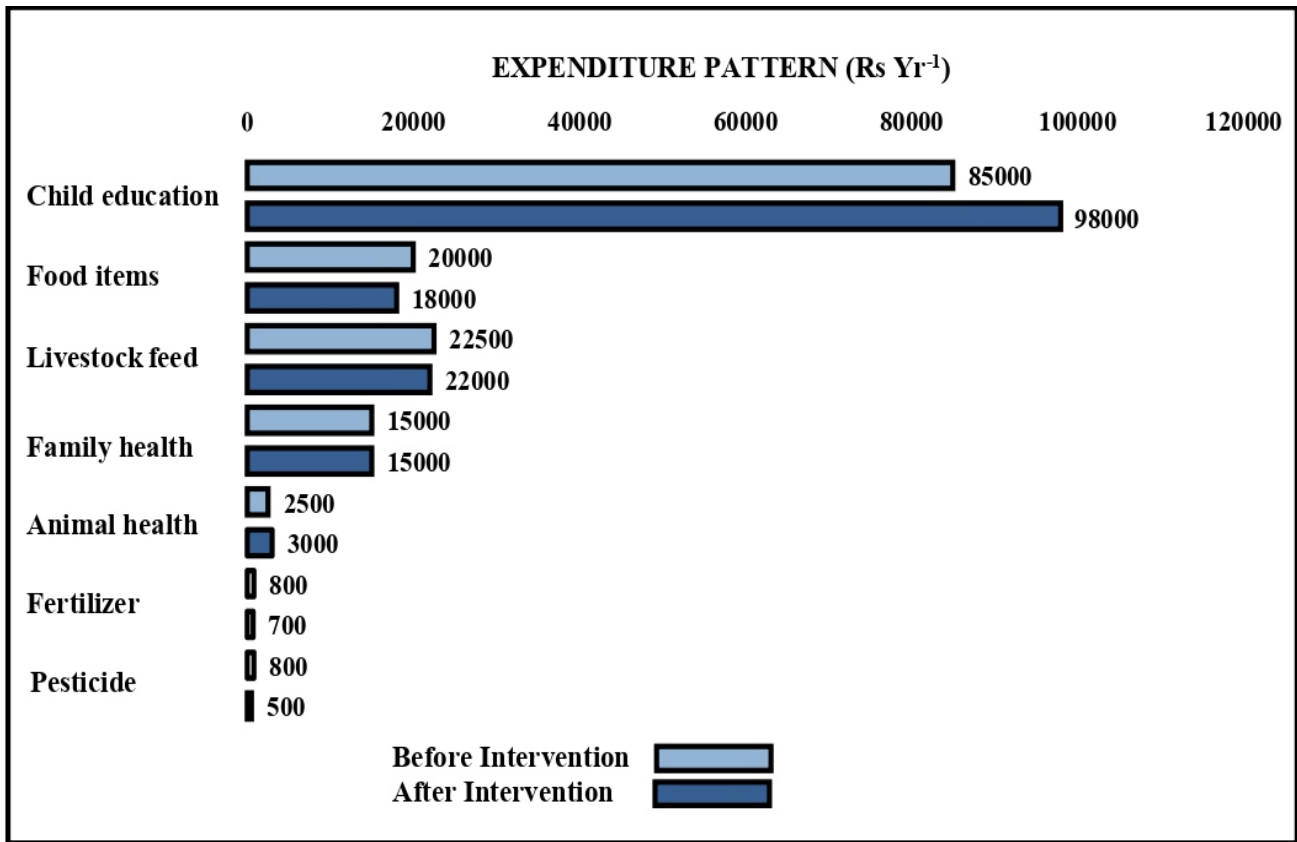
Name - **Rajendra Sharma**
Village - **Bhangi Bhangela**
Age - **66**
Education - **B.A.**
Size of LandHolding(ha) - **2.39**

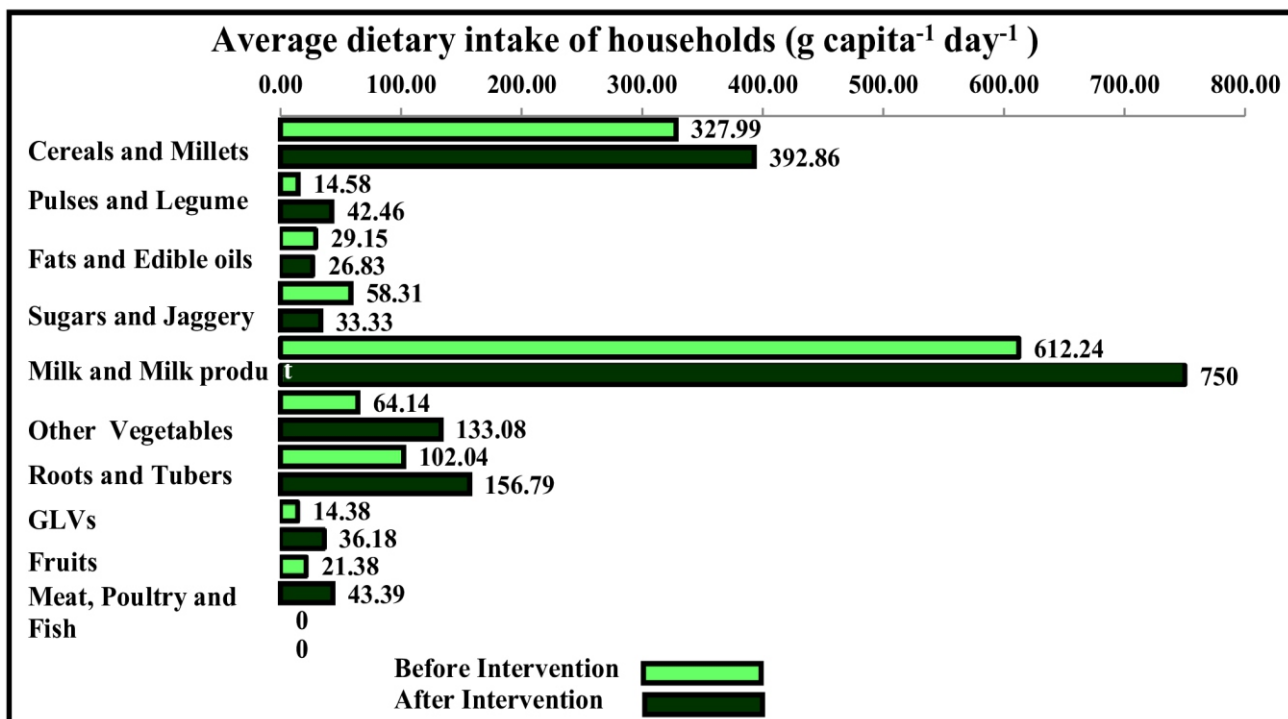
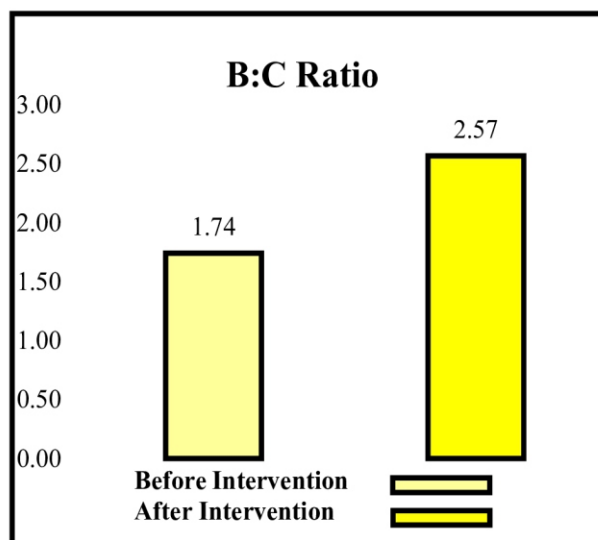
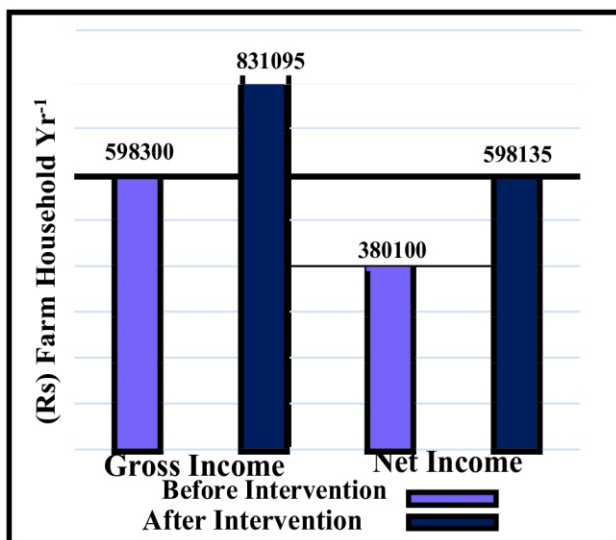
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat	0.64	22	39700	29300
	PBW 75				
Field Crop 2	PBW 226	2.24	1568	509600	327600
	Sugarcane				
Field Crop 3	Co 0238	0.08	40	5800	5000
Livestock 1	Sorghum	2.0	2000	56000	30000
Total				611100	391900

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat	0.40	21.25	50375	44375	53.1
	PBW 658					
	PBW 550					
	PBW 3086					
Field Crop 2	Sugarcane	2.24	2240	672000	487760	
	Co 0238					
Field Crop 3	Sorghum	0.16	76	13600	14000	
Field Crop 4	Mustard	0.08	2.0	14000	13500	
	RH 749					
Hort. Crop 1	Vegetable	0.01	1.0	3000	2500	
Livestock 1	Buffalo	1.0	1860	78120	38000	
Total				831095	600135	





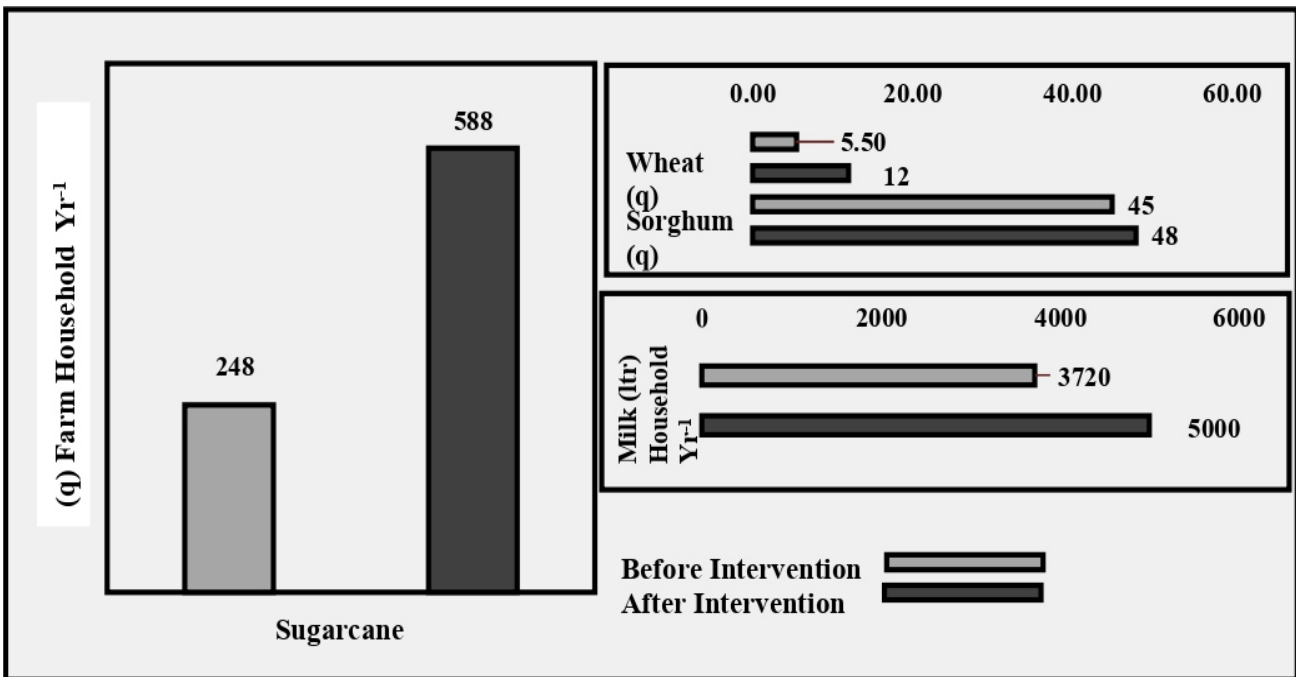
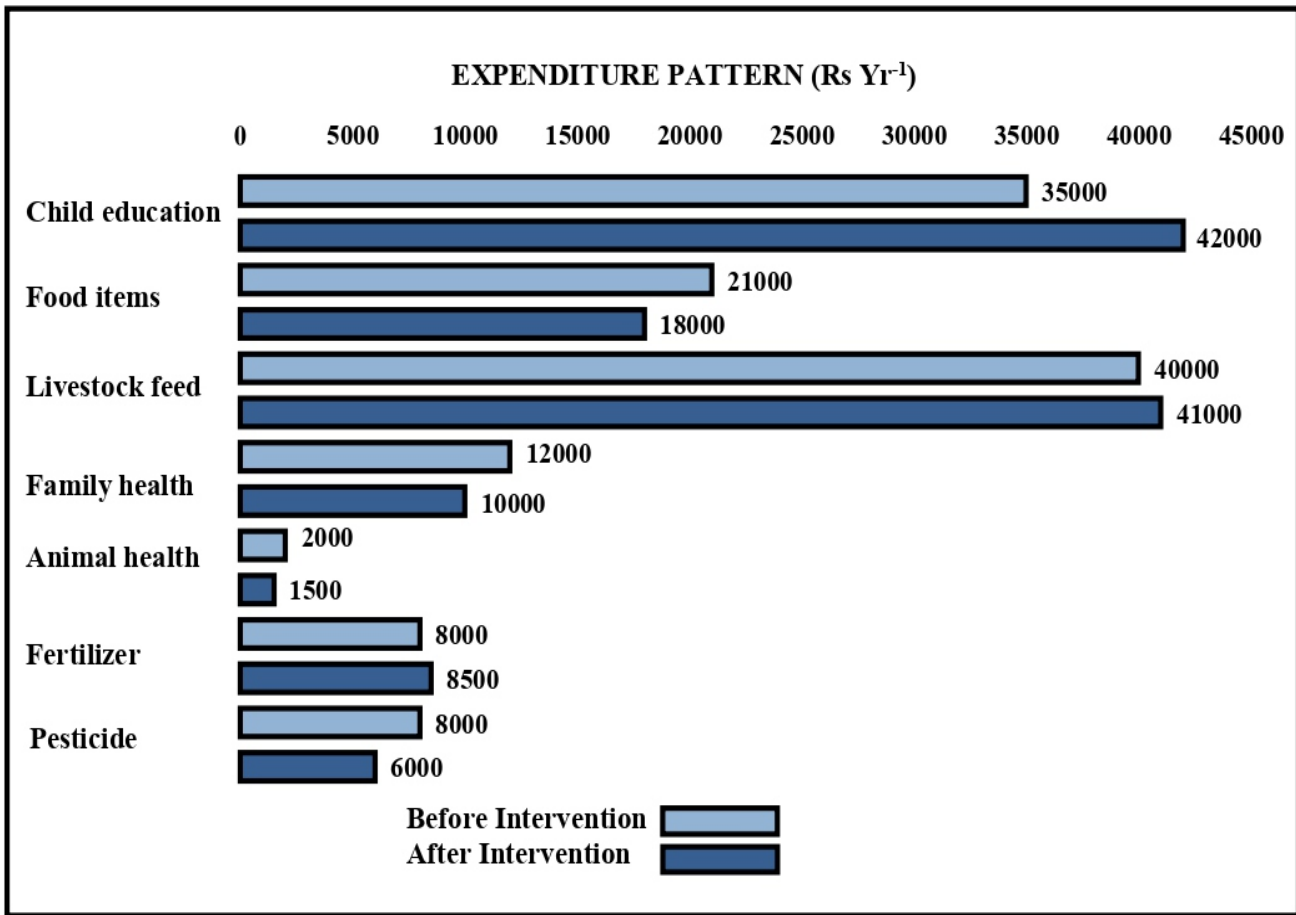
Brief: The farmer used to get an annual income of Rs. 391900 from mixed crops and livestock-based farming systems and with interventions like improved management practices (crops and livestock), high yielding varieties, integration of oilseeds and kitchen gardening, he is getting an annual net income of Rs. 600135 (53.1% higher). The benefit: cost ratio was improved from 1.55 to 2.20. The average dietary intake of the household was much lower in terms of cereals and millets, pulses and legumes, other vegetables, roots and tubers, green leafy vegetables, and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 12.5, 37, 46, 34, 27, 22 and 29% from RDI, respectively after interventions. The expenditure on children's education have improved by 15%.

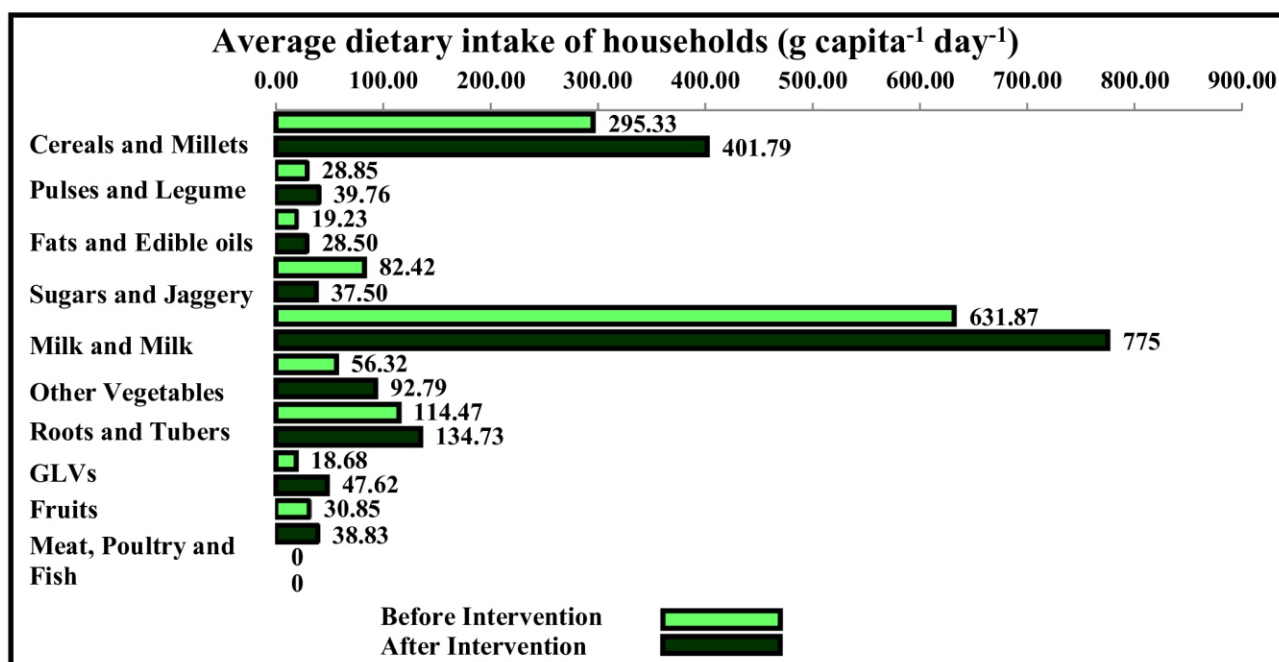
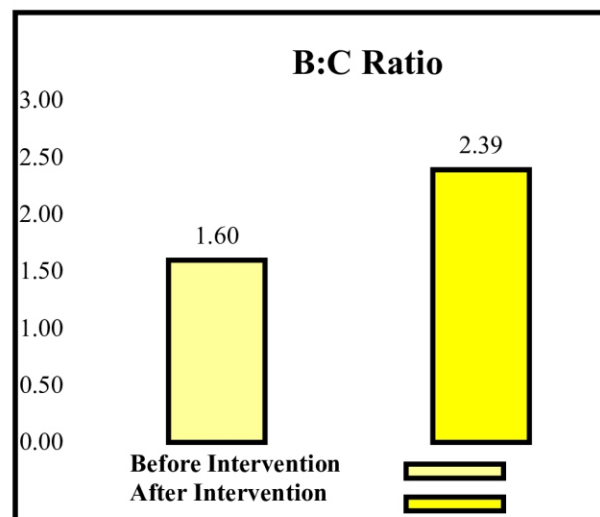
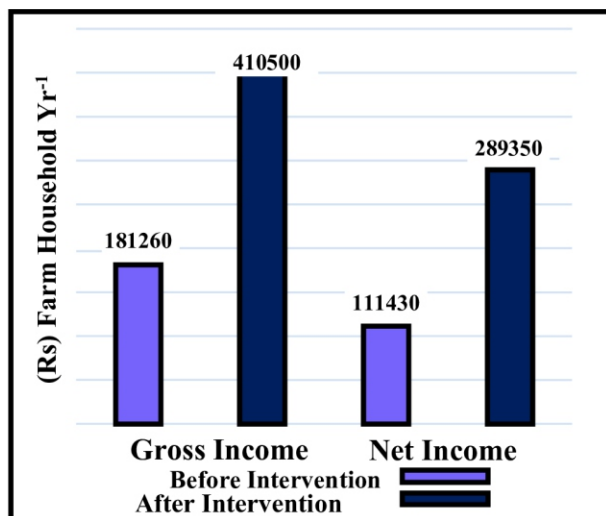
Success Story 13: Achieving Food and Nutrition Security of Sugarcane-based Marginal Farmer with High Yielding Varieties, IPNM and Animal Health Management

	Name	-	Salekh Chand
	Village	-	Bhangi Bhangela
	Age	-	55
	Education	-	10
	Size of LandHolding(ha)	-	0.71

Before Intervention					
Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226	0.16	5.5	11800	8560
	PBW 75				
Field Crop 2	Sugarcane Co 0238	0.24	248	80600	66800
Field Crop 3	Sorghum	0.08	45	6000	4800
Livestock 1	Buffalo	1.0	1800	48300	18300
Livestock 2	Cow	1.0	1920	34560	12970
Total				181260	111430

Status in 2020-21						
Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/ No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550	0.24	12	25200	20250	
Field Crop 2	Sugarcane Co 0238	0.56	588	191100	150500	154.8
Field Crop 3	Sorghum	0.08	48	7000	5800	
Hort. Crop 1	Vegetable	0.01	0.6	1200	1000	
Livestock 1	Cow	1.0	2700	75600	41400	
Livestock 2	Buffalo	1.0	2300	110400	65000	
Total				410500	283950	





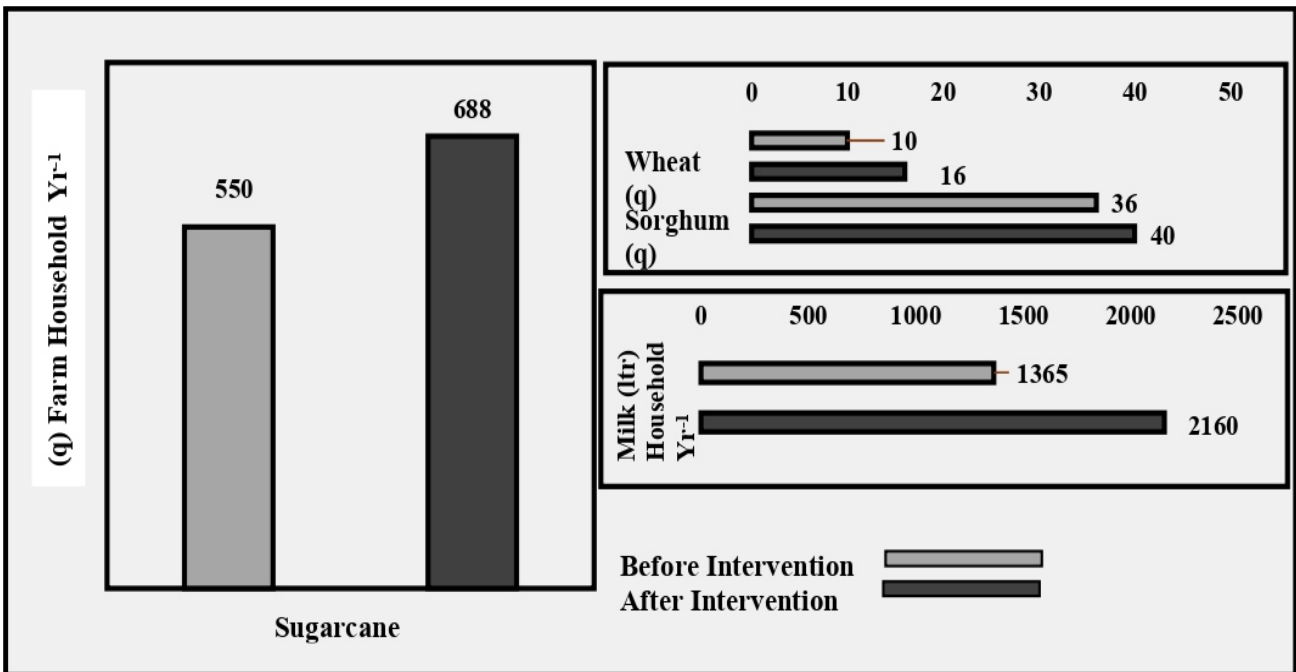
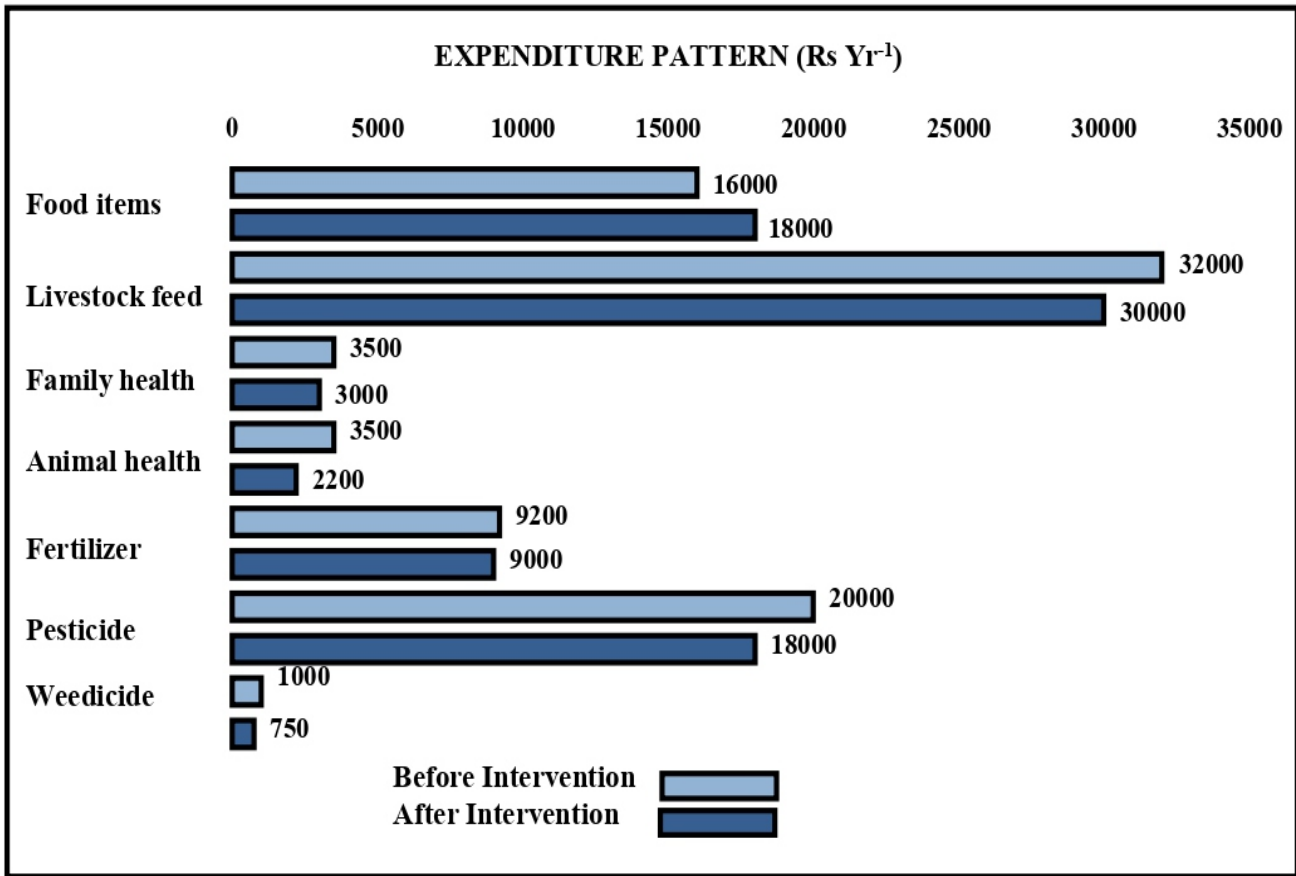
Brief: The farmer used to get an annual net income of Rs. 111430 only from mixed crops and livestock, but with interventions like improved management of crops and livestock, high yielding varieties, and nutritional kitchen gardening, he is now getting an annual net income of Rs. 289350 (154.8% higher). The benefit: cost ratio was improved from 1.59 to 1.62. The average dietary intake of the household was much lower in terms of cereals and millets, pulses and legumes, fats and edible oils, other vegetables, roots and tubers, green leafy vegetables and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 21, 15, 23, 18, 12, 29 and 8% from RDI, respectively after farming system interventions. The expenditure on children's education has improved by 20%, whereas expenditure on purchase of food items and pesticide use has reduced by 14 and 25%, respectively.

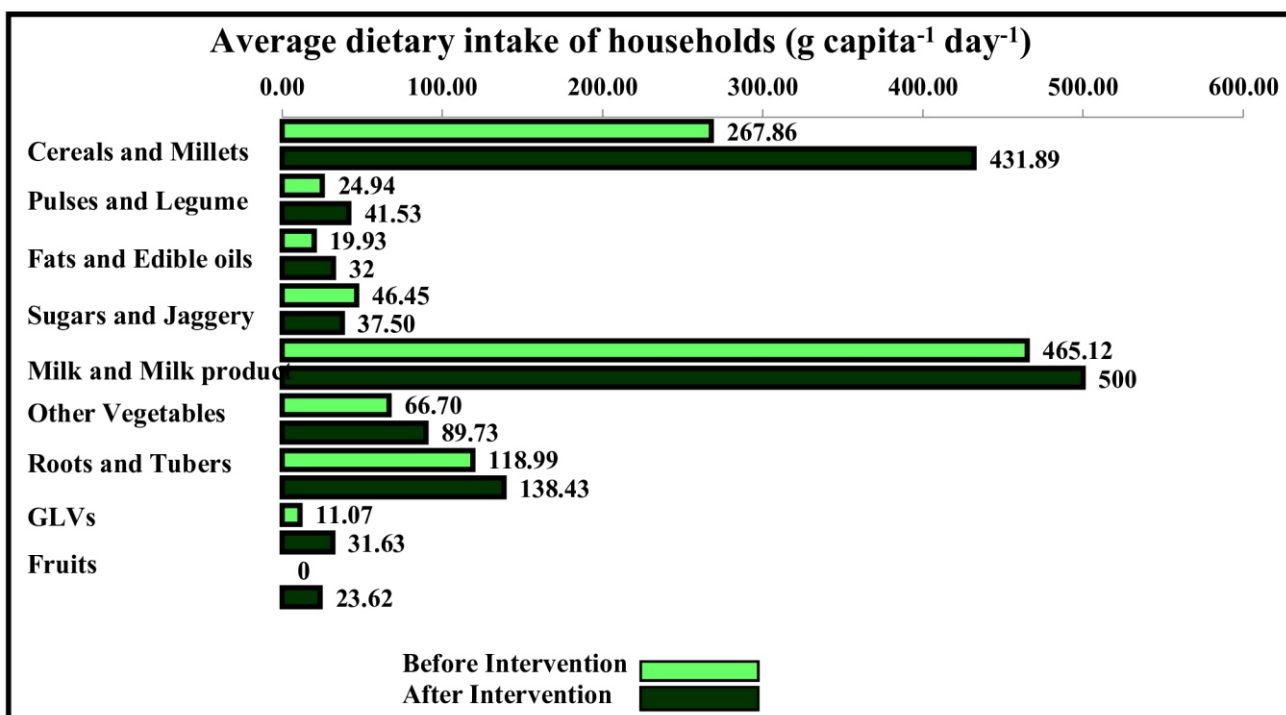
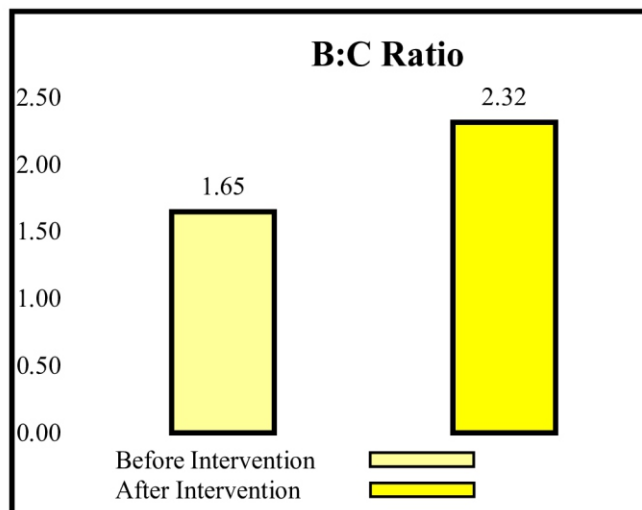
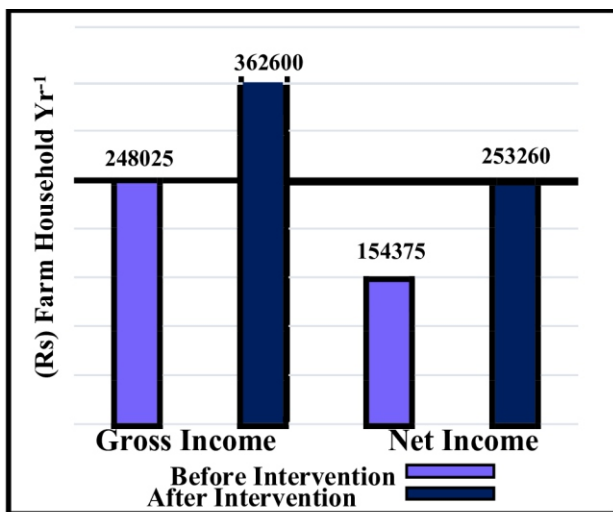
Success Story 14: Diversification of Sugarcane-based Farming System with Improved Agronomic Packages and Animal Health Management

	Name	-	Surendra-21
	Village	-	Bhangi Bhangela
	Age	-	54
	Education	-	10
	Size of LandHolding(ha)	-	0.95

Before Intervention					
Component Description		Benchmark (Baseline period 2016 17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 2329 PBW 226	0.32	10	17300	13300
Field Crop 2	Sugarcane Co 0238	0.88	550	178750	121550
Field Crop 3	Sorghum	0.08	36	4200	3600
Livestock 1	Buffalo	1.0	1365	47775	15925
Total				248025	154375

Status in 2020-21						
Component Description		Period (2020-21)				Improvement in net income
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	(%)
Field Crop 1	Wheat DBW 71 PBW 550	0.32	16	39600	32400	
Field Crop 2	Sugarcane Co 0238	0.84	688	223600	171600	
Field Crop 3	Sorghum	0.08	40	7000	5800	
Field Crop 4	Paddy PB 1	0.04	1.25	2000	1500	
Field Crop 5	Black gram	0.16	35	2500	2160	
Hort. Crop 1	Vegetable	0.01	0.5	1500	1400	
Livestock 1	Buffalo	1.0	2160	86400	38400	
Total				362600	253260	64.1





Brief: The farmer generated an annual net income of Rs. 154375 from mixed crops and livestock-based farming systems and with interventions like improved management practices, high yielding varieties, diversification through basmati rice, intercropping of legumes in sugarcane and nutritional kitchen gardening, he has increased his annual net income to Rs. 253260 (64.1% higher). The benefit: cost ratio was improved from 1.65 to 2.32. The average dietary intake of the household was much lower in terms of cereals and millets, pulses and legumes, fats and edible oils, other vegetables, roots and tubers, green leafy vegetables and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 29, 22, 20, 12, 10, 13 and 24 % from RDI, respectively. The expenditure on children's education has improved by 12.5% whereas the expenditure on pesticides has decreased by 10%.

Success Story 15: Diversification and Intensification of Sugarcane-based Farming System with HYVS, IPNM and Basmati Rice Integration and Animal Health Management



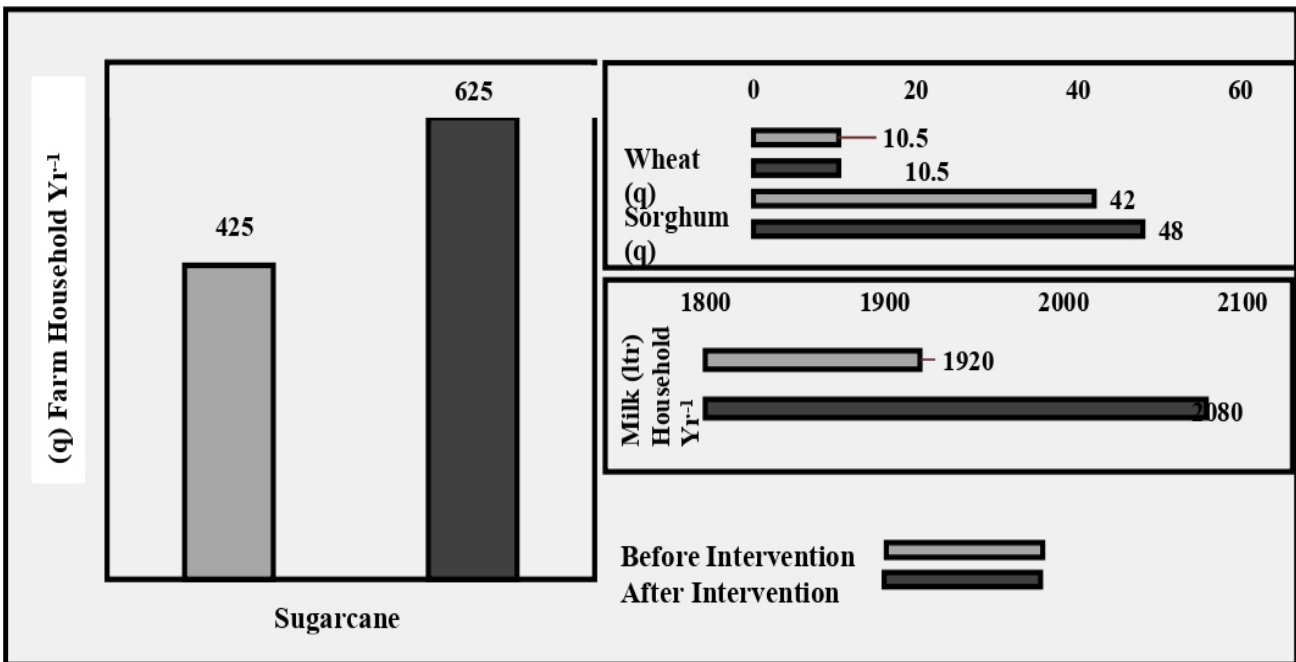
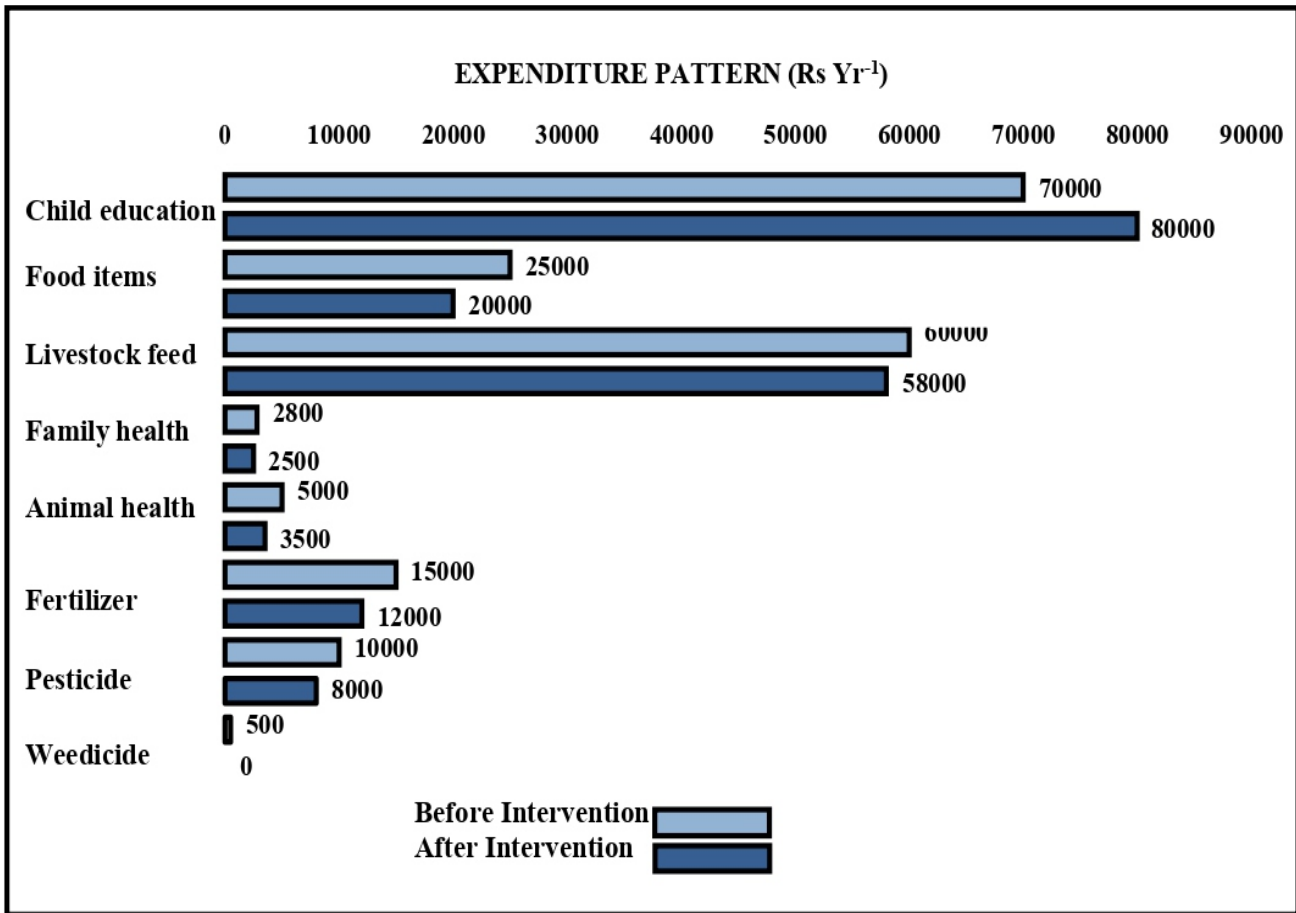
Name	-	Virender Kumar
Village	-	Bhangi Bhangela
Age	-	46
Education	-	12
Size of Land Holding (ha)	-	0.95

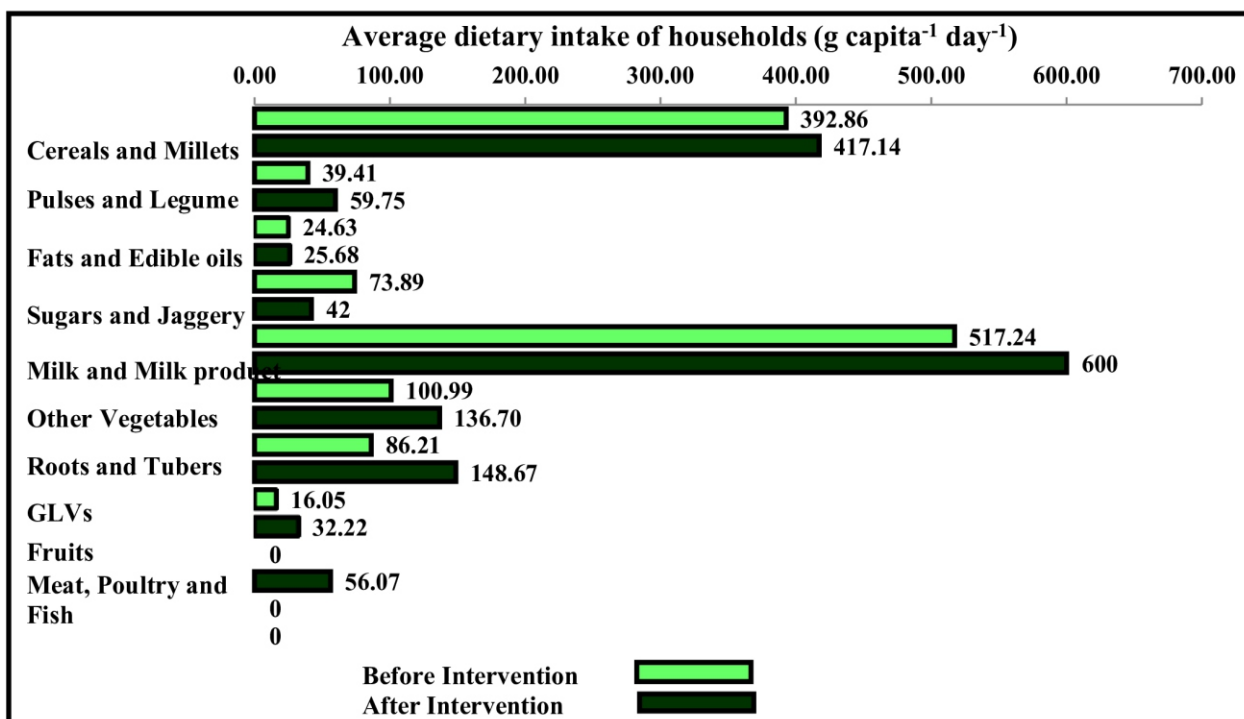
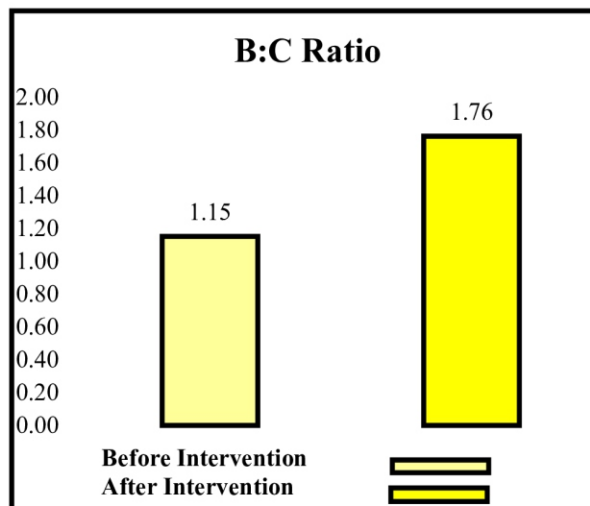
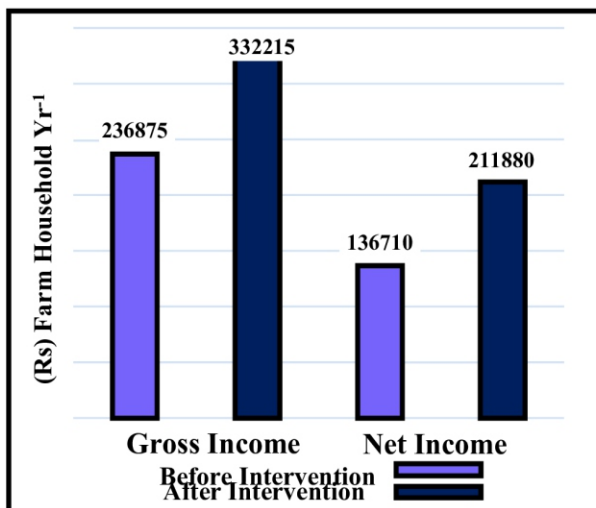
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 75	0.24	10.5	19750	12000
	PBW 226				
Field Crop 2	Sugarcane Co 0238	0.72	425	138125	84950
Field Crop 3	Sorghum	0.08	42	5500	4260
Livestock 1	Buffalo	1.0	1920	73500	25500
Total				236875	126710

Status in 2020-21

Component Description		Period (2020-21)				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658 PBW 550	0.20	10.5	19750	13700	
Field Crop 2	Sugarcane Co 0238	0.82	625	203125	145750	
Field Crop 3	Sorghum	0.08	48	6000	4900	67.2%
Field Crop 4	Paddy 1121	0.04	1.25	2000	1280	
Hort. Crop 1	Vegetable	0.01	0.5	1500	1000	
Livestock 1	Cow	1.0	2080	99840	45250	
Total				332215	211880	





Brief: The farmer was generating an annual net income of Rs. 126710 from a mixed crops and livestock systems, with interventions like improved management practices of crop and livestock, high yielding varieties and basmati rice integration, his annual net income increased to Rs. 211880 (67.2% higher). The benefit: cost ratio was improved from 1.15 to 1.76. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, roots and tubers, green leafy vegetables and fruits than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 27, 18, 31, 16 and 56% from RDI, respectively after farming system interventions. The expenditure on children's education has improved by 14% whereas the expenditure on food items has reduced by 20%.

Success Story 16:
**Diversification and Sustainable Intensification of Sugarcane-based Farming System
with High Yielding Varieties, ICM, Legume Intercropping and
Animal Health Management**



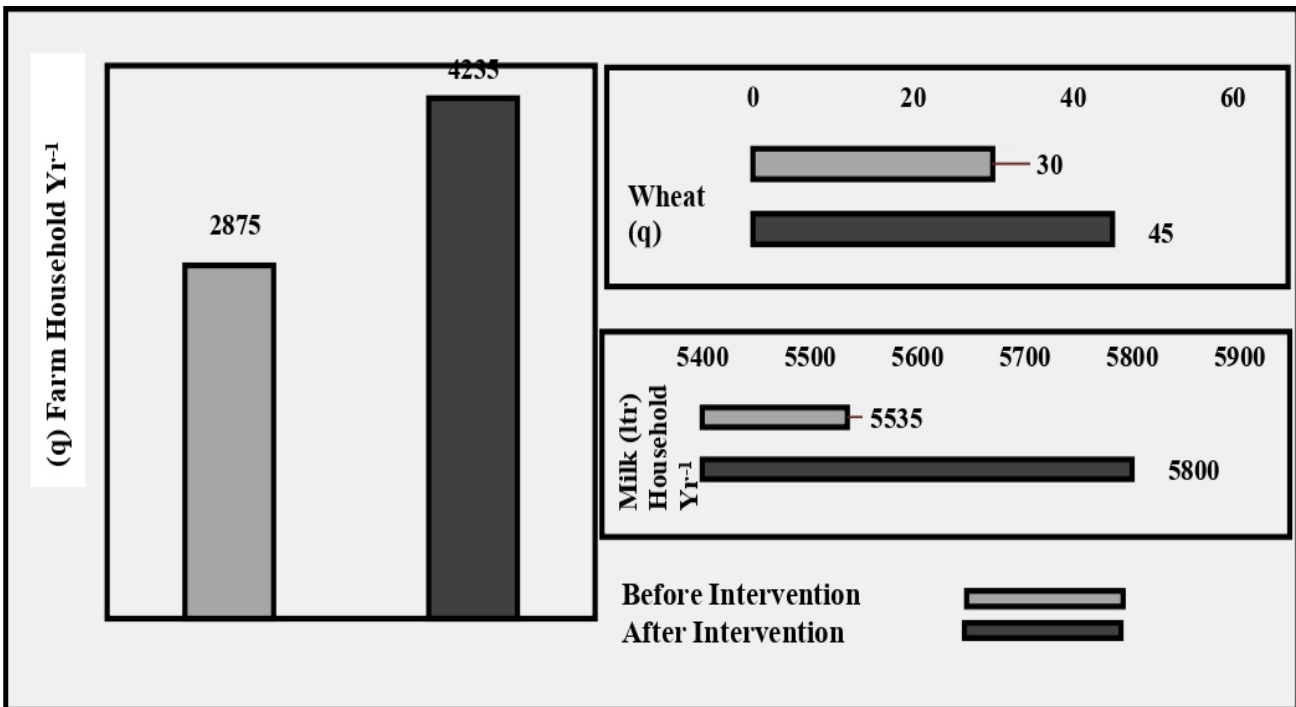
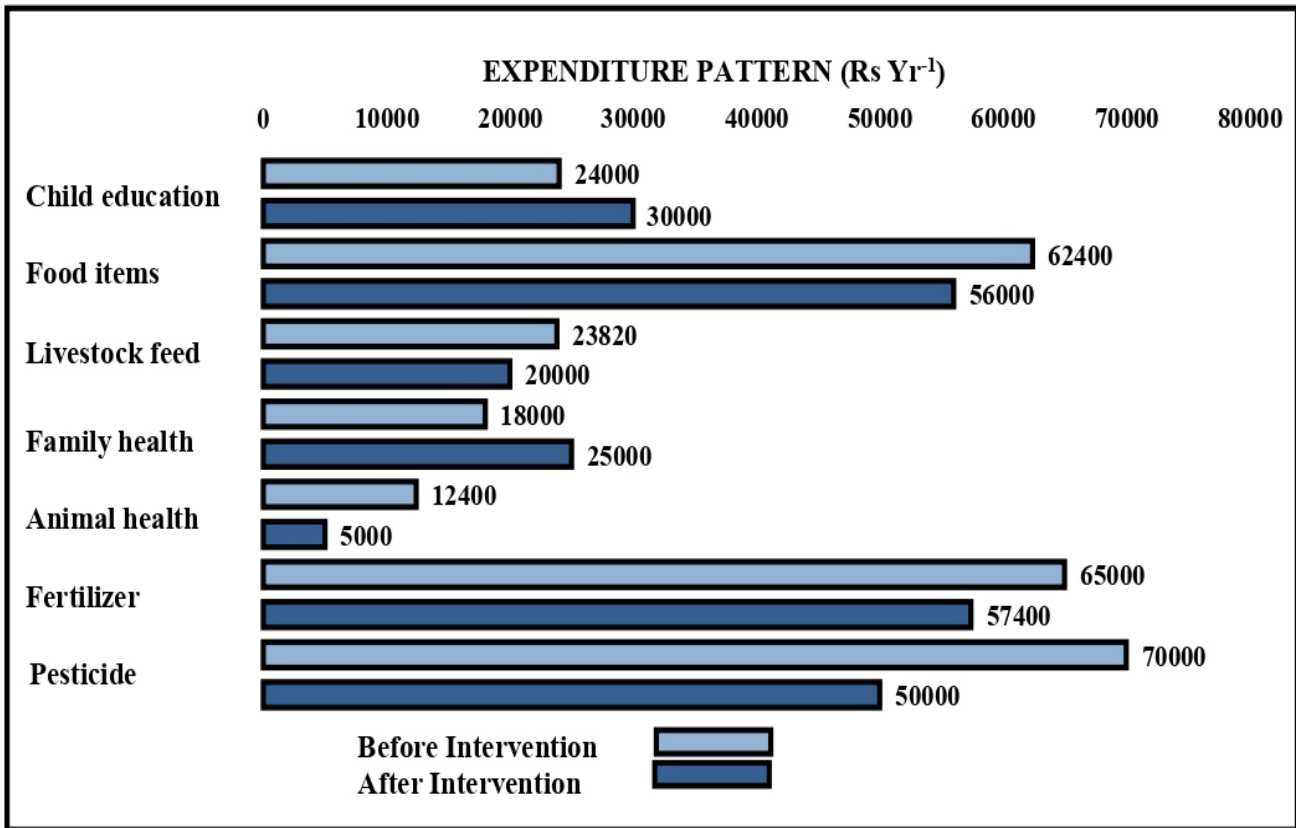
Name - **Akhil Kumar**
Village - **Satheri**
Age - **35**
Education - **12**
Size of Land Holding(ha) - **4.39**

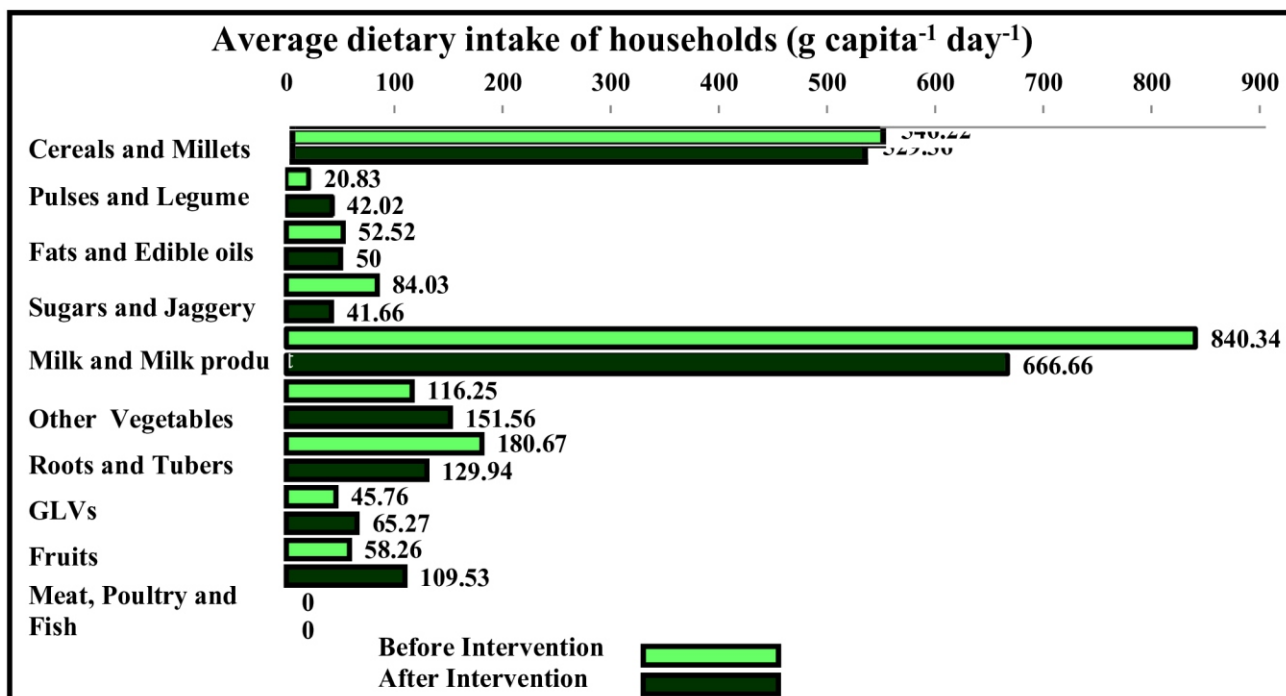
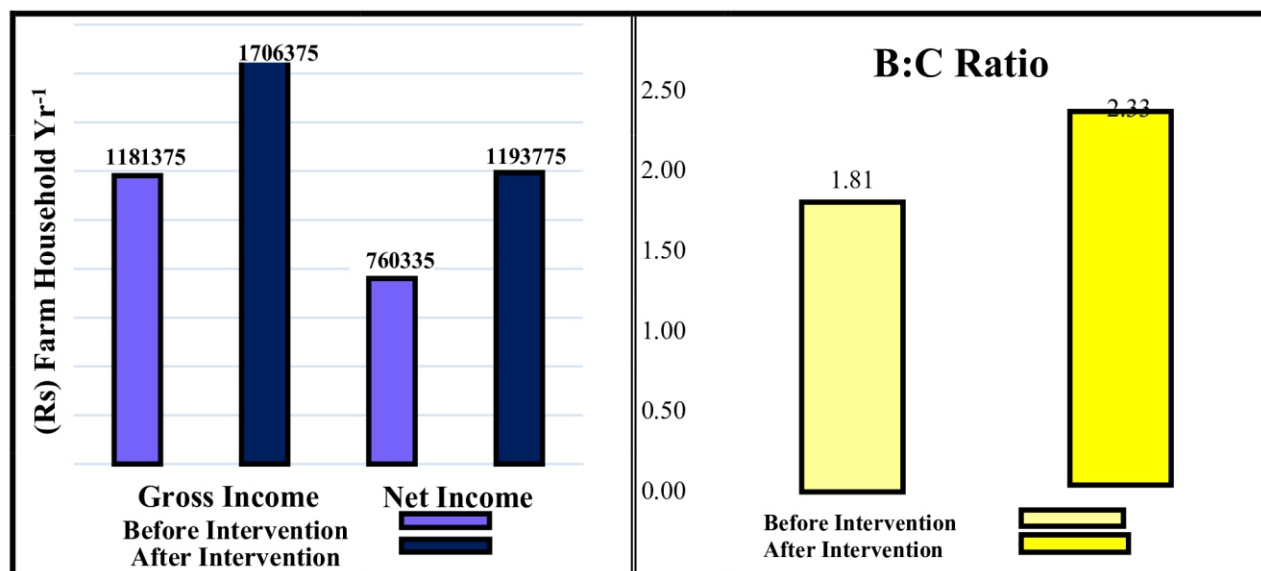
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat				
	HD 2967	0.8	30	54000	40000
Field Crop 2	PBW 226				
	Sugarcane	4.0	2875	934375	609375
Field Crop 3	Co 0238				
Field Crop 3	Sorghum	0.4	190	25000	20000
Livestock 1	Buffalo	2.0	2835	97200	56160
Livestock 2	Cow	2.0	2700	70800	34800
Total				1181375	760335

Status 2020-21

Component Description		Period 2020-21				Improvement in net return (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat					
	PBW 658	0.96	45	109500	82500	
	PBW 550					
Field Crop 2	Sugarcane					
	Co 0238	4.39	4235	1376375	991375	
Field Crop 3	Black gram	1.05	90	5400	5400	
Hort. Crop 1	Vegetable	0.01	0.60	1500	1500	
Livestock 1	Buffalo	2.0	3500	140000	75000	57.0
Livestock 2	Cow	1.0	2300	73600	38000	
Total				1706375	1193775	





Brief: The farmer was generating an annual net income of Rs. 760335 from mixed crop, livestock farming. Through interventions like improved management of crops and livestock, intercropping of legumes with sugarcane, nutritional kitchen gardening, he could generate an annual net income of Rs. 1193775 (57.0% higher). The expenditure on purchase of fertilizer and pesticide consumption has been reduced by 12% and 30%, respectively. The benefit: cost ratio was improved from 1.81 to 2.33. The average dietary intake of the household was much lower in terms of pulses, other vegetables, green leafy vegetables, fruits, than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 28, 20, 20 and 51% from RDI, respectively after interventions.

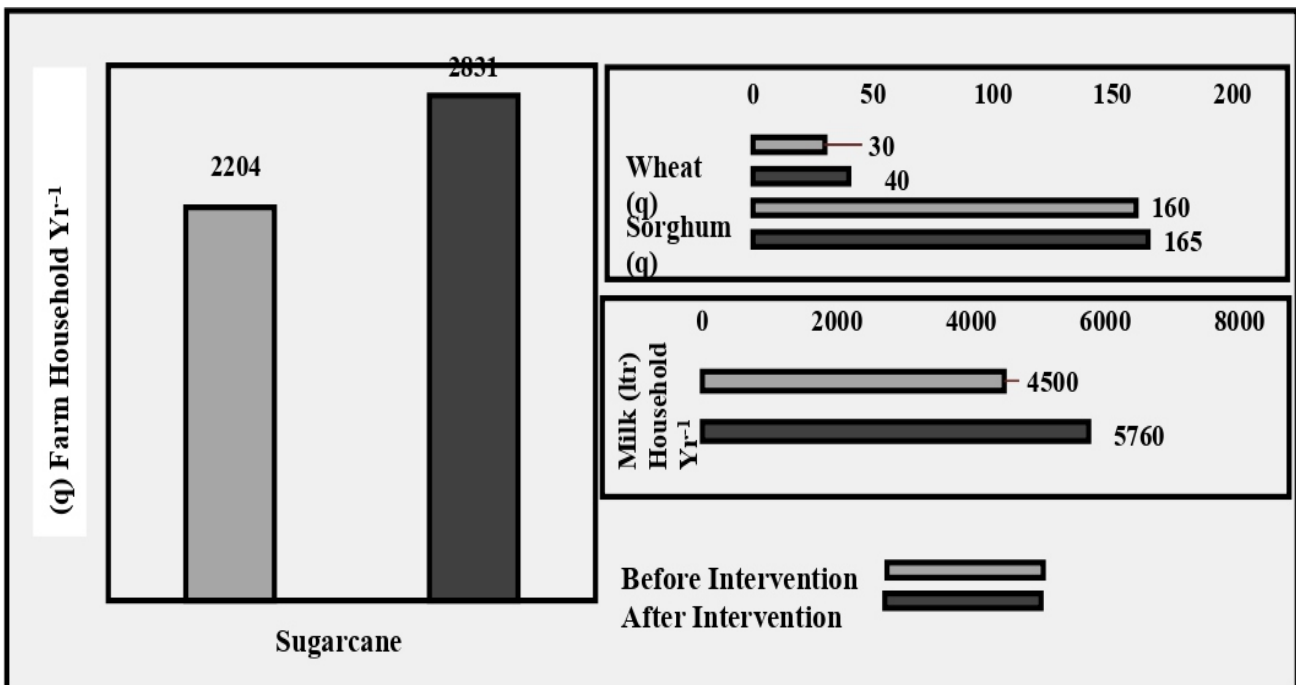
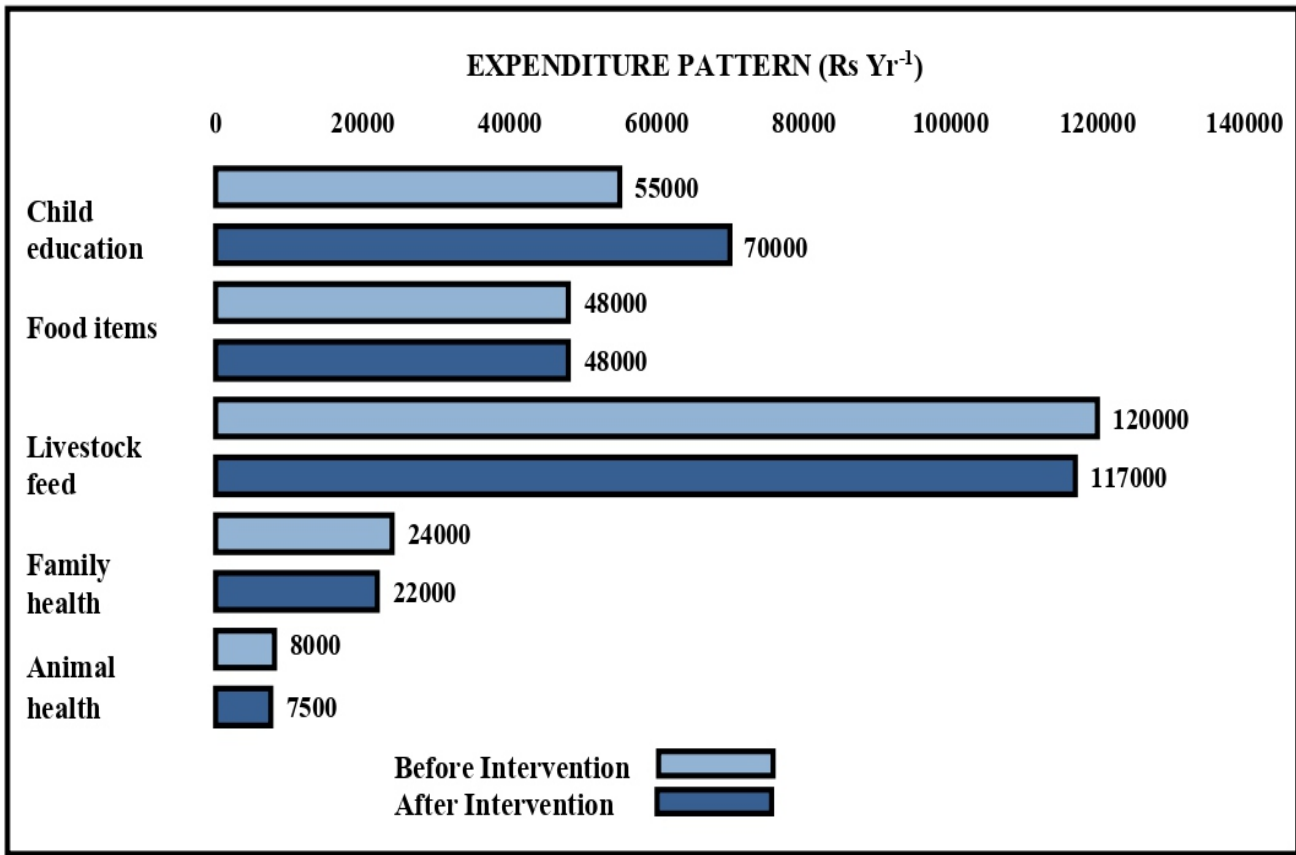
Success Story 17: Diversification and Intensification of Sugarcane cum Horticulture-based Farming System with High Yielding Varieties, Legume Integration and Improved Management Practices

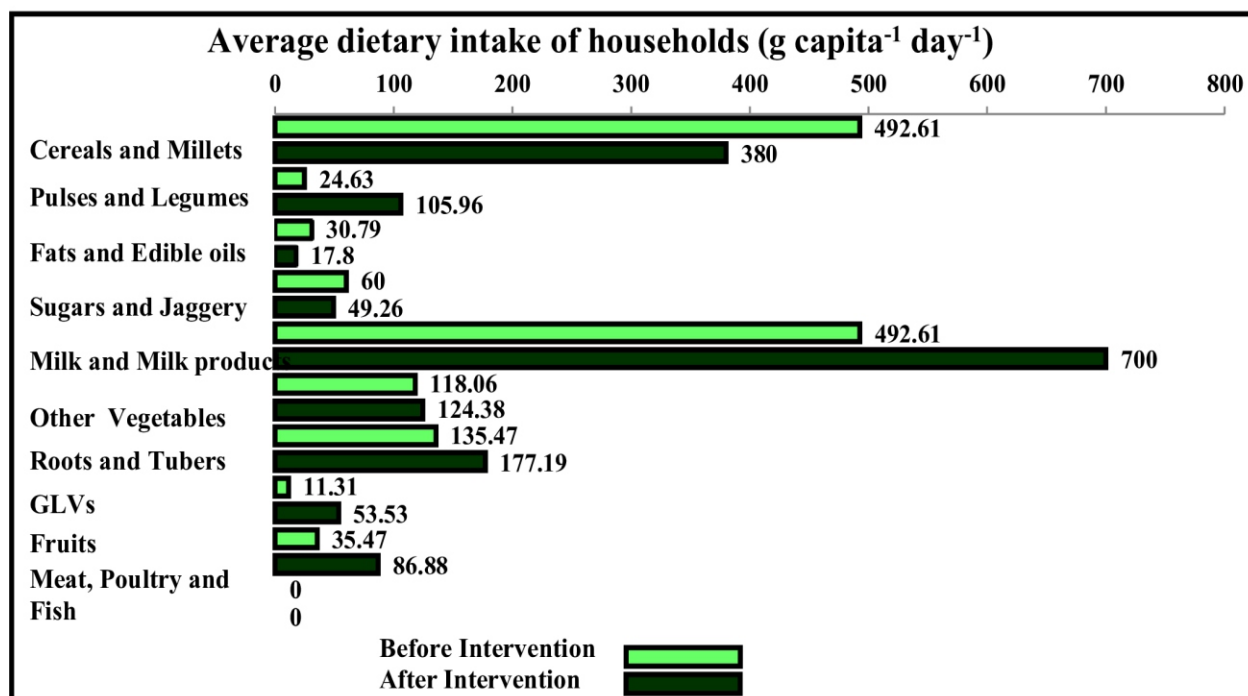
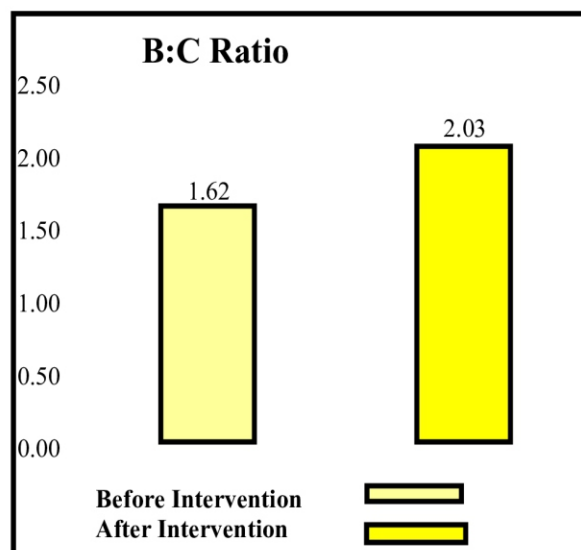
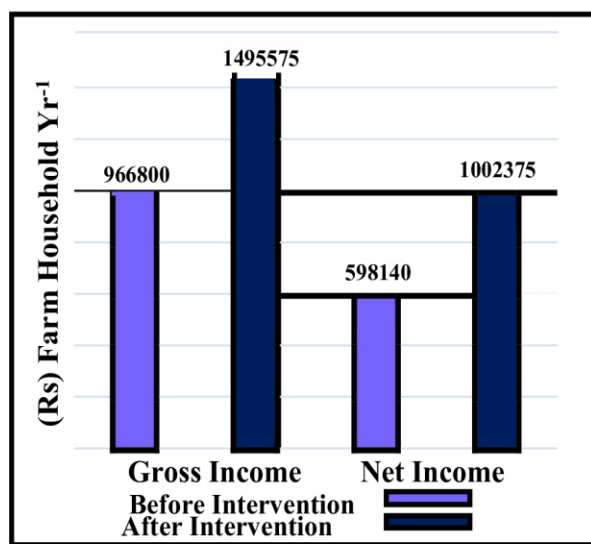


Name	-	Khadak Singh
Village	-	Satheri
Age	-	60
Education	-	10
Size of Land Holding (ha)	-	4.63

Before Intervention						
Component Description			Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 226	0.96	30	54600	42600	
Field Crop 2	Sugarcane Co 0238	3.04	2204	661200	411540	
Field Crop 3	Sorghum	0.40	160	11500	10000	
Hort. Crop 1	Mango+Litchi+Aonla	1.2	54	100000	50000	
Livestock 1	Cow	2	1800	45000	20000	
Livestock 2	Buffalo	2	2700	94500	64000	
Total				966800	598140	

Status in 2020-21						
Component Description			Period 2020-21			Improvement in net return (%)
Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 658, HD 3086	0.80	40	96500	84500	67.6
Field Crop 2	Sugarcane Co 0238	3.04	2831	920075	646475	
Field Crop 3	Sorghum	0.40	165	30000	25000	
Field Crop 4	Black gram	0.40	1.5	9000	8400	
Hort. Crop 1	Mango+Litchi+Aonla	1.2	100	200000	150000	
Livestock 1	Cow	0.3952	2400	72000	30000	
Livestock 2	Buffalo	0.3952	3360	168000	58000	
Total				1495575	1002375	





Brief: The farmer earlier generated an annual net income of Rs. 598140 from crop, orchard, livestock farming. Through technology interventions like improved management of crop, orchard, livestock, high yielding varieties and legume integration, he is getting annual net income of Rs. 1002375 (67.6% higher). The benefit: cost ratio was improved from 1.62 to 2.03. The average dietary intake of the household was much lower in terms of pulses, green leafy vegetables, fruits, than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 108, 42 and 87% from RDI, respectively after farming system interventions. The expenditure patterns on children's education have improved by 27%.

Success Story 18: Diversification of Crop Intensive Farm into Crop + Vegetables+ Dairy Farming System



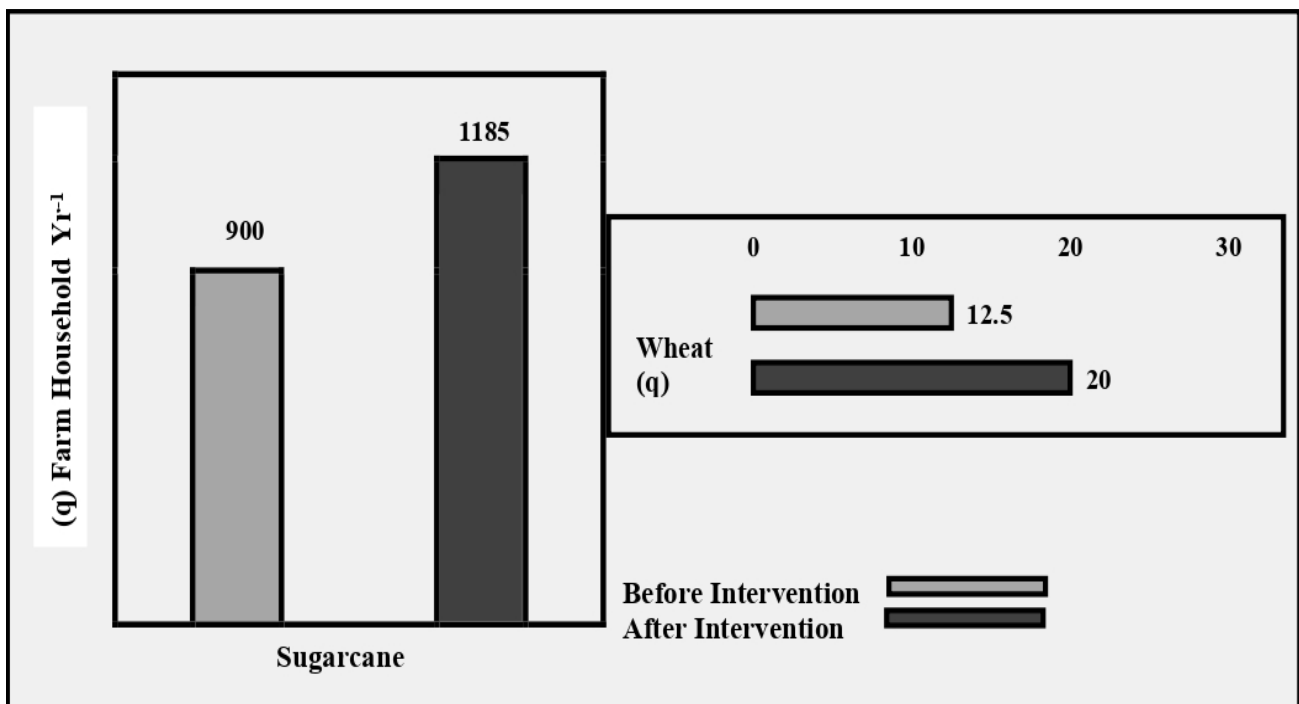
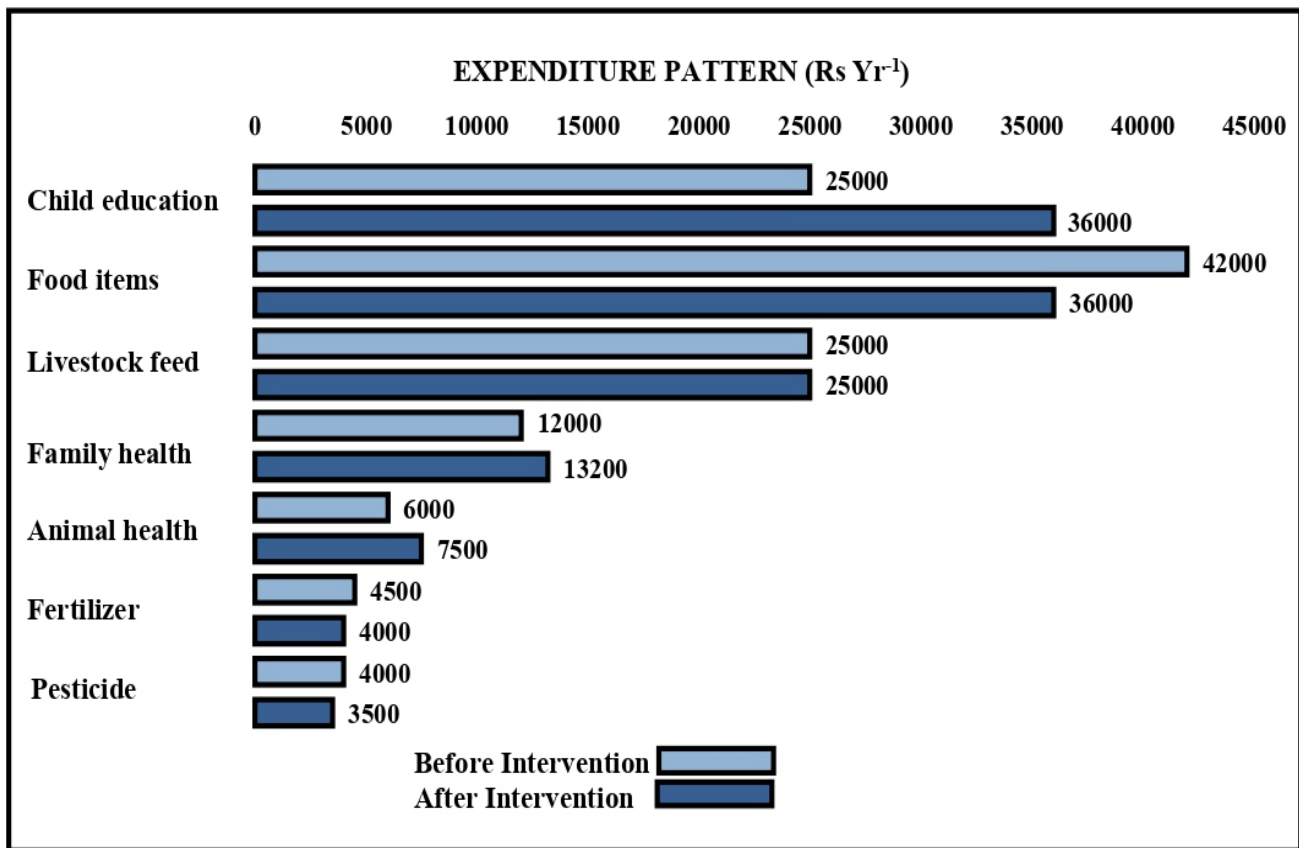
Name	-	Kuldeep-10
Village	-	Satheri
Age	-	47
Education	-	10
Size of LandHolding(ha)	-	1.19

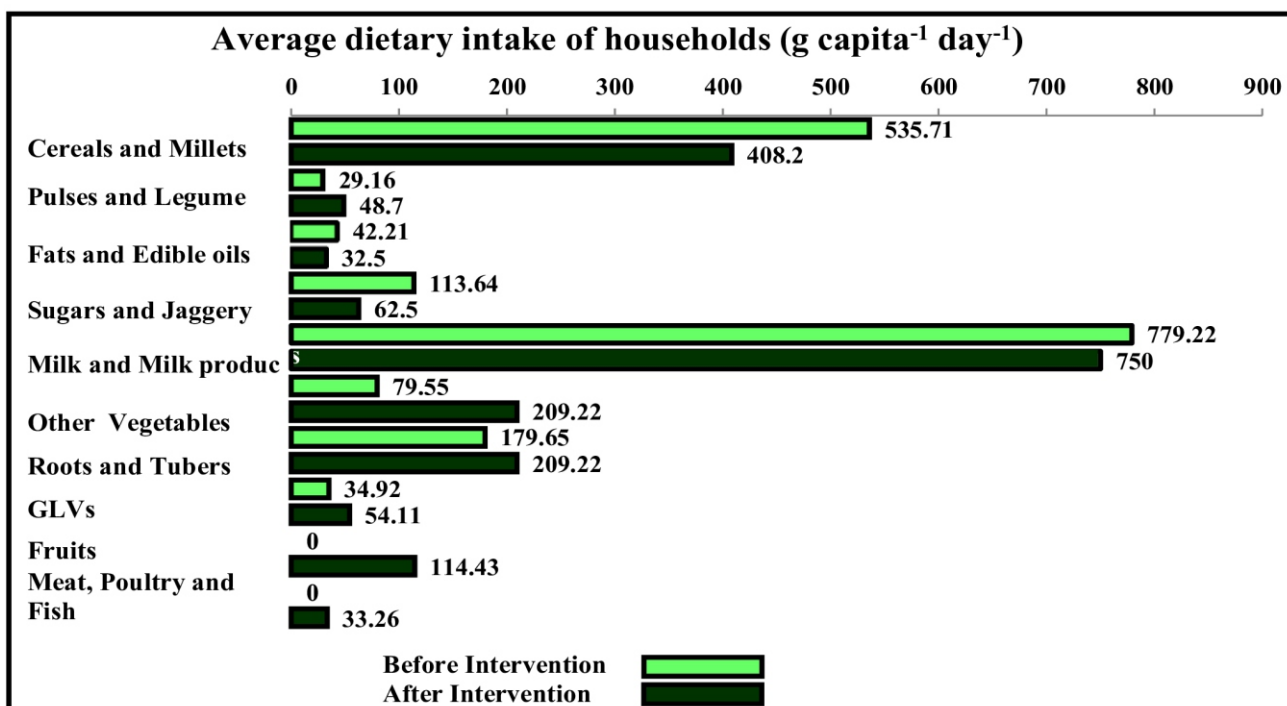
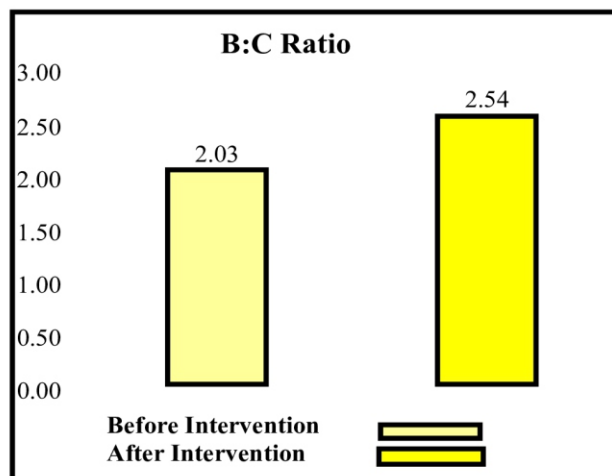
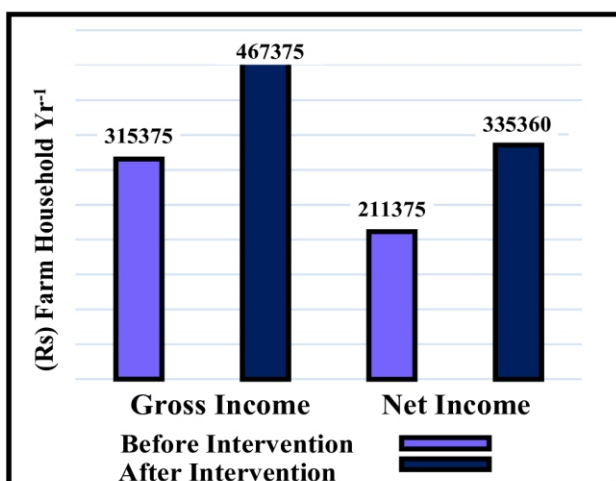
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat HD 2967	0.40	12.5	22875	16375
Field Crop 2	PBW 226 Sugarcane Co 0238	1.2	900	292500	195000
Total				315375	211375

Status in 2020-21

Component Description		Period 2020-21				
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net return (%)
Field Crop 1	Wheat PBW 550 PBW 658	0.40	20	45500	40000	
Field Crop 2	Sugarcane Co 0238	1.2	1185	385125	272625	
Field Crop 3	Black gram	0.16	30	2000	1735	58.7
Hort. Crop 1	Vegetable	0.02	0.20	1000	1000	
Livestock 1	Cow	2.0	1125	33750	20000	
Total				467375	335360	





Brief: The farmer was getting an annual income of Rs. 211375 from sugarcane and wheat, livestock farming and with interventions like improved management of sugarcane and wheat, animal integration, legume intercrops and nutritional kitchen gardening, he is getting an annual net income of Rs. 335360 (58.7% higher). The benefit: cost ratio was improved from 2.03 to 2.54. The average dietary intake of the household was much lower in terms of pulses, other vegetables, green leafy vegetables, fruits, meat, poultry and fish than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 26, 65, 19 and 114, 100% from RDI, respectively after DFI interventions. The expenditure on children education has increased by 44 and the expenditure on purchase of food items has reduced by 14%.

Success Story 19: Sustainable Intensification of Sugarcane-based Farming System with Crop Diversification through Legume, High Yielding Varieties and Improved Management Practices



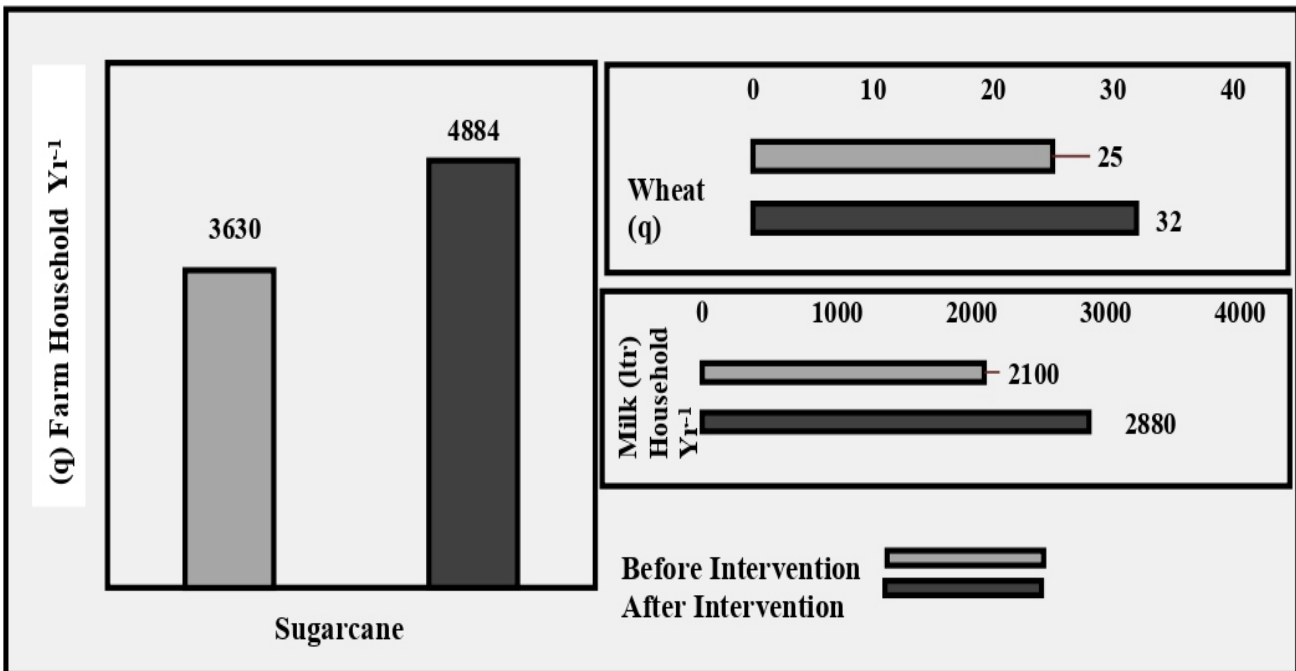
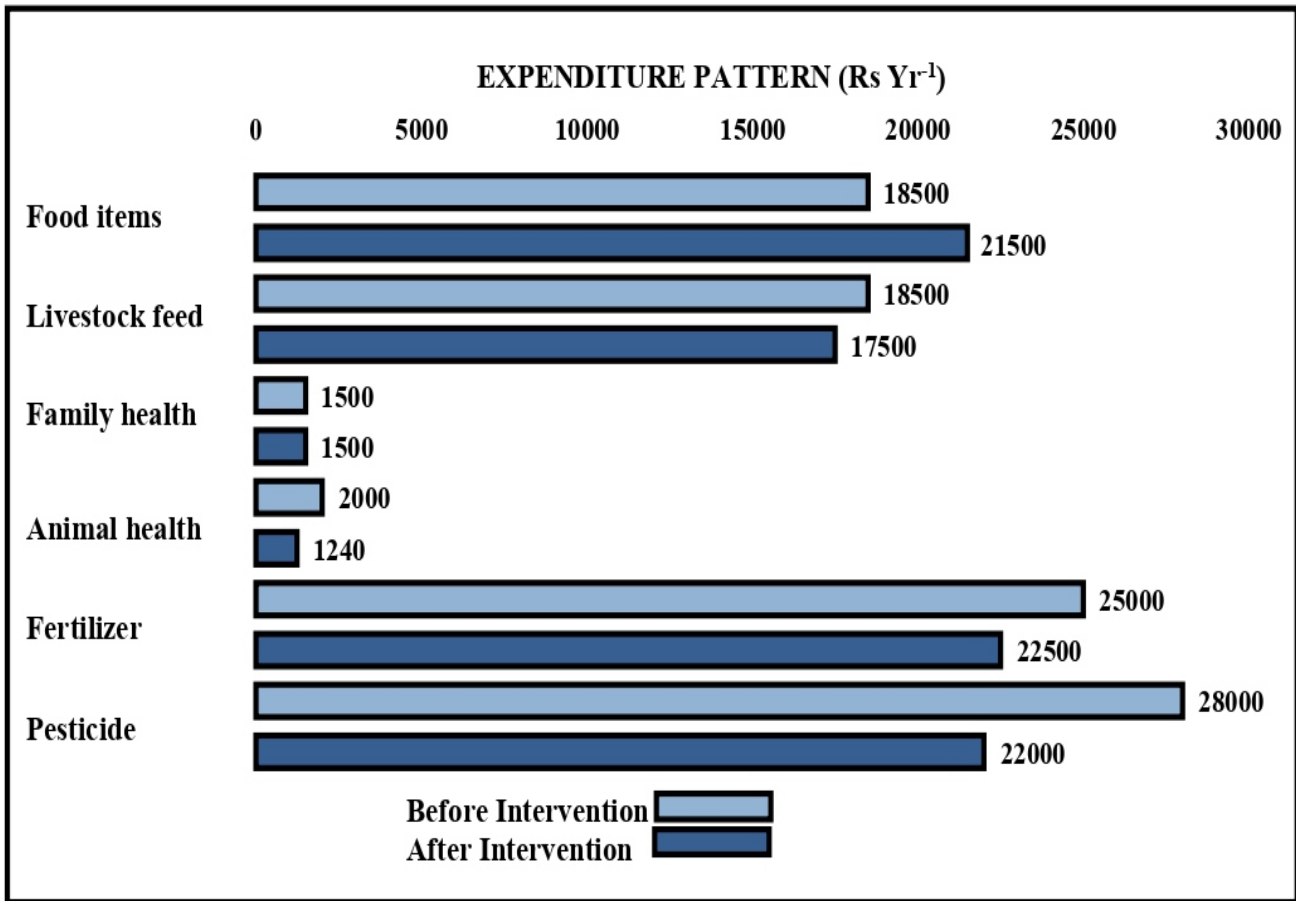
Name	-	Mukesh-11
Village	-	Satheri
Age	-	41
Education	-	M.A.
Size of LandHolding(ha)	-	5.28

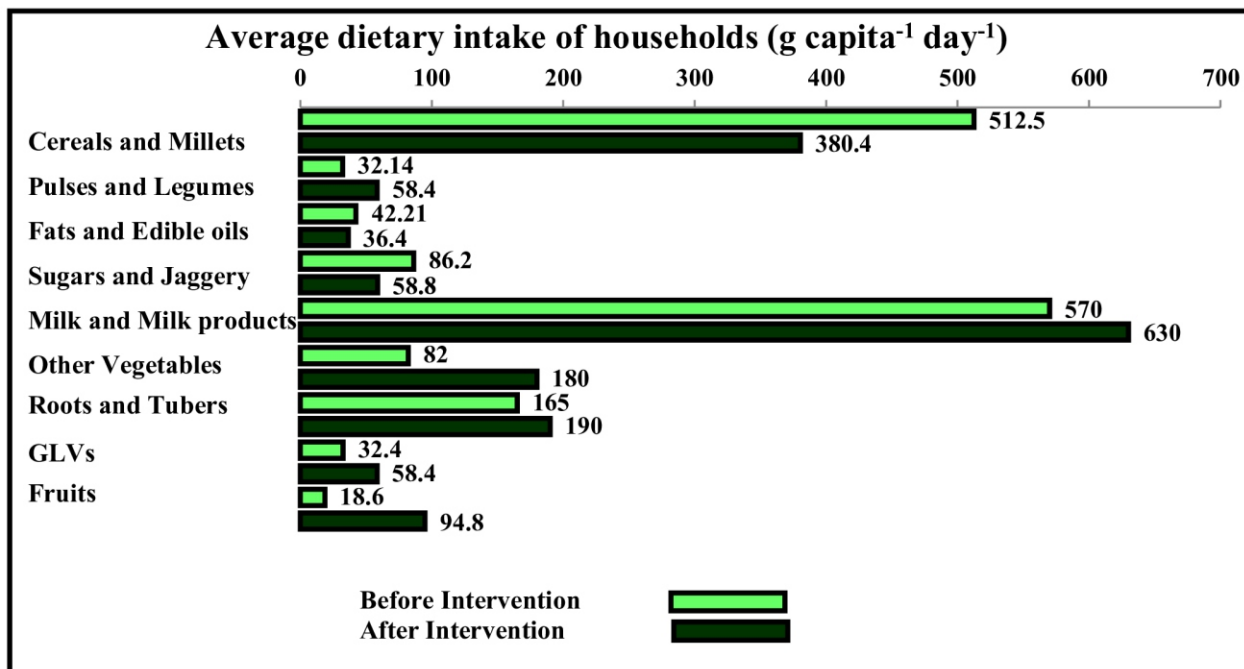
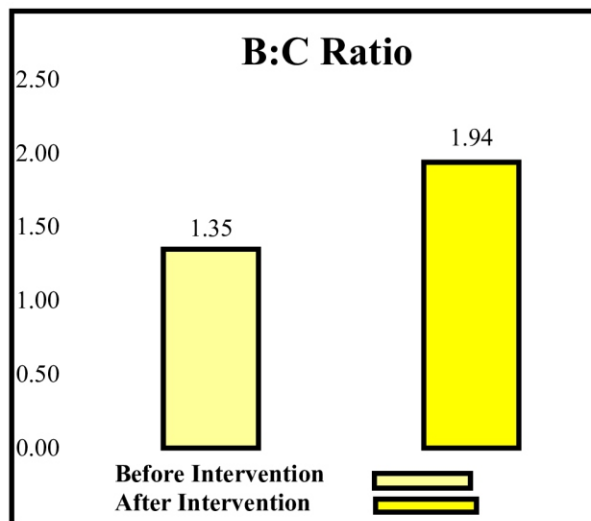
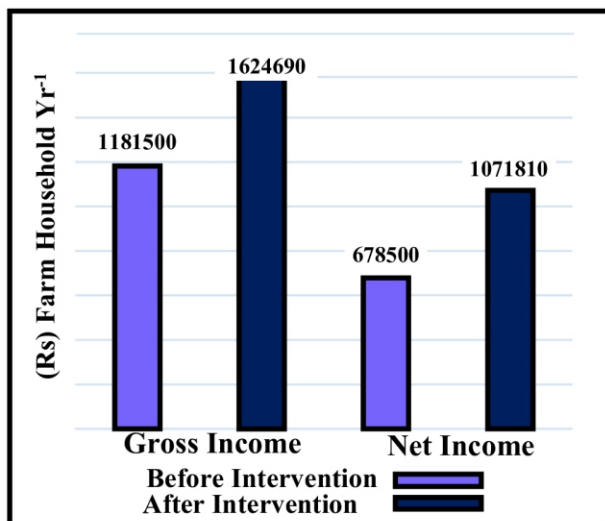
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat HD 2967	0.80	25	40000	30000
Field Crop 2	PBW 226 Sugarcane Co 0238	5.28	3630	1089000	627000
Livestock 1	Cow	2.0	2100	52500	21500
Total				1181500	678500

Status 2020-21

Component Description		Period 2020-21				Improvement in net return
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	(%)
Field Crop 1	Wheat PBW 658 PBW 550	0.64	32	74000	64400	
Field Crop 2	Sugarcane Co 0238	5.28	4884	1465200	963600	
Field Crop 3	Black gram	0.40	60	3600	2560	
Hort. Crop 1	Vegetable	0.01	0.22	1250	1250	57.9
Livestock 1	Cow	2.0	2880	80640	40000	
Total				1624690	1071810	





Brief: The farmer used to get an annual net income of Rs. 678500 from a mixed crop and livestock farming and but with farming system interventions, like improved management of crops and livestock, high yielding varieties in wheat, legume integration, nutritional kitchen gardening, he is now getting an annual net income of Rs 1071810 (57.9% higher). The benefit: cost ratio was improved from 1.35 to 1.94. Average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, green leafy vegetables and fruits than recommended dietary intake (RDI) which improved significantly by reducing the gap by 35, 49, 26 and 76 % from RDI, respectively after farming system interventions. The expenditure has reduced by 21% and 16%, respectively on food items as well as pesticides.

Success Story 20: Doubling Small Holder's Income by Crop Diversification through Intercropping Oilseeds, High Yielding Varieties, IPNM, and Animal Health Management

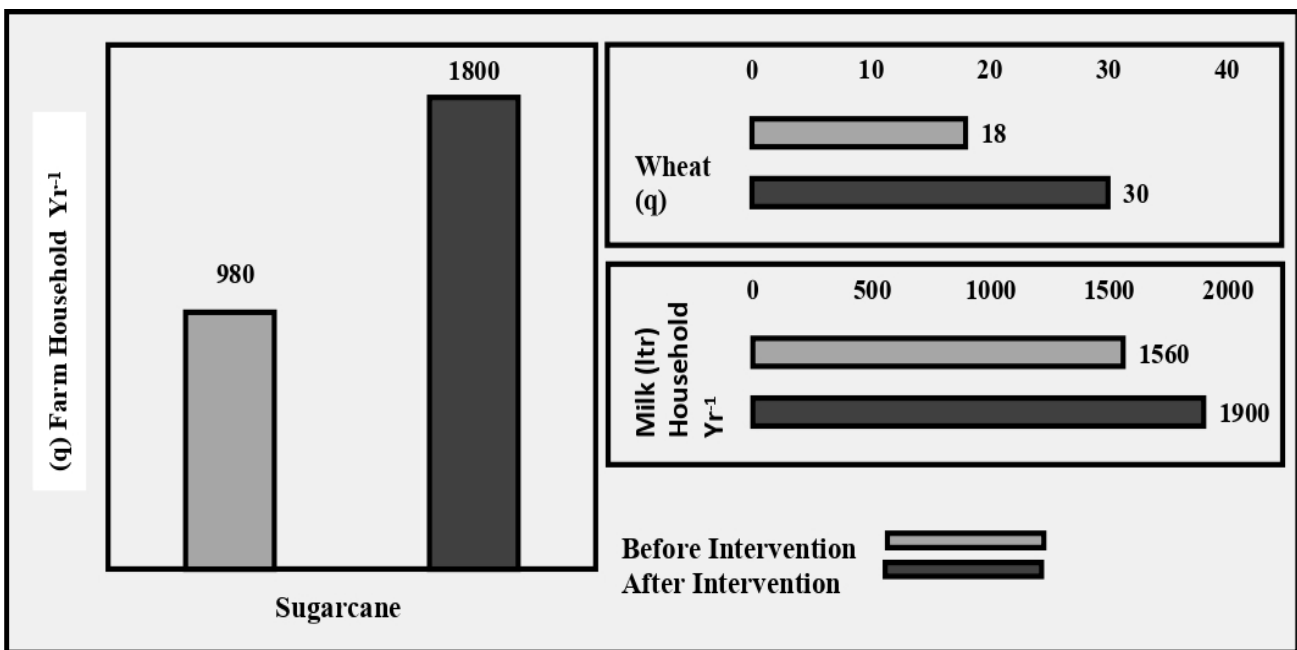
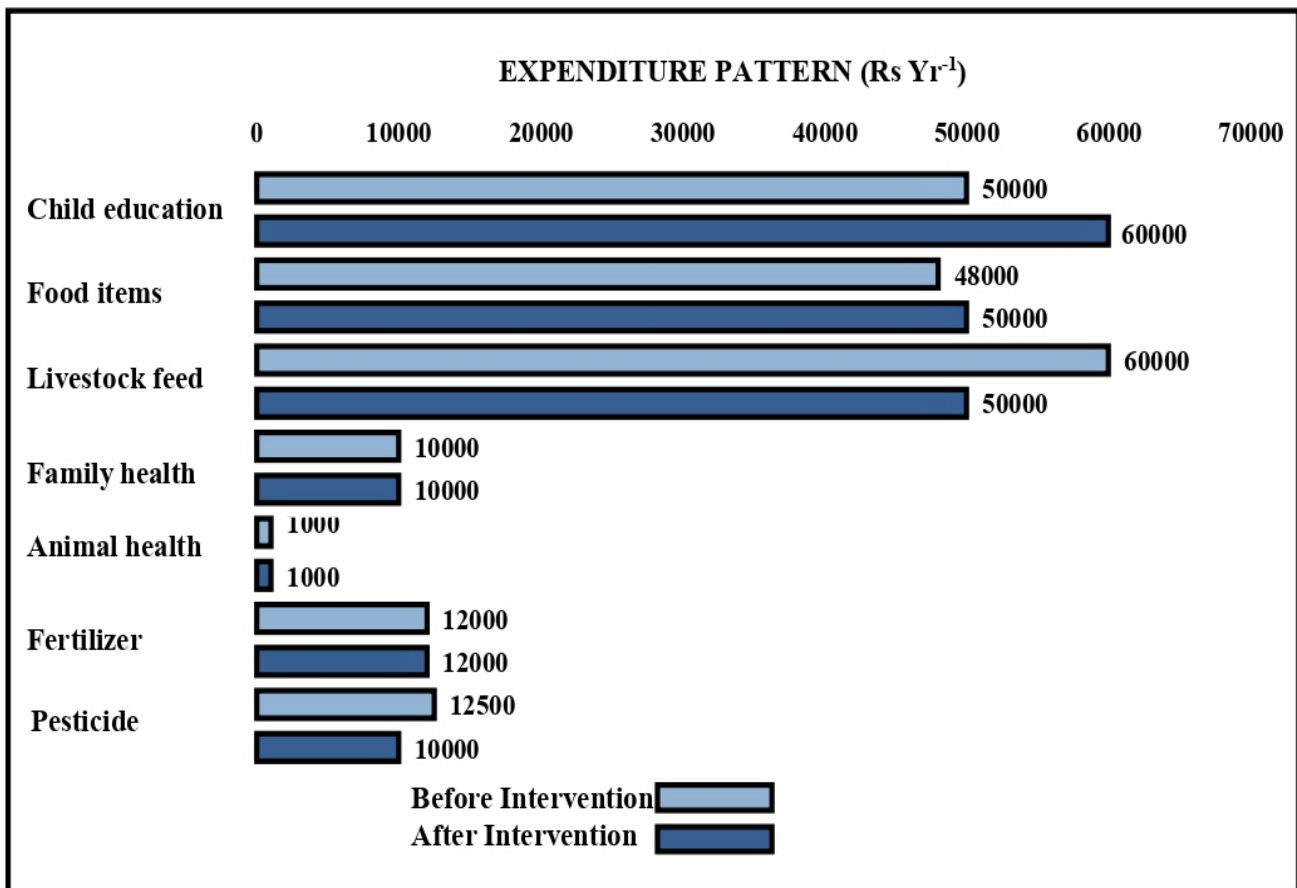


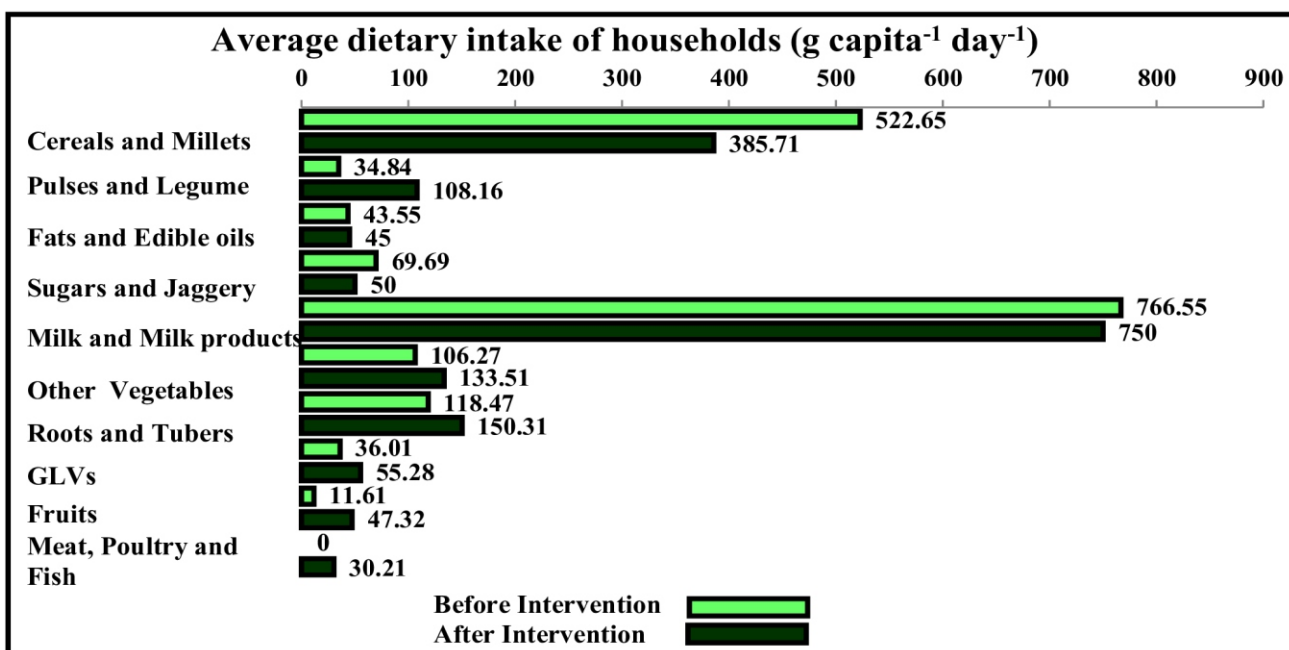
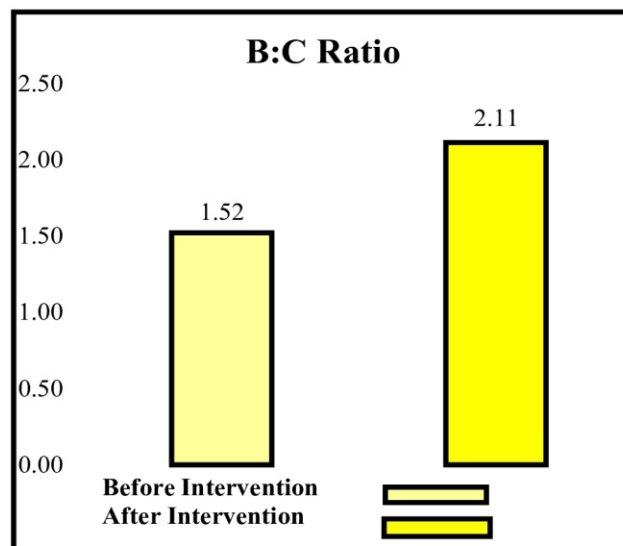
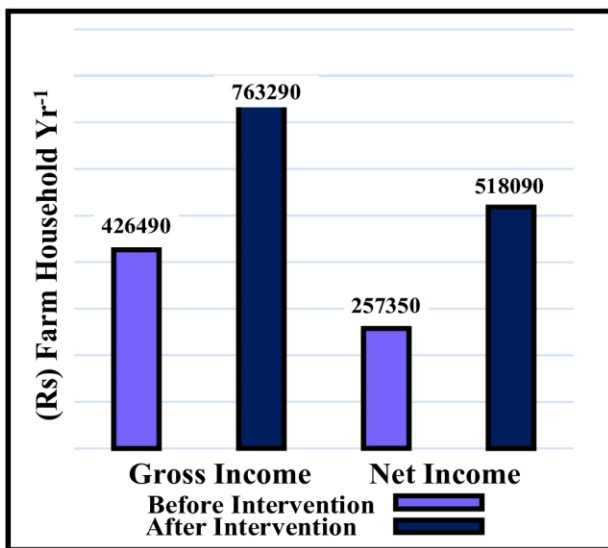
Name	-	Sanjay Singh-18
Village	-	Satheri
Age	-	47
Education	-	Nil
Size of LandHolding(ha)	-	1.67

Before intervention					
Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW226, PBW 4037	0.56	18	33390	23950
Field Crop 2	Sugarcane Co0238	1.44	980	318500	183500
Field Crop 3	Sorghum	0.32	120	20000	14800
Livestock 1	Buffalo	1.0	1560	54600	35100
Total				426490	257350

Status 2020-21

Component Description		Period 2020-21				Improvement in net income %
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 550, PBW 658 DBW 187	0.56	30	71000	62000	101.3
Field Crop 2	Sugarcane Co 5191	1.67	1800	585000	388200	
Field Crop 3	Mustard RH 749	0.24	4.5	29250	26250	
Field Crop 4	Berseem, oat	0.32	64	4840	2640	
Hort. Crop 1	Vegetable	0.01	0.30	1000	1000	
Livestock 1	Buffalo	1.0	1900	72200	38000	
Total				763290	518090	





Brief: The farmer used to get an annual income of Rs. 257350 from mixed crops and livestock farming systems, but with farming system interventions like improved management of crop and livestock, diversification through oilseed intercropping with sugarcane, integration of berseem and oats he is getting annual net income of Rs. 518090 (101.3% higher). The benefit: cost ratio was improved from 1.52 to 2.11. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, roots and tubers, green leafy vegetables, fruits and meat poultry and fish than recommended dietary intake (RDI) which improved significantly by reducing the gap by 97, 14, 16, 19, 36, and 100 % from RDI, respectively after interventions. The expenditure on children's education has improved by 20% whereas the expenditure on livestock feed has reduced by 20%.

Success Story 21: Amelioration of Marginal Farmer's Livelihood through Diversification and Intensification of Sugarcane-based Farming System



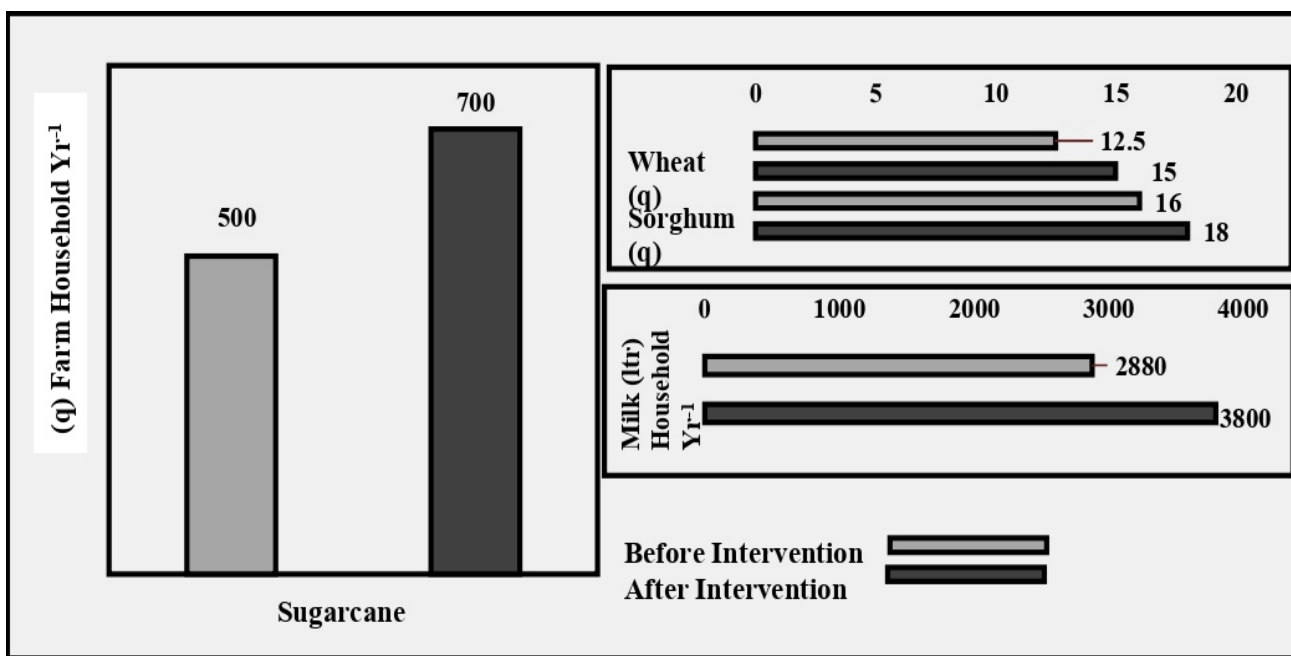
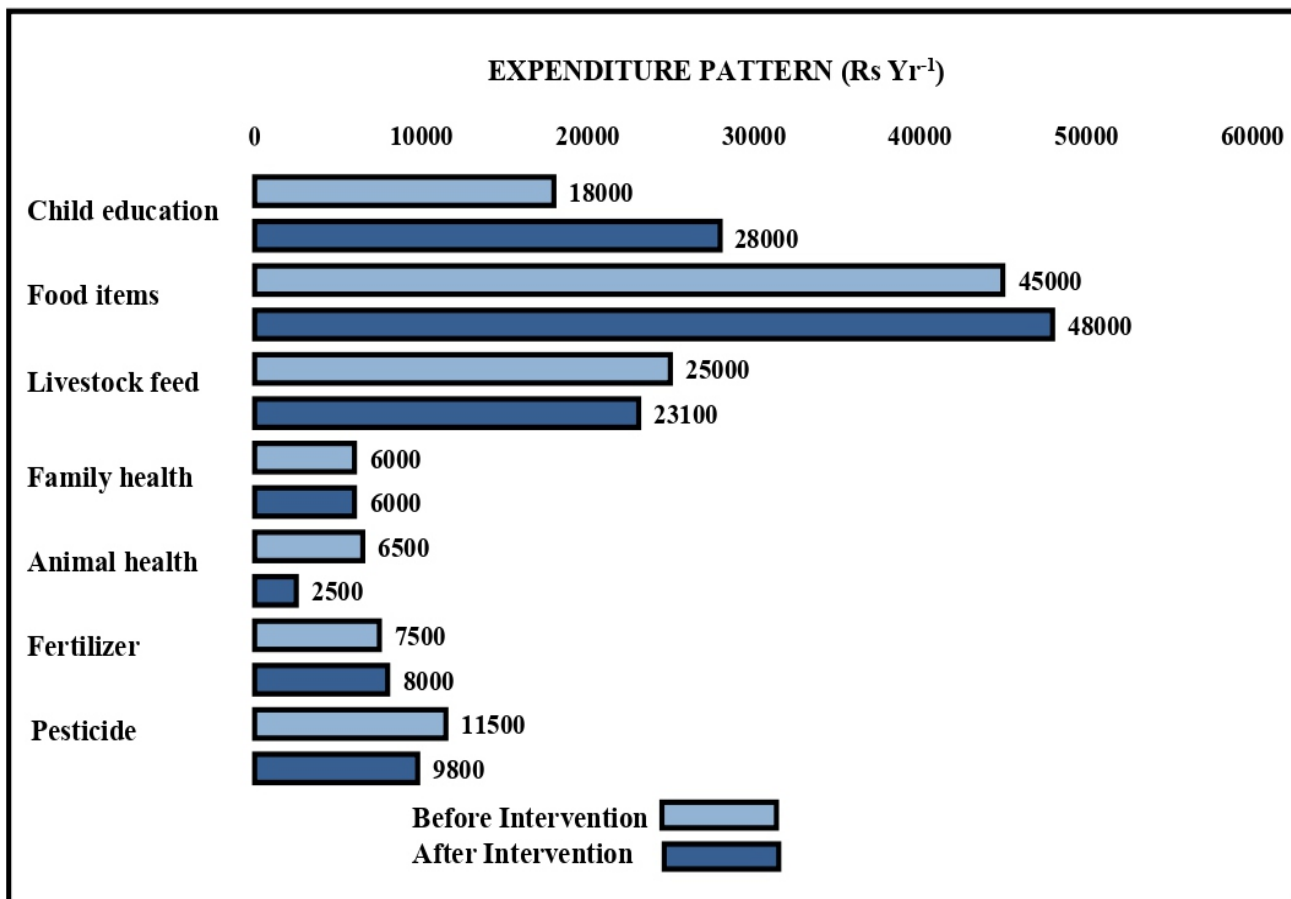
Name	-	Satyapal-19
Village	-	Satheri
Age	-	61
Education	-	10
Size of LandHolding(ha)	-	0.83

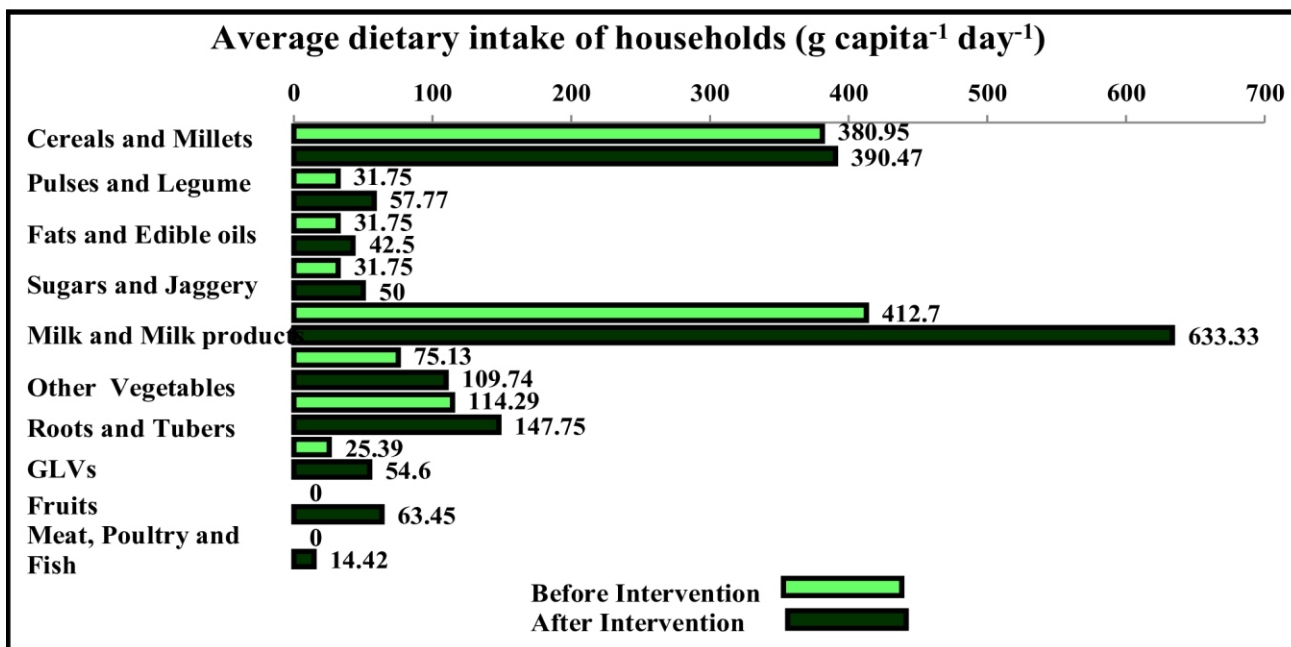
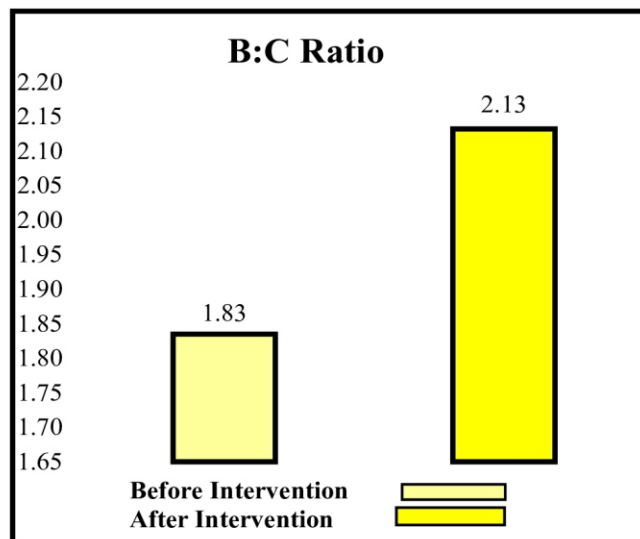
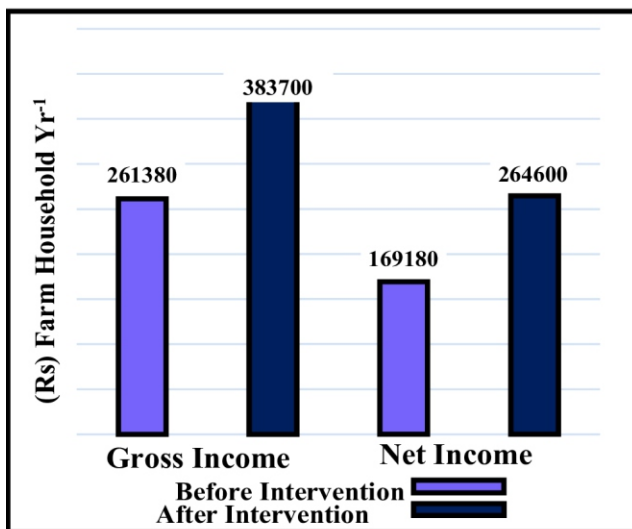
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat				
	HD 2967 PBW 226	0.40	12.5	21000	15000
Field Crop 2	Sugarcane				
	Co 0238	0.80	500	162500	114000
Field Crop 3	Sorghum	0.40	16	3000	2500
Livestock 1	Cow	3.0	2880	74880	37680
Total				261380	169180

Status 2020-21

Component Description		Period 2020-21				Improvement in net income (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat	0.36	15	35700	27500	56.4
	PBW 658					
Field Crop 2	Sugarcane	0.80	700	227500	161500	
	Co 0238					
Field Crop 3	Sorghum	0.04	18	3000	2600	
Field Crop 4	Black gram	0.16	0.20	1500	1000	
Hort. Crop 1	Vegetable	0.02	0.85	2000	2000	
Livestock 1	Cow	2.0	3800	114000	70000	
Total				383700	264600	





Brief: The farmer used to get an annual income of Rs. 257350 only from mixed crops, and livestock farming but with farming system interventions like improved management of crop and livestock, diversification through oilseed intercropping with sugarcane, integration of berseem and oats, he is now getting annual net income of Rs. 518090 (101.3% higher). The benefit: cost ratio was improved from 1.52 to 2.11. The cropping intensity is improved from 132.8% to 165.2%. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, roots and tubers, green leafy vegetables, fruits and meat poultry and fish than the recommended dietary intake (RDI) which improved significantly by reducing the gap by 97, 14, 16, 19, 36, and 100 % from RDI, respectively. The expenditure on children's education has improved by 20% whereas expenditure on livestock feed has reduced by 20%.

Success Story 22: Intensification of Sugarcane cum Agroforestry-based Farming System with High Yielding Varieties, IPNM and Animal Health Management



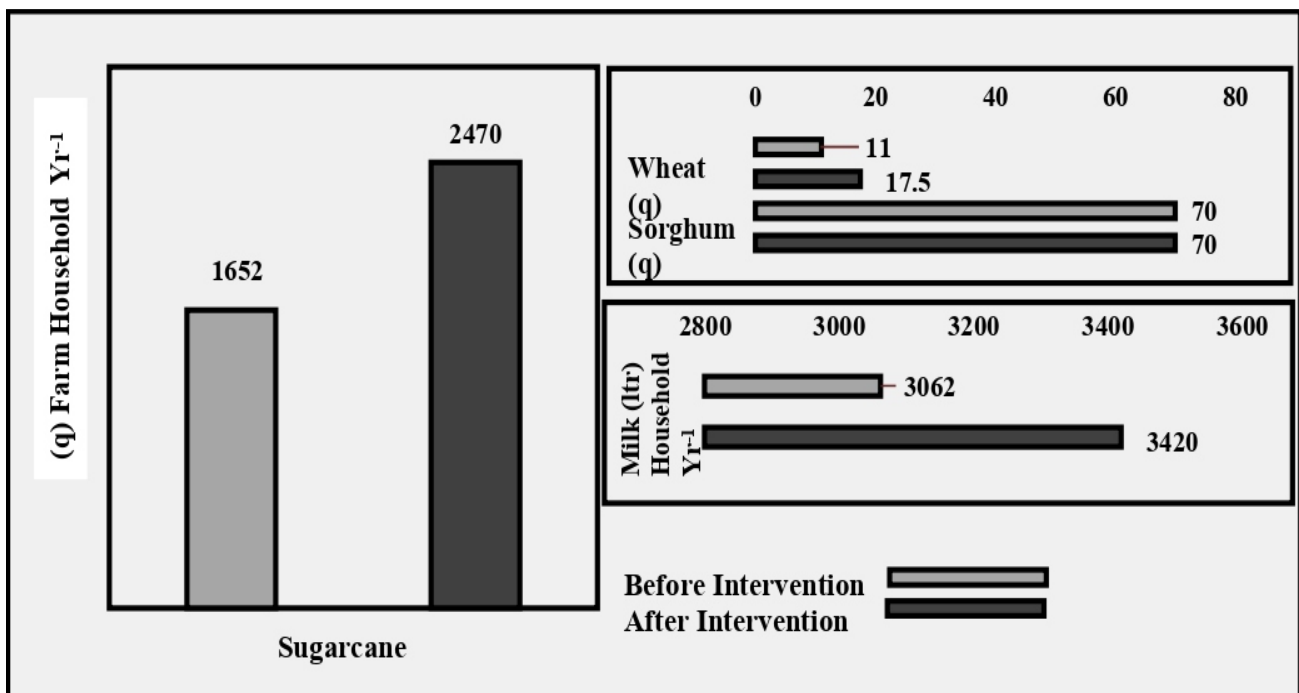
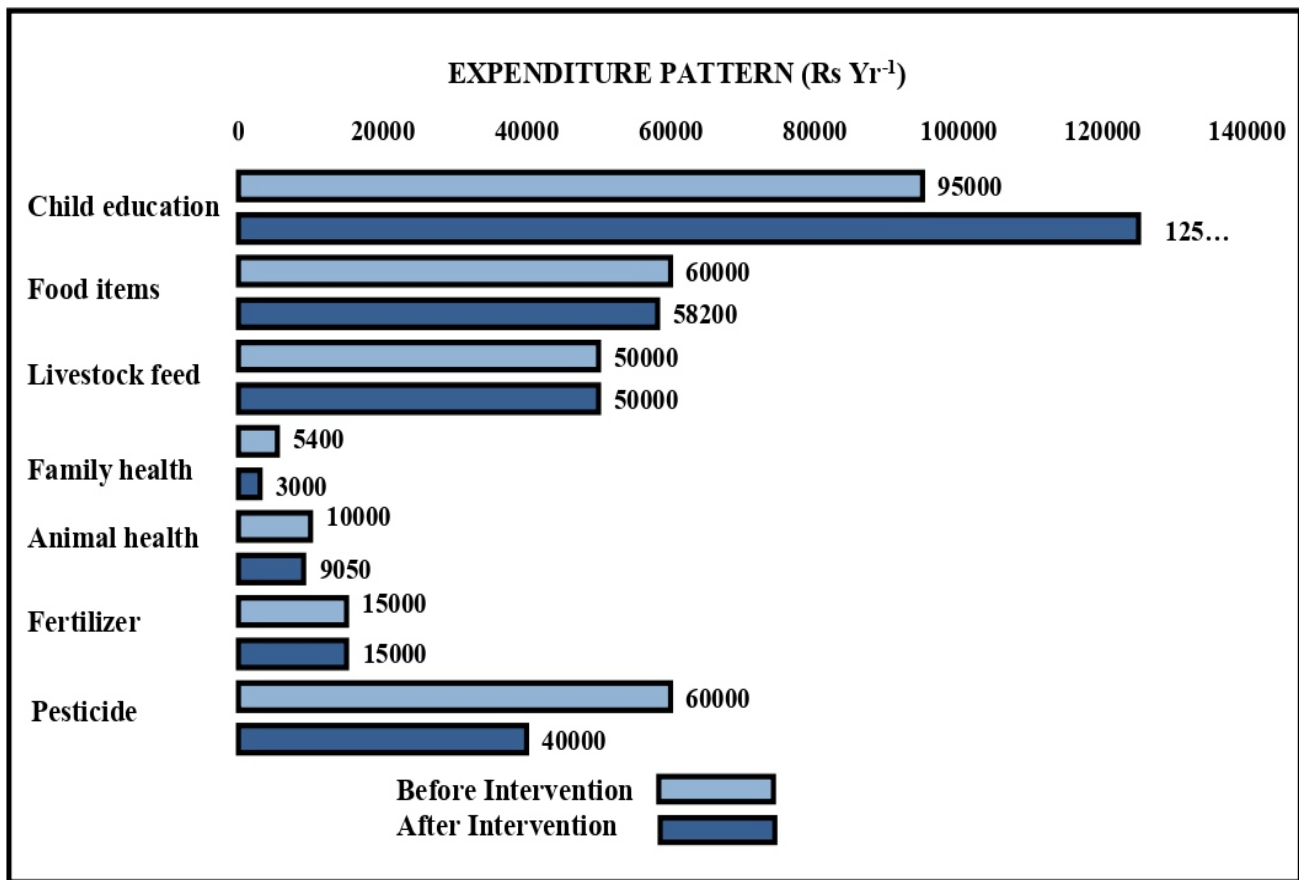
Name	-	Shyam Pal-20
Village	-	Satheri
Age	-	41
Education	-	12
Size of LandHolding(ha)	-	3.19

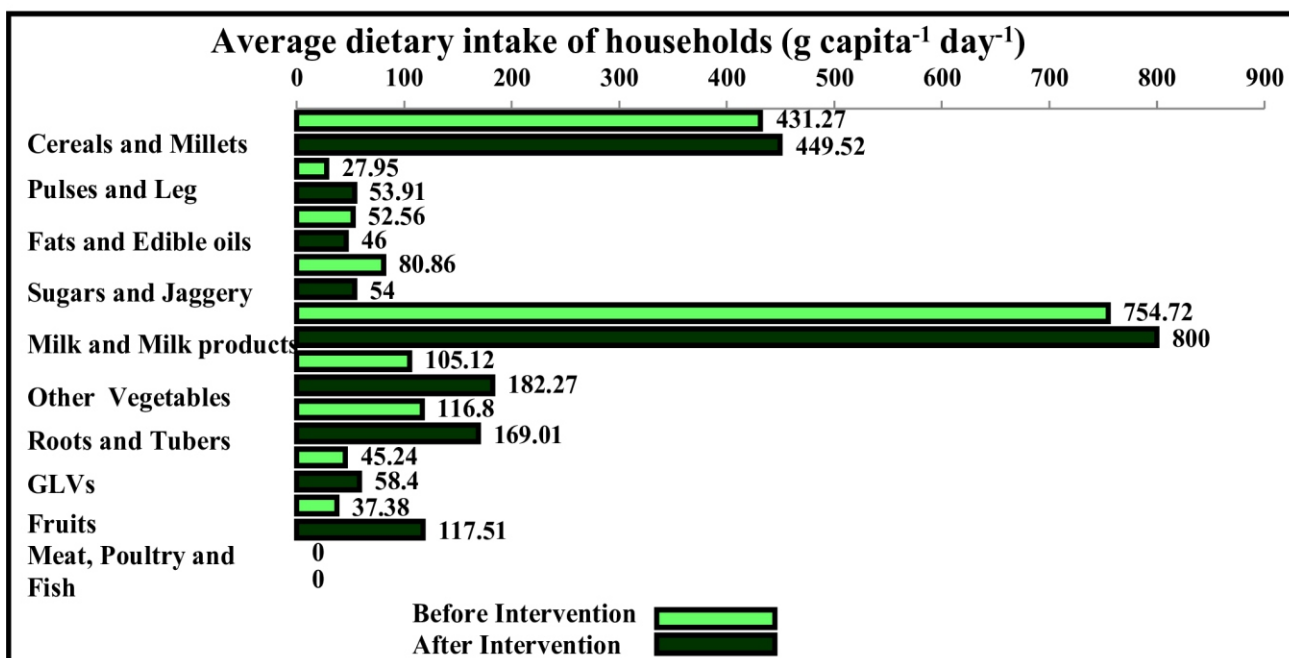
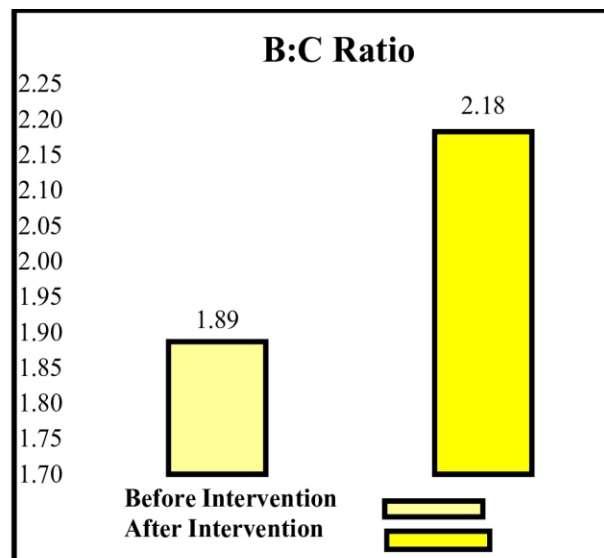
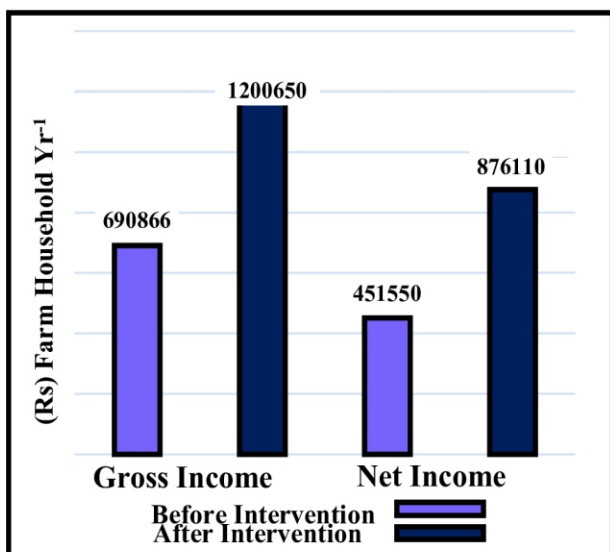
Before Intervention

Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Wheat PBW 226, Super 303	0.32	11	19650	13050
Field Crop 2	Sugarcane Co 0238	2.24	1624	527800	331800
Field Crop 3	Sorghum	0.16	70	11000	9200
Livestock 1	Buffalo	0.08	1462.5	40936	14600
Livestock 2	Cow	1.0	1600	38400	16000
Trees	Poplar	0.80	20	44000	30000
Total				690886	451550

Status 2020-21

Component Description		Period 2020-21				Improvement in net return (%)
Components	Names	Area (ha/No.)	Production (q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	
Field Crop 1	Wheat PBW 550 PBW 658, DBW 187, 71	0.40	17.5	40750	32750	
Field Crop 2	Sugarcane Co 5191	3.04	2470	802750	579750	
Field Crop 3	Sorghum	0.16	70	14000	11600	94.0
Hort. Crop 1	Vegetable	0.01	0.90	2500	2000	
Livestock 1	Buffalo	1.0	1920	76800	42000	
Livestock 2	Cow	1.0	1500	45000	28000	
Trees	Popular	0.80	1450	220000	180000	
Total				1200650	876100	





Brief: The farmer was generating an annual net income of Rs. 451550 from crop, agroforestry, and livestock farming, but with farming system interventions like improved management of crop, agroforestry, and livestock, high-yielding varieties, and nutritional kitchen gardening, he is now getting an annual net income of Rs. 876100 (94.0% higher). The benefit-cost ratio was improved from 1.89 to 2.18. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, roots and tubers, green leafy vegetables, and fruits than the recommended dietary intake (RDI), which improved significantly by reducing the gap by 35, 39, 26, 13, and 80% from RDI respectively, after respective interventions. The expenditure on children's education has improved by 32%, whereas the expenditure on pesticides has reduced by 33%.

Success Story 23: Diversification of Sugarcane-based Farming System with IFS and Product Diversification



Name	-	Rekha
Village	-	Satheri
Age	-	32
Education	-	High School
Size of LandHolding(ha)	-	0.39

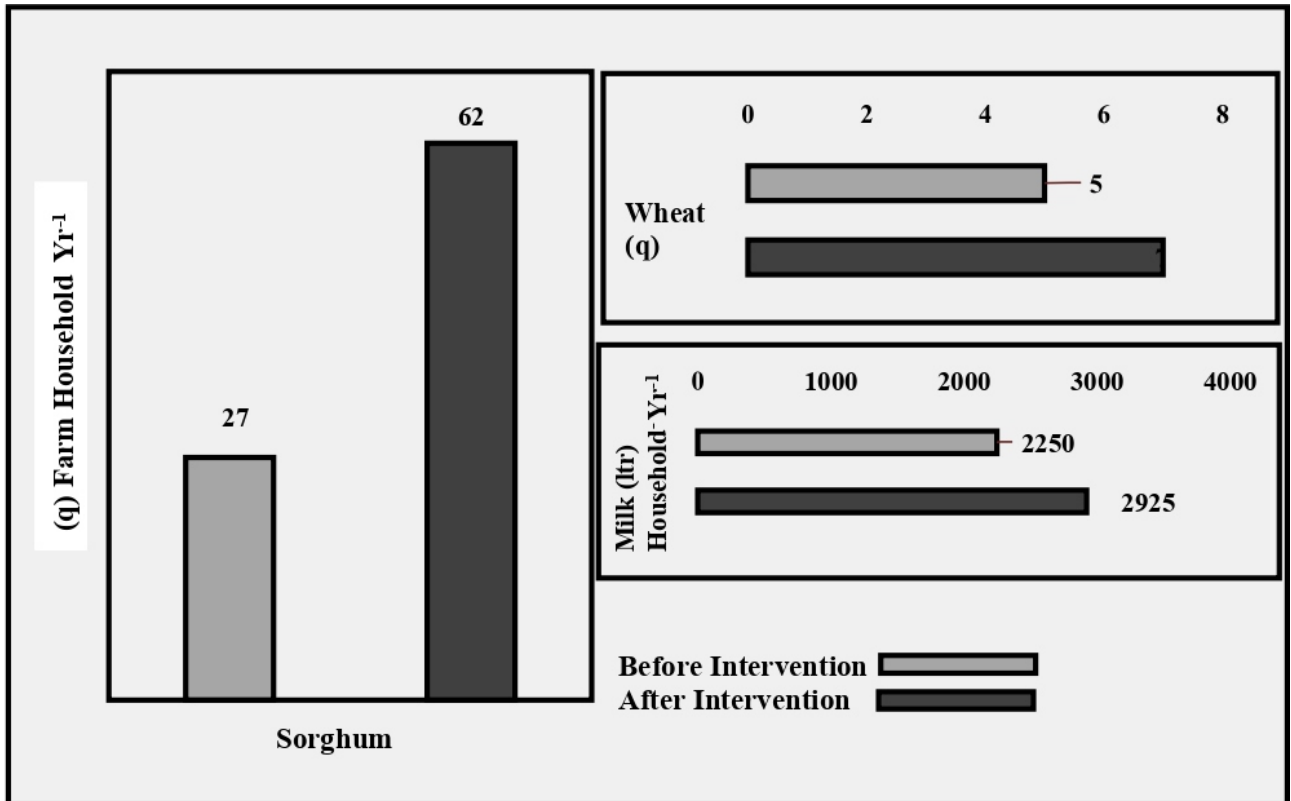
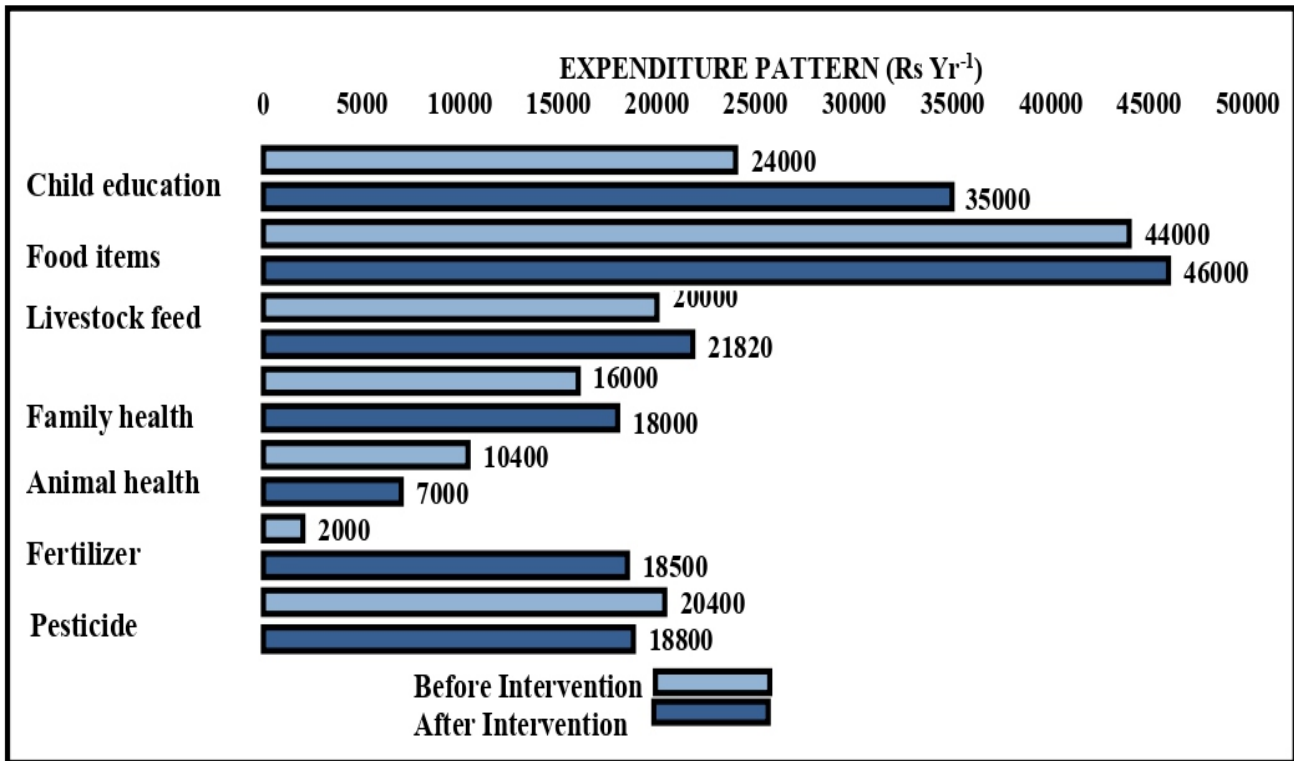
Before Intervention

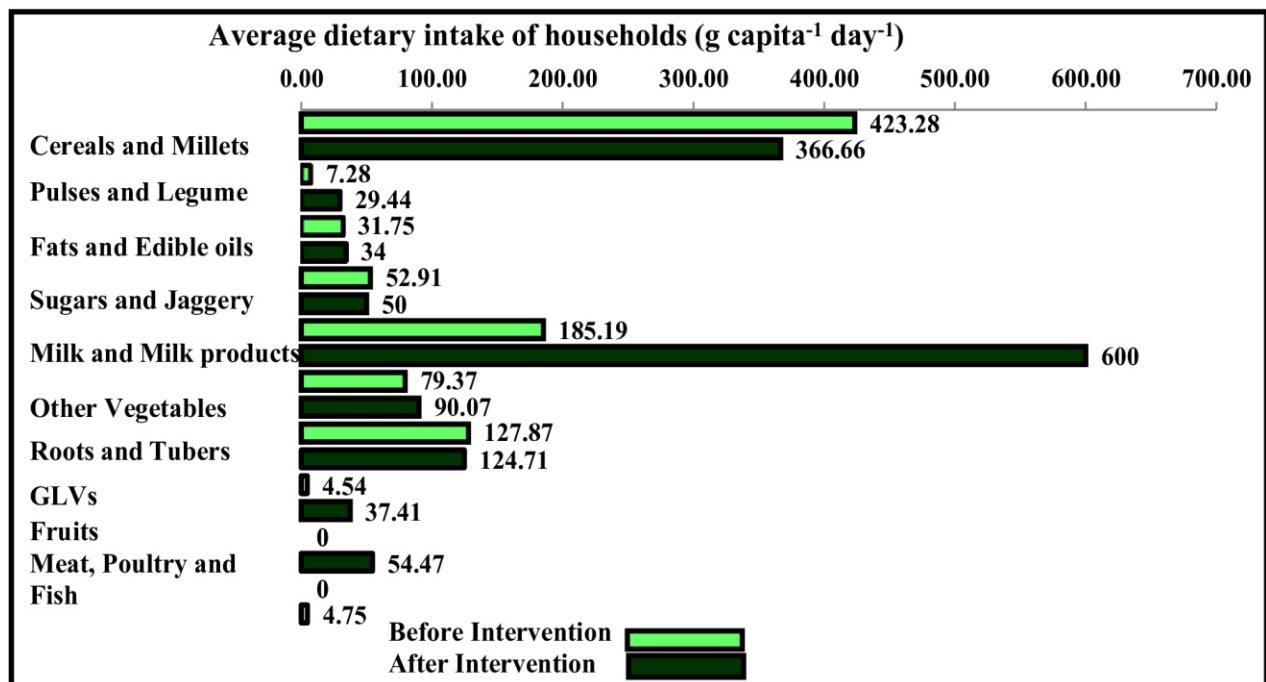
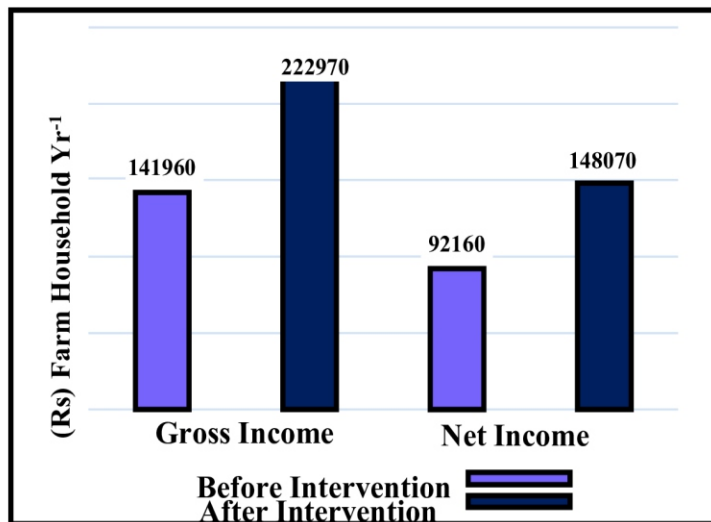
Component Description		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Sugarcane +Ratoon Co 0238	0.31	200	65000	47500
Field Crop 2	Wheat PBW 226	0.16	5	11960	8460
Field Crop 3	Sorghum	0.08	27	4700	4000
Livestock 1	Buffalo	1	900	22500	15000
Livestock 2	Cow	1	1350	37800	17200
Total				141960	92160

Status in 2021

After Benchmark Period 2022-23

Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Improvement in net return (%)
Field Crop 1	S.cane+Ratoon Co 0238	0.24	162	52650	39050	
Field Crop 3	Wheat DBW 187, PBW 550	0.16	7	17300	14500	
Field Crop 4	Sorghum CSV 32	0.16	62	12500	11000	
Hort. Crop 1	N.K.G		0.30	1400	1100	
Livestock 1	Cow H.F	1	1485	39400	21500	
Livestock 2	Buffalo Murrah	1	1440	54720	30920	60.7
Value addition module	Turmeric powder, pickles, gram flour, multigrain flour		40	45000	30000	
Total				222970	148070	





Brief: The woman farmer used to get an annual income of 92160 only from mixed crop and livestock farming, but with farming system interventions including product diversification, improved management of crop and livestock, nutritional kitchen gardening, post-harvest management, and value addition, she is getting an annual net income of Rs 148070 (60.7% higher net income). The average dietary intake of the household was much lower in terms of pulses, milk and milk products, other vegetables, green leafy vegetables, fruits, meat, poultry, and fish than the recommended dietary intake (RDI), which improved significantly by reducing the gap by 39, 100, 45, 37, 54, and 16% from the RDI, respectively, after farming system interventions. The expenditure patterns on children's education have improved by 46%.

Success Story 24: Diversification and Intensification of Sugarcane -Wheat Farming System with Incorporation of Oilseed and Round the Year Forage Crops



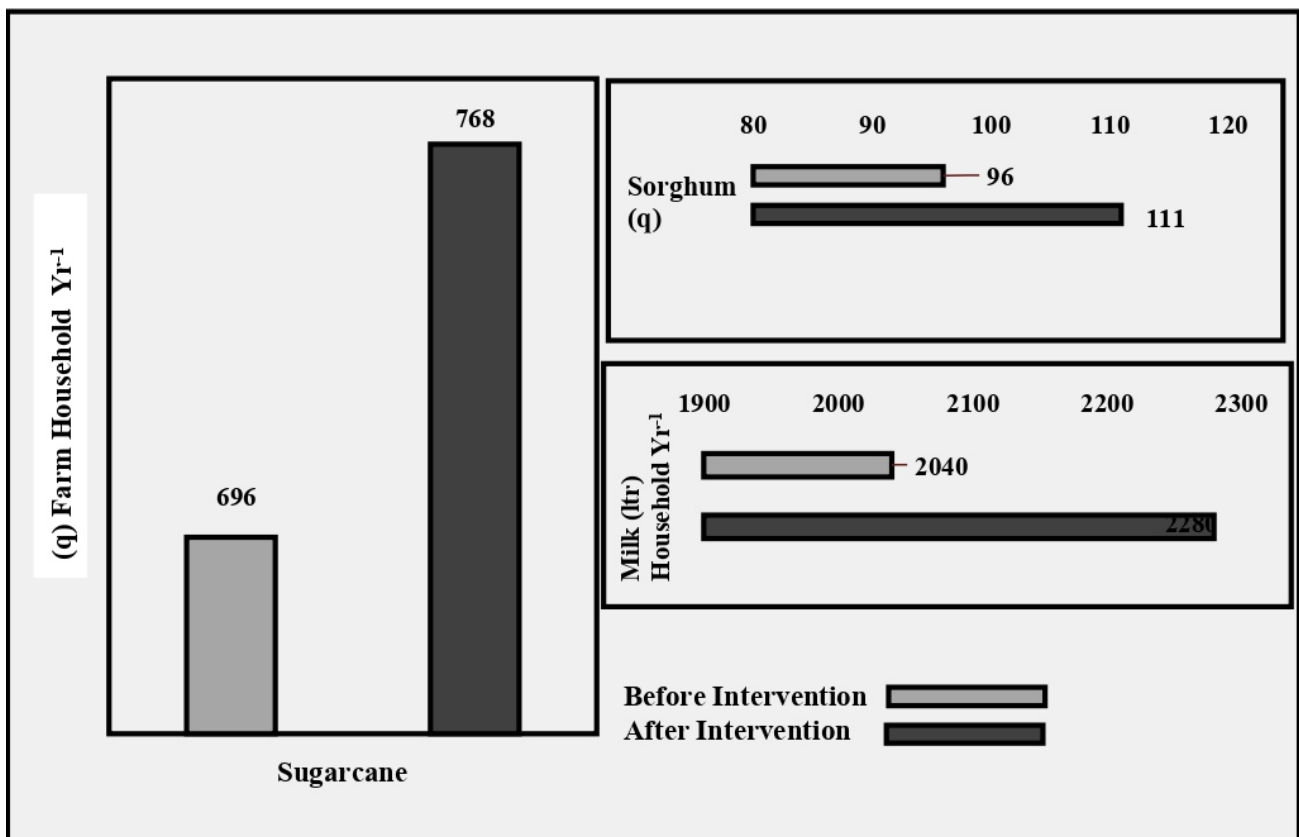
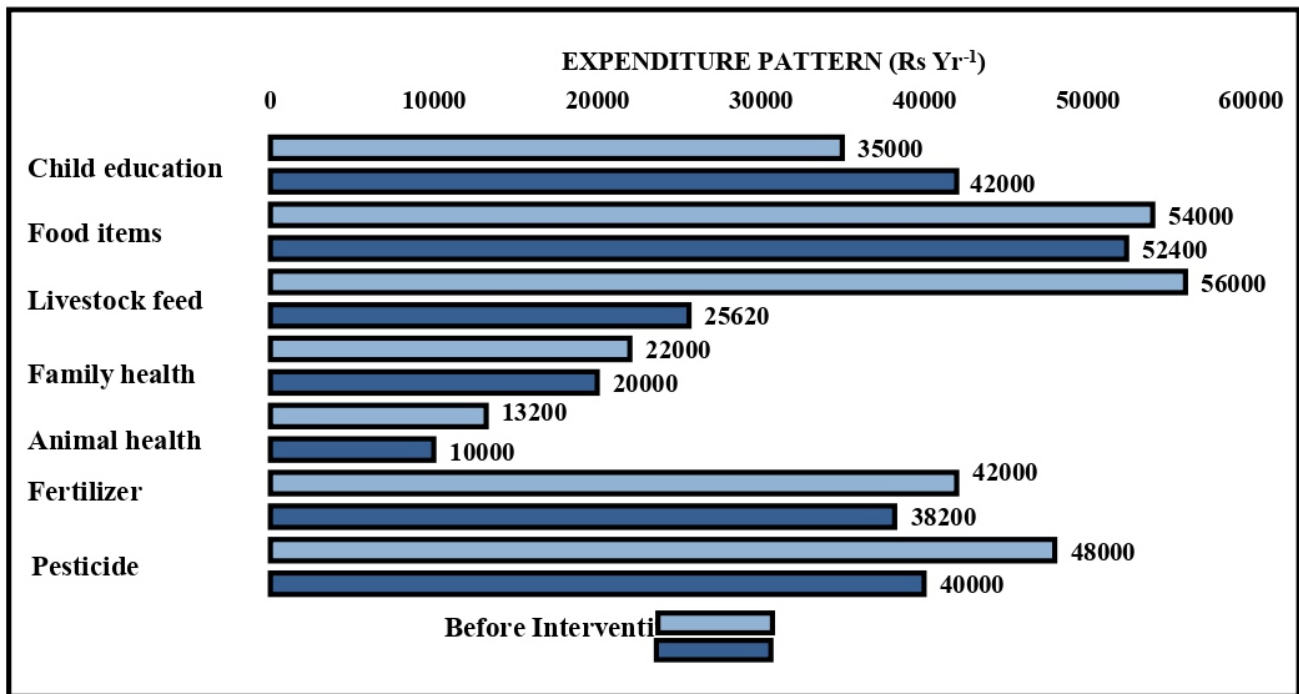
Name	-	Sandeep
Village	-	Satheri
Age	-	46
Education	-	10
Size of LandHolding(ha)	-	1.21

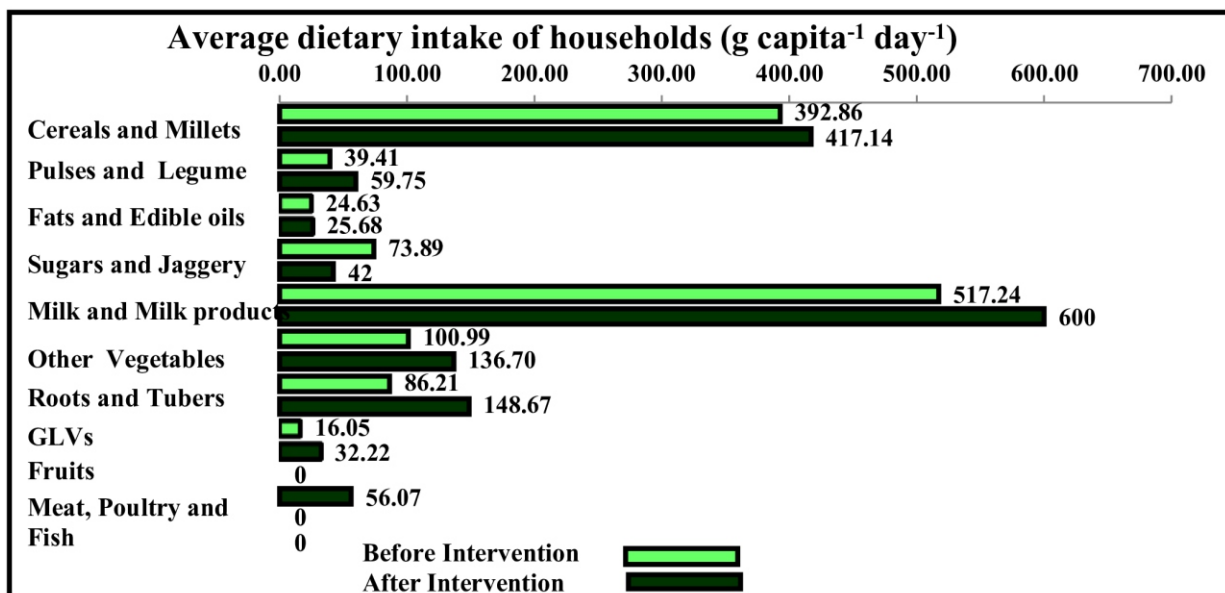
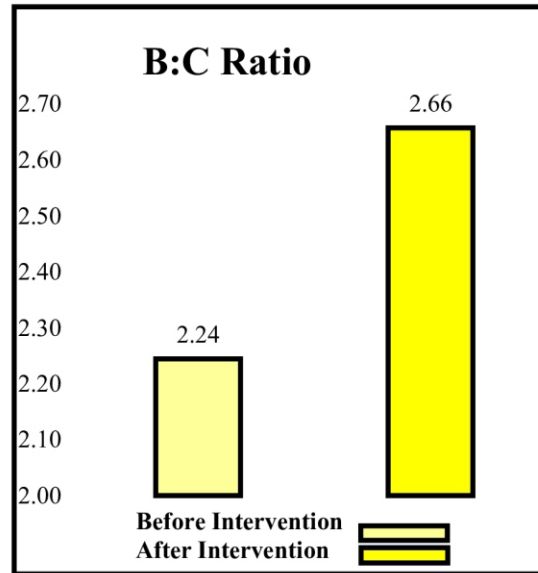
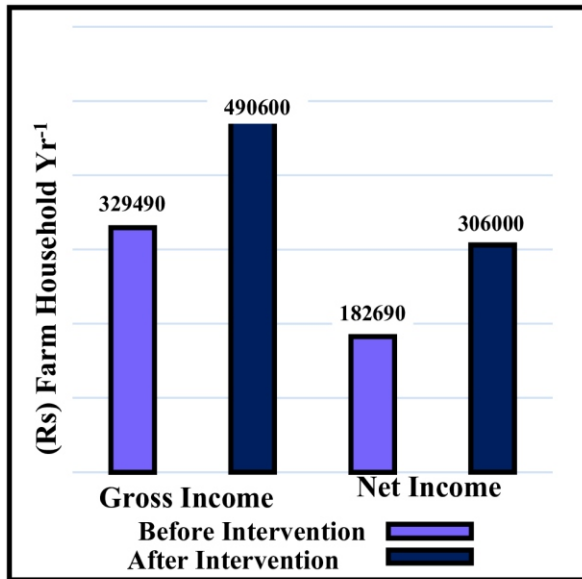
Before Intervention

Component Description	Benchmark (Baseline period 2016-17)				
Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Field Crop 1	Sugarcane +Ratoon Co 0238	0.48+0.48	696	194880	112080
Field Crop 2	Wheat PBW 226	0.72	52	47250	24250
Field Crop 3	Sorghum	0.24	96	18000	13000
Livestock 1	Buffalo (ND)	1	2040	69360	33360
Total				329490	182690

Status in 2021

Component Description		Period 2022-23				
Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Percent Increase in income (%)
Field Crop 1	S.cane+Ratoon Co 0238	0.48+0.48	768	268800	177600	
Field Crop 2	Wheat DBW 187, 222	0.48	44	61200	40200	
Field Crop 3	Sorghum CSV 32	0.24	111	24000	19200	67.5
Field Crop 4	Mustard RH 725	0.16	3	16500	12700	
Field Crop 5	Oat+Berseem	0.08	15	4500	3200	
Hort. Crop 1	N.K.G		0.5	1600	1500	
Livestock 1	Buffalo, (ND)	1	2280	114000	51600	
Total				490600	306000	





Brief: The farmer used to get an annual income of Rs. 182690 from crops and livestock, and with farming system interventions like integration of oilseeds, improved management practices (crop), high yielding variety, animal health management (mineral mixture, calcium, vitamin mixture), round-the-year forage availability, and kitchen gardening, he is getting an annual net income of Rs 306,000 (67.5% higher net income). The benefit-cost ratio was improved from 2.24 to 2.66. The average dietary intake of the household was much lower in terms of pulses and legumes, other vegetables, roots and tubers, green leafy vegetables, and fruits than the recommended dietary intake (RDI), which improved significantly by reducing the gap by 27, 18, 31, 16, and 56% from the RDI, respectively after farming system interventions.

Success Study 25: Enhancing Landless Farmer's Income by Poultry Integration and Improved Livestock Management Practices



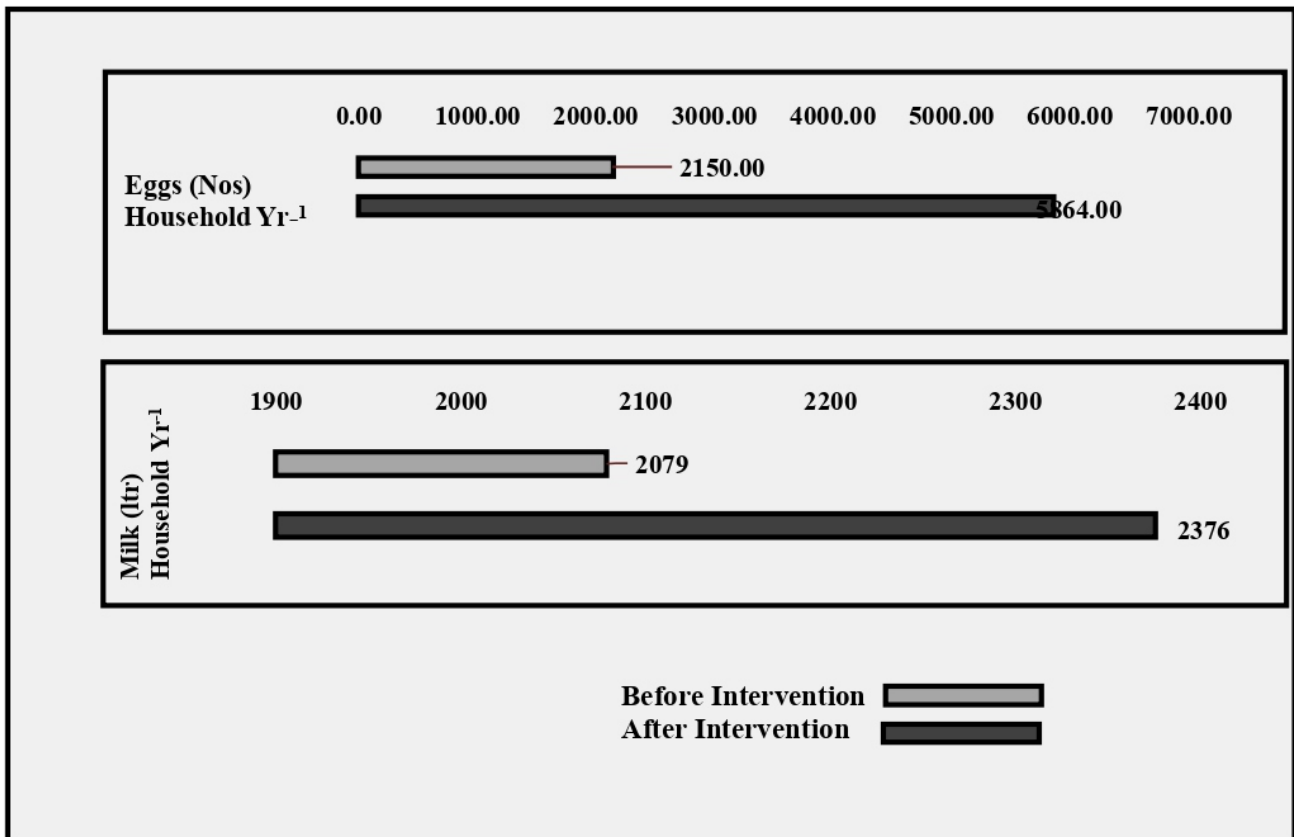
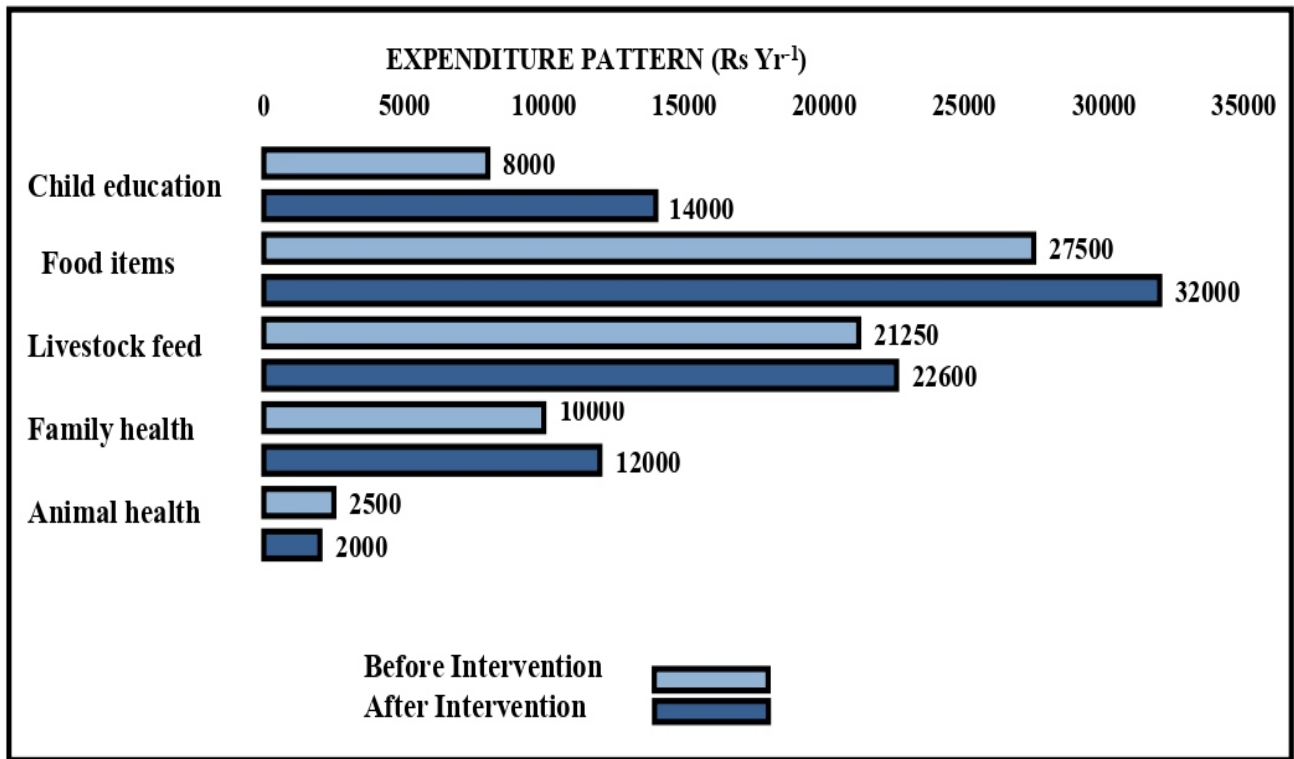
Name	-	Madan
Village	-	Satheri
Age	-	55
Education	-	5th
Size of LandHolding(ha)	-	Nil

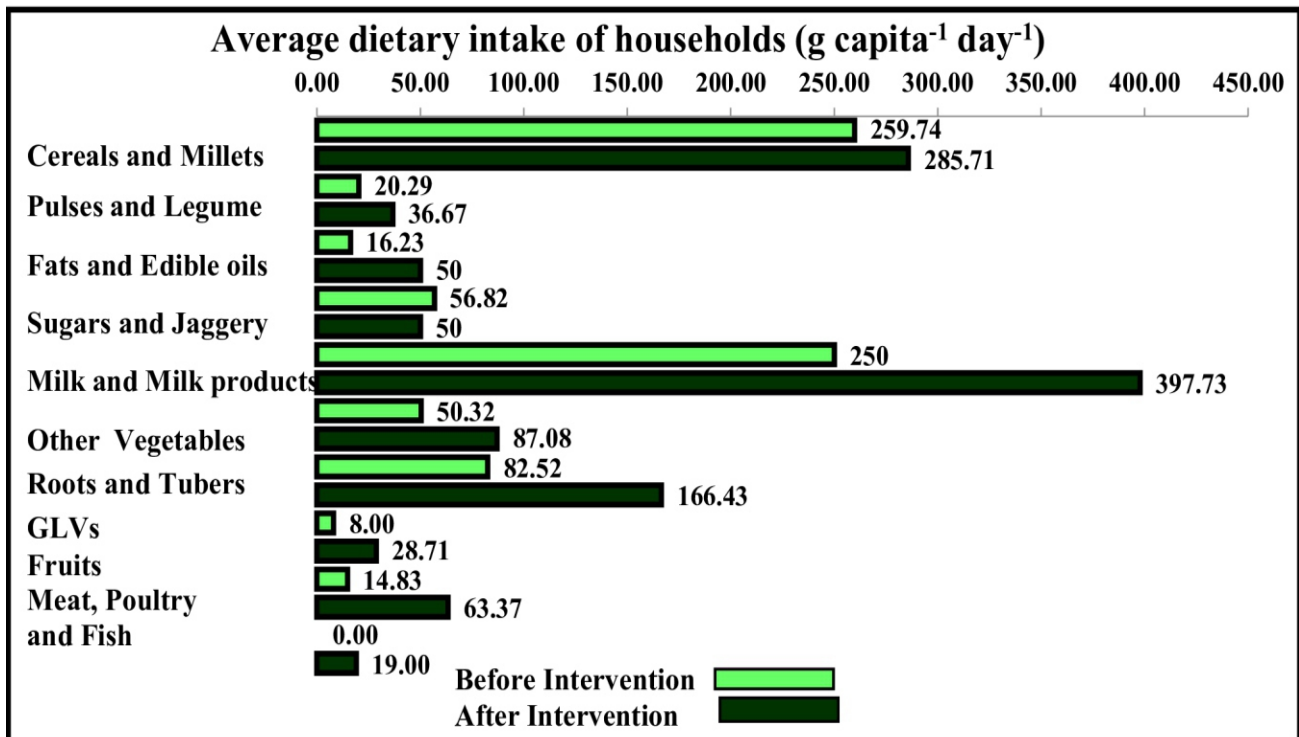
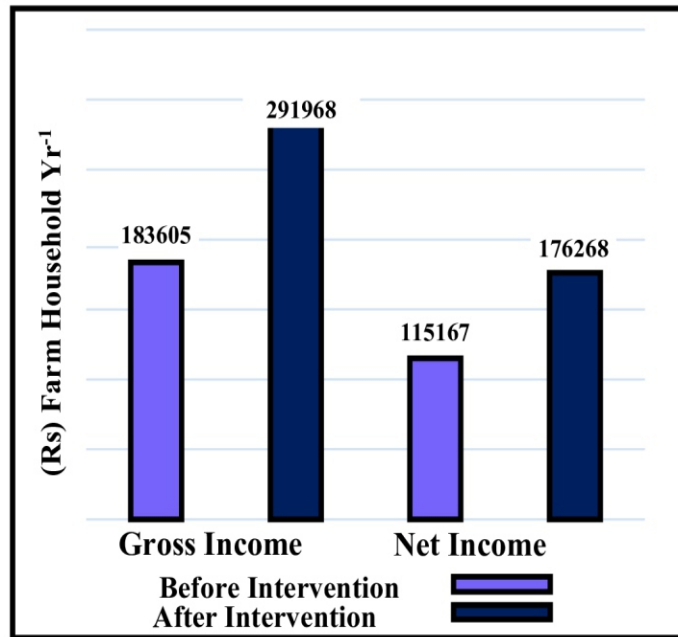
Before Intervention

Component Descriptions		Benchmark (Baseline period 2016-17)			
Components	Names	Area (ha/No.)	Production (Q/iter/No.)	Gross Income (Rs.)	Net Income (Rs.)
Livestock 1	Buffalo (ND)	1	2079	93555	45867
Livestock 2	Poultry	13 Nos.	2150	15050	11800
Subsidiary occupation	Farm Labour	1	250	75000	57500
Total				183605	115167

Status in 2022

Component Description		After Benchmark Period 2021				
Components	Names	Area (ha/No.)	Production (Q/liter/No.)	Gross Income (Rs.)	Net Income (Rs.)	Percent Increase in income
Livestock 1	Buffalo (ND)	1	2376	118800	73800	53.1
Livestock 2	Poultry I.R.I	30 Nos.	5864	70368	25368	
Subsidiary occupation	Farm Labour	1	257	102800	77100	
Total				291968	176268	







भारत-अनुप.—भारतीय कृषि प्रणाली अनुसंधान संस्थान
 मोदीपुरम, मेरठ—250 110 (उ.प्र.)

