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Performance of integrated farming system models under rainfed and partial irrigated conditions of Rewa district of Madhya Pradesh

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ABSTRACT:

This study evaluates the comparative performance of Integrated Farming System (IFS) models under rainfed and irrigated conditions in Kapsa village, Rewa district, Madhya Pradesh. The objective is to enhance traditional IFS models for marginal and small farm holdings, focusing on improving productivity, economic returns, and employment generation. A total of 26 farmers were selected and categorized into rainfed and partially irrigated conditions. Various IFS models, including Crop + Large Ruminants (CLR), and Crop + Small + Large Ruminants (C + SR + LR), were implemented with and without modern interventions. Improved management practices, such as the use of high-yielding crop varieties, nutritional feeding for livestock, and drought mitigation techniques, were introduced. The results demonstrated that the IFS models with interventions significantly increased yields, economic returns, and employment opportunities compared to traditional farming systems. Specifically, net returns and productivity were markedly higher in the improved IFS models. The study concludes that integrating modern agricultural practices within traditional IFS frameworks can substantially improve the sustainability and economic viability of farming in scarce/erratic rainfall zones.

KEYWORDS: Employment generation, integrated farming system, irrigated agriculture, rainfed agriculture, yield

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INTRODUCTION:

Agriculture in semi-arid regions faces numerous challenges, primarily due to erratic rainfall, poor soil fertility, and limited water resources. In such areas, integrated farming systems (IFS) can play a crucial role in enhancing farm productivity, ensuring food security, and improving the livelihoods of small and marginal farmers. The concept of IFS involves combining various agricultural enterprises such as crop cultivation, livestock rearing, and agro forestry in a holistic manner to optimize resource utilization and increase farm resilience. The Rewa district in Madhya Pradesh, India, is characterized by its scarce rainfall and frequent droughts, making traditional farming practices often unsustainable and economically unviable. The village of Kapsa, located within this district, presents a microcosm of these broader agricultural challenges. Farmers here primarily depend on rainfed agriculture, with some having access to partial irrigation. The traditional farming systems in the village include crop cultivation integrated with livestock, specifically large ruminants (cattle) and small ruminants (goat's sheep). This study aims to evaluate the performance of various IFS models under rainfed and partially irrigated conditions and also to strengthen the traditional IFS models for small and marginal farmers in Kapsa village. By implementing improved management practices and modern agricultural interventions, the study seeks to compare the yield, economic returns, and employment generation potential of these IFS models against traditional farming systems. The ultimate goal is to develop sustainable farming models that can be replicated in similar agro ecological zones. Previous research has indicated that IFS can significantly enhance farm productivity and income by diversifying the sources of revenue and reducing the risk associated with single-crop failures.

However, the specific impacts of IFS in scarce rainfall zones, particularly under varying irrigation conditions, need further exploration. This study addresses this gap by systematically analyzing the performance of different IFS models, providing valuable insights into their potential for improving agricultural sustainability and economic viability in semi-arid regions. The findings from this study will not only contribute to the body of knowledge on IFS but also provide practical recommendations for policymakers, extension workers, and farmers in semi-arid regions. By demonstrating the benefits of integrated farming practices, this research aims to encourage wider adoption of IFS, ultimately leading to more resilient and sustainable agricultural systems

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MATERIALS AND METHODS:

On-Farm Research on Integrated Farming System was carried out during 2023in Kapsa village, Rewa district. Marginal and small farmers were selected for this study equally under two farming situations (rainfed and partially irrigated conditions) and two farming systems (CLR, C + SR + LR based farming systems) (Table 1 and 2) involving natural resource management, crop production, horticulture, cattle, small ruminants, kitchen garden, fodder production and capacity building. Kapsa village is located in Rewa district of Madhya Pradesh. It is situated in Latitude of 24^{o}30'N, Longitude of 81°20'E. Mean elevation of this village is 365.7 m. It is located at 15 km from Rewa and 20 km from Kuthuliya Research Station, Rewa. Soils of this village are sandy loams which are slightly acidic with pH of 6.78, low in Electrical Conductivity (0.31 dsm^{-1}), organic carbon (0.41%), available nitrogen (246 kg/ha); medium in available phosphorus (14.7 kg/ha) and potassium (370 kg/ha); micronutrients like copper (0.1.82 ppm), manganese (5.57 ppm), iron (6.89 ppm) and deficient in zinc (0.50 ppm).

Table 1: Selection of farmers at OFR village

Farming Situation	Farming system	Farmer category	No. farmers selected	
			With Interventions	Without Interventions
Rainfed	CLR based farming system	Marginal farmers	3	3
		Small Farmers	3	3
Partially Irrigated	CLR based farming system	Marginal farmers	3	3
		Small Farmers	2	2
	CSR + CLR based farming system	Marginal farmers	2	2
		Small Farmers	2	2
Grand Total			**15**	**15**

Table 2: Details of farmers and their farming situation

Sl. No	Farming situation	Exiting predominant traditional rainfed farming system	Farmer category	Name of the farmer	Interventions		
					NRM	Crop/ cropping systems	Livestock (L) and number of animals
1.	Rainfed	Crop+LR	Margi	Santosh	Summer	Soybean+Blackgram	Cow (2)

			nal	Kumar	ploughing+	– Chickpea with RDF	
2.	Rainfed	Crop+LR	Marginal	Jitendra ku. Tiwari	Summer ploughing+	Soybean + Blackgram –Linseed with RDF	Cow (2)
3.	Rainfed	Crop+LR	Marginal	Amit ku. tiwari	Summer ploughing+	Soybean - Linseed with RDF	Cow (2)
4.	Rainfed	Crop+LR	Small	Krishna Kumar	Summer ploughing	Ridge furrow+ Soybean – Chickpea with RDF	Cow (2)
5.	Rainfed	Crop+LR	small	Garudatdhwaj	Summer ploughing	Ridge furrow + Soybean + Blackgram –Linseed with RDF	Cow (2)
6.	Rainfed	Crop+LR	small	Anil kumar	Summer ploughing	Ridge furrow + Blackgram – Chickpea with RDF	Cow (2)
7.	Partially irrigated	Crop+LR	Marginal	Smt. Aarti	Summer ploughing	Rice + Soybean Wheat + with RDF	Cow (2)
8.	Partially irrigated	Crop+LR	Marginal	Ashwini Tiwari	Summer ploughing	Rice + Blackgram Wheat + with RDF	Cow (2)
9.	Partially irrigated	Crop+LR	Marginal	Dileep kumar	Summer ploughing	Rice + Blackgram - Chickpea + Wheat + with RDF	Cow (2)
10.	Partially irrigated	Crop+LR	Small	Shiv ku. Tiwari	Farm pond + Summer ploughing	Blackgram - Chickpea + Wheat with RDF	Cow (2)
11.	Partially irrigated	Crop+LR	Small	Brajesh Kumar	Farm pond + Summer ploughing	Soybean - Chickpea + Wheat with RDF	Cow (2)

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12.	Partially irrigated	Crop+LR+SR	Small	Jaylal kol	Farm pond + Summer ploughing	Soybean - Chickpea + Wheat with RDF	Cow (2) Goatry (5+1
13.	Partially irrigated	Crop+LR+SR	Small	Mahaveer	Farm pond + Summer ploughing	Soybean - Chickpea + Wheat with RDF	Cow (2) Goatry (5+1

Actual and Normal rainfall during crop growth period is depicted in Fig. 1 which clearly indicates that actual rainfall is less or more compared to normal during all months. There were 9.1mm rainfall occur in January 2023. February month has 77.2mm, March month has 9.9mm and April months have no rainfall. During summer from April to 15th June 2023 total rainfall of 43.2 mm were recorded. During the month of June 74.3 mm rain was received against normal rain 119.8 mm in 9 rainy days. During the month of July a rain of 271.6 mm, distributed in 19 rainy days, 636.9 mm rain during the month of August distributed in 20 rainy days, 292.1 mm rain in 14 rainy days was recorded in September and during the month of October 21.5 mm rain was recorded. The November and December month has no rainfall month. Total 1420.6 mm rainfal received from January to December 2023.

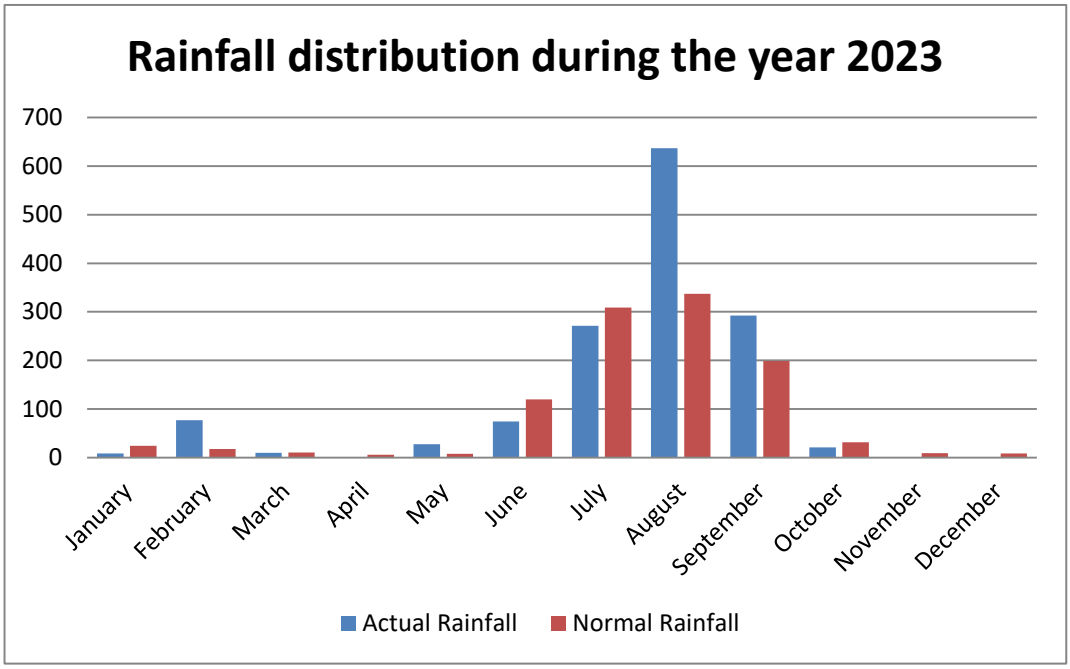

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Figure 1: Rainfall during crop growth period in OFR village Kapsa

Crops and animals were raised by improved management practices involving selection of improved varieties of seed of field crops, horticulture crops and fodder crops; feeding animals with highly nutritious feed required for weight gain in large and small ruminants and improving milk production in cattle; regular vaccination, deworming, animal health camps to protect animals from health problems; natural resource management to conserve rain water; drought mitigation technologies; growing of plantation crops and vegetables in space available at home etc., in improved Integrated Farming System. Whereas, in existing farming system regular management practices like growing of old and traditional varieties; grazing on open lands, feeding rice to animals were being followed. Yield of crops was calculated separately for each intervention, Goat by weight, cattle by milk. Employment generation was calculated as 8 hours per day as one day. For economics, cost of inputs and outputs prevailing in the market were considered and calculated.

DRYSPELLS DURING CROP GROWTH PERIOD

Dry spell is the major problem in rainfed crops leading to poor productivity. Improved technologies like moisture and water conservation measures are very helpful and their impact can be visible when the crop will subject to moisture stress conditions due to prolonged dryspells. Crops were subjected to dry spells from vegetative stage to harvesting stage.

SCENARIO OF DROUGHT AND OTHER EXTREME EVENTS:

During *Kharif* season, the onset of monsoon took place on 1st July 2023 with a rainfall of 62.5 mm. The rainfall during monsoon was 1281.2 mm. No drought situation was occurred during the year 2023. During *Rabi* season, 21.5 mm rains in October and no rains occur in November with no rains in December 2023.

Problems identified in OFT village

Crops: Prolonged dryspells, Non adoption of soil & water conservation practices, Lack of improved varieties, Poor mechanization (No tractors), and Poor soil health management

Cattle: Shortage of green fodder, Improper feeding of available green and dry fodder, No concentrate feeding to milch animals, No practice of legume feeding, improper calf rearing

Goats: Farmers mostly are illiterates and lack of awareness, Poor growth rate in kid and buckling, Most of the flocks under migration

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Table 3: Modules adopted for RIFS Research:

M1	NRM module	Insitu moisture conservation, rain water harvesting etc.
M2	Crop module	Improved varieties, inter cropping systems, improved agronomic practices etc.
M3	Livestock module	Vaccination, deworming, mineral mixtures etc.
M4	Perennial tree module	Growing of fodder trees, multipurpose trees etc.
M5	Fodder module	Improved fodder varieties and management practices etc.
M6	Specific/optional module	Interventions specific to individual farmer's needs
M7	Capacity building module	Trainings, field days, exposure visits etc.

Total 7 modules were adopted for RIFS approach involving crop, livestock and capacity building

Table 4: Details of constraints in existing system and interventions implemented in diversified system

Module	Existing system	Constraints in Existing system	Diversified system
M1 - NRM module	Sole soyabean and Chickpea	Not adopting insitue moisture conservation practices	Deep tillage with chisel plough Insitu moisture conservation through conservation furrows at 35 DAS Supplemental irrigation through farm pond
M2 - Crop module	Sole soybean, urd and Chickpea , Chickpea + Wheat intercropping system	Old varieties Prolonged dryspells	Improved varieties and cropping system
M3 - Livestock module	Rearing of cow, buffaloes and goats	Grazing on open lands Avoiding mineral feeding	Total Mixed Ration Animal health camp, deworming, vaccination
M4 - Fodder module	barseem after kharif	Cultivating local variety	Introduced improved fodder variety of MP Cherry and Berseem
M5 - Perennial tree module	Barren field and bunds	No boundary plantation, Oldest trees with less fruit bearing	Planting grafted plants i.e., Aonla, Guava, Citrus, Karonda, Mango etc in backyard and on field bunds
M6 - Optional module	Limited vegetable production	Purchasing vegetables from local shops	Introduced nutri kitchen garden kits
M7 - Capacity building module	Traditional cultivation	Lack of knowledge on improved crop management practices	Need based trainings and awareness programmes to farmers

RESULTS AND DISCUSSION:

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The data presented in Tables 5 to 11 the performance of various components under different interventions for both marginal and small farmers.

Yield and Black gram Equivalent Yield (UEY)

For marginal farmers and small farmers under the Crop + Large Ruminants and C + SR + LR based farming system in both rainfed and partially irrigated conditions (Table 5 to 11), the interventions resulted in a significant increase in yields The interventions, including improved crop and fodder varieties, moisture conservation techniques, supplemental irrigation, feeding of nutritious feed, kitchen gardening led to a marked increase in crop yields and Blackgram Equivalent Yield (UEY). The productivity of the existing systems on marginal farmers and small farmers was lower compared to the IFS with interventions. The additional benefits through IFS interventions were substantial, with Urd Equivalent Yield advantage ranging from 553 to 1156 kg for marginal farmers and 604 to 1159 kg for small farmers. These findings align with literature suggesting that integrated farming systems, which combine multiple agricultural activities, optimize resource use and enhance productivity (Singh et al., 2011; Hegde, 2012). Deep Tillage has been documented to improve soil structure, reduce compaction, and enhance root growth, leading to higher crop yields (Aikins & Afuakwa, 2012). Improved Crop Varieties are known to be more resilient to pests and diseases and have higher productivity, which aligns with the increased yields observed (Ortiz et al., 2007). Drought Mitigation Techniques such as KNO3 sprays help in managing water stress, thus improving crop performance (Ashraf, 2010).

Cost of Production and Returns

The cost of production increased slightly due to the interventions but was offset by the significant increase in gross and net returns (Table 5 to 11). While the cost of production increased with the interventions, the net returns were significantly higher, indicating that the investments in better farming practices and inputs are economically viable. For marginal farmers additional monitory benefit of R.25350 to Rs.30480 and for small farmers Rs. 31900 to Rs. 36523 was obtained with interventions. This is consistent with findings by Soni et al. (2014), who reported that integrated farming systems improve farm income and sustainability in rainfed areas. Livestock Integration into cropping systems provides multiple benefits, including manure for soil fertility, additional income from animal products, and efficient use of farm resources (Thornton & Herrero, 2010).

Employment Generation (man days)

Employment generation saw a marked increase in marginal farmers with interventions. Small farmers also benefited significantly, with EG increasing. Additional advantage of 21 to 70 man

days were recorded in marginal farmers and 40 to 49 man days in small farmers. The increase in employment generation is particularly noteworthy. The introduction of diverse farming activities within the IFS framework requires more labor, thus creating more employment opportunities. This is crucial for rural development and poverty alleviation, as noted by Reddy and Reddy (2017) .

Sustainability

Integrated Farming Systems promote sustainability by enhancing soil fertility, reducing dependency on external inputs, and improving biodiversity. The adoption of practices such as deep tillage, moisture conservation, and the introduction of perennial trees further support sustainable farming, as highlighted in studies by Gill et al. (2011) and Prasad et al. (2018) .

COMPARATIVE PERFORMANCE OF YIELD AND ECONOMICS:

Benchmark Data 2020 vs. RIFS Productivity in 2023

The provided Table 11 compares the performance of various farming systems in terms of yield, net returns, and employment generation between the benchmark data of 2020 and the results after interventions in 2023.

Yield Improvement

Across all farming systems, there is a significant increase in Blackgram Equivalent Yield (UEY) compared to the benchmark data from 2020. For instance, UEY rise from 1190 kg in 2020 to 3870-8110 kg in 2023. Literature supports that integrated farming systems, which combine crops, livestock, and other components, enhance resource use efficiency and productivity (Singh et al., 2011).

Economic Gains

The net returns have seen substantial increases across all systems. Farmers experienced a rise in net returns from Rs. 17175 in 2018 to Rs. 83772 - Rs. 106000 in 2023. This economic gain is corroborated by studies indicating that integrated farming systems improve farm profitability by diversifying income sources and optimizing input use (Hegde, 2012; Soni et al., 2014).

Employment Generation

Employment generation has also increased markedly. Farmers saw an increase of employment generation from 130 man-days in 2020 to 151-459 man-days in 2023. The increase in labor

demand aligns with findings that integrated farming systems can generate more employment by integrating multiple activities that require diverse labor inputs (Reddy & Reddy, 2017).

CONCLUSION:

The interventions applied in the farming system significantly improved the yield and economic returns across various components. The integration of livestock and fodder crops further enhanced the overall productivity and sustainability of the farming system. In conclusion, the comprehensive approach in the farming system, incorporating advanced agronomic practices, effective water management, and diversification with livestock and perennial crops, has demonstrated significant improvements in productivity and economic returns. This integrated model can serve as a viable strategy for sustainable agriculture. The comparison clearly demonstrates that the implementation of RIFS interventions has significantly enhanced the yield, economic returns, and employment generation for both marginal and small farmers. This transition towards more integrated and sustainable farming practices is supported by substantial improvements documented in literature, indicating that RIFS can be a viable strategy for boosting agricultural productivity and rural livelihoods

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Table 5: Yield and Economics of Integrated Farming System with and without interventions for marginal farm holdings under crop + large ruminants (CLR) based farming system in rainfed situation (Mean of 3 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg/ha)	Cost of cultivation/ production (Rs/ha)		Net returns (Rs from cultivated Area)		Employment generation (man-days/day)
				With family labour	Without family labour	With family labour	Without family labour	
2.Crop/cropping system module Crop +LR (2 cow)								
Soybean	0.4	Kharif Soybean with Ridge Furrow	1430	21500	28550	20629	17809	32
Blackgram	0.2	Ridge Furrow	1315	20850	28700	15450	13880	22
Chickpea	0.6	INM with seed treatment	1125	20200	28200	28043	23243	22
LR		2 cow	1460 li	25450	29560	32950	28840	75
Total (RIFS productivity)			3870	88000	115010	97072	83772	151
Existing system productivity			3093	80350	90790	58484	54246	120
Additional Benefit			777	7650	24220	38588	29525	31
Benchmark data 2020			388.5	3825	12110	19294	14762	130
Additional benefit through RIFS in 2023							69009	21

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Table 6: Yield and Economics of Integrated Farming System with and without interventions for small farm holdings under crop + large ruminants (CLR) based farming system in rainfed situation (Mean of 3 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg/ha) (YEB/G)	Cost of cultivation/ production (Rs/ha)		Net returns (Rs from cultivated Area)		Employment generation (man-days/day)
				With family labour	Without family labour	With family labour	Without family labour	
2.Crop/cropping system module Crop +LR (2 cow)								
Soybean	0.4	Kharif Soybean with Ridge Furrow	1530	22300	28550	20629	19809	35
Blackgram	0.4	Ridge Furrow	1418	21955	28700	15450	15880	25
Chickpea	0.6	INM with seed treatment	1278	22200	28200	28043	25243	25
	LR	2 cow	1470 li	25750	29560	32950	29840	80
Total (RIFS productivity)			4226+1470L	92205	115010	97072	90770	165
Existing system productivity			3093	80350	90790	58484	54246	125
Additional Benefit			1133	11855	24220	38588	36523.47	40
Benchmark data 2020			388.5	3825	12110	19294	14762	140
Additional benefit through RIFS in 2023							72508.27	25

Performance of the farming system without interventions (control/benchmark) 26% over control

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Table 7: Yield and Economics of Integrated Farming System with and without interventions for marginal farm holdings under crop + large ruminants (CLR) based farming system in partially irrigated situation (Mean of 3 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg/ha)	Cost of cultivation/ production (Rs/ha)		Net returns (Rs from cultivated area)		Employment generation (man-days)
				With family labour	Without family labour	With family labour	Without family labour	
Crop/cropping system module Crop +LR								
Rice	0.2	Summer Ploughing with RDF	2500.00	13500	18300	10200	6730	61
Blackgram	0.4	Summer Ploughing with RDF	1425.00	8800	12650	22600	20100	58
Wheat	0.4	RDF	3120.00	17320	20450	19200	14800	32
Fodder module	0.2	Berseem	1050.00	9300	11800	12600	8100	62
Livestock	Shed area (m) 10x15m2	2 cow	695 liter	19500	23000	50600	48600	200
Total (RIFS productivity)			8095	68420	86200	115200	98330	413

Existing system productivity	3285	48000	59200	80500	67850	363
Additional Benefit	4810	20420	27000	34700	30480	40
Benchmark data 2020	2405	10210	13500	17350	15240	280
Additional benefit through RIFS in 2023					83090	133

Table 8: Yield and Economics of Integrated Farming System with and without interventions for small farm holdings under crop + large ruminants (CLR) based farming system in partially irrigated situation (Mean of 2 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg/ha)	Cost of cultivation/ production (Rs/ha)		Net returns (Rs from cultivated area)		Employment generation (man-days)
				With family labour	Without family labour	With family labour	Without family labour	
Crop/cropping system module Crop +LR								
Rice	0.2	Summer Ploughing with RDF	2500.00	13500.00	18300.00	10200.00	6730.00	54
Blackgram	0.4	Summer Ploughing with RDF	1425.00	8800.00	12650.00	22600.00	20100.00	83
Wheat	0.4	RDF	3120.00	17320.00	20450.00	19200.00	14800.00	42
Fodder module	0.2	Berseem	1050.00	9300.00	11800.00	12600.00	8100.00	60
Livestock module	Shed area (m) 10x15m2	2 cow	705 liter	19500.00	23000.00	50600.00	48600.00	200

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Total (RIFS productivity)	8110	69420	88200	119200	99750	439
Existing system productivity	3285	48000	59200	80500	67850	399
Additional Benefit	4825	21420	29000	38700	31900	40
Benchmark data 2020	2412.5	10710	14500	19350	15950	239
Additional benefit through RIFS in 2023					83800	200

Performance of the farming system without interventions (control/benchmark) 29% over control

Table 9: Yield and Economics of Integrated Farming System with and without interventions for marginal farm holdings under crop + small ruminants + large ruminants (C + SR + LR) based farming system in partially irrigated situation (Mean of 2 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg)	Cost of cultivation/ production (Rs)		Net returns (Rs)		Employment generation (man-days)
				With family labour	Without family labour	With family labour	Without family labour	
Crop/cropping system module Crop + LR + SR								
Soybean	0.6	Summer Ploughing with RDF	1460	9800	13450	24200	20200	60
Chickpea	0.2	RDF	1575	17320	18250	14300	11700	62
Wheat	0.2	RDF	1525	17500	20600	15700	12300	34
Fodder	0.2	MP Cherry	830.00	10100	11800	9800	6500	50

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module								
Livestock module	Shed area (m) 15x20m2	2 Cow + 2 Goat	725 liter	19500	22500	56100	46300	220
Total (RIFS productivity)			5390 + 725 li milk	74220	86600	120100	97000	426
Existing system productivity			3410	50900	61400	82300	71650	356
Additional Benefit			1980	23320	25200	37800	25350	70
Benchmark data 2020			990	11660	12600	18900	12675	239
Additional benefit through RIFS in 2023							84325	187

Table 10: Yield and Economics of Integrated Farming System with and without interventions for small farm holdings under crop + small ruminants + large ruminants (C + SR + LR) based farming system in partially irrigated situation (Mean of 2 farmers)

Components of farming system	Area (ha)	Details of interventions	Main crop equivalent yield (kg)	Cost of cultivation/ production (Rs)		Net returns (Rs)		Employment generation (man-days)
				With family labour	Without family labour	With family labour	Without family labour	
Crop/cropping system module								
Soybean	0.6	Summer Ploughing with RDF	1560	10800	15450	26200	22200	65

Chickpea	0.2	RDF	1675	19320	19250	15300	13700	68
Wheat	0.2	RDF	1625	19500	21600	17700	14300	38
Fodder module	0.2	MP Cherry	930	11100	12800	10800	7500	58
Livestock module	Shed area 15x20m2	2 Cow + 2 Goat	825 liter	21500	22500	59100	48300	230
Total (RIFS productivity)			5790 + 825 li milk	82220	91600	129100	106000	459
Existing system productivity			3410	50900	61400	82300	71650	410
Additional Benefit			2380	31320	30200	46800	34350	49
Benchmark data 2020			1190	15660	15100	23400	17175	239
Additional benefit through RIFS in 2023							88825	220

Performance of the farming system without interventions (control/benchmark) 27%over control

Table 11: Comparative performance of yield and economics during 2020 and 2023 after interventions

Particulars	Black gram Equivalent Yield (Kg)	Net returns (Rs.)	Employment generation (man days)
Benchmark data 2018	1190	17175	130
Yield and economics through different interventions by 2023			
Rainfed-CLR based faring system-marginal farmers	3870	83772	151
Rainfed-CLR based faring system-small farmers	4226	90770	165

Partially irrigated- CLR based faring system-marginal farmers	8095	98330	413
Partially irrigated- CLR based faring system-small farmers	8110	99750	439
Partially irrigated- C + SR + LR based faring system-marginal farmers	5390	97000	426
Partially irrigated- C + SR + LR based faring system-small farmers	5790	106000	459