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Success Story



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Integrated Farming System for Sustainable Income: Success Story of an Innovative Farmer

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Abstract

In Siddipet district, paddy is the predominant crop, occupying 72% of the total cropped area. However, paddy cultivation is highly input and labor-intensive, yielding lower net profits ranging from Rs. 25,000 to Rs. 50,000 ha⁻¹. To address these challenges, the Agricultural Research Station (ARS) and District Agricultural Advisory and Transfer of Technology Centre (DAATTC), Tornala, introduced an Integrated Farming System (IFS) in 2020. IFS is a sustainable agricultural practice that combines livestock, crop production, fishery, poultry, tree crops, plantation crops, etc., to create mutually beneficial relationships. The goal is to enhance productivity and profitability for marginal farmers through the IFS approach, which is based on the principle that “waste is only a misplaced resource,” meaning that waste from one component of the system can serve as an input for another rather than relying solely on paddy cultivation. This success story highlights an inspiring example of a farmer who has effectively implemented IFS in Siddipet district, Telangana.

1. Introduction

Indian agriculture is predominantly characterized by small and marginal farmers (86%), who cultivate only 44% of the total arable land. As of 2010–2011, the average size of an operating landholding was 1.16 ha, and fragmentation has further reduced farm sizes. This fragmentation threatens the future sustainability, food security, and profitability of Indian agriculture (Siddeswaran et al., 2012). Marginal and small farmers often rely heavily on cereal-based crops which are highly exhaustive and place significant demands on resources leading to soil depletion, high water usage, vulnerability to climate variability, pest and disease susceptibility, nutritional imbalances, economic risks, erosion, limited crop rotation, dependency on synthetic inputs, and biodiversity loss. These challenges often prevent farmers from achieving sufficient income to sustain their families (Kumar et al., 2018).

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IFS, which integrate animal and crop enterprises, have gained renewed attention among marginal, small, and medium farmers (Behera and France, 2016), particularly those with less than one hectare of land. The IFS approach promotes ecological intensification, reducing reliance on anthropogenic inputs while enhancing ecosystem functions such as nutrient recycling, soil formation, and fertility enhancement (Bell and Moore, 2012; Salton et al., 2014). Efficiently managed IFS can be less risky due to the benefits of enterprise synergies, product diversity, and ecological reliability (Behera and France, 2016). Recognizing the importance of IFS for food and nutritional security, biodiversity conservation, climate resilience, residue recycling, and employment generation, District Agricultural Advisory and Transfer of Technology Center and Agricultural Research Station have promoted IFS in the district.

In the heart of Siddipet district, where paddy traditionally dominates the agricultural landscape, one farmer's innovative approach has turned the tables on conventional practices. With paddy cultivation yielding modest profits and demanding intensive resources, a transformative idea was set into motion by the DAATTC and ARS in Tornala. Their solution: Integrated Farming Systems (IFS) which is a sustainable approach that combines various agricultural practices to maximize efficiency and income.

2. Background Information

Meet Shri Darni Parashuramulu, a dynamic 31-year-old farmer from Ibrahimipur village in Narayanraopet mandal, Siddipet District. Armed with a fresh perspective and a commitment to improving his family's agricultural fortunes, Darni embarked on a journey of transformation. Previously focused solely on paddy cultivation, Darni's land, though ample, was not yielding the returns needed to sustain a thriving livelihood. Faced with rising costs and inconsistent profits, he sought a more sustainable and lucrative farming model.

3. The Challenge

Before adopting the IFS model, Darni's 1.6 ha farm was exclusively dedicated to paddy. Despite his earnest efforts, the returns were insufficient, constrained by low yields, high input costs, and the inefficiencies of monocropping. His only sources of irrigation were an open well and a borewell, which further limited his options. The prospect of relying on a single crop seemed increasingly untenable.

4. The Innovative Solution

In 2020, guided by the expertise of ARS and DAATTC, Darni embraced the IFS approach, which integrates multiple farming components to optimize productivity and income. His new approach included:

- **Diverse Cropping:** Darni diversified his crops with ridge gourd (Figure 1), bitter gourd (Figure 2), tomato (Figure 3), green chillies (Figure 4), and sunflower, alongside traditional paddy. He implemented farm pond technology for irrigation and adopted drip irrigation to enhance water efficiency.
- **Animal Husbandry:** He introduced dairy farming with two buffaloes (Figure 5) and maintained a fodder block (Figure 6) to sustain them.
- **Poultry and Pisciculture:** Darni also integrated 50 backyard poultry birds (Figure 7) and established a fishery in his farm pond (Figure 8).
- **Resource Utilization:** He maximized resource efficiency by using paddy straw as fodder, and poultry and dairy waste as organic manure (Figure 9) for his crops.



Figure 1: Ridge gourd on pandal system under drip



Figure 2: Bitter gourd on pandal system under drip



Figure 3: Tomato under drip (water efficiency)



Figure 4: Green chilles under drip



Figure 5: Milch Dairy maintained by farmer



Figure 6: Napier grass

5. Impact and Results

The results of Darni's integrated farming approach were remarkable. The diversified cropping system and additional income streams resulted in a substantial



Figure 7: Back yard poultry maintained by the farmer



Figure 8: Farm pond for irrigation and Pisciculture



Figure 9: FYM from dairy utilised for crop

increase in his net income.

- **Net Income:** Darni achieved a net income of Rs.5,13,050 per year across 1.6 ha farm, averaging Rs. 3,20,656 ha⁻¹ (Table 1).
- **Economic Benefits:** The IFS model significantly boosted profitability, with crops like bitter gourd and fishery yielding impressive returns.

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Table 1: Economic benefits of IFS components

Crop/ Component	Intervention followed by the farmer	Yield (q or t or l/ kg unit ⁻¹)	Cost of cultiva- tion (Rs. Crop/ component ⁻¹)	Gross returns (Rs. Crop component ⁻¹)	Net returns (Rs. Crop component ⁻¹)
<i>Kharif</i>					
Paddy (1 ha)	JGL-24423 (Rainfed)	65 q	Rs. 55,000	Rs.1,33,900	Rs. 78,900
Bottle/Ridge gourd (0.3 ha)	Private hybrids (Rainfed)	7.8 t	Rs. 30,000	Rs.46,200	Rs.16,200
Tomato (0.1 ha)	Private hybrids (Rainfed)	3.5 t	Rs. 10,000	Rs.64,000	Rs. 54,000
<i>Rabi</i>					
Paddy (0.6 ha)	KNM-118 (Bore well)	45 q	Rs. 33,000	Rs.92,700	Rs. 59,700
Sunflower (0.4 ha)	DRSH-1 hybrid (Zero tillage in rice fallow under drip)	8 q	Rs. 20,000	Rs.52,000	Rs. 32,000
Bitter gourd (0.3 ha)	Private hybrid (Drip irrigated with farm pond water)	7.8 t	Rs. 30,000	Rs.1,80,000	Rs. 1,50,000
Green chillies (0.1 ha)	Private hybrid	8q	Rs. 10,000	Rs.30,000/-	Rs. 20,000
<i>Year round</i>					
Fodder (0.1 ha)	Super Napier	-		For milch Dairy	
Dairy (0.1 ha)	2 No. Buffalos	5 l×365 days	Rs. 40,000	Rs. 91,250 per year	Rs. 51,250
Poultry	50 No. Desi birds	50 kg	Rs. 3,000	Rs.15,000	Rs. 12,000
Fishery (0.1 ha)	Ravallu in Farm pond	500 kg	Rs. 1,000	Rs. 40,000	Rs. 39,000
Total (1.6 ha)			2,32,000	7,45,050	5,13,050
Average (1 ha)			1,45,000	4,65,656	3,20,656

6. Sustainability and Spread

The integrated approach not only enhanced Darni's income but also demonstrated significant environmental and economic benefits:

- **Productivity and Profitability:** Increased yields and reduced costs through effective use of resources and diversification.
- **Soil Health and Nutrition:** Organic supplementation improved soil fertility and sustainability.
- **Pollution Reduction:** Effective recycling of waste materials minimized environmental pollution.

Darni's success has inspired many. He actively participates in training programs, shares his knowledge with fellow farmers, and has contributed to the spread of sustainable practices across his community. His innovative practices, such as zero-tillage sunflower cultivation and green manure usage, have become models of efficiency.

7. Conclusion

Shri Darni Parashuramulu's journey from traditional paddy farming to an integrated farming system is a testament to the potential of sustainable agriculture. His story highlights the profound impact of adopting diversified and resource-efficient practices, demonstrating that with the right guidance and innovations, small-scale farmers can achieve significant economic and environmental benefits.

8. Future Perspectives

As Darni continues to refine his practices and inspire others, the future of integrated farming systems in Siddipet and beyond looks promising. His success serves as a beacon for other farmers seeking to enhance their income, sustainability, and resilience in the face of agricultural challenges.

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