

Fertile Grounds, Fading Resilience: The Story of Rice-Rice Farming in Godavari Districts of Andhra Pradesh

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Abstract

The rice-rice cropping system in the Godavari deltas of Andhra Pradesh stands as a cornerstone of agricultural practices, offering both advantages and challenges. This article provides a concise overview of the system, highlighting its dual-cropping nature. The dual-cropping system is explored in terms of its advantages, such as high yield potential, optimized resource use, and employment opportunities. Conversely, challenges encompass soil quality degradation, water scarcity, pest and disease buildup, limitations in crop rotation, and vulnerability to climate change. This article encapsulates the essence of the rice-rice cropping system in the Godavari deltas, presenting its dual nature in enhancing agricultural output while posing various sustainability challenges that warrant careful consideration and strategic management for long-term viability.

Introduction

Rice (*Oryza sativa*) is the second highest produced grain in the world after corn (maize). It is the most important grain with regard to human nutrition and calorific intake, providing more than one fifth of the calories consumed by worldwide by the human species.

The Godavari delta in Andhra Pradesh is renowned for its rich agricultural history, with rice being a staple crop for centuries. One of the prevalent farming practices in this region is the rice-rice cropping system, where two successive rice crops are cultivated in a single year. While this approach offers certain advantages, it also poses challenges that require careful consideration. In this article, we delve into the pros and cons of rice-rice cropping systems in the Godavari deltas of Andhra Pradesh.

Rice Production in Godavari Deltas of Andhra Pradesh

Andhra Pradesh ranking 3rd position in Production. And produces 128.95 lakh tons of rice in India. It is a leading rice producer with a production of 12% of total rice produced in the country. Rice is the principal food crop cultivated throughout the state providing food for its growing population, fodder to the cattle and employment to the rural masses. In Andhra Pradesh paddy is the major crop cultivated in more than 22 lakh hectares during Kharif and Rabi seasons. 13 districts of Andhra Pradesh are producing rice crop out of which West Godavari, East Godavari, Krishna, Guntur, Srikakulam, Vizianagaram and Chittoor are the major producers. In fact West Godavari, East Godavari and Krishna are three most important rice producing districts not only of Andhra Pradesh but of the whole of India. West Godavari, and East Godavari districts considered as rice bowl of Andhra Pradesh. The Godavari deltas in Andhra Pradesh have long been the backbone of rice production in India. The region's fertile soil, coupled with its intricate network of waterways and canals, has facilitated the cultivation of rice for generations. (APSSDC)

The Godavari deltas are among the top rice-producing regions in India. The region's geographical advantage of being crisscrossed by numerous rivers and tributaries provides ample irrigation opportunities, enhancing rice yields. As per historical data up until 2021, the annual rice production in the Godavari deltas has consistently contributed a significant portion of Andhra Pradesh's total rice output.

Historical Perspective:

Rice cultivation has been deeply intertwined with the cultural and agricultural fabric of the Godavari deltas. The deltaic plains have historically been home to a predominantly agrarian society, with rice as the staple crop. Over the decades, agricultural practices have evolved, and the rice-rice cropping system emerged as a

dominant strategy to maximize yields from the land's natural endowments.

Yield Variability:

While the rice-rice cropping system has contributed to notable yields, the production figures have shown variability over the years. Factors such as rainfall patterns, climate fluctuations, pest and disease outbreaks, and technological advancements have influenced annual rice yields. In some years, bumper harvests have contributed to surplus stocks, while in others, unforeseen challenges have led to reduced outputs.

Economic Impact:

Rice production in the Godavari deltas has not only addressed the region's food security but has also played a crucial role in the state's and country's economy. The surplus rice produced in the deltaic region is not only consumed locally but also contributes to the state's rice procurement pool, ensuring food security and price stability.

Pros:

1. **High Yield Potential:** The rice-rice cropping system capitalizes on the region's fertile soil and abundant water resources, allowing farmers to achieve high yields. With suitable management practices, this system can lead to increased production and enhanced food security for the local population.
2. **Optimized Resource Use:** Since rice is the main crop in both seasons, it allows for efficient utilization of resources. Farmers can optimize water management, nutrient application, and pest control strategies, leading to better resource utilization and potentially higher economic returns.
3. **Crop Residue Utilization:** The residue from the first rice crop can serve as organic matter for the second crop. Incorporating rice straw back into the soil improves soil structure, enhances water-holding capacity, and contributes to overall soil health.
4. **Employment Opportunities:** The dual-cropping system generates employment opportunities for local communities. The extended cropping period creates demand for labor during various stages of cultivation, from planting and maintenance to harvest.
5. **Spread of Risk:** Planting two successive rice crops provides a level of risk management against potential crop failure due to adverse weather conditions, pests, or diseases. If one crop faces difficulties, the other might still thrive, reducing the overall vulnerability of the farming system.

Cons:

1. **Degradation of Soil Quality:** Continuous cultivation of rice can lead to soil degradation over time. The repeated demand for nutrients, particularly nitrogen, may deplete the soil's fertility. This can result in reduced crop yields and the need for increased fertilizer application.
2. **Water Scarcity and Quality:** The rice-rice cropping system demands significant water resources. In regions prone to water scarcity, this can strain local water supplies and exacerbate existing water-related issues. Additionally, waterlogged fields in the monsoon season can lead to waterborne diseases and decreased crop performance.
3. **Pest and Disease Buildup:** Growing rice in quick succession can lead to the buildup of pests and diseases that affect rice crops. Without proper management practices, this can result in increased pest resistance and disease prevalence, necessitating more frequent and potentially higher chemical inputs.
4. **Monotony of Crop Rotation:** Continuous rice cultivation limits the crop rotation options available to farmers. This can lead to a reduction in biodiversity, increased vulnerability to pests, and decreased overall resilience of the farming system.
5. **Climate Vulnerability:** The rice-rice cropping system is highly dependent on favorable weather conditions. Climate change could disrupt the regular monsoon patterns, leading to irregular rainfall and temperature fluctuations that could impact crop growth and yields.

Challenges to Sustain Production:

While the statistics demonstrate the immense potential of rice production in the Godavari deltas, there are inherent challenges that need to be addressed to ensure sustainable productivity. Soil degradation, water

scarcity, and the need to balance resource utilization are among the primary challenges faced by farmers and policymakers. The rising concerns of climate change and its potential impact on weather patterns further underline the need for adaptive strategies.

Looking Ahead:

As the agricultural landscape continues to evolve, there is a growing recognition of the need to adopt more sustainable and resilient farming practices. While the rice-rice cropping system has served its purpose admirably, diversification, technological innovation, and precision agriculture are emerging as key avenues for future growth. These approaches can help mitigate some of the challenges while maintaining the region's status as a rice production powerhouse.

Conclusion:

In conclusion, the rice-rice cropping system in the Godavari deltas of Andhra Pradesh offers both advantages and disadvantages. While it contributes to high yields, optimized resource utilization, and employment opportunities, it also comes with potential downsides such as soil degradation, water scarcity, and increased vulnerability to pests and diseases. To ensure the sustainability of this farming practice, there is a need for effective management strategies that address its drawbacks while harnessing its benefits. Farmers, researchers, and policymakers must collaborate to strike a balance between productivity and environmental resilience in the Godavari deltas' rice-rice cropping system.