

Incentives for Farmers to Switch over from Paddy Farming in India

LR Meena*, Devendra Kumar and Anjali

ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut, Uttar Pradesh-250 110, India

***Corresponding Author:** LR Meena, ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut, Uttar Pradesh-250 110, India.

Received: October 01, 2024; **Published:** November 06, 2024

Global crop production must substantially increase to meet the needs of a rapidly growing population (8.2 billion in 2024). This is constrained by the availability of nutrients, water and land. There is also an urgent need to reduce the negative environmental impacts of crop production. Collectively, these issues represent one of the greatest challenge of the 21st century (Jeffery A., 2020). Sustainable cropping systems should be based on ecological principles which are the core of integrated approaches to solve the many challenges those are being faced by the large human population in India. Keeping in view the facts in to account, some emerging newly alternative cropping systems have been developed to resolve the present constraints (Meena et al. 2023).The innovative approaches for sustainable agriculture are integrated nutrient management via inclusion of green manure crops/ cover crops and mulching of soil surface through agriculture based byproducts. Rice is a major staple food crop in India spanning over 23.15 m ha across the various states. Rice crop is being primarily grown in the states like West Bengal, Uttar Pradesh, Andhra Pradesh, Punjab, Haryana, Odisha, Bihar and Himachal Pradesh predominantly in rice- wheat cropping system. Alternate cropping system (Maize (cobs)- potato- onion) in Punjab can give rise 52.20% higher net return over existing cropping system (rice- wheat). However, other states like Haryana, Uttar Pradesh, Bihar, Odisha, Tamil Nadu and Andhra Pradesh fetched higher net returns by 61.5%, 53.0%, 49.0%, 40.0%, 29.0% and 52.0%, respectively over prevailing cropping systems (Table1). Generally, farmers in Punjab state are growing rice and wheat crops in a cropping sequence and other cropping systems like maize-wheat, sugarcane-ratoon-wheat systems are less resource efficient and need high inputs as compared to newly identified cropping systems such as maize-potato-onion and groundnut-potato-pearl millet. Maize, soybean and pigeonpea have the potential to diversify the rice cultivation for *Kharif* season. Instead, during *rabi* season mustard can be an alternative crop to diversify the wheat cultivation. Maize has dual advantage as it is both, an industrial as well as food and fodder crop (Rakshit et al.2021). Therefore, rice can be replaced by maize in the cropping systems. The economic earnings from these systems are higher by 186% than prevailing cropping systems in the state like Punjab. Another important cropping systems were also ascertained as maize + cowpea – chickpea- sorghum and/or maize- gobhi sarson–summer green gram (GG). Besides, sugarcane is highly nutrients and water exhaustive crop. Sugarcane crop could be made more lucrative option in the autumn season, intercrops with wheat, raya, gobhi sarson, toria, cabbage, radish, pea, tomato, onion, garlic and chickpea could be sown between rows of sugarcane, whereas in summer season sugarcane crop could be planted with green gram and okra (ladyfinger) which were found the most suitable for the intercrop. Autumn sugarcane with intercrop of garlic and onion gave rise extra ₹80000 to ₹ 100000 per hectare, while gobhi sarson with autumn planted sugarcane fetched ₹ 40000 to ₹ 50000 per hectare as an additional income. Relay cropping of basmati rice –wheat-maize was found cost- effective option in Bihar. Sugarcane with intercrop helped in suppression of weeds, insects-pests and diseases also. Further, diversified cropping systems create employment opportunities for the small and marginal farmers in India making them self-reliant in cater to meet domestic needs. Cowpea (pods), soybean and groundnut can be grown as intercrop in maize. Cowpea and maize (as fodder) intercrops in cotton, green gram in pigeonpea and oat with gobhi sarson are some other important intercropping systems to switch over prevailing cropping systems like rice-wheat, maize-wheat, maize-wheat-sorghum, sugarcane- ratoon-wheat systems. Farmers those have dairy animals should adopt maize, sorghum, and pearl millet as intercrops with cowpea and guar which offer balanced nutritional diet. Intercropping augments diversity to the cropping system and allow lesser use of inputs to enhance their income. Incentives need to be given to the farmers by government for adoption of alternative cropping systems as mentioned

under:

- High quality seed of climate smart varieties to be ensured for sowing in the alternate cropping systems with improved package of practices.
- Ensuing easily accessible markets/mandies for selling farmers crop products.
- Government should increase MSP (minimum support price) of the crops being adopted under alternate cropping/diversified cropping systems.

<i>State</i>	<i>Existing cropping system</i>	<i>Alternative cropping system need to be adopted</i>
Punjab	Rice-wheat	Maize (green cobs)-potato-onion
Haryana	Rice-wheat	Cotton-wheat-green gram
Uttar Pradesh	Rice-wheat	Maize-potato-sunflower
Bihar	Rice-wheat	Rice-wheat-maize
Odisha	Rice-rice	Rice-maize-green gram/cowpea
Tamil Nadu	Rice-rice- sesame	Rice (DSR)-maize (cobs)-black gram
Andhra Pradesh	Rice-rice	Maize-onion/tomato

Table 1: State wise existing and alternative cropping systems for higher economic returns across the states of India.

References

1. Jeffery A Coulter. "Sustainable cropping systems". *Agronomy* 10 (2020): 494.
2. Meena LR., et al. "Alternate cropping system: A tool to enhance income". *Indian Farming* 73.07 (2023): 36-40.
3. Rakshit S., et al. "Diversification of cropping system in Punjab and Haryana through cultivation of Maize, Pulses and Oilseeds". Policy Paper. ICAR-Indian Institute of Maize Research, Ludhiana (2021): 37.

Volume 7 Issue 5 November 2024

© All rights are reserved by LR Meena., et al.