Crop Diversification

Crop diversification refers to the addition of new crops or cropping systems on a particular farm, taking into account the monetary and non-monetary returns from the added crops.

Why do we need to move away from mono-cropping agricultural systems?

- Mono-cropping results in nutrient mining and this necessitates higher fertilizer usage resulting in increased production costs, decreased farm net income and, soil and water pollution
- It leads to loss of biodiversity and the resulting soil ecology leads to low soil fertility
- It can lead to emergence of new insect pests and weeds leading to increased use of pesticides and herbicides, increased production costs including labour
- Paddy mono-cropping systems which depend on irrigation with groundwater tend to result in depleting water table

Why crop diversification is important?

- Diversification offers an opportunity to combine more remunerative crops in the system to increase incomes where demand for the crop products exists and market linkages are present
- Crop diversification can improve crop resilience in a variety of ways: by enhancing the ability to suppress pest outbreaks and dampen pathogen transmission, as well as by buffering crop production from the effects of greater climate variability and extreme event
- Risk owing to climatic shocks like droughts and floods is spread over several crops reducing losses
- It helps combat soil problems like soil salinity and low soil fertility in affected areas
- By adopting farm systems that promote ecosystem services for pest and disease control and resilience to climate change variability, farmers are less at risk to production loss and are more generally resilient to environmental change

- Vulnerable to climate change
- Vulnerable to food insecurity
- Ensure nutritional security

- Climate Resilient Farming
- Lessen risk
- Ensure nutritional security

High specialization
Even portfolio

High diversity
Uneven portfolio

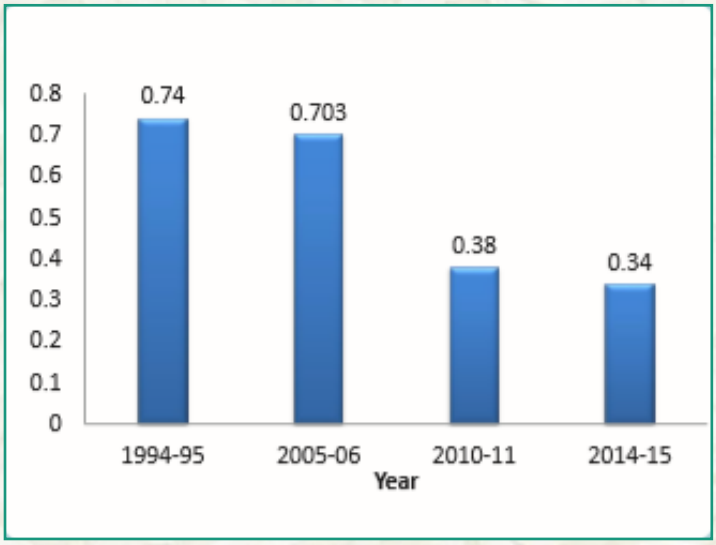
Mono-cropping

Crop diversification

Basic representation of crop diversification scenarios to ensure food security

Crop diversification in Odisha

Crop diversification has decreased in the state in the past two decades.



Crop diversification index (Source: Odisha Economic Survey 2018)

Maize cropping with Cowpea

Why is diversification not adopted by farmers?

- Predominance of wetlands, irrigation in the river basins, and low but stable yield with low inputs favour rice cropping in kharif.
- Alternative food crops like maize, pulses are considered riskier, in high rainfall zones with poor drainage; crops like sugarcane have long growing duration and poor return on investment. Soils may not be suitable for some crops like cotton.
- Millets and Pulses were part of traditional cropping systems in uplands but went out of favour due to change in food habits that favoured rice. They fetch higher prices but their yields are relatively low and resulting incomes are lower in small farms.
- Lack of irrigation, particularly in Rabi.

Options for promoting crop diversification

- Rice-pulse/oilseeds system in kharif-rabi is a good option with appropriate varietal combination, even in rainfed lands
- Rice cropping with Alternative Wetting and Drying (AWD) in kharif can create soil conditions favourable for diversified rabi cropping with vegetables
- Canal irrigated rabi rice areas can be diversified to high-value crops with better coverage; more value per drop
- Promote water harvesting structures to provide supplemental irrigation to grow crops in fallow lands in Rabi
- Explore use of renewable energy sources for irrigation, e.g., Solar irrigation pump
- Awareness of farmers regarding benefits of diversification could be raised through inclusion in extension messages using various channels and media

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