Two-stage rainwater conservation for integrated rice-fish culture

TECHNOLOGY BRIEF

A **two-stage rainwater conservation technique for rice-fish culture** in medium land ecosystem was conceptualized and tested for *in-situ* & *ex-situ* conservation of rainwater (98%), nutrient (74%) and sediments (92%) in rice-fish system. Weir height of 12.5 cm, provision of peripheral trench on three sides of rice fields (0.5 m width and 0.3 m depth), a refuge occupying 9% of field area and fish stocking density of 25,000 ha^{-1} were found suitable for this system and resulted in rice equivalent yield of about 6.4 t ha^{-1} without application of pesticides. In this system, paddy yield of 5.4 t ha^{-1} and fish yield of 1.8 t ha^{-1} 120 d^{-1} can be achieved with B:C ratio of 2.37 and net water productivity of ₹ 8.9 per m^3 of water. The system has potential to generate net profit of ₹ 78,000 ha^{-1} per crop, while conserved water can be used for low duty *rabi* crop with enhanced cropping intensity of 183%. This system not only accommodates crop diversification, enhances productivity and income, but also distributes the risk (both biological and economic), as two or more subsystems are involved, instead of a single-commodity farming system.

IMPACT / UTILITY

This replicable technology has successfully been transferred to several farmers in Dhenkanal, Balasore and Bolangir Districts of Orissa. Further, Orissa Watershed Development Mission (Govt. of Orissa), has accepted the technology for mass scale adoption in eight DPAP districts (Drought Prone Area Programme) of Orissa vide letter No. WM(NRM) 43/ 04/ 898/ WM, Dt.28.3. 2005. The SAARC Agricultural Information Center, Dhaka, Bangladesh; Agricultural Promotion and Investment Corporation of Orissa Ltd. (APICOL); Command Area Development Agency (CADA), Govt. of Orissa; and NGOs like SRADHA, IYWW have already advocated this recommended production technology for mass scale adoption. This technology is suitable for medium land rice ecosystem in India & S-E Asia.

HIGHLIGHTS

- Conservation of rainwater (98%), nutrient (74%) and sediments (92%) in rice-fish system .
- Improve water use efficiency & water productivity.
- Refuge occupying 9% of field area and weir height of 12.5 cm is found optimal.
- This work was awarded with ICAR-Team Research Award (2001-02).

Project Details

Rice fish integration for enhancing land and water productivity (Project Code: WTCER/97/32)

Publications

- *Mishra et al.(2004) Agricultural Water Management*, 67: 119-131
- *Mohanty et.al., (2004) Aquaculture*, 230:125-135
- *Mohanty et.al., (2002)* WTCER (ICAR) *Research Bulletin No. 11*, 24p

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