Production and Economics

The farmer harvests around 60 tonnes of rice (average grain yield, 3 t/ha) and 135 or more tonnes of fish from the farm. The fish yield increases in the case of release of fingerlings.

Sri Mishra realized an income of around ₹ 16 lakhs in the first year, which increased to 30 lakh in the 2nd year and around 150 lakhs in the 3rd year due to diversification of the farm with horticultural crops and intensification of mainly fish culture activities. The farmer spent around ₹ 25 lakhs as input costs against the gross income of ₹ 150 lakhs. He returned the whole loan amount (₹ 113 lakhs) in the 3rd year itself. He expects still higher income with the produce from long term fruit crops.

Farmer's Perception and Future Plan

Sri Mishra claimed that he experienced the benefit of rice-fish farming by way of bio-control of weeds and also rice pests through fish culture and for this, he does not apply herbicide and insecticide in the rice field. Besides, he also perceives that the soil fertility level increases in this farming due to addition of fish excreta and left over fish feed.

After realizing the enormous benefit in rice-fish-horticulture crop based farming system, he recently purchased another patch of 180 acres of lowland and he has a target of extending this practice to even 600 acres of farm area.

Commercialization of Rice-Fish Farming System Model of CRRI - A Success Story

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Commercialization of Rice-Fish Farming System Model of CRRI - A Success Story

D.P. Sinhababu and G.A.K. Kumar

A highly progressive farmer, Sri Sunakar Mishra, Proprietor of a combined farm in village Mahisara under Dharmasala block of Jajpur district in Odisha has made exemplary achievement and impact by way of making huge benefits through successful adoption of rice-fish farming system model developed by the Central Rice Research Institute (CRRI), Cuttack in commercial scale.

Shri S. Mishra briefing media

Background

Sri Mishra initially started shrimp farming in the year 1980-81 by taking lease of 15 acres farm in the coastal saline areas of Baleswar district of Odisha, which was extended to 80 acres through purchase of additional areas during 1983-84. But due to outbreak of White Spot Virus disease in the farm, he incurred a heavy loss and left shrimp farming. He then thought of alternate farming of fresh water prawn and fish in rice field. Accordingly, he purchased 65 acres of lowland in village Mahisara in the year 1992, which was later extended to 79 acres and started practicing rice-fish farming in traditional way with some benefit. But due to flood in 2003, he experienced a heavy loss because of improper farm development and management practices and stopped farming. He was

looking for improved rice-fish technology and technical support. During the year 2004, he came to know through News Paper about the successful rice-fish technology developed by the Central Rice Research Institute (CRRI), Cuttack. He visited the rice- fish system model at CRRI farm and discussed about the technology with the concerned Scientist, Dr. D.P.Sinhababu, Principal Scientist. He got back his confidence on this farming system. Since then, he had visited the CRRI rice-fish rainfed and deepwater models many times and got all the required technical support. Besides, the concerned scientists of CRRI visit his farm and provide technical assistance.

Farm Development

Sri Mishra made a bankable scheme with the support of Agricultural Production and Investment Corporation Limited (APICOL), Odisha after registering the farm and availed a loan of ₹ 113 lakhs in the year 2007 from State Bank of India, Jajpur Branch mainly for the farm development (land shaping and other infrastructure) and also for meeting inputs costs. He started farm development with the loan amount by purchasing a second-hand LNT Excavator machine and through custom hiring of 14 tractors.

He developed three deep water (more than 75 cm water depth) rice-fish farm farms totaling about 77 acres area and the rest 2 acres were used for farm house and other facilities. The largest one is of 40 acres, medium one of 22 acres and a smallest one of 15 acres area. The micro-water shed (pond refuge and trenches) covered about 15% of the area, while similar portion of farm area was used for construction of strong and raised bunds of 30-40 ft wide and 15 ft height on all sides. The rest about 70% of the farm area is now being used for cultivation of rice, fish and other crops after rice.

Fallow low land

After rice-fish farm development

The farm possesses facilities of two 20 HP diesel and four electric pumps, two tractors, one boat, power thresher, nets and other field articles. Twenty daily-paid labourers and one Manager are employed in the farm.

Components and Production Practices

Sri Mishra purchased around one tonnes of breeder seed of a stiff-culmed long duration, photo-sensitive CRRI variety, Varshadhan. The rice crop is direct-seeded well before the onset of monsoon and then is allowed to grow along with the gradual water accumulation. He uses only the organic (30 tractor–load of cowdung), but does not apply any chemical fertilizer, herbicides or insecticides in the rice field. The rice crop is harvested during the end of December by cutting about 2 ft of culm along with panicles using boat in standing water of more than 100 cm. After drying the field, crops like watermelon, bitter gourd, okra etc are grown. The Varshadhan variety is preferred for its ability to withstand prolonged high level of standing water as well as its suitability for its consumption as puffed and beaten rice.

Harvesting of rice in standing water

Vegetables and watermelon crops after rice

Along with the rice crop, he releases 5-6 lakhs of fish fry comprising about 60% grass carp, 20% catla and the rest 20% of rohu, mrigal and common carp species. However, of late he has started releasing fingerlings, which are raised from fry in the pond refuge area in the field. Realising the higher profit in fish rearing, he is now practising extended culture of the fish after the rice harvest. This is done by putting sufficient water (6-7 ft level) in the rice fields through deep tube well. The fishes are fed daily with 600 kg of feed comprising 200 kg each of horse gram, rice bran and broken rice, especially after the rice harvest.

Sampling of fish

A part of fish harvest

Various fruits, vegetables and pulse (pigeon pea) crops are grown on the bunds. Vegetable crops are mainly the cowpea, brinjal, chili, pumpkin, okra, bitter gourd and ridge gourd. The fruit crop component includes, improved varieties of papaya (1200), mango (300), coconut (100), guava (50) and jackfruit (30) plants besides, agro-forestry in the form of 300 sishoo and 20 teak plants.

Vegetable crops on bunds

Fruits crops on bunds