Duck Powered Organic Rice and Duck Value Chain Development for Sustainable Food Production, Environmental Protection and Inclusive Growth in the Philippines

J.A.Y. Pacamalan

For almost 2 decades, the introduction of the Integrated Rice-Duck Farming System (IRDFS) in the Philippines has been growing rapidly, and is considered one of the most promising organic rice innovations in a country where 120 million people depend on rice as a staple. IRDFS has also influenced Local Government Units (LGU) and the private sector in implementing the system as a strategy in reducing poverty in the countryside where 70% of the poor live.

IRDFS has economic, environmental, and health benefits. The IRDFS technology is about growing rice and ducks together in an irrigated paddy field (Furono, 2001). The paddling movement of the ducklings/ducks stimulates the rice plants to produce massive tillers. Duck manure fertilizes the soil and eliminates the need for synthetic fertilizers. The ducks also eat the harmful insects and weeds, thus eliminating the need for pesticides and herbicides. In short, the ducklings/ducks perform the functions of pest management, weed management, tiller stimulation, cultivation, and fertilization.

Figure 1. IRDFS farmer practitioner in North Cotabato, Philippines.

Based on the experiences of more than 1000 rice-duck farmers in the Philippines in the last 8 years, IRDFS has increased rice productivity up to 9 tons per hectare (average is only 4.2 tons/ha using conventional rice farming technologies), while reducing the cost of production by

---

1 Jose A.Y. Pacamalan, Founder, Rice - Duck Movement in the Philippines, Cagayan de Oro City, The Philippines. Corresponding author: J.A.Y. Pacamalan, email: rjkoy@yahoo.com.
It is also the only organic rice farming system that can successfully be adopted on a large scale. In addition, farmers also gain extra income from the sale of duck meat and duck eggs, whether raw or processed into salted egg or balut, a Filipino delicacy that is in very high demand. In the medium to long-term, the adoption of the IRDFS contributes to improving the quality of life of farmers, as evidenced by increased savings and income, better family nutrition (chemical-free rice, duck meat and duck eggs), and a healthier lifestyle.

IRDFS has also facilitated the growth of social enterprises along an integrated rice and duck industry value chain such as rice-duck farms, duck breeder farms, hatcheries, duck meat and egg processing, and retail sales, all of which provide market-based solutions that increase the productivity, income, and overall quality of life of farmers and other value chain players.

The ducks also serve as environment and health workers! As a sustainable organic farming system, IRDFS eliminates the need for chemical fertilizers and synthetic pesticides/herbicides. Due to the elimination of synthetic inputs, the physical and chemical properties of the soil are improved over time. As much as 21% of greenhouse gas emissions worldwide consist of methane gas that is released primarily by flooded rice fields. This is because flooding cuts off the oxygen supply to the soil and accelerates the decomposition of organic matter, releasing methane into the atmosphere. Studies in China show that ducks in the rice paddies effectively reduced the emissions of the greenhouse gas methane, potentially helping to alleviate global warming (Xiang et al., 2006; Li et al., 2008).

In the Philippines, IRDFS is also helping to address schistosomiasis, a chronic public health disease affecting farmers, rural inhabitants, and freshwater fisherfolk and their families, which is endemic in select parts of the country. The ducks eat the schisto-carrying snails, making a significant impact in reducing their population, thus reducing human infections and re-infections.

Another benefit of the IRDFS is through reducing malnutrition with a locally-resourced, community-based feeding program. After just 3 months of eating organic unpolished rice and iron- and iodine-rich duck meat (cooked into a porridge called arrozcalducks), there was improved nutrition (i.e., weight gain, improved skin, etc.) among 897 children aged 1-10 years old that participated in a feeding program for malnourished children in the Municipalities of Trento and Esperanza in the Province of Agusan del Sur in Mindanao, Philippines. In this study, 705 women were organized into local feeding teams (together with the barangay (village) nurses and health workers), and were taught to prepare the arrozcalducks for their children. Based on reports from school teachers and nurses, the average school attendance of the children in all the participating barangays improved from 57% to 72% in Esperanza, and from 64% to 73% in Trento.

References