

Integrated Fish Farming a Promising Intervention for Rural Women Empowerment and Poverty Alleviation in Ethiopia

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Contribution towards meaningful and sustainable women's empowerment initiatives is going on to make the world aware of the role of women in the society as a whole. Empowering women by providing emotional support and education, and create awareness about the women's rights and values as human beings have been undertaken and helped millions of women in many developing nations. Still several projects are ongoing focusing on the different issues. The rural women of many developing nations still deprived of higher education and opportunities to understand skills that can help to improve their income from the land and the resources available. They practice the age old skill and knowledge for finding their livelihood, ending with poor health and economic status in the society.

The technology transfer projects of Research and higher educational institutions are constantly focusing on the enhancement of the status of the farming community who work hard to feed the whole nation. The food production systems should be supported with scientific approaches and improved technologies in order to sustain the resources and increase the harvest at the same time improving the economic status of the farmers. The role of women in the farming activities cannot be ignored and the responsibilities they bear are immense. In East African countries like Ethiopia where the fertility of the soil is becoming low due to soil erosion, lack of irrigation facilities, type of soil, the high price of fertilizers and fuel and labor charges, the crop production is declining and food security is a big issue. The crop production from the highlands is mainly rain fed while irrigable lands are not extensively used due to the nature of the terrain, low level of water during dry season, absence of dams and so on. Hence the economic status of most of the farming families are very low and there is lot of hardship for the women and children and there are health issues too. Studies have revealed that educational attainment of the head, household size, livestock, and land holding are found to be the key determinants of poverty for female headed households than male-headed households in Ethiopia [1]. According to Dominique van de Walle [2] the number of female headed households are increasing in East African countries while poverty is declining. In Ethiopia FHHs are more illiterate and unemployed with most of them concentrating in informal sector activities [3] which push them to spend all the time in the fields to collect fire wood, fetching water and taking care of their children and livestock.

Under such circumstances empowering the women deserves top priority. It is necessary to facilitate them to find out activities which yield more income and value to their efforts. One of the options is to enable them to adopt crop diversification with the maximum utilization of available resources, such as integration of agriculture with aquaculture and livestock rearing. The crop residues and left over materials can be used to grow livestock and the excreta of these animals serve as fertilizer to the fish pond. The necessity is to have a pond which can hold water inside the farm or near the house. Integrated farming systems have been proved to be more advantageous as

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a multi-commodity farming system with the waste recycling as the key feature and fish culture as the major activity [4,5,6]. Erick et al. [7] have suggested that livestock-fish integration is one of the most practicable solutions to food insecurity and malnutrition in East African community. In Ethiopia a few attempts have been made on the integration of fish, livestock with crop cultivation [4,5,8]. The experimental results clearly demonstrated the cost effectiveness of the cultivation of vegetable crops with organically fertilized fish pond water than from monoculture of crops. Ethiopia is known for production of pulses like white pea beans, chickpeas, peas, mung peas, lentils and beans. If these legumes are integrated with the fish farming fish production can be increased by providing protein rich supplementary feeds to the farmed fish. Tilapia (*Oreochromis niloticus*) is the most favored fish by Ethiopian consumers. The rate of growth of this species is higher in the lowlands due to the relatively high temperature. Farming of paddy and fish and horti crops is also a profitable venture in the low lands where ample water supply is available. The adoption vermi compost technology would help the farmers to produce healthy chickens and add income and nutritious diet for the family. Integrating poultry, livestock such as cattle, sheep, and pigs along with fish culture is economically viable and can effectively recycle the farm land waste.

A project was initiated recently to involve women in fish and vegetable integrated farming to empower them and thereby promoting fish farming and consumption by Ambo University. Ten groups consisting of 50 women were given training on integrated fish farming and provided with fish ponds and fingerlings in collaboration with the Livestock and fisheries development department in the West shoa zone, Ethiopia. The women entrepreneurs after realizing the economic benefits within six months expressed confidence to continue the program. They can be encouraged to take up auxiliary income generation activities like fish feed preparation, fishing net making and fish seed production which are the major constraints in this system of farming. The fisheries research institutions, Universities, Livestock and Agricultural departments can cooperate to bring up such initiatives in more prospective areas in the country to strengthen the women and to reduce poverty and malnutrition.

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