

## **Impact Assessment of Kyusei Nature Farming and EM Technology in Sri Lanka**

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### **Introduction**

Sarvodaya shramadana movement was started in 1958 in Sri Lanka with the inspiration of becoming the pioneer in social and economic development in Sri Lanka through peoples participation. Today it is operating with 2 main wings namely social empowerment division and economic enterprises development services. At present, Sarvodaya network is having over 1000 villages engaged in community development activities. At present it is engaged in providing awareness, technical assistance, credit and other complementary services to its target group with the objective of promoting sustainable economic and social development in the target group.

### **Kyusei Nature Farming and EM Technology in Sri Lanka**

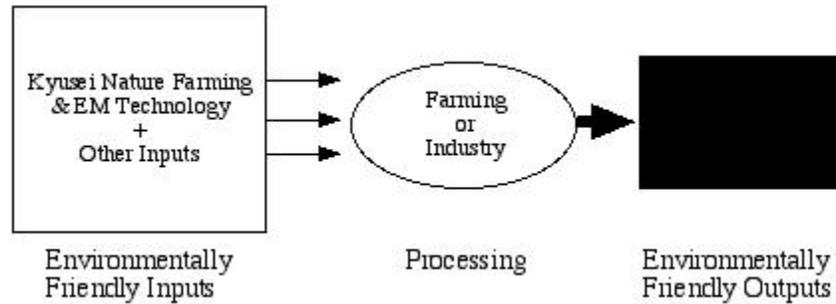
On par with the principles of Nature Farming Sarvodaya launched its EM extension program in 1995 as a pilot project with encouraging results it continued to introduce the use of EM to crop and livestock production, plantation crops (tea), sewage and wastewater disposal in hotel industry, solid waste disposal in urban areas. EM extension program was initiated in Sri Lanka in collaboration with the University of Peradeniya and APNAN. The total number of farmers using EM at present is about 3500 and between 1995 and 1998 EM has been introduced to dairy cattle and ornamental fish farming. In ornamental fish farming EM is used to improve the color, weight, and healthiness of ornamental fish.

Urban garbage is becoming a growing problem in Sri Lanka and EM is being identified as an effective technology to promote the recycling of organic waste. In line with the rapid development of tourism industry the capacity of the hotels in sewage disposal wastewater disposal has not been improved. The EM has been recognized as an environmentally friendly method of sewage and wastewater disposal in the hotel industry.

The tea plantations have faced the problem of eroding the soil fertility, which leads to reduction of productivity in the long run. On the other hand, day by day consumer preferences for organic products is remarkably increasing. To face these challenges some tea plantations have introduced EM to promote organic tea production.

The above encouraging results as well as the acceptability of the users being low cost, feasible and sustainable technology, EM has the potential of becoming popular among the agricultural as well as the industrial sectors of the country.

## Conceptual Frame Work



## Methodology

To assess the impact of EM an interview schedule was designed. The questions included the improvement in the economic impact, social impact and environmental impact. In addition to the interview, participant observation is also used in the study.

## Sampling Frame Work

<u>Sector</u>	<u>Selected districts</u>	<u>Sample size</u>	<u>Total No.</u>
Paddy	Anuradapura	30	90
	Polonnaruwa	30	
	Hambantota	30	
Vegetable	Nuwaraeliya	25	75
	Badulla	25	
	Kandy	25	
Dairy cattle	Nuwaraeliya	30	60
	Matale	30	
Ornamental fish	Kalutara	10	20
	Colombo	10	
Total			245

## Results

### The Impacts of Kyusei Nature Farming and EM Technology in Paddy Farming:

#### Economic Impacts

Ninety percent of the paddy farmers were able to save 9000 RS per ha by using EM instead of agrochemicals. Other 10% of the farmers could save RS.5000 per ha. They have deposited 50% of their savings in Sarvodaya societies. Other 50% have been utilized for the consumption purposes.

#### Social Impacts

At the end of the first year of using EM there was no significant social impact. But, when use EM

continually for 2 years small farmer groups using EM were able to save a considerable amount of money in Sarvodaya societies. Through this result they were recognized as a strong group by the other farmer families in the village.

The young farmers using EM were the technology disseminators of EM in the village and they are accepted as rural leader farmers in the community.

#### **Environmental Impacts**

Because of the agrochemicals the beneficial microorganisms have been destroyed. When EM was continually applied beneficial microorganisms have been developed in the soil. Natural enemies such as lady beetle (*Harmonia octomaculata*) and ground beetle (*Ophionea nigrofasciata*) has been developed in the ecosystem.

However, the EM Bokashi has increased the water holding capacity in the soil. Because of this the hard pan has been damaged. This was reported by 30% of the interviewed farmers.

#### **The Impacts of Kyusei Nature Farming and EM technology in Vegetable Cultivation:**

##### **Economic impacts**

The selected vegetable for the survey was beet root, leeks, and tomato. The 75% of selected vegetable farmers could reduce RS.10000 per ha. Other 25% could reduce the less than RS.10000 per ha. The total amount saved by the selected farmers was RS.750,000 and this money has been saved in Sarvodaya Societies. This money has been reinvested to assist the other needy farmers in the area.

##### **Social impacts**

The farmers have formed small groups and this has helped them to solve their problems in purchasing of inputs on time, technology problems and marketing problems. Thirty five percent of the farmers surveyed have formed small groups to get solved their problems.

##### **Environmental impacts**

According to the survey, seventy nine percent of the farmers have used EM Bokashi to enhance and maintain the soil fertility instead of using higher amounts of agrochemicals. This has helped them to produce a healthy and good quality produces. The yield index of the selected vegetables has been developed. The number of natural enemies has been improved.

#### **The impact of nature farming and EM Technology in Dairy cattle management:**

##### **Economic impacts**

Dairy cattle project is becoming popular among the village communities. The major problems faced by the farmers are high quality feeds, waste management, disease management and the marketing of raw milk. All the selected farmers are mixed EM to concentrations (10 - 20 g daily) and to drinking water (1:4000). Seventy percent of the total cost of production was incurred in animal feed and health care. By use of EM, farmers were able to reduce RS.2800 per month.

Out of the seventy-five farmers 83% of the farmers were able to improve the milk yield by 8 percent. EM is becoming popular among the rural dairy farmers because of this economic benefit.

### **Social impacts**

In Sri Lanka and India, cattle is accepted as a valuable asset. Milk marketing societies have been established and 63% of the surveyed farmers are active members and leader farmers of their societies. By use of EM, the yield has been improved by 8% and the lactation period also has been improved. Therefore, it acts as a motivating factor to promote EM among other farmers who are not using EM in dairy cattle management. EM using farmers are recognized by the other members of the society.

### **Environmental impacts**

The main environmental problems of cattle farming are waste disposal and the bad smell of the cattle sheds. This has affected the health condition of the surrounding families. More than 89% of the farmers use EM to cow dung and this has helped to remove the odor and to increase the rate of decomposition. The decomposition organic fertilizers are to crops and this has helped to reduce the fertilizer cost by 13%.

## **The Impacts of Kyusei Nature farming and EM Technology in Ornamental Fish Farming:**

### **Economic impacts**

Ornamental fish farming is a profitable agro enterprise and at present, 1.9% of the total world demand is supplied by Sri Lanka. The unpolluted water in rural areas is specially important to produce high quality ornamental fish. The major problems are cost of feed, medicine, and diseases. To improve the water quality and to improve the quality of fish EM has been used as a low cost technology. Accordingly EM has mixed to 1:1000 to the ponds and 1 - 5% was added to the feed. 95% of the farmers surveyed expressed that they could RS.5575 by good water management and using EM in other activities. Through disease control they could save RS.6757 and EM has helped to reduce the mortality rate by 2%. By EM and bokashi uniform production has been obtained and through that they could earn RS.323,332 per 10,000 square feet. Therefore the use of EM has helped to improve the profits in ornamental fish industry.

### **Social impacts**

Forty six percent of the interviewed farmers are earning a good income through their business and they are recognized as good entrepreneurs by the society. Farmers have formed small groups to do group marketing of their products.

### **Environmental impacts**

This business has caused some environmental problems such as water pollution, land digging for pond preparation. EM has been used to improve the water quality and this has helped to reduce the environmental damage.