

## Potential of Organic Farming Practices as a Rural Development Tool – A Case Study on Vegetable Farmers in Southern Sri Lanka

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### Abstract

Organic farming system promotes natural chemical and biological cycles that improve soil fertility and maintains an ecological balance. Sri Lanka is a developing country which focuses on increasing crop productivity. Many non-governmental organizations promote organic agriculture especially in remote areas as an economic development tool. Objective of this study was to examine the potential of organic agriculture practices as a rural economic development tool. Sixty five people who had participated to organic agriculture projects for over two years in the Weeraketiya area of Hambantota district were selected based on stratified random sampling. Data analysis was conducted through SPSS package, and tabular analysis, and frequencies are presented. The farmers had adopted organic techniques such as incorporate compost, cattle and poultry manure to their lands, use of live fences, soil bunds to improve soil fertility. They also practiced crop covering to reduce the damage of cucurbit fly. Over 60% of the population mentioned that organic farming is labor intensive and yields less. There was 50% of the population using pest repellent plants in their home gardens. Even though they produce vegetables organically, there was no excess value for organic products. It was observed that there were very little niche markets for organic leafy vegetables around Colombo. Opportunities seem remote for expanded markets for exports of organic vegetables. Productivity of organic cultivation (Grains, Potato, and vegetables) was less compared to traditional cultivation. Ultimately Farmers revolved within the vicious cycle of poverty continuously due to low income for their products. Though organic farming provides enormous environmental benefits, it was not sufficient to fulfil the demand. Combination of organic techniques in to conventional farms was good to improve their lands and productivity. Organic vegetable farming was not a viable practice as an economic development tool to uplift the farmers' economy in developing countries. In the absence of market infrastructure assuring a premium for organic farming, it could act as a poverty trap for developing countries.

**Key Words:** *Organic farming, livelihood development, productivity, income*

### Introduction

There are 32% of the people engaged in agriculture based employments in Sri Lanka. Official poverty line is Rs 3,141 in year 2010 (Department of census and Statistics, 2010) Agriculture sector

contributes 12.6 % to the GDP of Sri Lanka. (CIA - World Fact book, 2010)

Sri Lankan government's has focused on a policy of Vegetable Production emphasizing enhancement of high quality

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production, increasing productivity through modern technology and high quality seeds. Many development organizations, viz; department of agriculture, provincial agrarian services, Samurdhi development authority, provincial councils and non governmental institutions promote organic agriculture projects as development tools in rural economy. There seem to be a lack of implementations of conventional production of organic vegetables in rural areas. For example there is no certified organic vegetable grower in Hambantota district, which has many home gardening projects. In organic agriculture farmers are bound to use organic fertilizer instead of synthetic chemicals. It is more an eco-friendly farming practice. But many research studies show that organic agriculture itself provides comparatively low yields to the conventional agriculture. A report from University of California Davis, USA has predicted a 36% reduction in tomato yields in California if conventional insecticides and fungicides were eliminated (Vasilikiotis, 2010). Most of the NGOs try to promote shifts towards organic agriculture. In many cases farmers adopt such practices to receive direct technical, and or financial support. When the assistance stops, these practices are soon abandoned. It indicates that their underlying economic feasibility is not always apparent to farmers. (FAO, 2002)

Organic systems also vary more widely in nutrient availability because of reliance on indigenous soil fertility which exhibits strong spatial variability (Brandt and Molgaard, 2001). Reduction of macro elements Nitrogen, Phosphours and Potassium may leads to reduction of its productivity. Organic materials are not sufficient to refill nutrients removed by crop harvests. The use of corresponding amounts of mineral fertilizers is essential to sustain soil fertility and to achieve increased production (Tom Bruulsema, 2003). Research studies describe that there are higher yields reported from organic lands with comparison to traditional Agriculture. The non organic yields were used to inflate productivity of organic lands. Some of the common mistakes found in sampling, is it includes non organic yield claims as organic, comparing organic yields with non representative non organic methods, few research projects count extraordinary rates of organic yields and omit non favorable yields from the same studies. (Avery A., 2007)

Objective of the study was to examine the potential of organic agriculture practices as a rural economic development tool. Specific objectives were to; identify existing organic farming practices, assess profitability of the practice, and examine the perception of stakeholders of organic farming.

### **Methodology**

Weeraketiya area situated in the Hambantota district of Southern Sri Lanka was selected for the study. There were six Grama Niladari (GN) divisions, where farming was the main source of income. The GN divisions selected were Morayaya North, Morayaya South, Ambaklawewa North, Ambaklawewa South, Gonadeniya

South, and Gonadeniya North. There were 936 families in the above mentioned six GN Divisions. Source (WVL baseline survey, 2009). Sixty five people who had participated to organic agriculture projects for over two years in these GN divisions were selected based on stratified random sampling. They were interviewed using a

questionnaire schedule. Key informant discussions involving agriculture inspectors were also conducted. Statistical reports and publications were used as secondary data. Focus group discussions were held with agriculture officers in other NGOS and

other implementation agencies operating in the Hambantota District. Data analysis was conducted through SPSS package, and tabular analysis, and frequency distributions were used for narrative analysis.

## Findings and Discussion

### Background details of the respondents

#### Level of Education and Main Source of Income:

There were 81.6% of the respondents studied up to GCE O/L or lower than that. Nearly 8% of the respondents had no formal school education. There were 73.7% of the respondents practicing crop cultivation as their main source of income. Respondents had adopted most of the cultivation practices through field experience. The scientific background among farmers was very low, with regard to latent farming knowledge.

But they had predicted and described cultivation related things well with their experience. They had more than ten years of experience in traditional vegetable cultivation. They were dealing with traditional knowledge. These farmers lacked agricultural education and marketing tactics to compete with the current markets.

#### Years of experience in Organic agriculture:

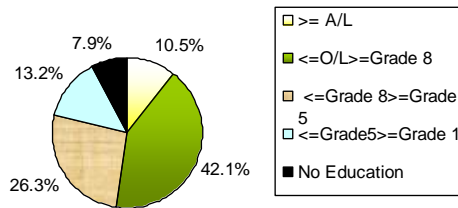
More than 80% of the respondents had experience in practicing organic agriculture for more than two years. There were 57% of the organic growers satisfied with organic techniques at home garden level, because of the garden products they used for home consumption. Most of

them considered of buying pesticides/fertilizer for fewer amounts of plants, an unnecessary cost. They mentioned that they can practice composting for small scale cultivations. Farmers were of the opinion that it was not worth practicing organic agriculture at their traditional lands, in larger extents.

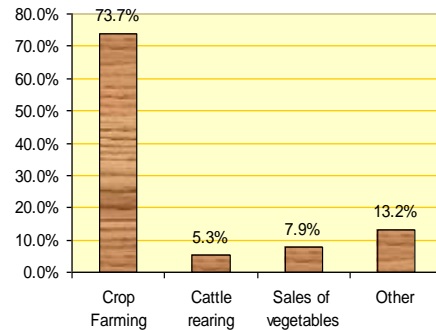
#### Reasons for not practicing it in traditional level:

There was no sufficient evidence of organic vegetable farming practicing to be seen in Hambantota district. Farmers were reluctant to use organic methods in their traditionally cultivated lands, hereto. More than 80% of respondents were engaged in practicing organic farming in land extents of half an acre to one and half acres of vegetable cultivation. Farmers had been practicing conventional agriculture with the green revolution to fulfill the needs of the market. However, because of the following reasons farmers were reluctant to practice organic agriculture in traditional lands.

- a.) High cost of labour for the organic farming practices
- b.) Plants response rate was low
- c.) Difficult to control pest and diseases
- d.) Less yield and productivity.

**Chart 1: Level of Education**

Farmers had adopted traditional farming methods from long time ago (15 years or more). Though there were evidences to suggest that ancient people had better knowledge on chemical free farming practices, the traditional knowledge seemed diffused at present. This invariably acts as a barrier for practice of organic agriculture. The inputs allowed as fertilizers in organic production were generally lower and varied in nutrient content and plant availability than commercial fertilizers. (Tom Bruulsema, 2003). When the farmers opted to use only organic fertilizer, farmers had to use huge amounts of organic manure starting from the land preparation. Whilst farmers had no doubt about the merits of organic farming such as improving soil structure, moisture conservation, retention of soil nutrients etc., they complained that it consumed more labour' money, and thus time. The impact was more especially for vegetable crops known as short tem crops that remain 3-5 months in the field. The hybrid varieties were highly sensitive to the fertilizer. When farmers practiced mono cultivations there were evidence of high number of pest attacks. Manual removal of diseased parts or insects was also a huge cost to the farmers in cultivation. Farmers

**Chart 2: Main Source of Income**

were more concerned of the income rather than the environmental benefits. To get the organic certification to the land was costly and took more time (3-5 years). It was observed that the awareness among farmers of organic certification procedure was very less.

#### **Market opportunities of Organic vegetables:**

There were 97.4% of people selling their produce in weekly fair. The collectors buy vegetables in weight basis at weekly fair. At the Colombo stock market there was no separate price for organic vegetables. As a result the entire products (including traditional and organic farming produce) secure the same/ similar market prices. That is a major factor expressed by the farmers that reduce their motivation towards organic agriculture. Organic techniques need more labour and time. In the mean time organic agriculture provides fewer yields comparing to traditional agriculture. That invariably has reduced the farmers' income. According to the farmer perception their customers were not willing to pay extra rupees for the organic nature of the food, because most of the direct customers of them were low income earning people. It was note-worthy that Sri Lanka had not established a system of export market for organic vegetables.

**Major problems faced by farmers in rural economy at present**

More than two third of the respondents mentioned, lack of adequate amount of income which will not be able to fulfill basic requirements of the family, as the main problem in practicing organic farming. The unavailability and high cost of labor were the other problems that existed among them. They mentioned that they were not getting adequate profit from cultivations due to cost of inputs and improper price fluctuations in the market. The knowledge on chemical pesticide was less among them. Lack of knowledge in soil nutrient management, correct usage of chemicals, and quality seeds may lead to increase input costs. Therefore farmers were unable to cover the costs of seasonal cultivations. They perceived the absence of agricultural extension service to teach farmers on proper management of pesticides and fertilizers. For an example 95% of the farmers in the studied area were adding common fertilizer packages to the soil as a base for growth stage, flowering and pod formation stages. They were unfamiliar with soil nutrient testing. Most of the farmers seek the advice of private chemical shops to identify the causal agents of plant symptoms and to purchase pesticides/herbicides/etc as per the sellers' recommendation. Supplying of this kind of technical information through formal channels is required to make profits through managing cost. There were agriculture extensions services provided by the government in each Agrarian development centers. But the gap between knowledge transfers was prevalent due to numerous reasons.

**Perception of organic farming among Stakeholders**

Respondents perceived that organic fertilizer itself was not economical to

provide nutrients to the traditional cultivations. Currently cultivating varieties were found highly fertilizer sensitive. They perceived that it was more economical to use mixture of organic and inorganic fertilizer to increase crop productivity. They perceived it more beneficial to the environment and as well as to the farmer. They found many entities/ development agencies promoting farmers to cultivate crops organically. Most common practice of the development agencies had been to provide seeds and planting materials and other basic equipments to the community. Respondents were of the view that these development agencies had not concerned about the market demand and the certification of lands. Respondents perceived a lack of a proper monitoring system and coordination among development agencies for the organic lands, at present. Rather, respondents' preferred sustainable agriculture interventions by the development agencies in focusing on rural economic development. Sri Lanka national agricultural policy (SLNAP) aims to promote agricultural production by considering technically sound, economically and environment viable and socially acceptable programmes to promote sustainable agricultural development. It is note-worthy that SLNAP has focused on sustainable agriculture rather than organic agriculture.

**Organic practices that farmers use in traditional cultivations**

Farmers used organic manure such as decompose plant and livestock wastage in land preparation stage. They perceived it to increase water holding capacity of soil and to act as nutrient binding agents which reduce nutrient depletion. Mixed cropping, mulching, crop rotation, and fruit covering were desired practices. It was also observed

that farmers using mix cropping systems with the aim of securing a continuous yield and to increase the land use efficiency. Some mix cropping patterns were perceived to help to reduce pest attacks. Mulching was practiced, especially with water melon to reduce fruit infections from soil borne diseases and insects. Crop covering pattern

was observed in cucurbit cultivations such as Luffa, Snake gourd to reduce the damage of cucurbit fly. Some traditional methods like lighting the oil lamps (Insect trap) in the evening were also practiced. Farmers used contour soil bunds and live fences to reduce soil erosion.

### **Conclusion**

Organic farming is perceived to be environmental friendly. Environment degradation caused by improper farming practices at present was very high. The ability of the nutrient retention capacity of soil decreases with the continuous cultivations. That was probably the reason why earlier people practiced chena cultivation followed by fallow periods. It increases its organic matter content. Organic tactics help to recover the damage done to the environment. It is good to move in to sustainable agriculture practices which pave the way to satisfy farmer and the environment. Sustainable agriculture is about an agriculture technology which environmentally friendly, profitable, productive, and well-suited with current socioeconomic conditions. It highlights

about soil quality, fertility and cost effective use of resources (Fertilizers, Pesticides etc), and improves nutrient cycles in ecosystem. It facilitates to break the vicious cycle of poverty through achieving better profits. It is essential to conduct field base research in participatory research and extension programmes, highlighting the need of small scale and resource-poor farmers. Development agencies need to focus on farmer centered projects which help to diminish rural poverty in practical ways. Otherwise it will be an unsuccessful investment. It is recommended that development agencies need to probe in to the whole system of agriculture with a proper implementation plan rather than switching green lights.

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