

# A Model of Farmers Cooperative Society: A Case Study on Rice Farming Done by Sarvatho Bhadram

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## Abstract

Thanniyam gram panchayat having an agrarian economy located at Anthikad Block Panchayat 20 km from Thrissur in Kerala, India. For generations, the men and women of panchayath have survived on agriculture. Although the village has good rainfall due to the inadequate supply of fresh water through the canals that have left their fields dry. Improper barrage management at the estuarine mouths has caused saltwater to move inwards into their fields. The farmers have used fertilizers and pesticides for a long time, which resulted in the high cost of cultivation. Most of the farmers left farming 17 years ago and hundreds of hectares became Culturable Waste-Land. Then in 2020, the village adopted organic farming under the initiative of Sarvathobhadram-Organic. This paper examines the changing trend in the area after adopting organic farming, increase in production, and success of the convergence method. It also attempts to find out various constraints faced by farmers during the paradigm shift from conventional method to organic.

**Keywords:** Sarvathobhadram-Organic; Thanniyam gram panchayat; Organic joythi rice; Convergence method; SHG'S; Jeevamirtham; Natural methods

## Introduction

### Yagam” –Harvesting Festival at Sarvatho Bhadram- Going Local Creating Self-Reliant Communities-Rishaba

Rishaba Yagam (Agriculture Feast- Krishi Mela,) the flag off program started in January 2020 with the harvesting of different vegetables produced in panchayath and planning to start organic farming for Kharif Season (July-October). The farmer's produce was very useful as it comes during the Post Corona Period. For farmers, it's the grace of "Swami Sree Avangattil Kalari Sree Vishnumaya". The message of Yagam is to support organic farming and convert fallow lands and make them more productive. It started with various cultural and informative agricultural programs including bull race-ritualistic approach is to he-buffaloes for thanksgiving (to God) for protecting their animals from diseases, Ola Medayal (usually used as roofing materials crafting from coconut leaf); Kayar Prikal ( rope making for coir products); method adopted in organic farming, techniques to utilize sustainable means of farming which cause the least harm to the environment; how to increasing facilities for agro-based entrepreneurship; effects of climate change on agriculture; better use of technologies that depend on ecologically sound and responsible principles and arrangement made for one-lakh saplings, seeds, organic fertilizers to start a kitchen garden.

## Methodology

The study has been at Thanniyam Gram Panchayat and Sarvathobhadram-Organic by interviewing the fifty farmers of the group, discussion with Krishi officer, various government departments who coordinated the convergence work, Panchayath President and ward members.

## Findings and Discussion

### Rebuilding from the ground up

Sarvathobhadram-Organic played a critical role in assisting small and marginal farmers to customize, adapt, and tailor the methodology to their needs. The Farmers Club formed in May 2020 with 50 members to generate additional revenues and also encourage farmers to convert to organic farming. The aim of the club is to ensure food and nutritional

security in Anthikad Block Panchayat. The shift initially was slow but gained pace with time.

## Key Intervention

A key intervention made through the program was to distribute seeds through SHGs to create kitchen gardens at homes. A meeting was conducted with farmers in presence of Thanniyam Agriculture officers. Farmers discussed their problems, chalked out solutions, and decided to form a group named Sarvathobhadram-Organic. Started the kitchen gardens which help to increase food diversity in the diets of the participating families and reduce reliance on the market for fruits and vegetables. The successful model was replicated to different wards of the block by supplying fifty thousand saplings, seeds, and organic fertilizers to SHG groups to start kitchen gardens. The project benefited 6500 families by ensuring food supplies and nutrition through kitchen gardening in Block. The arrival of perishables from different states is down by more than half during the Covid. Community-led initiatives help to meet the entire need for vegetables and fruits in the Block Panchayat. Scale-up and converted thirteen hectares of fallow land with organic vegetables and cultivating paddy in twenty-five hectares of Wetlands.

## Vegetables in thirteen hectares of land

Farmers working together: Group farming initiatives are a big step forward for impoverished farmers to bring themselves out of debt. Now the farmers' club consists of six groups (Dhanu, Makaram, Kumbam, Meenam, Medam, and Edavam) managing different stages of agriculture. Much to their surprise and satisfaction, they experienced a profitable crop of organic vegetables. The decision to experiment with organic after 17 years on Cultivable Waste-Land was challenging and unknown. The farmers in Anthikad Block Panchayat are now committed to taking it further.

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**Received** July 31, 2021; **Accepted** August 31, 2021; **Published** September 28, 2021

**Citation:** Sreeni KR (2021) A Model of Farmers Cooperative Society: A Case Study on Rice Farming Done by Sarvatho Bhadram. J Rice Res 9: 263.

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After understanding the miserable situation of the paddy farmers, a plan has been drawn to revive the community's agriculture from the ground up. The first step was the formation of the farmers' group Sarvathobhadram-OR comprising of 50 farmers, most of them owning land in the Peringottukara wetland area.

### Paddy at twenty five hectares of wetland

Peringottukara wetland cultivation is different from other cultivation in many ways. The wetlands are low-lying tracts located 0.5 to 1 m below Mean Sea Level (MSL) and remain submerged for about six months in a year. Rice cultivation in the wetland starts with de-watering low-lying fields. It is part of the natural drainage system and connected by small, large canals and ponds and linked to the sea. The wetland has all the features of Kole wetland but not classified as Kole wetland [1].

Together, the group owns about twenty-five hectares of fertile land having good rainfall and access to irrigation facilities. The members themselves defined their responsibilities and formulated guidelines for internal management. With guidance from Sarvathobhadram-Organic and support from Krishi Bhavan (Agriculture office), they started with activities like selecting crop varieties, soil testing, seed testing, crop planning, and water budgeting and conservation measures. Every step was discussed by the group to find solutions locally (Figure 1).

### Cost -per-hectare

Land Preparation: Primary tillage was done with the help of a tiller and the secondary tillage was done using a tractor which involves ploughing to "till" and overturn the soil; harrowing to break the soil clods into smaller mass and incorporate plant residue, and levelling the field. The cost of cultivation per acre is estimated at Rs.9600 per hectare [2].

### Side protection (Varambu)

Side protection (Varambu): It's used to store water and separate the fields. The total labour cost to prepare side protection for one hectare is Rs 3840.

Application of lime: By applying lime the PH of water increase and prevent the subsurface becoming acidic and helps to increase yield. The total cost for the lime application is Rs 5200 per hectare.

Groundnut & neem cake: 50 kg of Groundnut and 50 kg of neem cake and 100 kg of cow dung were used for one hectare of land. The total cost of groundnut cake is Rs. 6500 and neem cake is 3600 and cow dung is Rs.2400 and labour cost for the application is Rs. 5700. (Total  $6500+3600+5700=$  Rs15800).

Pseudomonas20: kg of Pseudomonas has applied at one hectare of land which helps to controls a number of devastating soil-borne pathogens. The total cost is Rs 2000.

Fish waste: Fish waste allows to supply nutrients to paddy and collected from the market. The total labour cost is Rs 2000/hectare.

### Preparation of Jeevamrutham

Because the cost of and the dependence on agricultural chemicals can often drive marginal farmers into losses, it became clear that organic farming is a more sustainable future for the group. Sarvathobhadram-Organic provided the farmers with training in preparing natural pesticides and fertilizers such as Jeevamrutham (a mixture of cow dung and urine, legume powder, and jaggery). Jeevamrutham is an organic fertilizer and helps to prevent fungal and bacterial plant diseases. 800 litres of Jeevamrutham is used for one hectare of land at regular interval of time. The cost of preparation of 800 litres of jeevamrutha required to spray in a one-hectare rice crop is Rs 16,000 excluding cow dung and cow urine.

### Preparation of seed beds

Used 70 kg of seeds to transplant in one hectare of land and kept 1 m wide by convenient length. Raise the soil to 5–10 cm height. Broadcast pre-germinated seeds in thoroughly puddled and levelled soil. Construct drainage canals for proper water removal. Transplant seedlings at 14-20 days old. The cost for preparing seedbeds is Rs 7200/ Hectare.

### Transplantation

After 20 days rice seedlings were transferred into puddled soil with transplanting machine. 2–3 seedlings per hill at shallow depth at optimum spacing (14 cm × 14 cm). It helps to get higher yields and less weeding. Transplantation is done through rice transplanter machine [3]. Grow seedlings on a thin layer of soil in 30 cm × 60 cm is cut and



Figure 1: Paddy at twenty five hectares of wetland.

kept in trays. Transplanting involves planting young rice seedlings into puddled soil by a machine that requires considerably less time and labour. Total cost for machine transplantation was Rs. 7200/Hectare.

### Water use and management

Rice cultivation in the wetland starts with dewatering low-lying fields. In most places, permanent bunds have been constructed around fields. A network of barrages across the canal and at estuarine mouths has stopped saltwater to move inwards into their fields. A pumping operation system (in and outflow) has locally developed to pump out water surplus and at the time of shortage, water pumped into the canal and then into the field from the river. If saltwater from the estuaries enters the field water pumped using modern pump-sets, to channels around these bunds. The cost for water management is Rs 4000/Hectare.

### Weed management

Using cono weeder, weeds are buried and it also helps to aerate the soil at 7-10 days interval from 10-15 days after planting. It also helps to remove weeds between rows of paddy crop efficiently. The cost of weed management is Rs 12000/Hectare.

### Harvest

The crop matures in a short duration of 120 days and got around 3000 kg per hectare. The Harvest cost was Rs 4000/Hectare. Total Cost from cleaning of canals to harvesting was Rs. 91,300/Hectare (Table 1).

### Convergence and group farming

Canal cleaning: The work of cleaning and desilting of canal for a length of 1 km was done under Rebuild Kerala, Kerala Government Initiative with an aim to reconstruct, and to build ecological and technical safeguards so that the restructured assets could better withstand floods in the future”.

Seed selection: In June 2020, the farmers planted nearly 70 kilograms/Hectares of organic Joythi rice(Seeds) on their land (sown Seeds is 1750 Kgs for 25 Hectares). The farmers got the seed in the Subhiksha Keralam scheme, supported by the government of Kerala using convergence. In accordance with their customs, a ritual of worship was performed by the fields to imbibe blessings from Lord Sree Vishnumaya, their patron deity.

**Table 1:** Cost of cultivation per hectare.

Particulars	Amount (Rs)
Land Preparation (Primary and Secondary Tillage)	9,600.00
Side protection	3,840.00
Lime and Labour	5,200.00
Seed beds and Transplantation	14,400.00
Groundnut cake	6,000.00
Neem Cake	3,600.00
Cow dung	2,400.00
Labour cost	5,760.00
Jeevamruthum (4 times)	16,000.00
Pseudomonas	2,000.00
Fish waste and Labour	2,000.00
Water use and management	4,000.00
Weed management	12,000.00
Harvesting	4,500.00
<b>Total</b>	<b>91,300.00</b>

Finance assistance: Finance assistance of Rs 10,000 per hectare is given under Subhiksha Keralam and People plan fund (janakeeyasoothranam). Rs 5500 per Hectares was given under sustainable rice development scheme- for the promotion of fallow land cultivation and group based paddy promotion concentrated in the major rice growing tracts of the State under seven Special Agriculture Zones with natural endowments for augmenting rice productivity [4].

Other assistance: Apart from Financial assistance 75 percentage subsidy were given towards the cost of lime by Agriculture department and all paddy crop were insured under state crop insurance scheme.

Health benefits: Joythi rice or Kerala red rice is considered to be a rich source of magnesium which helps to regulate the normal breathing pattern of the body. Many of the enzymatic reactions in the body require magnesium as an essential element. It also aids with the transmission of nervous signals through the body and helps with the prevention of heart diseases and osteoporosis. With increased quantities of minerals, vitamins, fibres and more, it contributes to a healthier diet.

Magnesium is a vital component for staying healthy. Half a cup of Joythi Matta rice has equivalent to 42 g of magnesium. It helps in nerve signal transmission to prevent heart disease and osteoporosis.

19.4% of people have diabetes in Kerala, including children. Due to its high magnesium and calcium content, especially in its pericarp, Matta rice protects from developing insulin resistance and enhances optimum glucose uptake, ensuring that you stay healthy and free from disease. Fibre helps add volume and lubrication to your bowel movements. The high fibre content also enhances its anti-diabetic properties by slowing down the absorption of carbohydrates. This helps control blood sugar and indirectly helps you reduce your blood pressure.

Matta rice complements your diet with a good dose of calcium, protecting you from painful and cumbersome diseases such as Osteoporosis and weakened bones. This rice can be taken as plain rice or be used in the making of value-added products like flakes, broken rice, appams, idlis, and various snacks like kondattam and murukku.

### Result and Discussion

After the first harvest in January 2021, it became clear that all their hard efforts had come to fruition. The farmers' initial costs had been dramatically reduced by converting entirely to organic practices, availing of government schemes Rebuild Kerala, Kerala Government Initiative, and Subhiksha. Due to the convergence approach, the Sarvathobhadram-Organic farmers harvested their first profitable crop after seventeen years. They saw a phenomenal increase in net income—from a loss of more than Rs 1,12,000 (4000 kg\*28 Rs (minimum support price)) in the earlier years to a profit of Rs 2,10,000(3000 kg\* Rs 70(Selling price) hectare—using natural farming methods. Profit rises to 50 percent.

Another contributing factor to profitability was the adoption of postharvest techniques such as cutting, cleaning, sorting, and branding. This not only increased the market value of their rice. It also allowed them to sell their organic rice paddy that is always in high demand.

The key to selling their goods is marketing. But the isolated villagers commonly struggle with agriculture marketing and access to the market. With the help of Sarvatho-Organic, the farmers' group identified direct bulk buyers at the big markets thus eliminating the middlemen. Sarvathobhadram-Organic with the help of panchayath started a rural mart where they not only sell rice but also by-products like broken rice, rice with 30 percentage bran, and rice flakes. As a result, the farmers were able to repay all the loans taken from cooperative and nationalised banks with earnings from just one successful season.

## Conclusion

Organic farming at Thanniyam panchayath was a success. Along with farmers' confidence relationships with the local agriculture department have also improved and most farmers get the benefits of government schemes using convergence. More importantly, farmers recovered their confidence and created hundreds of direct and indirect jobs and gained self-respect during covid. Next year they are looking to develop a warehouse and the process to secure organic certification and a self-sufficient village that ensures healthy food for all.

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