3

Research Design

"Where the vision is one year, cultivate flowers;
Where the vision is ten year, cultivate trees;
Where the vision is eternity, cultivate people"

Sustainable agriculture prioritizes resource conservation, producing high-quality food, being environmentally safe, and profitable. It minimizes purchased inputs and focuses on renewable resources. Conventional agriculture relies heavily on synthetic inputs, reducing crop productivity and nutritional deficiencies. Small and marginal farmers struggle to obtain costly inputs, leading to nutritionally deficient crops. Transforming this can ensure food, nutrition, increased yields, and a pollution-free environment. Strengthening the alternative approach of converting organic waste into inputs for organic farming is crucial.

The cleanliness and public health of India, especially in rural regions, are seriously threatened by waste. The main source of organic waste is a serious ecological problem. Vector-borne illnesses and waterborne infections are caused by incorrect disposal of solid and liquid waste; the majority of these illnesses are linked to poor waste management, a lack of clean water, and poor sanitation.

As a result, it is absolutely necessary to enhance waste management techniques by converting organic waste into organic fertilizers, growth boosters, and pesticides. Therefore, the research on **"Creating Awareness on Organic Waste Management Practices among Selected Rural Households"** was carried out with the goal of enhancing soil fertility, environmental cleanliness, and family members' health condition through the implementation of organic waste management practices.

The research design framework for the study comprised the following phases:

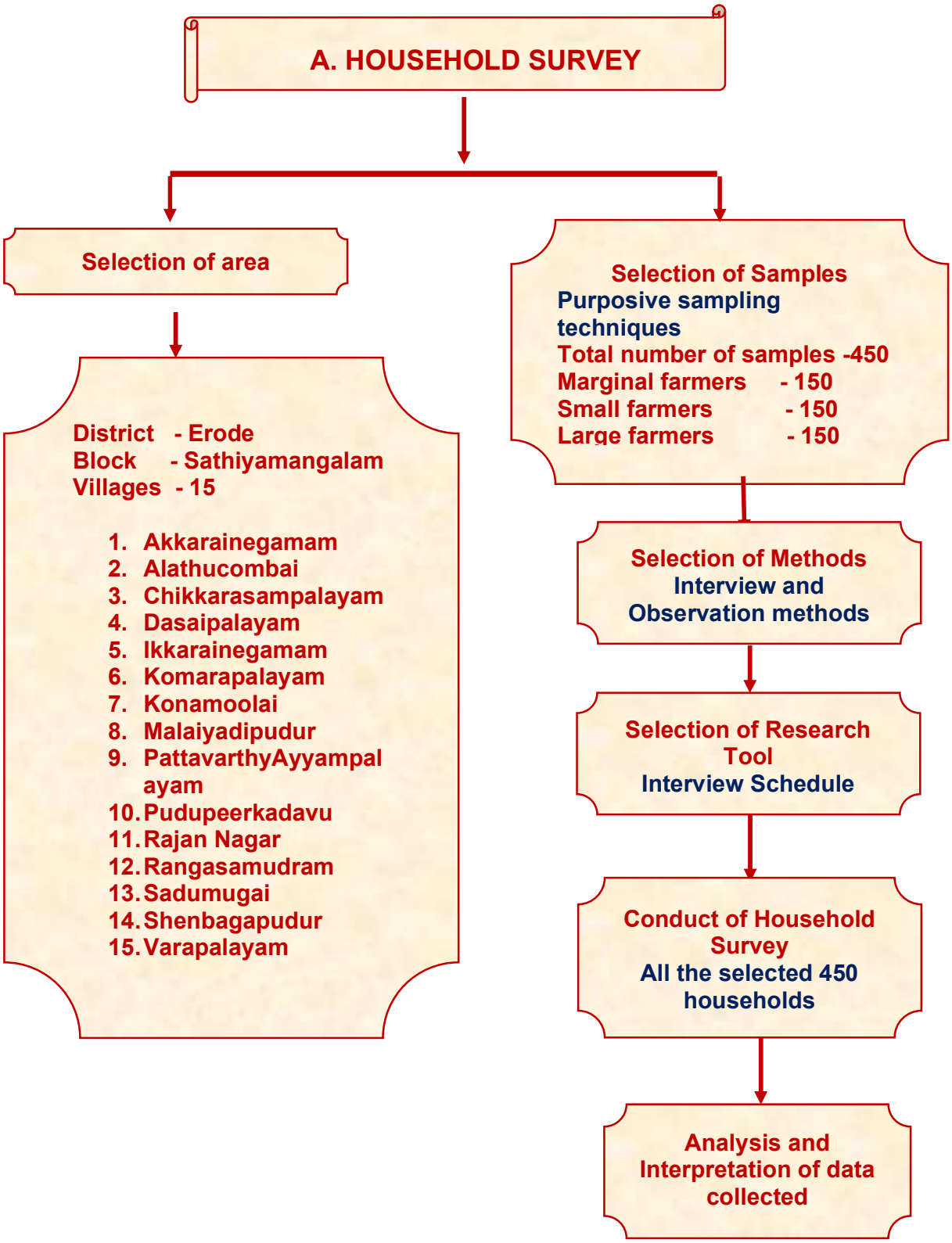
Phase I Household Survey

Phase II Creating Awareness on Organic Waste Management Practices

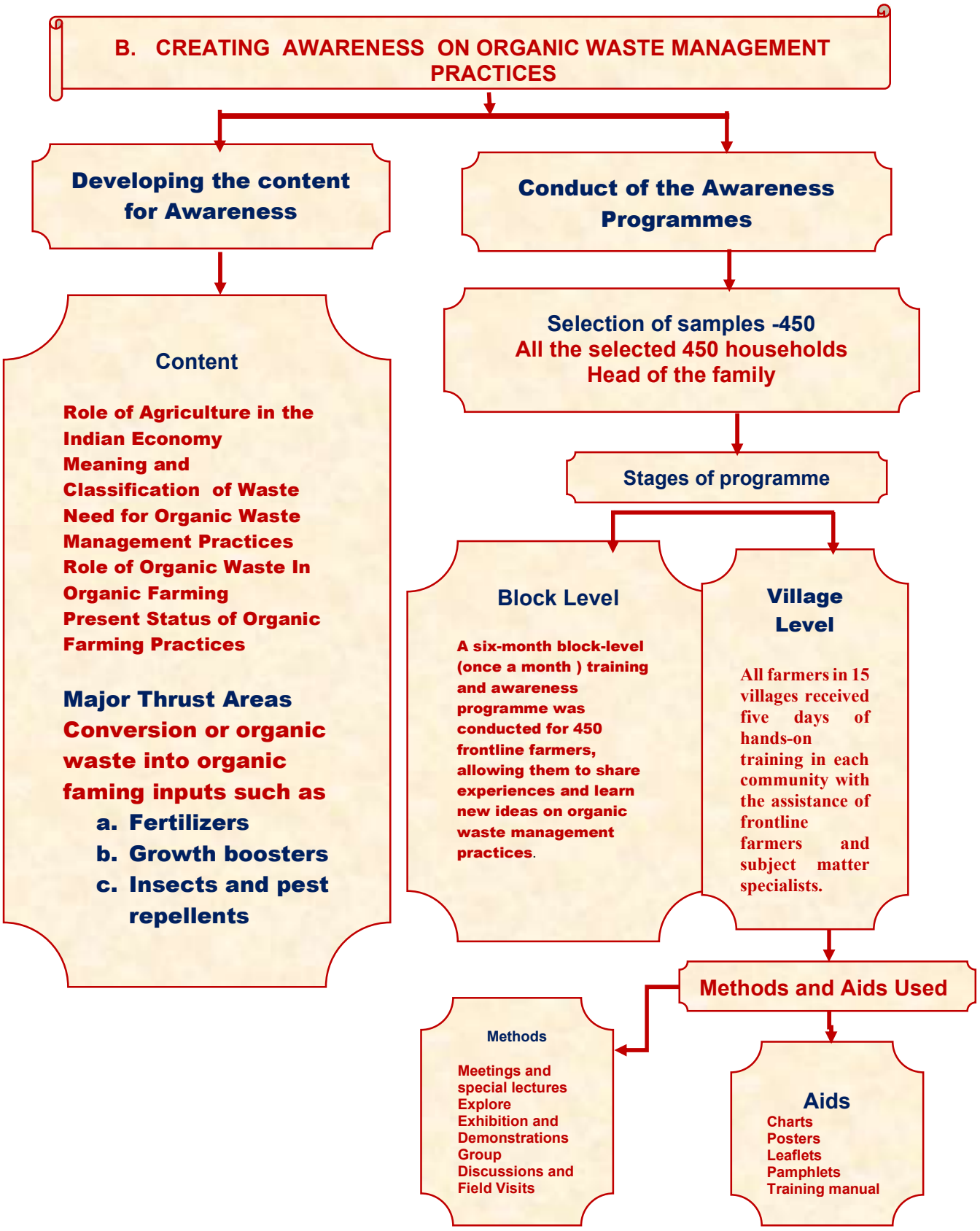
Phase III Evaluating the Impact of the Awareness Programme Conducted

The schematic representation of the research design is given in Figure I.c.

PHASE -I


A. HOUSEHOLD SURVEY
Selection of area
District - Erode
Block - Sathiyamangalam
Villages - 15
1. Akkarainegamam
2. Alathucombai
3. Chikkarasampalayam
4. Dasaipalayam
5. Ikkarainegamam
6. Komarapalayam
7. Konamoolai
8. Malaiyadipudur
9. PattavarthyAyyampalayam
10. Pudupeerkadavu
11. Rajan Nagar
12. Rangasamudram
13. Sadumugai
14. Shenbagapudur
15. Varapalayam
Selection of Samples
Purposive sampling techniques
Total number of samples -450
Marginal farmers - 150
Small farmers - 150
Large farmers - 150
Selection of Methods
Interview and Observation methods
Selection of Research Tool
Interview Schedule
Conduct of Household Survey
All the selected 450 households
Analysis and Interpretation of data collected

PHASE II


B. CREATING AWARENESS ON ORGANIC WASTE MANAGEMENT PRACTICES
Developing the content for Awareness
Conduct of the Awareness Programmes
Content
Role of Agriculture in the Indian Economy
Meaning and Classification of Waste
Need for Organic Waste Management Practices
Role of Organic Waste In Organic Farming
Present Status of Organic Farming Practices
Major Thrust Areas
Conversion or organic waste into organic faming inputs such as
a. Fertilizers
b. Growth boosters
c. Insects and pest repellents
Selection of samples -450
All the selected 450 households
Head of the family
Stages of programme
Block Level
A six-month block-level (once a month) training and awareness programme was conducted for 450 frontline farmers, allowing them to share experiences and learn new ideas on organic waste management practices.
Village Level
All farmers in 15 villages received five days of hands-on training in each community with the assistance of frontline farmers and subject matter specialists.
Methods and Aids Used
Methods
Meetings and special lectures
Explore
Exhibition and Demonstrations
Group Discussions and Field Visits
Aids
Charts
Posters
Leaflets
Pamphlets
Training manual

PHASE III

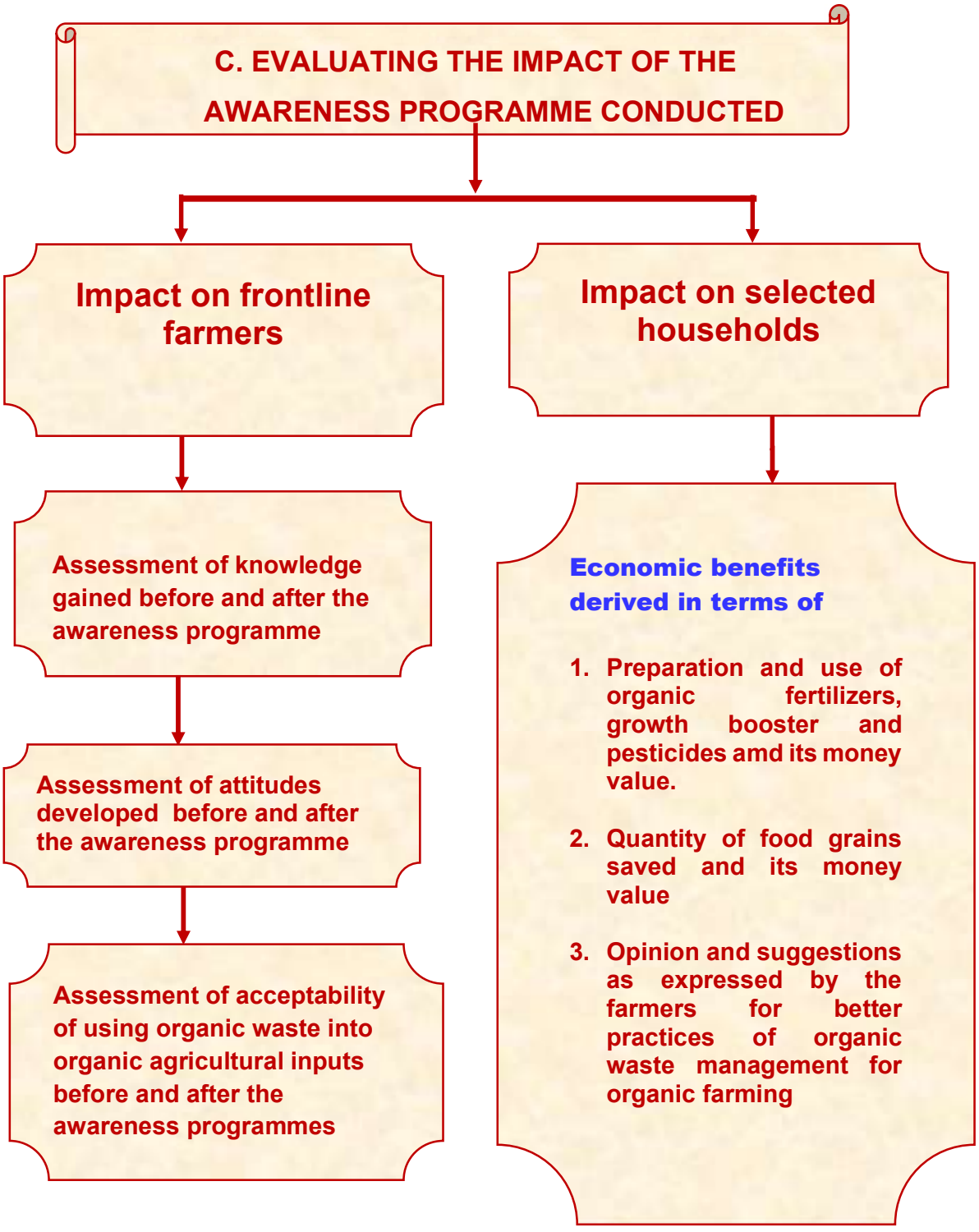


FIGURE - I c. SCHEMATIC REPRESENTATION OF THE RESEARCH

A. HOUSEHOLD SURVEY

Survey research is defined as “the collection of information from a sample of individuals through their responses to questions" (Alam, 2021). This type of research allows for various methods to recruit participants, collect data, and utilize various instrumentation methods. Researchers give household surveys to a sample of households in a population. They offer the interviewer considerable discretion regarding the information requested by respondents (Wolff et al., 2021). The researcher conducted a household survey to understand the existing agricultural farming and organic waste management practices and the availability of botanicals in the selected villages. The household survey included the following steps:

1. Selection of Block
2. Selection of Villages
3. Selection of Samples
4. Selection of Methods
5. Selection of Research Tool
6. Conducting a Survey and
7. Analysis and Interpretation of the Data Collected

1. Selection of Block

India is an important agricultural country. Two-thirds of the population engages in agricultural activities. Agriculture is a primary activity that produces most of the food for consumption. Besides food grains, it also produces raw materials for various industries. Over the years, cultivation methods have changed significantly depending on physical environment characteristics, technological know-how, and socio-cultural practices. Farming varies from subsistence to commercial.

From the records on food grains and vegetables production maintained at the District Agriculture Office of Erode District, it is noted that out of twelve blocks in the district, Sathyamangalam block had the maximum production of food grains and vegetables. Erode is a highly progressive district in Tamil Nadu. It is one of the forerunners in the state in terms of agriculture and industrial activities. Erode District generates 128 MT/day of organic waste. The main theme of the present study is converting organic waste into organic fertilizers, boosters, and pest repellents. Therefore, the Sathyamangalam block was selected as the study area. The agricultural profile of the selected block is given in Appendix I.

2. Selection of Villages

After scrutinizing the village-wise records maintained in the Sathyamangalam block, 15 villages were selected for the study which produces surplus cereals, pulses, and vegetables (Figure 2). Appendix II contains the profiles of the villages selected for the study.

3. Selection of Samples

The success of any study depends on careful sample selection. Researchers must base their sample selection on factors such as the nature of the study, the size of the universe, the size of the sample, the degree of precision desired, and the availability of resources (Bihu, 2021).According to Whitehead and Whitehead (2020), define purposive sampling as deliberately selecting the desired number of sample units based on the object of inquiry. Purposive sampling enables researchers to exercise good judgment and employ an appropriate strategy to select cases that meet the research needs satisfactorily (Priatna, 2021). Hence purposive sampling procedures was followed to select the samples for this study.For the household survey 30 farm households from the selected 15 villages (totally 450 households) with equal representation from marginal (up to 2 ½ acres), small (2 ½ to 5 acres), and large (above 5 acres) land holdings were selected. Since farm men and women play a significant role in agricultural activities, both of them were selected to be the respondents for the household survey.

4. Selection of Methods

The interview and observation methods were adopted for the collection of data. An interview is a two-way method that permits the exchange of ideas and information. It is a unique method because it involves collecting data through direct verbal interaction between the interviewee and the interviewer http://repository.out.ac.tz/id/eprint/3458. This method offers greater depth, support, flexibility, clarity, and stimulation for the respondent to give a valid answer (Ranjit et al., 2019). Through personal interviews and a questionnaire, the researcher surveyed farmers about organic farming and organic waste management practices.

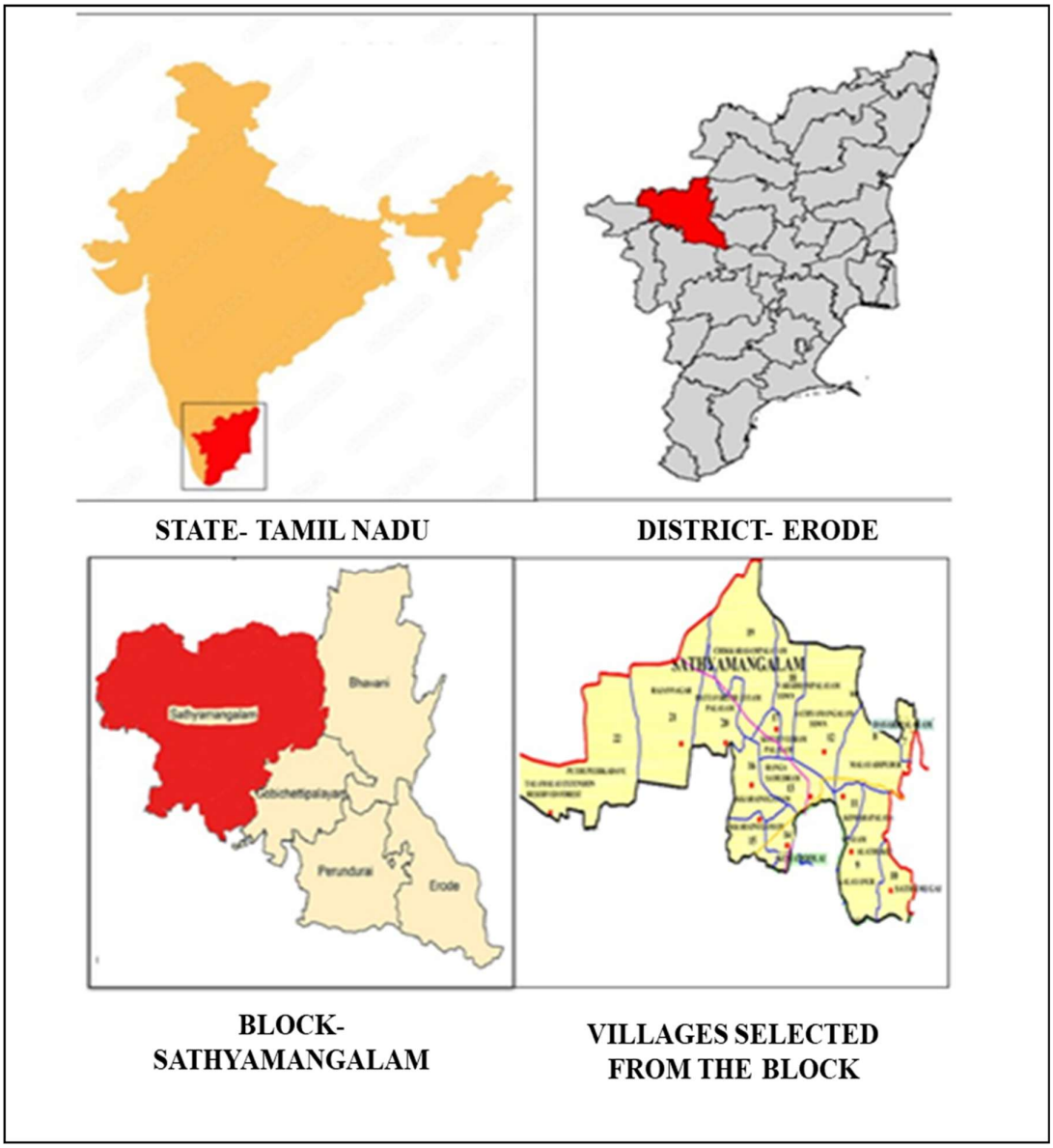


FIGURE 2

AREA SELECTED FOR THE STUDY

The observation method is subjected to checks and controls with respect to validity, reliability, and precision. This technique is very useful for extensive enquiries and generally yields dependable results. A systematic observation during the interview also contributed to the data's accuracy. Therefore, the interview and observation methods were used to gather details relevant to the study.

5. Selection of Research Tool

For this study, the researcher used an interview schedule. According to Zhao and Tang(2012), the schedule facilitates data collection by sending enumerators with schedules to respondents, presenting questions in the order listed, and recording replies in the designated space. To collect details related to this study, it was necessary to include in the schedule questions that would help to elicit information on the socio-economic profile of the sample, types of crops cultivated, problems faced, and measures undertaken to solve the problems. The researcher carefully drew up a schedule to elicit the required information.

To check the validity and reliability of the schedule, pretesting was done through a pilot study. As mentioned by Shehadeh (2024), the pilot study helps in improving data collection routines, trying scoring techniques, revising locally developed measures, and checking the appropriateness of standard measures. The schedule was finalized after a pilot study was conducted in 45 farm households, 15 from each of the three categories. The questionnaire was reviewed by subject experts from Tamil Nadu Agricultural University and the Food Science and Nutrition Department at Avinashilingam Institute, Coimbatore. The finalized interview schedule is given in Appendices III a & b.

6. Conduct of Survey

Gupta and Jha (2015) state that a personal interview effectively initiates an informal verbal and non-verbal conversation for a specific purpose, focusing on certain planners' content areas. Therefore, the personal interview method was chosen to find the required information from the farmers. The finalized schedule facilitated surveying 450 households, with 150 from each of the three categories. The farmers were contacted personally, one at a time, at their convenience. Explaining the study's purpose and the organization that supports it created rapport. The researchers thus instilled confidence in relations with farmers, helped to build confidence, developed goodwill, established a good rapport, and explained the objectives of the study.

The investigator also established a strong link to motivate them to adopt organic waste management practices for agricultural sustainability. The required information was then elicited using the schedule and recorded side by side. Plate 11emphasize the household surveys conducted in the selected households.

7. Analysis and Interpretation of the Data Collected

After obtaining data from a primary or secondary source, the next step in a statistical investigation involves editing and scrutinizing the data. The primary data should be complete, consistent, accurate, and homogeneous when edited (Gupta and Jha, 2015). After collecting the data, researchers must process and analyze it according to the outline established during the development of the research plan (Mezmir, 2020). The first step in the analysis is to classify and tabulate the information collected. The classification and tabulation may provide a clear picture of the significance of the organized material. Therefore, the data obtained was classified, tabulated, and presented in Chapter IV.

B. CREATING AWARENESS PROGRAMMES ON ORGANIC WASTE MANAGEMENT PRACTICES

Enhancing the personal life, health, and well-being of rural residents requires proper and sufficient adoption, awareness-raising, training, awareness and consultation. Enhancing a family's quality of life and capacity for production through practical advancements in their technical and professional abilities supports economic growth as a whole.It was determined to teach farmers how to turn organic waste into organic farming inputs in order to promote sustainability for the environment, agriculture, and people after looking at the issues with organic waste management techniques in the chosen communities.

The steps included were:

1. Formulation of a Training Content on Organic Waste Management Practices
2. Selection of Farmers for the Awareness Programme
3. Organization of the Awareness Programme
4. Follow-up on the Awareness Programme

PLATE 1: HOUSEHOLD SURVEY

Interaction with Farmers and Data Collection

1. Formulation of a Training Content on Organic Waste Management Practices

Organic farming practices does not mean going back to traditional methods. Many of the farming methods used in the past are still useful today. Organic farming takes the best of these and combines them with modern knowledge. Farmers should be trained of all the organic techniques using materials available at farm to work with nature. To be a successfulorganic farmer, the farmer must not see every insect as a pest, every plant out of place as a weed and the solution to every problem in an artificial chemical spray. The aimsis not to eradicate all pests and weeds, but to keep them down to an acceptable level and make the most of the benefits that they may provide and also to provide the best living conditions for the soil life and plant roots.

The household survey revealed the problems farmers faced due to pests and diseases, and the use of chemicals to control pests and diseases during the pre and post-harvest period, which led to the formulation of training content. The detailed procedures for the preparation of training content are given below:

- Perform a thorough analysis to identify agricultural difficulties in the target community, such as present agricultural methods and organic waste management.
- Conduct a review of existing research and evidence-based methods to inform content development. Consider local facts and ideas from previous projects.
- Collaborate with subject matter experts and stakeholders to validate training content. Incorporate their experience with organic waste management, organic agriculture, techniques, and community development.
- Develop organised material to address identified issues fully. Include organic waste management procedures and the value of organic farming practices.
- Ensure training and awareness are tailored to local settings and community needs.

The training content, methods, and aids used during the training programme are given in Table I, while Table II and Plates 2 to 7 show the major thrust areas covered during the training.

TABLE I

CONTENT, METHODS, AND AIDS USED IN THE AWARENESS PROGRAMMES

Training period

July 2021- December2021

Day	Topic	Method/ audio-visual aids used
Day - I	**NEED FOR ENVIRONMENTAL SUSTAINABILITY** The importance of the environment, its causes, and the consequences of degradation. It promotes sustainable practices, encourages informed decision-making, and helps create future generations committed to environmental sustainability. It also addresses global warming and resource depletion, fostering a sense of responsibility and promoting sustainable practices.	Lectures by subject experts and booklet
Day - II	**MEANING AND CLASSIFICATION OF WASTE** Waste refers to discarded or unwanted materials from human activities, including household waste, which includes food scraps, paper, plastics, and more. In India, solid wastes are classified into six components: Municipal Solid Waste, Hazardous Waste, E-waste, Bio-medical Waste, Plastic Waste, and Construction and Demolition Waste. Unmanaged waste can cause environmental pollution, soil and water damage, air pollution, and health problems.	Lectures using slides charts and booklet
Day- III	**NEED FOR ORGANIC WASTE MANAGEMENT PRACTICES** Waste management minimizes environmental impact by reducing landfill waste and reducing greenhouse gas emissions. Organic waste management is crucial for environmental protection and sustainability, conserving resources, and combating climate change. It contains valuable nutrients for natural fertilizer and sustainable energy sources. With an increasing population, waste generation is doubling daily, affecting people's lives, especially in slums near waste disposal areas.	Lectures cum demonstrations, slides, booklet and charts.

Day - IV	**ROLE OF ORGANIC WASTE IN ORGANIC FARMING** Organic farming uses organic waste as a natural fertilizer and soil structure enhancer, reducing waste sent to landfills and reducing environmental impacts. Organic waste, such as animal manure, food scraps, and crop residues, is a natural source of nutrients for plants and supports beneficial microbial activity. Composting is a key process in organic farming, where organic waste materials are decomposed under controlled conditions to create nutrient-rich soil amendments. Types of organic waste used include animal manure, food scraps, crop residues, and green manure. Benefits of using organic waste include reduced reliance on synthetic fertilizers, improved soil structure, enhanced water retention, and increased biodiversity. Organic farming practices also support a healthy soil ecosystem.	Lectures cum demonstrations, Field visits .
Day – V	**PRESENT STATUS OF ORGANIC FARMING PRACTICES** Organic farming is gaining popularity worldwide due to its potential to promote soil health, ecosystems, and people. In India, traditional farming methods have led to the use of chemical fertilizers and loss of fertile land. Tamil Nadu ranks 14th in organic farming with 31,629 hectares of farm land and 11th in organic food production. The state is working on certification and addressing the hazards of chemical residues in greens and vegetables.	Lectures with group discussion.
Day VI	**ROLE AND RESPONSIBILITIES OF AN INDIVIDUAL TO SAFEGUARD OUR ENVIRONMENT AND AGRICULTURAL SUSTAINABILITY** To help the environment, individuals can reduce, reuse, recycle, save water, minimize travel, opt for renewable energy, buy local food, avoid toxic chemicals, participate in political campaigns, and donate to conservation charities. Adopting sustainable practices like reforestation, sustainable agriculture, waste reduction, recycling, and environmental education can help preserve natural resources and promote social and economic equity. Sustainable agriculture, waste reduction, recycling, and environmental education are key strategies for preserving natural resources, protecting the environment, and promoting social and economic equity.	Lectures with group discussions.

TABLE II

MAJOR THRUST AREAS COVERED IN THE AWARENESS PROGRAMMES

Organic resources are converted into organic fertilizers	
Portable Methods **Home Composting:** **a.** Compost Bag	Compost bags are created from old polythene bags. The investigator showed the farmers how to create a home compost bag. Its lightweight design makes it exceptionally simple to handle, carry, and utilize. It is water-resistant and may last up to a year. Only threads are needed for stitching. Cost-effective: a maximum of Rs.10/- per bag.
b. Plastic Container:	To minimize unpleasant odours, gather organic waste in a plastic container and cover it with a tiny bit of dug dirt each day. Once the plastic container is full, leave it undisturbed to enable the anaerobic activity to turn the whole waste into manure. After filling the first plastic container, homeowners should place the organic garbage in a second one. Reuse the same plastic containers for the next stages. The plastic container will serve a household for two years and costs Rs. 520 /- per container.
c. Field Composting 1. Portable method. SilpaulinVermibed	On a farm, vermicompost is a nutrient-rich organic fertilizer and soil conditioner that plants may readily absorb. Worm castings are sometimes used as organic fertilizer. Earthworms crush and consistently blend minerals in basic forms, so plants need little effort to get them. The worms' digestive tracts also introduce helpful bacteria to the soil, resulting in a "living" environment for plants. The sheet is made of silpaulin material and costs Rs. 3550/- per bed. One vermibed may produce a total of 1000 kg of manure at one time. It is simple to migrate from place to place.
2.Permanent methods**:** Compost pit	The compost pit is 90 cm x 90 cm x 1.5 m. The estimated cost of building the compost pit is Rs.4650/-.The availability of space and organic waste determines the size of the pit.

Organic resources are converted into organic growth boosters	
a. Amuthakaraisal	10 litre of water is mixed with 2 kg of cow dung, 2 litres of cow's urine, and 250 grams of jaggery. Keep it for one day. The next day, it is ready to be used for the plant in a ratio of 1:10. One litre of Amuthakaraisal with 10 litres of water is enough for spraying on one acre of land. The cost of 250 grams of jaggery is Rs. 15/-.
b. Jivamrutham	To prepare the mixture, combine 10 kg of cow dung and 5 to 10 litres of cow urine with 200 litres of water, then add 2 kg of jaggery, 2 kg of pulse flour, and a handful of soil together. Three times a day, stir the mixture clockwise for a couple of minutes. Allow the solution to ferment. Fermentation normally peaks after 48–72 hours. One mix is enough to cover an acre. This ensures sufficient mulch in the soil, resulting in healthy soil and, subsequently, healthy plants and crops. The cost of the jaggery of 2 kg is Rs. 120/-, and any pulse powder of 2 kg is Rs. 140/-, approximately.
c. Panchakaviyam	In an earthen pot, mix 5 kg of cow dung with 1 kg of cow ghee for 4-5 days, stirring twice daily, and expose it to sunlight for 30 minutes each morning. On the fifth day, combine the fermented mixture with 3 litres of cow urine and 2 litres of cow milk. 1 lb. curd, 1 kg. Jaggery, 3 lb. tender coconut, 12 red bananas, cover with a wire net and keep it in the shade. Stir the mixture regularly for 15 days until the panchagavya solution is ready. Use this solution daily for up to six months, and adjust its consistency by adding water. The cost of the jaggery is 1 kg. Rs.60/-
d. Fish Amino Karaisal	Ferment 1 part fish waste with 1 part jaggery and dilute it with 3 to 4 parts water. Ferment for 40 days, then strain. This solution can be used daily for up to six months without spoiling. Use it as a nutrient-rich fertilizer to enhance soil fertility and promote plant growth. A kilogram of jaggery costs Rs.60/- 1 kg of fish waste, Rs 150/-

e. Egg and Onion Karaisal	Egg and onion Karaisal, a homemade fertilizer, is made by soaking approximately 200 grams of crushed eggshells and 300 grams of onion peels in 1 litre of water. Let this mixture ferment for approximately 2 to 3 weeks. Following the fermentation process, strain the liquid and dilute it with water in a 1:5 ratio, then use this nutrient-rich solution to nourish plants, promoting healthy growth and soil fertility.
f. Lemon and Egg karaisal	Ferment 500 grams of lemon peels and 200 grams of crushed eggshells in approximately 2 litres of water for 3 to 4 weeks to create Lemon and Egg karaisal, a natural fertiliser. Following the fermentation process, strain the liquid and dilute it with water in a 1:5 ratio. This nutrient-rich solution enhances soil fertility and supports healthy plant growth.
g. Arapumorukaraisal	Soak 1 to 2 kg Arapu leaves in water, then mix with 5 liters of sour buttermilk and 1 liter of tender coconut water. Add 500 grams of waste fruit or 1 liter of fruit juice from waste fruit. Ferment the mixture in a mud pot or plastic container for seven days. Dilute 1 liter of the resulting Arapumorukaraisal fertilizer with 10 liters of water before use.
Organic Resources are Converted into Organic Pesticides	
h. Neem Leaf Extract	10 - 12 kgs of Neem leaves are required for use in an acre of land. Pound the leaves gently and tie it loosely with a cotton cloth. Soak this overnight in a vessel containing 20 - 24 litres of water. After this, it is filtered. On filtering, 15 - 17 litres of extract can be obtained. About 500 - 1000ml of extract should be diluted with 9 to 9½ litres of water before spraying.
i. Cow Dung Extract	1 kg of dung mix it with 10 litres of water. Filter the extract with a gunny cloth. Add 5 litres of water to the filtrate and again filter it with the same cloth. Spray the filtrate on the plant.

j. Neem Kernel Extract	3 - 5kgs of Neem kernel is required for an acre. Remove the outer seed coat and use only the kernel. If the seeds are fresh, 3kgs of kernel is sufficient. If the seeds are old, 5kgs are required. Pound the kernel gently and tie it loosely with a cotton cloth. Soak this overnight in a vessel containing 10 litres of water. After this, it is filtered. On filtering 6 - 7 litres of extract can be obtained. 500 - 1000ml of extract is used for one tank (a tank of 10 litre capacity). 500 - 1000ml of extract should be diluted with 9 to 9½ litres of water before spraying. The concentration of the extract can be increased or decreased depending on the intensity of the pest attack. The shelf life of this extract is one month.
k. Seed Treatment with Cow's Urine	Dilute 500 ml of cow's urine with one litre of water. Before sowing the seeds, soak them in this mixture for half an hour, and shade-dry the seeds before sowing. Normally, soak paddy seeds in water for a day or two before sowing. Therefore, first treat the paddy seeds with cow's urine before soaking them in water.
l. Akniasthiram	Akniasthiram is a natural pest control method that employs the following ingredients and quantities: 20 kilograms of cow dung, 1 kilogram of ash, 2 kilograms of green chillies, 1 kilogram of garlic, and 5 kilograms of neem leaves. Mix these ingredients thoroughly in a mud pot. Stir the mixture five times, then cover it tightly with a cloth for two days. After this period, remove the cloth and leave it uncovered for an additional two days. The clear water that accumulates on top after this process is Akniasthiram, which can be effectively used by mixing 3 litres of it with 100 litres of water to spray on crops, resulting in the disappearance of pests without leaving any residue.

m. Neemasthiram	Prepare Neemasthiram, an organic pest repellent, with the following ingredients and quantities: 2 kilograms of country cow dung, 10 litres of country cow urine, and 10 kilograms each of neem seeds and neem leaves. Combine these ingredients in a large container with 200 litres of water and let it soak for 48 hours. Cover the container but do not fully seal it during this time, and stir it three times daily in an anti-clockwise direction. Following the soaking period, strain the mixture and let it ferment in a shaded area. This potent solution serves as an effective pest repellent for a variety of pests. The fermentation process typically lasts for at least thirty days.
n. Brahmastra	Brahmastra, a potent herbal pesticide, requires the following ingredients and quantities for its preparation: 10 kilograms of neem leaves, 3 kilograms of basil leaves, and 2 kilograms of turmeric leaves, combined with 10 litres of cow dung Prepare this mixture in a mud pot, strain, and store the solution after soaking it for 48 hours. To use, dilute 2 litres of the solution in 100 litres of water, along with 3 litres of cow dung slurry, per acre of land. Apply this diluted mixture to the crops 2-3 times a month to effectively repel pests like aphids.
o. Turmeric Extract	Grind 20 grams of turmeric roots into small pieces. Combine the turmeric pieces with 2 litres of cow dung slurry. Allow the mixture to ferment overnight. After fermentation, strain the mixture to remove any solid particles. Dilute the strained mixture with 2-3 litres of water. Using this diluted mixture, thoroughly water the plants, paying particular attention to the roots.
p. Ginger Extract	Finely chop 500 grams of ginger, soaked in 2 to3 litres of water, ensuring thorough soaking before straining. Soak the Khadhi soap in water overnight, and then combine it with this solution. Add 4 millilitres of this solution to a litre of soap solution and thoroughly spray it over the plants.

q. Garlic, Chilli, Ginger Extract	Soak 1 kilogram of garlic cloves in vegetable oil overnight. The next day, finely chop 1 kilogram of soaked garlic, along with 0.5 kilograms each of green chillies and ginger. Separately, mix each chopped ingredient with water. Combine strained mixtures with soaked garlic, grind into a smooth paste, and dilute with 3 litres of water. Strain the solution well and use it as a pest repellent.Soak the khadhi soap in water overnight, and then combine it with this solution. Add 4 millilitres of this solution to a litre of soap solution and thoroughly spray it over the plants.
r. Castor Seed Extract	Soak 5 kg of castor seeds in 5 litres of water for 10 days, then strain the solution. Mix 2 litres of the strained solution with 3 litres of water and apply at a rate of 5 buckets per acre. Use traps coated with castor seeds, such as coconut shells or clay pots, to effectively attract and eliminate pests. Repeat every two days for the best results.

Conclusion

Organic resources have been converted into fertilizer, boosters and pesticides, and they are used for organic farming. Organic farming is more economical than other farming techniques. Its range of benefits includes reduced soil erosion (retaining fertility and avoiding the need for fertilizers and pesticides) and less use of water. Therefore, organic farming is more profitable.

"A vegetable hand-picked from your garden tastes better than anything you can buy in a store."

HOME COMPOSTING

PLATE 2: PREPARATION OF COMPOST IN GROW BAG

HOME COMPOSTING

PLATE 3: PREPARATION OF COMPOST IN PLASTIC CONTAINER

FIELD COMPOSTING

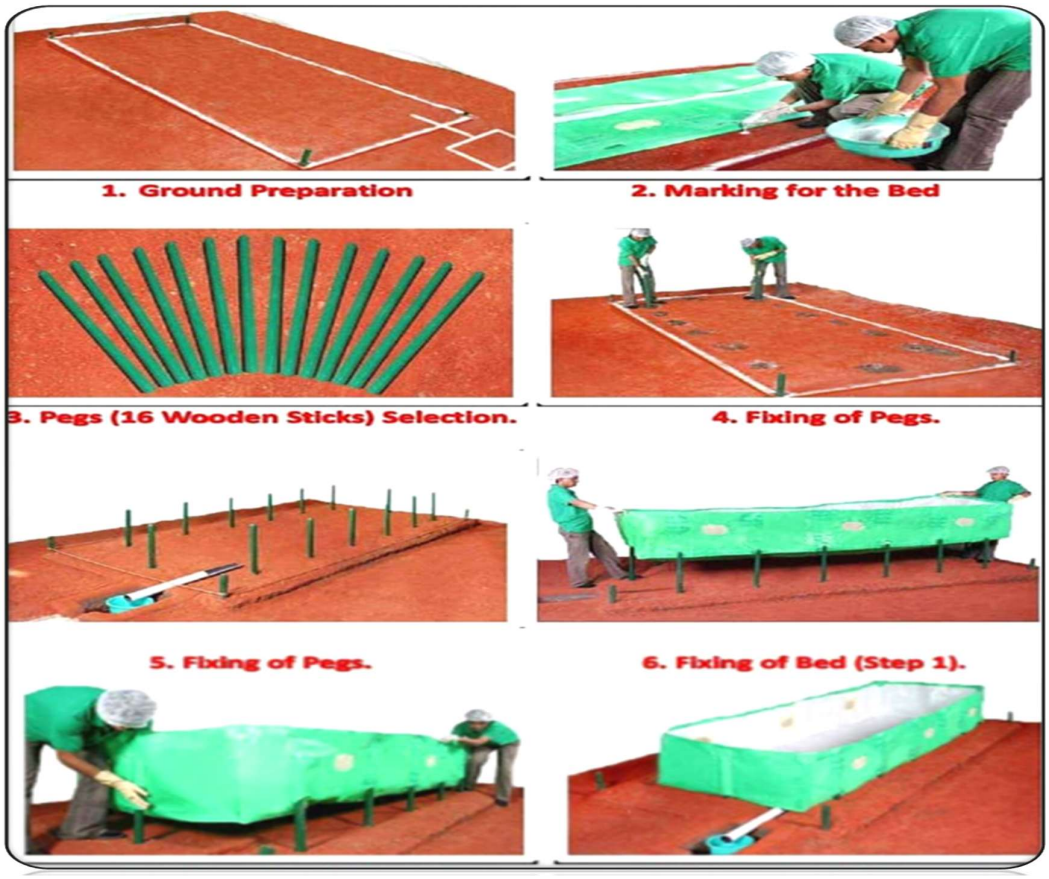


PLATE 4: PORTABLE METHOD OF COMPOSTING -SLIPAULIN VERMIBED

PLATE 5: PERMANENT METHOD OF COMPOSTING -COMPOST PIT

ORGANIC GROWTH BOOSTERS

a) Amuthakaraisal

b) Jivamrutham

PLATE 6: PREPARATION OF ORGANIC GROWTH BOOSTERS

c) Panchakaviyam;

d) Fish Aminokaraisal

PLATE 6: PREPARATION OF ORGANIC GROWTH BOOSTERS

e) Egg and Onion Karaisal

f) Lemon and Egg karaisal

g) Arapumorukaraisal

PLATE 6: PREPARATION OF ORGANIC GROWTH BOOSTERS

ORGANIC PESTICIDES

a) Neam Leaf Extract

b).Cow Dung Extract

c.)Neen Kernal Extract

PLATE 7: PREPARATION OF ORGANIC PESTICIDES

d) Seed treatments with cow's urine

e) Akniasthiram

f) Neemasthiram

PLATE 7: PREPARATION OF ORGANIC PESTICIDES

g) Brahmastra

h) Turmeric extract

i) Ginger extract

j) Garlic, Chilli, Ginger extract

PLATE 7: PREPARATION OF ORGANIC PESTICIDES

2. Selection of trainees (frontline farmers)

The best way to make use of the neutral and potential capabilities of farmers is to provide them with opportunities for self-development through training, which means the transfer of technologies for improving their existing knowledge and skills and thus enhancing their capabilities. It is a well-known fact that both men and women in India play an important role in agriculture.

During the household survey, the investigator found that the head of the familiesplays a major role in agriculture and allied activities in the selected households, and hence, they were selected as trainees (front-line farmers) for the study. A team of 30 trainees per village, representing 10 each from the marginal, small, and large categories, comprising 450 traineeswas selected from all 15 villages in the Sathyamangalam block based on their initiative and willingness to popularize the knowledge acquired through training with other members. These farmers came from households that produced surplus food grains, and they were also interested in organic farming and the availability of herbs within their reach. The training and awareness will equip them with skills to generate income, which will support them in running their families with the highest satisfaction.

3. Organization of the awareness programmes

Training and awareness involves face-to-face interaction between members. It helps to gain more practical and theoretical knowledge. Training and awareness is a planned communication process that primarily aims to provide the skills, knowledge, and attitude required by specified objectives related to the desired pattern of behaviour (Kukkonen and Harjumaa, 2018). The training andawrenesswas planned in two stages.

1. Training and Awareness of Frontline Farmers at the Block Level
2. Training and Awareness of Farmers at the Village Level

1. Training and Awareness of Frontline Farmers at the Block Level

The training and awareness programme was conducted once a month for six months, with experts from Tamil Nadu Agricultural University, Avinashilingam Institute, Panchayat Union Agricultural Officers, and other experienced farmers. The course content and major trust areas were covered during the block-level training.

The investigator explained the study's purpose and training programme to them, seeking their cooperation to ensure the study's success. The trained front-line farmers serve

as an effective medium, approaching producers to make them aware of organic waste management practices for sustainable agriculture and finally transferring their knowledge to other members of their respective villages.

2. Training and Awareness of Farmers at the Village Level

"A village is a hive of glass, where nothing unobserved can pass."

Charles H. Spurgeon

The instruction at the periphery level in the respective villages was intended for the entire farm population. With the help of the trained frontline farmers, a five-day camp was held at each village level in all of the selected villages. The camp was held at local schools, homes, and common place at the villages. The sustainable agriculture training and awarenessprogrammeemphasisedon organic waste management for organic farming. The investigator advised the trained farmers on how to increase their training effectiveness. Experts from Tamil Nadu Agricultural University, the Panchayat Union Agricultural Officers, and other experienced field workers assisted farmers in gaining practical experience in the preparation of organic fertilisers, boosters, and pest repellents.

The researcher combined all types of extension methods-individual, group, and mass- with varied modes of communication to generate awareness among farmers about organic waste for organic farming. Plate 8 to 13 depicts the methods and tools used during the training and awareness programme.

PLATE 8: COLLABORATIVE MEETINGS WITH AGRICULTURAL OFFICERS

PLATE 9: MEETINGS AND SPECIAL LECTURES AT THE BLOCK LEVEL

PLATE 10: MEETINGS AND SPECIAL LECTURES AT THE VILLAGE LEVEL

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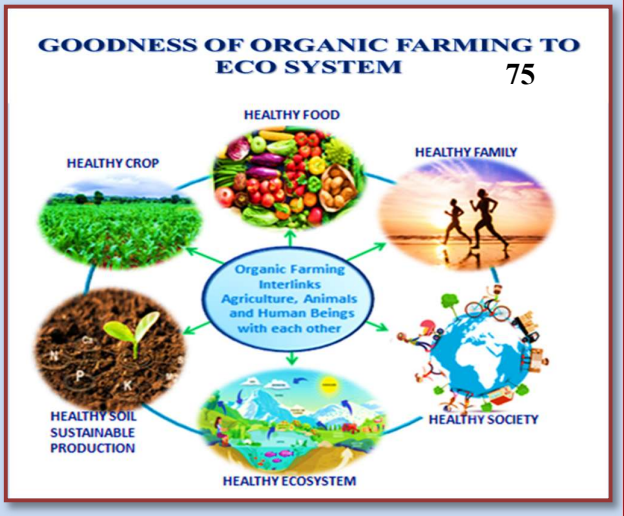

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PLATE- 11 CHART USED DURING THE AWARENESS PROGRAMMES

PLATE 12: POSTERS USED DURING THE AWARENESS PROGRAMMES

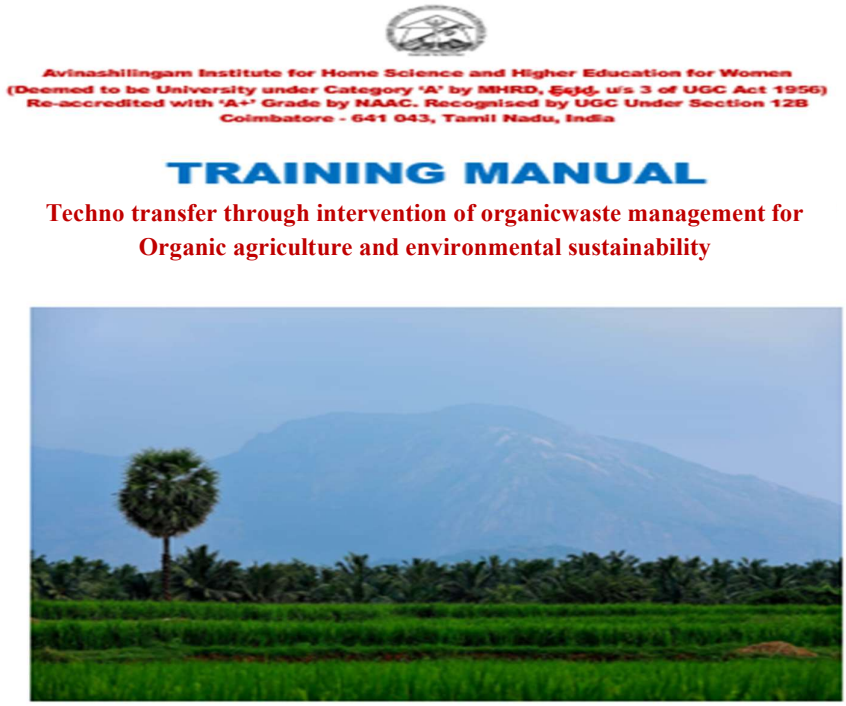

PLATE 13: TRAINING MANUAL DISTRIBUTED TO THE FRONTLINE FARMERS

It contains, Importance of Agriculture, Indian Agriculture Systems, Ancient Agricultural Practices, Existing Status of Agriculture Practices, Challenges to feed Ever Increasing Population, Inorganic Agriculture and its drawbacks, Organic Agriculture and its Fundamental Principles and Processes such as Organic Resources converted into Organic Boosters, Pesticides to Preserve Soil, Food and Human Health.

C. EVALUATING THE IMPACT OF THE AWARENESS PROGRAMMES CONDUCTED

Evaluation is a systematic process of measuring the end product and impact of an effort, aiming to determine if training and awareness has achieved its objectives. It involves collecting evidence about the programme's outcome and interpreting it to determine if the goals and objectives set before implementation have been achieved. It assesses the changes attributed to an intervention or policy. (David, 2018), and Mertens and Wilson (2018).

As a result, the training programme's impact was assessed to determine its effectiveness of organic waste management for organic farming. Farmers' conservation of every grain of food produced can also reflect their understanding and motivation to adopt organic agricultural farming practices.

The impact of the training and awareness programmes on organic waste management for organic farming among selected rural households was assessed in terms of

1. Impact on Frontline Farmers
2. Impact on the Selected Households

1. Impact on Frontline Farmers

“Farmers are the backbone of India’s economy. They are protectors of our land and our food security.”

HardeepPuri, Union Minister

Our culture places a high value on farmers. They are essential to civilisation, as everyone requires healthy food to survive. Farmers make significant contributions to the nation's economic development. With their contributions to food security, employment, and

GDP through agricultural output, export revenue, and industry support. We have an obligation to treat all farmers with dignity.

The impact of the training and awareness programmes on organic waste management for organic farming on frontline farmers was evaluated on the following lines:

a. Knowledge Gained
b. Attitudes Developed
c. Acceptance to Adopt Organic Waste Management for Organic Farming

(a) Knowledge Gained

Diverse knowledge fosters the development of a wide range of products through the promotion of new ideas and innovative combinations. Additionally, knowledge contributes to economies of scope by generating shared value among different products (Ayoub, 2023). Learning is a continuous process. We should crave farming, where we apply our knowledge for the upliftment of the downtrodden and the betterment of society (Venna, 2013).Farmers possessed a certain amount of information regarding organic waste management and organic farming practices both before and after the training.

Forty-five knowledge evaluation questions were created and approved by DC members and subject matter experts to gauge the level of knowledge of frontline farmers. Their general opinions on organic waste management, environmental hygiene, inorganic and organic farming, the health risks of inorganic manures, fertilisers, and pesticides, and the financial advantages of turning organic waste into organic fertiliser, boosters, and pesticides were all covered in the knowledge assessment. Before and after the awareness exercises, knowledge tests were given. The inventory and knowledge check employed are described in Appendix IV

The mean scores, pre- and post-exposure, were recorded, and the 't' value was calculated to test the significant difference between the two sets of exposures.

(b) Attitudes Developed

"The greatest discovery of my generation is that a human being can alter his life by altering his attitude."

-William James

In order to find the right reflection of the frontline farmers attitude towards organic waste management and organic farming practices, an attitude check/inventory with 25 questions covering various aspects of organic waste management and organic farming was developed and approved by DC members and subject specialists. Appendix V explains the attitude inventory used before and after the training and awareness programmes. Summarizing the responses obtained against each item, a 't' test was conducted to identify any significant differences in the attitudes of trainees between the pre- and post-training periods.

(c) Acceptance to Adopt Organic Waste Management for Organic Farming

The acceptance and adoption of organic waste in organic farming are generally high, with farmers recognizing its value for soil health and crop yields. Organic waste, such as crop residues and compost, is widely used to improve soil fertility and reduce reliance on synthetic fertilizers. However, factors like low awareness and limited infrastructure can hinder broader adoption. To assess the selected trainees' acceptance of organic waste management for organic farming practices before and after the training programme, a questionnaire was developed with 25 aspects,and approved by the subject experts and DC members . Appendix VI provides the level of acceptance as expressed by the frontline farmers. The investigator recorded the mean scores both before and after the exposure and calculated the 't' value to test the significant difference between the two sets of exposures in terms of acceptance of adoption status .

2. Impact of on the Selected Households

The level of adoption of organic waste management for organic farming practices was assessed after a period of six months to one year, which corresponds to the necessary time for one cropping cycle. The researcher periodically monitored the adoption level through frequent visits to the selected villages. The researchers instructed the farmers on all aspects of safe production and cultivation, emphasizing the use of organic fertilizers, boosters, and pesticides to control insects and pests on food grains. The researcher directly observed the selected households putting their knowledge into practice as part of the evaluation process.

The study analysed the economic benefits of the organic composts, boosters, and pesticides produced and used by the selected households. The decrease in the use of

inorganic pesticides and growth-promoting chemicals in agricultural operations served as evidence of it. The percentage of food grain saved and the related cost were determined in part by the experience of the selected frontline farmers. In addition, the researcher collected household responses about the feasibility and acceptability of handling organic waste for organic farming methods.

Save grains, save lives.

Chapter IV deals with the findings of this study