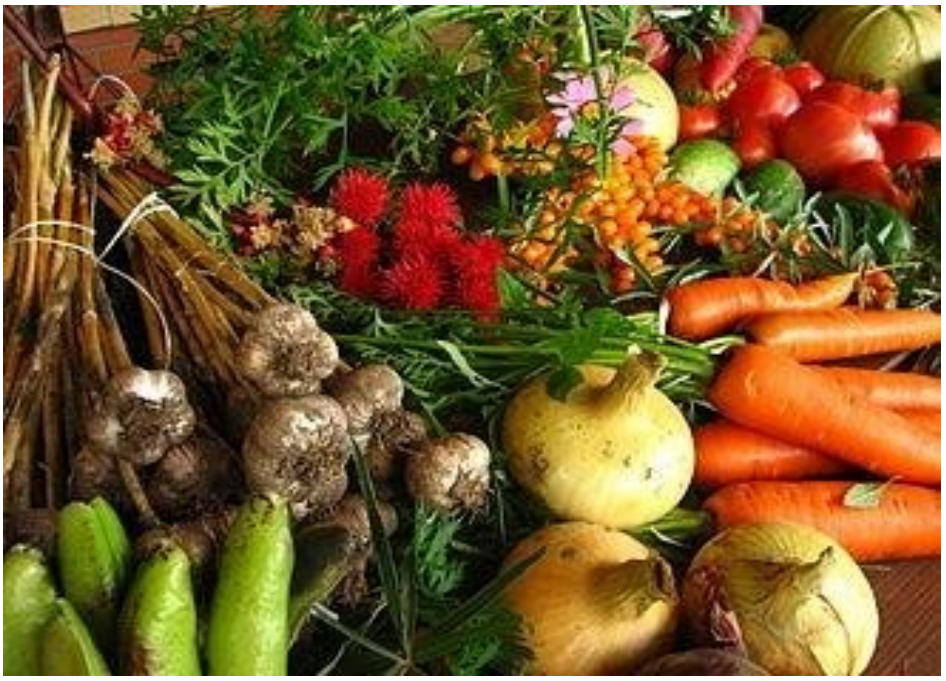
MAHATMA GANDHI UNIVERSITY

MOOC ORGANIC FARMING PROJECT REPORT 2020-23



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CHAPTER- 1

INTRODUCTION

Food quality and safety are two vital factors that have attained constant attention in common people. Growing environmental awareness and several food hazards (e.g. dioxins, bovine spongiform encephalopathy, and bacterial contamination) have substantially decreased the consumer's trust towards food quality in the last decades. Intensive conventional farming can add contamination to the food chain. For these reasons, consumers are quested for safer and better foods that are produced through more ecologically and authentically by local systems. Organically grown food and food products are believed to meet these demands.

In recent years, organic farming as a cultivation process is gaining increasing popularity Organically grown foods have become one of the best choices for both consumers and farmers. Organically grown foods are part of go green lifestyle.The word "Organic Farming" is derived from two words – "Organic" means "origin from a living thing" and "Farming" means "production system alive with long life".

The term Organic was first coined by North Bourne, in 1940, in his book entitled "Look to the land". The British botanist, Sir Albert Howard studied Traditional farming and considered such practices as superior to modern agricultural practices which is Described in his work "An Agricultural Testament" published in 1940 emerged as the origin of modern Organic farming. Later he is known as the "Father of Organic farming".Organic Farming system is not new and is being followed from Ancient time. It is a system of agriculture originated early in the 20th century in reaction to rapidly changing Farming practices.

Organic Farming is a method of farming system aimed at cultivating the land and raising Crops in a way as to keep the soil alive and in good health by use oforganic wastes and other biological Materials along with bio fertilizers to release nutrients tocrops for increased sustainable production in an eco-Friendly pollution free environment

Organic farming, agricultural system that uses ecologically based pest controls and biological fertilizers derived largely from animal and plant wastes and nitrogen-fixing cover crops. Modern organic farming was developed as a response to the environmental harm caused by the use of chemical pesticides and synthetic fertilizers in conventional agriculture, and it has numerous ecological benefits.

Compared with conventional agriculture, organic farming uses fewer pesticides, reduces soil erosion, decreases nitrate leaching into groundwater and surface water, and recycles animal wastes back into the farm. These benefits are counterbalanced by higher food costs for consumers and generally lower yields. Indeed, yields of organic crops have been found to be about 25 percent lower overall than conventionally grown crops, although this can vary considerably depending upon the type of crop. The challenge for future organic agriculture will be to maintain its environmental benefits, increase yields, and reduce prices while meeting the challenges of climate change and an increasing population.

BENEFITS OF ORGANIC FARMING

- Makes agriculture more rewarding,sustainable and respectable.
- Sustains soil fertility by preventing the loss ofsoil and leaching of minerals.
- Protects and enriches biodiversity - micro organisms, soil flora and fauna, plants andAnimals.
- Requires less water and promotes waterconservation.
- Improves and maintains ago ecosystem andnatural landscape for sustainable production.
- Depends mostly on renewable on-farmresources.
- Encourages consumption of renewable energyresources- mechanical and other Alternate sources of fuel.
- Includes domestic animals as an essential part of organic system which helps Maintaining soil fertility and also increases theincome of farmers.
- Ensures pollution free air, water, soil, foodand, natural ecosystems
- Improves agro-biodiversity (both varieties and crops).
- Protects and enhances traditional knowledge in farming, processing and seed Improvementleading to its protection for the future generations
- Reduces the cost of production throughlocally suitable methods and inputs.
- Produces adequate quantity of nutritious,wholesome and best quality food and develops a healthy food culture

ORGANIC AGRICULTURE AND SUSTAINABLE DEVELOPMENT

The concept of sustainable agriculture integrates three main goals— environmental health, economic profitability, and social and economic equity. The concept of sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs.

The very basic approach to organic farming for the sustainable environment includes the following: -

1. Improvement and maintenance of the natural landscape and agro-ecosystem.
2. Avoidance of overexploitation and pollution of natural resources.
3. Exploitation synergies that exist in a natural ecosystem
4. Maintenance and improve soil health by stimulating activity or soil organic manures and avoid harming them with pesticides.
5. Optimum economic returns, with a safe, secure, and healthy working environment.
6. Acknowledgement of the virtues of indigenous know-how and traditionalfarming system.

Long-term economic viability can only be possible by organic farming and because ofits premium price in the market, organic farming is more profitable. The increase in the cost of production by the use of pesticides and fertilizers in conventional farming and its negative impact on farmer's health affect economic balance in a community and benefits only go to the manufacturer of these pesticides. Continuous degradation of soil fertility by chemical fertilizers leads to production lossand hence increases the cost of production which makes the farming economically unsustainable. Implementation of a strategy encompassing food security, generation of rural employment, poverty alleviation, conservation of the natural resource, adoption of an export-oriented production system, sound infrastructure, active participation of government, and private-public sector will be helpful to make revamp economic sustainability inagriculture.

Fertilizers

Large-scale organic farmers typically use mass-produced and certified organic fertilizers.However, organic gardening enthusiasts and small-scale farmers use the following fertilizers while organic farming:

Manure

Cow or chicken manure is one of the most prevalent organic farming fertilizers used. The agricultural use of manure goes back more than 8,000 years ago and finds its origin in Europe, from where it spread out to the entire world. It was particularly useful for those rearing livestock alongside farming.

The nutritional content of manure depends on its source, age, and bedding material. Typically, manure is composted for 180 days (6 months) or until fully composted. While poultry manure has higher nitrogen content (NPK: 3-1-1), cattle or horse manures have NPK in the ratio of 2-1-

1. Manure continues to fertilize the soil for several years to come. It may also contain seeds, which will cause weeds to sprout up.

Compost

Compost is yet another staple fertilizer of organic farming. It introduces organic matter into the soil and feeds the microbe biome to boost the soil's fertility and water holding capacity. Breaking down plant or vegetable residue will yield a salt-balanced compost that can improve soil health and supplying micronutrients to plants. Compost generally contains NPK in a 2-1-1 ratio. However, the ratio is subject to change depending on the organic material.

Fish or Fish By products

Processing fish or fish by products using acid, enzyme, or heat treatment results in the formation of a fish emulsion. This fish emulsion is used as a fertilizer in organic farming. Naturally, itemits a powerful and revolting odour, except in the case of fish emulsions prepared using enzymes. Regardless, fish-based organic fertilizersare highly rich in macronutrients with an NPK

Bones or Blood Meal

Bone meal is an extremely nutritious fertilizer in organic farming due to its high phosphorus content. On average, the NPK ratio of bone meal is at 3-15-0. However, the phosphorus takes about a few months to break down and become available to the plants. Additionally, the availability of phosphorus is at its highest when the soil pH is around 6-7 Blood meal is another by- product of slaughtering houses that may be present at the farm. Blood meal is rich in nitrogen, with an NPK ratio as high as 12-0-0.

However, it does have high levels of ammonia, which may burn the crop.

Organic farming yields more nutritious and safe food. The popularity of organic food is growing dramatically as consumer seeks the organic foods that are thought to be healthier and safer. Thus, organic food perhaps ensures food safety from farm to plate. The organic farming process is more eco-friendly than conventional farming.

Organic farming keeps soil healthy and maintains environment integrity thereby, promoting the health of consumers. Moreover, the organic produce market is now the fastest growing market all over the world including India. Organic agriculture promotes the health of consumers of a nation, the ecological health of a nation, and the economic growth of a nation by income generation holistically. India, at present, is the world's largest organic producers and with this vision, we can conclude that encouraging organic farming in India can build a nutritionally, ecologically,and economically healthy nation in near future

CHAPTER- 2

REPORT OF THE PROJECT

I Anima Krishna of B.COM department at Kristu Jyoti College, Changanacherry have done a project on Mahatma Gandhi University's MOOC on 'Organic Farming'. The project was done at My resident (Mallapally, pathanamthitta)

Hereby submitting the proofs and record of my works

According to the instructions by the university we were assigned to do organic farming with minimum five crop varieties. I chose the Following crops.

A. Cowpea (VIGNA UNGUICULATA)
B. Chilli(CAPSICUM FRUTESCENS)
C. Ladies finger (ABELMOSCHUS ESCULENTUS)
D. Brinjal (SOLANUM MELONGENA)
E. Spinach (SPINACIA OLERACEA)

The seeds of spinach, ladies finger and pea were collected from my relatives house. Chilli and Brinjal seeds were preserved from our previous cultivation.As per the instruction given by the university I prepared 25 bags soil, out of these 10 were grow bags and rest were plastic bags. All of my crops were grown in grow bags and plastic bags. Land were not suitable for cultivation in our area because of shady atmosphere of Rubber trees.Soil were mixed with cow dung, coco peat, and bone powder. The soil was then changed to Grow bag. The soil was left for 2 days. Cowurine was poured daily. In Third day seeds were planted. All the seeds were put in the grow bag. In the first week I pour less water...

All the plants sprouted within a week

Lets examine each crop in detail

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A. COWPEA (VIGNA UNGUICULATA)

Cowpeas are typically climbing or trailing vines that bear compound leaves with three leaflets. The white, purple, or pale- yellow flowers usually grow in pairs or threes at the ends of long stalks. The pods are long and cylindrical and can grow 20– 30 cm (8–12 inches) long, depending on the cultivar. The plants are heat-adapted and drought-tolerant.The peas are sprouted in the stalk. On the fourth day the pea sprouted. It was later shifted to growbag. Within one month the pea spread with vines. After 45 days the pea blossomed. Two weaks later the peas were ready for harvest. At first there were only two peas. More yields were obtained from pea than expected. Observation and details of pea from planting to harvesting isavailable in chapter 3 of the project

B. CHILLI(CAPSICUM FRUTESCENS)

Chilli is a fruit which belongs to Capsicum genus. It has many varieties which are differentiated on its pungency measured on Scoville Scale. Chilli fruit when ripened and dried becomes red chilli, which is further grounded to form red chilli powder. These are categorized as hot pepper. Red chilli became famous all around the world because of its characteristics like pungency, taste and flavor matched black pepper, which was very expensive during old times and thus it became one of the most important and integral spices.

The chilli seeds was planted in grow bag itself. It was sprouted in the 6^{th} day. Seedlings were transplanted in 3 grow bags.The kitchen ashes and vegetable waste would be added to the soil once a week. At first it was not in good growth but later it grew well.

C.Ladies Finger(ABELMOSCHUSESCULENTUS)

Ladies finger is a type of green vegetable, long finger like, having a small tip at the taporing end. Its head shows a bulge, lighter green in shade, which is often removed as inedible portion. The cross section cut okra shows white colored round seeds spread entirely inside the vegetable.

Ladies finger sprouted on the stalk. Within a week the seeds germinated. Within a month two or three plants experienced minor infestation. Neem was sprayed with water to remove it. Vegetable waste and kitchen ashes are used as compost. Two and a half months later the first flower appeared in it. Within two weeks it was ready for harvesting. At first the expected yield did not get from ladies finger.

D.Brinjal (SOLANUM MELONGENA)

Brinjal is a rather small plant that grows up to
1.5m.7 Brinjal is classified as a herb because of its non-woody stem.8 Its simple leaves are oblong to oval, slightly lobed, with its underside a paler green than the uppersurface. Both leaves and stem are covered with fine hairs. Its flowers sprout singly or in small clusters from the leaf axils. Individualflowers are star-shaped, light purple in colour and have short stalks. There are five stamens attached to the corolla tube and a single superior ovary.Its fruits are berries with many seeds and are either long or round and vary in colour according to the variety: white, orange,green, purple or black. It is a perennial and fruits all year round.

Brinjal Seeds are sprouted in plastic pot. Then after one week it shifted to growbag. Cowdungwas put in once a week. Food waste also usedas a Manure.

After 3 months flower appear in Brinjal but it
had fallen off. Then again flower come and within 3 weeks it was ready for harvest. The expected yield did not get from Brinjal .

E.Spinach(SPINACIA OLERACEA)

Spinach, hardy leafy *annual* of theamaranth family used as a *vegetable*. Widely grown in northern Europe and the *United States*, spinach is marketed fresh, canned, and frozen. It receivedconsiderable *impetus* as a crop in the 1920s, when attention was first called to itshigh content of *iron* and *vitamins A* and *C*. Spinach is served as a salad green and as acooked vegetable.

Spinach on the third day after sowing sprouted. The spinach was transplanted to growbag within a week. In transplantedSpinach some plants leaves felt infested and some had no Growth.After 2 months the leaves were harvested.

Chapter 3
OBSERVATION AND DATA COLLECTION

Observation table of crops

CROPS	DAY OF GERMINATION	SUCCESS RATE
Cow pea	6th day	10/10
Chilli	7th day	10/10
Ladies Finger	6th day	8/10
Brinjal	7th day	7/10
Spinach	3rd day	10/10

HEIGHT OF PLANT (in cm) IN 15 DAYS AFTERGERMINATION

CROP	Crop Height (cm) Approx.
Cowpea	14 cm
Chilli	8 cm
Ladies finger	13 cm
Brinjal	2 cm
Spinach	4 cm

NUMBER OF BRANCHES / LEAVES / VINES IN30 DAYS AFTER GERMINATION

CROP	NUMBER OF BRANCHES /LEAVES/VINES
Cowpea	7+ vines
Chilli	2+ branches &1 sub branch
Ladies finger	6+ Leaves
Brinjal	2 main branches
Spinach	Main steam with 6 leaves

DAY OF FIRST FLOWERING

Crop	Day of Flowering
Cowpea	45th day
Chilli	70th day
Ladies finger	75th day
Brinjal	90th day
Spinach	60th day

DAY OF FRUITING

CROP	Day of Fruiting
Cowpea	55th day
Chilli	90th day
Ladies finger	95th day
Brinjal	120th day
Spinach	No fruit

DAY OF HARVEST

CROP	DAY OF HARVEST
Cowpea	60th day
Chilli	107th day
Ladies finger	103rd day
Brinjal	127th day
Spinach	63th day

NUMBER & WEIGHT OF FRUITS / YIELD INTOTAL

CROP	**SUCCESS RATE**	**WEIGHT (**in kg**)** (Approx.)
Cowpea	**3/5**	**0.50kg**
Chilli	**3/3**	**0.75kg**
Ladies finger	**5/5**	**0.50kg**
Brinjal	**2/5**	**0.25kg**
Spinach	**20/25**	**1kg**

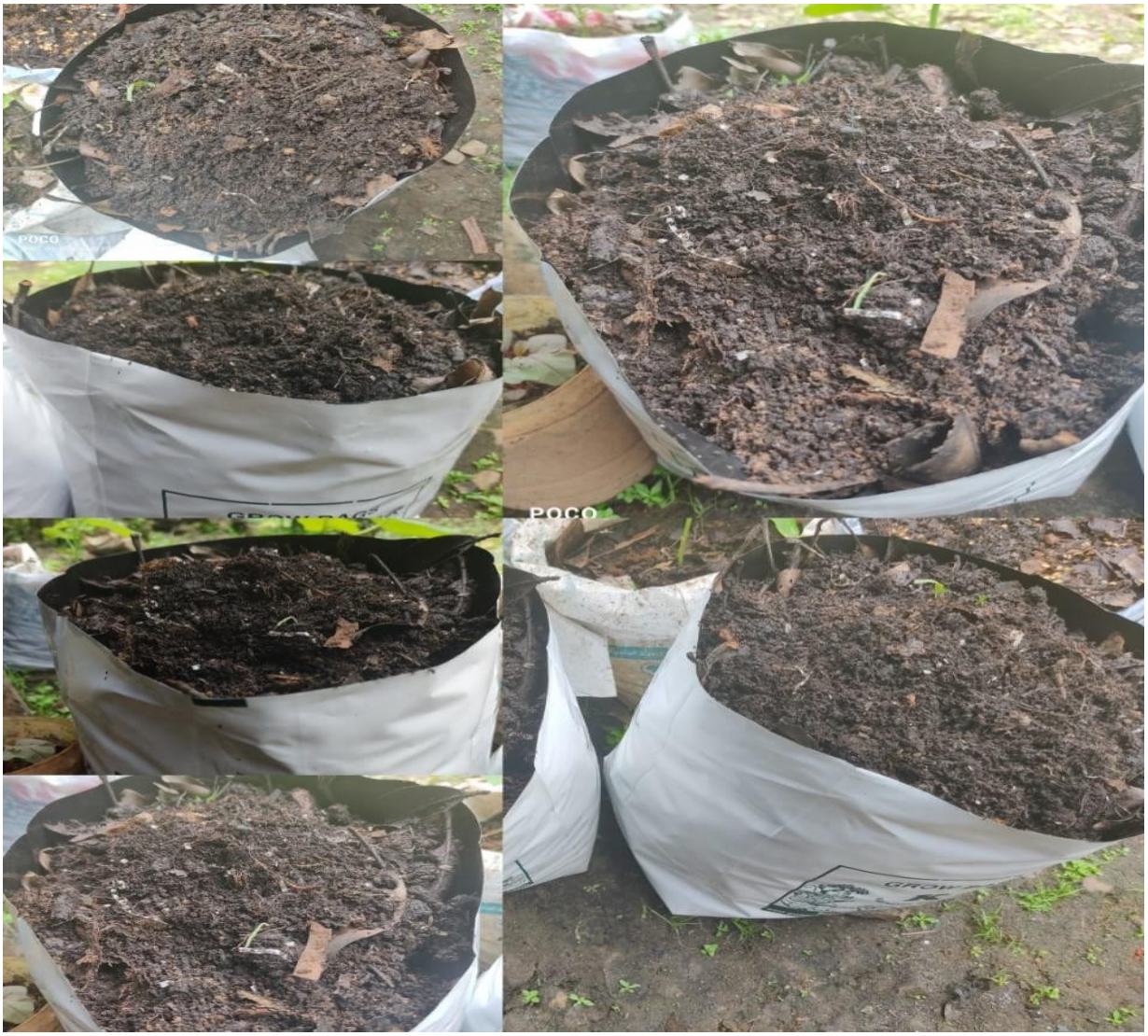
Success Rate=Total plants survived / Total plants

Planted

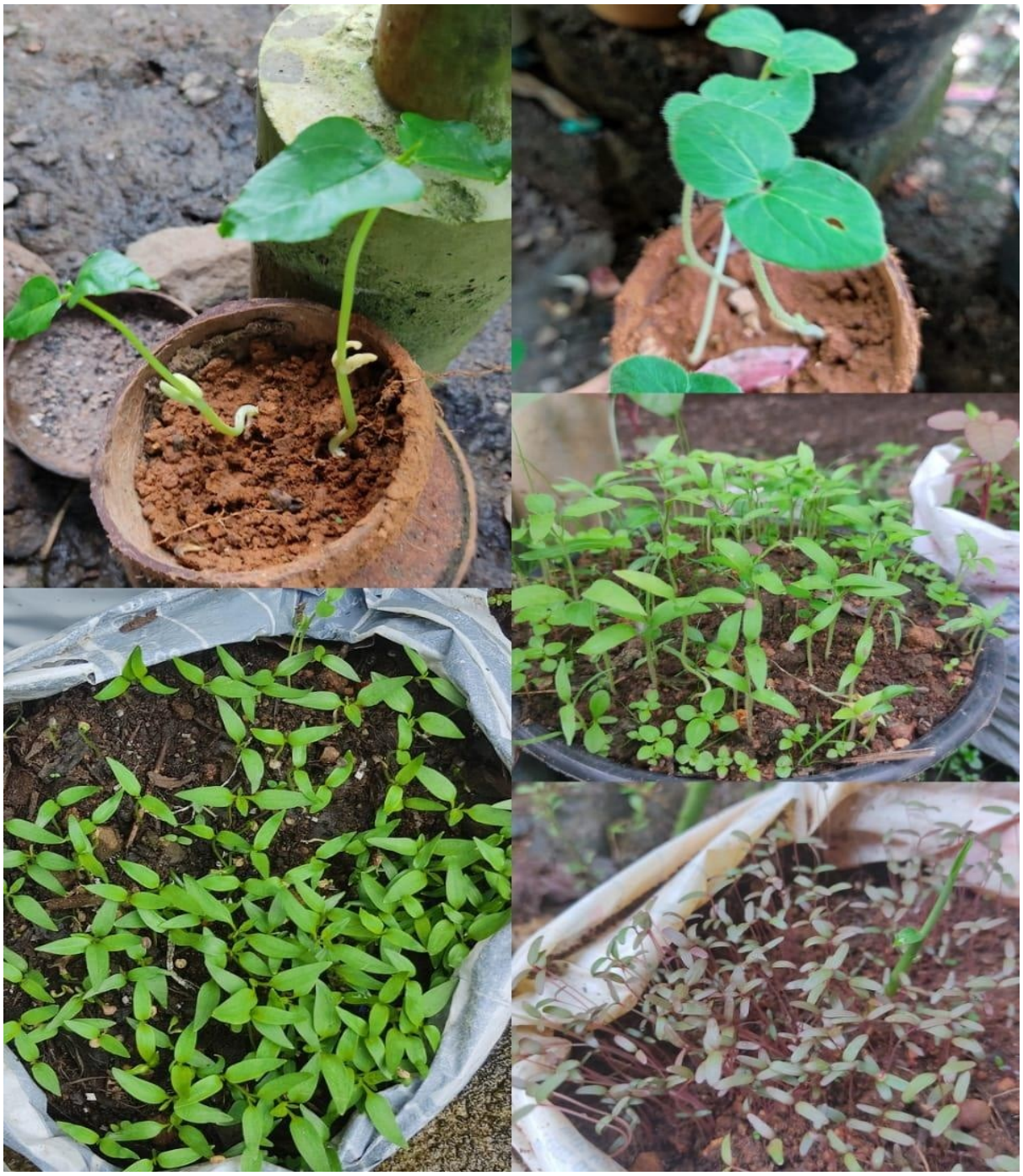
Chapter 4

PHOTO GALLERY

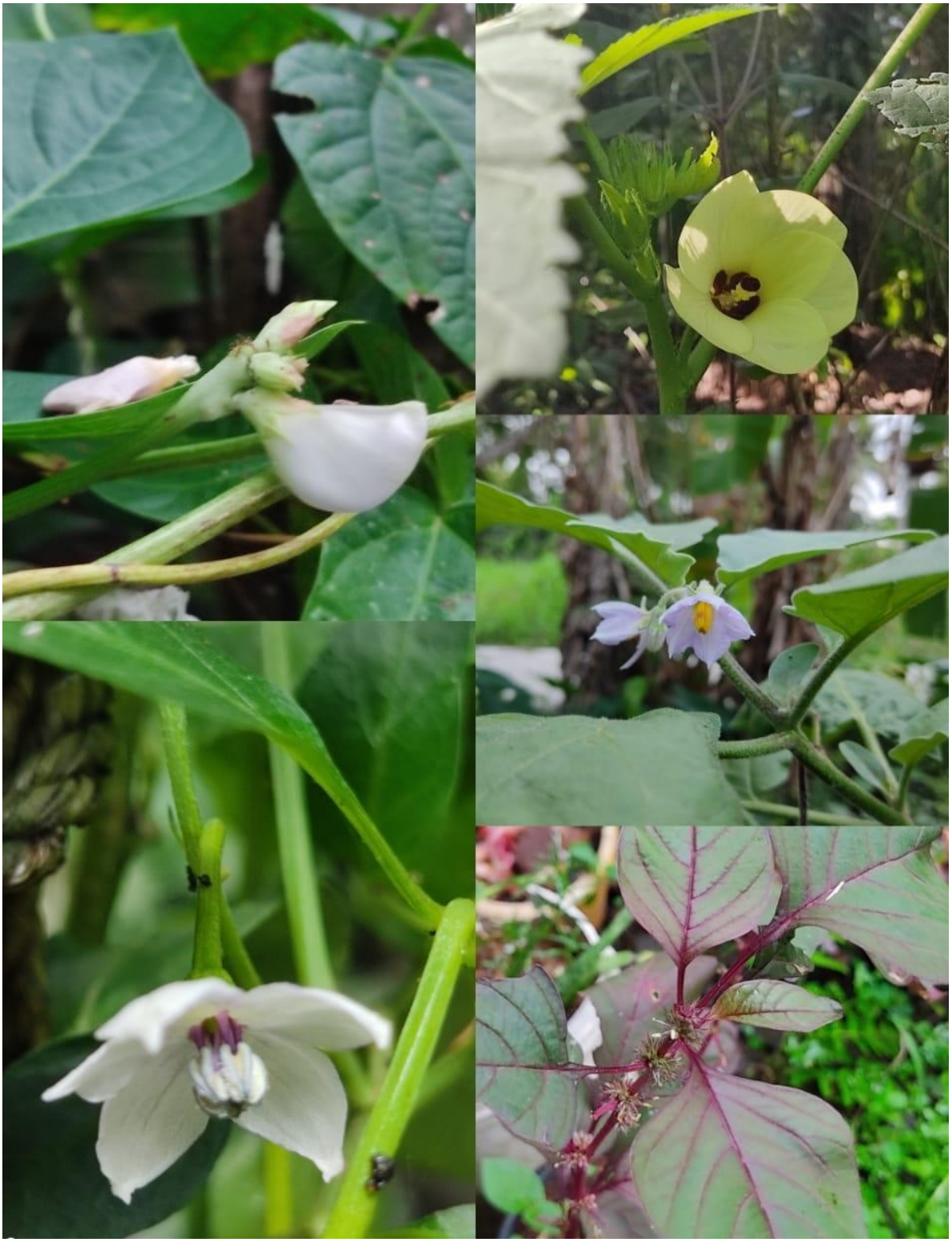
A. GROW BAGS



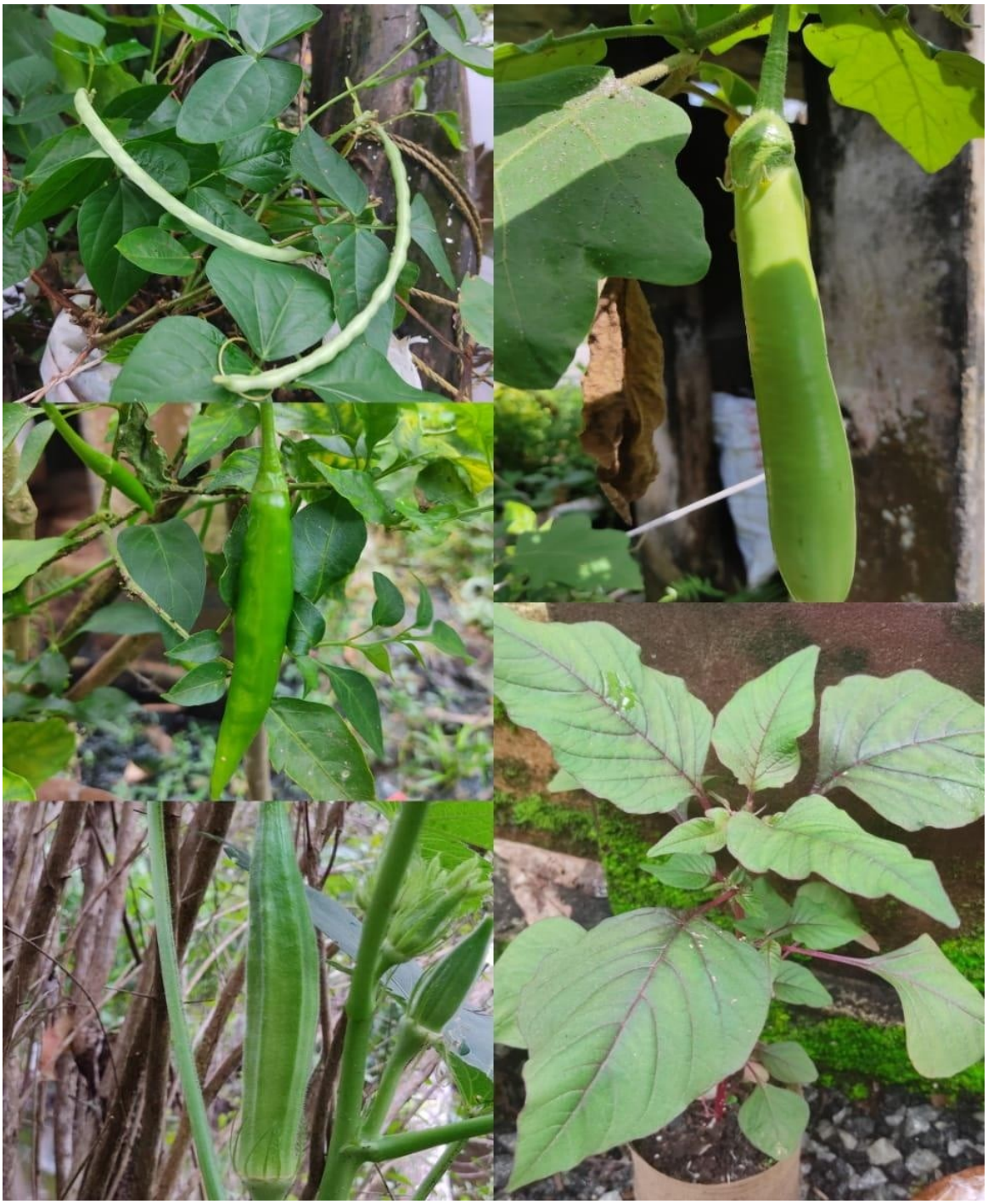
B.GERMINATION

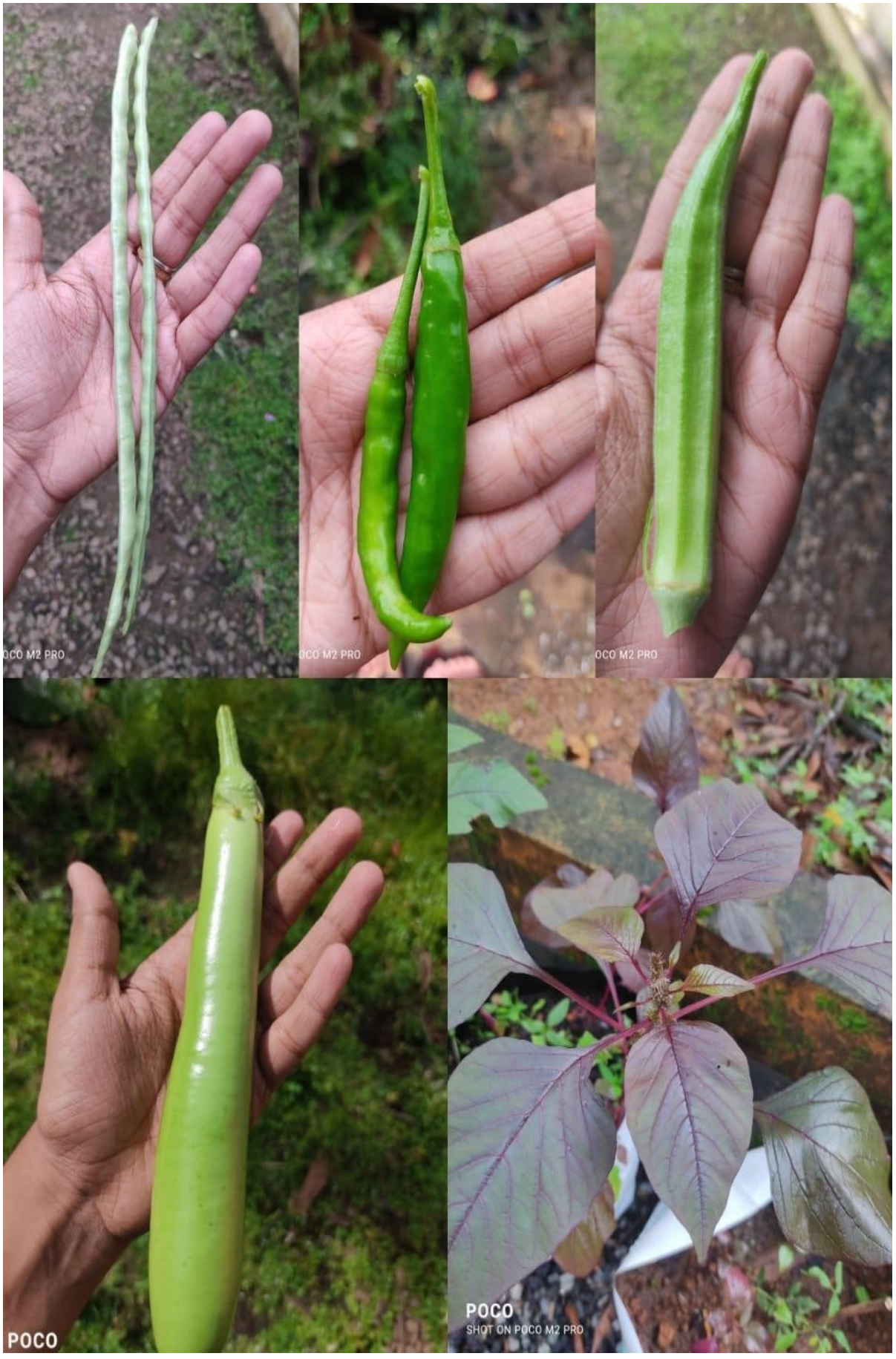


C.FLOWERING STAGE



D.HARVEST




POCO
SHOT ON POCO M2 PRO


POCO
SHOT ON POCO M2 PRO

CHAPTER- 5

COST BENEFIT ANALYSIS

The whole project was performed with only minimum investment.All most all things was available free near as expect few grow bags. Bone powder was collectedfrom my uncles home and cow dung from nearby houses

MATERIALS	**EXPENSE**
Grow bag (10)	150 (15 per bag)
Total	**150**

15 bags were plastic covers of textiles.It is very surprising that with only ₹150 We got vegetables for our small kitchen uses. As we had coconut husk coco peat was easily available. We also had Neem plant also in our house. The project also need some physical hard work Which made us familiar with our nature. We started this project in covid crises situation so this project give some relaxation for our mind also.I am Sure that if more care and more grow bags were prepared we could harvest more crops with enable us not to purchasevegetables from market and have organic vegetables in our home itself.

CHAPTER- 6

CONCLUSION

Today Organic farming is growing and spreading all over in Kerala. It is superior on account of increased use Of natural resources, lower cost of cultivation, highersoil fertility, better input use efficiency , increases self Reliance etc. Thus Organic farming has better economical and environmental benefits. The major challenge of It is that its lowest yield compared to conventional farming. In Kerala, it is crucial to familiarise policies and Strategies to promote Organic farming methods in order to realise its full potentialIn my farming experience almost every crop were successful except Spinach at initial stage due to unfavourable climatic condition such as Cyclones happened in the month of May. Cowpea was successfulthan expected. Ladies finger was successful at first then it faces some infestation problem and one full grow bag plant was not useful. Brinjal was also successful expect the problem of fallen flowers at first. I think Brinjal was more successful if I would planted it on soil.
Chilli was successful and harvestedenough Chilli for our kitchen
uses.

CHAPTER-7

ABSTRACT

The bags were prepared according to the instructions given by the mentor and family. Raw materials such as seeds cow dung and bone powder wascollected from nearby houses and relatives houses.The crop I selected was cowpea chilli ladies finger Brinjal and Spinach.My family also helped meto plant this crops. All plants were planted in growbags and plastic bags.
Some plants were put in stalk for germination after that it was replantedto grow bags. As the process started in the month of May some climatic problems were experience such as cyclones. The use of water were low at initial stage because of heavy rainfall. Some germinated Spinach were became not useful due toheavy rainfall. After that in the month of June onwards it was dry season and a lot of water were used for watering the plants. Daily watering and observation of plants was done.

There were infestations of ants and beetles at various growth stages of plants, but a good Percentage was ableto eradicate with fermented Neem water. The top soil was disturbed for good supply of oxygen and requirement of nutrients to plants. As manure, cow dung, Kitchen wastes andashes were applied. Some unnecessary plants were also grown in the grow bag which also wereremoved manually at occasion. I think that Brinjal was harvested more if it was planted on soil. In grow bag the roots didn't have enough space to propagate. The leaves of ladies finger was affected by beetles and thus some plants of ladies finger didn't growas expected. The growbags were planted in proper place were sufficient sunlight is available. Routine observation was done on every 15 days. Minor harvest was done before the main harvest. Cowpea was harvested first then Spinach then ladies finger chili and Brinjal.

The overall experience of the project was good. This project gives us mind relaxation from sitting home in this covid period. Through this project I was more Familiar with nature and surroundings. Food quality and safety are the two important factor that have gained ever -increasing attention in general consumer. Through this projectwe get some fresh Organically grown fresh vegetables for our kitchen uses.

THANK YOU.