SEMESTER 1 – PROJECT REPORT

MASSIVE ONLINE OPEN COURSE (MOOC)

IN

ORGANIC FARMING

Submitted to

MAHATMA GANDHI UNIVERSITY
KOTTAYAM

Name of Student : **ARDHRA MURALI**

Register No: **20011016**

Name of the programme : **BCOM CA**

Department : **COMMERCE**

ASSUMPTION COLLEGE (Autonomous)

Changanassery, Kerala

2021

CHAPTER 1 : INTRODUCTION

MOOC stands for 'Massive Open Online course' (term originated in US in 2008).

Mahatma Gandhi University introduced MOOC on organic farming as a project for first year students . understand the importance of organic farming and to produce food while establishing an ecological balance .

I'm Ardhra Murali , 1 year BCOM Computer Application of Assumption college, Changanassery (Autonomous) . And I'm presenting this report to explain the output I have received from organic farming.

CHAPTER 2: MATERIALS AND METHODS

CROPS SELECTED :

1. Green chilli
2. Amaranthus
3. Brinjal
4. Elephant yam
5. Colocasia
6. Banana

SOURCE OF SEEDS / SEEDLINGS :

Seeds/seedlings used for farming was from different sources. Seeds of Amaranthus , green chilli and brinjal were given by Krishibhavan whereas seedlings of banana , elephant yam and colocasia were from Nursery .

AREA OR NO . OF GROWBAGS:

The crops used for cultivation was planted in my home itself , they were planted in the backyard of my house. We used approximately 100 square metres of land for planting amaranthus , elephant yam , colocasia , banana and brinjal . green chilli was planted in growbags . They all received direct sunlight which means about 6-8 hours a day since sunlight is really essential for the growth of vegetables .
The heavy rainfall also affected my crops badly .

MANURE

Since chicken manure has very high nitrogen content which is needed for all plants , it was used .
Dried cow dung was also used in addition to the chicken manure .
It was easily obtained from uur neighbourhood as they have cows and hens with no cost .
Also bio waste from kitchen was also used for nourishment .

BIO-PESTICIDES :

Bio-pesticides are used for better yield and pest control .

The following bio-pesticides were used :

- Neem oil - it acts as both fungicide and pesticide . it works on arthropod pests that often eat vegetables and controls common fungi that grow on vegetable plants . Neem oil was bought from shop .
- Tobacco decoction - It controls aphids and soft bodied insects that infests vegetable crops . it was prepared in our home .

Preparation :

By stepping 500 g of tobacco in 4.5 litres of water for 24 hours .
Dissolve 120g of ordinary bar soap separately in another vessel .
Then the soap solution and mixed thoroughly . dilute this stock solution by adding 6-7 times more water before spraying .

LAND PREPARTION :

As mentioned earlier , about 100 sq.m was used for farming . Amaranthus was planted in a bed formation after ploughing for 2-3 times . used a shovel to tum the soil around so the top soil is in the bottom .

Broke apart large clods dirt , until all of the soil had similar size and consistency . The soil was loosened using a garden hoe .

Weeds were removed . The pH of the soil was checked and found that it was 4.5 . so lime was mixed to control pH .

Green chilly was planted in growbags in which pebbles were lined to aid draining .
Well drained soil with pH 6.5 – 7.5 is good for brinjal
Elephant yam , Banana snd colocasia were planted conveniently ..

SEEDLING OR PLANTING

Amaranthus , green chilli , brinjal , Elephant yam , Banana and colocasia were the crops 1 planted .

Amaranthus was sowed for bed formation . after 1 week , seeds sprouted and the stem was elongated with space in between . Water was sprayed regularly . After 2 Weeks , watering was done in alternative days . After 3 Weeks , the Amaranthus was ready to harvesting .

In the case of brinjal cultivation , After 2-3 Weeks of sowing , seeds germinated . Seedlings were spaced about 1.5 – 2 ft apart .
Took optimum care while transplanting as it might affect it's growth .
The plant started to fruit After 3-4 months .

Green chilli was planted in the Growbags and was watered frequently .
Elephant yam , Colocasia and Banana saplings were planted on the ground and watered daily . they didn't need much Care .

CHAPTER 3: PHOTOS

CHAPTER 4 : COST - BENEFIT ANALYSIS

All the crops I cultivated were benefitting . it was not at all profit motive .

Even though we encountered rainfalls and winds , we were able to yield pure organic vegetables at home .

A course of Amaranthus was used and distributed to our neighbourhood.

Green chilli grew and produced a great amount of yield and still yielding .

We could harvest brinjal also in a better produce .

Banana could also be harvested as it was planted about 10 months back.

We couldn't harvest Elephant yam and colocasia since they are long- term crops.

During the process, we managed to bring great effect in different stages of growth .

Manures were given from our neighbourhood. Bio –waste was available which helped the growth of these plants .

This was cost relatively really low and was effective too .

CHAPTER 5 :CONCLUSIONS

In conclusion ,vegetable gardening is a rewarding activity that produce fresh and healthy vegetables from your backyard straight to the kitchen .

During this pandemic , we could use these pesticide - free pure vegetables that adds to the health of all members of the family .

It is high time that all should grow an organic vegetable garden for the sake of themselves as well as the upcoming generations .this project should be

introduced to schools and from there to homes. Not only the yields we get from the garden , but also it helps us mentally to forget all our pains and sufferings through engaging in framing .

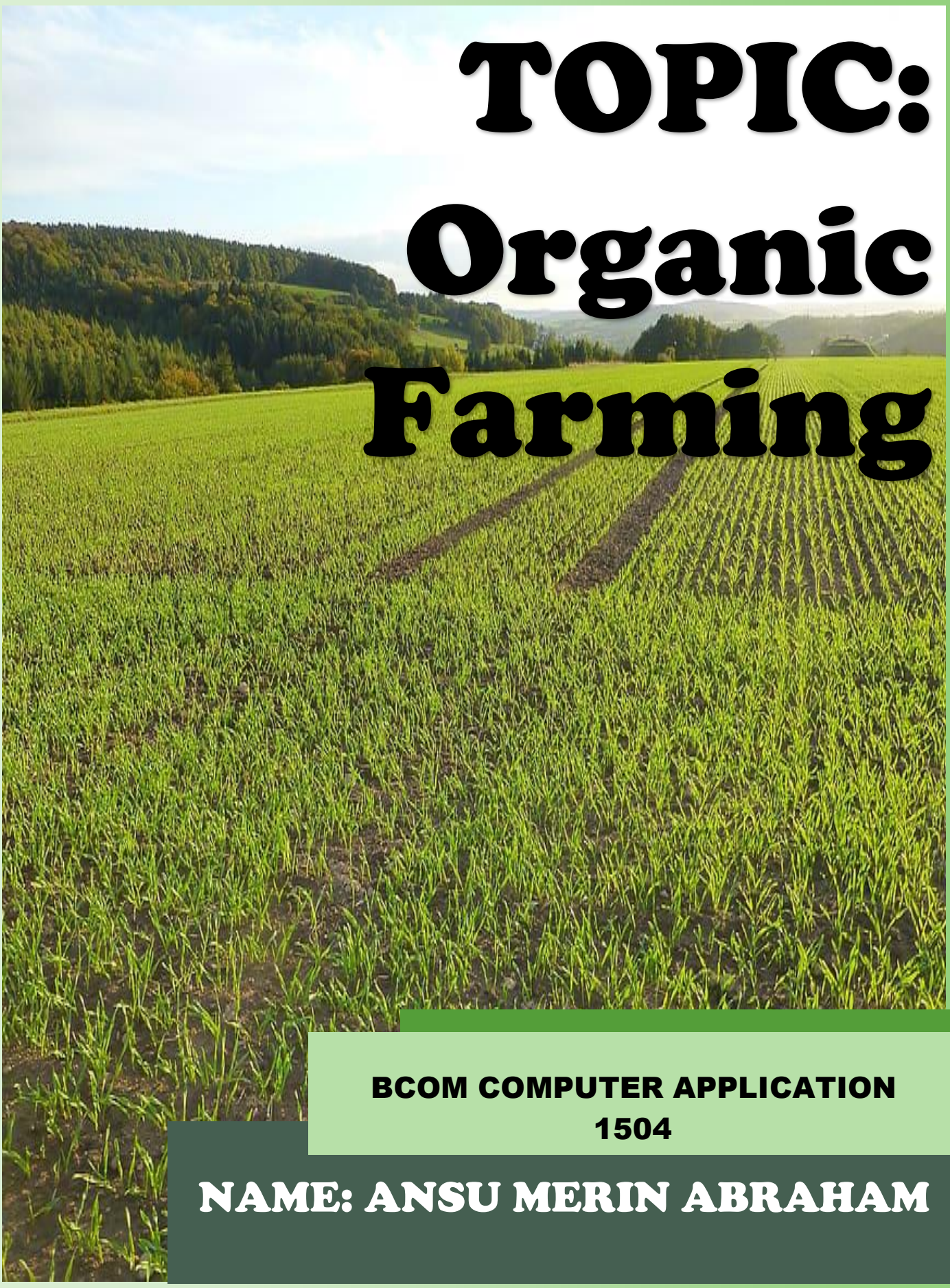
Let's eat pesticide free farm fresh veggies from our own home and be healthy forever.

ABSTRACT

Organic farming is a modern and sustainable form of agriculture that provides consumers fresh natural farm products . It's objective is to use techniques to improve crop fields without harming the natural environment.

In this project , I tried to assess the reliance , relevance and the effect of organic farming on management of balancing . This project aimed on relying on local and easily available resources , economic efficiency and economic aims , long term security to yield biodiversity , ecological aims , functioning of ecosystems , stability , social aims , self – provided workforce , fulfilling local needs or at least that members of the family . The need for vegetable garden in our own home is really high . I believe that may project would encourage others also to cultivate vegetables for themselves.

******



TOPIC: Organic Farming

BCOM COMPUTER APPLICATION
1504

NAME: ANSU MERIN ABRAHAM

INDEX

Introduction

Organic Farming is an agricultural system that uses fertilizers of organic origin such as compost manure, green manure, and bone manure and places emphasis on techniques such as crop rotation and companion planting. It originated early in 20^{th} century in reaction to rapidly changing farming practices.

Advantages of organic farming

1. No more genetically modified organisms
2. Soil protection
3. Better nutrition
4. Healthy working environment around farms
5. Resistance to pests and diseases
6. Fertilizers are made naturally and on site
7. Opportunity to grow variety of crops
8. Climate friendly
9. For the future

MATERIALS AND METHODS

CROPS SELECTED

1. Spinach
2. Peas
3. Brinjal
4. Green chilli
5. Lady's finger

SOURCES OF SEEDS/SEEDLING

Seeds/seedlings used for planting were collected from home. I collected the seeds of spinach, green chilli, peas, lady's finger and brinjal from our front yard

AREA AND NO. OF GROWBAGS USED

All of the five growbags were planted in the front yard of my house, where it was possible to receive six to eight hours of sunlight. All were planted in grow bags. In total, 7 grow bags were used.

CROP SEASON

1. **Spinach**: Spinach is sown throughout the year.
2. **Peas**: Sowing time for pea seeds are dependent on the area of cultivation.
3. **Brinjal**: Brinjal can be grown in any season . In rainy season- June and July.
4. **Green chilli**: It is a tropical and sub-tropical plant that requires a blend of warm, humid or dry.

5. **Lady's finger**: It is an important vegetable crop of India.

WEATHER CONDITION

1. **Spinac**h: It grows well during sunny and spring season at an average temperature of 10°C to 20 °C.
2. **Peas**: They grow best when temperature stays below 70°C.
3. **Brinjal**: Daily mean temperature of 13°C to 21°C is most favorable for its successful production.
4. **Green chilli**: Temperature between 20°C to 25°C is perfect for the growth of chilli.
5. **Lady's finger**: Temperature range of 22°C to 35°C for its growth.

SOURCE OF MANURE

Vegetables compost was mostly used as it is the best for organic farming. I could obtain it at home. Cow dung was used and laid on for the growth of plants. Ash remains were also used when the leaves were damaged due to worms.

PROCESS

- **Land preparation**

Firstly, sand was ploughed into the grow bag. A mix of cow dung was applied to the ploughed soil. Proper spacing was done to ensure the healthy growth of the crops.

- **Seeding**

Peas were soaked in the water and then sowed directly into the prepared soil.

Spinach, green chilli, brinjal and lady's finger were all directly sowed to the soil.

- **Water management**

All require water on its daily basis.

- **Harvest**

The plants I sowed were harvested frequently.

OBSERVATION AND DATA COLLECTION

1. HEIGHT OF PLANT

Name of crop	No.
Spinach	2¾ f
Peas	-
Brinjal	1½ f
Green chilli	2½ f
Lady's Finger	1¾ f

2. NO. OF BRANCHES

Name of crop	No.
Spinach	8
Peas	-
Brinjal	3
Green chilli	3
Lady's Finger	-

3. SEEDS

Name of crop	No.
Spinach	5(out of 10)
Peas	5(out of 10)
Brinjal	2(out of 5)
Green chilli	3(out of 7)
Lady's Finger	4

4. DAY OF FIRST FLOWERING

Name of crop	Date
Spinach	-
Peas	1 June
Brinjal	29 July
Green chilli	10 August
Lady's Finger	5 August

5. DAY OF FIRST FRUITING

Name of crop	Date
Spinach	-
Peas	15 June
Brinjal	5 August
Green chilli	24 August
Lady's Finger	15 August

6. HARVEST DAYS

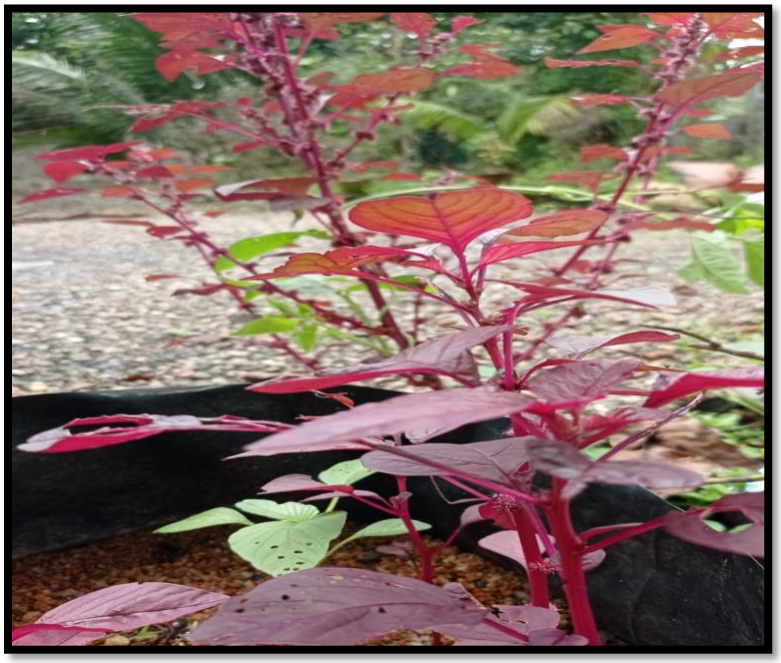
Name of crop	Date
Spinach	20 May
Peas	20 June
Brinjal	30 August
Green chilli	30 August
Lady's Finger	30 August

7. WEIGHT OF FRUITS

Name of crop	Weight	No.
Spinach	-	-
Peas	1 kg	4 Bundle
Brinjal	2 kg	1 bundle
Green chilli	1 kg	3 bundle
Lady's Finger	-	-

PHOTOS

Spinach



Peas

Brinjal

Green Chilli

Lady's Finger

HARVEST

COST BENEFIT ANALYSIS

There weren't much expenses that incurred as most of the items used were available at our home . The crops I cultivated were beneficial for my house . Though I encountered minor issues , due to the heavy rain , we were able to yield better than expected . During this pandemic , we could consume these vegetables , without any chemical usage , with very limited expenses .

CONCLUSION

Organic farming is a productive activity which produce fresh and healthier vegetables. It yields more nutritious and safe produce .

From this project , I could study and understand so many aspects of farming through organic farming .The current generation should indulge in organic farming

as it is more sustainable and environmental friendly for us and our future .

ABSTRACT

Through Organic Farming , the Massive Open Online Classes (MOOC) aims for a healthy environment and to inform students about the value of growing plants .

The objective of this task is to investigate and know more about the malfunctioned maintenance of our soil and crop production .

MAHATMA GANDHI UNIVERSITY

MOOC on

ORGANIC FARMING

JELIN ANN REJI

B.COM COMPUTER APPLICATION

1507

INDEX

CHAPTER – 1

INTRODUCTION

INTRODUCTION

Organic farming has engrossed much attention in current decades as a way to maintain farming production. At the same time, it has played an important role in dealing with the environmental harms rooted in traditional agricultural techniques. Organic farming not only produces fine and healthy food products but also improves the fertility and quality of soil.

Organic farming is a production scheme, which mainly prohibits or avoids the utilization of artificial pesticides, fertilizers, livestock feed additives, and growth regulators. Organic farming is environmental friendly ecosystem management in which use of all kinds of synthetic input is eliminated.

Organic farming is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic farming combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved in the environment.

CHAPTER – 2

MATERIALS AND METHODS

MATERIALS AND METHODS

1) Location of college and student:

College: Assumption College, Changanassery.

Student: Elanthoor, Valiyavettom, Pathanamthitta.

2) Crops selected:

2.1) *Varieties:*

- Vegetables: Green Chilly, Brinjal, Lady's Finger
- Aromatic: Ginger
- Potato: Taro Root

2.2) *Source of seedlings:*

Krishi Bhavan, Omalloor, Pathanamthitta

3) *No. of grow bags*:

9 grow bags were used.

4) Crop season:

- Green Chilly:
  Chillies can be grown both as Kharif and Rabi crop. In addition they are also planted at other times. Sowing months are May to June for Kharif crop, September to October for Rabi crops. If they are grown as summer crops then January-February months are chosen.
- Brinjal:
  The brinjal can be grown around the year, the main sowing being done during July to August.

- Lady's Finger:
  It is grown in kharif (June-August) and Zaid (January-March) season. It is grown in tropical and sub-tropical region.

- Ginger:
  The crop duration is generally around 8-10 months.

- Taro Root:
  Taro root can be grown throughout the year in frost-free weather conditions. Taro crop thrives well in warm, moist conditions.

5) <u>Weather condition:</u>

- Green Chilly:
  Chillies grow best in warm and humid conditions. The ideal temperature for growing green chilly is somewhere between 22-25°C.
- Brinjal:
  Brinjal is a warm season crop and requires a long warm growing season. A daily mean temperature of 13-21^{o}C is most favourable for its successful production.
- Lady's Finger:
  Lady's finger requires warm climate throughout its growing period because it cannot bear cold climatic conditions. It requires temperature range of 22-35°C for its best growth. Rainy season is essential for its successful growth. Seeds are unable to germinate when the temperature is below 20°C.

- Ginger:

  Ginger requires warm climate, a moderate rainfall showers during the growing period, and dry weather with a temperature of 28°C to 30°C**.**

- Taro Root:

  Taro crop thrives well in warm, moist conditions. Evenly distributed rainfall is ideal for its proper growth and cultivation. In drought or dry, low-rainfall areas, one should provide supplemental irrigation. Best growth can be expected at 25°C to 35°C.

6) *Equipments used*:

Basket, pitchfork, rake, trowel, spray bottle, etc.

7) Liming material and quantity:

A small quantity of ashes, salt, neem cake and bone manure were used.

8) Manures:

- Basal application:

  A mix of sheep manure, neem cake, dry leaves compost, cow dung, bone manure, 8*8 manure, egg shells, porridge water and ashes was added to the ploughed soil.

- Top dressing:

  Dry leaves compost, bone manure, neem cake, ashes and egg shells was applied.

- Bio-fertilizers:

  Fresh sheep manure, cow dung and egg shells was applied.

- Bio slurries:

  Kitchen wastes, sheep manure and cow dung was applied.

9) *Bio pesticides:*

Mix of porridge water, papaya leaves and neem leaves was sprayed to brinjal, chilly and lady's finger plants.

10)*Any other inputs used:*

Mixture of porridge water, neem leaves and papaya leaves liquid was sprayed on leaves to control insects and ants.

11) *Crop management:*

- *Land preparation:*
  - Firstly, ploughed the field very well.
  - Bushes, roots and weeds were removed.
  - Small stones and rocks were removed.
  - Cow dung cakes, neem cakes, ash powder and bone manure were applied and mixed well with the soil.
- *Liming:*

  A small quantity of ashes, salt and bone manure were used.
- *Basal manuring:*

  A mix of sheep manure, neem cake, dry leaves compost, water and ashes was added to the ploughed soil.
- *Grow bag filling:*

  Mixed loose soil with cow dung cakes, neem cakes, coconut husk, ash powder, bone manure and dry leaves. This will be the base mixture in the bag. Keep the mixture under sunlight for an hour before filling it in the bag. To this mix, add bone manure and neem cake powder to increase the quality of fertilizer.

- *Seeding/ planting:*
    - Seeds of transplanted crops like lady's finger, brinjal and green chilly were soaked in water for 6 hours and was sown in paper cups. After these seeds sprouted then I planted it into grow bags with soil well mixed with cow dung cakes, neem cakes, coconut husk, ash powder, bone manure and dry leaves.
    - Ginger and taro root: A small piece of ginger and a piece of taro root was directly planted into the well ploughed soil.
- *Top dressing:*

  Dry leaves compost, bone manure, neem cake, ashes and egg shells was applied on top of the soil.
- *Pest management:*

  Mix of porridge water, papaya leaves and neem leaves was sprayed to brinjal, chilly and lady's finger plants and removing of weeds.
- *Disease management:*

  Mix of porridge water, papaya leaves and neem leaves was sprayed to brinjal , chilly and lady's finger plants.
- *Water management*: Well water was used for all purposes.
    - Green chilly, brinjal and lady's finger requires watering on daily basis.
    - Ginger and taro root requires gentle amount of water. Excess water leads to decaying of ginger and taro root.
- Harvest:

  Brinjal, green chilly and lady's finger can be harvested frequently.

  Ginger and taro root can be harvested within 8 to 10 months.

CHAPTER – 3

OBSERVATIONS AND DATA COLLECTION

OBSERVATIONS AND DATA COLLECTION

Table.1. *Germination / plant stand establishment percent.*

CROP NAME	NO.
Green Chilly	6(out of 10)
Brinjal	5(out of 10)
Lady's Finger	4(out of 6)
Ginger	23(out of 25)
Taro Root	7(out of 12)

Table.2*. Height of plants in cm. (15 days interval)*

CROP NAME	5/5/21	20/5/21	4/6/21	19/6/21	4/7/21	19/7/21	3/8/21	18/8/21
Green chilly	-	1	5	9	12	18	23	29
Brinjal	-	5	15	26	35	47	58	70
Lady's Finger	-	2	7	12	16	20	25	30
Ginger	-	4	7	15	18	22	27	30
Taro Root	-	3	7	13	20	27	38	46

Table.3. *No. of branches (15 days interval)*

CROP NAME	5/5/21	20/5/21	4/6/21	19/6/21	4/7/21	19/7/21	3/8/21	18/8/21
Green Chilly	-	1	3	6	8	9	10	15
Brinjal	-	2	7	12	13	16	20	24
Lady's Finger	-	2	4	4	5	6	7	9
Ginger	-	1	2	2	3	4	5	6
Taro Root	-	1	2	2	3	3	4	4

Table.4.*Day of first flowering (Days After Sowing/ planting)*

CROP NAME	DATE
Green Chilly	26/8/21
Brinjal	29/7/21
Lady's Finger	6/8/21
Ginger	-
Taro Root	-

Table.5. *Day of first fruiting (Days After Sowing/ planting)*

CROP NAME	DATE
Green Chilly	2/9/21
Brinjal	3/8/21
Lady's Finger	10/8/21
Ginger	-
Taro Root	-

Table.6. *Harvest days (Days After Sowing/ planting)*

CROP NAME	DATE
Green Chilly	-
Brinjal	17/8/21
Lady's Finger	14/8/21
Ginger	-
Taro Root	-

Table.7. *No. and weight of fruits from each harvest*

CROP NAME	NUMBER	WEIGHT
Green Chilly	-	-
Brinjal	10	500gm
Lady's Finger	7	200gm
Ginger	-	-
Taro Root	-	-

Table.8. *Cumulative Yield (kg)*

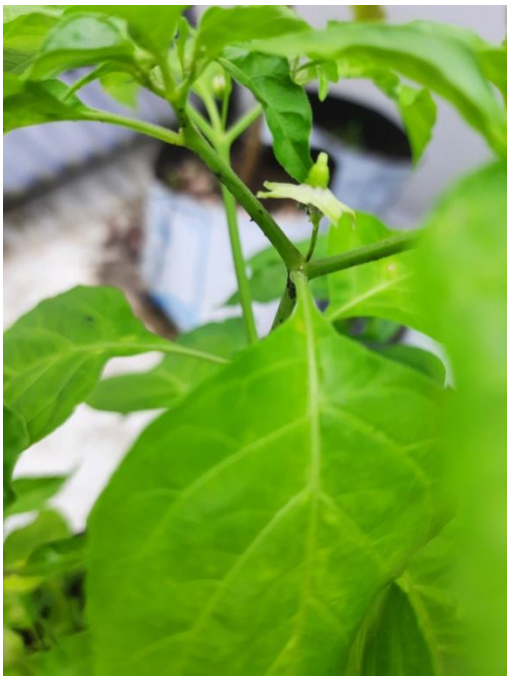
CROP NAME	KG
Brinjal	500gm
Lady's Finger	200gm

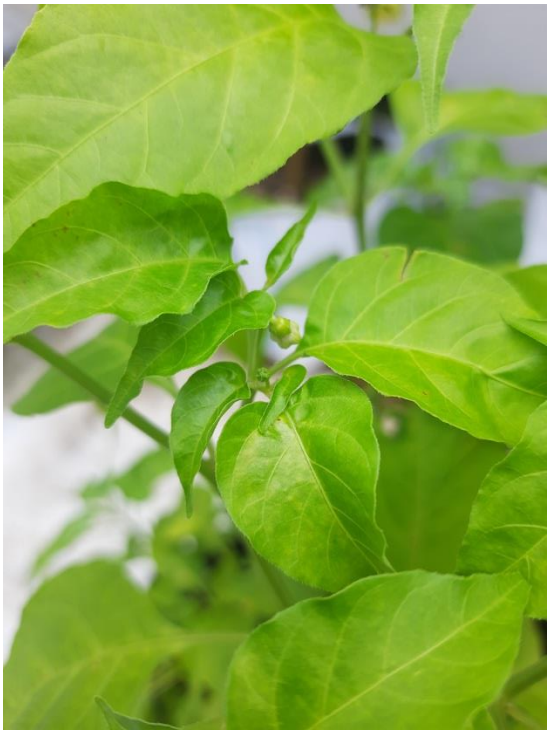
CHAPTER – 4

PHOTOS

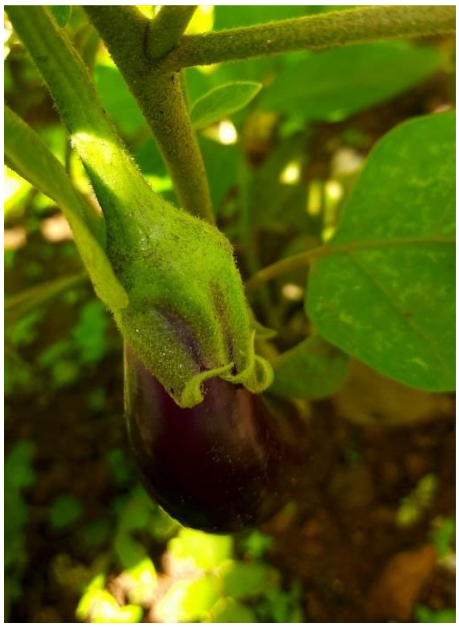
PHOTOS

GREEN CHILLY





BRINJAL



LADY'S FINGER

GINGER

TARO ROOT

CHAPTER – 5

COST BENEFIT ANALYSIS

COST BENEFIT ANALYSIS

Growing our own food is a healthy way to save money and enjoy fresh and pesticide-free products at home. However, it takes time and patience for the plants to grow and be fruitful. So that now we cannot predict the cost benefits of the vegetables, but it has been used for our home purposes. A small outlay of money was spend to buy seeds, fertilizers, tools, grow bags and other equipments that was required for the organic farming. The cost occurred for the farming was almost ₹900 (including transportation expenses).

CHAPTER – 6

CONCLUSION

CONCLUSION

Organic farming yields more nutritious and safe food. The popularity of organic farming is growing as consumer seeks the organic foods that are thought to be healthier and safer in this pandemic. Thus, organic farming perhaps ensures food safety. 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. The primary goal of organic farming is to optimize the health and productivity of interdependent communities of soil life, plants, animals and people.

By doing organic farming we get fresh and healthy vegetables. We also get vegetables for our own self-sufficiency. It makes us healthier and was like an exercise for our body. It also helps us to refresh our mind and be calm. It is the best way of kitchen waste management and composting the kitchen waste reduces the need for water as kitchen waste has enough moisture. It also helps in water management.

I can say that organic farming is a very good and productive habit. Also, it helped me to establish a connection with the greenery and love towards nature. An organic farming is a great opportunity for growing organic vegetables.

ABSTRACT

Growing our own food is a healthy way and enjoy fresh and pesticide-free products at home. However, it takes time and patience for the plants to grow. A small outlay of money was spend to buy seeds, fertilizers, tools and other equipments that were required for the organic farming.

As a part of MOOC project I have started my organic farming on 5th MAY, 2021. For farming I took green chilly, brinjal, lady's finger, ginger and taro root. In the beginning bushes, roots and weeds were removed. Then ploughed the field very well. Small stones and rocks were removed. Cow dung cakes, neem cakes, ash powder and bone manure were applied and mixed well with the soil. Seeds of transplanted crops like lady's finger, brinjal and green chilly were soaked in water for 6 hours and was sown in paper cups. After these seeds sprouted then I planted it into grow bags with soil well mixed with cow dung cakes, neem cakes, coconut husk, ash powder, bone manure and dry leaves. Ginger and taro root were directly sown into the soil and covered with top soil and dry leaves. A small quantity of ashes, salt and bone manure were used.

Green chilly, brinjal and lady's finger requires watering on daily basis. Ginger and taro root requires gentle amount of water. Excess water leads to decaying of ginger and taro root. Brinjal, green chilly and lady's finger can be harvested frequently. The first harvesting of brinjal was on 17/8/21 and lady's finger harvesting was on 14/8/21, but green chilly had just started to bud on 26/8/21 so harvesting was not yet been done. Ginger and taro root can be harvested within 8 to 10 months. About 5-6 hours plants were kept under sunlight. Some of the plants that I planted was damaged and lost some flowers due to heavy rain and wind. And also some fruits were also destroyed by insects.

By being a part of MOOC project I am really happy to say that this project has helped me to gain more knowledge about organic farming. I had a good experience and also enjoyed doing this project. It also helped me to refresh my mind and be calm by staying and sparing some time in nature. I can say that organic farming is a very good and productive habit. Also, it helped me to establish a connection with the greenery and show my love towards nature. An organic farming is a great opportunity for growing organic vegetables and also have a good connection with nature.

ORGANIC FARMING

By

Name of Student: Ann Susan Jacob

Name of the Programme: BCom

Computer Application

Roll Number: 1490

Department: Commerce

ABSTRACT

It is a matter of fact that modern agriculture is based on the use of high yielding varieties of seeds, chemical fertilizer, irrigation water, pesticides etc. to satisfy the ever-growing demand for food grains not only to fulfil the problem of food security but also to earn foreign exchange at the cost of environmental quality which cannot be sustainable in future because of the adverse changes being caused to the environment and ecosystem. Thus, widespread environmental degradation, severe poverty around the globe and the burning concerns about achieving and maintaining a good quality of life were the principal factors for taking interest in intergenerational equity, about access to natural resources. As best agricultural land has already been farmed and the region has exceeded the safe limit, primarily in Asia, the natural resources available for further farming expansion is practically exhausted. So, the necessity of having an alternative agriculture method that can be functioned in a friendly Ecosystem while sustaining and increasing productivity is talk of the day among not only agricultural scientists but also even common men - Organic farming is recognized as the best-known alternative. It is economically feasible to practice when the farmers can get a premium price for their product. The cost of cultivation will be reduced by not depending upon the purchased off-farm inputs. The low productivity in the transition stage needs research activities at the national and international levels. Organic farming is not the only revival to the farming community, it also revival to the consumers to lead a “Healthy and Happy life”. So, a paradigm shift to Organic farming is the need of the day to enhance the quality of life.

CHAPTER I

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 more ecologically and authentically by local systems. Organically grown food and food products are believed to meet these demands (Rembialkowska, 2007).

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 a go green lifestyle. But the question is that what is meant by organic farming? (Chopra et al., 2013).

The term 'organic' was first coined by Northbourne, in 1940, in his book entitled 'Look to the Land'.

Northbourne stated that 'the farm itself should have biological completeness; it must be a living entity; it must be a unit which has within itself a balanced organic life' (Northbourne, 2003). Northbourne also defined organic farming as 'an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity.

According to Winter and Davis (2006), ‘it is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.

They mentioned that organic produce is not grown with synthetic pesticides, antibiotics, growth hormones, application of genetic modification techniques (such as genetically modified crops), sewage sludge, or chemical fertilizers.

Whereas, conventional farming is the cultivation process where synthetic pesticides and chemical fertilizers are applied to gain higher crop yield and profit. In conventional farming, synthetic pesticides and chemicals can eliminate insects, weeds, and pests and growth factors such as synthetic hormones and fertilizers increase the growth rate (Worthington, 2001).

As synthetically produced pesticides and chemical fertilizers are utilized in conventional farming, consumption of conventionally grown foods is discouraged, and for these reasons, the popularity of organic farming is increasing gradually.

In this project, we are using the organic farming method of cultivation to observe the rate of growing and yield produced compared to conventional farming and then we analyse the total expenditure and profit that we got from organic farming.

CHAPTER II

MATERIALS AND METHOD

2.1 Location of College and Student

Both college and the house of the student are located in Kottayam district of Kerala. The land is mostly covered with red soil.

2.2 Crops Selected

The seedlings of 5 varieties of crops collected from VFPCK Plant Nursery. The crops selected for this project were:

1. Tomatoes
2. Snake Beans
3. Red Amaranth
4. Brinjal
5. Chillies

2.3 Area Cultivated or Number of Grow Bags

All the crops except tomatoes planted in a total of 25 grow bags and tomatoes potted in 15 hanging pots

2.4 Crop Season

The crops planted during the beginning of summer around the first week of April which is the ideal season for growing the selected crops. Then around the first week of June, the monsoon season started. So, the planting season wearied from one to another. They thrived throughout the seasons

2.5 Weather Conditions Prevailed

The weather was quite unstable. The temperature ranged from 24℃ to 30℃. It started with hot summer then due to the cyclone, heavy rain started. The wind speed reached up to 60km/hr. now due to the monsoon, a light sprinkle of rain is observed

2.6 Agricultural Implements and Equipment's Used

The equipment's and implements used for gardening are:

i. Handheld trowel
ii. Poly grow bag
iii. Pruning Shear
iv. Hose and Watering can
v. Spade
vi. Hand weeder
vii. Hoe

Hand Trowel: A trowel is a small hand tool used for digging, applying, smoothing, or moving small amounts of viscous or particulate material.

Poly Growbag: It is a large plastic bag filled with a growing medium and used for growing plants, usually salad crops. Various nutrients are added, sufficient for one season's growth, so frequently only planting and watering are required of the end-user.

Pruning Shears: also called hand pruners, or secateurs, are a type of scissors for use on plants. They are strong enough to prune hard branches of trees and shrubs, sometimes up to two centimetres thick

Hose and Watering Cans: Watering cans are good for containers, especially on balconies and roofs with no hose spigot. Hand watering with a gentle spray from a hose is good for small areas and gives you a chance to pay close attention to your plants.

Spade: It is a tool primarily for digging, comprising a blade. It's typically stunted and less curved than that of a shovel with and a long handle

Hand Weeder: It is used for removing weeds in vegetable gardens, basins of orchard trees and Vineyard plantations. It is also used for breaking the soil crust and creation soil mulch.

Hoe: It is used for shaping the soil includes piling soil around the base of plants (hilling), digging narrow furrows (drills) and shallow trenches for planting seeds or bulbs.

2.7 Liming material and Quantity

The liming material used is Dolomitic limestone. It is garden grade calcium and magnesium carbonates. it raises the pH level of acidic soil by which helps plants to absorb the basic nutrients that are locked up in the soil.

The soil is tested using a home test kit. Most garden plants prefer a pH range of 6.0-6.5. Add 2kg of dolomites to a 100 sq. ft. of garden space for every 1 point that is needed to raise the pH of the soil.

2.8 Manures Used

i. Basal Application: leaf moulds, Coco peat, Vermicompost and Cow dung are used for basal application
ii. Top Dressing: Compost is used as a top dressing
iii. Bio-fertilizers Used: Bone meal, Neem Cake is used as biofertilizers
iv. Bio Slurries: Groundnut cake is mixed with water to make a slurry and fermented rice water is used as bio-slurry
v. Bio Pesticides: Neem oil, baking soda and Beauveria bassiana are used as bio-pesticides
vi. Biocontrol Agent: Verticillium lacanii and Pseudomonas fluorescens are used as biocontrol agents
vii. Waste Decomposer (WDC): It contains beneficial microorganisms from Desi Cow Dung for Soil Health Reviver. It can control all types of soil-borne, foliar diseases, insects and pests as a plant protection agent. Its application can eliminate up to 90% of uses of all types of pesticides, fungicides, and insecticides since it controls both root

diseases and shoots diseases. It can also be used as foliar spray Made by using the technology developed by the National Centre of Organic Farming, NCOF, Govt. Of India. It is used by mixing 1 bottle of WDC to 200 litres of water 2kg of jaggery. Then the solution is kept for a week and is mixed properly 2-3 times a day. After a week we can use the solution to spray or even water the crops by mixing it with water in a 1:3 ratio.

2.9 Crop Management

Liming:

Two weeks before setting out seedlings, the weeds and other debris are removed then the dolomite is spread evenly over the soil in the proportion of 2kg/sq. ft. Using a spade worked the dolomite into the top 7 inches of soil and watered thoroughly so that the dolomite begins to leach into the surrounding soil. The soil is then allowed to dry under the sun for 2 weeks before it is mixed with the potting mixture and transferred to a poly grow bag

Potting Mixture Preparations:

As part of soil prep, after liming the soil and letting it dry for 2 weeks under the sunlight, the potting mixture was prepared by mixing equal parts of good quality river sand, red earth soil and cocopeat.

Basal Manuring:

The prepared potting mixture is then mixed with Vermicompost, Bone meal, Neem cake and Cow dung

Grow Bag Filling:

The grow bag is opened and checked for holes at the base, if not a hole is made using a pointed object or soldering iron. The base of the grow Bag is first covered with leaf moulds and weeds then the prepared potting mixture is added up to ¾ of the grow bag.

Planting the Seedling:

Since the seedling was leggy a hole deeper than normal holes for planting a seedling were taken with a hand trowel to compensate for the extra length. During the transplantation of the seedling from the potting tray, the roots are dipped in the pseudomonas solution to prevent root rot.

Top Dressing:

The compost is used as a top dressing. It is added to the soil once two weeks and the top layer of the soil is loosened so that the compost easily goes down into the soil after watering

Pest Management:

i. there were no pests observed in red amaranth since it got destroyed in the storm
ii. Mites, Aphids and Leaf folders were observed in Snake Beans. Neem oil emulsion was sprayed every part of the plant to aphides and leaf folder. For mites, the affected parts were removed and Beauveria fungus solution was sprayed
iii. Stalk borers were observed in tomato plants. The destroyed stalks were removed and Neem oil emulsion was sprayed on every part of the plant
iv. Leaf miners were observed in brinjal. As pesticide Neem oil emulsion were used

Disease Management:

i. Halo blights were observed in Snake Beans. Pruned stake plant parts with a disinfected pruning shear
ii. Stunted growth disease observed in chilli. To revive the plant fermented rice water is used and sprinkled some ashes

Water Management:

the watering was done by both hose and water can. The watering was done either in the morning or evening. In summer, the plants were watered twice a day. In monsoon, the plants were watered once a day. On storm days, only plants that were kept under the shades were watered.

Harvest:

i. The red amaranth got destroyed before harvesting
ii. The snake beans haven't reached the harvesting stage yet
iii. The chillies were harvested for 1 time
iv. The tomatoes haven't reached the harvesting stage yet
v. The brinjals were harvested 2 times

Despite planting all the crops at the same time, its seen that the harvesting time differs for different crops

CHAPTER III

OBSERVATION AND DATA COLLECTION

3.1 GERMINATION AND PLANT STAND ESTABLISHMENT

Since the crop was bought as a seedling the rate of germination per unit area can't be calculated.

All the crops that were planted in grow bags survived except Red Amaranth

3.2 HEIGHT OF PLANT IN CENTIMETER

CROPS	HEIGHT OF PLANT AFTER TRANSPLANTING THE SEEDLING (15 days interval) (Cm)				
	15 DAYS	45 DAYS	60 DAYS	75 DAYS	90 DAYS
Tomato	35 cm	58 cm	76 cm	93 cm	121 cm
Brinjal	37 cm	49 cm	63 cm	78 cm	91 cm
Chilli	20 cm	29 cm	32 cm	48 cm	56 cm
Snake Beans	45 cm	Since the plant was a climber and it spread all over the fence, couldn't record the height of the plant			
Red Amaranth	20 cm	Couldn't record the height of the plant as it got destroyed in the storm			

3.3 NUMBER OF BRANCHES

CROPS	NUMBER OF BRANCHES (15 DAYS INTERVAL)				
	15 DAYS	45 DAYS	60 DAYS	75 DAYS	90 DAYS
Tomato	2 Branches	2 Branches	3 Branches	5 Branches	5 Branches
Brinjal	0 Branches	1 Branches	3 Branches	3 Branches	5 Branches
Chilli	0 Branches	1 Branches	1 Branches	3 Branches	3 Branches
Snake Beans	Since it's a climber and was spread all around the fence, couldn't count the number of branches				
Red Amaranth	0 Branches	Since the plant got destroyed in the storm, couldn't count the number of branches			

3.4 DAY OF FIRST FLOWERING

CROPS	DAY OF FIRST FLOWERING AFTER TRANSPLANTING THE SEEDLING
Tomato	60 Days
Brinjal	55 Days
Chilli	70 Days
Snake Beans	85 days
Red Amaranth	–

3.5 DAYS OF FIRST FRUITING

CROPS	DAY OF FIRST FRUITING AFTER TRANSPLANTING THE SEEDLING
Tomato	62nd Day
Brinjal	58th Day
Chilli	71st Day
Snake Beans	86th Day
Red Amaranth	–

3.6 HARVEST DAYS

CROPS	HARVEST DAYS AFTER TRANSPLANTING
Tomato	Haven't reached the harvesting stage
Brinjal	65th Day And 82nd Day
Chilli	88Th Day
Snake Beans	Haven't reached the harvesting stage
Red Amaranth	–

3.7 NUMBER AND WEIGHT OF FRUITS FROM EACH HARVEST

CROPS	NUMBER AND WEIGHT OF FRUITS FROM EACH HARVEST
Tomato	Haven't reached the harvesting stage
Brinjal	2 Nos. (200 gm) and 4 Nos (350 gm)
Chilli	33 Nos (100 gm)
Snake Beans	Haven't reached the harvesting stage
Red Amaranth	–

3.8 CUMILATIVE YIELD

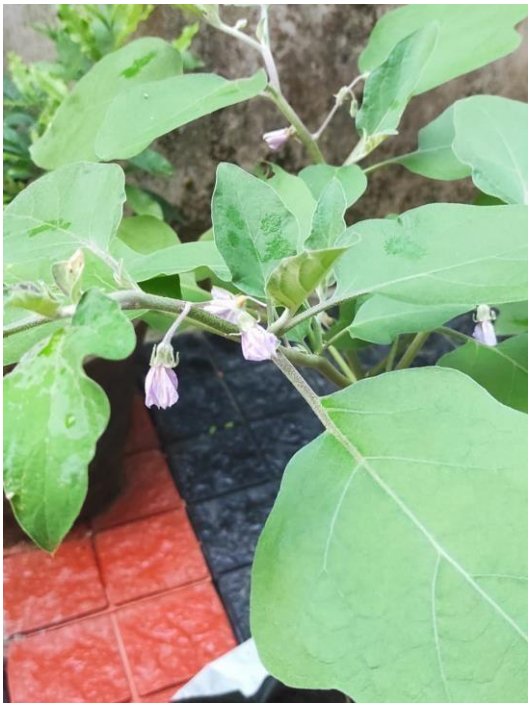
CROPS	CUMILATIVE YIELD (Kg)
Tomato	Haven't reached the harvesting stage
Brinjal	0.75 Kg
Chilli	0.1 Kg
Snake Beans	Haven't reached the harvesting stage
Red Amaranth	–

CHAPTER IV

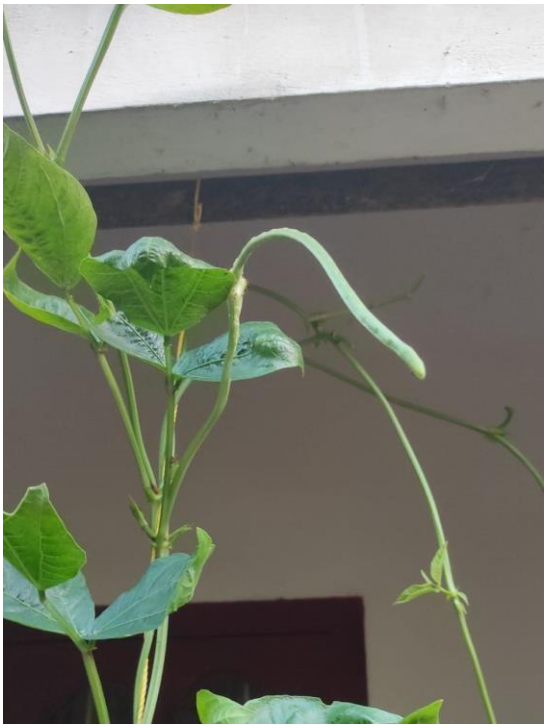
PHOTOS

4.1 Grow Bag Preparation and Layout

4.2 Flowering Stage



4.3 Fruiting Stage



4.4 Harvest

CHAPTER V

COST-BENEFIT ANALYSIS

The total expenditure of this project is Rs. 1850/-. Till now we cultivated 750 gm brinjal and 100 gm chillies, which in the market is for Rs. 90 /- in total. We used the cultivated vegetables for household purposes. As the crops are not fully cultivated, we cannot say if it's a profitable way of cultivation or not. But it is a beneficial way of cultivation for both our physical and mental health.

CONCLUSION

Since the harvesting is not completely done, the project is incomplete. So, we cannot conclude but 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 environmental 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 producer and with this vision, we can conclude that encouraging organic farming in India can build a nutritionally, ecologically, and economically healthy nation someday.

PROJECT

മഹാത്മാഗാന്ധി യൂണിവേഴ്സിറ്റി
MOOC on Organic farming

മൂന്നാം സെമസ്റ്റർ MOOC Organic farming course

പ്രോജക്ട് റിപ്പോർട്ട്

സമർപ്പിക്കുന്നത്,

രേഷ്മ. ആർ
നാലുപറമ്പിൽ
ചങ്ങനാശ്ശേരി
കോട്ടയം ജില്ല
മൂന്നാം വർഷ ബി. കോം
Roll NO: 1503

Assumption college
Kottayam.

ഉള്ളടക്കം

ആമുഖം

എന്റെ പേര് ക്ഷേമ. ആർ. ഞാൻ മൂന്നാം ബിരുദ (ബി.കോം) വിദ്യാർത്ഥിനിയാണ്. മഹാത്മഗാന്ധി യൂണിവേഴ്സിറ്റി യിലെ വിദ്യാർത്ഥികളിൽ ജൈവ കൃഷിയെക്കുറിച്ചുള്ള അവബോധം ഉണ്ടാകുവാനായി പുതിയായി തുടങ്ങിയ compulsory കോഴ്സ് ആയ MOC Organic farming ന്റെ ഭാഗമായി എന്റെ വീട്ടിൽ ചെയ്ത കൃഷിയുടെ അടിസ്ഥാനത്തിൽ ഞാൻ തയ്യാറാക്കിയ റിപ്പോർട്ട് ആണിത്.

ഈ റിപ്പോർട്ടിൽ ജൈവകൃഷിക്കായി ഞാൻ സ്വീകരിച്ച രീതികളും രീതികളും, വിളകളും, അവയുടെ പരിചാലനവും വിളവെടുപ്പും, രോഗനിയന്ത്രണവും മുല പരിപാലനം തുടങ്ങിയ വിവിധ ഘടകങ്ങൾ ഈ റിപ്പോർട്ടിൽ ഉൾപ്പെടുന്നു.

ഞാൻ ആറു മാസത്തിലധികമായി (ഗ്രോബിൾ പെറ്റൂണിയ) ജൈവകൃഷി നടത്തി. ആദ്യ ഘട്ട വിളവെടുപ്പ് മെയ് ജൂൺ തുടങ്ങിയ മാസങ്ങളിൽ തന്നെ നടത്തി.

വസ്തുക്കളും രീതികളും കോളേജിന്റെയും വിദ്യാർത്ഥികളുടെയും സ്ഥലം

കോട്ടയം ജില്ലയിലെ ചങ്ങനാശ്ശേരിയിലാണ് Assumption കോളേജ് സ്ഥിതി ചെയ്യുന്നത്.

കോട്ടയം ജില്ലയിലെ ചങ്ങനാശ്ശേരിയിലാണ് ഞാൻ താമസിക്കുന്നത്.

തിരഞ്ഞെടുത്ത വിളകളും നട രീതിയും

Mooc organic farming-നു വേണ്ടി വിവിധയിനം വിളകൾ തിരഞ്ഞെടുത്തു അവയിൽ, ചീര, വഴു, മഞ്ഞൾ ഇഞ്ചി; പയർ തണ്ടൻ, പയറ്റ് പച്ചക്കറിക്ക് വേണ്ട തുടങ്ങിയവ നട്ടു

നട രീതി

വിത്തുകളും നടുവും ചാണകവും നിലത്തുമായാണ് നടത്. നടുന്നതിന് മുമ്പായി പയർ വിത്തുകൾ 2 രാത്രിയെങ്കിലും വെള്ളത്തിലിട്ടു വിത്തുകൾ വച്ചുന്നിനു ശേഷമാണ് നടത്. ചാണകവും കരിയിലയും മണ്ണിൽ ചാലിൽ ചെടിയായി നിറച്ചു അവയിൽ വിത്തുകൾ നട്ടു. നിലമൊരുക്കി കഴിഞ്ഞപ്പോൾ വിത്തുകൾ നട്ട് തടമുടികരിയിലയും പച്ചിലയും മൂടിയിൻ വിതറി.

പരിപാലന രീതികൾ

ചാക്കിലും മറ്റും നട്ട വിത്തുകൾ നല്ല രീതിയിൽ തന്നെ പരിപാലി-ച്ചിരുന്നു. ദിവസവും കുറച്ച് സമയം വിത്തുകളുടെ പരിപാലനത്തിന് മാറ്റിവെച്ചിരുന്നു. ഏകദേശം നാല് മുതൽ അഞ്ചു ദിവസത്തിനുള്ളിൽ തന്നെ നട്ട വിത്തുകൾ മുളയ്ക്കുവാൻ തുടങ്ങി. ഇടയ്ക്ക് ഇടയ്ക്ക് ചാണക പൊടി ഇടുകയും വെള്ളമൊഴിക്കുകയും ചെയ്തിരുന്നു. അതിന്റെ ഫലമായി വിത്തുകൾ മുളച്ചു.

രോഗനിയന്ത്രണം

വിളകളിലും, പൂവിലും മുഞ്ഞ, മറ്റു കീടങ്ങളെ ഒഴിവാക്കുവാൻ വേപ്പെണ്ണ, പാൽ തുടങ്ങിയവ വിളകളിലും. ഇലകളിലും തളിച്ച് ഒരു പരിധി വരെ ഇവകളെ തടയുവാൻ സാധിച്ചു. കൂടാതെ നന്നായി വെള്ളവും ഒഴിച്ച് കൊടുത്തിരുന്നു.

ഗ്രോബാഗുകൾ നിറച്ച രീതി.

വിത്തുകൾ ഗ്രോബാഗിലും ചാക്കിലും നിലത്തുമായിട്ടാണ് നട്ടത്. ഗ്രോബാഗുകൾ നിറയ്ക്കുന്നതിനായി മണ്ണും ചാണകവും ഒരുമിച്ചാക്കി കുറച്ച് ഗ്രോബാഗിലേക്ക് ഇട്ടു. അതിനുശേഷം കുറച്ച് മുട്ടതോടും കരിയിലകളും നിറച്ചു. അവസാനം മണ്ണും ചാണകവും അതിന്റെ മുകളിൽ ഇട്ട് ഗ്രോബാഗ് നിറച്ച് ഒരുക്കുകയും അവസാനം കുറച്ച് വെള്ളത്തിൽ ചാണകപ്പൊടിയിട്ട് കലക്കി അതിന്റെ മുകളിലായി ഒഴിച്ചു.

ഉപയോഗിച്ച വളങ്ങൾ ജൈവ വളങ്ങൾ

ജൈവ വളങ്ങളായി ചാണകം ചെടികളിൽ ഇട്ടു. കൂടാതെ പച്ചക്കറികൾ അരിഞ്ഞതിന്റെ മറ്റും അവശിഷ്ടം ഇട്ടിരുന്നു. അതുപോലെ തന്നെ മുട്ടത്തോടും കരിയിലകളും ചെടികൾക്ക് ചുറ്റുമായി ഇട്ടു. പോന്നിരുന്നു കൂടാതെ കഞ്ഞിവെള്ളവും ഒഴിച്ചിരുന്നു.

ഉപയോഗിച്ച കാർഷിക ഉപകരണങ്ങൾ

കൃഷിക്കായി തൂമ്പ. കൈവണ്ടി. മണ്ണ് നിറക്കുന്നതിനായി ചെറിയ ചട്ടി തുടങ്ങിയവയാണ് ഉപയോഗിച്ചത് കൂടാതെ ചെടികൾക്ക് വെള്ളം ഒഴിക്കുവാനായി ചെറിയ ഒരു പാത്രവും ഉപയോഗിച്ചു.

ജലസ്രോതസ്സ്

നട്ട ചെടികൾക്ക് വെള്ളം ഒഴിക്കുന്നതിനായി വീട്ടിലെ കിണറിൽ നിന്നാണ് ജലം എടുത്തിരുന്നത്.

വിളവെടുപ്പ്

ചീരയുടെ വിളവെടുപ്പ് ആഗസ്റ്റ് മാസത്തിൽ തന്നെ നടന്നു പയർ ആഗസ്റ്റ് മാസത്തിൽ തന്നെ ലഭിക്കുവാനായി തുടങ്ങി വെണ്ട ആഗസ്റ്റ് മാസം അവസാനത്തോടുകൂടെ ചെറിയ രീതിയിൽ വിളവെടുക്കുവാൻ സാധിച്ചു.

വിളവെടുപ്പ് ദിവസങ്ങൾ

വിളകൾ	വിളവെടുത്ത ദിവസങ്ങൾ
ചീര	30/5/21 28/7/21
വഴു	20/8/21
പയർ	18/7/21 10/8/21
മത്തൻ	20/8/21
ഇഞ്ചി	25/8/21
തക്കാളി	22/8/21
പടവലം	17/8/21
വെണ്ട	20/8/21
പാവൽ	10/8/21

ചീര

പയർ

മഞ്ഞൾ

ഇഞ്ചി

തക്കാളി

പപ്പര

கரு

പച്ചമുളക്

വെണ്ട