JanataShikshanSanstha's

KISAN VEER MAHAVIDYALAY ,WAI

Department Of Botany

Academic year: 2022- 2023

CLASS: B. Sc.III

Project report

Sr.no	Programme code	Name of the course	Course code	Academic year	Name of the students	Title of the project
1	81682	Practical III (Based On Paper No. Xi And Xvi)	DSC-E28	2022-23	NevareDishaSudhir KambleLaxmi Suresh	VERMICOMPOSTING
2	81682	Practical III (Based On Paper No. Xi And Xvi)	DSC-E28	2022-23	JadhavPrathamesh Sanja MatkarHrutvik Anil	BIOFERTILIZER
3	81682	Practical III (Based On Paper No. Xi And Xvi)	DSC-E28	2022-23	Nikita Suresh Mandhare DahotreShwetaKrishnak	HERBAL PRODUCT
4	81682	Practical III (Based On Paper No. Xi And Xvi)	DSC-E28	2022-23	JagtapVrushali Sunil DhekaneRupaliHarkesh SupriyaBhagwanChaudl	POST HARVESTING FRUIT DISEASES

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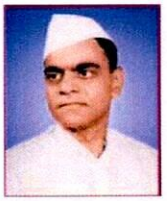

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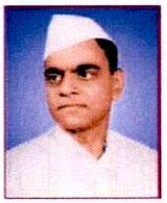

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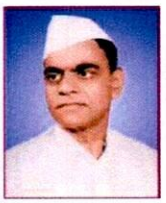

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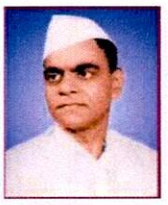

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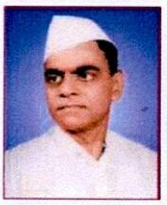

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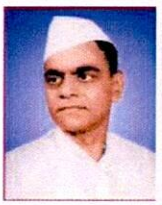

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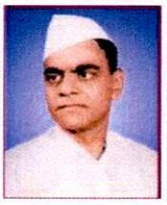

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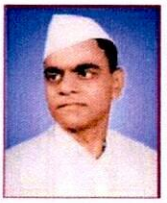

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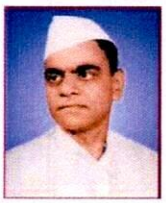

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KISAN VEER MAHAVIDYALAYA, WAI

(DIST.-SATARA)

VERMICOMPOST

A Project Submitted to

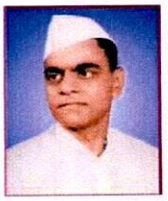
DEPARTMENT OF BOTANY

Submitted by

Miss.Disha Sudhir Nevare

Miss.Laxmi Suresh Kamble

2022-2023



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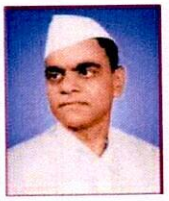

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DECLARATION OF THE STUDENT

Hereby declare that the project work entitled, "Vermicompost" is the original work carried out by me at the department of Botany of Kisan Veer Mahavidyalaya,Wai.

The project has not been carried out previously by any agency / person so I have selected this project for the field work.

Place : Wai

Date: 1/03/2023

Sr. No	Name of the Student	Roll No.	Exam seat no.	Signature
1	Miss.Disha Sudhir Nevare	53		Disha
2	Miss.Laxmi Suresh Kamble	89		

KISAN VEER MAHAVIDYALAYA Wai, Dist. Satara

INDEX

CHAPTER NO. 1

INTRODUCTION & METHODOLOGY

1.1 INTRODUCTION

Compost is soil made up out of things that used to be live plants love it. It is the organic matter in the soil that provided a repository for nutrients as we as a home to the many beneficial organisms that helps to decompose dead organic matter, make nutrients available to plant material provide aeration regulate moisture and soil temperature and provide a system of check and balance between the harmful and beneficial component of the soil.

Vermicompost

The term of vermicomposting means "The use of earthworm (plat 9) for composting organic residue "earthworm can consume practically all kinds of organic matter and they can eat their own body weight body per day 1kg of worm can consume 1kg of residue every day the excreta (casting) of the worms are rich in nature available from of P,K, Ca & Mg, The passage of soil through earthworm promotes the growth of bacteria and actinomycetes. Actinomycetes thrive in the presence of worms and their content in worm casts is more than six times that in the original soil.

Vermicompost is an ecologically pure organic fertilizer. The product of processing manure with of technological earthworms startles. This concentrate fertilizer contain the whole balance complex of essential nutrients and microelement enzymes, soil antibiotics, vitamins, growth promoting hormones.

It also contains a lot of humic substance. Vermicompost is a unique micro-biology fertilizer with the community of useful soil micro-organisms improving soil fertility. Vermicompost does not contain pathogenic microflora helminth eggs wood seeds and heavy metals. The fertilizer is easily and gradually assimilated by plant with in their life cycle. The fertilizer improves agrochemical characteristics increase quality and yield of agricultural crop.

IMPORTANCE OF EARTHWORM IN AGRICULTURE

The role played by earthworm is very high in agriculture as compared to other fields. The major role played by earthworm in agriculture are as follows :-

Maintenance of sustainability in sustainable Agriculture

It is a system of cultivation with use of manures, crops relations minimum tillage, less use of fertilizers, pesticides and weedicides earthworms helps in recycling of decomposable wastes in the soil.

Play important role of successful organic furming

Without earthworm organic farming is not possible which is essential to produce food of good quality. Utilization of vermiculture & vermicompost in agriculture is one of the important compounds of organic farming. Soil fertility increase as earthworm population increase in soil & the goal of sustainable agriculture is achieved.

Earthworm activities in soil

Earthworm activities are numerous & cover every important aspects of sustainable agriculture. It reduces pathogen, consume, organic wastes give casting more in soil profiles adds humidity & urea through urine increase moisture holding capacity having up-to 1000 times more micro in organisms.

Soil fertility & Texture

Earthworm enhances decomposition of organic waste. Lower down the C: N ratio & marks N available to plants. Humiliates is also hastened by earthworm .cast contains enzymes like protests , amylase, lipase ,cellulose etc are major plant nutrients like N,P,K& micro nutrients made more & easily available to plant through vermicast. It improves soil structure texture particles size of soil, increase ionic activity & keep the soil pH at neutral level.

VERM ICULTURE

It is the first step in earthworm. Biotechnology from which it can be possible to obtain required number of earthworms for their utilization in various fields for human welfare.

It is the process to raving & breeding of earthworms. The organic manure obtained by the activities of earthworms is called as vermicompost. Both vermiculturing & vermicomposting process are going on simultaneously.

Types of worms:-

The rearing of earthworms is called as vermiculture and the organic manure obtained by the activities of earthworms is called vermicompost. These worms are divided into two types:

1. Microdrili: - Deals with worms mostly aquatic having 280 known species.
2. Megadrili :- Deals with earthworms mostly terrestrials having 3320 known species in world, earthworms belongs to Phylum - Annelida. Order-Neo-oliguchaeta
   And further classified into 10 families comparing 240 genera & 3320 species.

We all know the importance of earthworms in agriculture while plays in important role in improving oil properties, physically .Chemically Biologically and helps in obtaining better crop yield the suitable species of earthworm for vermiculture are as follows:-

1. Eisenia fotida
2. Eudrilus eugeniae
3. Lampito mauriti
4. Metapare posthuma
5. Perionyx excavates
6. Octoheatus surnerisis
7. Dichogaster attmis
8. Ocherodrilus occidentalis
9. Drawida willsi.

The moist compost heap of 2.4m by 1.2m & 0.6 height can support a population of more than 5000 worms. The introduction of worms in to a compost heap has been found to be mix the material, aerate the heap and hasten decomposition. Teaming the heap is not necessary where earthworms are present to do the mixing and aeration. The deal environment for the worm in a shallow pit and the right sort of worm is necessary. Lumbricus rubellus (cred worm) and Eisenia foetiba are thermo-tolerant so particularly useful field worms (Allolobophora caliginosa) and hight crawlers.

European hight crawlers (Dendrabeana Veneta OR Eisenia hortensis) are produced commercially and have been used successfully in most climate. These night crawlers go to about 10-20cm. The however it has a narrow temperature tolerance range and it cannot servive at temperature below at 7°c vermicomposting is use in many countries experiences from selected countries are described as case studies.

1.2 *OBJECTI VES* -

- *To study the details process of vermicomposting*
- *To study the benefits of vermicomposting*
- *To create awareness among the people about ' sustainable*

1.3 *H YPOTH ESIS* –

- *Process of vermicompost is easy.*
- *Vermicompost increase the productivity of land*
- *It is better than chemical fertilizers and no advers impact.*

CHAPTER NO. 2
REPORTING

2.1 Reporting

Row, material

The material for used in vermicompost -

Cow dung, hours pellets of sheep & goats any one type of dung is preferred. Derived leaves of Banana, Coconut, Straw grass dried soil.& earthworm of suitable species.

Quantity

1st layer [6 inches] :- Dried Coconut & Banana leaves

2nd layer [6 inches] :- Layer of porous soil.

3rd layer [6 inches] ;-Layer of earthworm.

4th layer [6 inches] :- Layer of dung.

5th layer [9 inches] :-• Layer of dried leaves.

6th layer [6 inches] :- Soil layer.

7th layer [6 inches] :- wet porous covering.

Measurement of pit :-

The pit measurement width is "3feet"&

Length is "12 feet" &

Depth is "40feet"

1.4 STUDY AREA

To study vermicomposting method we selected vermicompost project in "Ramchandra Krushi Vidvalav Khandala" Kandala is a drought area region. The Khandala is a place of Tahasil area. In Khandala 70% people is farmer. The Ramchandra Krushi Vidyalay Khandala" is a agricultural collage. This collage is famous in the Khandala Tahasil. In this collage various courses like Horticulture, Animal science, Crop science, Tissue cultural science etc. The population in Khandala is 9000.

1.5 M ETH ODOLOGY

A) Survey Methodology -

Normally the survey method is used to collect the information about the project. In this method statistically information is collected by observing natural phenomenon. The questionnaire and interview schedule are the important tool in this method. The questionnaire is the list of questions supplied to respondent for collection information of disposal of degradable waste in useful and efficient manner.

B) Questionnaire Methodology:-

In questionnaire respondent may give written response to project worker an interview is the face to face dialogues between project worker and respondent in both this method our aim is to collect information about source and disposal method of bio-medical waste., These are some demerits of questionnaire. Eg. Questionnaire is not useful in case of illiterate person and children.

STATISTICAL DATA

Sr. No.	Decomposition Waste	Nitrogen %	Potassium %	Phosphorus %
1	Cow dung	0.75	0.5	0.2
2	Agriculture waste	1.56	0.59	0.63
3	Grass	0.84	0.57	0.6
4	Mango leaves	1.52	0.59	0.62
5	Cashew nut leaves	1.52	0.59	0.59
6	Waste leaves	1.40	0.62	0.69
7	Vegetable residue	1.67	0.56	0.66

The vermicompost fertilizer use:

- The vermicompost is used in farms
- The Banana, Mango, Guava, Grapes, Fruit crops is used in vermicompost.
- The increase yield of crops.
- The vermicompost is used in ground nut, sugarcanes, & Jowar, Maize crops.
- The affecting the crops yield & benefits is more.
- Agricultural land are becoming non fertile.
- This fertilizers is used in various crops are farm.

PROCEDURE

Preparation of vermicompost pit :-

- Basal Layer -

  It is the 6 inches in height. It is filled with dried grass. Banana, Coconut leaves or any other dried straw.

- Second Layer -

  It is 6 inches in height. It is a layer prow soil. It is mainly for proper drainage of water.

- The worms are of desired quality with adequate number shall be added.
- The worms are covered with any type of dung. The main thing is that dung accelerated the growth of worms.
- The layer of dung is covered by dried leaves.
- The dried bio-mass is again converted with wet organic soil.
- The compost pit is always covered with wet porous cloth or periodically water is sprinkled over it.
- In order to maintain proper humidity pits should be provided with proper shade.
- There should not be a layers trees nearly the vermicompost pits so that roots will not absorb the fertilizers.
- The P^H of pits should be 6.5to 7.
- The temperature of pits must be maintained 28°c to 30°c.
- In arid region the vermiculture is not useful.
- Even synthetic area should be added to the mixture of vermiculture. This type is Complete the pit in vermicompost.

TEMPARATURE:-

28°c to 30°c.

Separation of Earthworms from pits

Pits cannot be digged with any instrument that could make injury to worms but vermicompost is filtered with line mesh worms & cocoons are separated out.

Collected the "Row Material"

The cow dung is collect in Karuna Mandir. This Mandir is famous for the Khabataki ghat.

Leaves of banana, coconut: This is collect from the self farms of banana & coconut.

Dried soil: This soil is collect form the agriculture land.

Earthworm Species:

The earthworm species is collect from rearing the shri Phadnis of the **Menavali.**

Project in vermicompost prepare use this species

In this project of vermicompost is used in worms species in Eubrilus eugeniae (African night crawlers) because this species is attack organic matter from below but latter. Do not thrive during active composting being more easily than the other at filtrate high temperature and this species is large tropical.

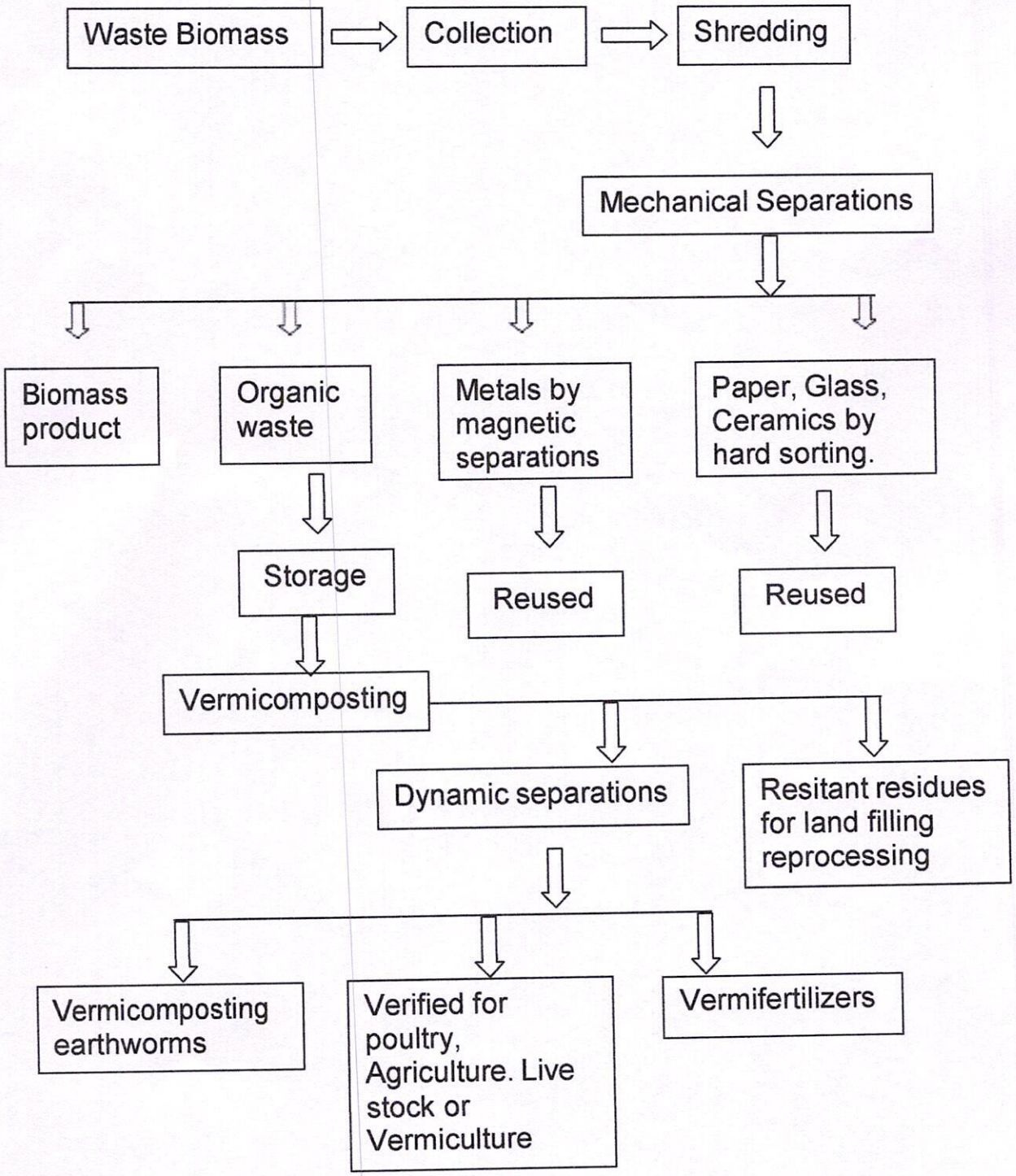
ADVAN TAGES OF VERM ICULTURE
VERM ICOM POSTIN G

- The breaking down of organic residue and nutrient recycling hi soil.
- They feed on organic material and digest the organic residue is their got by their own enzymes.
- The secrete nutritional)} rich cost which are enriched with essential plants nutrients

  hi available from such as nitrogen(N) Phosphorus(P) Potassium(K) Sodium(Na) Calcium{Ca) Magnesium(Mg) & certain micronutrients need for plants growth.
- Improve soil fertility and reclaim the *soil.*

  Eliminate odors and fly problem.
- Reduce fertilizers input together extent.
- Obtain organic manure free from population.
- Upgrade the value of original waste materials
- Provided employment to rural people.
- Well processed dried worms now used in a cattle or poultry feed.

FLOW-CHART

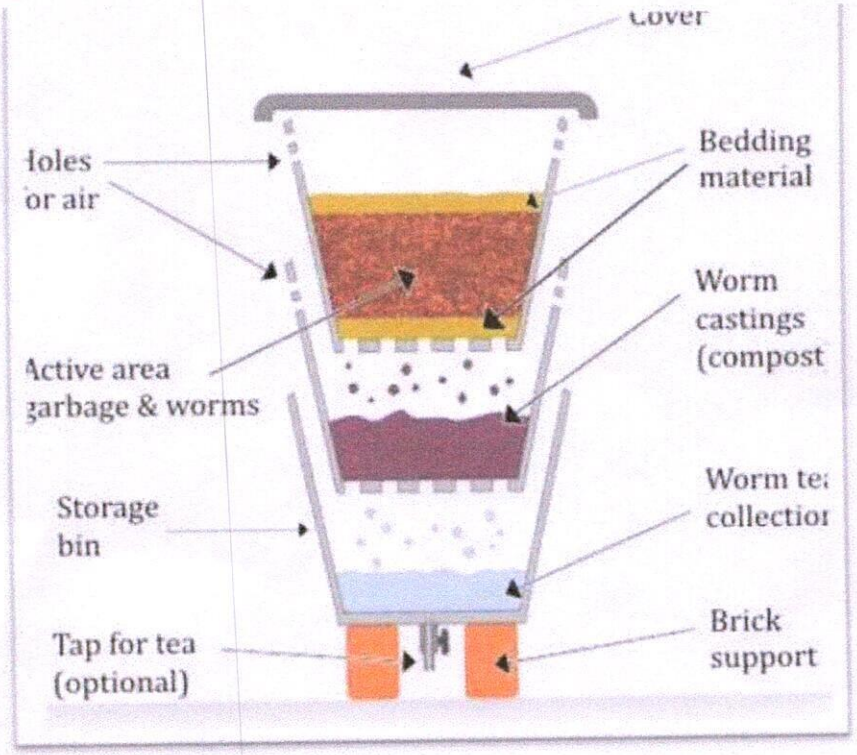


BEN EFITS OF VERM ICOM POSTIN G

The typical level of nutrients (N, P, K) in vermicomposted green waste are of the order 1-2%. It would appear that the vermicompost does not compare favorable with commercial chemical fertilizers However two important factors are overlooked when compairing the two the microbial content and the organic matter content.

The vermicompost is a. natural fertilizers. This is fertilizers produced in soil in useful nutrient n, p, k like that & maintain the soil pH and chemical fertilizers are either sterile or have negligible microbiologically activity . The chemical fertilizers are composed primary of water soluble chemical salts and such as organic material rarely farm parts of chemical fertilizers once the salt have been depleted from a chemical fertilizers than re application and nitrogen fixed bacteria in vermicompost means that nitrogen can be fixed from the atmosphere and converted to plant soluble intrates.

The process continue as their in sufficient organic matter and so re application is not required at the microbiologically active. Vermicompost regenerated the nutrient from the atmosphere organic matter and water replace those lost from chemical fertilizers by launching plant uptake and chemical reaction in relation to moisture holding capacity & improvement of soil structure chemical fertilizers have negligible effects as thy primarily consist of water soluble salts 'vermicompost on the other hand due to the aggregate nature of the worms casting has appreciable water holding capacity and its use leads to improved soil structure.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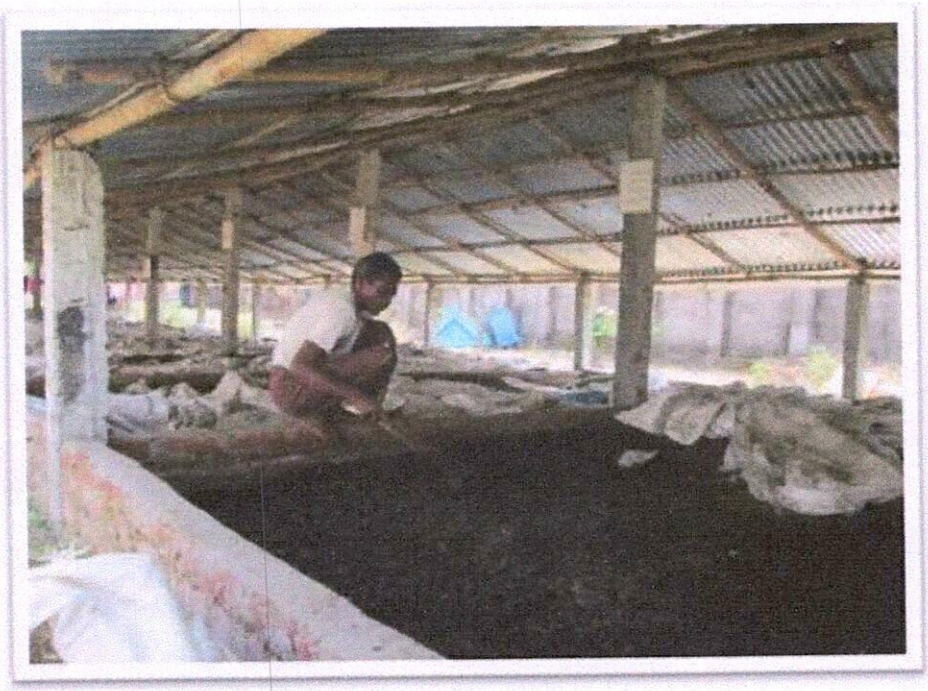

CHAPTER NO. 3
SUMMARY AND CONCLUSION

3.1 SUMMARY:-

It is mainly useful in agriculture earthworms make that soil fertile in search of food they execute soil out in the form of soft pellets called vermicasting.

This vermicasting use as bio-fertilizers the alimentary canal of earthworms acts as perfect natural. Bio-reactor and is an ideal breading home for beneficial bacteria. The nitrogen to fixed trap the atmosphere nitrogen to convert in to nitrates. They enrich the soil by supplying soluble phosphorus and potassium salt from rocks more than earthworms > more bacteria > more disposal of organic wastes > more enrichment of soil.

Thus the vermicomposting contain bacteria nitrates, phosphorus, potassium, enzymes, vitamins, hormones, antibiotic humus & cocoons of earthworms etc. It provides balanced nutrients to plant as it acts as a super fertilizers earthworms from a layer of vermicasting on the surface of soil in this way earthworms acts as *Best friends of farmers.*

Use in degradable soil wastes **movements:-**

Degradable solid wastes like sugarcane fresh feathers bones etc. are added to the specially prepared earthworms beds.

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