



## Value Added Course



2022-23



# Vermicomposting

Course Code :ZOOVAC-07

*Duration:30 days*

on 01-12-2022 to 07-01-2023

Class -I B.Sc.BZc (E.M)

# **A.G. & S.G. Siddhartha Degree College of Arts & Science**

Vuyyuru-521165, Krishna District, Andhra Pradesh

(Managed by: Siddhartha Academy of General & Technical Education, Vijayawada-10)

An Autonomous College in the Jurisdiction of Krishna University

Accredited by NAAC with "A" Grade

ISO 9001:2015 Certified Institution

2022-2023



## **DEPARTMENT OF ZOOLOGY**

### **Value Added Course**

**Title: Vermicomposting**

Name of the Lecturer : K.Padmaja

Class : I B.Sc BZC( EM)

Duration of the Course : 30 Days

VAC Code : ZOOVAC -07

**A.G. & S.G. Siddhartha Degree College of Arts & Science**  
Vuyyuru-521165, Krishna District, Andhra Pradesh

**Value Added Course**

**Title: Vermicomposting**

**Objectives :**

- The chief objective is to compost organic wastes not for the disposal of solid organic wastes but also to produce superior quality manure to feed our “nutrient/organic matter hungry” soils.
- Large volume of organic matter generated from agricultural activities, dairy farms and animal shelters usually dumped in corners emanating foul smell, can be utilized by properly composting it into a value-added end product

**Methodology :**

- Vermiculture is a technique based on utilizing some species of earthworms to convert organic waste into Vermicompost which is again, the product of decomposition by various worms. It is a practice of harvesting worms that take part in decomposing organic waste and turning it into nutrient-rich fertilizer.

**Duration : 30 Days**

# A.G. & S.G. Siddhartha Degree College of Arts & Science

Vuyyuru-521165, Krishna District, Andhra Pradesh

## Value Added Course Student Enrolment Sheet

Class : I B.Sc BZC (EM)

S. No	Roll No.	Name of the Student	Signature
1	22-501	P.UMA	P Uma.
2	22-502	CH.HARITHA	Ch.Haritha.
3	22-503	V.NITHYA SRI	V. Nithya Sri
4	22-504	B.SUMATHI	B. Sumathi
5	22-505	M.BHUVANA SRI	M. Bhuvana Sri
6	22-506	ABDUL AYESHA BEGUM	AB. Ayesha Begum.
7	22-507	K.VIJAYA SRI	K Vijaya Sri
8	22-508	G.DHANEESHA	G. Danisha
9	22-509	S.VISHNU PRIYANKA	S. Vishnu Priyanka
10	22-510	B.JAHANAVI	B. Jahanavi
11	22-511	K.SARWAN CHOWDARY	K Sarwan Chowdary
12	22-512	P.KARTHIKEYA	P. Karthikeya

*B. A. Liranmayee*  
Head, Department of Zoology.  
AG&SG Siddhartha Degree College.  
(Autonomous)  
VUYYURU - 521 165.

*[Signature]*  
PRINCIPAL  
AG & SG Siddhartha Degree College of  
Arts & Science (Autonomous), Vuyyuru



**A.G. & S.G. Siddhartha Degree College of Arts & Science**  
Vuyyuru-521165, Krishna District, Andhra Pradesh

**Value Added Course**

**Title: Vermicomposting**

Content	Module No.
<p style="text-align: center;"><b>General Vermiculture/ Vermicompost</b></p> <p>1. Introduction to vermiculture. definition, meaning, history, economic importance, their value in maintenance of soil structure, role as four r's of recycling reduce, reuse, recycle, restore.</p> <p>1.2 The role in bio transformation of the residues generated by human activity and production of organic fertilizers. How does nature works.</p> <p>1.3 The matter and humus cycle (product, qualities). Ground population, transformation process in organic matter</p>	<b>Unit-I</b>
<p style="text-align: center;"><b>Earthworm Biology and Rearing</b></p> <p>2.1 Choosing the right worm. Useful species of earthworms. Local species of earthworms. Exotic species of earthworms.</p> <p>2.2 Key to identify the species of earthworms. 6 Biology of Eisenia fetida. a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae. b) Vital cycle of Eisenia fetida: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors). Complementary activities of auto evaluation</p>	<b>Unit-II</b>
<p style="text-align: center;"><b>Vermicompost Technology (Methods and Products)</b></p> <p><b>3.1 Vermicompost Technology (Methods and Products)</b></p> <p>3.2 Conventional commercial composting - Earthworm</p> <p>3.3 Composting la Conventional commercial composting - Earthworm Composting larger scale rger scale</p>	<b>Unit-I11</b>
<p style="text-align: center;"><b>Applied vermiculture</b></p> <p>4.1 Nutritional Composition of Vermicompost for plants, comparison with other fertilizers 11 Vermiwash collection, composition &amp; use</p> <p>4.2 Considerations about economical aspects of this activity. Research and ratability according to different exploitation orientations</p>	<b>Unit-IV</b>

# **A.G. & S.G. Siddhartha Degree College of Arts & Science**

Vuyyuru-521165, Krishna District, Andhra Pradesh

## **Value Added Course**

### **Title: Vermicomposting**

#### **Test Exercise:**

- 1. What is Vermiculture??**
- 2. How does Vermiculture work??**
- 3.What is the importance of vermiculture products??**
- 4What should I feed the worms? What should I avoid adding to the vermicomposting bin??**
- 5. How do I maintain the worms in the winter?**
- 6. What are some of the materials required for Vermicomposting?**
- 7. What are the Advantages of Vermicompost Over Regular Compost?**
- 8. What are the Benefits of Vermicomposting?**
- 9. . What are earthworms like?**
- 10. What are the three techniques of Vermiculture?**

**A.G. & S.G. Siddhartha Degree College of Arts & Science**  
Vuyyuru-521165, Krishna District, Andhra Pradesh

**Value Added Course**

**Title: Vermicomposting**

**Key:**

1. Vermiculture can be defined as culture of earthworms. Earthworms are divided into two groups: humus formers and humus feeders. The first group dwell on the surface and feed on nearly 90% organic materials. They are generally darker in colour, and are also called epigeic or detritivorous earthworms. It is these worms that are generally harnessed for vermicomposting. The second group, the humus feeders, are burrowing worms some of which are useful in both compost preparation as well as making the soil porous. Generally the burrowers help in mixing and distributing humus through the soil.

It has been proved that earthworms can degrade organic wastes speedily and efficiently. However, to increase the efficiency of vermicomposting, care should be taken to see that worms thrive well on organic matter, breed faster adapting to moisture and climatic fluctuations. The most beneficial feature of vermicomposting is that it eliminates foul smell of decaying organic wastes, as it is a fully aerobic system. The concept of vermiculture became well known in the 50s of this century when facilities were set up in industrialised countries of Western Europe for the mass breeding of earthworms. Subsequently, USA, England and France conducted several experiments related to vermiculture technology for efficient disposal of organic wastes.

2. Earthworms feed on organic waste, consuming two to five times their body weight. They use a relatively small amount of their intake for their growth and excrete the mucus coated undigested matter as vermicasts. Vermicasts consist of organic matter that has undergone physical and chemical breakdown through the activity of the muscular gizzard that grinds the material. The nutrients present in the vermicasts are readily soluble in water for uptake by plants. Vermicast is a rich source of macro and micronutrients, vitamins, enzymes, antibiotics, growth hormones and microflora.

3. The products of vermiculture act as environmentally friendly long-term soil conditioners containing nutrients readily available to plants, which greatly improve soil performance and crop yields. Scientific research conducted into the effects of vermicast has found 30-50% increases in nitrogen uptake, 100% increases in potassium and phosphate uptake, increases in root length, root numbers, and shoot length, and 40-60% increases in cucumber and tomato yields. There are also reported increases in flavour and shelf-life, though these findings are not as easily quantified.

4. I tell my students that worms are vegan and therefore should only be fed scraps from fruit and vegetables. No meat, no dairy, no cheese, no bones, no manure, or any other animal product should be added to the vermicomposting bin. Shredded newspaper, copy paper, or even shredded cardboard is beneficial. Avoid adding plant material that has been sprayed with insecticides or other chemicals. Also avoid adding plastic, metal, or other non-biodegradable products.

5. Red wigglers prefer temperatures between 55-75 degrees Fahrenheit. Most homes maintain these temperatures during the winter months so it is best to bring vermicomposting bins indoors during the winter. Dark locations like a basement corner or under the kitchen sink are ideal. A well-maintained vermicomposting system has little or no odor. Indoors the worms can be continually fed throughout the winter months as they do not go dormant. Ideally vermicomposting systems are not allowed to freeze, as this will kill the worms.

6. Crop residues, vegetable waste, dried leaves, cattle dung, earthworms, water supply, a container, and a few other materials are needed for Vermicomposting. These need to be ready prior to Vermicomposting. Vermicomposting is good for the soil and plants as it enriches them with nutrients and is a great alternative to chemical fertilizers and pesticides that make any plant unhealthy. The page on Vedantu Vermiculture has ample information on the subject and can be read by all students to quell all their doubts.

7. Worm-made compost material is far superior to normal compost

1. The compost material size of Vermicompost is less than 2 microns which is smaller than regular compost
2. Vermicompost improved soil water retention, drainage, aeration, and soil stability.
3. Vermicompost contains high amounts of natural plant growth hormones and has more antibiotic properties than regular compost.

8. Worm-made compost material is far superior to normal compost

- The compost material size of Vermicompost is less than 2 microns which is smaller than regular compost
- Vermicompost improved soil water retention, drainage, aeration, and soil stability.
- Vermicompost contains high amounts of natural plant growth hormones and has more antibiotic properties than regular compost.

9. Earthworms have no eyes and ears but five hearts. They breathe through their skin. More about them is covered if the students read from Vermiculture - Meaning, Technique, Methods, Process, Preparation, and FAQ. This page on Vedantu is completely free of cost for all those who need access to it. It can even be downloaded in PDF format and then be referred to. It has all the details on earthworms and Vermicomposting that's needed by the students before a test on the same.

**10** The three techniques of Vermiculture are manual, migration, and mechanical. More about this has been explained in Vermiculture on Vedantu's platform. This page has all the answers for the students to read from and then find out. The techniques of Vermiculture are each used for the purpose of harvesting worms. This page has been created by expert Biology as well as environmental science teachers. It contains only the most relevant inputs needed by students.



# **A.G. & S.G. Siddhartha Degree College of Arts & Science**

Vuyyuru-521165, Krishna District, Andhra Pradesh

## **Department of ZOOLOGY**

### **Value Added Course**

#### **Title: Vermicomposting**

### **Marks List**

**Class: I B.Sc BZC(EM)**

<b>S. No</b>	<b>Roll No.</b>	<b>Name of the Student</b>	<b>Marks</b>
1	22-501	P.UMA	40
2	22-502	CH.HARITHA	45
3	22-503	V.NITHYA SRI	42
4	22-504	B.SUMATHI	46
5	22-505	M.BHUVANA SRI	44
6	22-506	ABDUL AYESHA BEGUM	43
7	22-507	K.VIJAYA SRI	42
8	22-508	G.DHANEESHA	47
9	22-509	S.VISHNU PRIYANKA	45
10	22-510	B.JAHANAVI	43
11	22-511	K.SARWAN CHOWDARY	43
12	22-512	P.KARTHIKEYA	44

**Department of ZOOLOGY**  
**Value Added Course**

**Title: Vermicomposting**

**Feed Back Form**

1. Is the programme interested to you (Yes/No)
2. Have you attended all the session (Yes/No)
3. Is the content of the program is adequate (Yes/No)
4. Have the teacher covered the entire syllabus? (Yes/No)
5. Is the number of hours adequate? (Yes/No)
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)
8. Do you have any suggestions on the program? (Yes/No)

*B. Jahanavi*

*I. B. 2c - 22 - 510*

*S. A. Kiranmayee*

Head, Department of Zoology,  
AG&SG Siddhartha Degree College,  
(Autonomous)  
VUYYURU - 521 165.

*[Signature]*  
PRINCIPAL

**AG & SG Siddhartha Degree College of  
Arts & Science (Autonomous), Vuyyuru**

**A.G. & S.G. Siddhartha Degree College of Arts & Science**

Vuyyuru-521165, Krishna District, Andhra Pradesh

**Department of ZOOLOGY**  
**Value Added Course**

**Title: Vermicomposting**

**Feed Back Form**

1. Is the programme interested to you (Yes/No)
2. Have you attended all the session (Yes/No)
3. Is the content of the program is adequate (Yes/No)
4. Have the teacher covered the entire syllabus? (Yes/No)
5. Is the number of hours adequate? (Yes/No)
6. Do you have any suggestions for enhancing or reducing the number of weeks designed for the program? (Yes/No)
7. On the whole, is the program useful in terms of enriching your knowledge? (Yes/No)
8. Do you have any suggestions on the program? (Yes/No)

P. Uma  
I.B-2C. 22-501

*B. A. Karunmayee*  
Head, Department of Zoology,  
AG&SG Siddhartha Degree College,  
(Autonomous)  
VUYYURU - 521 165.

*[Signature]*  
PRINCIPAL  
AG & SG Siddhartha Degree College of  
Arts&Science (Autonomous), Vuyyuru



Name Of The Office ... A.G.S.G.S Degree  
 College ... Vayyuru

### Attendance

### Register

Vermicomposting

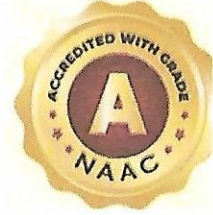
Month December to January  
 Year 2022-2023

S. No.	NAME	Designation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Remarks
			1/12	2/12	3/12	4/12	5/12	6/12	7/12	8/12	9/12	10/12	11/12	12/12	13/12	14/12	15/12	16/12	17/12	18/12	19/12	20/12	21/12	22/12	23/12	24/12	25/12	26/12	27/12	28/12	29/12	30/12	31/12	
1. 22-509	P. Uma		P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	A	P	P	P	P	P	P	P	A	P	P	P					
2. 502	Ch. Hanitha		P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P	A	P					
3. 503	V. Nitya Sri		P	P	P	A	P	P	P	A	P	P	P	P	P	P	A	A	A	A	A	P	P	P	P	P	A	P	P					
4. 504	B. Sumathi		P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P					
5. 505	M. Bhavana Sri		P	P	P	P	A	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P					
6. 506	Ab. Ayesha Begum		P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P					
7. 507	K. Vijaya Sri		P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P					
8. 508	G. Dhanecha		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P					
9. 509	S. Vishnu priyanka		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P					
10. 510	B. Jahnavi		P	P	P	P	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P					
11. 511	K. Susmita Chowdary		P	P	P	A	A	P	P	P	P	P	P	P	P	A	P	P	A	P	P	P	P	P	A	P	P	A	P					
12. 512	P. Kasthi koya		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P					





**ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS  
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,  
(AUTONOMOUS) VUYYURU A.P  
(Accredited at "A" level by NAAC, Bengaluru)**



## Department of Zoology

**VALUE ADDED COURSE: Vermicomposting**

### CERTIFICATE

This is to Certify that G. Dhaneesha of B.Sc. B.Z.C. has successfully completed Value Added Course in **Vermicomposting** organised by the Department of Zoology during the Year 2022-2023 and passed the Examination in grade A.

*K. padmay'a.*  
**Co-ordinator**

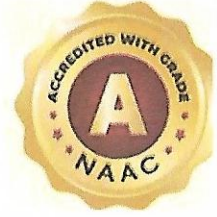
*S. Arunmayee*  
**Head of Department**  
Head, Department of Zoology,  
AG&SG Siddhartha Degree College,  
(Autonomous)  
VUYYURU - 521 165.

*Shave*  
**Principal**  
Adusumilli Gopalakrishnaiah & Sugarcane Growers  
Siddhartha Degree College of Arts & Science,  
Vuyyuru-521 165, Krishna District.





**ADUSUMILLI GOPALAKRISHNAIAH AND SUGARCANE GROWERS  
SIDDHARTHA DEGREE COLLEGE OF ARTS AND SCIENCE,  
(AUTONOMOUS) VUYYURU A.P**  
(Accredited at "A" level by NAAC, Bengaluru)



## Department of Zoology

VALUE ADDED COURSE: Varmicomposting

### CERTIFICATE

This is to Certify that .....P. Uma.....of I.B.Sc BZC..... has successfully completed Value Added Course in **Varmicomposting** organised by the Department of Zoology during the Year 2022-2023 and passed the Examination in grade....A....

*K. Padmaja*  
**Co-ordinator**

*S. Arunmayer*  
**Head of Department**  
Head, Department of Zoology,  
AG&SG Siddhartha Degree College,  
(Autonomous)  
VUYYURU - 521 165.

*Shau*  
**Principal**  
Principal  
Adusumilli Gopalakrishnaiah & Sugarcane Growers  
Siddhartha Degree College of Arts & Science,  
Vuyyuru-521 165, Krishna District.