



Bhimthadi Education Society's
Late K.G. Kataria College, Daund
Tal-Daund, Dist-Pune -413801
(Id No. PU/PN/SC/140/1999)



www.kgkcd.in

kgkatariacollege@rediffmail.com

Certificate Course

In

Vermiculture & Vermicomposting

2021-2022.



Bhimthadi Education Society's
Late K.G.KATARIA COLLEGE, DAUND
Tal-Daund, Dist-Pune -413801
(Id No.PU/PN/SC/140/1999)
(Science & Arts and Commerce College)



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Department of Zoology
Date:- 14/07/2021

To,
The IQAC Coordinator,
Lt. K. G. Kataria College, Daund,
Pune

Sub:- About conducting the Certificate Course: Vermiculture and Vermicomposting

Respected Sir,

As per above mention subject the Department of Zoology wanted to conduct the Certificate Course on "Vermiculture and Vermicomposting" in the current academic year. The syllabus of Course is very helpful and applicable to all students for all types of curricular as well as co-curricular examinations in the future.

SO please grant the permission for the same.

Thanking You,

Yours faithfully,

PRINCIPAL
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Certificate Course: Vermiculture and Vermicomposting

Introduction:

Vermicomposting technology is known throughout the world, albeit in limited areas. It may be considered a widely spread, though not necessarily popular technology. As a process for handling organic residuals, it represents an alternative approach in waste management, in as much as the material is neither land filled nor burned but is considered a resource that may be recycled. In this sense, vermicomposting is compatible with sound environmental principles that value conservation of resources and sustainable practices. Vermicomposting is akin to composting in that similar feedstock-organic residuals -are used. Both systems utilize microbial activity to break down organic matter in the moist, aerobic environment. Vermicomposting is however faster, produces fewer odors and produces a superior product. But vermicomposting requires greater surface area, more moisture, and is susceptible to heat, high salt levels, high ammonia levels, and substances that may be toxic to earthworms. Of the 4400 identified earthworm species, specific species of litter dwelling earthworms are required for this purpose. Vermicomposting in developing countries could prove to be useful in many instances. In the past ten years an organization in India has promoted over 3,000 farmers and institutions to switch from conventional chemicals to the organic fertilizer, vermicompost.

Vermiculture enables any scale or size of operation. Vermicompost is being used in over 1,00,000 hectare cultivated area in almost all agro-climatic zones in India. Noted for its ability to increase organic matter and trace minerals in soil, vermiculture has been the primary focus at Maharashtra Agricultural Biotechs in India, an organization that has initiated both commercial and educational ventures to promote vermiculture. In 1985, Maharashtra Agricultural Biotechs was formed and established a small plant to manufacture vermicompost from agricultural waste.

In 1991-1992, Maharashtra Biotechs and the India Department of Science And Technology promoted the adoption of vermicompost technology in 13 states in India. The group has also established a vermicompost unit with Chitrakoot Gramodaya University, Madhya Pradesh which produces five tons of vermicompost per month. Educational institutes in Maharashtra & other states have started conducting certificate/diploma/regular courses on vermiculture, vermiculture biotechnology, and vermiculture & vermicompost technology. The duration of courses ranges from 10 days to six months. The Department of Zoology running this certificate course.

Aims and Objectives of this certificate course:

- Students will be able to compost in a limited space and describe the decomposing process.
- The interested students will get the knowledge of composting.

- _ Students will get the employment,
- _ They can generate employments,
- _ They will also turn towards organic farming,
- _ Will help to maintain the environment pollution free and
- _ Will get the knowledge of biodiversity of local earthworms

Certificate Course program

Content	Marks
Theory	25(2 credit)
Practical	25(2 credit)

Syllabus: Theory

	Unit I Vermiculture	15L
1	Introduction to vermiculture, definition, meaning, history, economic important, their value in maintenance of soil structure.	
2	role in bio transformation of the residues generated by human activity and production of organic fertilizers.	
3	The matter and humus cycle (product, qualities). Ground population, transformation process in organic matter.	
4	Choosing the right worm. Useful species of earthworms. Local species of earthworms. Exotic species of earthworms. Complementary activities of auto evaluation.	
5	Biology of <i>Eisenia fetida</i> . a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae. b) Vital cycle of <i>Eisenia fetida</i> : alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors).	
6	Classification of earthworms and their types.	
	Unit II Vermicomposting	15L
7	Small Scale Earthworm farming for home gardens - Earthworm compost for home gardens	
8	Conventional commercial composting - Earthworm Composting larger scale	
9	Earthworm Farming (Vermiculture), Extraction (harvest), vermicomposting harvest and processing.	

10	Nutritional Composition of Vermicompost for plants, comparison with other fertilizers	
11	Vermiwash collection, composition & use	
	Enemies of Earthworms, Sickness and worm's enemies. Frequent problems. How to prevent and fix them. Complementary activities of auto evaluation.	
12	a) The working group experience with <i>E. fetida</i> populations comportment with farm industrial residues (frigorific, cow places, feed-lot, aviaries exploitations, and solid urban residues). b) Lineaments to vermicomposting elaboration projects.	
13		

Syllabus: Practical

15L

- 1 Key to identify different types of earthworms
- 2 Field trip- Collection of native earthworms & their identification
- 3 Study of Sytematic position, habits, habitat & External characters of *Eisenia fetida*
- 4 Study of Life stages & development of *Eisenia fetida*
- 5 Study of Life stages & development of *Eudrilus eugeniae*
- 6 Comparison of morphology & life stages of *Eisenia fetida* & *Eudrilus eugeniae*
- 7 Study of Vermiculture, Vermiwash & Vermicompost equipments, devices
- 8 Preparation vermibeds, maintenance of vermicompost & climatic conditions.
- 9 Harvesting, packaging, transport and storage of Vermicompost
- 10 Study the effects of vermicompost & vermiwash on any two short duration crop plants
- 11 Study the effects of sewage water on development of worms

References

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- Chaudhuri, P.S. (2006). Kenchor Jeevan Baichitra: Kencho Projukti. Jyan Bichitra Prakashani, Tripura, ISBN: 81-8266-088-2, 128 pages. 1 ll. Das, M.C. QAD).
- Charles Darrvin's Plough. Tools for Vermitechnology. I K International Publishing House, ISBN: 978-93-81 141-27 , 182 pages.

Ismail, S.A. (1997). Vermicology - The Biology of Earthworms. Orient Longman, 92 pages.

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Dash, M.C., B.K.Senapati, P.C. Mishra (1980) " Vermes and Vermicomposting" Proceedings of the National Seminar on Organic Waste Utilization and Vermicomposting Dec. 5-8, 1984, (Part B), School of Life Sciences, Sambalpur University, Jyoti Vihar, Orissa.

Rahudakar V.B. (2004). Gandul khatashivay Naisargeek Paryay, Atul Book Agency, Pune.

Satchel, J.E. (1983) "Earthworm Ecology" Chapman Hall, London.

Wallwork, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London.

Subject: Vermiculture and Vermicomposting

Multiple Choice Question

20marks

-
1. Which of the following is a mixture of ingredients used to fertilize and improve the soil?
 - a. Phosphatic fertilizers
 - b. Mycelium
 - c. Compost
 - d. Alfa-alfa
 2. 1. Which of the following methods uses earthworms during composting?
 - a) Vermicomposting
 - b) Vertical composting
 - c) Windrow composting
 - d) Burning
 3. Which of the following is not a major objective of Vermicomposting?
 - a) To elevate the value of original material
 - b) To accelerate the rate of degradation
 - c) To obtain toxic products
 - d) To obtain products free of any pollutants
 4. Which among the following is not a major reason for choosing earthworms for Vermicomposting?
 - a) Low incubation time
 - b) Digestion rate
 - c) Adaptability
 - d) Low growth rate
 5. Which of the following species of earthworms is not suitable for Vermicomposting?
 - a) *Epifilis*
 - b) *Endogens*
 - c) *Aneciques*
 - d) *Plasmodium*

6. Which of the following species has a shorter body size?
- a) *Epifilis*
 - b) *Endogens*
 - c) *Aneciques*
 - d) *Eudrilus*
7. Which of the following species is most stable in Indian conditions?
- a) *Perionyx*
 - b) *Epifilis*
 - c) *Endogens*
 - d) *Aneciques*
8. Which of the following cannot be established properly in the field?
- a) *Eisenia foetida*
 - b) *Perionyx*
 - c) *Epifilis*
 - d) *Aneciques*
9. Earthworms subsidize to the burial of wastes?
- a) True
 - b) False
10. What is the major advantage of three-tire vermi-culture technology?
- a) It can be applied to both solid and liquid wastes
 - b) It cannot be applied to both solid and liquid wastes
 - c) It involves chemical treatment
 - d) It can degrade organic wastes

Subject: Vermiculture and Vermicomposting

Multiple Choice Question

20 marks

-
1. Which of the following is not a method of worm cast harvesting or manufacturing?
 - a) Homogenization
 - b) Active feeding
 - c) Drying under adequate light
 - d) Separation of cocoons
 2. Which of the following earthworm specie is not recommended for vermicomposting?
 - a. *Eudrilus eugeniae*
 - b. *Eisenia fetida*
 - c. *Perionyx excavates*
 - d. *Pheretima Posthuma*
 3. Which of the following worms are used for vermicomposting?
 - a. Flatworm
 - b. Roundworm
 - c. Redworm
 - d. Pinworm
 4. The use of earthworms to convert organic waste into fertilizer is known as:
 - a. Vermiculture
 - b. Composting
 - c. Vermicomposting
 - d. None of these
 5. Compost manure is formed from:
 - a. Rotted vegetable and animal refuse
 - b. Farmyard manure and green manure
 - c. Farm refuse and household refuse
 - d. Organic wastes from which biogas has been extracted

6. Choose the correct statement regarding compost:
- a. Decomposed remnants of organic material
 - b. Decomposed remnants of inorganic material
 - c. Fresh remnants of organic material
 - d. Fresh remnants of inorganic material
7. Which of the following form the first layer of compost?
- a. Branches and twigs
 - b. Leaves
 - c. Grass clipping
 - d. Kitchen scraps
8. What is the width of the second layer of compost?
- a. 4-6 inches
 - b. 4-10 inches
 - c. 6-10 inches
 - d. 3-15 inches
9. Which of the following form the second layer of compost?
- a. Branches and twigs
 - b. Twigs
 - c. Water
 - d. Leaves, grass and kitchen scraps
10. What is the most widely used earthworm species for vermicomposting?
- a. *Lumbricus terrestris*
 - b. *Eisenia andrei* and *Eisenia fetida*
 - c. *Aporrectodea limicola*
 - d. *Arctiostrotus vancouverensis*



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Admission list 2021-22

Certificate Course : Vermiculture and Vermicomposting

Sr. No.	Name of the Student
1	Guard Mehek S.
2	Chavan Ganesh
3	Chitare Kapil
4	Shaikh Zubair
5	Thorat Rohan
6	Dhumal Ashirwad
7	Waghela Manoj
8	Randhave Madhav
9	Thorat Bhavesh
10	Shaikh Aliya
11	Shaikh Aliya
12	Londhe Rutvik
13	Katore Tejal
14	Pawar Aditya





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Marklist list 2021-22

Certificate Course : Vermiculture and Vermicomposting

Sr. No.	Name of the Student	Theory	Practical
1	Guard Mehek S.	18	20
2	Chavan Ganesh	20	20
3	Chitare Kapil	20	22
4	Shaikh Zubair	20	20
5	Thorat Rohan	19	21
6	Dhumal Ashirwad	23	20
7	Waghela Manoj	20	22
8	Randhave Madhav	23	21
9	Thorat Bhavesh	20	21
10	Shaikh Aliya	19	20
11	Shaikh Aliya	19	20
12	Londhe Rutvik	20	23
13	Katore Tejal	22	23
14	Pawar Aditya	23	20

Certificate Course: Vermiculture and Vermicomposting (Attendance 2021-22)

[illegible]

Certificate Course: Vermiculture and Vermicomposting (Attendance 2021-22)

[illegible]

Certificate Course: Vermiculture and Vermicomposting (Attendance 2021-22)

Name of the Student	30/12/21	1/1/22	3/1/22	4/1/22	5/1/22	6/1/22	7/1/22	8/1/22	10/1/22	11/1/22
Guard Mehek S.	Gems	Gems	Gems	Gems	Gems	Gems	Gems	Gems	Gems	Gems
Chavan Ganesh	chavan	chavan	chavan	chavan	chavan	chavan	chavan	chavan	chavan	chavan
Chitare Kapil	Kapil	Kapil	Kapil	Kapil	Kapil	Kapil	Kapil	Kapil	Kapil	Kapil
Shaikh Zubair	ZS	ZS	ZS	ZS	ZS	ZS	ZS	ZS	ZS	ZS
Thorat Rohan	Thorat	Thorat	Thorat	Thorat	Thorat	Thorat	Thorat	Thorat	Thorat	Thorat
Dhumal Ashirwad	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal	Dhumal
Waghela Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj
Randhave Madhav	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj
Thorat Bhavesh	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj
Shaikh Aliya	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj
Shaikh Aliya	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj	Manoj
Londhe Rutvik	Londhe	Londhe	Londhe	Londhe	Londhe	Londhe	Londhe	Londhe	Londhe	Londhe
Katore Tejal	Tejal	Tejal	Tejal	Tejal	Tejal	Tejal	Tejal	Tejal	Tejal	Tejal
Pawar Aditya	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar	A.Pawar

Coordinator
I Q A C
Late. K.G. Kataria College Daund,
Tal. Daund, Dist. Pune.



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Certificate Course

This is to certify that **Mr./Miss**..... of F.Y.B.Sc. has successfully completed *Certificate Course in "Vermiculture & Vermicomposting"* during the Academic Year 2021-22 in the grade He completed 30 Course hours (2 Credits).


Coordinator


Head of Department

Principal


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Admission List 2022-23

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Sr. No.	Name of the Student
1	Kadam Kabir
2	Telore Swapnil
3	Khere Om
4	Kale Abhijit
5	Shaikh Bushira
6	Raut Pooja
7	Shaikh Saniya M.
8	Shaikh Rizwan
9	Shaikh Naziya
10	Sawant Ankita
11	Shaikh Saniya N.
12	Shirke Shrushti
13	Netam Pramila
14	Patole Anjali
15	Panhalkar Ishwari
16	Pawar Nikhil
17	Sayyad Mosin
18	Raskar Pradnya
19	Raut Mayuri
20	Shinde Nanaita
21	Shaikh Sahil
22	Shaikh Meher
23	Salampure Gauri
24	Biradar Priya



Certificate Course: Vermiculture (2022-23)

[illegible]

[illegible]

Certificate Course: Vermiculture & Vermicompost

[illegible]

Certificate Course : Vermiculture & Vermicompost.
Attendance Sheet (Marklist).

Sr. No.	Name of the Participant	Sign. Marks	
		T	P
1	Kadam Kabir Vikas	18	23
2	Telore Swapnil	19	20
3	Khere Om Vijay	19	20
4	Kale Abhijit Vinod	15	20
5	Shaikh Bushira Taber	19	23
6	Raut Pooja Suresh	15	20
7	Shaikh Saniya Munar	20	23
8	Shaikh Rizwan	19	20
9	Shaikh Naziya	18	22
10	Sawant Ankita G.	19	22
11	Shaikh Saniya Nazir	18	23
12	Shirke Shrashti Ramesh	21	20
13	Netam Pramila S.	22	20
14	Patole Anjali R.	20	20
15	Panhalkar Tshwari S.	19	23
16	Pawar Nikhil J.	19	20
17	Sayyad Masin Amir	20	21
18	Raskar Pradnya	20	20
19	Raut Mayuri	20	21
20	Shinde Nanaita. P	19	22
21	Shaikh Sabil F.	20	23
22	Shaikh Meher	20	20
23	Solampure Gauri	19	20
24	Biradar Priya	19	22



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*This is to certify that **Mr. Kadam Kabir Vikas** of F.Y. B.Sc. has successfully completed Certificate Course in "Vermiculture and Vermicomposting" during the Academic Year 2022-2023 in the grade A. He completed 30 Course hours (2 Credits).*

Prakash
Coordinator

Dr. S. S.

Head of Department

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