

Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Short term course

A.Y.2019-20

Department of Zoology

Vermitechnology

Syllabus of the Course (Theory & Practical)

Total Lectures: 30

Unit I

3

Earthworm taxonomy – Morphological and anatomical – Classification of earthworms – Food habits – Digestive system – Excretion – Reproduction and Life cycle – Earthworm as Farmer's friend.

Unit II

4

Types of earthworm – Exotic and native species – South Indian and North Indian species used in Vermicomposting – Collection and Preservation of earthworms for Vermicomposting – Culture techniques of earthworms.

Unit III

5

Vermicomposting production – Requirements – Different methods of Vermicomposting -Heap method, Pot method and Tray method changes during Vermicomposting.

Unit IV

4

Role of Earthworms in soil fertility – Use of Vermicompost for crop production – Use of earthworms in land improvement and land reclamation – Economics of Vermicompost and vermiwash production. Earthworms as animal feed – Medicinal value of earthworm meal – Role of Earthworms in Solid Waste, Sewage and faecal waste management and Vermifilters Earthworms as bioreactors.

Unit V

4

Interaction of earthworms with other organisms – Influence of chemical inputs on earthworm activities – Large scale manufacture of Vermicompost, packaging of vermicompost and its marketing – Financial supporting – Government and NGOs for vermiculture work.

Unit VI

10

Practicals & Field Visit

REFERENCE BOOKS:

1. Invertebrate Zoology – Ekambaranatha Ayyar.
2. Earthworm in Agriculture – S.C. Talashikar and Dosani, Agrobios Publications, Near Nasarani Cinema, Jodhpur, 342 002.
3. Vermi compost for sustainable Agriculture – P.K. Gupta Agrobios 2nd Edition.
4. Organic Farming for sustainable Agriculture – A. K. Dahama, Agrobios.
5. A Hand book of Organic farming – A. K. Sharma. Agrobios publication.
6. Earthworm ecology – Clive A. Edwards St. Lucie press – CRC Press Washington DC.
7. Biology of Earthworm - Edward and Lofti – Chapman and Hall Publication.
8. Vermi technology – Sultan A. Ismail – Orient Longman Press.
9. Vermiculture Biotechnology – U.S. Bhawalkar BERI, PUNE.




HEAD
Department of Zoology
Hutatma Rajguru Mahavidyalaya
Rajgurunagar. 410505.

Objectives of the course:

Nowadays humanity has faced an acute environmental problem how to save the earth. Taking care of the Earth is not just a responsibility - it's a privilege. Hundreds of tones of biodegradable organic waste are being generated in cities and towns in the country, creating disposal problems. This waste can be converted into valuable compost by applying vermicomposting technology. This approach reduces pollution, provides a valuable substitute for chemical fertilizers and makes a less harmful impact on the environment. A great attention should be paid to production of ecologically pure food and increase of agricultural crops productivity using organic fertilizers to protect soil and crops from contamination with nitrates, phosphates and other mineral fertilizers. To settle these problems for improving the quality and increasing the yield of agricultural products it's obligatory to promote the introduction and use of vermiculture technology.

One of the main processes of vermiculture technology is the vermicompost producing. Vermicompost is an excellent nutrient-rich organic fertilizer and soil conditioner containing water-soluble nutrients. Vermicomposting is practiced in Canada, Italy, Japan, the Philippines, the United States and other countries. The vermicompost may be used for farming, landscaping, for creating compost tea, or for selling. Some of these operations produce worms for bait and home vermicomposting.

From the above said we decided to draw attention to the vermicomposting and generalise it to the vermiculture technology and inform the society about the importance of implementing vermiculture technology to get ecologically pure and safe bio products.

Considering the selection of the most productive and efficient local earthworms' species (eg: *Pheretima* family representative of earthworms which are as active as other known species).

Besides all this will motivate the villagers to protect the environment, enable them to have a permanent production of bio humus and use it in farming.

It should be noted that after many experiments and researches in many countries, it was announced that 10%-20% of humus added to soil was the most effective and in some cases the addition of even 5% was quiet enough. Thus, humus positive impact on soil productivity and plants growth is beyond any doubt. Humus content in bio humus depends on substrate type and rises to 10-15%.

Besides earthworms' cultivation and successful application in agriculture, earthworms can be used as nutrition for poultry breeding, natural live bait for fishing and in medicine. The above-mentioned is beyond question and indicates to the necessity of bio humus and vermiculture production taking in the account the current state of agriculture.

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Department of Zoology
Hutatma Rajguru Mahavidyalaya
Rajgurunagar. 410505.

Outcomes of the Vermitechnology:

The students are able to produce good quality of Vermicompost and Vermiculture.

The students are able to acquire skills for entrepreneurship.

The students are able to produce vermisaaline.

Baits for fishing, nutrition for poultry farming.

The successful application in agriculture

Positive impact of humus on soil to increase the quality of soil.


HEAD
Department of Zoology
Hutatma Rajguru Mahavidyalaya
Rajgurunagar. 410505.

To,

Date: 23/12/2019

The Principal,

Hutatma Rajguru Mahavidyalaya,

Rajgurunagar, Dist. Pune.

Subject: Permission for Short term course "Vermitechnology" A.Y. 2019-20


Respected sir,

The Department of zoology conducting short term course on "Vermitechnology" from 30 December 2019 to 4 January 2020, for T. Y. B.Sc. Zoology students.

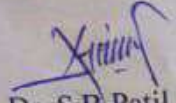
We request to you to give permission to run this course as per the schedule.

Thanking you.

Yours faithfully


Prof. D.N. Birhade

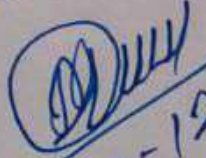
(Course Coordinator)


Dr. S.B. Patil

(Head of Dept.)

HEAD
Department of Zoology
Hutatma Rajguru Mahavidyalaya
Rajgurunagar. 410505.

Allowed & Approved


28-12-19

Officiating Principal
Hutatma Rajguru Mahavidyalaya
(Arts, Science & Commerce)
Rajgurunagar, Tal. Khed, Dist. Pune.






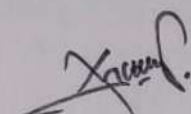
K.T.S.P. Mandal's
HUTATMA RAJGURU MAHAVIDYALAYA
 RAJGURUNAGAR, TAL. KHED, DIST. PUNE

CERTIFICATE

This is to certify that
 Mr./Ms. Ankita S. Gaikwad of FI/ISI/ITY B.Sc./M/Sc.
 has successfully completed short term course on Vermitechnology
[30th December 2019 - 4th January 2020]

organized by Department of Zoology in the academic year
 2019- 2020


 Co-ordinator


 Head


 Principal
 Officiating Principal
 Hutatma Rajguru Mahavidyalaya
 (Arts, Science & Commerce)
 Rajgurunagar, Tal. Khed, Dist. Pune



K.T.S.P. Mandal's

HUTATMA RAJGURU MAHAVIDYALAYA

RAJGURUNAGAR, TAL. KHED, DIST. PUNE

CERTIFICATE

This is to certify that

Mf./Ms. Monika B. Satpute of FRISTY B.Sc./M./Sc.

has successfully completed short term course on Vermitechnology
[30th December 2019 - 4th January 2020]

organized by Department of Zoology in the academic year
2019 - 2020

Co-ordinator

Head

Principal

Officiating Principal
Hutatma Rajguru Mahavidyalaya
(Agriculture & Commerce)
Rajgurunagar, Tal. Khed, Dist. Pune



K.T.S.P. Mandal's

HUTATMA RAJGURU MAHAVIDYALAYA

RAJGURUNAGAR, TAL. KHED, DIST. PUNE

CERTIFICATE

This is to certify that

Mr./Ms. Poonam D. Gosavi of FY/SY/ITY B.Sc./M.Sc.

has successfully completed short term course on Vermitechnology
(30th December 2019 - 4th January 20-20)

organized by Department of Zoology in the academic year
2019 - 2020

Co-ordinator

Head

Principal

Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Department of Zoology,

Short Term Course: Vermitechnology

Student List- A.Y.2019-2020

Sr. No.	Student Name	Class	Contact number	Signature
1	Korde Prasad Tukaram .	T.Y. B.Sc.	8805584215	
2	Sanas Prachi Nilesh .	T.Y. B.Sc.	9657131964	
3	Tupe Mangiri Sukhdev .	T.Y. B.Sc.	7721973084	
4	Gosavi Poonam Dattatrya .	T.Y. B.Sc.	7028983476	
5	Raut Gauri Balasaheb .	T.Y. B.Sc.	9552118916	
6	Chaskar Akshata Govind .	T.Y. B.Sc.	7758090196	
7	Ghanwat Sagar Gorakh .	T.Y. B.Sc.		X
8	Chaudhari Shivraj Kailas .	T.Y. B.Sc.		X
9	Roundhal Trupti Dattatraya .	T.Y. B.Sc.	7057255694	
10	Shinde Ujjwala Atmaram .	T.Y. B.Sc.	7057281742	
11	Ghewari Nilam Vijay .	T.Y. B.Sc.	7038133081	
12	Pathan Misaba Nasir .	T.Y. B.Sc.	7758995724	
13	Totre Monika Bharat .	T.Y. B.Sc.	8308144136	
14	Karale Gauri Ramdas .	T.Y. B.Sc.	9763724325	
15	Kale Gauri Laxman .	T.Y. B.Sc.	8390312669	
16	Satpute Monika Bajirao .	T.Y. B.Sc.	8459819166	
17	Rakshe Damini Kaluram .	T.Y. B.Sc.	8275911914	
18	Jungale Monika Sanjay .	T.Y. B.Sc.	7517215131	
19	Ware Bhagyashree Govind .	T.Y. B.Sc.	8459738565	
20	Jori Ashlesha Shantaram .	T.Y. B.Sc.		X
21	Kudale Hrushekesh Ramdas .	T.Y. B.Sc.	9518770432	
22	Potdar Omkar Kashinath .	T.Y. B.Sc.		X
23	Shinde Ashwini Dattaraya .	T.Y. B.Sc.	9623808705	
24	More Prajakta Ulhas .	T.Y. B.Sc.	9049114376	
25	Rokade Shital Lahiru .	T.Y. B.Sc.		X
26	Shinalkar Satyawan D. .	T.Y. B.Sc.		X
27	Gaikwad Ankita .	T.Y. B.Sc.	7821811933	

Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Department of Zoology,

Short Term Course: Vermitechnology

Students Attendance Report- A.Y.2019-2020

Sr. No.	Student Name	Theory 1 1/1/2020	Theory 2 1/1/2020	Practical 1/1/2020	Theory 1 2/1/2020	Theory 2 2/1/2020	Practical 2/1/2020
1	Korde Prasad Tukaram	P	P	P	P	P	P
2	Sanas Prachi Nilesh	P	P	P	P	P	P
3	Tupe Mangiri Sukhdev	P	P	P	P	P	P
4	Gosavi Poonam Dattatrya	P	P	P	P	P	P
5	Raut Gauri Balasaheb	P	P	P	P	P	P
6	Chaskar Akshata Govind						
7	Ghanwat Sagar Gorakh						
8	Chaudhari Shivraj Kailas	P	P	P	P	P	P
9	Roundhal Trupti Dattatraya	P	P	P	P	P	P
10	Shinde Ujjwala Atmaram	P	P	P	P	P	P
11	Ghewari Nilam Vijay	P	P	P	P	P	P
12	Pathan Misaba Nasir						
13	Totre Monika Bharat	P	P	P	P	P	P
14	Karale Gauri Ramdas						
15	Kale Gauri Laxman	P	P	P	P	P	P
16	Satpute Monika Bajirao	P	P	P	P	P	P
17	Rakshe Damini Kaluram	P	P	P	P	P	P
18	Jungale Monika Sanjay						
19	Ware Bhagyashree Govind						
20	Jori Ashlesha Shantaram	P	P	P	P	P	P
21	Kudale Hrushekesh Ramdas	P	P	P	P	P	P
22	Potdar Omkar Kashinath	P	P	P	P	P	P
23	Shinde Ashwini Dattaraya	P	P	P	P	P	P
24	More Prajakta Ulhas	P	P	P	P	P	P
25	Rokade Shital Lahiru	P	P	P	P	P	P
26	Shinalkar Satyawan D.						
27	Gaikwad Ankita	P	P	P	P	P	P

Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Department of Zoology,

Short Term Course: Vermitechnology

Students Attendance Report- A.Y.2019-2020

Student Name	Theory 1 3/1/2020	Theory 2 3/1/2020	Practical 3/1/2020	Theory 1 4/1/2020	Theory 2 4/1/2020	Practical 4/1/2020
Korde Prasad Tukaram	<u>Korde</u>	<u>Korde</u>	<u>Korde</u>	<u>Korde</u>	<u>Korde</u>	<u>Korde</u>
Sanas Prachi Nilesh	<u>Sanas</u>	<u>Sanas</u>	<u>Sanas</u>	<u>Sanas</u>	<u>Sanas</u>	<u>Sanas</u>
Tupe Mangiri Sukhdev	<u>Tupe</u>	<u>Tupe</u>	<u>Tupe</u>	<u>Tupe</u>	<u>Tupe</u>	<u>Tupe</u>
Gosavi Poonam Dattatrya	<u>Gosavi</u>	<u>Gosavi</u>	<u>Gosavi</u>	<u>Gosavi</u>	<u>Gosavi</u>	<u>Gosavi</u>
Raut Gauri Balasaheb	<u>Raut</u>	<u>Raut</u>	<u>Raut</u>	<u>Raut</u>	<u>Raut</u>	<u>Raut</u>
Chaskar Akshata Govind						
Ghanwat Sagar Gorakh						
Chaudhari Shivraj Kailas	<u>Chaudhari</u>	<u>Chaudhari</u>	<u>Chaudhari</u>	<u>Chaudhari</u>	<u>Chaudhari</u>	<u>Chaudhari</u>
Roundhal Trupti Dattatraya	<u>Roundhal</u>	<u>Roundhal</u>	<u>Roundhal</u>	<u>Roundhal</u>	<u>Roundhal</u>	<u>Roundhal</u>
Shinde Ujjwala Atmaram	<u>IAS</u>	<u>IAS</u>	<u>IAS</u>	<u>IAS</u>	<u>IAS</u>	<u>IAS</u>
Ghewari Nilam Vijay	<u>Ghewari</u>	<u>Ghewari</u>	<u>Ghewari</u>	<u>Ghewari</u>	<u>Ghewari</u>	<u>Ghewari</u>
Pathan Misaba Nasir						
Totre Monika Bharat	<u>Totre</u>	<u>Totre</u>	<u>Totre</u>	<u>Totre</u>	<u>Totre</u>	<u>Totre</u>
Karale Gauri Ramdas						
Kale Gauri Laxman	<u>Kale</u>	<u>Kale</u>	<u>Kale</u>	<u>Kale</u>	<u>Kale</u>	<u>Kale</u>
Satpute Monika Bajirao	<u>Satpute</u>	<u>Satpute</u>	<u>Satpute</u>	<u>Satpute</u>	<u>Satpute</u>	<u>Satpute</u>
Rakshe Damini Kaluram	<u>Rakshe</u>	<u>Rakshe</u>	<u>Rakshe</u>	<u>Rakshe</u>	<u>Rakshe</u>	<u>Rakshe</u>
Jungale Monika Sanjay						
Ware Bhagyashree Govind						
Jori Ashlesha Shantaram	<u>Jori</u>	<u>Jori</u>	<u>Jori</u>	<u>Jori</u>	<u>Jori</u>	<u>Jori</u>
Kudale Hrushekesh Ramdas	<u>Kudale</u>	<u>Kudale</u>	<u>Kudale</u>	<u>Kudale</u>	<u>Kudale</u>	<u>Kudale</u>
Potdar Omkar Kashinath	<u>Potdar</u>	<u>Potdar</u>	<u>Potdar</u>	<u>Potdar</u>	<u>Potdar</u>	<u>Potdar</u>
Shinde Ashwini Dattaraya	<u>Shinde</u>	<u>Shinde</u>	<u>Shinde</u>	<u>Shinde</u>	<u>Shinde</u>	<u>Shinde</u>
More Prajakta Ulhas	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>
Rokade Shital Lahiru	<u>Rokade</u>	<u>Rokade</u>	<u>Rokade</u>	<u>Rokade</u>	<u>Rokade</u>	<u>Rokade</u>
Shinalkar Satyawan D.						
Gaikwad Ankita	<u>Gaikwad</u>	<u>Gaikwad</u>	<u>Gaikwad</u>	<u>Gaikwad</u>	<u>Gaikwad</u>	<u>Gaikwad</u>

K.T.S.P.Mandal's

Hutatma Rajguru Mahavidyalaya, Rajgurunagar.

Short Term Course-Vermitechonology

A.Y 2019-20

Department of Zoology

Time Table & Workload

Day & Date	Theory (12:30 to 1:30 PM)	Theory (1:30 to 2:30 PM)	Practical (2:45 to 4:45 PM)
Monday 30/12/2019	Dr. S. B. Patil	Prof. D. N. Birhade	S.B.P/ D.N.B Dr. Jamodar Sir.
Tuesday 31/12/2019	Dr. S. S. Patil / Dr. Gulvekar Guest lect.	Prof. U. M. Pawar	S.S.P/U.M.P/ Guest Dr. Gulvekar.
Wednesday 1/1/2020	Prof. G. S. Kadlug Dr. R. D. Chaudhari Guest lect.	Prof. D. N. Birhade	G.S.K./ D.N.B Dr. R. D. Chaudhari
Thursday 2/1/2020	Prof. D. N. Borhade Guest lect.	Dr. S. S. Patil	D.N.B/ S.S.P
Friday 3/1/2020	Dr. S. B. Patil	Prof. U. M. Pawar	S.B.P/ D.L.T
Saturday 4/1/2020	Revision	Revision	Field Visit


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Rajgurunagar. 410505.

K.T.S.P.Mandal

Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Department of Zoology

Report of Short term course 2019-20

“Vermitechnology”

Vermicompost is the product of the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms, to create a mixture of decomposing vegetable or food waste, bedding materials, and vermicast.

Vermicast (also called worm castings, worm humus, worm manure, or worm faeces) is the end-product of the breakdown of organic matter by earthworms. These castings have been shown to contain reduced levels of contaminants and a higher saturation of nutrients than the organic materials before vermicomposting.

Vermicompost contains water-soluble nutrients and is an excellent, nutrient-rich organic fertilizer and soil conditioner. It is used in farming and small scale sustainable, organic farming.

Vermicomposting can also be applied for treatment of sewage. A variation of the process is vermifiltration (or vermidigestion) which is used to remove organic matter, pathogens and oxygen demand from wastewater or directly from black water of flush toilets. Now a day it is necessary to know in brief about vermicompost.

The Department of Zoology, Hutatma Rajguru Mahavidyalaya, has Conducting short term course in A.Y.2019-20. For T.Y.BSc. Student on “vermitechnology” On dated 30th December 2019 to 4th January 2020.

Day 1: At 30th December 2019 we had started the course with inauguration in presence of our Principal Dr. H. M. Jare and head department of zoology Dr. S. B. Patil, Vice Principal Dr. V. D. Kulkarni, Co-ordinator of the course Prof.D. N. Birhade, Dr. R. D. Chaudhari (Head, dept.of zoology,SSC College, Junnar.) and all staff members of Zoology department.

After inauguration we started the course with guest lecture Dr. R. D. Chaudhari, on Introduction to Vermitechnology, importance of vermitechnology in day to day life and products of Vermitechnology.

Day 2: At 31th December 2019 we invited guest lecturer Pof. V. D. Deshmukh, he delivered lecture on preparation of Vermicompost Bed and practicals as per time table.

Day 3: At 1th January 2020 we invited guest lecturer Dr. J. M. Jamadar, he delivered lecture on selection of Earthworm culture and Culture method of Earthwormn and practicals as per time table.

Day 4: At 2th January 2020, Dr. S. B. Patil head department of Zoology delivered his lecture on Industrial applications of vermicompost and uses of vermicopost.

Day 5: At 3th January 2020, Dr. S. S. Patil delivered her lecture on different species of Earthworm, Life cycle of Earthworm and harvesting of vermicompost.

Day 6: At 4th January 2020, we organized Field visit to vermicompost unit at Nighoje, Chakan. There we saw vermicompost beds, machine which separate vermocompost from small paddles, preparation of good quality vermicompost and they also gave us great knowledge about business of vermicompost.


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Rajgunnagar. 410505.



Photo 1: Visit to vermicompost unit, Nighoje, Chakan.



Photo 1: Mr. Rajput Giving information about vermiculture bed.

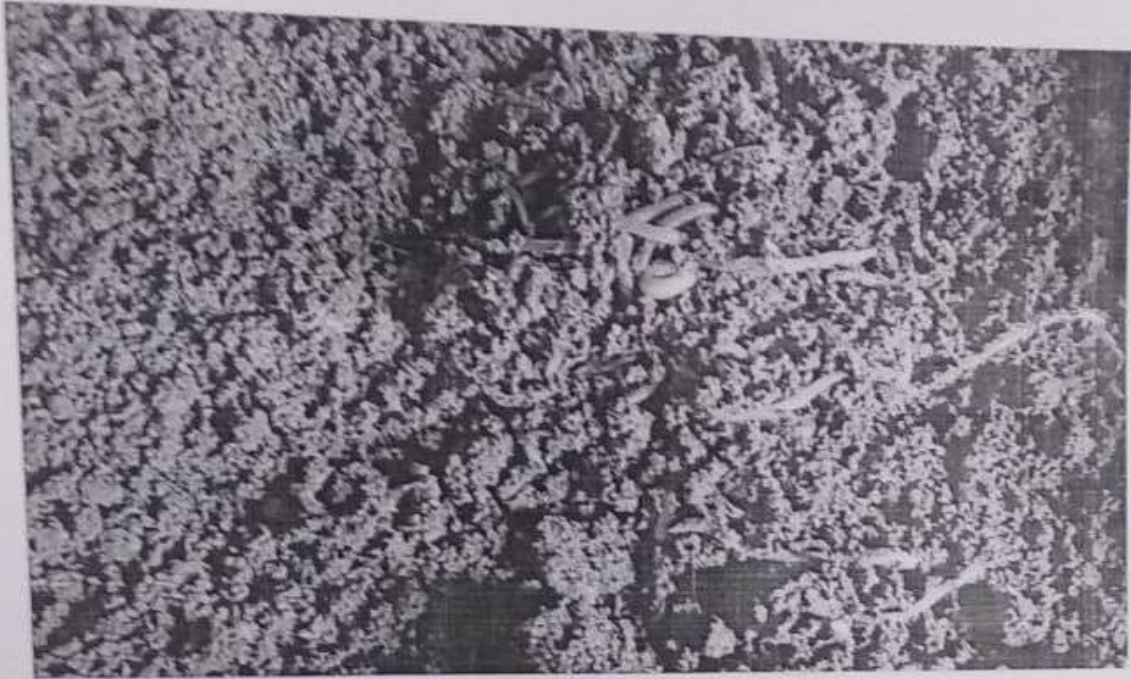


Photo 4: Vermicompost Bed with Earthworm culture

[Handwritten Signature]

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