

Report of the program
'Training of Resource Teachers for Conducting Open
ended Experiments
on Life Sciences using
Vermicomposting as a Base'
12th to 15th October, 2009

Catalysed and Supported by

Rashtriya Vigyan Evam Prodyogiki Sanchar Parishad
Department of Science & Technology
Government of India , New Delhi



Organised by



SEBA

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Training of Resource Teachers for Conducting
Open ended Experiments on Life Sciences
using Vermicomposting as a Base'

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***Report of the program Training of Resource
Teachers for Conducting Open ended***

Experiments on Life Sciences using Vermicomposting as a Base'

The Council for Socio-Economic Benevolent Action (SEBA) was organized a four days workshop on “Training of Resource Teachers for Conducting Open ended Experiments on Life Sciences using Vermicomposting as a Base” at Swami Vivekananda Educational Complex, Shiksha Vihar, Sirishbani, Baripada, during 12th to 15th October 2009. The above programme was catalysed and supported by Rashtriya Vigyan evam Pryodyogiki Sanchar Parishad (RVPSP), Department of Science & Technology, Govt of India.

The workshop was inaugurated by Dr. Satish Chandra Paul, (Former Head, Aromatic & Medicinal Plants Division, Regional Research Laboratory, Bhubaneswar, on 12th October morning. Deliberating the basic objective of the training workshop, Dr. Paul enlighten the participants that popularization of science and technology through



Inauguration of the Workshop by Dr S C Paul, Former Head, Aromatic & Medicinal Plants Division, RRL, Bhubaneswar on 12-10-2009.

organizing workshop, trainings at the grass root level for students, teachers and social activists as well as common people is one of the major activities of RVPSP. He has shown his concern for protection of environment and biodiversity, global warming and consequences of climate change.

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The training workshop was participated by Thirty number of High school Science Teachers from Mayurbhanj and other district of Orissa. During the four day residential workshop the participating High school Science Teachers, conducted number of experiments beside collection and classification of samples in connection to the subject. Three number of resource persons namely Dr. Satish Chandra Paul, Former Head, Aromatic & Medicinal Plants Division, Regional Research Laboratory, Bhubaneswar, Dr Sohan Giri, Asst Environmental Scientist, State Pollution Control Board, and Mr Nayan Singh Mundari, Addl Dist Agriculture Officer, Mayurbhanj, Baripada, assisted the participants through there resourceful lectures, slide show through LCD Projectors, field demonstration and various practical experiments. Which makes the whole training period lively, interesting and useful for the participants.



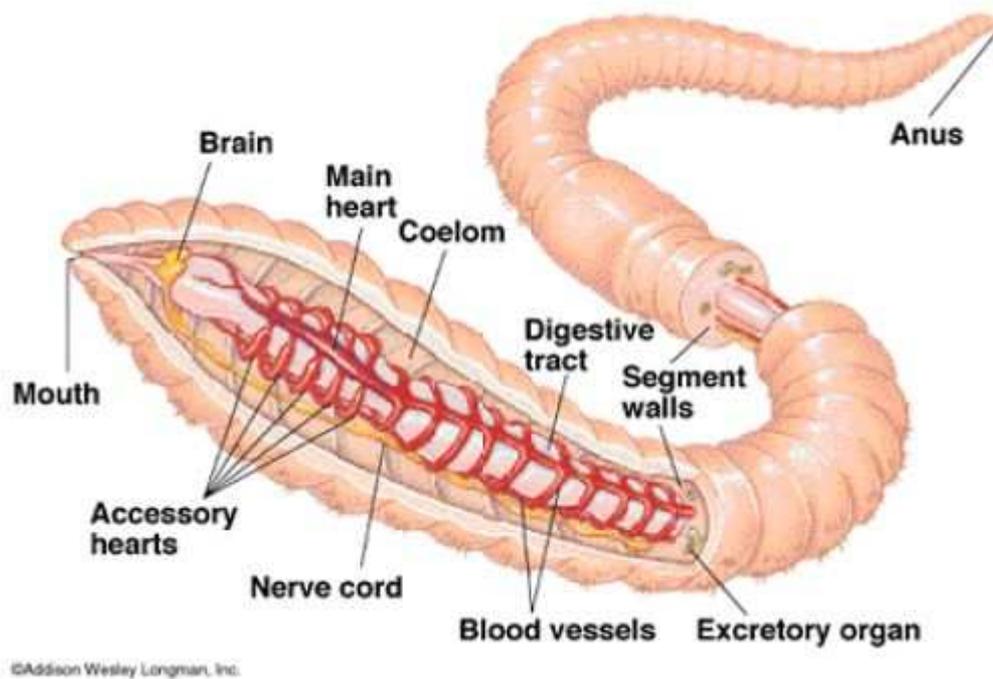
Eudrilus eugeniae

On the first day of the workshop after introduction Dr Sohan Giri, gives a clear picture about the aim and objective of the workshop , beside focusing on the Importance of S & T communications and role of RVPSP, and Developing effective Science Communication Skills. He elaborate the concept Vermicomposting, which could be defined as : the combination of biological processes, designs and techniques used systematically and intensively to culture large quantities of certain species of earthworms to speed up the stabilization of organic waste materials, which are eaten, ground and digested by the earthworms with

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the help of aerobic and some anaerobic micro flora, and thereby naturally converted into much finer, humified, microbial active faecal materials (castings), where important plant nutrients are held in a form much more soluble and available to plants than those in the parent compounds.

The end product, a decomposable faecal material (earthworm faces or 'castings'), consisting of very finely structured, uniform, stable and aggregated particles of humified organic materials, with excellent porosity, aeration and water holding capacity, rich in available nutrients, hormones, enzymes and microbial populations. Thus this product is valuable, marketable and superior plant growth medium.



The most common worms used in composting systems, red worms (*Eisenia foetida*, *Eisenia andrei*, and *Lumbricus rubellus*) feed most rapidly at temperatures of 59 to 77 degrees Fahrenheit (15-25 degrees Celsius). They can survive at 50 degrees Fahrenheit (10 degrees Celsius). Temperatures above 86 degrees Fahrenheit (30 degrees Celsius) may harm them. This temperature range means that indoor vermicomposting with redworms is suitable in all but tropical climates. (Other worms like *Perionyx excavatus* are suitable for warmer climates. If a worm bin is kept outside, it should be placed in a sheltered position away from direct sunlight and insulated against frost in winter.

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During post lunch session of 1st day and pre lunch session of 2nd day Dr S . C. Paul explain about the living soil, soil at different depth, soil composition and there classification, stages of soil formation, mineral component of soil, soil texture, soil structure and porosity etc. The most important role of soil is in relation to its ability to support plant growth. This property of soils – soil fertility – is controlled by there content of organic matter. The soluble mineral, salts present in the soil also contribute to some extent to a soil’s fertility.

The organic components of soil determine its interactions with air and water. By altering the structure of a soil the organic matter helps in making it suitable for different types of plants and crops. Organic matters in the soil also helps directly by providing valuable nutrients required for plant growth. In this way after their death the living organisms make their contribution to the soil’s ability for supporting new life. It is in this link role that soil proves to be one of the most important factors for the living world. The development of soil health through vermicomposting etc.



Collection of Garbage

On second day the participants were divided into three groups having ten number of participants in each group, they collected garbage produced in daily life from various places in groups to bring variety into the collected sample. The garbage’s so collected were further classified as Dry recyclables, Compostable organic matter, Toxic materials and

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Hazardous materials, such as diapers, wound dressing, infected cotton, drips, injection syringes and needles, sanitary napkins etc. They explain about proper management of garbage, its importance to ensure clean surroundings and better living conditions.



During Classification of Garbage

During post lunch session of second day Dr. Paul and Dr Gire explain the participants about the role of earth worm in maintaining soil quality, various type of earth worm, collection of locally available earth worm species. There comparison with higher grade species like *Eisenia foetida*, *Eisenia andrei*, and *Lumbricus rubellus*.



Collection of locally available earth worm species.

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Earth worms are of different kinds, some directly consume the waste biomass, while others relish on soil rich in organic contents. The biomass eating earth worms mostly live on the surface of the earth (epigeics) while the soil consuming ones stay in deep burrows in the soil



Distinguishing between the collected earth worm species.

(endogeics). These two types drastically differ in their morphological features, physiological functions and mode of reproduction. The biomass eating earth worm are important for vermicomposting while soil consuming earth worms help in tilling of soil. The epigeics prefer



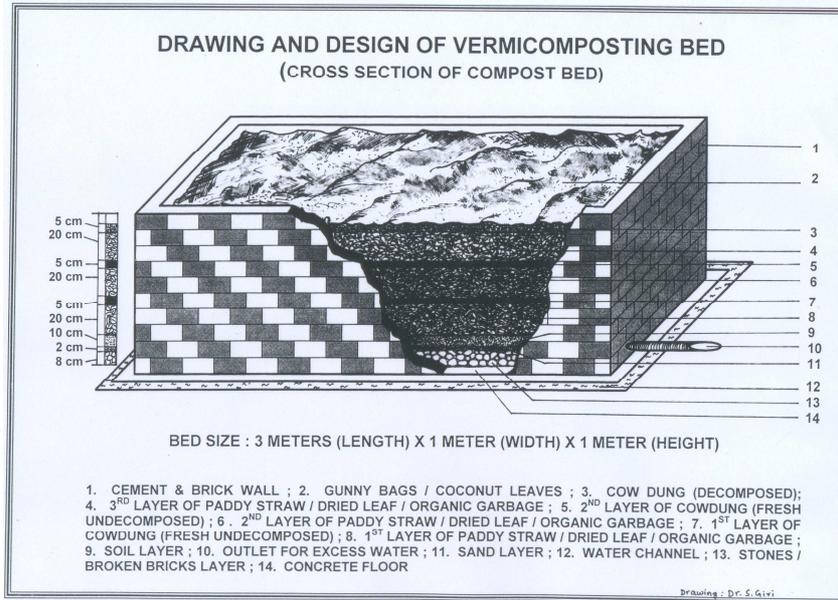
Dr Sohan Giri, Resource person, during delivering his lecture

partially digested biomass. To distinguish between mud eating and garbage eating earth worms participant collects earth worms from

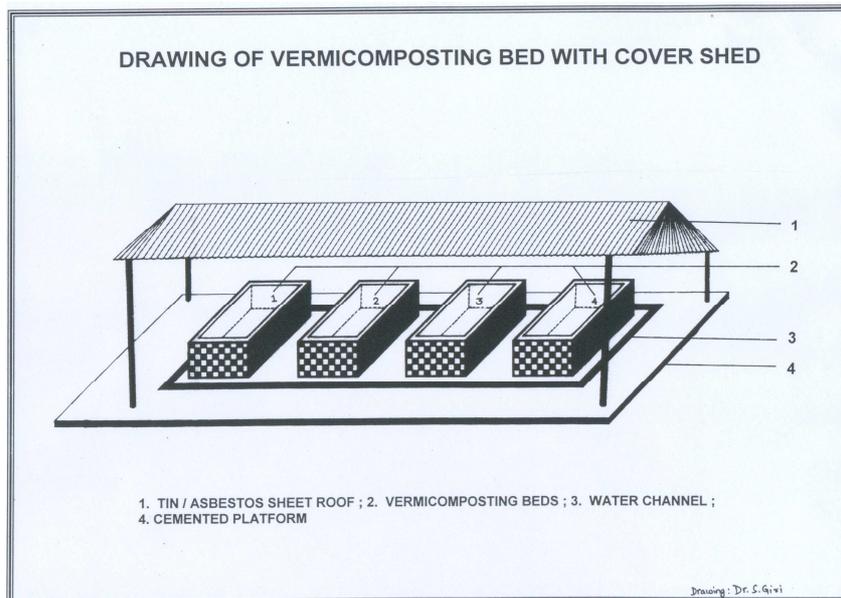
Continued ... p7

different places under the supervision of Dr Paul, and conducted various experiments to recognize their behavior.

During evening hour the participants visited to one nearby vermin composting pit site for practical knowledge under the guidance of resource persons.



On third day pre lunch session during a very interactive class Dr Sohan Giri explains the participants regarding preparation maintenance & benefit of Vermin composting pit. Where as Mr Nayan Singh Mundari, Addl Dist Agriculture Officer, explain about construction and estimate of pits and its benefit for the farmers in large scale production.



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One model Vermin composting pit was prepared by the participants during afternoon session under supervision of the resource persons. The participating science teachers were very eager to know all the aspects regarding preparation of pit as they were interested to built one such pit in their school through their respective Eco-clubs, after returning from the workshop, and also spread the message among the local farmers for sustainable long term soil fertility. This was followed by an interactive



Preparation of Vermin composting pit

session and presentation of presentation of audio-video slides through LCD Projector. During this session Dr Giri explain about life cycle of Earth worm, starting from cocoons to cocoon, types of earth worm, their behaviour, preparation of vermibed, feeding the vermibed, formation of vermin compost, harvesting and storage of vermin compost etc. Dr S C Paul during his presentation talk about Solid waste management, and role of Macro-organisms in soil .

On the fourth and final day i.e. on 15th October morning participants checked the Vermin composting pit prepared 14th afternoon. They were amused to see the progress, followed by lecture and discussion, after tea session Importance of S & T communications and role of RVPSP, effective training of trainers has been discussed by Dr S C Paul. Which was followed by Open House Discussion, Analysis, observation and reporting.

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In the after lunch session one interaction with participant High school teacher's, Resource persons and some one hundred number of invited High school students from various local schools has been organized.



Dr S C Paul, Res Person interacting with the invited High school students

SEBA also arranged one Book Exhibition for the benefits of the participants on the last day, beside organizing some quiz competition among the participating high school students on the topic. Participants



Dr Giri, replying to the queries of the invited High school students on 15-10-09

were gone through several titles of popular science books related with Vermin composting, climate change, bio diversity etc both in English and

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Oriya through that exhibition. Free distribution of NCSTC Books and periodical are also conducted as per the choice of the participants



Participants eagerly checking the books during the book fair on 15-10-09

The valedictory function was attended by Shri Rabindra Padhiari, Senior Advocate and Environment activist, and Ms Binapani Dash, Principal, SVS.



Ms Binapani Dash, Principal, SVS, distributing certificate of Participation to the participants

Proposed Follow up action to be taken by SEBA :

1. SEBA to see and guide Science communication skills among the participants, and conduct one survey after three months from the date of completion of the workshop.
2. SEBA to conduct more such vermin compost / culture related workshop through out the state of Orissa, to create awareness.

ANALYSIS OF THE FEED BACK

(From participants and Resource persons)

Three feed back form has been developed in consultation with RVPSP. Which was filled by participants and resource persons before the beginning of the workshop, i.e. on or before 12th October 2009, immediately after completion of the workshop, i.e. on 15th October 2009, and after three months of completion of the workshop, so that in between last week of January 2010.

Pre workshop feed back :

Here all the participants mentioned about the kinds of garbage which are commonly produced in their locality, most of them mentioned about vegetable abstract, cow dung, dry leafs, waste paper and plastic, where as some of them mentioned about industrial and hospital wastages. Bad smell and environment pollution is the main problem faced due to those garbage as mentioned by the participants. Dumping is the Present mode of disposal of 300 to 500 kg of garbage produced daily in the locality of the participants. There understanding and knowledge about vermin/ earth worm and vermicompost, which sows that all the participants heard about vermicomposting although did not know in details.

Feed back immediately after completion of the workshop :

Here participants have given there comment on the program content, Sequence of lectures, Practical orientation, Reading material, board and lodging, opinion on the duration of the programme etc. where a majority number of participants expressed their satisfaction over the program and its duration, where as some of them rated the program content etc as excellent. A few number of participants suggested for more field visits and increased duration of the workshop.

Feed back after three months of completion of the workshop :

Post workshop feed back has been conducted after completion of three months of the workshop, so that during 16th to 30th January 2010. Here some of the participants mentioned that they have already constructed vermicomposting pits in their school, and promoting the concept in the locality. It took a little more time in collection of the feedback form, which results in late submission of the completion report. Here the participants mention that the workshop became useful to them in their study and work place, they have also expressed their interest to attend more such workshop in future.

**Analysis of Area Survey for impact analysis
after three months of the training**
(Targeting 100 persons of various locality)

It was proposed to conduct area survey targeting 100 persons of various locality of participants, after three months of the completion of the workshops. But the process is delayed due to late in finalization of Area survey format. Which further delayed the submission of the final completion report. To make the survey more realistic participants from diversified fields has been selected.

Here most of the participants mentioned about the kinds of garbage which are commonly produced in their locality, most of them mentioned about vegetable abstract, cow dung, dry leafs, waste paper, plastic and other domestic and agricultural wastages. Bad smell and environment pollution is the main problem faced due to those garbage as mentioned by the participants.

Participants knows about earth worms, where as only few of them knows about the role of earth worm in soil fertility. They believe that garbage can be composted, some of them already have compost pits in their backyard. Further they are willing to adopt the technology vermincomposting in a more scientific way for better production of compost.

**PROGRAMME SCHEDULE FOR 'TRAINING OF RESOURCE TEACHERS
FOR CONDUCTING OPEN ENDED EXPERIMENTS ON LIFE SCIENCES
USING VERMICOMPOSTING AS A BASE'**

During 12th to 15th October 2009, to be held at Baripada

TIME	ACTIVITY
First Day	12-10-2009, (Venue – SVS, Sirishbani, Baripada)
09.00 – 10.00	REGISTRATION
10.00 – 11.30	INAUGURAL FUNCTION
11.30 – 11.45	TEA
11.45 – 12.30	Introduction of participants .
12.30 – 13.30	Introduction to Verms and vermin composting in India.
13.30 – 14.00	LUNCH BREAK
14.00 – 15.30	Lecture and discussion on the concept of soil resources.
15.30 – 15.45	TEA
15.45 – 17.30	The Living Nature, The Soil health, Preparation,
17.00 – 17.30	Interactive session and presentation of audio-video slides.
Second Day	13-10-2009,
10.00 – 11.30	Classification and nature of soil, Group formation, collection of Garbage .
11.30 – 11.45	TEA.
11.45 – 13.30	Classification of Garbage, role of Macro-organisms in soil , Preparation of Vermin composting Pit.
13.30 – 14.00	LUNCH BREAK
14.00 – 15.30	Collection of locally available earth worms, demonstration, and practical and orientation.
15.30 – 15.45	TEA
15.45 – 17.30	Field visit, demonstration, practical experiments with earth worm orientation, continues .
Third Day	14-10-2009,
10.00 – 11.30	Preparation, Maintenance & benefit of Vermin composting Pit.
11.30 – 11.45	TEA.
11.45 – 13.30	Bio fertilizer, Solid waste management and role of Macro- organisms in soil .
13.30 – 14.00	LUNCH BREAK
14.00 – 15.30	Field demonstration, practical and orientation.
15.30 – 15.45	TEA
15.45 – 17.30	Interactive session and presentation of audio-video slides.
Fourth/ Valedictory Day	15-10-2009,
10.00 – 11.30	Lecture and discussion on micro-organisms and their significances
11.30 – 11.45	TEA
11.45 – 12.30	Importance of S & T communications and role of RVPSP, Effective training of trainers.
12.30 – 13.30	Open House Discussion, Analysis, observation and reporting .
13.30 – 14.00	LUNCH BREAK
14.00 – 15.30	Inter action with local school students.
15.30 – 15.45	TEA
15.45 – 17.30	VALEDICTORY FUNCTION .

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Participants of the workshop on ‘Training of Resource Teachers for Conducting Open ended experiments on Life sciences using Vermicomposting as a Base’ During 12th to 15th Octoer 2009, held at Baripada

Sl no	Name & Designation of Participant	Male / Female	Address of Participant
1	Sri Bijay Kumar Mohanty	Male	Badmundhabani High School, At/Po-Badmundhabani, Via- Gadia, Mayurbhanj
2	Ms Tapaswini Behera	Female	M.P.C High School, Betnoti, Mayurbhanj
3	Sri Debasis Mohanta	Male	C.S. New Govt. High School, At/Po- Darkhuli , Via- Amarda.
4	Sri Rabindra Nath Giri	Male	Jokeswar High School At/Po-Joka, Mayurbhanj
5	Ms Chinmayee Mohapatra	Female	Govt. Girls High School Betnoti, Mayurbhanj
6	Sri Bibhudhendra Upadhyay	Male	Madhpur High School Madhpur, Pratappur, Mayurbhanj
7	Sri Rabindra Sethi	Male	Binod Ray Vidya Pitha, Rashgovindpur
8	Ms Rasmi Rekha Mohanty	Female	Gangraj High School, Gangraj, Mayurbhanj.
9	Sri Ashish Kumar Mohapatra	Male	Poda Astia High School, Poda Astia , Mayurbhanj,
10	Ms Sushama Ratha	Female	L.M.P High School, Dhanpur, Po- Shamakhunta, Mayurbhanj.
11	Sri Jagannath Sahu	Male	Bhanjpur High School, Bhanjpur, Mayurbhanj.
12	Sri Rajib Lochan jena	Male	M.K.C. High School, Baripada, Mayurbhanj.
13	Ms Sudipta Sethi	Female	Basipitha High School, Mayurbhanj.
14	Ms Kalpana Nandi	Female	Barsahi High School, Barasahi, Mayurbhanj.
15	Sri Rudra Narayan Mohapatra	Male	N.M.V.M High School, Adsil, Po- Parulia, Mayurbhanj.

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16	Sri Kamalakanta Sahu	Male	Govt. Girls High School, Rairangpur, Mayurbhanj.
17	Sri Bivas Sengupta	Male	Shiksha Vihar, Narendra Nagar, At/Po- Sirishbani, Mayurbhanj Orissa, PIN- 757 049.
18	Ms Ranjana Tripathy,	Female	Sri Satya Sai Vidya Vihar, Baripada- 757001.
19	Sri Gauranga Behera	Male	H. K. High School, Naraharipur, Balasore.
20	Ms Maheswata Nanda Asst Teacher,	Female	Srikanta charan vidyapith At-Sianroy, Uplapt, Dist- Balasore
21	Mr Debraj Nayak	Male	P.C. Girls High School, Talpada, Balasore,
22	Sri Bhabani Sankar Parida	Male	N Prasad Ashram School, At/Po- Banapur, Dist- Khurda.
23	Mrs Salila Sethi	Female	B M High school, Old Town, Bhubaneswar,
24	Mr Baikunthanath Das,	Male	Head Master, Purunapani Panchayat Tileswar High school, At Purunapani, Po-Nobedhi, Via- Kuliaana-757030.
25	Mr Chittaranjan Puhan	Male	Aanra High School, At/Po- Aanra, Dist- Keonjhar.
26	Ms Banita Panda	Female	Gandarda High School At/Po- Gandarda, Dist-Balasore.
27	Sri Amulya Kar,	Male	Asst Teacher, Sakhigopal High School, Puri, Orissa.
28	Ms Sabita Mohanty,	Female	Govt Girls High School, Sakhigopal, Puri, Orissa.
29	Sri Pravat Mihir Jena	Male	Panchayat High School, Basantia At/Po- Basantia, Dist-Bhadrak, PIN-756114.
30	Sri Pitabas Jena	Male	Banta High School, At/Po- Banta, Dist-Bhadrak, PIN-756114.

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List of Resource Persons

for the program

‘Training of Resource Teachers for Conducting Open ended experiments on Life sciences using Vermicomposting as a Base’ held at Baripada, during 12th to 15th October 2009.

Organised by SEBA,
catalysed and supported by RVSP, DST, Govt of India, New Delhi,

Sl No	Name, Designation and Address of Resource Person	Contact
1	Dr. Satish Chandra Paul, Former Head, Aromatic & Medicinal Plants Division, Regional Research Laboratory, Bhubaneswar, At- S-59, Maitrivihar, Phase-1, Po- Chandrasekharpur, Bhubaneswar – 751 023	paulsc123@yahoo.com 094375 22480
2	Dr Sohan Giri, Asst Environmental Scientist, State Pollution Control Board, Regional Office, Plot no-160, Sahadeb khunta, Balasore -756001,	M- 094372 78633, giri.sohan@yahoo.com
3	Sri Nayan Singh Mundari, Addl Dist Agriculture Officer, Mayurbhanj, Baripada .	M- 09938172598 ,

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NEWS CLIPPINGS OF NATURE CAMP WORKSHOP

Media Coverage :

1. JANABANI 14.10.2009
2. Dhvani Pratidhwani 14.10.2009
3. The Samaj 17.10.2009
4. JANABANI 17.10.2009
5. AAJIKALI 20.10.2008
6. Dhvani Pratidhwani 20.10.2009
7. JANABANI 21.10.2008

8. All India Radio, 15.10.2009
Baripada

9. Sky vision TV 17.10.2009

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PHOTOGRAPHS

“Training of Resource Teachers for Conducting Open ended Experiments on Life Sciences using Vermicomposting as a Base” , organised at Baripada during 12th to 15th October 2009, with assistance from RVPSP, DST, Govt of India.



Inauguration of the Workshop by Dr S C Paul, Former Head, Aromatic & Medicinal Plants Division, RRL, Bhubaneswar on 12-10-2009.



During introduction, sitting from left to right, Mr R N Mishra, Partially visible, Ms Binapani Dash, Principal, SVS, Dr Sohan Giri, Asst Environmental Scientist, Dr. Satish Chandra Paul, Former Head, Aromatic & Medicinal Plants Division, RRL, Bhubaneswar, Mr R N Padhiari, Environmentalist, Mr N S Mundari, Addl Dist Agriculture Officer,

Continued ... p27



During Registration of participants on 12-10-2009



Collection of domestic garbage by the participants during Training

Continued ... p28



Classification of Garbage During the Training



Collection of Indigenous Earth worm by the Participants During the Training

Continued ... p29



Distinguishing between the collected earth worm species.



Mr Nayan Sing Mundari, Addl Dist Agriculture Officer, explaining construction of Vermicomposting pit

Continued ... p30



Dr S C Paul, Scientist, explaining during his Presentation



During visit to Vermiculture site on 13-10-2009

Continued ... p31



Dr Sohan Giri explaining participants during experiments on 14-10-2009



Preparation of Vermin composting pit during the Training on 14-10-2009

Continued ... p32



Participants eagerly checking the books during the book fair on 15-10-2009



Participants & guests enjoying Exhibition of Books on Science awareness organized on 15-10-2009

Continued ... p33



Mr Kamalakanta Sahu, Participant science Teacher, interacting with the High school children



Dr Giri, replying to the queries of the invited High school students on 15-10-09



Ms Binapani Dash, Principal, SVS, distributing certificate of Participation to the participants



Participants of The Training



SEBA

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