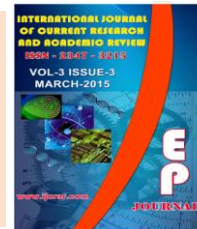




*International Journal of Current Research  
and Academic Review*

ISSN: 2347-3215 Volume 3 Number 3 (March-2015) pp. 271-284

[www.ijcrar.com](http://www.ijcrar.com)



**Socio-economic Upliftment of SC and other Weaker Section of the Society through the Integrated Vermibiotechnological Approach**

**Shweta Yadav\***

Department of Zoology, Dr H S Gour Vishwavidalaya, (A Central University), Sagar -470003, MP, India

*\*Corresponding author*

**KEYWORDS**

Vermicomposting, organic farming, earthworms, biofertilizers.

**A B S T R A C T**

The study aimed to train 500 SC farmers for the production of vermicompost by locally available organic wastes to discourage the use of chemical fertilizers and to increase income of beneficiary of western area Uttar Pradesh by the sale of vermicompost, earthworm and organic food production. The pains taken dedicated efforts made in the project during 2004-2007, have brought tangible results by way of setting-up of 837 vermicompost production units in 09 development blocks of Aligarh and Hathras districts of western U.P. The weaker sections of the society, particularly the SC population in the study area have not only being benefited by learning vermitechology and have started production and sale of vermicompost through sale counters at their door-step but developed amazing confidence to step into the new venture. This initiative with the support of DBT is first of its type in Western U.P. and likely to go a long way to improve upon the economy of weaker sections by way of generating employment in rural areas with almost no investment in this endeavor. This significantly contributes to the aimed and objectives of the projects. Other highlights of the project activities revealed in present study.

**Introduction**

To restore the soil composition, farmers are now showing inclination to revert to organic farming. With this changing trend it is necessary to produce the organic manure in large quantities from the available sources of organic matter to maintain the high level of produce in the available agricultural land.

In this regard, because of the rapid organic fertilizer production locally at extremely low cost using all kinds of biodegradable waste materials, *Vermicomposting* has great future, with this aim present study was undertaken during 2004 to onwards.

## **Achievements**

### **Hatchery – cum - demonstration unit at Project Head Quarter**

A Hatchery–cum-demonstration unit comprising Forty vermibeds has been established at Vermiculture Research Station, D.S. College, Aligarh which, will continue to run even after the completion of the project on no-profit-no-loss basis. The seed material, harvesting tools, technical guidance and other required knowledge will be provided to interested person regularly.

### **Technical Guidance to Farmers**

To create the awareness regarding the use and production of vermicompost twenty-nine training programmes were organized in different development blocks of Aligarh district with support and co-operation of respective BDO's, village land workers, Block Pramukh, Pradhan and others. In these twenty-nine meetings some 1507 farmers and other interested growers participated. They were all educated and trained in the production of vermicompost and cultivation practices of raising organic crops particularly high demands prioritized medicinal species, besides some traditional cereal crops to get higher income returns. This move had generated the employment opportunities in rural area and helped improve the economy of rural masses, particularly the weaker sections of the society.

The followed setting up of series of vermicompost units at the farmer s' land. Project staff regularly visited their fields in different villages in the study area of Aligarh district, to motivate them and solve their problems at the spot. The Principal Investigator also visited the fields to monitor the project programme.

### **Organization of Training Programmes at Head Quarter**

After selection and identification of beneficiaries, eleven training programmes on production, application and management of vermiculture units were organized at Vermiculture Research Station, D.S. College, Aligarh. More than 1067 beneficiaries participated in these training programmes. Dr. Jitendra Yadav, Scientist, Krishi Vighyan Kendra, Aligarh, Dr. Pushpa Dubey, Bhagal University, Bhagalpur, Prof. A.K. Tamrakar, Shri Gyanendra Singh University, Mr. Koju Director RUCODES , Nepal, Dr. Shailesh, Krishi Vigyan Kendra, Unnao and Dr. P.K. Srivastava, Chairman, Deptt. of Agriculture, AMU, Aligarh also delivered a series of lectures on various aspects of vermiculture and providing recent update in the area.

### **Establishment of Vermicompost Units at Farmer's Fields**

One Hundred mass production "Vermicompost Units" of 3-5 MT capacity per year were established on the cultivators land. The Earthworms, Harvesting Tools and Technical material etc were all provided to beneficiaries at their door-steps.

### **Organization of 'Vermi-mela**

A 'Vermi-mela' especially focussing on 'Awareness Training to Farmers on Vermicompost' was organized from 30 – 31<sup>st</sup> Dec. 2006 at D.S. College, Aligarh with support of Dept. of Biotechnology, Govt. of India, where, 25 stalls from different govt. departments and private sector exhibited their produce. Some 1200 farmers visited the exhibition stalls and had detailed interaction with experts. Fifteen Scientists from different parts of country delivered the lectures on various aspects of

agrotechnological practices and Vermitechnology during exhibition. The formal inauguration was done by the District Magistrate Aligarh, Shri Santosh Kumar, I.A.S. and others who participated included Prof. Anis Ansari, Former Advisor, Deptt. of AYUSH, New Delhi, Dr. A.S. Ninawe, Former Advisor, DBT, New Delhi and Padam Shri Anil P. Joshi, Director, HESCO, Dehradun, and addressed the farmers during the exhibition.

### Demonstration Plots on the Effect of Vermicompost in Medicinal Crops

Eight "Demonstration Plots" on medicinal plants namely *Ashwgandha*, *Sanai*, and *Kalmegh* were set-up in three development blocks of Aligarh and Hathras districts in western U.P to educate the farmer's through the project. Certified Seed and vermicompost were provided to farmers for live-demonstration of medicinal crops at the land of beneficiaries.

### Cultivation Practices at Project head Quarter

Investigations on agronomic practices for quality crude drugs production on *Withania somnifera* (Ashwagandha) and *Andrographis paniculata* (Kalmegh) were carried out at Vermiculture Research Station, D.S. College, Aligarh. (U.P). The materials and methods adopted to conduct the experiments are as under :

#### Experiment 1 Effect of Shade and Spacing

Design : Split plot  
Replications : 03  
Treatments : 4x4 = 16  
Main plots : Four shades 0, 25; 50, 75) M<sub>1</sub> to M<sub>4</sub>  
Subplot : Four spacing (10x10, 20x10, 20x20, 30x20 inches) (S1 to S4)  
Date of : 19 July 2007

planting

Date of Harvesting: 29 Nov. 2007

Vermicompost was applied as basal dressing at 2 t ha<sup>-1</sup>.

#### Experiment 2 Manurial requirements

Design : RBD  
Replications : 03  
Treatments : 16  
Three levels of vermicompost (1, 2, 3 to ha<sup>-1</sup>) F<sub>1</sub> to F<sub>3</sub>

Five level of substitution of vermicompost with inorganic fertilizers (0, 25, 50, 75, 100%) (P<sub>1</sub> to P<sub>5</sub>)

Control : No vermicompost and fertilizer (1.2 t vermicompost was considered almost equivalent to 40:30:20 kg N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O based on the content of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O)

The experimental area was ploughed twice, harrowed, levelled and brought to a good tilth. The field was laid out as per the study design of the individual experiment, in raised beds with channels (40 cm) separating the plots. The required shade was provided by erecting cover at a height of 2 m using iron poles. Buffer plots were maintained between two shade treatments to compensate for the periodical overlapping of shade. Uniform mulching with lemongrass was given in all the plots.

There was heavy weed infestation since the crop was slow growing with limited ground coverage. Hand weeding was carried out at 2 and 4 months after planting. Earthing up was carried out simultaneously with weeding and top dressing of fertilizers. In general, plant protection was taken up as and when necessary.

For Biometric observations viz. plant height, number of leaves, canopy spread, leaf area and data on numbers of roots per plant, root

length and dry matter production mean were recorded.

### **Experimental Trial Plots on Medicinal and Vegetables Crops**

Comparative studies on various medicinal and vegetables crops experiments on shade, spacing, effect of vermicompost, different dosages of chemical fertilizers, were done on twelve experimental plots located in four blocks viz. Dhanipur, Lodha, Jawan, and Hasain of Aligarh and Hathras districts. The experiments on trial plots were laid down on the land of cultivators and in-house programme at Vermiculture Research Station experimental field at D.S. College, Aligarh during the period. The details follow:

### **Organisation of a District Level Seminar(Krishak Gosthi) at Aligarh**

A district level seminar cum Farmers' meet on "Production and Application of vermicompost" was organized on 12<sup>th</sup> Sept. 2007 at Aligarh. More than 300 farmer's participated in the seminar which was chaired by District Magistrate Shri Bhuvnesh Kumar I.A.S. and other participants included Dr. Shalesh Singh Krishi Vigyan Kendra Unnav, Dr. K.K. Singh, Krishi Vigyan Kendra Unnav, Dr. Pushpa Dubey, Bhagalpur University, Bhagalpur, Dr. Jitendra Yadav, Krishi Vigyan Kendra, Aligarh, Dr. Asha Yadav, Krishi Vigyan Kendra, Aligarh and Shri R.P.P Singh Retired Agriculture Officer who delivered a series of lectures on various aspects of organic cultivation of crops, providing recent update in the area.

### **Setting up of Vermi-villages**

During the period three villages viz. Badhola Hazi, Block Lodha, Distt. Aligarh; vill. Balukhera, Block Dhanipur, Distt.

Aligarh and vill. Pankhani, Block Dhanipur, Distt. Aligarh. were developed as a "Vermi-village" Some 36 farmers of these villages undertook production of vermicompost of 4000-6000 MT per year. The vermicomposting worms, Harvesting tools, watering devices, packing bags and technical guidance were all provided to beneficiaries from the project. To encourage the beneficiaries the vermicompost produced by them was sold through the project in the initial stage of the project and payment made to them. The demonstration and trial experimental plots have also been set-up in these villages to encourage organic farming. The formal inauguration of Vermi-village Badhola Hazi, Block Lodha, Distt. Aligarh was done by Dr. A.S. Ninawe, former Advisor, DBT on 5<sup>th</sup> Aug. 2006. The *Vermi-village of weaker women farmer vill. Pankhani* first in the U.P. State was visited by Padam Shri Anil P. Joshi, Director, HESCO on 30<sup>th</sup> Sept. 2007.

### **Participation in Exhibitions**

The project staff participated in seven exhibitions where more than 7000 farmers visited the stall and were provided necessary guidance on vermitechnology. Some important exotic species of vermicomposting worms, seed (cocoon), model hatchery unit, harvesting tools vegetables and cereals grown in vermicompost were also displayed in exhibition to provide visiting farmers first-hand information. More than 6000 pamphlet on vermitechnology were distributed to farmers on these occasions.

### **Field day**

In order to assess and monitor the actual progress, the DBT officials and other dignitaries were regularly invited to visit farmer's field as well as Vermiculture Research Station, Aligarh.



Project Head Office -: Vermiculture Research station at D.S. College, Aligarh.



Monitoring of Vermicompost at Project office.



Dr. G.M. Lingaraju, DBT, New Delhi observing the earthworm activity reared on different medium in Hatchery at Vermiculture Research Station.



Dr. Shweta, Principal Investigator, explaining the activities of project to Dr. G.M. Lingaraju, DBT, New Delhi, at Vermiculture Research Station on 30<sup>th</sup> Sept. 2007.



A view of Hatchery -cum- demonstration Unit at Vermiculture Research Station, D.S. College, Aligarh on 02.05.2007.



Shri Rakesh Kumar, HESCO, intracting with farmers at the vill. Chahlesar, Block Java, Aligarh on 27<sup>th</sup> Jan. 2007.



Research Scholar Mr. Zafar Ali educating Dehradun, farmers at their door-step (vill. Kauchhore Block Dhanipur, Aligarh) on 13<sup>th</sup> Sept. 2006.



Project Asst. Shri Kishan, demonstrating vermicomposting technology to farmer's at vill. Uzzrah, Block Dhanipur Distt. Aligarh on 17<sup>th</sup> Aug. 2006.



Dr.A.S. Ninawe, Former Advisor, DBT, New Delhi, addressing the farmer's at vill. Sajna, Block Khair, Distt. Aligarh on 6<sup>th</sup> Aug. 2005.



Shri Padamshri Anil P. Joshi, Director HESCO, Dehradun addressing the beneficiaries of vermicompost production unit at vill. Pankhani, Block Dhanipur, Distt. Aligarh on 30<sup>th</sup> Sept. 2007.



Project staff, Shri Krishan interacting with farmer's to encourage the production and use of vermicompost at vill. Khangarhi, Block Dhanipur, Distt. Aligarh on 16 Sept. 2006.



Project Staff Shri Prem Shankar, demonstrating the harvesting technology to beneficiaries at H.Q. on 9<sup>th</sup> May 2007.



Dr. V.K. Singh, CCRUM, New Delhi, addressing the beneficiaries in farmer's meeting at H.Q. on 30<sup>th</sup> Sept. 2006.



### Mass Production Units of Beneficiaries



Prof. Anis A. Ansari Former Adviser, Department of AYUSH, Ministry of Health & Family Welfare, Govt. of India., Padamshri Anil P. Joshi, Director of HESCO Dehradun, Shri Santosh Yadav, District Magistrate, Aligarh., Dr. R.N. Singh, Principal, D.S. College, Aligarh., Dr. A.K. Singh, Dr. R.C. Sharma, and Dr. Shweta (from right to left) during the inaugural session of 'Krishi Pradarshani' 30-31<sup>st</sup> Dec. 2006 at D.S. College, Aligarh.



Padamshri Anil P. Joshi, Director, HESCO, Dehradun, District Magistrate, Aligarh Shri Santosh Yadav IAS, and Dr. R.N. Singh, Principal, D.S. college, Aligarh (from right to left) discussing the activities of the project in vermimela at Vermiculture Research Station on 30<sup>th</sup> Dec. 2006.



A section of audience in 'Krishi Pardarshani'



A view of 'Vermimela' on 30<sup>th</sup> Dec.2006.



Shri Santosh Yadav, IAS, District Magistrate, Aligarh inauguraing the stall of Krishi Vigyan Kendra, Unnao at H.Q. on 30<sup>th</sup> Dec. 2006.



Dr. A.S. Ninawe, Former Adviser, DBT, a New Delhi awarding the progress farmer's at H.Q. on 30<sup>th</sup> Dec. 2006.





A section of stall of vermitech centre at Badhola Hazi vill. Aligarh in vermicompost H.Q. on 30-31<sup>st</sup> Dec. 2006



A view of participation of M/s Morarka Foundation, Jaipur and CCRUM, New Delhi in vermicompost H.Q. on 30<sup>th</sup> Dec. 2006.



A view of 'Vermiculture Stall' at H.Q. in 'vermicompost Mela' on 30<sup>th</sup> Dec. 2006.



A view of 'vermicompost Mela' at Head Quarter on 30-31<sup>st</sup> Dec. 2006.



Agriculture Commissioner Shri Pochaster Karangor, I.A.S. visiting the field of Kalmegh (*Andrographis paniculata*) at vill. Pankhani, Block Dhanipur, Distt. Aligarh on 27<sup>th</sup> Nov. 2007.



Dr. V.K. Singh CCRUM, New Delhi, observing demonstration plot of Ashwagandha (*Withania somnifera*) at vill. Navipur, Block Hasain, District Hathras on 16<sup>th</sup> Sept. 2007.



Shri Michael Syed, District Agriculture officer, Meghalaya observing the shade, spacing and manurial quantity experiments on Ashwagandha (*Withania somnifera*) at Head Quarter on 27<sup>th</sup> Nov. 2007



Dr. G.M. Lingaraju, Deptt. of Biotechnology, Govt. of India and Shri Rakesh Khatri, reporter TOI in experimental plots of medicinal plants at H.Q. on 30<sup>th</sup> Oct. 2007.



Shri Pochaster Korangor, IAS, Agriculture Commissner, Meghalaya observing the experimental plots of medicinal crop in different types of vermicompost, at Vermiculture Research Station on 27 Nov. 2007



A view of Experimental Cultivation plots of medicinal crops at Vermiculture Research Station, D.S. college, Aligarh.



Shri Nem Singh, vill. Balukhera, Block Dhanipur, Distt. Aligarh, displaying the cauliflower (field)cultivated in Vermicompost to Agriculture Commissioner on 27<sup>th</sup> Nov. 2007



Project Staff Shri Mukesh Kumar, displaying the mustard crop cultivated in Shri Pochaster Korangaor, IAS, at vill. Pankhani, Block Dhanipur, Distt. Aligarh on 27<sup>th</sup> Nov. 2007.



Shri Bhuvnesh Kumar IAS, District Magistrate Invocating the 'Krishak Gosthi'. at H.Q.



A view of 'Krishak Gosthi' at H.Q.



Dr. A.K. Singh, Reader, Deptt. of Botany, Shri Bhawarpal singh (Retired DAO), Shri Bhuvnesh Kumar, District Magistrate Aligarh, Dr. R.N. Singh, Principal, D.S. College, Aligarh and Dr. Shweta, PI (from left to right) & Dr. Shelesh, scientist, Krishi Vigyan Kendra Unnao, delivering the lecture on organic farming at 'Krishak Gosthi' on 12<sup>th</sup> Sept. 2007.



A view of 'Krishak Gosthi' at Vermiculture Research Station on 12<sup>th</sup> Sept. 2007.



Dr. A.S. Ninawe, Former Adviser, DBT, New Delhi, with Principal Investigator Dr. Shweta at the vermivillage Bodhola Hazi, Block Lodha Distt. Aligarh.



Dr. A.S. Ninawe, Former Adviser, DBT, New Delhi, Dr. R.N. Singh, Principal, D.S. College, Aligarh, and Principal Investigator, at sale counter of vermivillage on 5<sup>th</sup> Aug. 2005.



Vermivillage Badhola hazi, Block Lodha, Distt. Aligarh on 7<sup>th</sup> June 2005



Shri K.Kohju, Director, RUCODES, Nepal at vermicompost to create awarness to general public at vermivillage on 5<sup>th</sup> Aug 2005.

A view of sig



A view of stall of project at 'Raiyebareilly Exhibition' on 18<sup>th</sup> Feb. 22<sup>nd</sup> Feb. 2006.



A view of stall of vermiculture unit at State Agriculture & Industrial exhibition on 2<sup>th</sup> Feb.- The formal inauguration done by Hon'ble Cabinet 22<sup>nd</sup> Feb. 2006.



A view of media coverage by DD-National Channel on 2<sup>nd</sup> Nov. 2007.



A Reporter of NDTV with Padamshri Anil P. Joshi, Director, HESCO, Dehradun, on 30<sup>th</sup>.

### **Developing ‘Sale Purchase Counters**

Two Sale Purchase counter were developed at vill. Ballukhera, Block Dhanipur District Aligarh and vill. Pankhani, Block Dhanipur, District Aligarh, where the land less farmers are selling their produce. After value addition vermicompost is being sold in the market with margin of reasonable profit. The formal Inauguration of these sale counters was done by Dr. G.M. Lingaraju, DBT, New Delhi and Padamshri Anil P. Joshi, Director, HESCO, Dehradun.

### **Transfer of Technology at Meghalaya**

Three-days Training programme on ‘Vermiculture technology’ (dated 4<sup>th</sup>-6<sup>th</sup> Oct. 2007) was conducted at Shri Arvindo Ashram Shillong, Meghalaya where thirty young people were trained. The formal inauguration of this training programme was done by Agriculture Commissioner, Meghalaya, Shri Pochaster Karingor IAS. To further develop this programme of transfer of technology, Agriculture Commissioner, Meghalaya visited the vermiculture fields at Aligarh along with District Agriculture Officer, Khasi; Shri Mr. Michel Syed and Mr. J.R. Sangama, Tura on 27<sup>th</sup> Nov. 2007.

### **Transfer of Technology in Nepal**

Six day training programme on ‘production and marketing of vermicompost’ was organized (dated 3<sup>rd</sup> – 9<sup>th</sup> Jan. 2005) at RUCODES, Nepal, where twenty women were trained and educated for production of vermicompost and marketing to generate the employment opportunities in rural area and improve the economy of rural masses.

### **Media Coverage**

Since the project programme on farmers’ meets on “Awareness Training, Production

and Management on Vermitechnology” was in public interest, all events have been given wide media coverage:

### **Deliverables of the Project: A Ground Reality**

The highlights of the study- project activities other than establishment of vermiculture units included:

#### **Farmers Training course**

Organizing eleven Farmers Training courses educating them with first-hand information on vermitechnology in different development blocks of Aligarh and Hathras districts .

#### **Mega Krishi Pardarshani**

Organizing a mega “Kishan Pradarshanicum-Vermimela” on 30-31 December 2006, where some 1200 farmers from different far-flung areas of different districts of U.P. participates and interacted with expert in respective field and updated their knowledge in the vermitechnology and medicinal plant cultivation and marketing including export. Some 15 eminent scientists included, officials from DBT, Govt. of India, participated and addresses the farmers’ delivering power-point presentations.

#### **Demonstration trial on Medicinal Plants**

Eight “Demonstration Plots” to study the comparative trials of vermicompost and chemical fertilizers were organized both at farmer’s field and Vermiculture Research Station, D.S. College, Aligarh. The crops included both medicinal and cereals. Results are encouraging and being analyzed for publication purpose.

### **Sale-Purchase Counters of Vermicompost**

To help weaker section, sale counters of vermicompost have been promoted through the project and tonnes of vermicompost sold from those counters over the years. The beneficiaries have been educated with the information of value addition.

### **Transfer of Technology**

Transfer of Technology Training courses have been organized at Shillong (Meghalaya and Nepal) where, farmers and other beneficiaries have been educated in vermitechnology and production of vermicompost with field demonstration.

### **Acknowledgement**

Author acknowledges the financial support of the Department of Biotechnology, Ministry of Science and Technology, Govt. of India, New Delhi, to carry out this study.

### **References**

Project report: Socio- economic Upliftment of SC and other weaker section of the society through the integrated vermibiotechnological approach submitted to Department of Biotechnology, Ministry of Science & Technology, Government of India, New Delhi.

Kothari A., 2001. Experience with biodiversity policy-making and community registers in India. International Institute for Environment and Development (IIED) 3, Endsleigh Street, London, WC1H 0DD, UK

Yadav Shweta and Singh V.K. 2014. Vermitechnology: Rebuilding of Sustainable Livelihoods. Nova Science Publisher, Inc: 400 Oser, Ave, Suite 1600: Hauppauge, New

York 11788-3619 USA, ISBN: 978-1-6317-943-3.

Yadav Shweta, 2014. Empowerment of Weaker Section of Society through Vermitechnology. LAP Lambert Academic Publishing, Germany.