

VERMICOMPOSTING: AN ECO-LOVING APPROACH FOR RECYCLING OF SANITARY WASTE INTO VALUABLE BIOFERTILIZER

N.B. Jagtap¹, S.J. Parkar², M. U. Mulla², M.B. Bamne¹

¹Assistance Professor, ²Research Student

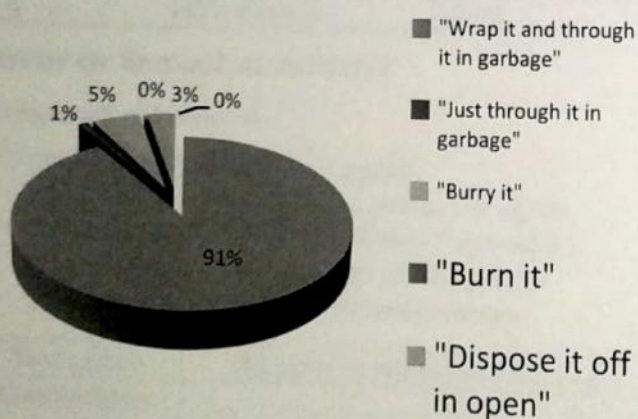
¹Department of Zoology, Dapoli Urban Bank Senior Science College, Dapoli, Ratnagiri, INDIA
²Department of Zoology, Dapoli Urban Bank Senior Science College, Dapoli, Ratnagiri, INDIA
 Corresponding Author: N.B. Jagtap, Email- jnsshinde80@gmail.com.

INTRODUCTION: As Nielsen's recent study on sanitary protection. [1] she said, every women's health rights report that around 36million women in India use sanitary napkins/pads which makes it 12% of 300 million women in the age group of 15-54 years. A woman used around 10,000 pads on an average in her entire life time for about 30-40 years. like every medicine has side effects, usage of menstrual hygiene products has. It is the perfect example of women emancipation and the empowerment makes the present women stronger than ever. sanitary napkins have many benefits and it has made lives easier for women.

It is very easy to change sanitary napkins four times a day and be all sanitized but what about the used napkins? What happens about used Napkins? Do women think once before disposing the menstrual waste? This research project will cover the after-usage aspect of sanitary napkins.

The disposal of waste through the use of earthworms also upgrade the value of original waste materials in situ and allows a final product to be obtained free of chemical

How do you dispose your sanitary waste?



or biological pollutants. [2,3]

It is generally accepted that microbial biomass and respiration are greater in earthworm compost than in the parent soil [4,5]

Eisenia fetida serves as the most suitable species for degradation of organic waste and production of vermicompost in South India [6].

Importance of Vermicompost-

1. Vermicompost is rich in plant nutrients, provides the entire essential nutrients elements.
2. Provides excellent effect on overall plant growth.
3. Vermicompost is free flowing easy to handle store and apply and does not have bad Odour.
4. Soil pH is neutralized by the buffering action of vermicompost.
5. Vermicompost is free from pathogens, toxic elements, weed, seed, etc.



Figure showing sanitary pads,



used pads and dumping of pads

in open space.

MATERIAL AND METHOD: -

A. Materials

- Used Sanitary pads
- Earthworms (*Eisenia fetida*)

B. Methods-



1. Collection of sanitary Napkins:

- This study was carried out in the month of June, July and August for 21 days.
- We collect the pads from girl students for one month and store it in a plastic container having water for soaking.

- Minimum 8 pads were used by each girl in one menstrual.
- 2. Experimental setup
 - A small pit was made in the wooden box in our garden.
 - The inoculums were prepared by mixing cutted sanitary pads and cow dung at different ratios (w/w. Mixed compost ingredients were added and put into separate tank (1 m depths).
 - Treatments were allowed for four weeks. A thorough turning was made every 15 days during the per-digestion periods. After pre-digestion process inoculated in each treatment. The tanks were covered with jute bags on the top to maintain proper heat and humidity. Moisture content was maintained by sprinkling water.
 - After 90 days vermicompost was ready for use.

Comparison of Garden Compost and sanitary pad mediated Vermicompost -To prove the compatibility of vermicompost we set up experiment in which we grow mustard plants in two plastic trays. We label them as TEST and CONTROL. In test tray, we add our sanitary pad mediated vermicompost and in control tray we add garden compost. In few days, we observed more growth in test tray as compared to control.

RESULTS AND DISCUSSION: -Micro nutrients of vermicompost were analyzed by Standard methods. The soil analysis is carried out through soil testing department of our college run by chemistry department. Micronutrients Zinc (Zn), Copper (Cu), Iron (Fe) and Manganese (Mn) were determined by atomic absorption spectrophotometry. Total micronutrients Zinc (Zn), Copper (Cu), Iron (Fe) and Manganese (Mn) contents increased from compost to vermicompost.

Composting by Earthworm is proving to be economically and environmentally preferred technology as it is rapid and nearly odorless process, reducing composting time by more than half and end product is both dis-infected and detoxified.

Vermicompost thus prepared have nutrients of following concentrations ---

Nutrient element	Vermicompost (%)	Garden Compost (%)
Nitrogen	1.51	0.8
Phosphorous	1.02	0.35
Potassium	0.63	0.48
Calcium	4.52	2.27
Copper	0.0039	0.0017
Iron	1.33	1.16
Zinc	0.0040	0.0012

CONCLUSION: -

Among micronutrients Zinc (Zn), Copper (Cu), Iron (Fe) and Manganese (Mn) were found in the vermicompost. From above method, Sanitary pads can be compost by worms.

Vermicompost is like getting "gold from garbage". The versatile species *E. fetida* performing wide social, economic & environmental functions occur almost everywhere.

The vermicomposting maintains the "global human sustainability cycle" & "circular economy" "using sanitary pads" and protecting farm soil. Vermicompost can replace the "chemical fertilizers" for production of "safe organic food" which has now been proved worldwide, it will be a giant step towards achieving global social, economic & environmental sustainability.

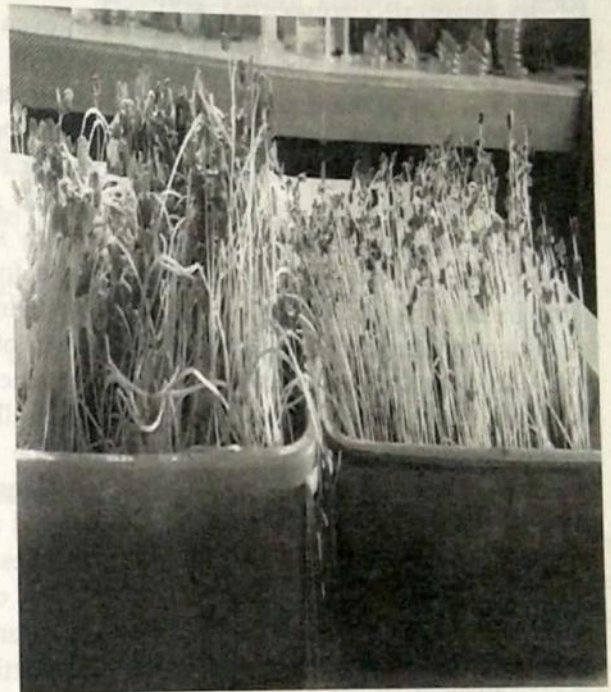


Figure showing comparison of Control and Test

References: -

1. Ac. Nielsen's recent study on sanitary napkins -2004
2. Bouche MB (1979) Valorization des dechets organiques par les lombriciens. Collection Recherche of Environment 11:384.
3. Divya UK (2001) Relevance of Vermiculture in sustainable agriculture. Agriculture General World.
4. Tiunov AV, Scheu S (2000) Micro fungal communities in soil litter and casts of *E. fetida*: a laboratory experiment. Appl Soil Ecol 14:17-26.
5. Aira M, Monory F, Dominguez J (2003) Effect of two species of earthworms (*Allobophora* sp.) on soil systems: a micro faunal and biochemical analysis. Pedobiologia 47:877-881.
6. M.L. Jackson, Soil, Chemical Analysis, Prentice Hall of India Private Limited, New Delhi, 1967.