



## Seri Vermicompost-An Entrepreneurial Opportunities for Sericulture Farmers

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### INTRODUCTION

Vermicompost is the end product formed by the degradation of organic matter. This process is done only by worms like red wigglers (*Eisenia fetida*), night crawlers (*Eudrilus euginae*), white worms, etc. The recent issue is fertility decline and it is necessitated a down-to-earth approach for management of diverse sources of fertility within the context of integrated nutrient management (INM). The integrated nutrient supply aims at balancing the soil fertility and plant nutrient status to an optimum level through the judicious and efficient use of mineral fertilizers, bio fertilizers, crop residues and organics. Among them is a new trend of seri waste compost and Vermicompost. The waste in sericulture contains organic matter like silkworm litter, left over leaves, soft twigs, dead moth, damaged cocoons, farm weeds, etc. The wastes have tremendous amount of nitrogen, phosphorus and potash as well as micronutrients like iron, zinc, copper etc.

In sericulture farms, the left over mulberry leaves from rearing bed and field and other waste including silkworm litter are not properly utilized in preparing compost of high nutritive value. Since the seri waste contains high amount of nutrients, there is potential for the bio conversion of seri waste to enriched compost and can be utilized as an excellent nutrient source for the production of crops. Vermicompost gives disease resistance to plants. Nutrient content of vermicompost is higher than traditional compost. It is a valuable soil amendment. Vermicompost harbors certain microbial populations that help in N fixation and P solubilization. Its application enhances nodulation in legumes and symbiotic mycorrhizal associations with the root. It is an eco-friendly bio fertilizer and richer in micro-nutrients than other compost.

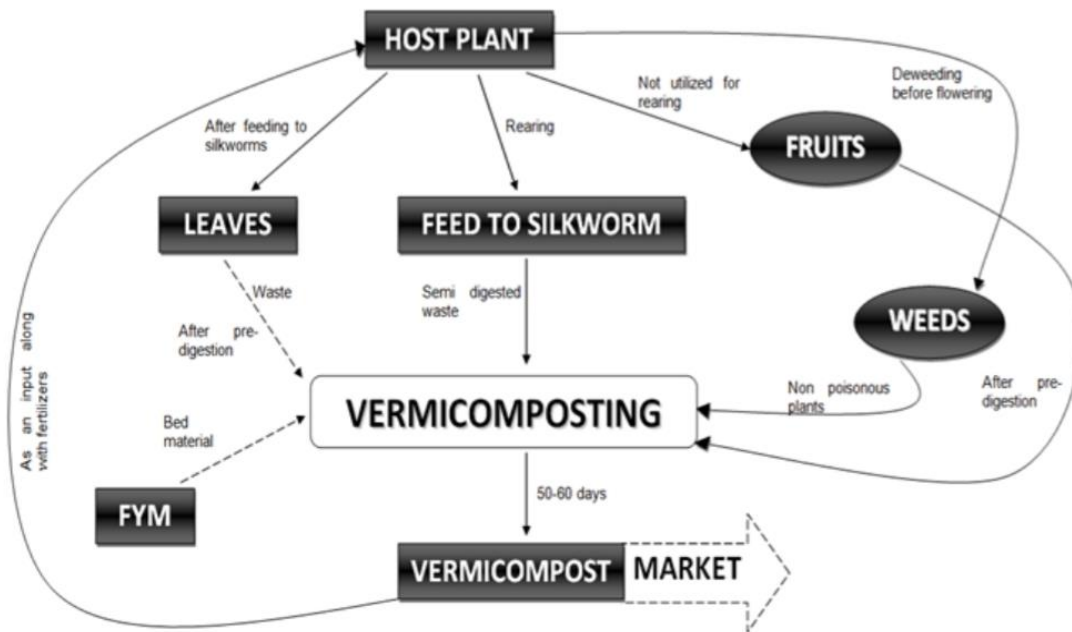


Fig1: A Flow chart depicting various components of sericulture waste utilized for vermicomposting

It improves soil texture, structure, aeration, water holding capacity, prevents soil erosion. Enhances germination, plant growth, crop yield. Improve root growth of the plants.

#### REQUIREMENTS:

Sericultural farm residues including silkworm litter, silkworm pupae and moth, spun silk, and silkworm cocoons. Mulberry leaves. Farm implements liked Spade, Hoe, Iron pans or Plastic basins and Garden rakes etc. Compost pit / Compost or Vermicompost shed or Plastic or Cemented or concrete Tanks or Drums for vermicomposting and Earthworms.

#### METHOD OF PREPARATION OF VERMICOMPOST USING SERICULTURE WASTE:

- The farm waste can be collected in pits of convenient size. (Two pits of size 3x1x1m is adequate to receive farm waste from 1 acre).
- Sericulture waste like silk worm litter, left over mulberry leaves weeds etc., should be collected every day and spread in a thin layer. A layer of fresh cow dung, ash and water is sprinkled over the layer and compacted.

- At the end of the rearing, the left over leaves of the garden, along with the young mulberry twigs can also be added to the pit.
- When the pit is filled and when the bed height is 30-40 cm above the ground level, it is plastered with 2.5cm layer of a mixture of mud and cow dung. Attached shed is provided to protect the pit from rain and direct sunlight.
- A thatched is constructed on a slight elevated ground for a mulberry farm of one ha area. Stone bunds are constructed all around the shed to prevent predators and to avoid migration of earthworms.
- As a feed for the earth worms the sericulture waste including weeds are mixed with cow dung slurry and mixed with 100 liters of water for every ton of waste.
- It is left in an open pit for about 7-10 days for partial decomposition. While decomposing, the material should contain a minimum of 30-40 percent moisture.
- During the decomposition process, the temperature of the semi decomposing

material will rise to 50-60 degree C. Hence, the material is turned upside down once or twice to bring the temperature to normal state.

- Later each trench is filled up with 200-300 kg of semi decomposed sericulture waste having moisture content of 30-40 per cent.
- A mixer culture of earthworms viz., *Eudrillus euginae*, *Eisenia fetida* and *Perionyx excavatus* in juvenile stage is introduced in the feed.
- While releasing earth worms care is taken to ensure approximately 30-40% moisture and normal temperature in the feed.
- During feed preparation, temperature of the decomposing waste increase beyond 50 degree c which may kill the worms and hence it is essential to bring down the normal temperature.
- After 2-3 days of release of earthworms, water is sprinkled regularly to keep the feed moist a protective cover of coconuts fronds or any green leaves is provided to avoid evaporations.
- Once a week the materials is turned upside down for proper composting.
- After 6-7 weeks time if most of the feed is found as loose granular casts (brown to black in colour) the material can be harvested and sieved through wire mesh to separate earth worms and cocoons for reuse.
- After sieving brown to black loose granules of vermicasting can be collected and used as manures.
- While harvesting moisture is evaporated for better result. Maximum quantity of vermicasting can be harvested if the material is allowed to dry for sometime inside the shed.
- It is necessary to keep the shed dark, moist and cool while vermicompost is under progress to get best result as earth worms do not prefer light.
- The final product vermicompost should be used for crop production without much delay to get best results.

**NUTRIENT CONTENT:** The approximate nutrient content of seri vermicompost and Farm Yard Manure:

Nutrient content	Seri-vermicompost	FYM
Nitrogen	2-2.24%	0.3-0.4%
Phosphorous	0.93-1%	0.2-0.4%
Potash	1.5-1.8%	0.3-0.6%

Moreover seri compost contains 30% moisture besides zinc, iron, manganese and copper as micronutrient. The product is found to be much superior compared to farmyard manure.

#### **USES OF VERMICOMPOST MADE FROM SERI WASTE IN SERICULTURAL FIELDS-**

The application of plant nutrients through recycling of sericulture farm wastes as compost and vermicompost can facilitate quality leaf production for better and more sustainable silkworm production. Seri waste compost are used in mulberry fields as it improves mulberry leaf yield, and its quality. Tasar Sericulture in order to bring back the productivity of soil, to ensure proper maintenance of soil fertility and health, leading to production of good quality leaf.

#### **CONCLUSION**

Now a days there is much focus on greener ways for sustainable agriculture. Technologies like vermicomposting are being utilized for sustainable agriculture. In sericulture the waste produced remains unutilized. By adopting technologies like vermicomposting, the farmer can utilize the seriwaste waste for production of vermicompost with high nutrient value, which will in turn reduce the cost of input application.