

VERMIWASH: A RICH INPUT SOURCE FOR ORGANIC FARMING**Dr. R. B. Patil¹, Mr. S. R. Lokhande²**¹Associate Professor, Yashwantrao Chavan Warana Mahavidyalaya, Warananagar²Research Scholar at the Dept. of Geography

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Abstract

Organic farming requires different types of inputs processed by organically. The farmers are facing problems of availability of organic inputs for practicing organic farming. Vermiwash is the organic processed liquid from earthworm's container used as fertilizer as well as pesticides with cow urine. It is used for foliar spray and root treatment before transplanting and as drenching after transplanting. Present research work attempted to analyze the macro and micro nutrients available in the vermiwash produced at filed by using organic wastes.

Key Words: Vermiwash, Organic Wastes,**Introduction**

Organic farming is increasing in the recent years as a result of over utilisation of synthetic fertilizers for accelerating agricultural production. After industrial revolution the chemical fertilizers are used massively to fulfil the increasing demand of food grains due to the rapid growth of population. The application of chemical fertilizers, pesticides, irrigation techniques and high yielding varieties is a known as Green Revolutionary Technology (GRT). But in the recent studies reveal they adverse effect of the chemical fertilizer, pesticides on the environment as well as human health. The rapidly use of chemical fertilizers and pesticides destroyed the fertility of soil and also produces the harmful diseases for crop and human mankind (Hemant Samadhiya, 2013). The organic farming, natural farming, zero budget farming etc. are essentials for environmental balance and human welfare which ultimately leads to sustainable development. The alternative sources such as microbial inoculants and compost based products are considered to meet the nutrient requirements of crops (Vijantie R. R. , 2021). It is quite possible to effect quick change over for sustainable agriculture by harnessing brand new vermicompost technology to the soil. In recent times the commercial vermin culturists have started promoting a product called vermiwash (K. Sundararasu, 2016).

The farmers are doubtful about the production of organic farming. The experience of organic farmers reveals the decrease in agricultural production in the initial stage of organic farming. There are problems of availability of inputs for organic farming. But the vermicomposting and vermiwash technology provide better source of organic manures by processing farmyard organic wates. Earthworm rapidly convert the wastes to humus like substances with finer structure than the thermophilic composts but possessing a greater and more diverse micro bio-activity (Elvira, 1996). Here and attempt had been made to find out the sources of inputs for enriching organic farming. Organic compost is the important sources of the soil of macro and micro nutrients to balance and eco-friendly for agriculture system.

Objective

The vermiwash is the best alternative to provide macro and micro nutrients to the soils. The main object of this research is to analyse the availability of nutrients of vermiwash contains with using farmyard materials. It is experiential research. It is also aim to promote the formers for production of vermiwash according to their need.

Methods and materials

Vermiwash is prepared by the method of standardized the Institute of Research and Soil biology and Biotechnology by Ismail (1997). The earthworms are collected form Yadav Vermicompost Centre, Kavlapur, Taluka-Miraj, District-Sangli. The *Eisenia foetida* species of earthworm used for the preparation of vermiwash.

The plastic container of 200 litres has been used for the production of vermiwash and it is mounted on bricks foundation. The tap has fitted at the base of plastic container. It is filled by required material of Ismail's method (1997).



Figure 1 Vermiwash Production Unit

- The base layer is field by broken bricks and gravels up to 15 cm height.
- Over the first layer coarser sand and fine sand layer up to 5 cm.
- Over the fine sand layer shade net spread to prevent entry of the worms in the earlier layers.
- The third layer is of coconut cover and groundnut residue for the year circulation.
- The four layer is of semi composed buffalo dang as main food for earthworms.

The slowly percolated water through the organic material used for food carry with the released nutrients by the earthworms called as vermiwash.

1. Varmi wash production

The vermiwash produced by utilisation of organic waste available at farmyard through the earthworms. Earthworms are the nature's most useful converter of waste products as their food habit. This is the natural recycling system of biodegradable waste. Earthworms release some colonic fluids in the used materials as their food and increase the rate of decomposition. Vermiwash obtained a liquid from earthworm bed contains many growth regulating substances (Nielson 1965). Vermiwash is a liquid that is collected after the passage of water through a column of worm actions. It is a mixture of excretory products and mucus secretions of earthworm along with micro nutrients from the soil organic molecules (Hemant Samadhiya, 2013)

Varmiwash is the collected water from the earthworm column. The water is sprinkled to keep moisture and maintain the temperature for the survival of earthworms. The percolated water collected at the best of unit. The sprinkled water passes through the earthworm and vermicompost. The various vitamins and growth hormones are released by the earthworm body. The vermiwash contains the excretory products and makers of the earthworms and residue of organic materials used in the multilayers. After 15 days percolated water was

collected daily by slowly sprinkling 2 liters of domesticated water from the top of container. It is stored in home at room temperature.



Figure 2 Produced Vermiwash liquid



Figure 3 Stored vermiwah at room temperature

2. Uses of Vermiwash

1. Vermiwash contains macro nutrients, micro nutrients, harmonies which acts as growth regulator for plants.
2. It is helpful for in reaching soil quality with mixing microbes.
3. It is used root process before transplanting which causes root growth after transplanting.
4. It is a pure biofertilizer and eco-friendly process which avoids harmful effect on soil properties.
5. Vermiwash liquid is directly used as a spray and soil application to the growing seedlings.
6. It is cheap and affordable hormonal treatment for small and marginal formers as compared to chemical hormonal.
7. the effect of vermiwash is a progressive on the parameters like length of shoot and root, number of leaves, number of branches and breadth.
8. The vermiwash 10% and cow urine 10% is used as pest and disease control which is eco-friendly. It minimises harmful effects of chemical pesticides and insecticides.

3. Analysis

The vermiwash was analysed on the basis of various parameters. The analysis was carried out to determine the deferent macro and micro nutrients. The physiochemical and microbiological characteristics of vermiwash is presented in the following table.

Sr.	Parameter	Unit	Value
1.	pH	-	08.17
2.	Electric Conductivity	mmhos/m	05.70
3.	Moisture	%	99.31
4.	Ash	%	00.49
5.	Organic Carbon	%	00.12
6.	Organic Matter	%	00.20
7.	C/N Ratio	-	10.48
	Macronutrients		
8.	Nitrogen	ppm	110.70
9.	Phosphorous (as P ₂ O ₅)	ppm	51.48
10.	Potassium (as K ₂ O)	ppm	1192.81

11.	Calcium	ppm	404.93
12.	Magnesium	ppm	200.39
13.	Sulphur	ppm	323.96
	Micronutrients		
14.	Iron	ppm	04.10
15.	Manganese	ppm	02.76
16.	Zinc	ppm	00.36
17.	Copper	ppm	00.13
18.	Boron	ppm	00.52
19.	Molybdenum	ppm	<0.10

Compiled by Author (January, 2022)

4. Conclusion

The vermiwash contains various macro and micro nutrients those are very essential for practicing organic farming. The analysis of six macro nutrients reveals that Potassium has greater than the other macro nutrients and followed by Calcium. The share of Sulphur and Magnesium is significant and the existence of Nitrogen and Phosphorous is very low. Iron and Manganese micro nutrients are found high quantity whereas Boron and Zinc at significant level. The proportion of copper is very less.

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