

## IMPROVEMENT OF CROP PRODUCTION: BY THE USE OF VERMIWASH

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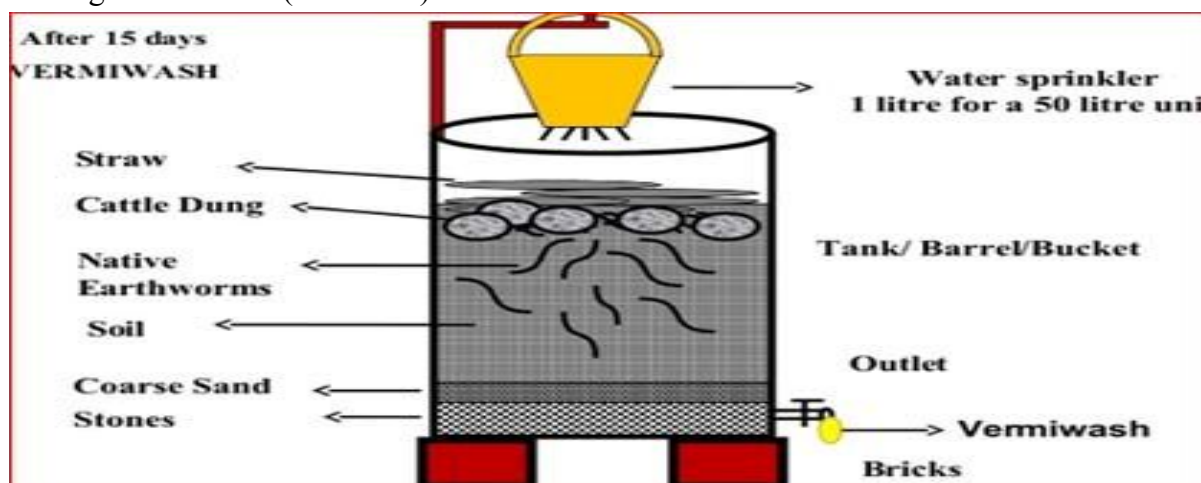
### Abstract

Vermiwash is a liquid organic fertilizer it is by-products or essential parts of vermiculture/vermicompost in the form of drainage that is collected after the channel of water through a column of worm action of vermiculture and vermicomposting and is very beneficial as a foliar spray. Rich in soluble plant nutrients, some enzymes, organic acids, growth hormones, different amino acids, many useful micro-organisms and mucus of earthworms are present.

### Introduction

Composting is one of the viable means for bio-degradable solid wastes converting into beneficial organic soil improvements for supporting environment-friendly agricultural, the process of involvement of earthworms in preparing enriched compost is called vermicomposting. Earthworm acts physically an aerator, crusher, and mixer, chemically a degrader, and biologically a stimulator in the process of decomposition. Vermiwash is a liquid organic fertilizer but also as a mild biocide (pale yellow colored fluid) it is a by-products or essential parts of vermiculture/vermicompost in the form of drainage that is collected after the channel of water through a column of worm action of vermiculture and vermicomposting and is very beneficial as a foliar spray. Which are simply available to plants (Chanu, L. J. *et al.* 2018 and Das, S. K. *et al.* 2014). It is a group of excretory products and mucus secretion of earthworms is called worm cast or worm manure popularly called black gold. Casts are reaching in micronutrients, growth-promoting substances, and beneficial soil microflora. Commercial vermin-culturists have started to promote a product called vermiwash (have the soluble plant nutrients such as N, P, K, Ca apart from some enzymes cocktails of proteases, amylases, urease and phosphatase, organic acids, growth hormones cytokinins, auxin, different amino acids, many useful micro-organisms such as heterotrophic fungi, actinomycetes, bacteria including nitrogen-fixing bacteria like *Rhizobium* spp., *Agrobacterium* spp., *Azotobacter* spp., phosphate solubilizes and mucus of earthworms are

present) in organic farming systems. Principles of vermiwash preparation earthworm worked soils have burrows; Bacteria richly inhabit these burrows, also called as the drilospheres (www.vknardep.org). There is no special device required to collect the vermiwash except by allowing water to percolate through the tunnels made by the earthworms on the coconut leaf - cow dung substrate kept in a plastic barrel. Water is allowed to fall drop by drop from a pot hung above the barrel into the vermicomposting system. During the period of normal management, water is sprayed regularly to maintain adequate moisture and excess water is drained which contains some essential plant nutrients. When used good quality vermicompost for the production of vermiwash by earthworms then the quality of is also good quality by-product of vermiculture/ vermicompost (vermiwash) is obtain (Sreenivas 2000). Application methods of vermiwash: Vermiwash alone or mixed with cow urine is also an excellent growth promoter. Before the application of vermiwash on any plants dilute with water (10 percent) and saturate the soil to prevent soil-borne diseases. At the time of transplanting, seedlings are dipped in vermiwash solution for about one hour and thirty minutes after diluting it with water (five times).



Source: <https://blog.ucbmsh.org/department/vermiwash-liquid-fertilizer>

vermiwash alone or mixed with cow urine and dilute it with water to use it as a pesticide and foliar spray (One liter vermiwash + one liter cow urine+ eight liters water) or dilute with 10 % cow urine or garlic extract or neem extract to use it as a natural biopesticide. When vermiwash liquid added to compost pits to accelerate the degradation process. Liquid is diluted 5 to 10 % hinders the mycelial growth of pathogenic fungi, initiate flowering and long-lasting inflorescence also use as rhizospheric liquid fertilizer, act as a tonic of plants and to induce the rate of photosynthesis in crops/plants(Das, S. K. *et al.* 2014).

### Conclusion

An inherent property of vermicompost or vermiculture is vermiwash. which acts not only as a liquid organic fertilizer but also as a mild biocide, rhizospheric liquid fertilizer, natural biopesticide, excellent growth promoter, worm cast or worm manure and popularly called as black gold they are effectively used in organic agriculture for both soil health and disease management for sustainable crop production, to prevent environment and human health.

## Reference

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