TRENDS IN AGRICULTURE SCIENCE
Popular Article
Vol.3 Issue 08 August 2024, Page: 2105-2111

Vermi-wash

Aniket verma, Dr.Swati mehta, Devika parida
Lovely professional university, Phagwara Jalandhar
(Assistant professor) Lovely professional university, Phagwara Jalandhar.
Lovely professional university, Phagwara Jalandhar
DOI:10.5281/TrendsinAgri.13621935

Abstract

Vermiwash is a nutrient-rich liquid fertilizer produced from the dung of earthworms. It is a liquid extract obtained from the vermicomposting process, which uses earthworms to break down organic waste materials. The present study focuses on the potential use of vermiwash as a sustainable solution for organic farming practices. Various research sources have highlighted the benefits of vermiwash in different agricultural applications. It is a sustainable and eco-friendly alternative to chemical fertilizers, packed with essential nutrients like nitrogen, phosphorus, potassium, and micronutrients. This organic fertilizer is highly beneficial for plant growth and soil health, promoting better root development, increased water retention, and improved nutrient absorption. Vermiwash also helps in controlling pests and diseases, making it a valuable addition to any gardening or farming operation. With its numerous benefits and easy production process, vermiwash is becoming increasingly popular among environmentally

Keywords: Vermiwash, Organic farming, UGM (Undecomposed green material), Sustainable agriculture, FYM.

Introduction

Vermi-wash, a nutrient-rich liquid obtained from vermicomposting, has gained significant attention in recent- years due to its effectiveness as a natural foliar spray and soil conditioner. It is derived from the process of passing water through a vermicompost bed, where it extracts various nutrients and beneficial microorganisms. The use of vermin wash in agriculture has shown promising results in enhancing plant growth, improving soil health, and suppressing harmful plant pathogens. In addition to its nutrient content, Vermi-wash also acts as a bio-pesticide, providing natural protection against pests and diseases. The Vermi-wash produced from vermicomposting is a highly effective and sustainable solution for enhancing crop yields and promoting overall soil health, making it a valuable tool for sustainable crop production (Mukhi et al., 2022). Using Vermi-wash as a foliar spray or soil application has been shown to significantly improve the growth, yield, and quality of crops. Furthermore, research has shown that the composition of the raw materials used in vermicomposting can have a significant impact on the quality of Vermi-wash produced (Kumar et al., 2022).

Published: 30 August 2024
ISSN: 2583-7850

Vermi-wash Definition

Vermi-wash is a liquid fertilizer that is produced from the process of vermicomposting, where earthworms break down organic matter into nutrient-rich compost. Vermi-wash is a residual liquid that contains the excretory and secretory products of earthworms, along with micronutrients from the soil that are collected in water that has passed through worm-worked soil burrows (Ansari et al., 2019). Vermi-wash is an organic liquid fertilizer that is derived from vermicomposting, a process involving earthworms breaking down organic matter into nutrient-rich compost.

Method of Vermiwash:

1. Vermi-wash, also known as bio-wash, is a liquid extract that is obtained from Vermi-composts (Subramaniam et al., 2010). It is rich in nutrients and beneficial microorganisms, making it an effective organic fertilizer and plant growth promoter. There are different methods of obtaining Vermi-wash from vermicompost. Some common methods of obtaining Vermi-wash include:
2. Water leaching method: In this method, water is poured over the vermicompost and allowed to pass through, collecting the liquid at the bottom.
3. Decanting method: In this method, the vermicompost is mixed with water and left to settle. The liquid portion is then decanted or poured off, leaving behind the solid vermicompost.
4. Filtration method: In this method, the vermicompost is placed in a filtering apparatus or cloth bag and water is poured over it to extract the liquid portion, which is the Vermi-wash.
5. Drip irrigation method: The Vermi-wash is diluted with water and applied directly to the soil through a drip irrigation system. These methods ensure that the beneficial components of the vermicompost are extracted into the Vermi-wash, making it a potent organic fertilizer for plants (Biabani & Omara, 2020).

Published: 30 August 2024
ISSN: 2583-7850

Fig.1: Earthworms such as Eisenia Foetida

- 50g worms=approx40 worms.
- 100g worms= approx.80 worms.

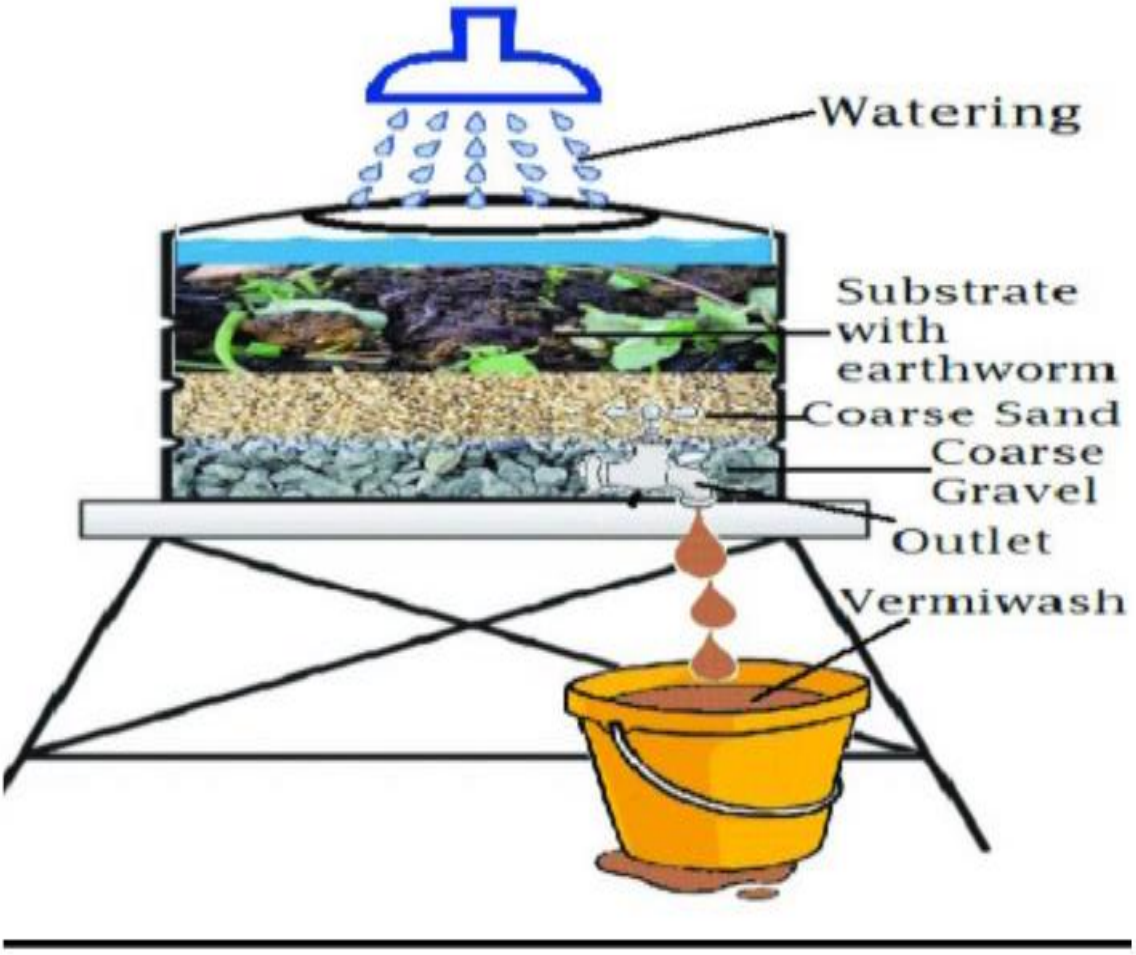

Fig.2: Process of vermiwash

Vermi-wash preparation process:

Published: 30 August 2024
ISSN: 2583-7850

1. Vermi-wash is a valuable organic liquid fertilizer that can be easily prepared using earthworms (Rajasooriya & Karunarathna, 2020). To prepare Vermi-wash, follow these steps:
2. Collect a sufficient number of earthworms, such as Eisenia foetida.
3. Create a Vermi-wash bed by filling a container or pit with compost or organic matter, such as vegetable scraps, shredded paper, and dried leaves.
4. Place the earthworms and soil in the vermiwash bed, ensuring that they have enough space to move and access the organic matter.
5. Cover the vermiwash bed with a layer of damp straw or mulch to maintain moisture levels.
6. Allow the earthworms to work their magic for about 4-6 weeks, during which time they will consume the organic matter and produce verminwash.

The Benefits of Vermicompost and Vermi-wash in Agriculture

The use of Vermi-wash in agriculture has shown numerous benefits for crop growth and soil health (Mukhi et al., 2022).

These benefits include improved root growth parameters, enhanced soil physicochemical and microbiological properties, and increased yields. By utilizing Vermi-wash as a foliar spray or directly applying it at the roots of plants, farmers can provide essential nutrients, such as nitrogen, potassium, magnesium, zinc, calcium, iron, and copper, to the plants. This can lead to increased plant growth, improved crop quality, and higher yields. Additionally, Vermi-wash contains amino acids, vitamins, and growth hormones like auxins and cytokines, further promoting plant growth and development. Overall, the use of Vermi-wash in agriculture offers a natural and sustainable solution for improving crop growth, enhancing soil fertility, and reducing reliance on synthetic chemicals.

Vermi-wash Disadvantages

- Vermiwash, a liquid fertilizer produced using earthworms, has numerous benefits for plant growth and soil fertility (Rajasooriya & Karunarathna, 2020). However, there are also some disadvantages associated with the use of vermiwash.
- One disadvantage of vermiwash is that its effectiveness may vary depending on the quality of the substrate used to produce it. The quality of the vermiwash can be affected by the type and condition of the organic waste used for vermicomposting.
- Another disadvantage of vermiwash is its limited shelf life. Once produced, vermiwash has a relatively short period of effectiveness before its nutrient content starts to degrade. Additionally, the production of vermiwash can be time-consuming and labor-intensive.
- Another disadvantage of vermiwash is the possibility of contamination. If the organic waste used in vermicomposting contains contaminants such as heavy metals or pesticides,

Published: 30 August 2024
ISSN: 2583-7850

these contaminants can potentially accumulate in the vermiwash and pose a risk to plants and the environment when applied.

- Furthermore, the application of vermiwash may not provide immediate results compared to synthetic fertilizers. It may take longer for the nutrients in vermiwash to become available to plants, as they need to be broken down and released by soil microorganisms. Overall, the use of vermi-wash in agriculture offers a natural and sustainable approach to nutrient management and plant protection. By utilizing vermi-wash, farmers can reduce their reliance on synthetic
- Fertilizers and chemical pesticides, therefore minimizing the negative impact on the environment.

Use the following sources if appropriate:

Source 1: Vermi-wash collected by water through a column of worm activation is generally used as a foliar spray or directly poured at the plant's roots in the soil (Rao et al., 2022).

Source 2: The combined use of Vermi-wash and vermicompost leads to the highest-yielding plants with improved root growth parameters and enhanced physicochemical, biological, and microbiological properties of the soil (Awadhpersad et al., 2021).

Conclusion

In conclusion, vermiwash is an effective and sustainable solution for enhancing crop growth and soil health in agriculture (Mukhi et al., 2022).It offers a natural and environmentally friendly alternative to synthetic fertilizers and pesticides, reducing the negative impact on the ecosystem. Overall, the use of vermiwash in agriculture has shown promising results in enhancing plant growth, improving soil health, and suppressing harmful plant pathogens (Awadhpersad et al., 2021). Using Vermi-wash in agriculture can promote sustainable plant production by enhancing crop yields, improving soil health, and providing natural protection against pests and diseases. The use of Vermi-wash in agriculture has proven to be an effective and sustainable method for improving crop growth and soil health. By incorporating vermiwash into agricultural practices, farmers can effectively enhance the nutrient content of plants and improve overall soil fertility. Additionally, It has been found to promote root growth and enhance the physical, chemical, and biological properties of the soil.

References

Canellas, L.P., Olivares, F.L. Physiological responses to humic substances as plant growth promoter. Chem. Biol. Technol. Agric. 1, 3 (2014). https://doi.org/10.1186/2196-5641-1-3

Mukhi, S. K., Nayak, M. P., Sardar, S. S., & Bar, N. (2022). Vermiwash: a potential tool for crop production in organic agriculture. International Journal of Plant &Amp; Soil Science, 1650-1656. https://doi.org/10.9734/ijpss/2022/v34i232587

Published: 30 August 2024
ISSN: 2583-7850

Rajasooriya, A. P. S. and Karunarathna, B. (2020). Application of vermiwash on growth and yield of green gram (vigna radiate) in sandy regosol. AGRIEAST: Journal of Agricultural Sciences, 14(2), 31. https://doi.org/10.4038/agrieast.v14i2.95

Gudeta, K., Julka, J. M., Kumar, A., Bhagat, A., & Kumari, A. (2021). Vermiwash: an agent of disease and pest control in soil, a review. Heliyon, 7(3), e06434. https://doi.org/10.1016/j.heliyon.2021.e06434

Ansari, A. A., Raghubeer, H., & Jaikishun, S. (2019). The effect of vermiwash and vermicompost produced from leaves of azadirachta indica and citrus aurantifolia on the growth parameters of celery through hydroponic system. Tropical Drylands, 3(1), 11-16. https://doi.org/10.13057/tropdrylands/t030102

Subramaniam, G., Iyer, G. K. K., Gottumukkala, A., Humayun, P., Sree, V. M., & Deepthi,

K. (2010). Efficacy of jatropha, annona and parthenium biowash on sclerotium rolfsii, fusarium oxysporum f. sp. ciceri and macrophomina phaseolina, pathogens of chickpea and sorghum. African Journal of Biotechnology, 9(47), 8048-8057. https://doi.org/10.5897/ajb10.1276

Biabani, A. and Omara, M. O. (2020). Effect of different vermiwash sources on germination and seedling growth of fenugreek (trigonella foenum-graecum l.). Agricultural Science Digest

A Research Journal, (OF) https://doi.org/10.18805/ag.d-153

Mukhi, S. K., Nayak, M. P., Sardar, S. S., & Bar, N. (2022). Vermiwash: a potential tool for crop production in organic agriculture. International Journal of Plant &Amp; Soil Science, 1650-1656. https://doi.org/10.9734/ijpss/2022/v34i232587

Published: 30 August 2024
ISSN: 2583-7850