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RESEARCH ARTICLE

Impact analysis and confirmative study of physico-chemical, nutritional and biochemical parameters of vermiwash produced from different leaf litters by using two earthworm species

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ABSTRACT : Vermiwash is potential application in sustainable development of agriculture biotechnology. This experiment was carried out to asses the physico-chemical, nutritional and biochemical status of the vermiwash obtained using the popular composting earthworm species, *Eudrillus eugeniae* (Kinb.) (Eudrilidae: Haplotaxida) and *Lampito mauritii* from three different leaf litters namely, mango (*Mangifera indica*), guava (*Psidium guajava*) and sapota (*Achrus sapota*). The results showed substantial increase in the nutrient quality of the vermiwash produced with time in all of three cases. However, the vermiwash produced from guava leaf litter showed more content of electrical conductivity, magnesium, calcium, nitrite, phosphorus, carbohydrate, protein, lipid and amino acid compared with the vermiwash produced from sapota and mango leaf litter by using both the earthworm species, *Eudrillus eugeniae* and *Lampito mauritii*. In the present experiment control attained the values of most of the parameters of the standard on 60th day. Whereas, the vermiwash produced by two composting earthworm species and leaf litters from three different plants in the experimental sets attained the values of the parameters of the standard at an early days. It reveals that the quality of vermiwash can be achieved as in the standard even within 45 days with the use of these earthworms.

Key words **:** Vermiwash, *Eudrillus eugeniae*, *Lampito mauritii*, Nutrient analysis, Mango, Guava, Sapota

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INTRODUCTION

Earthworms are cold blooded animals and live in a place where food, moisture, oxygen and favourable temperature are available. Approximately 3600 kinds of earthworms are found in the world and are represented from every soil type of the globe (Verma and Prasad, 2005). It feeds on dead organic matter present in soil that is ingested together and the later, along with the undigested food is finally egested in the form of worm castings that are rich in nitrate, available phosphorus, potassium, calcium and magnesium (Subbarao, 2002). It assimilates nutrients and energy from a wide range of ingested materials with variable efficiency, depending on the species and the nature of the ingested materials (Curry and Olaf, 2007). Vermiwash is a wonderful gift from the "farmers friends" to boost up plant growth and yield so safely, economically and eco-friendly. It is the fluid collected by pouring water slowly through vermicompost or by washing the compost with water. It is a very nutritious input to plants since it contains a lot of minerals, micronutrients, hormones, vitamins, antibiotics, etc. in a form which is readily absorbable by plants. It is also a repository of different microorganisms which can fix atmospheric nitrogen and also increase the availability of phosphorus from the soil. It can either be applied as a foliar spray over the plants or drenched in soil. Plants treated with vermiwash are green much more resistant to pests and diseases and also more vigorous in growth (Jayashree, 2006). In the light of information presented above, the present study was carried out to find out the physico-chemical, nutritional and biochemical availability in the vermiwash produced by two different composting earthworms namely, *Eudrillus eugeniae* and *Lampito mauritii* when provided with the leaf litter from mango, guava and sapota trees.