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AN INVESTIGATION ON THE VERMICOMPOSTING OF ELEPHANT DUNG : A NEW SCENARIO

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ABSTRACT :

The study comprises vermicomposting from elephant dung which is found to have highly nutritive value in the form of organic manure. Keeping this view in mind, the vermicompost was made from elephant dung with the help of earthworm species Eisenia foetida to get remarkable success. The Nitrogen and Carbon values of vermicompost of elephant dung were tested in laboratory and compared with cow dung vermicompost which was taken as a standard. Results show that elephant dung vermicompost has high Nitrogen content (1.78%) and organic carbon (18.45%) as compared to cow dung vermicompost which was 1.50% and 15.75% respectively. It is noticeable that elephant dung has been used first time to obtain its vermicompost in the selected area.

Key words: Eisenia foetida, Elephant dung, Manure, Vermicomposting.

I. INTRODUCTION:

Indian soil is in danger because of deforestation, expanding cities, unsustainable land use and management practices, pollution, overgrazing and change of climate. Organic farming systems with the aid of various nutrients of biological origin such as composts are thought to be the answer for the food safety and farm security in future. All composts are produced from some waste materials of society which is converted into a 'valuable resource'. It is a renewable resource and can be readily available to mankind in future, 'Vermiculture refers to biomass production of earthworms under semi natural conditions using different types of degradable organic solid waste as the feed for earthworms. Elephant dung is found to be a very good quality of fertilizer from the ancient time. Keeping this in mind, through this investigation, research is aiming to find out most effective vermicomposts with the help of cow dung and elephant dung and estimate the nutritional value of elephant dung vermicompost in comparison with cow dung vermicompost which was taken as a standard. It is a sign of attention that cow dung has been previously used for vermicomposting but elephant dung is being used for the first time as a raw material for vermicomposting. To solve the problem of pollution and utilizing of waste, the researcher is aiming to take a step in the field of waste management and organic farming and trying for the production of highly fertile soil to serve for the motherland.

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II. OBJECTIVE

2.1 To prepare vermicompost from cow dung and elephant dung.

2.2 To compare the nutritive values of Nitrogen percentage and organic carbon percentage in cow dung and elephant dung vermicomposts.

III. REVIEW OF LITERATURE

- Charles Darwin conducted a comprehensive study of burrowing earthworms. In 1881, he published his last and final book "The formation of vegetable mould, through the action of worms, with observation on their habits" which reported in detail, how these organisms feed and convert organic materials, mainly leaves, to castings which favor plant growth.
- Laird *et al* (1981) studied earthworm structure, functioning and the effects of environmental factors on earthworm performance. An attempt was made to portray the benefits and limitations of earthworms as waste disposers, pollution indicators and as a source of nutrients for animals or the human species.
- Trautmann and Krasny (1997) studied that composting is a technique to recycle waste into products that enhance plant growth.
- Gajalakshmi *et al (2001)* studied that four species of detrivorous earthworms were used for their ability to vermicompost the paper waste blended with cow dung in 6:1 ratio, *Lampito mauritii* (Kinberg) and *Eudrilus eugeniae* (Kinberg) were the most effective of the four species employed. According to them feasibility of vermicomposting as a viable process for the gainful utilization of paper waste is an environmentally clean manner.
- According to Plaza *et al* (2008) vermicomposting was able to promote organic matter humification in both cattle manure alone and in the mixture of olive pomace and cattle manure thus enhancing the quality of these materials as soil organic amendments.
- According to Am-Euras (2009), Vermicomposting is scientifically proving as 'miracle growth promoter and also plant protector' from pests and diseases. Vermicompost retains nutrients for long time while the conventional compost fails to deliver the required amount of macro and micronutrients including the vital NKP to plants in shorter time, the vermicompost does.
- According to Sinha *et al* (2010) Earthworm and vermicompost can promote growth from 50 to 100% over conventional composts and 30 to 40% over chemical fertilizers besides protecting the soil and the much economic cost (at least 50-75% less) as compared to the costly chemical fertilizers.
- According to Nattudurai *et al* (2012) coirpith and cowdung natural sources were used to produce vermicompost which showed enhanced growth promoting effects in the crop *Cyamopsis tetragonoloba*.
- Meena *et al* (2013) studied in detail and highlighted the technology of vermicomposting at Krishi Vigyan Kendra, Borkhera, Kota.

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IV. METHODOLOGY:

First of all 1*1*1 meter beds or compost tanks were made according to number of two different faecal materials. For this purpose, cow dung and elephant dung were collected and experiments were set up in the beds. Then approximately 1500 to 2000 earthworms (*Eisenia foetida*) were released in each bed.

After three months when vermicomposts were made, they were tested in laboratory to estimate nutritive elements in it.

Table 1:- Percentage of Nitrogen and Organic Carbon comparing Cow dung with Elephant dung.

S.No.	Nitrogen %	Organic Carbon %
Cow Dung	1.50	15.75
Elephant Dung	1.78	18.45

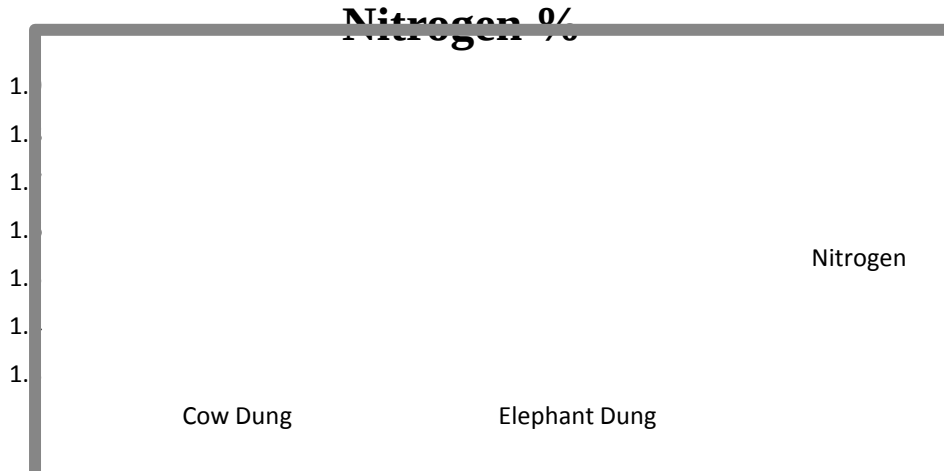

Fig 1:- Percentage of Nitrogen component comparing Elephant dung vermicompost with Cow dung vermicompost.

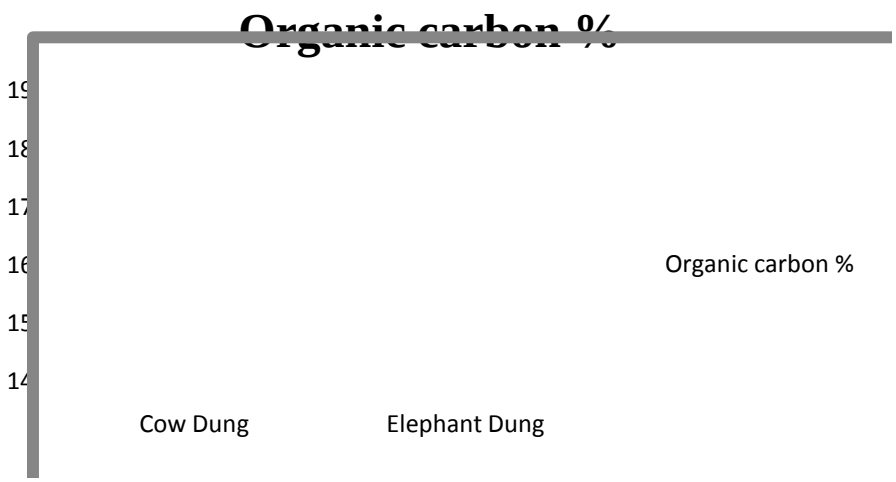

Fig 2:- Percentage of organic carbon comparing Elephant dung vermicompost with Cow dung vermicompost

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V. RESULT AND CONCLUSION:

Results showed that elephant dung is having more amount i.e. 0.**30%** of Nitrogen and organic carbon **2.70%** as compared to cow dung providing a new ray in organic farming in the form of remarkable success. We can say that it can also be used to make the soil fertile with different combinations of other organic wastes. For this, a further study is required.

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