

VERMIWASH-A LIQUID BIOFERTILIZER

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Vermiwash is a transparent pale yellow liquid biofertilizer. It is a mixture of excretory products and mucous secretion of earthworms and organic micronutrients of soil, which may be promoted as a potent fertilizer for better growth and yield of plants.

It is now widely accepted that inorganic fertilizer are degrading the productivity of soil worldover. Imprudent use of chemical fertilizer is a prime factor to cause deterioration of soil health (Ismail, 1995). To get rid of the dangerous effects of modernized agriculture, and economically productive and lay lasting farming system needs to be developed which can possible by using liquid biofertilizer *i.e.* vermiwash, a product of earthworm activity. Though the contribution of earthworm to soil porosity and fertility is commonly known. Yet soil management through such creature is a prospective object for modern research.

In order to prepare the liquid biofertilizer to above vermiwash unit were setup. Each unit consists of two different sized pitchers placed one above the other. The small sized pitcher was put over the large one. A hole of 1 cm diameter was made in the bottom of small pitcher and a piece of cotton was fixed therein for slow, continuous and downwards flow of water into the lower large pitcher. Six hole of 0.5 cm diameter were made in the bottom of large pitcher wherein cotton was fixed.

Brick pieces and coarse sand was placed in the larger pitcher and nearly four hundred earthworms (*Lampito mauritii*, *Eisenia foetida*) were introduced which were covered by the hay. The lukewarm water was filled in the small pitcher for 4-5 hrs. Finally the vermiwash released from unit was collected.

Brick pieces and loam soil were put in the container of ½ sq. m. dimension (vermibin). The decomposed cow dung along with the leaf litter were spread on the soil and about 500 worms (*L. mauritii*) were inoculated into it. Thereafter, the contents were covered with hay and gunnybags. Watering and mointoring of the bins was done for forty-five days. Finally, vermicompost was formed which was soft, spongy, sweet smelled, dark brown and sieved (through 3 mm). It was packed in polythelene bags. Chemical analysis of water (control), vermiwash and vermicompost was carried out by standard methods.

The chemical composition of vermiwash, water (control) and vermicompost depicts in the Table I.

The NPK value of the vermicompost is always lower than that of any standard chemical fertilizer (Tomlin, 1983) but has tremendous potential for ensuring a good yield Robinson *et al.*, 1992). The nutrients of vermicompost are taken up through the roots whereas foliar spray of vermiwash make the nutrients directly available to plants. Hence, the application of vermicompost alongwith foliar spray of vermiwash is likely to provide improved nutrition to plants.

Table I : Chemical analysis of vermiwash.

Substrate	Conductivity (mho/cm)	pH	P (%)	K (%)	N (%)	Zn (ppm)	Cu (ppm)	Fe (ppm)	Mg (ppm)
<i>Lampito mauritii</i>									
Kitchen waste	1.45	7.6	0.70	0.65	0.57	16.64	11.63	20.86	170
Cow dung	1.18	7.5	0.70	0.72	0.62	16.93	11.47	19.98	169
Buffalo dung	1.19	7.5	0.72	0.68	0.63	15.89	12.12	21.73	166
Leaf litter	1.39	7.6	0.58	0.71	0.67	16.56	10.35	18.86	171
Oil cake	1.59	7.3	0.46	0.68	0.56	15.92	9.95	20.03	168
Agricultural Waste	1.21	7.3	0.54	0.64	0.58	16.06	10.66	20.69	166
Kitchen waste + cow dung	1.35	7.6	0.48	0.67	0.61	17.09	9.10	22.02	170
Buffalo dung + agril. waste	1.41	7.6	0.58	0.72	0.63	17.15	10.89	23.86	170
Leaf litter + oil cake	1.13	7.8	0.62	0.72	0.69	17.32	11.41	20.68	166
Kitchen waste + cow dung + oil cake	1.14	7.5	0.54	0.64	0.59	16.24	11.11	19.08	167
<i>Eisenia foetida</i>									
Kitchen waste	1.60	7.8	0.76	0.68	0.74	19.44	12.38	25.80	175
Cow dung	1.26	7.6	0.75	0.74	0.83	19.03	13.91	25.74	176
Buffalo dung	1.78	7.8	0.79	0.78	0.79	20.47	13.75	24.05	170
Leaf litter	1.76	7.7	0.71	0.80	0.84	19.55	12.40	21.98	178
Oil cake	1.64	7.7	0.60	0.84	0.73	18.59	12.44	26.73	174
Agricultural Waste	1.60	7.8	0.64	0.75	0.75	18.18	13.71	23.38	175
Kitchen waste + cow dung	1.64	7.7	0.70	0.74	0.78	19.81	11.95	26.35	174
Buffalo dung + agril. waste	1.78	7.7	0.76	0.77	0.83	23.02	12.62	28.29	177
Leaf litter + oil cake	1.38	7.8	0.72	0.75	0.85	21.30	13.20	24.42	169
Kitchen waste + cow dung + oil cake	1.18	7.7	0.70	0.72	0.79	21.14	12.25	24.48	175

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