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E: ISSN NO.: 2455-0817 *Remarking An Analisation*

Vermitechonological Potential of Amynthas Morrisi (Beddard) on Leaf Litter and Vegetable Waste during Summer and Winter in Jammu.

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Abstract

In controlled lab conditions an investigation was carried out on vermicompost vis-à-vis vermiculture efficacy of Amynthas morrisi on vegetable waste and leaf litter during summer and winter periods. The vermicomposting process was observed to be influenced by seasonal variation i.e. during winter season only five harvesting were carried out where as in summer season six harvesting were carried out .Summer was observed to be more productive than winter

Key Words: Earthworm, vermicompost, vermiculture, Organic waste summer and winter.

Introduction

A major fraction (51%). of urban municipal solid waste in India is organic matter and 17.5 % of the municipal solid waste are recyclables and the rest 31% is inert waste. Generation of municipal solid waste has an obvious relation to the population of the area or city, due to which bigger cities generate more waste. (Waste-to-Energy Research and Technology Council 2012). Vermitechnology is the use of surface and subsurface local varieties of earthworm in composting and management of soil (Ismail, 2005). It has been recognized that the work of earthworms is of tremendous agricultural importance. Earthworms along with other animals have played an important role in regulating soil processes, maintaining soil fertility and in bringing about nutrient cycling (Ismail, 1997). Earthworms have a critical influence on soil structure, forming aggregates and improving the physical conditions for plant growth and nutrient uptake. They also improve soil fertility by accelerating decomposition of plant litter and organic matter and, consequently, releasing nutrients in the form that are available for uptake by plants. Vermitechnology is the process of vermicomposting resulting in the production of organic manure and aiding in waste management and the other is its application in the conservation processes of land or reclamation of waste lands (especially organic farming) (Abbasi and Ramasamy, 2001).In present studies vermicompost vis-à-vis vermiculture efficacy of Amynthas morrisi on vegetable waste and leaf litter during. Summer and winter periods has been assessed during two years study period

Material Methods

Collection of earthworms: Epigeic species of earthworms (Amynthas morrisi (Beddard as has been identified by Dr JM Julka Former Jt Director &Emeritus Scientist Zoological Survey of India) has been collected from moist, well aerated, loose soils rich with organic matter, at a depth of 3 to 10 cm from soil surface in the urban and sub-urban areas of Jammu District . Preparation of Vermibeds: Vermibeds were prepared in wooden boxes of size 40cm x 30 cm x 26 cm using paddy straw, sand and garden soil and 40g of earthworms in each vermibed. Processing of bio waste: 240 gm of Shredded leaf litter and 240 gm vegetable waste was separetely transferred after soaking in 24hrs. into vermibeds slowly in a period of 2-3 days.Replicas of three sets of vermibeds for each type of waste were prepared Collection of vermicompost: After the completion of vermicomposting process, the loose layer of soil along with decomposed organic material (bio waste) from each type of vermibed was collected. Calculation of earthworm biomass: After the complete harvesting of vermicompost the earthworms from each vermibed will be separated out and weighed to find out increase in earthworm's biomass per vermibed i.e. to evaluate the vermiculture potential of each species

Observation and Discusion

Amynthas morrisi generated on an average 74.56% and 71.17% vermicompost on vegetable waste in summer and winter respectively and on an average 21.97%and 16.25% vermicompost on leaf litter during summer and winter respectively. On the other hand vermiculture potential of Amynthas morrisi exhibited average increase of 39.88% and 25.56% on vegetable waste and 13.74% of and 8.83% increase on leaf litter in summer and winter respectively (Fig.1) . The higher vermicompost production during summer as compared to that in winter season may be due to decreased reproductive and other metabolic activities of the earthworms in winter this supports the observation made by Deka et al., 2011.

From the present investigation it was concluded that vermitechonological potential of (Amynthas morrisi) varied with type of substrate. The present investigation revealed that vermicompost potential on vegetable waste was more as compared with that on leaf litter in summer as well winter. .

Suthar (2007), Meena and Ajay (2011) also reported that the vermicomposting potential depends upon the chemical nature of substrate. Vermiculture production of Amynthas morrisi on vegetable waste was observed to be more than that on Leaf litter... Suthar (2007)

Also reported that type of substrate effects the vermiculture potential of Perionyx sansibaricus Bioconversion of Vegetable waste and leaf litter is possible through Vermitechnology employing indigenous earthworm species Amynthas morrisi. Overall study concluded that earthworm biomass gain, of Amynthas morrisi as well as vermicompost production was higher in summer than winter. And that too on vegetable waste So the ideal substrate and season for vermitechnological potential of Amynthas morrisi. is vegetable waste and summer respectively.

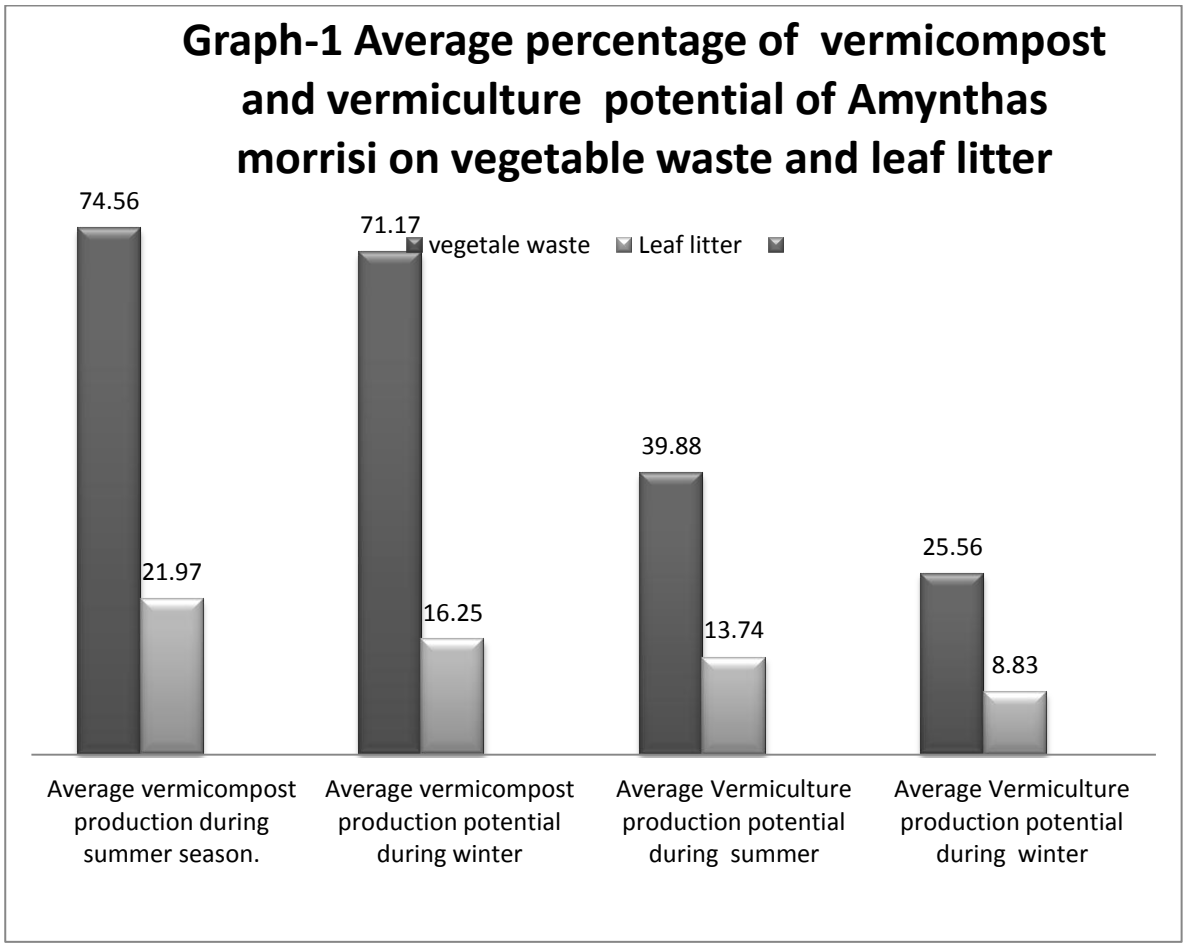

Table.1
Vermitechonological potential of *Amynthas morrisi* on vegetable waste and leaf litter during of summer period

No. of Harvesting	Average vermicompost production potential per Vermibeds during summer study period on				Average Vermiculture production potential per Vermibeds during summer study period on			
	Vegetable waste		Leaf litter		Vegetable waste		Leaf litter	
	Vermicompost production		Vermicompost production		Vermiculture production		Vermiculture production	
	Quantity (g)	%age	Quantity (g)	%age	Quantity (g)	%age	Quantity (g)	%age
1st Harvesting	174.27±2.86	72.61%	46.84±1.98	19.52%	10.61±0.46	25.68 %	4.22±1.55	10.05 %
2nd Harvesting	177.04±1.20	73.76%	51.12±2.49	21.03%	11.97±0.75	29.93 %	4.66±0.64	11.64 %
3rd Harvesting	178.43±0.77	74.34%	53.37±1.99	22.23%	15.07±0.84	37.51 %	5.54±0.92	13.84 %
4th Harvesting	184.76±3.00	76.98%	58.35±1.611	24.31%	18.41±0.64	46.03 %	5.82±1.14	14.55 %
5th Harvesting	187.64±1.54	78.18	62.66±0.28	26.10%	20.91±0.80	52.28 %	6.63±1.07	16.58 %
6th Harvesting	171.68±1.83	71.53%	44.11±0.24	18.38%	19.15±0.97	47.88 %	6.14±0.98	15.36 %
Average harvesting	178.97±6.13	74.56%	52.74±6.95	21.97%	16.01±4.14	39.88 %	5.50±0.90	13.74 %

Table.2
Vermitechonological potential of *Amynthas morrisi* on vegetable waste and leaf litter during May-Oct of winter period

No. of Harvesting	Average vermicompost production potential per Vermibeds during winter study period on				Average Vermiculture production potential per Vermibeds during winter study period on			
	Vegetable waste		Leaf litter		Vegetable waste		Leaf litter	
	Vermicompost production		Vermicompost production		Vermiculture production		Vermiculture production	
	Quantity (g)	%age	Quantity (g)	%age	Quantity (g)	%age	Quantity (g)	%age
1st Harvesting	172.65±2.31	71.95%	37.37±1.85	15.57%	14.97±1.22	37.43%	4.37±0.37	10.93%
2nd Harvesting	168.25±1.30	70.10%	34.58±0.54	14.41%	12.87±0.48	32.08%	3.71±0.66	9.28%
3rd Harvesting	169.18±0.11	70.49%	37.74±1.11	15.72%	6.26±0.54	15.64%	2.44±0.37	6.11%
4th Harvesting	171.09±0.88	71.29%	41.15±1.16	17.15%	6.98±0.78	17.44%	3.37±0.30	8.43%
5th Harvesting	172.85±0.81	72.02%	44.23±0.07	18.43%	10.09±0.79	25.22%	3.77±0.84	9.43%
Average harvesting	170.78±2.04	71.17%	39.01±3.73	16.25%	10.23±3.73	25.56%	3.53±0.70	8.83%

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