

Short Communication

Preparation of Compost from Mustard (*Brassica juncea*) Straw Waste

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Organic manures improve the physico-chemical and microbiological properties of the soil. Farm yard manure (FYM) is being used in field crops since ancient times. Limited availability of manures is, however, major constraint. Compost prepared with various crop residues and other materials is often advocated as a good organic manure for use in field crops (Gaur, 1987; Bhriguvanshi, 1988). Mustard residues are often burnt and could be a good source of organic manure after composting. However, research work on compost of mustard residues is meager. Keeping this in view, the experiment was carried out to prepare compost from mustard straw.

The experiment was conducted in cement pits (1 x 1 x 1 m) during June to October, 1999 and 2000. There were five treatments for production of mustard compost: (T₁) 10 kg mustard waste + 2 kg cow dung slurry + 0.5 kg FYM + 0.5 kg soil, (T₂) 10 kg mustard waste + 4 kg cow dung slurry + 0.5 kg FYM + 0.5 kg soil, (T₃) 10 kg mustard waste + 2 kg sheep dung slurry + 0.5 kg FYM + 0.5 kg soil, (T₄) 10 kg mustard straw waste + 4 kg sheep dung + 0.5 kg FYM + 0.5 kg soil, and

(T₅) 10 kg mustard waste + 2 kg cow dung slurry + 1% urea + 0.5 kg FYM + 0.5 kg soil. FYM (0.5 kg) used in each treatment was well decomposed and included litter, dung and other wastes. Well decomposed 0.5 kg each of FYM and soil (from the field) was added as a starter dose to enhance the growth and the development of bio-agents.

Each treatment was replicated 4 times in a randomized block design. The mustard waste was layered in the pits and slurry of fresh dung (as per treatments), FYM and soil was sprayed over it and eight such layers were laid in each pit and watered on alternate day to maintain about 70% moisture. To improve the aeration, contents in the pits were turned over after 20 and 45 days of filling the pits. After 135 days of composting, samples were collected for chemical analysis and compost produced was calculated (Yield % [weight of manure compost/weight of original material] x 100). Total nitrogen and organic carbon in the compost were determined (Black, 1965).

The data on mustard compost showed that different treatments influenced the OC and total nitrogen content and ultimately brought down the C:N ratio (Table 1). After the decomposition, the treatment that involved 2 kg sheep dung (T₃) had

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Table 1. Chemical analysis and yield of mustard straw compost as influenced by different treatments

Treatment	OC (g kg ⁻¹)			Total N (g kg ⁻¹)			C:N ratio			Yield (%)		
	1999	2000	Mean	1999	2000	Mean	1999	2000	Mean	1999	2000	Mean
T1	312	298	305	9.5	9.2	9.3	32.8	32.4	32.6	68.3	65.3	66.8
T2	272	262	267	10.7	11.0	10.8	25.4	23.8	24.6	59.4	58.2	58.8
T3	286	290	288	11.2	11.2	11.2	25.2	25.9	25.5	70.2	65.5	67.8
T4	262	270	266	12.0	12.2	12.1	21.8	22.1	21.9	58.8	60.4	59.6
T5	278	270	274	10.0	10.5	10.2	27.8	25.7	26.7	62.2	61.8	62.0
CD at 5%	15	21	9	0.6	0.8	0.4	-	-	-	6.2	5.8	3.1

Initial C of the material = 401 g kg⁻¹; initial total N of the material = 5.6 g kg⁻¹ and initial C/N ratio of the material = 71.6.

significantly low OC content as compared to the treatment having same quantity of cow dung (T₁). This may be because of higher initial N content in the sheep dung that hastened the decomposition. However, the difference was non-significant when the higher doses of sheep manure (T₄) and cow dung (T₂) were compared. The treatment involving 1% urea (T₅) significantly reduced the OC as compared to 2 kg cow dung (T₁) or sheep dung (T₃) as addition of urea may hasten the decomposition process by bringing down the initial C:N ratio of mustard straw (C:N 71.6). The total N was significantly higher in the treatments involving sheep dung (T₃, T₄) as compared to the treatments involving cow dung (T₁, T₂). The total N in T₅ was significantly lower than in T₄ and T₃ treatments inspite of adding 1% urea initially. Bangar *et al.* (1989) also observed a loss of 60% of added N on application of 2% urea-N during preparation of N enriched phosphor-compost.

The treatment involving 4 kg sheep dung (T₄) had minimum C:N ratio in the mustard compost and was followed by 4 kg cow dung treatment (T₂). This may due to low OC and higher total N content in these

treatments. The addition of 1% urea to mustard straw also lowered the C:N ratio, however, other treatments were more effective as far as C:N ratio is concerned except T₁. The yield (%) of finished compost was in the order T₃ > T₁ > T₅ > T₄ > T₂ (Table 1). In other words decomposition of mustard residues was better in T₂ and T₄ treatments and these may be adopted to get good quality compost from mustard straw.

References

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