

Organic Manure



DIRECTORATE OF AGRICULTURE

GOVERNMENT OF GOA

CARANZALEM - GOA

ORGANIC MANURES

1. INTRODUCTION

Biodegradable waste, recycled or made use of to be a valuable resource or a form of wealth called organic manure.

Biomass of crop residue, weeds, oil seed cakes, human and animal waste which are largely the residue of plant products consumed by man or domesticated animals are all-recyclable.

Waste recycling is an age-old concept recognized as the only natural way to improving soil fertility, soil properties such as tilt, water holding capacity and providing a more favourable environment for root growth. In fact, waste recycling is user-friendly.

Waste recycling leads to an improvement in over all soil productivity of which soil fertility is a key component. This age-old concept of waste recycling has in modern times been improved on, to more efficient and versatile processes and technologies. Microbes, compost inocculent (accelerators) which hasten the decomposition process play a vital role in modern mass composting projects as do earthworms where vermiculture has attained commercial proportions for farm, domestic and municipal waste conversion.

2. METHODS OF COMPOSTING

- i. **Pit Method :** In a pit depth not exceeding 1 meter, shredded crop residue is spread, over which animal excreta is also spread in a layers. The process is repeated until layers reach 30 cm above ground level. Moisture in the pit is to be maintained at optimum level. The pit may be sheltered from rain and sunshine by a roof. Pit contents have to be turned every fortnight to obtain good quality compost in 16 weeks.
- ii **Heap method :** Plant residue, cattle dung and other organic wasters are heaped in layers in a shady place maintaining optimum moisture. Each heap is sealed with a plaster of mud. This method would take 32 weeks to get nitrogen rich compost.

3. COMPOSITION AND CHARACTERISTICS

Composition and characteristics of compost cannot be standardized, due to large variation in characteristics of raw material and recycling parameters.

However the below mentioned standards are suggested :

- i. Minimum : Nutrient content : 1-3% N, 1.5-3% P_2O_5 , 1-1.5% K_2O
- ii. Moisture content : Should not exceed 15-25%
- iii. Organic matter : Should be at least 20% carbon.
- iv. C. N. ratio : Should be between 10:1 - 15:1
- v. pH : Should be around neutral (6.5 - 7.5)

Compost enrichment with cheaper sources of P can also be done by mixing Rock Phosphate @ 5% P_2O_5 with the composting mass.

Oil cakes of non edible oilseed (like Neemcake) are mostly used as organic fertilizer. They are often referred to as concentrated organic manure because of their higher nutrient content than conventional bulky organic manure such as FYM and compost. Oil cakes can be applied as manure just at the time of crop sowing.

4. HANDLING AND STORAGE OF COMPOST

Under ordinary condition there are invariable losses of nutrients. During rainy season, nutrient losses are extensive due to the removal of water soluble constituents. When exposed to sun, plant nutrient is lost through volatilization.

5. PERCENTAGE NUTRIENT CONTENT OF SOME COMMON ORGANIC MATERIAL

	N	P_2O_5	K_2O
i. Cow dung	1.74	1.7	0.60
ii. Poultry excreta	2.17	2.0	4.2
iii. Goat excreta	0.65	0.5	0.03
iv. Pig dung	2.27	3.1	1.8
v. Fish meal	4-10	3-9	1.8
vi. Bone meal	2-5	26-28	—
vii. Neem cake	5.22	1.08	1.48

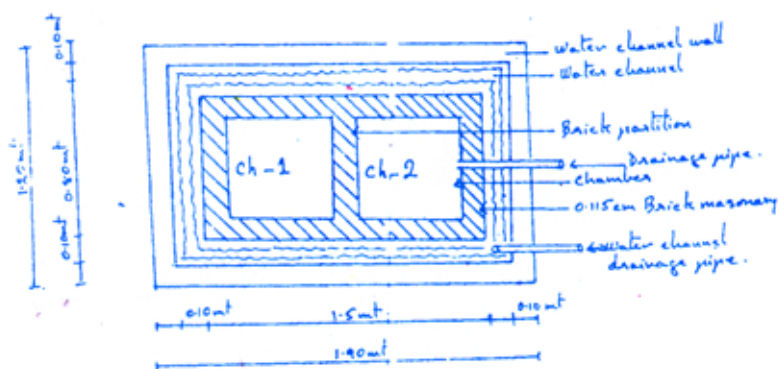
Chemical fertilizer have played a significant role in providing nutrients for intensive crop production which brought about manifold increase in agricultural production. However, with the increased usage of chemical fertilizers alone, problems such as diminishing soil productivity and multiple nutrient deficiencies appeared. Soil microflora and earthworms which are highly beneficial for maintaining soil healthy are continuously depleted due to the heavy doses by chemical fertilizers. Chemically fertilized crops do not have the quality and taste as those produced organically.

VERMICOMPOST

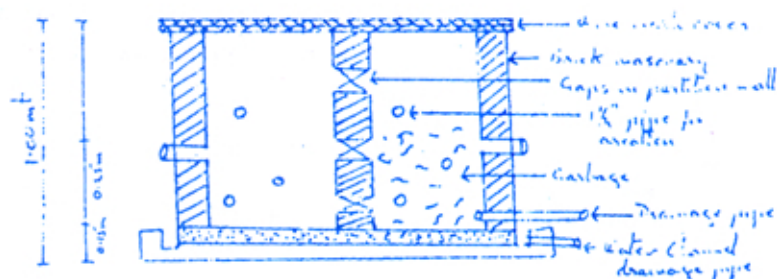
Earthworms, mankind's first recognized friend of the farmers, feed on any organic waste and are known to consume 4-5 times their body weight per day. Compost produced by earthworms is a mixture of fecal excretions, organic material including humus, live earthworms and their cocoons.

Below, is a diagram of a low cost brick bin (household unit) set in a shady spot of the garden and covered by roof (tatched) to protect from direct sunlight and rainwater.

TWIN CHAMBER UNIT PLAN



SECTIONAL DIAGRAM



- iv. Excessively wet waste should be avoided or earthworms do not survive in soaking garbage.

Vermicomposting can also be done on a larger scale in lateritic stone lined cement plastered pits with P. C. C. floor of size 1mt x 1mt x 5 mt where farm waste crop residue animal waste etc. generated, can be used for vermicomposting.

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**FOR TECHNICAL GUIDANCE AND FURTHER DETAILS
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