

Making compost from weeds:

a way of management

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In general, a plant which is not required and do cause some harmful effects to men, animals or the environment, and is useful on some other occasion is termed as a weed. We classify some plants as weeds depending on their spontaneous occurrence, abundance and naturally evolved growth behavior. Like our cultivated species of plants or crops, weeds are also valued for their numerous and diversified uses. Amongst the different control options, management through utilization is the best way because this tactic instead of spending money on management, help the users to earn money by utilizing them and simultaneously to achieve control too. The genesis of utilizing weeds is that many weed although they are problematic also possess useful properties. Weeds may be used for the compost and vermicompost making and thus may turn to be a wealth instead of waste.

Key words: Compost, Management, Weeds

The depletion of soil nutrients occurs to a greater degree leading to imbalance in availability of nutrients, loss of soil fertility and drastic reduction in crop productivity because of intensive farming system. Productivity of the soils can not be sustained with the fertilizer alone. Therefore, organic manures should also be included in schedule to maintain the productivity of the soils. The concept of organic waste management and its use for plant nutrient recycle is becoming more essential for sustaining soil-health through improvement of physico-chemical properties and microbial diversity of soil.

Making composting from weeds may be a widely applicable process of handling biodegradable organic wastes. Composting and vermicomposting from weeds at one hand give the option to utilize the waste for enhancing soil nutrient availability while on the other hand provide direct relieve to stakeholder from the weeds in their farm and places. Vermicomposting technology is an aspect of biotechnology involving the use of earthworms for

recycling of non-toxic organic waste to the soil. Composing from the weeds also required proper and scientific knowledge so that seeds of weeds are killed completely.

Generally, weeds compete with crops for nutrients, space, energy and sunlight etc which eventually reflects on the performance of the crop. Crop growth and yield are influenced by biotic and abiotic factors. Hence, weeds are one of the important factors to affect crop yield. It removes substantial amount of nutrients from the soil depending on the density and species of weeds. The weed species locally available in large amounts like *Ipomoea carnea*, *I. aquatica*, *Chromolaena odorata*, *Eichhornia crassipes*, *Lantana camara*, *Calotropis gigantea*, *Parthenium hysterophorus*, *Hyptis suaveolense*, *Indigofera tinctoria*, *Phaseolus trilobus*, *Croton bonplandianum*, *Vernonia cineraria*, *Melilotus* sp., *Cannabis sativa*, *Xanthium strumarium* etc. could be easily converted in to compost. Weeds like *Chenopodium album* contain more than 8 % potassium (K) on dry weight basis. Further, weeds also accumulate high amounts

on other secondary and micronutrients e.g. 2.04 to 2.07% Calcium (Ca) in *Cirsium arvense* and *Polygonum hydropiperoides*, 585 ppm Zinc (Zn) in *Setaria lutescens*, 14 ppm Cu in *Bromus inermis*, 32 ppm boron (B) in and 39 ppm manganese (Mn) in *Taraxacum* sp., 0.71% magnesium Mg and 373 ppm iron (Fe) in *Polygonum hydropiperoides*.

Preparation of compost from weeds

As a thumb rules, weeds biomass intended to be composted should be collected before seed setting or it should be devoid of the vegetative propagates that help its regeneration. But in practical, it is not possible because often farmer do uprooting late when seeds are already in the plants. There are weeds, which simultaneously have all the stages at a time including seed bearing plants, therefore, it is neither practical nor possible to uproot or cut only those plants devoid of flowers. Almost all the weeds possess huge number of seeds. Therefore, it has to be assured to follow proper methods so that all the seeds are killed during composing process. Herewith, scientific method

Table 1. Nutrient composition in different composts.

Type of organic fertilizer	Nutrients (%)				
	N	P	K	Ca	Mg
<i>Parthenium</i> compost	1.05	0.84	1.11	0.90	0.55
Vermicompost	1.61	0.68	1.31	0.65	0.43
Farmyard manure	0.45	0.30	0.54	0.59	0.28

N, Nitrogen; P, phosphorus; K, potassium; Ca, calcium; and Mg, magnesium

of compost making from *Parthenium* is given, which can be followed for almost all the type of weeds.

Compost preparation from *Parthenium* biomass: *Parthenium hysterophorus* is a menace to farmland, human beings, animals, environment and bio-diversity. During interaction with farmers, it was found that if they use the compost made from the weeds in general and *Parthenium* in particular by recommended NADEP or open pit or heap methods (farmer practice), there was more germination of that type of weeds in the field from which such compost was made. Although, it is always recommended by the experts to collect the *Parthenium* and other weeds' biomass before flowering for making compost either by NADEP or open pit method. But it is not practically possible to collect only flowerless weedy plants in general and *Parthenium* in particular as all the stages of *Parthenium* are available at any time due to non-dormancy of seeds which may germinate on the availability of water. It was observed that in NADEP methods, all the weeds seeds are not killed, particularly on the boundary sides of the NADEP pit. Therefore, technology of pit method was developed for the safe use of compost made from the weeds in general and *Parthenium* in particular.

Method: Make a pit of 3 × 6 × 10 feet (depth × width × length) at a place where water does not stagnate during rainy season. Pit size can be increased or decreased on the availability of biomass but depth cannot be compromised. If possible,

cover the surface and side walls of the pit with stone chips. If stone chips are not available, make soil surface compact. Arrange about 100 kg dung, 10 kg urea or rock phosphate, soil (1 to 2 quintals) and one drum of water near the pit. Collect all the *Parthenium* and other uprooted weedy plants during process of weeding from your field, bunds, road side and nearby area. Spread about 50 to 100 kg of *Parthenium* on the surface of pit. Over this, sprinkle 500 g urea or 3 kg rock phosphate. Make dung slurry by adding 5 to 10 kg dung in 25 liter water and sprinkle over the weed biomass. If possible add *Trichoderma viridi* or *Trichoderma harziana* (kind of fungi cultured powder) in the amount of 50 g/layer. All the above constituents will make one layer. Like first layer make several layers till the pit is filled up to one foot above the ground surface. Fill the pit in dome-shape. While making layers, apply leg pressure to make weed biomass compact. If there is no sufficient soil with weeds roots than add 10 to 12 kg of loamy soil on each layer. If pit is full with above described layers, cover it with mixture of dung, soil and husk. After 3-4 months we can get well decomposed compost. The 37 kg of compost can be obtained from 100 kg of raw *Parthenium* biomass.

In comparison to farmyard manure, NPK, Ca and Mg was found almost double in compost prepared from *Parthenium* biomass, however, it was little less than the vermicompost (Table 1).

Benefits: Weed compost including of *Parthenium* is a type of bio-



fertilizer which has no harmful effects on crops, human beings and environment. Weed compost is an eco-friendly biofertilizer that can be made by low cost inputs and application of it in crop fields will increase the fertility of soil. During the process, the temperature rises 60 to 70°C due to which seeds are killed.

Precautions: Pit should be in open and shady upland. If you find fresh germination of weeds near the pit where weed was collected to fill up the pit, destroy them otherwise they may contaminate the compost after flowering. Check the moisture level of compost. If there is dryness in the pit, make a few holes and pour water in the pit and close the holes. While it may take about 3 to 4 months to prepare the compost in a warm climate but, in cold regions it can take more time.

SUMMARY

Weeds can be utilized for making good quality compost by following scientific methods. Weeds often possess large number of seeds, which should be killed during process of composting. Pit method is found suitable for making compost from the weeds. Therefore, farmers are advised to use pit methods instead of NADEP method to prepare compost from the weeds.

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