Uses of compost

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Compost is a versatile product resulting from composting - the biodegradation of organic waste, industrially, commercially or domestically produced. Composting can be carried out at the household level, in garden composters or in composting toilets, or at municipal level at centralised composting plants. The method of producing the compost has an influence on its possible uses in terms of quantity and quality considerations.

The basic use of compost is conditioning and fertilizing soil by the addition of humus, nutrients and beneficial soil bacteria, with a wide range of specific applications.

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Agriculture

On the open ground, for growing wheat, corn, soybeans, and similar crops, compost can be broadcast across the top of the soil using spreader trucks or spreaders pulled behind a tractor. It is expected that the spread layer is very thin (approximately 6 mm (0.25 in.)) and worked into the soil prior to planting. However, application rates of 25 mm (one in.) or more are not unusual when trying to rebuild poor soils or control erosion. Due to the extremely high cost of compost per unit of nutrients in the western world (such as USA) on-farm use is relatively rare since rates over 4 tons/acre can not be afforded. This is unfortunate and results from over-emphasis on "recycling organic matter" than on "sustainable nutrients". In other countries such as Germany, where compost distribution and spreading are partially subsidized in the original waste fees, compost is used more frequently on open ground, but only on the premise of nutrient "sustainability"[1]

In plasticulture, strawberries, tomatoes, peppers, melons, and other fruits and vegetables are often grown under plastic to control temperature, retain moisture and control weeds. Compost may be banded (applied in strips along rows) and worked into the soil prior to bedding and planting, be applied at the same time the beds are constructed and plastic laid down, or used as a "top dressing".

Many crops are not seeded directly in the field but are started in seed trays in a greenhouse (see transplanting). When the seedlings reach a certain stage of growth, they are transplanted in the field. Compost can be used as an ingredient in the mix used to grow the seedlings, but is not normally used as the only planting substrate. The crop to be grown and the seeds' sensitivity to nutrients, salts, etc. dictates the ratio of the blend, and maturity is important to insure that oxygen deprivation will not occur or that no lingering phyto-toxins remain.[2]

Horticulture

Compost is used in horticulture in a wide range of contexts. In raised bed gardening, compost can be mixed with sand, clay, aged sawdust, and other materials to create an enriched mix for landscape beds or raised-bed gardens. Compost should be no more than 30 percent of the total mix. Use a high quality mature compost to avoid nutrient and oxygen competition with plants.

In a container garden, as in bedding mixes, compost may be a beneficial ingredient in potting media, used up to 30 percent of the total mix, depending on salinity and maturity. It is considered a partial substitute for peat moss, but generally lacks the porosity and water-holding capacity of peat so must be used in limited percentages. The nutrient content of compost can also reduce the need for supplemental chemical fertilizers, although this has to be determined in each situation.

Excavated areas around the foundation of new buildings are backfilled when construction is complete, but these planting zones may contain rubble, residues of toxic chemicals, and other undesirable substances. Removing the backfill and replacing it with a soil/compost mix will improve soil structure and give foundation plantings a healthier start.

Two or more inches of compost can be used alone or in conjunction with conventional mulch products to keep root zones cool, conserve moisture, and act as a slow-release fertilizer, provided the product is course textured and mature. For a weed barrier, double or triple the depth of compost can be used, placed on top of a thick layer of newspapers, to replace geomembrane weed barriers. This is obviously only true if the compost is weed free; many are not.

For trees and shrubs, mixes of *well aged* compost with the native soils can be used as backfill. Immature composts may cause settling and young root disturbance due to oxygen deprivation. Seasonally, top dress with compost to the drip line and rake into the soil.

To establish new turf areas (lawns, recreation fields, golf courses), compost can be applied prior to seeding or sodding and work into the soil. Compost can seasonally be used to top dress and may also be raked into the soil. Some turf farms also use compost, growing grass in a couple of inches of the material to prevent topsoil loss.

Erosion control

Topsoil loss is a serious ecological issue. The use of compost to control sediment run-off and fight erosion is a relatively new technology, now being adopted by local authorities, developers, farmers, and other major disturbers of soil as another tool to reduce topsoil loss.

A layer of compost spread over a disturbed area of soil is called a compost blanket. With a high water-holding capacity, compost is not tilled into the soil but remains on the surface to temper the impact of rainfall. Even small amounts can help, but typical recommendations call for a 5 cm (2 in.) layer to insure adequate surface coverage. The blanket can also be directly planted into.

Compost berms and socks are used alone or in conjunction with compost blankets to mitigate the impact of high volume water discharges and flows. Compost berms are more aesthetically pleasing than silt fences and eliminate the need to remove the berm when the project is complete. Over time, a compost berm simply biodegrades and returns to the earth. As the name implies, a compost sock is a mesh tube stuffed with compost. Socks stand up better to heavy equipment, can be anchored in place, and are easily removed/reused. If a biodegradable fiber is used for the sock, it can also be left in place to biodegrade. This is rarely if ever practiced, however, since it defeats the idea of the sock.

Special uses

Additional special uses for compost include use as a planting media for constructed or artificial wetlands, as a cap for a landfill cell when it is closed to encourage vegetation and reduce erosion, and as erosion control along streambanks to restore functionality and beauty to riparian zones while possibly mitigating future damage.

Regulation and voluntary standards

EPA Class A and B guidelines in the U.S.A.[3] were developed solely to manage the processing and beneficial reuse of sludge, also now called biosolids, following the US EPA ban of ocean dumping. About 26 American states now require composts to be processed according to these federal protocols for pathogen and vector control, even though the application to non-sludge materials has not been scientifically tested. An example is that green waste composts are used at much higher rates than sludge composts were ever anticipated to be applied at.[4] U.K guidelines also exist regarding compost quality,[5] as well as Canadian,[6] Australian,[7] and the various European states.[8]

In the USA some compost manufacturers participate in a testing program offered by a private lobbying organization called the U.S. Composting Council. The USCC was originally established in 1991 by Procter & Gamble to promote composting of disposable diapers, following state mandates to ban diapers in landfills, which caused a national uproar. Ultimately the idea of composting diapers was abandoned, partly since it was not proven scientifically to be possible, and mostly because the concept was a marketing stunt in the first place. After this, composting emphasis shifted back to recycling organic wastes previously destined for landfills. There are no bonafide quality standards in America, but the USCC sells a seal called "Seal of Testing Assurance"[9] (also called "STA"). For a considerable fee, the applicant may display the USCC logo on products, agreeing to volunteer to customers a current laboratory analysis that includes parameters such as nutrients, respiration rate, salt content, pH, and limited other indicators.[10] However, the STA program is not ISO approved, and is a financially beneficial activity for the private USCC, an organization that does disclose its books (in 2009 USCC earned $65,000 from STA fees). Some argue that the existence of STA means EPA or USDA do not have to regulate composts.

References

1. http://www.landwirtschaft-mlr.baden-wuerttemberg.de/servlet/PB/show/1118971/Landinfo_Nachhaltige%20Kompostanwendung%20in%20der%20Landwirtschaft-%20Ergebnisse%20eines%20mehrj%E4hrigen%20DBU-Projektes%20aus%20Baden-W%FCrttemberg.pdf
2. Phytotoxicity and maturation (http://www.ncbi.nlm.nih.gov/pubmed/18585031)
3. EPA Class A standards (http://www.access.gpo.gov/nara/cfr/waisidx_02/40cfr503_02.html)
4. EPA regulations for compost use (http://www.epa.gov/epawaste/conserve/tools/cpg/products/compost.htr
5. British Standards Institute Specifications (http://www.wrap.org.uk/downloads/Introduction_to_BSI_PAS_100-20052.92f2ee6e.2181.pdf)
6. Consensus Canadian national standards (http://www.compost.org/compostqualitydoc.pdf)
7. Australian quality standards (http://www.environment.gov.au/settlements/publications/waste/compo
8. EU member compost standards (http://ec.europa.eu/environment/waste/compost/)
9. [1] (http://www.compostingcouncil.org)
10. US Composting Council testing parameters (http://www.compostingcouncil.org/programs/sta/test_methods.php)

External links

- Compost Tea (http://www.bugbrewer.co.uk)
- Discussion of world-wide compost standards (http://compost.css.cornell.edu/Brinton.pdf)
- Provincial composting regulation in Canada (http://www.compost.org/pdf/ccc.sw&r.legislation.PDF)
- Seal of Testing Assurance (http://www.compostingcouncil.org/section.cfm?id=35)
- Article on compost use for sediment and erosion control from the Carolinas Composting Council. (http://www.carolinacompost.com/USE%20COMPOST/Erosion%20Control.htm)
- Article on compost use for sediment and erosion control from the University of Georgia Cooperative Extension Service. (http://pubs.caes.uga.edu/caespubs/pubcd/B1200.htm)
- EPA paper on anaerobic compost-constructed wetlands (http://www.epa.gov/ORD/SITE/reports/540r02506a/540R02506a.pdf)