NEW HORIZONS IN COMPOSTING

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Discussion by

Clinton R. Albrecht
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Messrs. Greeley and Nollet have presented an article evaluating waste composting. Both gentlemen have long experience in the field and have contributed to whatever success solid waste composting has achieved.

Changing public concerns, an upheaval in the economics of energy, and more stringent environmental regulations have caused an overall reevaluation of composting as a method of waste treatment before reuse or disposal. These same concerns have also caused many of the composting treatment methods formerly acceptable because of the experimental or small scale size not to be implementable in today's "citizen input" society. Many composting projects which two years ago were considered sophisticated concepts have not met public approval and consequently were not built because of public "concern." Successful implementation of composting involves using most advanced technology, a planned citizen education program, as well as a sound marketing program.

The waste disposal business is done in negative dollars, i.e., cost reduction is the attainable goal. Any hope of a true profit is remote. The merit of a composting approach is to reduce the amount of material sent to landfill. If in an economic review, the cost of composting is adjusted by taking credit for the true value of available air space in the landfill, a significant reduction in overall cost may be realized.

The final product, compost, is a bulk commodity of low economic value. This may change somewhat as the economics of modern farming experience the effect of the cost of energy which is a direct input into chemical fertilizer as well as equipment operation. To preclude the use of compost produced from sludge and solid waste from use in agriculture would be a mistake. Guidelines for determination of the suitability of and the uses of compost in agriculture have been developed by the U.S. Department of Agriculture. To ignore these guidelines could severely restrict compost marketing.

The recommended system is a good approach to composting solid waste. Front end separation of the biodegradables from the total mass is very desirable. Many composting systems, especially in European countries, now incorporate front end separation to reduce power consumption, excess wear and screening problems. The Rotary Drum Air-Classifier (RDAC) should accomplish this. Other methods of preparation of the solid waste stream tend to be too expensive and complicated when applied to a composting system.

Developing of a solid waste, or solid waste and sludge composting project requires market identification. In the past, there have been limits to the uses of compost. Many of these restrictions are now being examined and regulatory authorities are expanding the possible uses of compost.
Composting as a method of waste treatment can be considered a viable alternative to other methods if all factors are considered. The low energy consumption and resource recovery aspects of this process are very attractive in today's energy conscious world.

Discussion by
C. M. Koch
Greeley and Hansen
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The paper by Messrs. Greeley and Nollet presents a good summary of the history of solid waste composting in the U.S.A. The authors should be commended on their discussion of composting in the mushroom industry. The mushroom industry represents a prime example of how composting can be used to produce a valuable material from agricultural waste products.

While the authors discussed both the windrow and enclosed composting system, they did not mention the aerated pile method. The aerated pile method, which was developed at the U.S. Department of Agriculture Experimental Station in Beltsville, Maryland, has become the most popular method for composting sludges from municipal wastewater treatment facilities. In the aerated pile method, dewatered sludge is mixed with a bulking agent and stacked in piles on top of a grid of perforated pipe. Air is drawn through the pipe with blowers to maintain aerobic conditions. Woodchips or solid waste can serve as the bulking agent which is used to provide porosity and adsorb excess moisture.

Throughout their paper, Messrs. Greeley and Nollet allude to the high expense of resource recovery facilities as compared to composting. I prefer to think of composting as being a form of resource recovery. Solid waste can be viewed as a natural resource which has intrinsic value either as a fuel or as an organic soil amendment. Both composting and energy recovery through combustion of solid waste or RDF provide a means of resource recovery.

Combustion reduces the solid waste to a very small residue volume while recovering energy from the organic fractions. However, the capital costs of achieving energy recovery are high. Composting converts solid wastes to a soil conditioner. But unless the compost can be marketed or used to improve soil fertility and tilth, resource recovery is not achieved.

The last section of the paper deals with specific research conducted by the authors, and potential markets for composted solid wastes. Their investigations into using solid wastes as a raw material to produce compost for the mushroom industry, or for poultry litter, represent the type of marketing approach that is necessary to make composting a success. It is unfortunate that the FDA frustrated their success in these two areas.

With regards to their comparative sod production test using five day old compost from a digester versus shredded solid waste from a two year old landfill, the results should be expected. It is common knowledge that compost from a mechanical digester is not ready for use until it has been aged and cured for at least thirty days.

In conclusion, the paper by Messrs. Greeley and Nollet presents some interesting observations concerning their experiences in composting equipment, markets and horticultural testing.

AUTHORS' REPLY

We wish to thank Messrs. Albrecht and Koch for discussing our paper. The comments and points made by both discussors were well taken, and we agree with only minor exceptions.

In Mr. Koch's discussion, he noted that we did not mention the aerated pile method of composting. We restricted our paper to windrow composting and digesters due to space limitation, and the fact that the main thrust of the paper was devoted to municipal solid waste composting. Also, we are not aware of any extensive work that has been done using the aerated pile method on municipal solid waste.

We must disagree with Mr. Koch's statement that - "it is common knowledge that compost from a mechanical digester is not ready for use until it has been aged and cured for at least 30 days."


EPA states that the material must remain in a windrow for 30 days to mature as compost, whereas digesters require only two to ten days to produce mature compost.

If the U.S. EPA does not understand the total
compost cycle, I cannot concur that it is common knowledge that 30 days are required to cure digester material.

The sod production test using five day old compost from a digester versus shredded solid waste from a two year old landfill was conducted to prove the very point that there is a difference between digester material and two year old landfill material. The authors and the staff at the University of Delaware conducting the test knew what the results would be, but the supplier of the digester material and their interested associates were convinced there was no difference.

It is evident that there is a void in the knowledge or understanding of many people, in and out of the composting field, as to what compost is – as shown in the statement by the EPA and the expected results of the sod by the supplier of the digestor material.