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COMPOSTING SEWAGE SLUDGE IN THE NURSERY

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In 1974, Dr. Francis Gouin introduced to this Society, the possibilities of using composted sludge in container growing mixes. His talk aroused my interest enough, that upon returning home, we immediately procured 40 tons of digested sludge from one of the Baltimore waste-water treatment plants. We composted this material using 2 parts aged hardwood bark and 1 part digested sludge. After composting thru the months of January, February, and March, using a front-end loader to turn the pile, a test was taken. The results were: pH 5.6, magnesium 300+ (V.H.), phosphate 510 (V.H.), potash 258 (H), soluble salts 3200 ppm (hot).

We consulted with Dr. Gouin, and a decision was made to add soil to reduce the soluble salts to a safe level. We used a half compost and half top soil mix for planting 500 shade and flowering trees in baskets. When the planting was completed, they were heeled-in with a hardwood bark mulch and top-dressed with nitrogen. There was not much different at first from our previous method of using a highly organic top soil, but as soon as mid-summer came and we got less and less rain,

the difference started to show. The containers with the compost mix retained moisture longer and the plants retained a darker and healthier color.

In the meantime, we had inquired about contracting for 1500 tons per year of digested sludge from Columbia City Treatment Plant at Salvage, Maryland. The superintendent of the plant welcomed the idea and started the necessary inquiries to his Howard County supervisors. Two days later, we were informed that a permit from the Maryland Dept. of Environmental Health would be needed and the approval of the local County Health Dept. We spent the whole summer and fall of 1975 going through all the necessary tests, hearings, meetings with state and local officials and on-site inspections of the composting area.

Since we had been very cautious with the composting done earlier, we were allowed to continue through the summer and fall of 1975 without the written permit from the state. This allowed us to have compost ready to use for the winter and spring of 1976. Our compost mixture now consisted of 2 parts hardwood bark, woodchips and straw, all thoroughly mixed with each other, and 1 part digested sludge. In the fall of 1975 we sent in a sample for testing. The results this time turned out to be excellent: pH 6.4, magnesium 276 (V.H.), phosphate 480 (V.H.), potash 375 (V.H.), soluble salts 720 ppm (low).

Finally, on January 28, 1976, we received a written permit to compost from the State of Maryland. We were convinced by this time that Columbia City's treatment plant was our best source of digested sludge. We also concluded the compost would be at least 1-year-old before being used for planting or top-dressing plants grown in the ground.

At the present time, our composting is done by reversing the pile with a large industrial front-end loader. For the first 2 months, we try to turn the pile 3 times, and then at least once every 3 months for a year. Once the year of composting is complete, it should be covered or stored inside to prevent leaching from rain.

This past year, every plant that went into 1 gal containers or larger had a certain percentage of compost in the mix. We had good results with the 50% top soil and 50% compost mixture and are planning to grow everything in this mix by adjusting the pH to suit the plant. The only exception will be with rhododendron, pieris, and azalea cultivars. We will continue to use an artificial mixture of sand, peat, and bark with 10% composted sludge added.

Here are some factors to consider which I have found to be useful in the successful and safe handling of sludge:

1. Make sure your source of sludge is low in soluble salts, 1500 ppm or lower.
2. The compost pile should generate heat up to 60° to 70°C in order to kill pathogenic bacteria and weed seeds; it also shows that the composting process is working.
3. Location of the composting area is important. You must prevent run-off into streams, lakes and rivers.
4. It is advisable to have no physical contact with the sludge before composting.
5. Machinery should be thoroughly washed immediately after using.
6. Always test the compost before using.
7. Leaves alone do not make a good bulky organic material to compost with.

The work of converting the human wastes and removing their offensive odor is done by microorganisms, which naturally convert wastes into plant food. Such bacteria, fungi and other organisms are an important link in the nitrogen cycle. These microorganisms can recycle human wastes rapidly if given the chance. The sad truth is, though, that the great majority of our wastes are never allowed to meet up with the microorganisms that in nature act as recycling agents. How long are we going to stand by and watch all that good nitrogen, phosphorus, potassium and humus go into landfills, oceans, bays, or into some river? Composting sludge requires some effort, but we feel it pays big dividends by being able to grow quality plant material at a nominal cost.

MARKED GROWTH RESPONSE OF WOODY PLANTS WITH SCREENED COMPOSTED SEWAGE SLUDGE[1]

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Nurserymen sell tons of top-soil with balled and burlapped crops and hundreds of cubic yards of potting mix with plants grown in containers. Peat moss, shredded bark, and greenmanure crops have been their primary sources of organic matter, while fertilizers and lime have been their principal

[1] Scientific Article No. A2252, Contribution No. 5244 of Maryland Agricultural Experiment Station, Department of Horticulture.