

## Using Compost Sewage Sludge in the Production and Maintenance of Ornamental Plants

### Introduction

When screened and blended with other organic and inorganic Amendments, composted sewage sludge is useful as a growing media for nursery and greenhouse crops and for establishing landscapes. However, large chemical differences exist in compost made from lime dewatered sludge, polymer dewatered sludge and processed garbage (metal and glass removed) composted with polymer or lime dewatered sludge.

Only compost made from sewage sludge that qualifies under the Environmental Protection Agency (EPA) standards, should be used for the production of nursery and greenhouse crops and for landscaping. The physical and chemical properties of the compost should be relatively uniform from month to month and from year to year, to be economically valuable to nursery operators, growers of greenhouse crops, and landscape contractors. Only screened compost with particle sizes no larger than 1.6 centimeters (five eighths of an inch) in diameter should be used. Compost must be stored under cover to keep it dry and to prevent its contamination by weed seeds. Additionally, it should be stored in a well drained area in windrows not to exceed 6 feet in height.

### Compost Sewage Sludge

#### Types of Compost

Compost made from *lime dewatered sludge* tends to have a high pH (between 7.2 and 8.0). When blended with organic materials such as peat moss, pine bark or soil, the resulting pH is generally between 7.2 and 8.0 unless the soil has a pH below 4.0.

Compost made from *polymer dewatered sludge* tends to have a pH between 6.2 (old compost) and 6.8 (fresh compost). When blended with most organic materials such as peat moss and pine bark, the resulting pH is between 4.7 and 6.2, depending on the pH of the peat moss or soil. The amount of sulfur or limestone needed to adjust the pH of such mixes is based on the amount of peat moss or topsoil used in formulating the growing media blend and the desired pH. Compost made from processed garbage and polymer dewatered sewage sludge (municipal compost) tends to have a pH between 6.9 and 7.2 and may also have a high concentration of boron, depending on the amount of cardboard used as bulking material. Although research is extremely limited on its use, plant response to this compost type appears

similar to those for compost made from polymer dewatered sludges blended with wood chips.

## **Potting Mixes**

### **Recommended Uses**

- Use lime dewatered sludge compost for growing foliage plants, chrysanthemums, poinsettia and vegetable transplants. The compost should not exceed one third by volume the total growing media. Never add limestone to blends containing lime dewatered composted sewage sludge.
- Do not use blends containing lime dewatered sludges for the production of bedding plants or for the production of container grown nursery stock.
- Use compost made from polymer dewatered digested sludge, in concentrations from 20 to 50 percent by volume in potting mixes. For growing bedding plants and vegetable transplants, concentrations should not exceed 20 percent by volume. For crops such as poinsettia, foliage plants, greenhouse chrysanthemums and container grown nursery stock, levels should not exceed 33 percent by volume. Most hardy outdoor chrysanthemums can be grown at concentrations of up to 50 percent by volume. It may be necessary to add lime if peat moss and/or topsoils used have a pH below 5.0, except for crops that grow best at a pH between 5.5 and 4.5.
- Municipal compost has restricted uses because of limited supply and lack of research. Until additional research is completed, levels used should not exceed 25 percent by volume.

Any of these composted products can be mixed with peat moss, milled pine bark, sand, perlite, expanded shale, vermiculite, ground styrofoam and styrofoam beads in any desirable amount. If topsoil is used, sterilize it and do not use in excess of 20 percent by volume. Never add trace elements to any potting media containing composted sewage sludge. All growing media blends, regardless of composition, should contain at least 10 percent peat moss for particle stabilization. For growing plants that prefer pH's below 6.0, use only compost made with polymer dewatered sewage sludge. Currently, it is not feasible to lower the pH of compost made from lime dewatered sludges. When used as recommended, the compost will supply the nitrogen needs of the plants through the first 2 to 3 weeks of growth. The amended compost growing media described above, may be blended with resin coated slow-release fertilizers at two thirds the recommended rate. However, do not apply agricultural grade and water soluble fertilizers until 2 to 3 weeks after planting. Irrigate the plants heavily for the first two irrigation's to leach out any excess soluble salts. Follow normal irrigation practices thereafter.

## **Compost Application Rates**

In the harvesting of nursery stock by balling methods, an estimated 250 tons of topsoil is removed with each crop. Unless nursery soils are properly managed, their productivity decreases rapidly. Composted sewage sludge can be used to rebuild and maintain nursery soil productivity. However, it should be used in conjunction with regular soil testing. The compost used also should be compatible with the crops to be grown. Never use compost made from lime dewatered sludge for growing species that prefer soils with pH requirements below 6.0.

### **Shade Trees, Seedlings, Liner Beds**

Compost application rates should not exceed 100 tons of product per acre or 4.5 cubic yards per 1,000 square feet of surface area. For growing shade trees, the compost is most effective when applied in bands 3 to 4 feet wide and incorporated just prior to planting tree liners in the middle of each band. In

seedling and liner beds, the compost should be applied just before seeding or transplanting. A single application of compost generally will satisfy the nutrient needs of the plants through the first growing season. At the recommended rate of application, there is usually sufficient phosphorus to supply the needs of the plants through 3 to 5 growing seasons. Thus fertilizing only with nitrogen and potassium may be all that is necessary. Repeated applications of compost should be based on soil test recommendations.

### **Landscape Plantings**

Composted sewage sludge may be used in the establishment of landscape plantings using balled, container grown and bare-root plants. The compost will supply all of the nutrient needs of the plants through the first growing season. However, it is important to select the compost best suited to the pH requirements of the plants.

### **Individually Planted Trees and Shrubs**

For transplanting general nursery stock, blend one-third by volume of the screened compost with existing soil. The planting hole should be dug so that 10 percent of the root ball will be aboveground and the diameter of the hole should be three to four times larger than the root ball, especially if the surrounding soil is of poor quality. The compost should be thoroughly mixed with the existing soil before backfilling.

### **Planting Beds, Flower Gardens**

Apply the compost uniformly over the designated area at the rate of 2 to 4 5 cubic yards per 1,000 square feet, depending on soil test results and soil conditions. Thoroughly incorporate it to a depth of 6 to 8 inches into the soil surface just before planting. For maintaining annual and perennial flower gardens, apply the compost at only one-half of the above recommended rate on alternate years. Yearly applications can result in reduced flowering.

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Maryland, College Park, and local governments, Thomas A. Fretz, Director of Maryland Cooperative Extension, University of Maryland.

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