

Using Composts for Healthy Plants and High Productivity®

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Klyn Nurseries has used composts in various aspects of production for over 20 years. Over the years we have modified certain applications of how we use composts but have never veered from the basic principles we discovered so long ago. The basic principle that organic material improves soil tilth, texture, drainage, adds slow-release nutrients, and provides disease control where used properly is a given. Using these principles we apply organic matter to our fields and bed production at every opportunity. The biggest problem we face is finding large enough quantities of these materials when we need them.

In field production we use a combination of composted nursery waste (ground up plants and container media), leaves and grass clippings. Working with the local County Cooperative Extension office we provide a service to the community as a drop off point for the Local Leaf to Land program allowing residents to drop off leaves and grass clippings at no charge. We accept no branches or coarse material that would require the use of a tub grinder keeping the operation very simple. We do not want to become a composting facility. Leaves collected through the fall and early spring along with composted nursery waste are piled and allowed to break down naturally. In late spring and early summer we apply a 3-in. layer to open ground as we are preparing fields for cover crops. Sudex is used as a green manure that helps shade out weeds while its roots open soil channels and as we cut it down and plow it under adds organic matter to the soil. We do a great deal of fall planting and find that this process has improved our soils so that every time we turn a field we get improved growth and healthier plants. If a field will not be planted until spring, we plant a fall crop of rye that will be turned down in spring to add even more organic matter.

The addition of the composted material adds a tremendous amount of organic material to the ground compared to cover crops alone (see Table 1 for comparisons of value for various types of organic material).

About 15 acres of irrigated beds are used for production of liners for use in field and containers. In these beds we also grow a large number of boxwoods and other high intensity finished plants in a three-row-bed system. When these plants reach maturity they can be dug B&B or bare-rooted for use in large containers. Composted municipal sludge (CMS) is used to supply most of the organic base in both beds and container media.

We apply up to 2-in. layer of CMS when building up new in-ground beds. One inch of material is applied to the area and worked in to the top 4 to 5 in. with a rototiller. After beds are planted we apply another 1 in. of material as mulch. After the first planting has been harvested we soil test to see if another full application will be needed. Usually we apply a layer of composted leaves and nursery waste and replant adding 1 in. of CMS as mulch without resting the ground. The CMS has added nutrients, loosened the soil, reduced water stress, and decreased disease issues. By applying generous amounts of organic matter we have been able to keep our beds in constant use for almost 20 years, never resting the soil, without decreasing productivity.

We have also benefited in container production by using 10% CMS as part of our container medium. Our medium is a fresh pine bark base, composted hardwood bark, CMS, Canadian peat, and pea gravel for aeration and ballast (6 : 1 : 1 : 1 : 1, by vol.) with incorporation of slow-release fertilizer for fertility. There are numerous benefits gained from the use of the composted hardwood bark and CMS.

We add no micronutrients to our media because there are enough in the bark and CMS to last the life of the container media. Disease suppression and nematode reduction are other benefits as proven through Ohio State University research.

Research has also proven that CMS contains mycorrhizae. Many of the plants we grow benefit from the relationship that these beneficial fungi can supply. By adding a mulch layer of CMS around our field-grown *Fagus* and then topping with a layer of composted leaves we have seen a significant increase in annual growth.

In conclusion composting makes sense in numerous ways to nursery production and makes us a greener industry in this age of sustainability.

Table 1. Comparison of equal application rates of green manure and compost.

Amendment	Recommended application rates	1st year available nitrogen (%)	Total organic matter (tons)
Green manure	16.1 tons/A 134 cu. yds	75	1.5
Composted municipal sludge (CMS)	54.3 tons/A 134 cu. yds	25	38
Nursery waste compost	60.3 tons/A 134 cu. yds	25	24