WHILE it is known that organics recycling commonly is practiced by nurseries and landscape firms, there have been few attempts to inventory composting within the green industry. In 1996, staff of the University of Massachusetts Cooperative Extension completed a statewide survey to identify those segments involved in composting operations and/or using compost products. We also sought to determine the extent of that involvement, identify practices and better understand the factors which help or hinder industry's compost practices.

There are 2,150 nursery and landscape companies in Massachusetts; our survey reached 32 percent of them. When asked, “Do you compost?” 71 percent of all respondents indicated that they conduct some form of composting at their facility. This represents not only plant materials the businesses themselves generate but also plant residues the companies take in from a variety of sources.

From the data collected, it was calculated that green industry businesses take in almost eight times more cubic yards of compostable material than they generate. This is based on a question asking for the number of cubic yards of compostable materials that a business produced as a result of their own activities as well as the number of cubic yards accepted from sources outside their business. On average, each business involved in composting estimates that they generate 267 cubic yards of compostable materials per year from their operations. In addition, companies accept an average of 2,083.5 cubic yards annually of compostable materials from other sources, including municipalities and private individuals. The fact that most (73 percent) of this material comes from homeowners means that green industry companies offer significant assistance to municipalities in the collection and disposal of plant residues, especially during the fall leaf season.

The total volume of composts identified from the inquiries of this survey amounted to 90,730 cubic yards. Overall, it would be reasonable to estimate that the volume of composts processed by nursery and landscape businesses approaches 300,000 cubic yards/year. This accounts for large and small businesses and for those that may consist of one or two person companies that do not advertise their services in any business listing.

**MATERIALS COMPOSTED, END PRODUCTS**

By far, the yard trimmings most frequently composted by businesses responding to the survey are fall leaves and lawn clippings. Animal manures are the most popular other material used in composting. Few businesses seem to be using industrial organics, e.g. cardboard, pallets or food residuals.

Most of the end products of composting are used on-site as soil amendments (53 percent use compost in this manner). Twenty percent incorporate the product into potting mixes and some use it as a component of a topsoil or loam product. In terms of composting's perceived benefits, 69 percent of respondents said they compost because “it is a good agronomic practice.” About one-quarter view the end products as a revenue source, which may indicate that many

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Laughton's Nursery in Westford, Massachusetts accepts fall leaves from surrounding residential communities.

Extension survey provides data on amount of materials being composted by green industries in Massachusetts, methods being used and trends for the future.

Ronald Kujawski and James Allen
On average, each business involved in composting estimates that they generate 267 cubic yards of compostable materials per year from their operations. Agresource already operates a composting facility for the municipality of Ipswich, manages land application programs, markets compost, provides windrow turning for six municipalities in the Boston-Cape Cod area, and manages a leaf and yard trimmings facility.

The company is collecting bone gelatin residue from Eastman Gelatin on Boston’s north shore and alternately hauling it to several farms and a composting facility. The bone gelatin residue is either applied directly to farmlands in liquid form or is dewatered into a cake form for the compost facility. Geoffrey Kuter of Agresource says his company is now approaching supermarkets and other commercial generators regarding contracts for hauling their food residuals to area farms and composting facilities.

Kuter says the success of this venture will depend on finding multiple outlets for the residuals of each large generator, all located a short distance from the source. “The farms aren’t equipped to take the food waste at all times throughout the year or the full quantity. Composting is usually a secondary objective for a farm operation and if a farm gets too much material, it can create odor and handling problems. We plan to divide the food residuals among two to three compost and farming operations so the generator is assured a home for the materials. The composting operations can provide backup for each other.” Agresource will sign a two to three year contract with the generator and pay the farmer part of the tip fee it collects for the residuals. “An individual farm usually can’t enter into a long-term contract with a generator without it having to put up capital to purchase additional equipment, obtain permits and do testing,” Kuter says. Agresource expects to provide the farms with what they need to get started — additional labor, equipment, a mixing pad, road improvements and so on — and finance these items through the farm’s portion of the tip fee. “We’ll try and set it up so there is a two to three year payback,” adds Kuter.

Kuter says that six farms have expressed interest in composting food residuals, including Westin Nurseries. Most already have permits or are exempted on-farm composters. Agresource is having a harder time convincing generators to source separate. “The farms are available but supermarkets are still sending their food trimmings to landfills or incinerators because the tip fees there are only $40 to $60,” explains Kuter. “There is an economic incentive when the farm is closer than the landfill because the generator can then save on hauling costs. The operations that are interested, like Westin Nurseries, are located farther away from generators than a landfill.” Kuter says he hopes to have at least one food waste network established in the next year or two.

— M.F.

**A NETWORK OF COMPOSTERS**

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N Amesbury, Massachusetts company is developing a network of farms and compost facilities that will compost organic waste materials generated in the greater Boston area. Agresource already operates a composting facility for the municipality of Ipswich, manages land application programs, markets compost, provides windrow turning for six municipalities in the Boston-Cape Cod area, and manages a leaf and yard trimmings facility.

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**MANAGING COMPOSTING ACTIVITIES**

More than half (55 percent) of the companies sort materials and 38 percent find it necessary to remove contaminants, e.g. bottles and other noncompostable trash. (We have observed that this problem is most severe with leaves brought by municipalities or homeowners to compost sites.) Other than regular or infrequent turning of compost piles, it would not appear that careful management of the compost process is a common practice. In fact, 72 percent of respondents said that they do not monitor the composting process by checking temperature or moisture levels. Assessment of compost quality is done more by intuitive or visual methods or timing than by testing. (It has been a concern of compost users that quality of compost products is very inconsistent. This could be a consequence of a lack of careful monitoring of quality.) Results in this survey indicate that regular testing is not practiced by the producers, making it apparent that there is a need for better monitoring of the composting process by the practitioners and for testing of the finished compost.

**EXPANDING OPERATIONS**

Our survey attempted to assess the prospects for future expansion of composting activities by the industry. When asked if they plan to expand their composting operations, only 15 percent of respondents indic-
ORNAMENTALS, PERENNIALS ... AND COMPOST

WESTON Nurseries in Hopkinton, Massachusetts, has been operated by the Mezitt family for four generations. The business was started by Peter John Mezitt in 1923 and is now known for having the widest selection in the Northeast of ornamental trees and shrubs. It also sells perennials, annuals, vines and other stock through a 240 page catalogue to both retail and wholesale markets. The nursery grows 90 percent of what it sells and has 600 acres under production. Mezitt's great-grandson, Peter, recently returned to the family business as wholesale yard manager after working seven years for Allgro and Wheelabrator.

The nursery has a landscaping division that generates wood residuals and yard trimmings. It also accepts yard trimmings from residents at no charge; landscapers and other businesses are charged $4.50 per cubic yard for yard trimmings and $6.75 per cubic yard for wood. Incoming materials are divided into two fractions: yard trimmings (leaves, grass clippings, hay and old mulch) and brush (whole plants without the root ball, tree tops and prunings). Twice a year, Weston Nurseries hires Morse Brothers of Windham, Maine to bring a tub grinder to the nursery and grind the brush into wood chips. The nursery takes from off-site sources.

The five-acre site. The nursery hires an attendant for the composting site from April 1 to December 15, but does not accept materials from December 15 to March 31. Trucks unload materials onto a dirt and gravel pad where they are measured and mixed. "We don't use truck scales, so everything is measured by the cubic yard," notes Mezitt.

The windrows are 300 feet long, 10 feet tall and 20 to 25 feet wide when initially formed but decompose to half that volume. A large Caterpillar 920 bucket loader is used to turn the piles approximately once a month, and less often in the winter when snow makes it difficult to gain access to the site. "We have a lot of equipment at the nursery, including four loaders, so we can take one to turn the piles," says Mezitt. The site usually contains 10 windrows at any given time. Once the piles are five feet tall, two windrows are consolidated into one. Materials are allowed to compost and cure for a year and are then screened with a Read Screen-All owned by the nursery.

The composting operation has not drawn complaints from neighbors. "We have a lot of acreage and the composting site is situated in an area where it won't cause a problem," he adds. "The biggest odor is from grass clippings so we put them at the opposite end from where houses are located."

Last year, the nursery produced 3,000 cubic yards of finished compost, most of which was used on its own land. "We don't have enough compost to actively sell it. Our first priority is our own needs," says Mezitt, adding that many customers are interested in buying compost. He expects the composting operation will be expanded next year. "We've sent out mailings to waste haulers and municipalities and are expecting to get more materials from these sources."

Mezitt is interested in composting food residuals from grocery stores and other commercial generators and has met with Geoffrey Kuter of Agresource, who is working with generators to provide compostables to several farms in Massachusetts. Kuter also would contract to turn the nursery's windrows with his company's windrow turner.

— Molly Farrell
ated that they will. Results showed that the major deterrent is the limited availability of suitable land (53 percent identified lack of space as the primary reason). This may not be much of a problem for businesses such as nurseries — which generally have large land holdings — but it does limit the possibilities for landscape and lawn care oriented businesses. It seemed, however, that there is a desire for expansion if land were available. This was corroborated by responses to a question about what would persuade the individual to take additional materials for composting. The most frequent response (56 percent) was “more land availability.”

The next most frequent reason (43 percent) for not expanding was that they have no need for additional compost product. (This response is cause for some concern. Could it be that we are approaching the saturation point for compost products within this industry?) Fifty-eight percent felt that they produced the amount of compost they can use or sell or have more than they need, while 42 percent produced less than they feel they can use or sell. On the other hand, it may indicate that further educational programs are needed both to help producers market their product and teach potential users how to incorporate these materials as soil amendments, disease suppressants, topdressings, mulches and slow release nutrient sources.

Businesses also identified “money” as an incentive for enlarging their composting operations. Though money was not defined in the survey, it is assumed that financial incentives in terms of grants, subsidies, profit from sale of product and payments of tipping fees from municipalities, businesses or private citizens delivering yard trimmings would convince these individuals to expand their composting operations. Thirty percent of respondents indicated that they are interested in availability of grant funds for expanding composting operations.

Reasons why some businesses are not planning to expand compost operations also might be inferred from data addressing concerns those companies have about composting. The most prominent issue is regulations. Answers on the questionnaire, as well as comments received during the administration of the survey, indicate a serious concern about overregulation of composting activities by government agencies. Many of the businesses who did not return the survey felt that by responding, they opened themselves to unnecessary scrutiny by government regulators. (This was discerned from follow up phone calls made to those who did not return the survey.) While almost all of the survey respondents recognized the benefits of composting in terms of plant residue disposal and value of compost products in soil management, most felt that overzealous government regulation will restrict their involvement in composting.

The presence of contaminants in the form of trash and litter also ranks high among the concerns. This can increase the costs incurred by composters as they pay for additional labor to sort out contaminants, and can affect end product quality. Social issues also were apparent by the fact that 39 percent of respondents view odors as a concern and 32 percent worry about complaints from neighbors.

Ronald Kujawski and James Allen are with the University of Massachusetts Cooperative Extension in Amherst.