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Molded for **Success**

Begun in 1998, the Missouri Botanical Garden Plastic Pot Recycling Program has collected and recycled more than 300 tons of plant containers and trays that would have ended up in landfills.

When plant pathologist Dr. Steven Cline became horticultural educator and manager of the Missouri Botanical Garden William T. Kemper Center for Home Gardening in 1989, he couldn't have imagined that only a decade later he would play a major role in developing a pilot program that has recycled more than 300 tons of horticultural plastic in metropolitan St. Louis.

In 1998, the first year of the Plastic Pot Recycling Program, 30,000 pounds (15 tons) of plastic containers and trays were collected and recycled at the Missouri Botanical Garden's recycling site on the west parking lot of the Monsanto Center, the garden's research facility. Only 10 years later, the recycling program achieved — and exceeded — its goal for 2008 of collecting and recycling 150,000 pounds (75 tons) of horticultural plastic, five times the amount of the first collection. To date, the program has saved more than 670,000 pounds of plastic garden pots, cell packs and trays from landfills.

by BARBARA PERRY LAWTON

The need. According to the EPA, US gardeners, garden centers and garden contractors together dispose of more than 350 million pounds of plastic containers and trays every year. The agency estimates that only 3.9 percent of the plastic generated in the US is recycled.

Noting how quickly plastic pots and trays piled up at home and at the Missouri Botanical Garden, Cline realized there should be a way to recycle a large percentage of horticultural plastic in a practical and economical manner without sending the material to a landfill.

Cleaning the pots and reusing them had proved to be impractical because the labor required to sterilize the plastic would cost more than the containers were worth. While homeowners may take the time to scrub plant pots with a 10 percent bleach solution, this is not possible for large-scale operations, such as nurseries and public gardens. Upon researching the problem, Cline found that the best solution would be to sort the plastics, grind them up and get the material back into the hands of fabricators.

Program evolution. How to finance this kind of recycling program was the initial challenge. In 1998, Cline wrote a grant application to local waste management groups and received \$13,794 from the St. Louis-Jefferson Solid Waste Management District. The purpose of the project would be to stimulate reuse, recycling and diversion from landfills. The pots were collected over several weekends on a parking lot at the Missouri Botanical Garden. That first year, approximately 30,000 pounds of horticultural plastic were collected, processed, sold and transported to a plastics plant for compression molding.

The St. Louis-Jefferson Solid Waste Management District continued to help fund both the program and some needed equipment, and other grantors began to come on board, as well. In 2004, the Missouri Environmental Improvement and Energy Resources Authority contributed \$21,000 for the purchase of a small granulator to process the pots. In 2005, Monrovia Growers, Azusa, CA, began contributing to the recycling program and has continued to participate.

The waste management district contributed \$25,000 in 2006 for three recycling trailers, and in 2008, Monrovia Growers contributed \$50,000 toward the purchase of six recycling trailers. These additions represented a major move into the community, as the trailers would be on the properties of seven area retail nurseries where they would serve as collection satellites. Other funding continues to support the Plastic Pot Recycling Program.

Collecting, processing, selling and transporting the horticultural plastic are the key parts of the recycling program. As Cline quickly discovered, the development of those four steps did not proceed at the same rate. First, collecting had to be encouraged through incentives, such as a little plant or ticket to the garden. Then, collecting grew to such large quantities that the equipment couldn't process quickly enough. As the message spread throughout the St. Louis area, Cline's comparatively small project grew to be a good-sized endeavor.

By 2008, the program had expanded from a few weekends a year to several months a year and from a few volunteers manning the collection site to volunteers plus several part-time employees. Equipment has grown from one small grinder to a 22-foot conveyor feeding a large granulator able to process many tons of plastic each year.

Pots and trays are sorted by plastic type and granulated on-site into small chips that are easily transported for recycling. The plastic regrind is sold back to con-

10 years of successful recycling

The following shows each year, grant amount, grant source and estimated pounds of horticultural plastic collected during the Missouri Botanical Garden Plastic Pot Recycling Program.

1998	\$13,794	St. Louis-Jefferson Solid Waste Management District	30,000 pounds
1999	\$17,157	St. Louis-Jefferson Solid Waste Management District	39,000 pounds
2000		No collection due to a lack of grant funding	
2001	\$25,644	St. Louis-Jefferson Solid Waste Management District	59,000 pounds
2002	\$24,852	St. Louis-Jefferson Solid Waste Management District	95,000 pounds
2003	\$34,914	St. Louis-Jefferson Solid Waste Management District	28,000 pounds
2004	\$34,339	St. Louis-Jefferson Solid Waste Management District	40,000 pounds
2005	\$68,000	St. Louis-Jefferson Solid Waste Management District	60,000 pounds
2006	\$45,000	St. Louis-Jefferson Solid Waste Management District	70,000 pounds
2007	\$25,000	St. Louis-Jefferson Solid Waste Management District	100,000 pounds
2008	\$30,000	St. Louis-Jefferson Solid Waste Management District	158,000 pounds

Other significant grants

2004	\$21,000	Missouri Environmental Improvement and Energy Resources Authority	Granulator
2005	\$5,000	Monrovia Growers	Plastic lumber
2006	\$5,000	Missouri Environmental Improvement and Energy Resources Authority	Conveyer
2006	\$15,000	Monrovia Growers	Granulator
2008	\$50,000	Monrovia Growers	Six recycling trailers



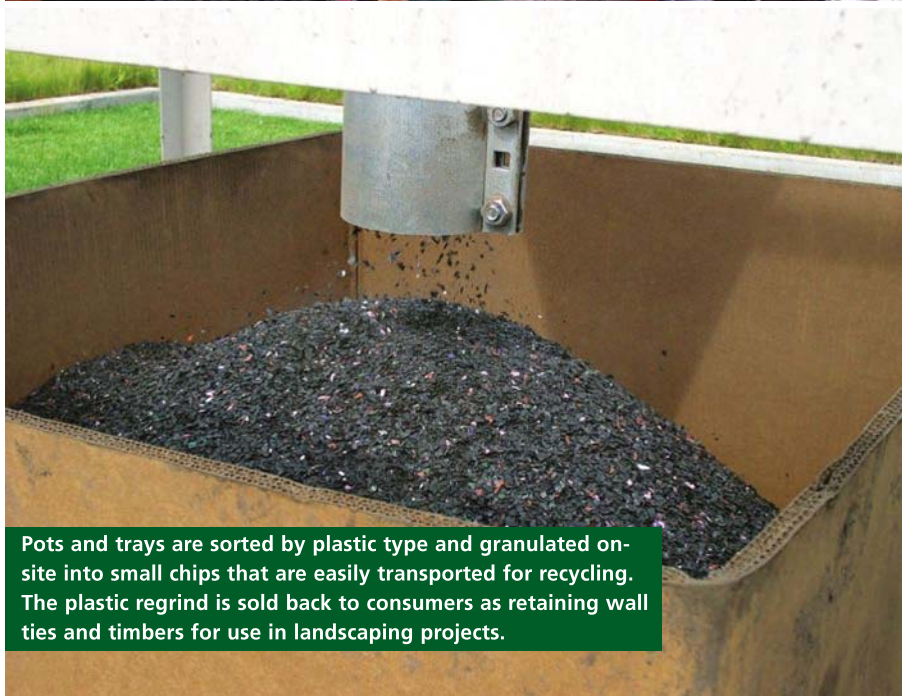
Volunteers this past summer collected more than 150,000 pounds of horticultural plastic originally destined for landfills as part of the Missouri Botanical Garden Plastic Pot Recycling Program.

sumers as retaining wall ties and timbers for use in landscaping projects. The plastic timbers are water- and pest-resistant, and can be cut and drilled similar to wooden lumber.

A new 900-square-foot staging area has been developed for unloading trailers. A trailer lift has been installed to allow for safer handling of materials. Recycled plastic ties made from the processed plastic



Dr. Steven Cline, manager of the Missouri Botanical Garden William T. Kemper Center for Home Gardening, looks through pots and trays collected by volunteers for recycling.



Pots and trays are sorted by plastic type and granulated on-site into small chips that are easily transported for recycling. The plastic regrind is sold back to consumers as retaining wall ties and timbers for use in landscaping projects.

have been used to build a 100-cubic-yard storage bin under a large canopy. This allows bulk storage to be efficiently handled until the regrind can be sold.

What will the future bring? Now that programs for recycling horticultural plastic are developing at other operations throughout the green industry, horticultural companies are beginning to respond to consumers' desire for more environmentally sound ways to contain and transport plants.

Manufacturers of plastic pots and trays are marking their products more clearly so that sorting the various plastics becomes easier. Most horticultural pots and trays are made of three kinds of recyclable plas-

tic — polyethylene, polypropylene and polystyrene — marked as No. 2, No. 5 and No. 6, respectively, in the triangular labels found on the container.

Companies, such as Ball Horticultural Co., West Chicago, IL, and Summit Plastic Co., Tallmadge, OH, are introducing plant containers made of rice hulls, cow manure and other natural and biodegradable fibers. Other companies, like MasterTag Inc., Montague, MI, are making plant labels that are biodegradable or recyclable. (See "Tagging Up and Going 'Green'" in the Sept. 1, 2008, issue of *AMERICAN NURSERYMAN*.)

Efforts such as these will help make commercial horticulture and plant production more environmentally sustain-

Items for recycling

Wanted

- Polyethylene No. 2 plastic pots
- Polypropylene No. 5 plastic pots
- Polystyrene No. 6 plastic cell packs and trays

Not wanted

- Plastic bags
- Household or food plastic
- Metal rings or hangers
- Clay pots
- Soil

able. At the same time, horticultural plastic is not going away — it's just too easy and inexpensive to manufacture.

Endorsing success. The Missouri Recycling Association honored the Missouri Botanical Garden Plastic Pot Recycling Program with a Choose Environmental Excellence Award in 2003 and a Best Use of Recycled Materials Award in 2004.

But the greatest honor to date came in April 2008 when the American Public Gardens Association (APGA) gave the Missouri Botanical Garden its 2008 Award for Program Excellence. This award is given to an APGA member institution "which has displayed a truly innovative spirit in the development of new programs and has pioneered in one or more of the disciplines appropriate to public horticultural institutions, including education, conservation, development, botany, gardening, horticulture, research, extension or administration."

Kris Jarantoski, executive vice president and chairman of the APGA awards committee, notes that the association was "impressed with not only Missouri Botanical Garden's recycling of its own plastic, but its outreach to a greater audience to help the environment. The program is a model for all public gardens of all sizes in all regions of the country."

The Missouri Botanical Garden Plastic Pot Recycling Program now serves as inspiration and a source of information for public gardens in several parts of the country, including Chicago and Minneapolis.

Barbara Perry Lawton has served as president of the Garden Writers Association and for nearly 20 years contributed a weekly garden column to the St. Louis Post-Dispatch. She is a Master Gardener and currently volunteers at the Missouri Botanical Garden, St. Louis. She has written several gardening books; her latest is Parsleys, Fennels, and Queen Anne's Lace. She can be reached at barbaralawton@att.net.