From Forest Nursery Notes, Winter 2013

5. Recycling plastic: how to reduce and amount of plastic ending up in landfills.
Newman, J. Greenhouse Management 32(2):18-21. 2012.

6 QUICK TIPS

One of the most successful recycling programs in the United States was developed at the Missouri Botanical Gardens. Since its inception in 1998, the Missouri Botanical Garden has processed more than 980,000 pounds of plastic pots, cell packs and trays through its Plastic Pot Recycling program, established by Steve Cline.

RECYCLING PLASTIC

How to reduce the amount of plastic ending up in landfills

Most greenhouses use large amounts of plastic including pots, flats, hanging baskets, greenhouse film, drip irrigation tape, plastic plant labels and plastic containers for agrichemicals. The extensive use of plastic has resulted in a significant waste disposal problem. One method for reducing the amount of horticultural plastic that ends up in landfills is recycling. Opportunities for recycling have increased in recent years due to high oil prices that have resulted in increased prices for recycled plastics, as well as growing consumer interest in recycling. There are more community curbside programs and state-supported programs for recycling plastic. Additionally, horticulture organizations such as the Missouri Botanical Garden, big boxes and garden centers have programs to collect and recycle plastic containers from gardeners. Further, there is a successful program developed by the Ag Container Recycling Council to safely collect and recycle plastic crop-protection product containers, including pesticide, fertilizer and adjuvant product containers.

The number of growers that are recycling is also increasing. A nationwide survey published in 2010 reported that 69.6 percent of the greenhouse and nursery crop growers recycled plastic containers; although less than one-fourth of surveyed growers used recycled plastic, those that did reported that recycled containers accounted for just under half of all container types used. Helping to resolve the greenhouse industry's waste problem by recycling is an environmentally sound response to the larger societal concern and promotes sustainability of the entire greenhouse production industry. Further, although most plastic buyers do not pay much for used plastic, growers that recycle save on expensive pickup, hauling and waste disposal fees.

> "Growers that recycle save on expensive pickup, hauling and waste disposal fees."

Despite the benefits, many barriers have impeded grower adoption of recycling practices. Here are some tips to keep in mind for developing and establishing a successful plastic recycling program in your greenhouse operation.

QUICK TIP 1

Know the plastic types that you use. If you don't know them, ask your supplier. Film plastic for greenhouse covers is low-density polyethylene plastic. Most hard plastic containers have a code stamp on it: No. 2 keynotes high-density polyethylene, No. 5, polypropylene; and No. 6, polystyrene. Each type of plastic should be carefully sorted and segregated on separate pallets. Mixed types may be rejected by the plastic buyer or a sorting fee charged because most plastic types do not blend when they are melted during recycling.

QUICK TIP 2

Identify potential plastic buyers that are close to your operation or pick up in your area, either onsite or at local collection points. Contact your cooperative extension office or local trade association to find out who other local growers are working with on recycling. Some manufacturers or brokers of recycled pots, such as East Jordan Plastics and Myers Industries Lawn and Garden Group, buy used pots. A searchable national directory of plastic buyers is available at www.plasticsmarkets.org. A list of contractor service areas for recycling plastic crop-protection product containers is available at the ACRC website www.acrecycle.org.

Match suppliers with the types of plastic that you use.

Photos courtesy of the Missouri Botanical Garden

The Garden purchased a granulator and conveyor to process plastic into chips.

Some recyclers only take specific types of plastics. For example, some recyclers will not accept plastic films used as greenhouse or hoop house covers because they break down from UV radiation, which limits their usefulness when recycled.

QUICK TIP 3

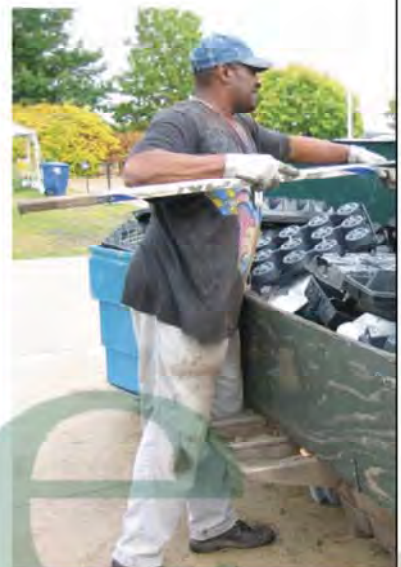
Contact the recycler for the price you can expect to receive for used plastic (if any) and recommended collection and bundling requirements required for acceptance. Film plastic may need to be cut, rolled or folded and must be free of lathing, staples and saran. Further, unless plastic films are baled, they are difficult to transport due to very low bulk density (recycling companies will occasionally provide baling equipment while growers are removing greenhouse coverings). For hard plastic containers, remove metal hangers and rings and nest like-containers together. Tie plastic to be recycled onto pallets; compress with baler or shrink wrap. Plastic crop-protection product containers must be empty and triple-rinsed or pressure-rinsed to remove all standing residue.

> "Every time plastic is recycled, contaminants and structural degradation reduces the quality of the plastic."

QUICK TIP 4

Plastic needs to be as clean as possible. Horticultural plastics are typically contaminated with soil and other organic materials which reduce the quality of recycled plastic compared to virgin material. Every time plastic is recycled, contaminants

and structural degradation reduces the quality of the plastic, making it more difficult to remanufacture the same product. Some recyclers will not take plastic unless it has been washed to remove soil. Excess soil and other debris must be removed and film plastic must not be muddy. Store collected plastic on clean surfaces away from dusty or dirty areas. Keep bales off the floor when moving them so that they don't pick up dirt and contaminants.



ABOVE: Garden staff grind plastic into small chips that are easily transported for recycling. The marketed plastic chips are eventually made into plastic lumber and other recycled products.

RIGHT: The Garden serves as a central collection site and there are retail garden centers throughout the area that participate as satellite collection sites.

QUICK TIP 5

When storing plastic on-site, maintain conditions that are safe and prolong the life of the product. If storage must be outdoors, plastic should be kept dry with minimum exposure to the sun, which can cause UV degradation. Safe stacking height should be based on integrity of the bales, ceiling height, bale dimensions and fire codes or building regulations. When stacking against a wall, the bottom bale should be about 6 inches out from the wall; otherwise subsequent bales will lean away from the wall instead of into it.

QUICK TIP 6

Volume makes a recycling program a realistic option for growers and is the key to success. Many recyclers require a minimum volume of plastic before picking it up, which requires a large storage area. Some growers have found that working with their retail customers helps to achieve the volume of plastic that buyers require: retailers collect empty containers and trays for recycling from customers and the scrap goes back to the production facility for storage. Small greenhouse growers who do not have the space to store a large amount of plastic for recycling may be able to combine waste with other growers in the community. When multiple growers consolidate plastic at a central location for pick-up, it is important that each grower mark each individual skid with their business contact information if they expect payment from the plastic buyer. GM

? HAVE A QUESTION? You can write Julie at jpnewman@ucdavis.edu.