From Forest Nursery Notes, Winter 2012

16. © Greenhouse and landscape performance of bedding plants in biocontainers.
Kuehny, J. S., Taylor, M., and Evans, M. R. HortTechnology 21(2):155-161. 2011.

Research Reports

Greenhouse and Landscape Performance of Bedding Plants in Biocontainers

Jeff S. Kuehny[1,4], Matt Taylor[2], and Michael R. Evans[3]

Additional index words. pots, sustainability, biodegradable

Summary. **Biodegradable and plastic containers were evaluated for greenhouse and landscape production of 'Score Red' geranium (*Pelargonium ×hortorum*), 'Grape Cooler' vinca (*Catharanthus roseus*), or 'Dazzler Lilac Splash' impatiens (*Impatiens wallerana*) at Louisiana State University (LSU), Baton Rouge, LA; Longwood Gardens (LWG), Kennett Square, PA; and University of Arkansas (UA), Fayetteville, AR. Of the 5-inch containers, the highest geranium and vinca shoot growth occurred in plastic containers compared with bioplastic and rice straw containers. Of the 4-inch containers, paper containers produced the greatest geranium shoot growth compared with the peat containers at LSU and LWG. Shoot growth in impatiens was similar for all container types at all three locations. When all container types were considered, there was no difference in the root growth of geranium or impatiens at all three locations. However, vinca had the highest root growth in paper containers compared with that in peat and coconut fiber. The root:shoot (R:S) ratio of geranium were mixed for all pot sizes, types, and locations. Vinca R:S ratio was highest in both the 4- and 5-inch plastic control containers at LSU and lowest in both plastic containers at LWG. Direct plant containers generally performed well in the landscape as the plants grown in plastic containers at LWG. Plants grown in all tested containers produced marketable plants for both the retail and landscape markets. However, growers and landscapers should be aware of growth differences that may occur when using biodegradable containers and align production practices accordingly.**

Bedding plants are one of the primary products of the floriculture industry. In the United States, the wholesale value for bedding and garden plants in 2007 was ≈$6.5 billion, which was 58% of total gross sales for floriculture crops [U.S. Department of Agriculture (USDA), 2009]. These crops are commonly grown in plastic containers, which present a significant disposal issue for consumers and the horticulture industry (Hall et al., 2009). Producers of bedding plants may encounter disposal issues of these plastic containers, particularly if plant materials are not sold during a season, and consumers and landscapers must also dispose of plastic containers once the plants are removed (Evans and Karcher, 2004). An estimated 1.7 billion pounds of plastic were used in agriculture in 2002 (Levitan and Barros, 2003).

There are numerous types of alternative, biodegradable containers that can be composted or planted directly into the soil, which eliminate the need for plastic containers (Rodda, 2008). The most common non-plastic biodegradable container has been the peat container. Although referred to as "peat" containers, they are typically made from a combination of peat and waste wood pulp or paper. Peat containers were reported to have advantages over plastic containers by reducing transplant shock and transplanting time, air pruning roots, quicker establishment of finished plants, and their ability to biodegrade (Khan et al., 2000). However, peat containers may have significant disadvantages compared with plastic containers; they are more expensive, they have been shown to have lower dry and wet strength than the plastic containers, and algae can grow on their outer walls (Evans et al., 2010; Evans and Karcher, 2004). Additionally, plants grown in peat containers required more water than plants grown in plastic containers (Evans and Karcher, 2004). When transplanting Jiffy® peat pots (Jiffy Products of America, Batavia, IL), it is recommended to remove or bury the rim of the peat pots so that the rim does not act as a wick to dry out the substrate (Grower's

This project was supported by the Louisiana State University Agricultural Center, Louisiana Nursery and Landscape Association, Arkansas Division of Agriculture, and Longwood Gardens.

The mention of trade names implies no endorsement of the products mentioned, nor criticism of similar products mentioned.

[1]Professor, School of Plant, Environmental, and Soil Sciences, 137 J.C. Miller Hall, Louisiana State University, Baton Rouge, LA 70803

[2]Research Horticulturist, Longwood Gardens, Kennett Square, PA 19348

[3]Professor, Department of Horticulture, University of Arkansas, Fayetteville, AR 72701

[4]Corresponding author. E-mail: jkuehny@lsu.edu.

Units

To convert U.S. to SI, multiply by	U.S. unit	SI unit	To convert SI to U.S., multiply by
29.5735	fl oz	mL	0.0338
0.3048	ft	m	3.2808
3.7854	gal	L	0.2642
2.54	inch(es)	cm	0.3937
16.3871	$inch^3$	mL	0.0610
0.4536	lb	kg	2.2046
28.3495	oz	g	0.0353
1	ppm	$mg \cdot L^{-1}$	1
(°F − 32) ÷ 1.8	°F	°C	(1.8 × °C) + 32