

produced from seeds meant that propagules could be held in storage by propagators until needed (up to 2 years, after which we found that seed viability declines markedly). Redhead grass seeds did not germinate well (a maximum of 14%, and more commonly 2% germination in our tests), and we did not see seeds on the water star-grass, but both grew vigorously enough from cuttings that they were successfully used in volunteer grower workshops by the Chesapeake Bay Foundation and the Maryland Department of Natural Resources. While sago pondweed was also very easy to grow and a potential species for volunteers, disturbing potted stock plants to dig through the soil for tubers was a messier, slower process than collecting seed or cuttings from the other species. Finally, common waterweed and southern naiad, although readily propagated, were less promising. Plants turned off-color, became fragile, and were quickly fouled by algae that was difficult to remove without damaging plants. Both species require further study before they would be suitable for either production systems or volunteer projects.

Remontant Hydrangeas?®

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NATURE OF WORK

Most gardening texts state that bigleaf hydrangeas, *Hydrangea macrophylla* hortensia types (syn. var. *macrophylla*), *H. macrophylla* lacecap types (syn. var. *normalis*), *H. serrata* (syn. *macrophylla* var. *serrata*), and their hybrids form flower buds the year before flowering. If those buds are destroyed by pruning or freeze injury then plants will not flower because new flower buds will not be formed then develop and open during the current growing season.

Recent research has demonstrated that bigleaf hydrangea cultivars exist that are truly remontant as well as others that will flower in autumn even if they have already flowered earlier in the year. Speculation exists concerning whether the flowers are from lateral buds that were not removed or freeze damaged; or whether new flower buds form during favorable conditions in late summer and early fall then open during an extended period of short days and nonfreezing autumn temperatures (Adkins, 2002; Adkins et al., 2002). To the landscape and gardening trade, it does not matter why these hydrangeas rebloom or continue to bloom into autumn. They want to know which ones will be both summer and fall flowering.

The bloom times of cultivars in an existing hydrangea collection (Adkins et al., 2002) at Mountain Horticultural Crops Research Station (MHCRS), Fletcher, North Carolina, were recorded weekly during the 2001 growing season. Plants that were flowering in July as well as flowering on 1 Oct. 2001 are listed as reblooming in Table 1. Those that flowered during the 2001 season but were not in bloom on 1 Oct. are listed in Table 2. Those that did not flower at all have been reported previously (Bir and Conner, 2000; Reed, 2002).

Table 1. Cultivars of *Hydrangea macrophylla* that were flowering in July as well as in October 2001 at Mountain Horticultural Crops Research Station, Fletcher, North Carolina.

Cultivar	
All Summer Beauty	Lanarth White
Altona	Maréchal Foch
Blauer Prinz (syn. Blue Prince)	Mariesii Lilacina (syn. Lilacina)
Blue Boy	Madame Emile Mouillère
Blue Danube	Mariesii Grandiflora
Coerulea Lace	(syn. White Wave)
Decatur Blue	Nikko Blue
Europa	Revelation
Geisha Girl	Souvenir du Président Doumier
Kluis Superba	Veitchii
La Marne	

Table 2. Cultivars of *Hydrangea*, *Hydrangea macrophylla* and *H. serrata* that flowered but did not flower in Fall 2001 at Mountain Horticultural Crops Research Station, Fletcher, North Carolina.

Cultivar		
<i>Hydrangea</i> Preziosa	<i>Hydrangea macrophylla</i> Ami Pasquier Ansley Ayesha Beauté Vendômoise Cardinal Red Fasan Générale Vicomtesse de Vibraye Gertrud Glahn Goliath Hadsbury Hamburg Heinrich Seidel Holstein Kastlen Masja Mathilda Gutges Mousseline Niedersachsen Oregon Pride Otaksa Monstrosa Paris Red Star Rose Supreme Sea Foam Shishiva Teller Rot (syn. Teller Red) Trophy	<i>Hydrangea serrata</i> Bluebird

RESULTS AND DISCUSSION

Most plants were killed to the ground by cold weather during the 2000-2001 Winter. First killing frost was on 10 Oct. 2000 with the lowest winter temperature recorded at MHCREC, Fletcher being 8°F on 20 Dec. 2000. However, much flower and vegetative bud damage occurred in spring due to variable temperatures. For example, high temperatures in excess of 75°F were recorded every day from 6 to 12 April 2001 followed by 3 nights below freezing the next week, another 3 days above 75°F then the last frost was on 27 April 2001. New growth in response to warm spring temperatures was killed by exposure to temperatures in the 20s.

SIGNIFICANCE TO THE INDUSTRY

Twenty of the fifty-two cultivars which flowered produced new flowers both in early summer and early fall.

LITERATURE CITED

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Does Wulpak Have Fertilizer Value?®

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NATURE OF WORK

Wulpak is a processed wool fiber product that has been used as mulch in container nursery production. In studies conducted at MHCREC, Fletcher, North Carolina in 2000, when Wulpak was applied at rates calculated to provide the same amount of nitrogen as the standard fertilizer products, controlled-release fertilized plants produced from 200% to 400% more growth during the experiment than those receiving only Wulpak. Data indicated that available nitrogen from Wulpak was released during the first 2 weeks of the experiment. For some, but not all, species a superior root system seemed to develop where Wulpak was top-dressed, possibly because of temperature and water stress modification by Wulpak as a mulch.

The objective of the test was to determine whether Wulpak as a fertilizer source can be a benefit to plant growth when standard controlled-release fertilizers are used. To evaluate this, Wulpak was applied at label recommended rate of 45 g per 1-gal pot. The controlled-release fertilizer Wilbro 19N-5P-12K was applied at the rate of 1.5 g N (21 g actual fertilizer) per gal per pot per month which was statistically the best rate in the 2000 tests. Additional treatments were 0.25 times that rate and 0.50 that rate, with or without Wulpak used as a mulch. There was also an unfertilized and unmulched treatment.