

## New Plants From the Landscape Plant Development Center®

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### BACKGROUND OF THE CENTER

Founded in 1991 by Dr. Harold Pellett, the Landscape Plant Development Center is a non-profit 501c(3) organization that operates solely on contributed funds and royalties in order to promote the development of durable, cold-hard ornamentals. After having taught for 34 years at the University of Minnesota and developing at least 25 (Table 1) well-recognized plants, he recognized how little was being devoted to the development of new durable, cold-hardy plants. First begun and still headquartered at the Minnesota Landscape Arboretum, the Center has a dedicated and still expanding distribution of full- and part-time researchers across the country.

The Center's unique approach to research and development is unmatched by any other institution. It has adopted a cooperative approach to its work that consists of engaging a network of approximately 80 plant scientists from universities, research stations, and arboreta from across the globe. It provides important access to a wide range of plant collections and test sites in different geographic regions. The Center provides funds to hire research technicians for these cooperative efforts at academic institutions and arboreta and those institutions in turn, leverages the use of their existing facilities and, in many cases, the expertise of their scientists to help conduct the research.

The Center's research network ensures effective and efficient research. Its ability to research and breed plants in diverse geographic regions and under a range of environmental conditions promises that the strongest, most hardy plants are developed.

### RECENT INTRODUCTIONS FROM THE CENTER

*Physocarpus opulifolius* 'Center Glow' (Fig. 1) Plant Patent No. 16,894 is the Center's first shrub introduction. It is a hybrid between 'Diabolo' and 'Dart's Gold' cultivars. It is useful in the landscape as a border or background for perennial or annual flower beds or in foundation plantings of larger buildings.

*Clematis* 'Center Star' (Fig. 2) Plant Patent No. 17010 is a new herbaceous perennial. A hybrid between *C. integrifolia* and *C. hexapetala* (see either *C. forsteri* or *C. recta* subsp. *recta* var. *lasiosepala*); it is sterile and has a long flowering period, providing an abundance of blue flowers for 6 to 8 weeks in the summer.

*Pyrus* 'Silver Ball', Silver Ball™ pear (Fig. 3) makes an excellent small specimen tree that serves well as a focal point in the landscape where trees of a shorter stature are desired.

### PLANTS CURRENTLY BEING DEVELOPED AT CORNELL

***Rhododendrons (Azaleas)***. It combines the best of the Northern Lights series with other deciduous species with late-season blooms. General goals are to produce late-blooming plants with better mildew resistance.

**Buddleja.** General goals are to tame this garden favorite. Breeding efforts at Cornell have been done all year long utilizing greenhouse facilities, allowing us to produce at least three generations per year. To date, we have accomplished what could normally take 12 years outdoors in just 4 years. Color range has been expanded and overall flower size has been increased. More compact habits and forms potentially suitable to container culture have also been developed. However, invasiveness is still a very big concern and steps have been taken to permanently sterilize any selections we release through molecular techniques. Productions of low-fertility or sterile plants using species other than *B. davidii* have been promising but the form and reblooming habit of *B. davidii* are hard to beat. Some sterility has been observed in plants produced by crossing two different interspecific hybrids involving *B. davidii* and by using gamma radiation. Other species used for better leaf texture, cold hardiness, and better flower color include: *Buddleja marrubifolia*, *B. alternifolia*, *B. crispa*, and *B. fallowiana*.

**Diervilla.** This is an extremely adaptable and resilient native plant that, until now, has not had much diversity in terms of flower color, flower size, overall habit, and leaf color. Just by carefully screening thousands of seedlings we have been able to coax a stable variegated chimera in *D. sessilifolia* out of a seedling with originally just a hint of variegation in a couple of leaves. We have also produced exciting plants with bold bronze leaf color and pink flowers by using *Weigela* as well.

**Weigela.** Shorter more compact plants with novel blossom colors such as yellow, orange, magenta, red, and white. In addition, better repeat blooming and plants with better foliage colors that include dark red, bronze, and gold are sought. Increasing cold-hardiness could also be beneficial. Crosses with *Diervilla* have been made with limited success.

**Quercus.** Combining the best qualities of hardy species that are tolerant of compacted soils with species from Mexico and the desert Southwest that tolerate high pH and salt (Table 2) is being sought. Improve the rooting potential of valuable urban forestry species by crossing them with easy-to-root species. Most crosses are very intermediate between both parents and some are quite vigorous. Currently stock is being multiplied through cutting and stooling techniques by Nina Bassuk.

**Physocarpus.** Most efforts to improve *Physocarpus* at Cornell are to find smaller growing plants with good-colored leaves. This has been accomplished by first making crosses between red- and yellow-leaved forms and planting individuals in isolated plantings. Open-pollinated seed from these plants is then irradiated and then grown out.



**Figure 1.** *Physocarpus opulifolius* 'Center Glow'.



**Figure 2.** *Clematis* 'Center Star'.



**Figure 3.** *Pyrus* Silver Ball™ pear.

**Table 1.** Plants introduced by Dr. Harold Pellet.

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<i>Acer rubrum</i> 'Autumn Spire'
<i>Acer rubrum</i> 'Northwood'
<i>Acer</i> × <i>freemanii</i> AF #1, Firefall™ Freeman maple
<i>Aesculus</i> 'Autumn Splendor'
<i>Cornus hessei</i> Garden Glow™ hess dogwood
<i>Cornus sericea</i> 'Cardinal'
<i>Exochorda serratifolia</i> 'Northern Pearls'
<i>Forsythia</i> 'Northern Sun'
<i>Gymnocladus dioica</i> 'Stately Manor'
<i>Lonicera</i> 'Freedom'
<i>Lonicera</i> 'Honey Rose'
<i>Maackia amurensis</i> Summertime™ Amur maackia
<i>Phellodendron amurense</i> 'His Majesty'
<i>Pinus resinosa</i> 'Wissota'
<i>Prunus nigra</i> 'Princess Kay'
<i>Rhododendron</i> Candy Lights™ azalea
<i>Rhododendron</i> 'Golden Lights'
<i>Rhododendron</i> 'Lemon Lights'
<i>Rhododendron</i> Lilac Lights™ azalea
<i>Rhododendron</i> 'Mandarin Lights'
<i>Rhododendron</i> 'Northern Hi-Lights'
<i>Rhododendron</i> 'Orchid Lights'
<i>Rhododendron</i> 'Pink Lights'
<i>Rhododendron</i> 'Rosy Lights'
<i>Rhododendron</i> 'Spicy Lights'
<i>Rhododendron</i> 'Tri-Lights'
<i>Rhododendron</i> 'White Lights'
<i>Sorbus</i> Patio Pride™ mountain ash
<i>Viburnum</i> 'Emerald Triumph'

**Table 2.** All possible crosses attempted between 2003 to 2006.***Quercus alba* × *Q. macrocarpa***

<i>Q. fusiformis</i>	<i>Q. minima</i>
<i>Q. geminata</i> mix	<i>Q. polymorpha</i>
<i>Q. lyrata</i>	<i>Q. rugosa</i>
<i>Q. mexicana</i> sp. NC State	<i>Q. virginiana</i> NC State
<i>Q. michauxii</i>	

***Quercus bicolor***

<i>Q. austrina</i>	<i>Q. geminata</i> mix
<i>Q. × bebbiana</i> ( <i>alba</i> × <i>macrocarpa</i> )	<i>Q. glauca</i>
<i>Q. chapmanii</i>	<i>Q. graciliformis</i>
<i>Q. dentata</i> 'Carl ferris Miller'	<i>Q. libani</i>
<i>Q. dentata</i> 'Pinnatifida'	<i>Q. lyrata</i>
<i>Q. fabri</i>	<i>Q. macranthera</i>
<i>Q. fabri</i>	<i>Q. macrocarpa</i>
<i>Q. fruticosa</i>	<i>Q. muehlenbergii</i> × <i>Q. robur</i>
<i>Q. fusiformis</i>	<i>Q. mexicana</i> NC State
<i>Q. gambellii</i>	<i>Q. minima</i>

- Q. mongolica* subsp. *grosseserrata*  
*Q. muehlenbergii*  
*Q. myrsinifolia*  
*Q. phillyreoides*  
*Q. polymorpha*  
*Q. robur* 'Pyramich', Skymaster™  
 English oak
- Q. robur* 'Argenteomarginata'  
*Q. robur* 'Concordia' (syn. 'Aureum')  
*Q. robur* 'Pectinata'  
*Q. rugosa*  
*Q. crassifolia* (syn. *Q. spinulosa*)  
*Q. turbinella*  
*Q. virginiana* NC State
- Quercus gambelii* × *Q. macrocarpa***  
*Q. lyrata*
- Quercus macrocarpa***  
*Q. fusiformis*  
*Q. geminata* mix  
*Q. lyrata*  
*Q. michauxii*  
*Q. minima*
- Quercus macrocarpa* 'Ashworth Strain'**  
*Q. fusiformis*  
*Q. geminata* mix  
*Q. lyrata*
- Quercus macrocarpa* × *Q. robur***  
*Q. aliena* var. *acutiserrata*  
*Q. aliena* × *Q. serrata*  
*Q. chenii*  
*Q. dentata*  
*Q. fusiformis*
- Quercus montana***  
*Q. aliena* × *Q. serrata*  
*Q. fusiformis*  
*Q. geminata* mix
- Quercus montana* × *Q. alba***  
*Q. fusiformis*  
*Q. geminata* mix  
*Q. lyrata*
- Quercus muehlenbergii***  
*Q. aliena* var. *acutiserrata*  
*Q. bicolor*  
*Q. chenii*  
*Q. fusiformis*  
*Q. geminata* mix  
*Q. lyrata*
- Quercus* 'Ooti' (*Q. bicolor* × *Q. robur*) × *Q. macrocarpa***  
*Q. fusiformis*  
*Q. geminata* mix  
*Q. graciliformis*  
*Q. lyrata*  
*Q. lyrata* × *Q. virginiana*  
*Q. macranthera*  
*Q. muehlenbergii* × *Q. robur*  
*Q. mexicana* sp. NC State  
*Q. michauxii*
- Q. × comptonae*  
*Q. prinoides*  
*Q. bicolor*  
*Q. gambelii*  
*Q. × comptoniae*  
*Q. turbinella*  
*Q. minima*  
*Q. virginiana* NC State  
*Q. michauxii*  
*Q. lyrata*  
*Q. michauxii*  
*Q. minima*  
*Q. variabilis*  
*Q. virginiana* NC State  
*Q. lyrata*  
*Q. mexicana* sp. NC State  
*Q. minima*  
*Q. virginiana* NC State  
*Q. michauxii*  
*Q. minima*  
*Q. virginiana* NC State  
*Q. minima*  
*Q. pedunculiflora*  
*Q. prinoides*  
*Q. variabilis*  
*Q. virginiana* NC State  
*Q. × comptoniae*  
*Q. minima*  
*Q. myrsinifolia*  
*Q. pedunculiflora*  
*Q. polymorpha*  
*Q. rugosa*  
*Q. variabilis*  
*Q. virginiana* NC State  
*Q. virginiana* Taylor's

*Quercus robur*

*Q. aliena* × *Q. serratta*

*Q.* × *bebbiana*

*Q. chenii*

*Q. dentata*

*Q. lyrata*

*Q. bicolor*

*Q. gracliiiformis*

***Quercus* × *schuettei***

*Q. fusiformis*

*Q. geminata* mix

***Quercus* × *warei* 'Long', Regal Prince® oak**

*Q. fusiformis*

*Q.* × *bebbiana*

*Q. polymorpha*

*Q. rugosa*

*Q. undulata*

*Q. fusiformis*

*Q. virginiana* Taylor's

*Q. geminata* mix

*Q. minima*

*Q. minima*

*Q. virginiana* NC State

*Q. minima*

*Q.* × *comptoniae*