

## Just Because They Are Native Doesn't Mean They Are Easy®

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### INTRODUCTION

Over the past 25 years there has been a continuous and ever increasing chorus of calls for more native plants in the landscape. Actually the call has been heard. In reviewing the offerings listed in the Plant and Supply Locator (2003) there are some 390 nurseries offering more than 550 different forms of native plants. In some parts of the country such as the Rockies and California native plants have often been a staple of the plant pallet primarily because they can readily fit into the landscape environmental niche. However, even where native plants are most useful there are always situations where highly desirable native plants just will not succeed. The objective here is to highlight some of these plants and explain and encourage nurseries and researchers to explore ways to overcome some of the problems associated with the production of some of the more desirable native plants.

### PROBLEM PLANTS

***Halesia diptera* var. *magniflora*.** This is a truly stunning flowering tree with large clusters of white flowers. It has a limited availability in the nursery trade because of difficulties in propagation. Cuttings root sparingly and in percentages that are not cost effective. Seed will come true to form if not cross-pollinated with other *Halesia* but the germination process is complex and percentages are often low. Chip budding seems to be the most reliable method but results can be disappointing with a final take of 50% not being unusual.

***Cotinus obovatus*.** This small tree occurs in the mountains of Tennessee and Alabama and in the landscape it is a highly desirable small tree with milky green leaves that turn to vivid displays of orange, yellow, and red in the fall. Cuttings can be rooted if the timing is absolutely perfect and ideal conditions can be met. But the cuttings can deteriorate quickly in mist beds and even a slight error of timing will result in little or no rooting. Seed set is tenuous at best and collection is a problem. Seed can be tricky to germinate and is mirrored by the close kinship of *Cotinus* to *Rhus*, another genus of known seed difficulties.

***Calycanthus floridus* 'Michael Lindsay' and *Calycanthus floridus* 'Athens'.** These two cultivars are excellent representatives of our Eastern U.S.A. native Carolina allspice. They are very good landscape plants but suffer from the poor rooting characteristics of the cuttings. If cuttings are rooted they do not always over winter well. It is uncertain if seed will come true from these plants but more to the point it should be noted that both appear to be self sterile and little if any seed is set. Grafting is not possible due to the suckering characteristics of the plants so propagation by cuttings is the only viable means of production.

***Magnolia macrophylla* var. *ashei*.** A magnolia that should be relegated to the status of the Cadillac of the *Magnolia* world but it hasn't been and probably won't be for a while. It is absolutely stunning while in bloom with huge numbers of white dinner plate flowers with a purple center with the fragrance is of vanilla and lemon.

Cuttings root sparingly and like the *Calycanthus* the plant appears to be partially if not completely self sterile. Since two or more individual plants are needed for pollination, seed set is often very limited. Once the seeds are germinated, and many times they are hollow, they do not grow on well and it takes quite awhile for them to gain a solid footing.

***Callicarpa americana.*** A beautyberry native in the southeastern U.S.A. and rewards those who have it with branches heavily laden with large clusters of purple fruit. Seed and cutting production is easy, but the plant is often rangy in appearance and not reliably cold hardy past Zone 8. The Mt. Cuba Center for the Study of Piedmont Flora is looking into this and working on the cold hardiness problem but still a lot of selection work has to be done to get a satisfying landscape plant.

***Asimina triloba.*** *Asimina triloba* is the great American paw paw and selection work has been done for improved fruit set. It makes a highly desirable and durable tree but is undesirable in the landscape because of small insignificant flowers and the resulting mess from the fruit, which is often loaded with a heavy seed set. Better forms and selections have to be budded as cuttings have not been reported to be rootable. Its close cousin, *A. reticulata* occurs in the lower southeastern U.S.A. and has a good habit and copious amounts of white flowers. The plants are small and could easily fit into a normal landscape situation and they do not have large fruit that is as distraction. They are not, however, reliably cold hardy and their potential is limited. Not much is known on the propagation of *A. reticulata* although if it could be crossed with *A. triloba* the resulting hybrids might be highly desirable.

***Gillenia (syn. Porteranthus) trifoliata* Mount Cuba pink form.** This selection is, as the unofficial name implies, a fine pink form of the normally white-flowered form of the plant. However, propagation by cuttings is almost a total failure. Root cuttings have not worked and there is uncertainty about seed coming true to type. Division so far has worked but is slow and cumbersome.

***Clematis texensis* and *Clematis pitcheri.*** These *Clematis* are two of the native *Clematis* that need more distribution. Both have production problems based upon the uncertainty of seed set with self-sterility being a common problem and this can be coupled with genuinely downright germination difficulties. Finding populations large enough to afford a reasonable seed set is difficult and the variations in the seedlings may not always be positive.

***Oxydendrum arboreum.*** A small tree that is one of the few true tree types found in the family Ericaceae. Its normal distribution is in the Smokey Mountains and Piedmonts of North Carolina and Georgia. It is easy from seed but down right difficult to graft and all but impossible to root from cuttings so that desirable selections and forms are hard to manipulate. Cuttings would be the fastest method but more work needs to be done.

***Leucothoe recurva.*** A deciduous *Leucothoe* found in the mountains of North Carolina and closely associated states. It has a stunning fall color and the white *Pieris*-type flowers are of interest. It is perhaps best by seed, which is generally difficult to obtain, as it is not the most common of woodland species.

***Pieris floribunda.*** Another ericaceous species put on Earth to stymie the nursery propagator. They do come true easily from seed but that is where the cozy relation-

ship ends. They resent transplanting and are prone to multitude of fungal diseases that can wipe out entire blocks of plants in short order. To further complicate matters they do not root from cuttings. There might be some hope in grafting the species to *P. japonica*, a more user-friendly plant, or to the hybrid *P. 'Brouwer's Beauty'* (*P. japonica* × *P. floribunda*).

***Asclepias purpurascens***. This is the new kid on the block for the genus *Asclepias* with really showy purple flowers. However, unlike its cousins *A. tuberosa* and *A. incarnata*, seed set is troublesome and it is not reliable from cuttings. Much more work is needed to get this plant into production.

***Amsonia 'Blue Ice'***. 'Blue Ice' is a beautiful blue-flowered form of the lowly *Amsonia*. It has the potential of being a real winner. However it is not reliable from seed and while it can be rooted from cuttings the timing is critical and *Amsonia* resent mist propagation. Careful attention to cutting timing and selection can be beneficial.

***Hibiscus coccineus***. *Hibiscus coccineus* is a native species of hibiscus with bright red flowers and showy green sepals that give the flowers a two-toned affect. It occurs naturally in bogs and wet spots and doesn't react favorably to normal landscape situations. Also it is not particularly hardy beyond Zone 7. It can be rooted from soft cuttings and comes readily from seed. Breeding work could accomplish a lot with both increased cold hardiness and a better form.

***Juniperus virginiana***. The eastern red cedar is often overlooked as a source of new landscape cultivars as it is in general difficult to root and in some cases to graft. The cultivar, Blue Sentenial, a Lorax Farms introduction has been stalled for years due to great difficulty in propagation. There are many desirable forms to be found in the wild but few if any have made it to the landscape trade.

***Baptisia 'Purple Smoke'* and *Baptisia sphaerocarpa 'Hello Yello'***. These two *Baptisia* taxa are respectively a fine purple-flowering form and a school-bus-yellow form of our native *Baptisia*. Both are in production but can be troublesome as cuttings taken too late will root but will not overwinter. It is difficult to establish correct cutting timing and this can be variable based upon weather conditions during the spring flush.

***Passiflora incarnata***. This passiflora is one of the few passionflowers with some degree of cold hardiness. It occurs naturally in Zone 8 and south and does come true readily from seed, however attempts to push it to Zone 7 and further north have failed. Perhaps selection work will find some individual plants that can tolerate more cold.

***Pinus strobus 'It's a Wonder'***. This witches broom was found in Wilkesboro, North Carolina. Like many witches brooms in conifers they do not graft well. Sound seed set can be difficult to obtain. Many of the witches brooms found have desirable characteristics but the very nature of the witches broom also builds in impediments to their further propagation.

***Castanea dentata***. In spite of chestnut blight there are known populations or American chestnut that seem to be blight resistant. Much work has been done in crossing *C. dentata* with *C. mollissima* and *C. sativa* and highly desirable forms have been found. However, these selections still must be grafted or budded onto *C.*

*mollissima* and there lies the bottleneck. Until practical means of cutting production are found there seems little hope of large-scale availability of new forms.

***Calylophus serrulatus* 'Prairie Lode'**. *Calylophus* (syn. *Calophyllus*) is a close relative to the oenotheras. It can be easily raised from cuttings but resents container culture and also resents the Northeastern U.S.A. climate. Its real claim to fame would be as a genetic material for potential hybrids with some of the northeastern *Oenothera*. Such a combination could conceivably combine the heavy flowering of *Calylophus* with the landscape durability of the eastern *Oenothera*.

***Potentilla fruticosa***. Bush cinquefoils are generally high-altitude shrubs coming from cold dry climates to suggest that they are user friendly in the Northeastern U.S.A. simply defies the logic of genetics. The many colored forms of *Potentilla* especially the reds and the pinks do not do well here because of heat intolerance. They could make fine landscape plants for the Northeast if selection was geared towards heat tolerance and high humidity situations.

***Chionanthus virginicus***. Our native fringetree is gaining in popularity, but in most cases the variations that occur in field plantings simply defy using more than one plant at a time. They can be rooted sparingly and there is some work being done to chip bud selections on the seedling rootstock. The problems with budding have to do with a poor take and the potential of sucking of the rootstock. Cuttings can be rooted but proper timing and manipulation of the stock plants requires extra effort.

***Cornus sericea* 'Silver and Gold' and *Cornus sericea* 'Kelseyi'**. These are but two forms of the native redosier dogwood. Both though point to a common problem in using native plants which stems from the fact that both the plants and their associated pathogens evolved at the same time and due to the ability of pathogens to continuously mutate it is all but impossible to produce and grow many native plants that don't become afflicted by their ride-along pathogens.

***Franklinia alatamaha***. The Franklin tree is a long sought after plant and rightfully so with good flowering and good fall color. However, it is limited by being very selective for specific soil and moisture conditions and being prone to a number of fungal diseases. Also, it is known that diseases of cotton can affect *Franklinia*, which is believed to have contributed to its near extinction in the wild. Breeding work with closely related species might prove to be the key to getting the *Franklinia* to a much more user-friendly status.

***Stewartia ovata***. This American stewartia is absolutely astonishing in flower but in general terms it is a rat plant with little desirable characteristics. It is hard to grow in the landscape and suffers from some of the same debilitating problems that plague its relative the *Franklinia*. Here too breeding work might push *S. ovata* forward and make it more accessible.

***Lithospermum caroliniense***. This native is from the prairies of the central U.S.A. Low mounding habit coupled with prodigious numbers of yellow flowers seem to set this plant up for an outstanding perennial. But its growing requirements are so specific that they are limiting and so far seed and cutting propagation have been virtually nonexistent. Much study needs to be accomplished to see this fine plant make its way into the landscape trade.

The nursery industry coupled with the botanic gardens and universities can accomplish a great deal to bring some of our more desirable native plants to the forefront. The nursery trade has so far relied upon those plants that have been an easy fix. Work now needs to be directed toward plants such as those listed here that while they have definite advantages they are accompanied by a host of disadvantages.

#### LITERATURE CITED

**Plant and Supply Locator.** March 2003. Hutchinson Publishing Corp., Taylors, South Carolina.

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## Seedling Growing Innovations in Oregon<sup>®</sup>

### Michael Anderson

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Carlton Plants produces bare-root trees, shrubs, and seedlings on 2000 acres in Oregon's Willamette Valley. About 4 million seedlings are grown annually in open-ground seedbeds, pots, and raised seedboxes. Seedbed production accounts about 95% of the total, produced on 35 acres.

Twenty years ago most liners were purchased and propagation facilities were limited to one greenhouse and about 2 acres of seedbeds; the current goal is to produce 99% of all in-house planting needs as well as seedlings and liners for sales.

The species grown range from *Acer* to *Zelkova*; seed for production is about 50% purchased and 50% collected. A seed orchard has been established to provide a substantial boost to in-house collections.

Seedling ground is cover cropped for 2 years between crops, using buckwheat, corn, wheat, and hybrid Sudan grass. Prior to sowing soil tests are done and the soil amended with lime and fertilizer as needed. Mocap is applied as well for control of soil-born insects. The soil is not fumigated; Vapam has been used in the past, primarily for weed control, but results have been unreliable. This is an area targeted for more trials.

At sowing time the ground is worked to a fine tilth, rotovating just prior to bedforming. The bedformer used is an elderly Northwest Tillers bedformer (actually a model used primarily for asparagus). It forms an aggressive bed; 7 to 8 inches high, 36 to 38 inches across the top. A high bed is needed in our soils, which are fairly heavy; in light of the substantial Oregon winter rains.

At sowing time a slow-release fertilizer is broadcast over the beds. Historically we have used Osmocote 18N-6P-12K (7-8 month) in the fall and 19N-6P-12K (3-4 month) in the spring, but are now looking at Multicote as a less expensive option. Rates are on the low end of suggested broadcast rates. The fertilizer is applied using a Gandy model 6500 three-point mount fertilizer spreader with hydraulic drive and hydraulic shutoff.

Contact herbicides will be applied over the winter as needed; Roundup or Gramoxone are the chemicals of choice.

As seedlings germinate the beds are covered with floating row cover. Metal stakes are set out every 4 ft and rows are covered in pairs or individually. Row cover gives 3-4 degrees of frost protection while also protecting from insects. We also have observed reduced foliar disease and enhanced early season growth. Covers remain in place from about mid-March through early May.