

From Forest Nursery Notes, Winter 2010

**21. Integrating plains natives into captivity.** Ackerman, R. R. International Plant Propagators' Society, combined proceedings, 2008, 58:228-232. 2009.

## Integrating Plains Natives into Captivity<sup>®</sup>

**Rod R. Ackerman**

Bluebird Nursery, 519 Bryan St., Clarkson 68629, Nebraska U.S.A.

Email: rod@bluebirdnursery.com

### THE PLAINS

What are the Plains and where are they? Historically the “Great Plains” / “The Great American Desert” ran roughly along the eastern slope of the Rocky Mountains east to the mixed deciduous forests and tall grass prairies (the interior lowlands). If we use this to define the Great Plains it would include Northern Texas, Oklahoma, Kansas, Nebraska, the Dakotas, north into Canada as the heart and eastern Colorado, Wyoming, and Montana as the western edge and the Missouri valley as the eastern edge (some include Western Iowa and Minnesota).

The diverse topography and climatic conditions lend to the diversity of plant life that can be found on the Great Plains from near desert plants to wetland species. Though nearly all of the eastern tall grass and mixed grass prairies have been lost to farm land and invading trees and the few remnants that still exist are still at risk. Fortunately much of the western short grass prairies have been left relatively intact due to their low rainfall and poor soils. Tall grass and short grass prairies just by their name lend themselves to the perception that the primary plants found on the plains consisted of mostly grasses which was far from true. Although big bluestem (*Andropogon*) and Indian grass (*Sorghastrum*) might have dominated large portions of the tall grass prairies, they were not alone, but rather infiltrated by a sea of composites from asters to goldenrods and a host of other broadleaf forbs creating a kaleidoscope of colors throughout the growing season. The short grass prairie might be poorer in fertility and rainfall — it's not poorer in diversity containing many infiltrators from the tall grass prairies from the east and mountains and high plateaus from the west. Though the diversity of the short grass prairies has been diminished in distribution much of it can still be found. One of my favorite areas for exploring other than the Badlands of South Dakota is the Sandhills of North Central Nebraska, one of the largest if not the largest fixed sand dunes in the world. Though at times over grazed by livestock and suffering from severe droughts during the last century a tremendous amount of diversity still exists. Within just a few yards you can find sand cherries (*Prunus pumila* var. *besseyi*), seed pods of *Penstemon grandiflora*, the cone of an *Echinacea*, colonies of goldenrods (*Solidago*), *Dalea villosa*, *Liatris punctata*, and *Amorpha canescens*, to name but a few, during every change of the seasons the kaleidoscope of colors continue to change.

Are there any plants out there worth bringing into cultivation? How do you get these plants into cultivation? Will they perform in a garden situation? Will they tempt the consumer at the garden center?

### BLUEBIRD NURSERY, CLARKSON, NEBRASKA

Currently at Bluebird Nursery, Clarkson, Nebraska, we are growing over 138 genera of U.S.A. natives, many of which are plains natives from wetland plants like *Pontederia cordata* and *Asclepias incarnata* to drought-tolerant plants like *Escobaria vivipara* and *Amorpha*. Hopefully many of these will continue to have commercial appeal and

pave the way for additional native plants along with their variations (cultivars). As the “cost” of fertilizers and water continue to increase the need for xeric plants should continue to rise with short grass prairie natives being ideal candidates to fill that need.

Many of the “best” plains natives are slow to mature and do not look “good” in a container as an immature plant, reducing their impulse appeal at garden centers, but with education the discriminating and patient gardener can be rewarded with a long-lived low-maintenance plant.

Will the plant perform in the garden? Many of the plains natives are adapted to severe climatic variables and competition, when this competition is reduced in the garden situation some have a tendency to become “floppy” if not placed properly (ex. *Rudbeckia missouriensis* and *Liatris punctata* to name two).

### SOME OF MY FAVORITES

***Baptisia australis* var. *minor*.** [syn. *B. minor*]. A true performer in the garden with spikes of lilac to blue flowers as the plants emerge in the spring followed by 18 inch × 24 inch blue-gray mounds of foliage through summer into fall with contrasting brown seed pods late summer through fall. Though slow to mature (2 to 3 years to flower from seed it) will continue to perform for decades, if not centuries, unless it is overgrown by trees. Even during the driest of years established plants have shown no signs of drought stress. We are currently working on a seed strain that will consistently produce deep blue flowers. Two other plains *Baptisia* of interest include *B. bracteata*; a small hairy *Baptisia* with cream to light yellow flowers on a drooping raceme, and *B. lactea*, a large vase-shaped plant with white flowers.

Propagation is always a question — vegetative or sexual, cutting propagation on many plains natives is slow at best and many naturalize easily, thus seed is the preferred method if possible.

Seed propagation of *Baptisia* is complicated by a waxy impermeable seed coat that needs to be pitted or removed prior to cold stratification; if the seed has not imbibed sufficient moisture, stratification will not work. From our experience soaking clean seed in sulfuric acid for 10 to 20 min [keep a close eye on the seed, if there is too much moisture or contaminants the solution may heat up enough to kill the seed (Note: always use caution when working with any acid)], followed by a double rinse and a warm water soak yields the most uniform seedling crop. Other methods that have yielded satisfactory results without the risk of sulfuric acid include; hot water soak for 24 h with frequent changes followed by cold stratification (expect to repeat cold stratification several times to get maximum germination). Another method that has been tried with good results, but has not been repeated to verify that it will consistently yield acceptable results, is a short soak in denatured alcohol (1 to 2 min) followed by a hot water soak. The alcohol is believed to soften or remove the waxy coat that is preventing moisture from being imbibed, be careful not to soak too long in alcohol as it will kill the seed. All methods described require 10 to 12 weeks cold stratification at 32 to 42 °F (12 weeks is preferred).

***Coryphantha*.** *Escobaria vivipara* (syn. *Coryphantha vivipara*) — the first wild plant that I ever collected and still one of my favorites — is great in the trough or rock garden. With good drainage especially in the fall and spring, this plains native is fully hardy from Texas to the Dakotas. Some of the western subspecies have not proven to be as hardy, but they still might be worth looking at for certain situa-

tions. Being a cactus it prefers open situations with no crowding overgrowth, a well drained soil or raised situation, and requires little or no extra water or fertilizer. On an established plant you can expect a crown of hot pink to magenta flowers from late spring to early summer with the fruit ripening shortly after the first frost. They are easy to grow from seed with little special attention other than a light covering of grit and on rare occasions a 2-week period of cold stratification (if you use old seed).

*Coryphantha sulcata* a Texas native with large golden yellow flowers and a reddish center that blooms sporadically from June to September. Its true hardiness has yet to be determined though it has survived for over five winters in my unheated Zone 4 greenhouse. Now that we have built up the population it will be trialed in an unprotected site in our Zone 4/5 gardens.

A few other hardy cactus to consider would include *Pediocactus simpsonii* from the foothills of the Rocky Mountains, *Echinocereus viridiflorus* ranging from the Dakotas south to Texas, and *E. reichenbachii* plants from an Oklahoma source that have proven to be fully hardy in my Nebraska garden.

**Oenothera.** *Oenothera macrocarpa* 'Comanche Campfire' is a unique variation of the subsp. *incana* (as far as I can determine). When we first found this plant growing in a desolate part of Oklahoma during the height of the summer drought it was in full bloom and turgid while all of the other *Oenothera* that we saw on that trip were showing signs of stress and very few with a bloom or two. Part of its glow other than the large bright yellow flowers from late spring/early summer until frost are its ruby stems, and wavy silver leaves. Cutting grown, the only real difficulty in production arises when we try to force early spring cuttings. It is a warm-season plant that likes plenty of sun and heat to perform well. Short lived in the Zone 4 garden, but well worth the trouble.

*Oenothera macrocarpa* subsp. *fremontii* — if you want something with a little finer texture, longer lived, and fully Zone 4 hardy — this Nebraska/Kansas native might be your plant. We grow this plant both from seed and cuttings from a select population. The strain that we grow has finer foliage than the type species described by most references. Silver to silver-green leaf blades and light bright yellow flowers from May till frost create season long interest. Evergreen through most Nebraska winters. The individual flowers are lighter yellow and a little smaller than 'Comanche Campfire'.

*Oenothera macrocarpa* softwood cuttings are taken late spring through early summer. Try to keep the foliage as dry as possible while still retaining turgidity. The use of Hormodin #1 powder or Dip'N Grow® (20 : 1, v/v) should work.

**Sphaeralcea.** *Sphaeralcea coccinea* (red false mallow) is native to the central and western Great Plains and west of the Rockies. A creeping ground cover topped with coral red/orange flowers during mid spring going nearly dormant during the height of summer only to reappear in late summer with fresh foliage and a few sporadic flower spikes, evergreen most winters.

Due to its creeping stems/roots a single plant can eventually form into a large colony, but partially due to its midsummer hiatus and its short habit (less than 12 inches in my garden) it does not seem to put much pressure on its neighbors. The colony I have started from one individual and has yet to produce seed — possibly self sterile. Propagation: cuttings or division — seed has proven sporadic to germinate. Cuttings can be rooted using the same procedure as *O. macrocarpa*.

If you want the color, something a little taller, and does not spread you might consider *Sphaeralcea grossulariifolia*.

***Clematis fremontii*.** *Clematis fremontii* is a Kansas/Nebraska native. This non-vining clematis produces solitary terminal blue to purple bells with a contrasting tomentose grayish white edge above dark green foliage. This unique species blooms primarily from midspring through early summer with an occasional flower after midsummer. The best flower color is found when the nights are still cool. Midsummer blooms may appear to be washed out. This long-lived perennial may take several years to mature, but will perform for years with little attention. Cutting propagation of mature plants is difficult in part due to the terminal habit; nearly every shoot will terminate with a flower. Seed propagation is as described below. Stratification typically needs to be repeated for complete germination. A presoak in hot water or a quick soak in sulfuric acid has improved germination after the first stratification, but the second stratification is still required for additional germination.

***Liatris ligulistylis*.** *Liatris ligulistylis* is one of the taller of the blazing stars. Most of the native liatris when grown in a garden situation have a tendency to fall over when they start to bloom. While most *L. ligulistylis* will also do this if grown as a specimen plant, the strain we are currently growing from a prairie remnant in South Dakota stands alone better than most. Unfortunately the prairie remnant that the original seed was collected from is now a corn field restricting further selection to the plants that we currently have. In addition to its strong central stem growing 3 to 4 ft plus with an inflorescence making up over two-thirds of the overall height. In both *L. ligulistylis* and *L. aspera*, the large individual floret clusters are held away from the primary stem giving them a unique appearance amongst the blazing stars. Seed germination as described below.

**A Few Other Plains Natives.** A few other plains natives of interest might include:

- *Ipomoea leptophylla* (bush morning glory, old man of the prairie, and man-of-the-earth are a few of the common names); adapted to nearly pure sand producing deep pink to red-violet 2-inch flowers throughout summer above finely textured foliage.
- *Antennaria parvifolia* is a small mat forming silver-green plant great for the rock garden or trough.

## PROPAGATION — SEED GERMINATION

Most prairie wildflowers (especially those producing seed in the fall) receive a 2 week warm moist (72 °F) followed by 10 to 12 weeks of cold stratification (32 to 42 °F, 32 to 36 °F is preferred), repeat if necessary.

## PRODUCTION

Getting plains natives into cultivation and finding the plant you want to propagate is one thing, the other is building a large enough population to provide sufficient seed or cuttings. To rely on wild-collected seed or cuttings is risky at best unless you own the land. You have no control over mowing, spraying, or plowing. Even the few tall grass prairie remnants left are at risk when the price of corn goes up, that happened to the prairie remnant that the *L. ligulistylis* seed was originally collected from. Fortunately most plains natives come relatively true from seed and seed is the preferred

method when possible, if you are not propagating for a specific trait as in *O.* 'Comanche Campfire' (red stems, ruffled/wavy leaves, and the larger than typical flowers).

To preserve a small portion of our botanical legacy in a garden without diminishing nature can be very rewarding.

#### **ADDITIONAL READING**

**Anderson, E.F.** 2001. The cactus family. Timber Press. Portland, Oregon.

**Barkley, T.** 1986. Flora of the Great Plains. The Great Plains Flora Association. Univ. Press of Kansas, Lawrence, Kansas.

**Farrar, J.** 1990. Field guide to wildflowers of Nebraska and the Great Plains. Nebraska-land Mag. Nebraska Game and Parks Commission, Lincoln, Nebraska.

**Trimble, D.E.** 1980. The geologic story of the Great Plains. Geological Survey Bul. 1493. U.S. Govt. Printing Office. Washington D.C.