Researchers from the Floriculture Program at Michigan State University (MSU) share research-based information on some of the top perennial performers from the past few years.

Production Tips For Top Performers
Chasmanthium latifolium

Northern sea oats is a great ornamental grass for native, shade and naturalized gardens.

by ***SONALI PADHYE*** *and* ***CATHY WHITMAN***

DURING a brisk, wintry walk in a Michigan garden, one realizes that, of the few elements of winter interest in the garden, ornamental grasses stand tall. There has been much said and written about the extraordinary versatility of the landscape use of ornamental grasses. Grasses add stature, texture, movement and fall and winter interest to any garden. *Chasmanthium latifolium*, commonly known as northern sea oats, is no exception. With its bamboo-like foliage and delicate inflorescences, chasmanthium is certain to interest gardeners (figure 1A and B).

Chasmanthium latifolium is native to the United States and is naturalized from New Jersey to Pennsylvania in the Northeast to Texas and northern Florida in the Southeast. Chasmanthium is hardy to USDA Zones 4 to 9 and is often found naturalized in shady areas in forests, near rivers and in flood plains. Although the common name, northern sea oats, suggests its proximity to water, the natural habitat of chasmanthium is inland.

A close but distinct relative, southern sea oats (*Uniola paniculata*) is distributed throughout the sand dunes of the southern United States and is used in dune restoration and erosion control projects.

Great for use in native gardens and naturalized areas, chasmanthium has also been used successfully in urban landscapes and charming containers. Chasmanthium is of particular interest to many gardeners due to its moderate height (2 to 5 feet), deer resistance and its adaptability to shady locations. Many popular ornamental grasses are full sun plants and become floppy in shady areas, while chasmanthium thrives in part shade. As with many other ornamental grasses, chasmanthium is fairly easy to maintain and adds great value to gardens in return for the little time invested in plant care and maintenance. Its attractive inflorescences can be used in fresh or dried form in flower arrangements.

Figure 1A and B. *Chasmanthium latifolium* plants provide movement and texture to a summer garden, while inflorescences add color and interest to a fall and winter garden.

Seeds can readily germinate when dispersed on the ground, resulting in a small mass of seedlings around the planted chasmanthium each year. Often, home gardeners remove seedlings to prevent the proliferation of this grass; while in some landscapes, this spread of chasmanthium is preferred to promote its naturalization.

Container production of chasmanthium is as easy as growing and maintaining it in the garden. Consumers prefer buying plants in flower, and ornamental grasses follow suit. While some grasses may be difficult to produce and market in flower,

chasmanthium can be easily forced. At Michigan State University, we conducted container production trials on chasmanthium, and our research-based results and production notes are narrated below.

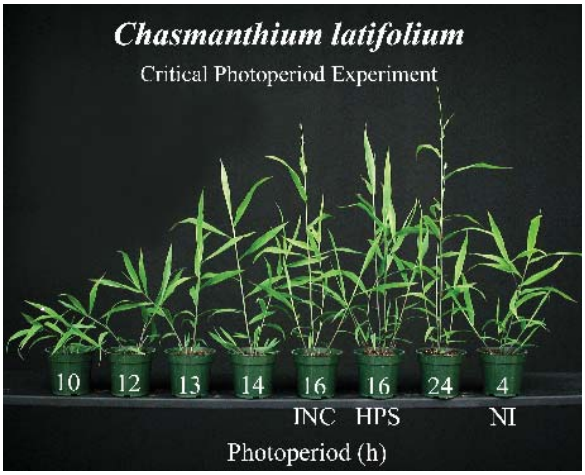

Figure 2. *Chasmanthium latifolium* is an obligate long-day plant and flowered completely when non-cooled plants were forced at 68˚F under photoperiods of 14 hours or longer. 16-INC and 16-HPS refer to a 16-hour photoperiod provided by incandescent and high-pressure sodium lamps, respectively. Four-hour night interruption in the middle of night is denoted by 4 NI.

Critical Photoperiod

Forcing under long-day (LD) and short-day (SD) photoperiods promotes flowering of LD and SD photoperiodic plants, respectively. Flowering of LD plants is hastened when the forcing photoperiod exceeds a critical value, known as the critical photoperiod. An experiment was performed to determine the critical photoperiod for flowering of *Chasmanthium latifolium*. The plugs were planted and grown at 68˚F under a 10-, 12-, 13-, 14-, 16- or 24-hour photoperiod. All photoperiods were provided by extending the nine-hour day using incandescent lamps. Another treatment consisted of natural days extended with light from high-pressure sodium (HPS) lamps to create a 16-hour high-light photoperiod. Plants under this treatment received ≈30 percent more total light compared with the other treatments. Additionally, a separate group of plants was forced under a four-hour night interruption provided by incandescent lamps.

No plants flowered when forced under a 10- or 12-hour photoperiod, 90 percent of plants flowered under the 13-hour photoperiod but their flowering was delayed, and all plants flowered rapidly when grown under photoperiods of 14 hours or longer or the night interruption treatment (Figure 2). Hence, chasmanthium is an obligate LD plant with a critical photoperiod of 14 hours. Plants forced under a 24-hour photoperiod flowered quickest (in five weeks), while seven to eight weeks were required for flowering when forced under photoperiods of 14 hours or longer.

Production Notes: Starting Material and Bulking

Chasmanthium latifolium seeds are viable and germinate easily. Hence, this grass is easy to produce commercially by seed by either germinating seeds in a propagation facility or purchasing seedling plugs. Cooling chasmanthium seedlings in plug trays at 41˚F for 15 weeks did not influence flowering and therefore, chasmanthium does not require vernalization for flowering. Although bulking is not necessary for flowering, growing plants to their

desired final size prior to forcing is beneficial. Plants should be bulked under photoperiods less than 14 hours to maintain vegetative growth and promote tiller production to obtain robust plants.

Forcing

As previously described, LD photoperiods of 14 hours or longer promote flowering of chasmanthium. Long-day photoperiods can be provided as a day extension or a four-hour night interruption treatment. When forced under 14- or 16-hour photoperiods or night interruption, plants flowered in seven to eight weeks in a greenhouse with an average daily temperature of 68˚F. Forcing can be accelerated by providing continuous light (24-hour photoperiod), with complete flowering in ≈5 weeks. When provided with supplemental lighting, plants produced twice as many tillers as plants forced under natural daylight. Therefore, a high-light environment will produce higher quality crops.

Nutrition

We have successfully used a peat-based medium to grow hundreds of herbaceous perennials. However, when some ornamental grasses, including chasmanthium, are grown in this peat-based medium, leaf chlorosis is observed. When left unattended, foliar chlorosis can progress to leaf necrosis and diminish the plant quality. Foliar tissue analysis indicated that this foliar chlorosis is due to iron deficiency. Application of chelated iron such as a foliar spray of diamine triamine penta acetate (DTPA) or a media drench of ethylene diamine dihydroxy methylphenyl acetate (EDDHA) can correct these deficiency symptoms when applied at the manufacturer's recommended rates (Figure 3). EDDHA is a red-colored compound and if splashed on the foliage, an unsightly red residue is left behind. Hence, the foliage should be rinsed off soon after media drenching. **GG**

FIgure 3. Leaf chlorosis observed in *Chasmanthium latifolium* was corrected by application of iron chelate at the manufacturer's recommended rate. Non-treated control plants (left) and plants that received a media drench of iron chelate (right) were photographed four weeks after the chelate application was made.

About the author: Sonali Padhye is a post-doctoral research associate and Cathy Whitman is a research technician at Michigan State University. They would like to thank private greenhouse growers and horticulture suppliers that have funded most of this research. For more information, please contact Sonali Padhye (**padhyeso@msu.edu**) or Cathy Whitman (**whitmanc@msu.edu**) at 517-355-5191 x 1-345. To become a floriculture research partner with MSU, please contact Erik Runkle (**runkleer@msu.edu** or 517-355-5191 x 1-350). Research on herbaceous perennials is one of the objectives of the Floriculture Research Program at Michigan State University.