Production Tips for Top Performers

Echinacea 'Sunrise' & 'Harvest Moon'

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

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

A few years ago, the world of herbaceous perennials went cone crazy with the introduction of novel yellow and orange-colored echinacea (cone flower) hybrids. These star hybrids of *Echinacea purpurea* and *Echinacea paradoxa* have continued to shine with their promising performance.

Over the last few years, we have trialed numerous echinacea cultivars for their greenhouse and garden performance, and we have been charmed with the two yellow-colored cultivars – 'Sunrise' and 'Harvest Moon.' The flower color of 'Sunrise' is cheerful, buttery yellow and the petals are perpendicular to the stems (Figure 1a) while 'Harvest Moon' has golden yellow flowers with reflexed petals (Figure 1b).

Both cultivars are mildly fragrant and have been reliably hardy at least in USDA cold hardiness Zone 5, in the Michigan State University trial gardens. 'Sunrise' and 'Harvest Moon' are easy to schedule and will be great additions to any production program and garden.

Starting Material

'Sunrise' and 'Harvest Moon' are patented, and tissue-cultured plants or plugs can be obtained from licensed propagators. We have observed slow post-transplant establishment of some echinacea cultivars, not to mention occasional to significant plant losses.

Figure 1a. Echinacea 'Sunrise.' The flower color of 'Sunrise' is cheerful, buttery yellow and its petals are perpendicular to the stems.

Figure 1b. Echinacea 'Harvest Moon.' Golden yellow flowers with reflexed petals highlight 'Harvest Moon.'

However, 'Sunrise' and 'Harvest Moon' have been vigorous in our trials conducted in Michigan and Florida.

Scheduling

Non-cooled echinaceas flower only under long-day photoperiods and rosette under short-day photoperiods. When 'Sunrise' was grown under a nine-, 12-, 13-, 14- or 16-hour photoperiod, plants flowered only when the photoperiod exceeded 13 hours (Figure 2). We anticipate that the photoperiodic responses of 'Harvest Moon' and other echinacea cultivars will be similar.

Flowering of these cultivars can be promoted by providing long-day treatments such as day extension, night interruption from 10 p.m. to 2 a.m. or cyclic lighting by mounting lamps on booms or by using a Beamflicker, ensuring a minimum of 10 foot-candles light in the darkest corner.

Flowering of some echinacea cultivars has been reported to hasten following a cooling treatment, also known as vernalization. We tested the response of 'Sunrise' to a 15-week

vernalization treatment at 41°F. Plugs were cooled in plug trays under a nine-hour photoperiod provided at 10 foot-candles. Following cooling, plugs flowered under long-day (16-hour) or short-day (nine-hour) photoperiods. However, under short days, flowering was delayed by four to five weeks and plants were shorter and had fewer buds compared with plants under long days.

Figure 2. The influence of photoperiod on flowering of Echinacea 'Sunrise' under 9-, 12-, 13-, 14- and 16-hour photoperiods.

Under the long-day photoperiod, cooled plugs flowered two to three weeks earlier than non-cooled plugs. However, cooled plants were forced during the late spring when the greenhouse light intensity and temperature were higher compared with the light and temperature received by non-cooled plants forced in the fall and early spring. Both 'Sunrise' and 'Harvest Moon' flowered in about 11 weeks from transplanting when grown in a greenhouse at a 68°F set-point under a 16-hour photoperiod.

Branching

Perennial growers producing echinaceas outside transplant them in the late summer or fall, allowing plants to grow before the onset of winter and then subsequently sell them in the spring. When produced in a greenhouse, after transplant, echinaceas can be bulked up under short-day photoperiods for a few weeks. Then, plants can be forced under long-day photoperiods. This additional growing allows the plants to initiate and develop lateral branches and fill the containers.

A shortcoming of this strategy is the increased production space and

BA was sprayed at transplant (below), and the photo was taken three weeks later.

Photos courtesy of Judith Groninger.

time for the crop. Many perennial growers also transplant, force and sell echinaceas in the spring and summer. In this production scheme, plants are grown for a shorter duration and may not branch and fill the containers. In our previous experiments, pinching did not increase lateral branching in echinacea 'Razzmatazz' and 'Fragrant Angel,' and a similar response may be found in other hybrids.

Application of benzyladenine (BA) has been shown to increase branching of some echinacea cultivars. We are conducting trials quantifying the influence of BA applications on branching of echinacea hybrids.

In summer trials conducted at the University of Florida, a single foliar spray of 300 or 600 ppm benzyladenine at transplant increased the number of lateral branches. In our trials, three weeks after 600 and 300 ppm BA spray applications, the number of branches of 'Sunrise' increased by about 50 percent, while 'Harvest Moon' had about 120 percent additional branches (Figure 3). Thus, BA applications can be successfully used to improve branching of echinacea 'Sunrise' and 'Harvest Moon'.

Production Tips

We have successfully grown hundreds of herbaceous annuals and perennials in a peat-based medium, and these echinaceas are no exception. When produced in the early spring, it is important not to over-irrigate the plants during initial establishment to avoid algae build-up in the pots. Both these cultivars will need plant growth retardant applications for height control whether produced in 5.5-inch or 1-gallon containers (Figure 4). In our trials, paclobutrazol, uniconazole, daminozide and chlormequat chloride effectively controlled the height of 'Sunrise.' **GG**

Figure 4. Echinacea 'Harvest Moon' grown without a plant growth retardant application.