

An Update on Sunflower Daylength Sensitivity Screening

Chris Wien

Many sunflower varieties used for cut flowers are sensitive to the daylength they experience in the seedling stage. Varieties in the Sunrich and Sunbright series, for instance, will flower 2 weeks earlier if they were sown in 12-hour daylength than if they are planted in

the long days of midsummer. This means plants will be short and have small flowers at flowering, and have a profusion of small flower buds on the stem. Many other varieties are not sensitive, and will produce similar-sized plants regardless of the daylength. To make sure new

varieties are characterized for their daylength response, we have screened them as they are introduced. Our technique consists of sowing the seeds in 72-cell trays, exposing them to either 12 or 16-hour daylength for 3 weeks on a light bench in a greenhouse, and then transplanting them

to the field, where we note the date of flowering, and plant height, flower diameter and bud number.

The 2012 screening included 10 new varieties and the two standards, ‘Procut Lemon’ and ‘Sunrich Orange’. The results are shown in the table below.

Table 1. Reaction of 12 sunflower varieties to short or long days, imposed for 21 days after seedling emergence. Plants were then transplanted to the field.

| Name | Daylength ^Z reaction | Days to first flower | | Plant height (cm) | |
|---------------------|---------------------------------|----------------------|-----------------|-------------------|------------------|
| | | Short day | Long day | Short day | Long day |
| Brilliance | Neutral | 60 | 60 | 99 | 89 |
| Coconut Ice | Neutral | 64 | 58 | 114 | 107 |
| Dafne | Strong SD | 52 | 74 | 70 | 128 |
| Double Quick Orange | Mod. LD | 84 | 72 | 153 | 111 |
| Frilly | Mod. LD | 78 | 66 | 168 | 116 |
| Giant Sungold | Neutral | 99 | 97 | 170 | 169 |
| Goldy Double | Neutral | 86 | 89 ^Y | 162 | 146 ^Y |
| Procut Lemon | Neutral | 61 | 56 | 105 | 94 |
| Sunbright Supreme | Strong SD | 47 | 72 | 69 | 144 |
| Sunrich Orange | Strong SD | 50 | 70 | 68 | 127 |
| Vincent Choice | Mod. SD | 47 | 56 | 77 | 81 |
| Vincent Fresh | Mod. SD | 47 | 55 | 73 | 87 |

^ZDaylength reaction = Neutral: less than 7 days difference in flowering between short and long day; Mod. SD: Plants flower 8-20 days earlier in SD; Strong SD: More than 21 days delay with LD treatment; Mod. LD: 7-14 days delay with SD treatment.

^YData from one replication only

Nearly half the varieties tested (40%) were insensitive to daylength. In both treatments, flowering dates and plant heights were similar. Slightly more (42%) were moderately or strongly sensitive to short days, flowering sooner on smaller plants when started in short days. Two varieties ('Double Quick Orange' and 'Frisly') were delayed 12 days in flowering under long day treatment, and were therefore classed as moderate long day plants. The pictures show the flower heads of 'Frisly' taken on July 25, after seedling daylength treatment in early June.

We have been testing sunflower daylength reaction for 7 years, and have found that of the 56 varieties tested, nearly half are day-neutral, but 30 % are strongly short day sensitive. Stay away from the latter, if you plan to grow sunflowers under short day lengths.

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To see the summary table of these results, go to my research page in the Dept. of Horticulture, Cornell website:
<http://hort.cals.cornell.edu/cals/hort/research/loader.cfm?csModule=security/getfile&PageID=702432>.

For results of our other cut flower trials in 2012 and previous years, visit:
<http://hort.cals.cornell.edu/cals/hort/research/wienresearch.cfm> and click on the individual year's results.



*Chris Wien
 is Professor of Horticulture
 at Cornell University.
 Contact him at
 hcw2@cornell.edu*