

and photoperiod requirement for flower bud initiation and development were investigated, as measured by the days to the appearance of the bud and the terminal flower. All rooted cuttings were obtained from stock plants maintained in a vegetative state with long day (LD=14 to 16h photoperiod plus night interruption lighting, 2200 to 0200HR, using 400W incandescent lamps) and 24°C/20°C (day/night) temperatures. After rooting in sand for ten days with the same conditions as the stock plants, the treated rooted cuttings were vernalized for four weeks at temperature 3-7°C under LD condition and then transferred to three photoperiod treatments: short days (SD=black cloth pulled 0800/1600HR, providing 16h darkness), LD, natural day lengths during March to July at Beijing, China under greenhouse conditions with same temperature as stock plants. All summer-flowering 'Qiyuetaohua' treated by low temperature initiated flower buds and developed to anthesis at three photoperiod treatments. The mean days to flower bud initiation and development for vernalized plants at LD were 90 and 110 days, respectively, which showed 5 and 8 days earlier than that at SD. The mean days to flower bud initiation and development for vernalized plants at ND were 94 and 116 days respectively. However, the controlled plants (no vernalization) never developed any flower at any photoperiod treatments and remain vegetative for treated time. The results indicated that *Chrysanthemum × morifolium* 'Qiyuetaohua' is a day-neutral plant after vernalization and the early flowering phenotype under natural conditions could be attributed to low temperature at seedling stage.

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### **(346) Construction of Forward and Reverse Subtracted cDNA Libraries from *Opisthappus taihangensis* (Ling) C. Shih. under Drought Stress**

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*Opisthappus taihangensis* (Ling) C. Shih. grows vigorously in both arid and saline soils, which indicates its strong resistance to drought stress. To study the molecular mechanisms of drought-stress resistance and obtain differential expressed genes in *O. taihangensis*, suppression subtractive hybridization (SSH) was employed in this study. Forward and reverse subtracted cDNA libraries were constructed with leaves treated by PEG solution. Results of electrophoresis suggested noticeable differences in PCR bands between subtracted sample and non-subtracted sample, which indicated that the subtraction was effective. In the subtracted cDNA library, the recombination rate was 92%, with the size of inserts between 200-600bp. Through sequencing the partial clones of forward subtracted cDNA libraries, a number of genes related to drought resistance were obtained and verified with Northern hybridization, such as bZIP transcription factor, MADS-box protein, SOD, calcium-dependent protein kinase genes etc. The results provided important information for cloning new genes from *O. taihangensis* and led to further study of molecular mechanism related to drought resistance.

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Springs F & G

### **Genetics/Germplasm/Plant Breeding: Cross-Commodity**

#### **(049) Effects of Planting Date and Stand Density on Sugar and Ethanol Yields of Sweet Sorghum Grown in Arizona**

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