Scheduling butterfly-bush (*Buddleia davidii* Franch.) for spring flowering

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Cultivars of *Buddleia davidii* Franch. and *B. weyeriana* are popular summer flowering woody ornamentals prized for their ease of cultivation, attractiveness to butterflies and season-long flowering. However, spring sales are inhibited since flowering does not occur until summer. If butterfly-bush could be forced to flower earlier in the season spring sales may be positively influenced. This study was initiated to determine if photoperiod or stage of development influences floral initiation. If so, these factors may be manipulated to force spring flowering of butterfly-bush.

Nature of Work

Butterfly-bush, a summer flowering woody ornamental, appeals to wholesale and retail nurseries because of its attractive foliage and fragrant flowers. Sales of butterfly-bush have increased with familiarity but are limited in the spring primarily because plants are not flowering. Butterfly-bush flowers on new growth beginning in early summer in the southern United States and continuing into the fall. Inflorescence development in flowering plants is often influenced by changes in day length, temperature and/or a transition from juvenility to maturity. Butterfly-bush does not require high temperatures to flower and, in fact, prospers in cool continental climates where summer temperature seldom rise above 80°F. However, flowering does coincide with increasing daylength in late spring and early summer. The purpose of this study was to determine the effect of day length and stage of development on flower development in butterfly bush.

On February 15, 1999 unpruned dormant liners of *B. davidii* 'Bonnie' and 'Potter's Purple' and *B.* × *weyeriana* 'Honeycomb' were transplanted two liners each into three gallon containers filled a standard nursery media. Fertilizer (Osmocote 19-6-4) and micronutrients (Micromax) were pre-incorporated at a rate of 14 lb and 2 lb per cubic yard respectively. Plants were randomly placed in one of two treatments in a heated single polyhouse and maintained using standard nursery practices. Treatments consisted of natural day length (ND) and extended day length (ED). A black plastic curtain was pulled between treatments daily at 5:00 p.m. to prevent supplemental lighting from influencing the ND treatment. ED was accomplished by lighting reflected 60w incandescent bulbs from 5:00 p.m. until 11:00 p.m. daily. A minimum temperature of 45°F and maximum temperature of 70°F were maintained throughout the study. Plants remained unpruned during the study. Height and width were recorded at first visible flower bud, and nodes formed prior to first visible flower bud were counted. Days to visible flower bud and anthesis were also recorded.

Results and Discussion

The study terminated on May 28, 1999 when all plants had reached anthesis. All plants had strong stems, abundant fully developed inflorescences and were of marketable quality. Differences in plant size, node number at which first visible bud was formed and days to first flower were insignificant between treatments for each cultivar. The average days to visible bud

stage for all cultivars in both treatments was 64 days. Based on this study, day length appears to have little influence on flower development. The number of nodes formed prior to first visible bud was consistent for all cultivars regardless of treatment: Visible bud stage was achieved when 8-12 nodes hade been formed. It appears that butterfly bush must first reach this stage of development before flowering will ensue. In order to incorporate forced flowering of butterfly-bush into commercial nursery production, node development would need to be controlled, and temperature manipulation will probably be necessary to produce flowering plants for the early spring market. A temperature regime should accomplish three things: Force growth necessary to initiate flowering in about 60 days; maintain short internode lengths; minimize heating costs. Further studies could illuminate minimum growing temperatures necessary to meet these requirements as well as the possibility of using growth regulating hormones to control flowering in butterfly-bush.