Techniques to Maximize Production of Sunflowers, Larkspur and Delphinium

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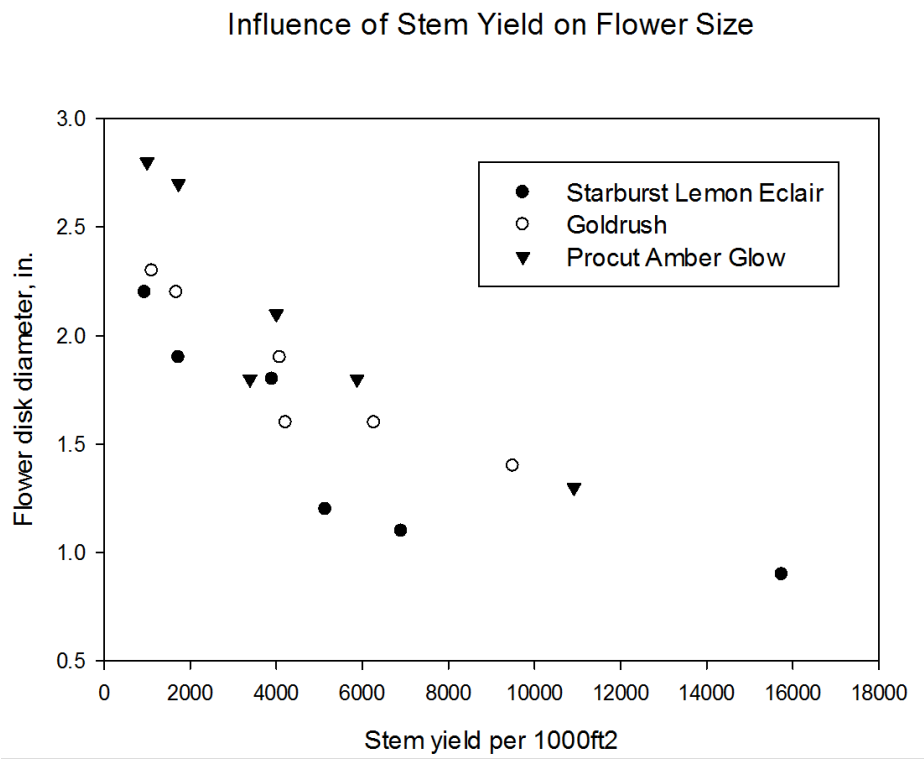
Increasing the yield of marketable stems of major cut flowers is a central goal of most cut flower growers. Such yield improvements may however come with the need for more inputs in materials or labor, and thus need to be considered carefully. We will present three cut flower crop examples that mostly avoid those problems and should be considered by growers.

Sunflowers grown as cut flowers are classified as either single stemmed or branched varieties. Yield of branchless varieties is determined by plant population, but can be increased by 3 to 5 times if the growing point is pinched out when the plants are in the seedling stage. Branching types will produce several stems, but also develop a first flower on the main stem, which, if harvested with a stem of a foot or longer, causes many of the potential branches to be removed. We have found that if these are also pinched early, long and profuse branches are produced. With the increased number of stems per unit area resulting from pinching, the size of the flowers decreases (Fig. 1).



If the plants are already crowded before pinching, the flower size may become too small to be acceptable commercially. On the diagram, if the commercial minimum flower size is set at 1.5 in., the maximum stem number should not exceed 6000 stems per ft^2.

In our research over 3 years, we have also found that sunflower varieties vary widely in their response to pinching. 'Procut Lemon' is reluctant to branch, and shows no benefit in being forced to branch; 'Sunrich Orange' is also adversely affected by pinching, developing a lower leaf disease that decreases the production of branches. In general, the branching varieties like Gold Cup and the Starburst lines respond well, and produce good yields when pinched early.

Larkspur (*Consolida*) has for us been a productive early season crop in the high tunnel. It grows well in cool conditions, and can survive well when sown directly in the fall, without secondary low tunnel covering. It can also be transplanted early in the spring to the high tunnel beds. In a comparison of the two planting methods, we found that plants in the two plantings produced similar yields, but the fall-planted larkspur flowered on June 6, two weeks earlier than the spring-planted lines. Fall planting is also easier since it does not require the use of a greenhouse to produce the seedlings in the spring.

Table 1. Yield, stem length and date of flowering of two varieties of larkspur, either sown directly into the high tunnel in the fall, or sown in the greenhouse in spring, and then transplanted into the high tunnel.

Sowing/Transplant date	Plant height in.	Stems per plant	First flower date
Oct. 24	28	5	June 6
Feb. 13, April 8	24	4	June 20

Perennials grown for use as cut flowers can be judged both on their productivity in the first year, but also on whether the plants survive to continue providing usable stems in succeeding seasons. We have been trying to overcome a decline in the plant population of certain delphinium varieties using several methods, but have found that choice of variety is the best indication of plant survival. Accordingly, we planted seven delphinium varieties in spring of 2013 in a field that had grown this species previously. We monitored plant stands throughout the season, and found distinct varietal differences (Table 2). The study indicates that choice of variety can be an important criterion for sustained productivity over time. We will monitor yield and stands in this trial over several years.

Table 2. Differences in plant stand among seven delphinium varieties planted in the field in 2013, averaging three replications and four sampling times.

Variety name	Average plant stand, percent
Centurion White	99.4
Centurion Rose	97.2
Aurora Blue	93.9
Pacific Giant Percival	93.3
Candle Blue	91.6
Guardian Blue	79.4
Pacific Giant King Arthur	69.4