Plant Spacings for Maximizing Flower Production of Anise Hyssop

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Due to shortages of bee forage, beekeepers in New England rarely can maintain more than 6-8 hives in one location. The strength and success of a hive is partly dependent on a continuous and reliable food source for the production of honey and accumulation of pollen. Honey production is dependent on the availability of nectar-producing plants. Research in recent years has shown that so-called "fixed-land honey production" is a viable concept, and that acreage of specific forage plants can be established that will support honey bee colonies and yield surplus honey. Fixed-land planting of honey bee forage has not been adopted widely because of a lack of cultural information and economical data to support the use of arable land to grow bee forages. In this project, we are investigating cultural systems of herb crops for fixed-land production of nectar.

In 1994 flowering duration was recorded for several herbs during the growing season. Anise hyssop (*Agastache foeniculum*) was identified as one of the most promising species for further investigation. It was very attractive to bees and had a long flowering duration (June through September). In 1995 nine row width-density spacing combinations were established to provide information on cultural management. These were three row widths (25, 50 and 75 cm) and three intra-row spacings (12.5, 25 and 37.5 cm). Seedlings were established in the greenhouse in April and transplanted into the field at the Agronomy research farm in Deerfield, MA., in early May.

Plant size was greatly affected by plant spacing (Fig. 1). As density was decreased, that is, row width and plant spacing increased, plant size increased occupying most of the space available. Thus, Canopy closure was complete for most of the flowering period for all treatments except the widest row by intra-row spacing, where canopy closure was somewhat delayed.

Figure 1. Anise hyssop plants at peak flowering, plants from left in 75, 50 and 25 cm rows respectfully each with a 25 cm intra-row spacing.

Flower number per plant ranged from 15,000 at the closest spacing to more than 90,000 at the widest spacing (Fig. 2). This wide variation was mainly a result of more inflorescences being produced per plant at the low plant densities. This high degree of plant plasticity, allowing the plants to adjust to changing density, resulted in a mostly similar number of flowers being produced per unit area (Fig. 3). Variability between replications was high resulting in a lack of statistical significance, however, a trend is evident which suggests a maximum row width of 50 cm and intra-row spacing of less than 25 cm.

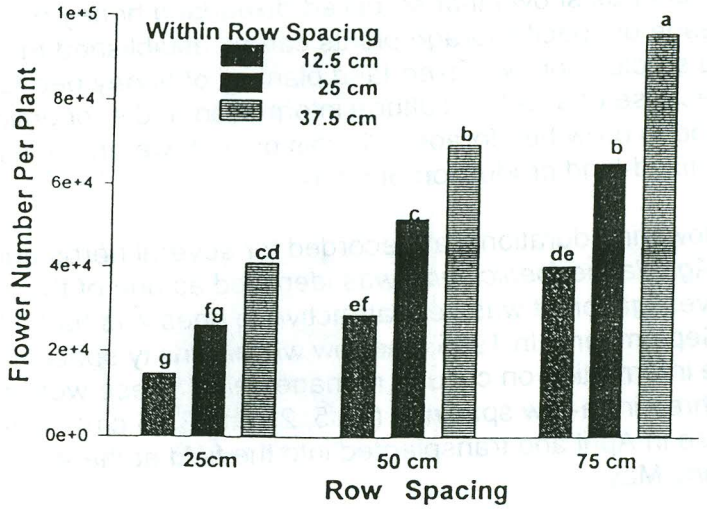

Figure 2. Anise hyssop flower number per plant determined at maturity by relating inflorescence length to flower number per inflorescence.

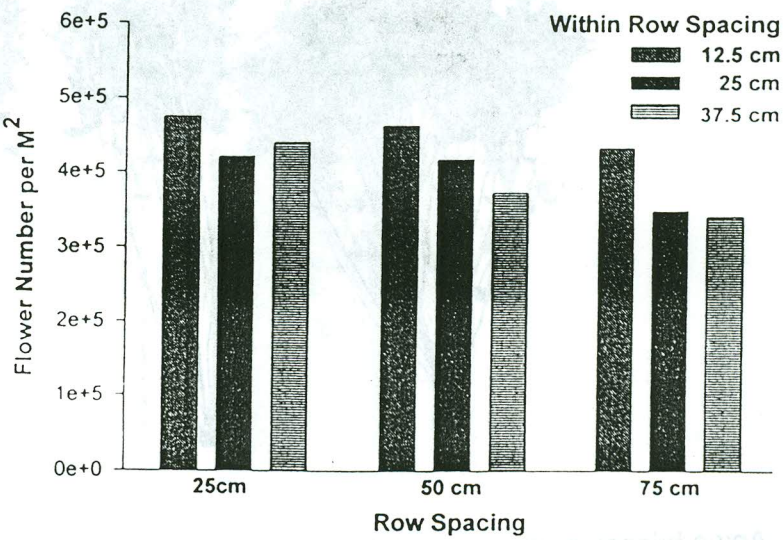

Figure 3. Anise hyssop flower number per unit area determined at maturity.