Plant Spacings for Maximizing Flower Production of Catnip

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Shortages of bee forage in New England occur from late spring to early fall. Thus it is rare for beekeeper to maintain more than a few hives in one location. Shortages in bee forage have occurred for several reasons. The native forest vegetation provides little nectar during summer months. Pasturing of animals was a source of nectar from flowering legumes (clovers) but now intensive cutting of hay fields during flower bud formation and prior to flowering has reduced this source. Also, with better weed control there are fewer weeds flowering further reducing the nectar sources for honey bees. Honey production is dependent on the availability of nectar-producing plants. Thus, research is needed to find a range of nectar producing plants that have overlapping flowering periods for a season-long nectar flow. 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. This reports on one more potential species we are investigating for fixed-land production of nectar.

In 1994 flowering duration was recorded for several herbs during the growing season. Catnip (*Nepeta cataria*) was identified as one of the more promising species for further investigation. It was heavily visited by bees, and flowering early with a long flowering duration (late May through late August-early September). In 1995 nine row width-density spacing combinations were established to provide information on cultural management. These were three row widths (45, 90 and 135 cm) and three intra-row spacings (30, 60 and 90 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 spacing, where canopy closure was somewhat delayed.

Figure 1. Catnip plants at peak flowering, plants from left in 135, 90 and 45 cm rows respectfully each with a 60 cm intra-row spacing.

Flower number per plant ranged from less than 15,000 at the closest spacing to more than 100,000 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. As with anise hyssop, 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) except the uniform plant spacing of 90 x 90 cm produced significantly more flowers.

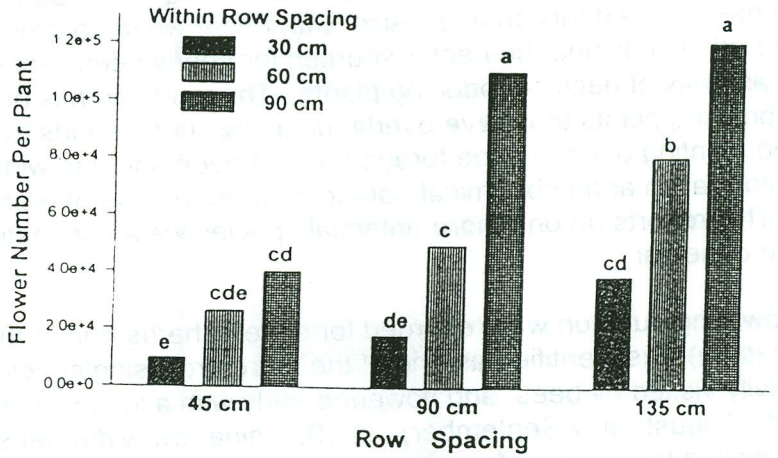

Figure 2. Catnip flower number per plant determined at maturity by relating inflorescence weight to flower number per inflorescence.

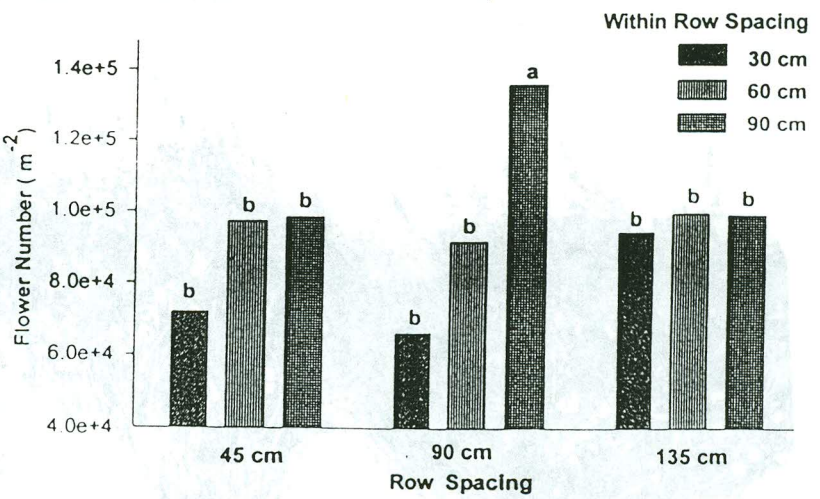

Figure 3. Catnip flower number per unit area determined at maturity.