Research Paper :

Studies on the influence of bee attractants on bee vision of *Apis dorsata* and *Trigona* sp. on onion (*Allium cepa* L.)

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SUMMARY
During *Rabi* season of 2008-09, a field experiment was conducted at Marathwada Agricultural University, Parbhani. The result revealed that a day before the first spray, the number of bees visiting the onion flower ranged from 1.66 to 2.50 bees/m^2/min and did not differ significantly among the treatments. However, the following day after the first spray, Bee-Q (15 g/lit) attracted the higher number of bees 5.17 bees/m^2/min. *Trigona* sp. treatment with Bee-Q (15 g/lit) (4.00 bees/m^2/min) was significantly superior in attracting more number of bees and was at par with Bee-Q (12.5 g/lit), Bee-Q (10g/lit), sugar syrup 5% and molasses 10% recorded (3.83, 3.67, 3.67 and 3.60 bees/m^2/min) on 1st day after 1st spray. Open pollination without spray recorded the lowest number of bees (2.30 bees/m^2/min).

In seed crop of onion (*Allium cepa* L.), the inflorescence of onion is an umbel. The onion flower is largely protandrous. The flowers are borne in simple umbel at the apex of a floral stem, which is a commonly hollow when mature. The number of flower per umbel may be as few as 50 to 2000 depending upon the variety. The flowers are white or bluish. The anthers of inner whorls dehiscence first all the pollen being shed over in a period of two to three days. Onion is highly cross pollinated crop due to its protandry. Insects are required to transport the heavy and sticky pollen grains in onion.

Anther dehiscence occurs in between 5 am to 9 am and anthesis starts in onion at 7 am. Honey bees are the most efficient pollinator among various insect pollinators of onion, out of which *Apis cerana, A. mellifera, A. dorsata, A. florea* and *Trigona* spp. are important.

Onion seed yield is heavily dependant on bee pollinators and for efficient pollination of this highly cross pollinated crop, honey bees are most applicable. By employing domesticated bees *viz.*, *Apis cerana, A. mellifera* colonies we can get required yield but if domesticated bees are not available and colonies of wild bees are present in nature, it is therefore possible to employ these bees for pollination. Hence, it is decided to employ these wild bees by attracting

them to crop by using bee attractants.

The material to increase the honey bee visit to specific crops would be of great practical value to harvest the benefits of cross pollination. Commercial and local bee attractants *viz.*, bee line, Bee here, Bee scent, Bee scent plus, fruit boost and Bee – Q are being used to boost the yield of pea, peach, blue berries, watermelon and apple in the United States, Spain and Canada. However, in India, the studies on the use of bee attractants are meagre. Further, though some studied have been made on pollination of onion but no attempts have been made for exploring the possible use of bee attractants to boost productivity of onion in India.

However, Zvedenok (1996) tried geraniol, citrol, limonene and carrot seed extract as attractant, for attracting bees on onion corp Murasing (2000) reported that spraying of bee-Q at higher dosage (15.00, 12.50 and 10.00 g/l) significantly enhanced the both quantitative and qualitative parameters in mustard. Sattigi *et al*. (2001a) observed that application of Bee-Q @ 12.50 and 15.00 g/l resulted in higher yield (19.56 and 19.45 t/ha, respectively), maximum good fruits, minimum malformed fruits and higher size and weight in watermelon. Application of Bee-Q (12.50 g/l) on niger increased the number of seeds/capsule (ranged from 24.41 to 29.26) and oil content (38.10 per