

Foraging activity Of *Apis dorsata* for pollen hosts preference and its relation with climatic factors

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Abstract

Honeybee nutrition is of interest in the context of the study of their behavior, biology, evolution as well as their practical management). Abady (1975) reported that commencement of flight each day was determined by the time of sunshine and the temperature, interacting in a complex fashion. Sihaag and Aborl (1986) reported that two mutually inter related factors viz. relative humidity and solar radiation has greatest direct effects or appreciable indirect effects. Abady(1975) reported that commencement of flight each day was determined by the time of sunshine and temperature , interacting in a complex fashion.

Material and methods

The observations on population dynamics of bee foragers and pollen collectors were carried out on some oil crops, such as *Brassica campestris* var. toria, *Brassica juncea* var. yellow sarson, *Helianthus annuus* (Sunflower) and two vegetable crops i.e. *Raphanus sativus* (Radish) and *Allium cepa* (onion) grown for seed purpose involving *A. dorsata*,. Direct counts of the number of foragers and the pollen collectors visiting a crop were made for 2-3 different days at an interval of 5-7 days during major blooming period. Each day observations were made on these crops at an hour interval between 08:00h in winter and from 07:00h to 19:00h in summer months for these observations four different plots, each measuring to 2sqm were randomly taken and bee counts were extrapolated

per 100sqm area. Data on ambient temperature and relative humidity were also monitored.

Result

The meteorological conditions i.e. the maximum day temperature (°C) and morning relative humidity (%) prevailed during the respective blooming periods of various crops also recorded. The maximum day temperature was at the lowest in the month of January and February (12°C) and it went high up to 45°C in the month of April and May. The morning humidity was at minimum in the month of April (29%) and maximum in the month of December to February(96.5%). Diurnal foraging pattern of *A. dorsata* on different crops shown in table 1. The maximum pollen collectors were recorded on *B. campestris* (100%), followed by *R. sativus*, *B. juncea* and *A. cepa*. *A. dorsata* pollen collectors were absent on *H. annuus*. The pattern of activity on *A. cepa* was bimodal.

Discussion

A.dorsata preferred most *B.campestris* var. toria. *A.dorsata* foragers least preferred *H.annus* pollen. Kapil and Kumar (1975) observed only 18 per cent of the *A.dorsata* collecting *B.juneca* var. yellow sarson crop during peak hours of activity. It is well established fact that *H.annus* flowers in general are less preferred by honeybees for pollen collection (Jain, 1992). Kumar et al. (1985) stated in Himachal Pradesh *A.cepa* was preferred by *A.dorsata* forager exclusively for nectar. Only a small percentage of *A.cerana* was reported to collect both pollen and nectar. . Other authors (Williams and Free, 1974) while collecting nectar subsequently comb it from their bodies and discard it and only a small proportion of Nevertheless, up to 82.3 per cent of *A.dorsata* bees were found collecting pollen during peak hours of their activity. Different behavior was noted for *A.dorsata* on *R.sativus* crop. Out of 363 bees/100sqm observed visiting these flowers; none was seen with pollen pallets. Interestingly *A.dorsata* bees were also been visiting on *A.cepa* flowers and *R.sativus* flower around 10:00 – 11:00h. f them pack it into their corbiculae . *A.dorsata* bees were intermediate in number and *A.florea* was found to appear later on the crop Kapil and Kumar (1975) observed only 18 per cent of the *A.dorsata* collecting *B.juneca* var. yellow sarson crop during peak hours of activity. . Other authors (Williams and Free, 1974) while collecting nectar subsequently comb it from their bodies and discard it and only a small proportion of Nevertheless, up to 82.3 per cent of *A.dorsata* bees were found collecting pollen during peak hours of their activity. Different behavior was noted for *A.dorsata* on *R.sativus* crop.

Summary

The observation on population dynamics of bee foragers and pollen collectors of, *A. dorsata* were carried out on some oil crops, such as *Brassica campestris* var. toria, *Brassica juncea* var. yellow sarson, *Helianthus annus* (sunflower) and two vegetable crops i.e. *Raphanus sativus* (radish) and *Allium cepa* (onion) grown for seed purpose. Direct counts of the number of foragers and the pollen collectors visiting a crop were made during major blooming period. Diurnal foraging pattern of *A.dorsata* on different crops depicts their highest activity on *B.campestris* var. toria at 10:00h (146/10 sqm). The *Apis dorsata* species showed differences in pollen preferences for these plant species. *A.dorsata* showed highest preference for *B.campestris* var. toria and *R.sativus* pollen and least for *A.cepa* pollen. Through *A.dorsata* foragers were recorded on *A.cepa*, but pollen collectors were altogether absent. *A.dorsata* foragers least preferred *H.annus* pollen.

Table 1: Diurnal foraging pattern of *A.dorsata* on different plants species (Total foragers/ 100m²).

Plant Species	Day Time (h)						Mean
	08:00	10:00	12:00	14:00	16:00	18:00	
<i>B.campestris</i>	0	426	104	12	0	0	85
Var. toria	(0)	(426)	(104)	(8)	(0)	(0)	(68)
<i>B.campestris</i>	0	0	163	108	50	0	49
Var.Yellow sarson	(0)	(0)	(150)	(71)	(12)	(0)	(31)
<i>R.sativus</i>	16	186	33	13	8	0	44
(0)	(0)	(125)	(17)	(0)	(0)	(0)	(24)
<i>A.cepa</i>	0	33	150	220	358	133	152
(0)	(0)	(0)	(122)	(167)	(192)	(42)	(79)
<i>H.annus</i>	25	13	0	0	0	17	9
(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

*Per cent pollen collector.

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