

## Investigation of insect pollination and foraging behavior of insects on *Trachyspermum ammi* (Linn.) Spr.

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### Abstract

Foraging behavior is a series of actions that predators take to hunt for food and it includes searching, chasing, catching, processing, and ingesting. It is an excellent indicator for evaluating individual performance as the plant species need food to supply vital energy for basic life functions. *Trachyspermum ammi* (Linn.) Spr. (Ajmain) belongs to family Apiaceae, is an important spice crop, mainly cultivated for its seeds, which possess medicinal and commercial value. It is commonly grown in some parts of our country in the month of October-November and harvested in February-March. In the present studies investigation of insect pollination and foraging behavior of insects on the selected plant was studied and reported.

**Keywords:** *Trachyspermum ammi*, insect, pollination

### Introduction

*Trachyspermum ammi* (Linn.) Spr. (Ajmain) is an important medicinal and spice crop. It is cultivated in many part of our country as a winter crop. It is an annual, erect herb with soft fine hairs. It has branched leafy stem and feather like leaves. Flowers borne in compound umbel inflorescence. The seeds are minute, egg-shaped, pungent and on steam distillation yield an essential oil, which is valued in medicine on account of the presence of thymol. Moreover, the seeds are carminative, stimulant and flatulent and have long been used in indigenous medicine for the treatment of spasmodic disorders. <sup>[1-2]</sup> Besides, they also used as a spice, in flavoring numerous foods, as anti-oxidants and preservatives.

Till date no any systematic work has been carried out on insect pollination and foraging behavior of insects on *Trachyspermum ammi* (Linn.) Spr. (Ajmain). Therefore the present work was undertaken.



**Fig 1:** *Trachyspermum ammi*: Whole Plant

### Methodology

The investigations pertaining to *Trachyspermum ammi* (Linn.) Spr. were carried out in the field and laboratory. Following methods were adopted as suggested by eminent workers.

### Insect Pollination

Studies regarding to pollination were made and studies were carried out as suggested by Dwivedi. [3-5]

### Foraging behavior of insects

The studies were conducted and the data were revealed as per the method already suggested. [3-5]

### Results and Discussion

The visitors of the flowers were collected with the help of nylon mesh butterfly nets and they were transferred to insect killing bottles containing chloroform moist cotton pad. They were examined under microscope. The samples were collected from the experimental field during the peak flowering months. Despite repeated trials made in every flowering months on 100 of flowers, the fruit setting were observed in insect pollination and the data so obtained are mentioned in table 1.

**Table 1:** Fruit set % in different pollination in *Trachyspermum ammi*

Replicates	Insect Pollination
R <sub>1</sub>	76
R <sub>2</sub>	88
R <sub>3</sub>	78
Total	242
X	80.6
+SD	80.6+ 4.2
+SEM	80.6+ 0.8

Table 2 shows the different kind of insects visiting on the flowers of *Trachyspermum ammi*. It is obvious that the insects like *Apis floreae* and *A. indica* collect both pollen and nectar, while *Terias hecabe*, *T. theophyratus*, *Hypolymous species* sip the nectar with the help of their long proboscis. It was also observed that the *Apis* species directly alight on the essential organs and collect pollen from dehisced anther and nectar from nectaries. The foraging behavior of vespidean, pentatomidean and formacidian insects were not significant. They were seldom seen on flowers. Moreover, *Componotus* sp. And *Pentamoid bug* were devouring the floral parts only.

**Table 2:** Arthropode associates of *Trachyspermum ammi*

Visitors type	Family	Forage type
<i>Apis floreae</i>	Hymenoptera Apidae	Pollen and Nectar
<i>A. indica</i>	Hymenoptera Apidae	Pollen and Nectar
<i>A. dorsata</i>	Hymenoptera Apidae	Pollen and Nectar
<i>Catopsilla pyranthea</i>	Lepidoptera Coliadinae	Nectar
<i>Componotus</i> sp.	Formicidae	Floral parts
<i>Hypolymous polyna</i>	Coleoptera	Nectar
<i>Pentamoid bug</i>	Pentomide	Floral parts
<i>Polistes dorsata</i>	Vespidae	Floral parts and Nectar
<i>P. hebrioua</i>	Vespidae	Floral parts and Nectar
<i>Ropalidia spatulata</i>	Vespidae	Floral parts and Nectar
<i>Terias hescabe</i>	Lepidoptera Coliadinae	Nectar
<i>T. theophyratus</i>	Lepidoptera Coliadinae	Nectar
<i>Vespa orientalis</i>	Vespidae	Floral parts and Nectar
Unidentified moth	Lepidoptera	Floral parts

A distinct visiting pattern was observed in the activities of bees and flies. The bees appear at about the time of anthesis while flies were seen on flowers all over the day. Out of these two insects, the bees seems to be more efficient pollinators to that of flies and boost seed production in many other crops.

The flowers of ajwain are protandrous and pollen liberated from the dehisced anther was attached in the wings and body of visitors and when these insects' creeps over another flower they bring out cross pollination. It has been observed that all the insects visiting the flowers were not equally effective pollinators. Among these, the butterflies and honeybees were effective pollinators based on their nectar behaviour and abundance. The other insects like wasps, moths and bugs were either less frequent or their floral behaviour pattern do not permit the significant contact with stigma and pollen.

### Conclusion

The present investigation concludes that a plant under study exhibits insect pollination. However, maximum fruit setting is observed as a consequence of insect pollination. The insects visiting the flowers obtains pollen and nectar. All the insects visiting flowers are not equally effective pollinators Honeybees and butterflies are major pollinators and play an active role in pollination

**References**

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