POLLINATION ECOLOGY OF *ASCLEPIAS CURASSAVICA* L.

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Abstract

Pollination studies of *Asclepias curassavica* L. have been made at its wild localities in Dehradun and Kathgodam. The flowers are foraged for nectar by *Crematogaster* sp., *Melipona laeviceps* and *Monomorium* sp. Despite different insect foragers, only large black ants *Monomorium* sp. have been observed to be the legitimate pollinator at Kathgodam. Due to absence of *Monomorium* sp. and the smaller size of other foragers, plants of *A. curassavica* showed complete failure in fruit-setting at Dehradun.

Introduction

Pollination studies of different species of *Asclepias* have been made by Sprengel (1793), Hildebrand (1866), Fritz Muller (1877), Corry (1883), Herman Muller (1883), Knuth (1908), Woodson (1954), Galil and Zeroni (1965), Macior (1965), Galil (1969), Percival (1969), Proctor and Yeo (1973) and Wyatt (1976, 1980). All of these workers reported various insect visitors as pollinia vectors of different species of the genus *Asclepias*. However, in the present investigation authors have described pollination mechanism of *Asclepias curassavica*, its legitimate pollinator, viz., *Monomorium* sp. and the effect of its absence or presence on these flowers at the investigated localities at Dehradun and Kathgodam respectively.

Materials and methods

Freshly opened flowers of *Asclepias curassavica* were observed for their pollination mechanism and pollinators at Dehradun and Kathgodam. Insect visitors were caught in glass test-tubes and subsequently killed with the help of xylene soaked cotton plugs. These specimens were then observed under stereobinocular for pollinia attachment to their body parts.

Observations

Different insect visitors, viz., *Crematogaster* sp. and *Melipona laeviceps* were observed licking up nectar from the flowers of *Asclepias curassavica* at Dehradun. The size of these visitors (see Table-1) seems too small to transport the pollinia from one flower to the other.

Table 1—Showing size of insect visitors of *Asclepias curassavica* L.

Name of insects	Size of insects in mm
Crematogaster sp.	2.00—3.00
Melipona laeviceps	3.00—4.00
Monomorium sp.	8.00—10.00

Not even a single pollinium was found attached to their body parts, which results in complete failure in fruit-set. In addition to *Melipona laeviceps* and *Crematogaster* sp., large black ants *Monomorium* sp. have also been observed at Kathgodam.

During their foraging visits, long legs of *Monomorium* sp. drag on the lateral sides of gynostegium. As these foragers move to other neighbouring flowers their long hind legs still remain on the previously foraged flower and when the same forager moves on to the third flower for nectar and pulls its leg, the fine hairs of hind legs come in contact with the corpusculum of pollinia which stick to them. When these visitors forage other flowers, their legs with pollinia enter the stigmatic notches. During the process of pulling of their legs, either the whole pollinia are left inside the stigmatic notch or legs of these visitors break up and remain inside the notches. Germination of pollinia was unilateral from the convex side.

Discussion

The flowers of *Asclepias curassavica* were found pollinated by large black ants *Monomorium* sp. only at Kathgodam. Due to absence of *Monomorium* sp. on the flowers of *A. curassavica* fruiting did not take place at Dehradun. Because of their smaller size, *Melipona laeviceps* and *Crematogaster* sp. were never found with pollinia attached to their body parts. However, Wyatt (1980) observed butterflies as pollinators of the same species in U. S. A. and reported that ants reduce the efficiency of pollination in *Asclepias curassavica*. During our observations on *A. curassavica*, we found large black ants *Monomorium* sp. as legitimate pollinators whose pollinia bearing legs often found inserted inside the stigmatic notches of the flowers, further, pollinators (butterflies) reported by Wyatt (1980), have never been observed over these flowers at any of the investigated localities.

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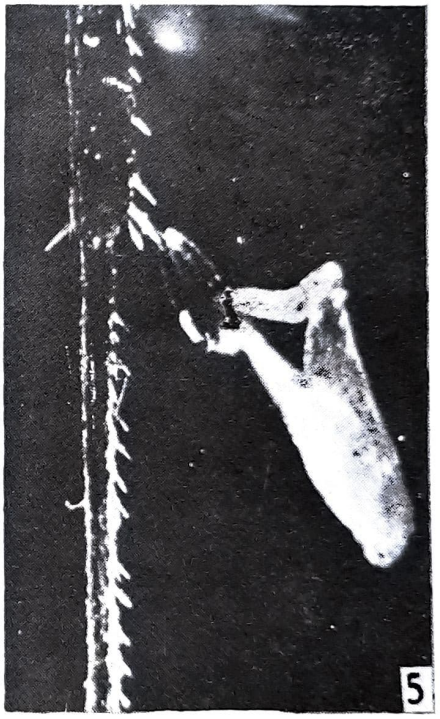

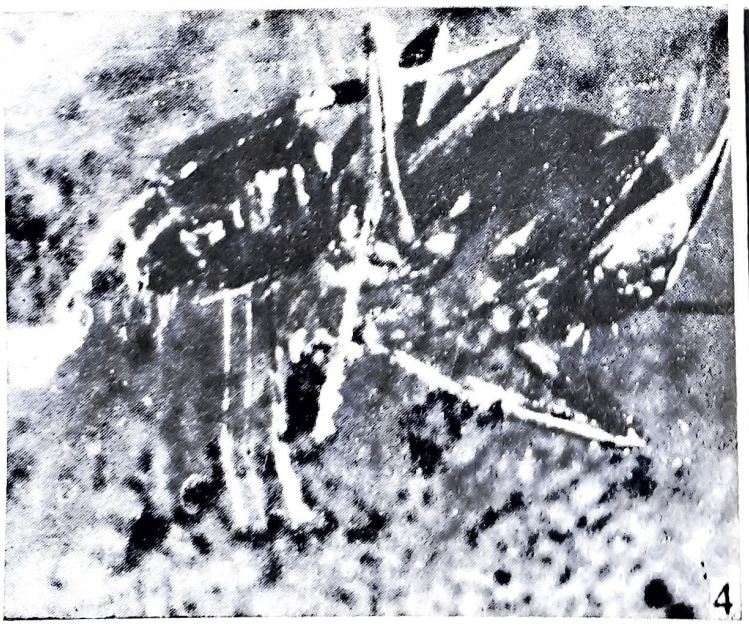

Explanation of Plate

1. Plant of *Asclepias curassavica* with flowers. ×. 37
2. Pollinia with broken leg of *Monomorium* sp. × 48.004
3, 4. Black ants *Monomorium* sp. with pollinia attached to their hind legs. × 8.125 and ×7 respectively
5. Magnified hind leg of *Monomorium* showing attachment of pollinia. × 21.
6. Germination of pollinium from lateral side. × 36.6.