UGC Minor Research Project

Summary of the Project

Entitled

Insect Pollination and Seed Production in *Coriandrum sativum* L.(Apiaceae)

For the year 2009 -11

Sanction Letter No.F.47-612/08 (WRO) Dated -11 Feb.2009

Date of implementation- 10th May 2009

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Summary of the Project

This project aimed at Investigating the insect pollination and seed production in *Coriandrum sativum* L. (Apiaceae). The present work was carried out during the year 2009-2011 at Akot situated in Akola district of Maharashtra state. The observations were made in a field of *Coriandrum* grown near the Akot at Umra and Shivpur village.

Coriandrum was sown in 2x4 m beds with spacing of 40cm between the rows. There were three treatments 1)Self Pollination (SP) 2)Bee Pollination(3-4 bees visited) (BP) and 3)Open Pollination (OP).For each treatment four plots were selected at random. For the first treatment 20 mature umbels were selected at random from each plot. The selected umbels were enclosed in 2x2x2 m mosquito nylon nets just before initiation of flowering.
In bee pollination treatment on the same day selected umbels which were visited at least thrice by bee were marked as bee pollinated. For open pollination treatments 20 mature umbels were selected at random and no net was kept and natural pollinating insects were allowed to visit crop.

The variation was observed among the treatments regarding seed yield per plant and seed yield per umbel. During the study, it was found that honeybees and other insect pollinators had a significant effect on seed yield of *Coriandrum sativum* . The highest yield was obtained from open pollinated crops whereas crops excluded from insects had the lowest yield. Plants covered without honeybees had the lowest yield (48 %.) while the highest yield was obtained from open pollinated crops (89%) followed by the bee pollinated crops. The variation of seed per umbel was found that the open pollinated crops had the highest number of seeds per umbel (85%) followed by bee pollinated crops. Therefore, it was necessary to keep sufficient number of honeybee colonies in nearby fields during the flowering period to increase the pollination efficiency and it enhances the seed productivity.

Simultaneously observations were also made on other important aspects involved in the process of pollination. The number of honeybees visiting a particular umbel in 10 minutes of

observation was recorded at hourly interval between 0600 hrs to 1800 hrs.consecutively for three days during peak flowering.

Honeybees were the major pollinating insects representing the 92% of the total number of insect visiting the *Coriandrum* crop. The pollinating bees include *Apis cerana indica,Apis dorsata* and *Apis florea* was the major pollinator.

It was found that the visits of *Apis cerana indica* and *Apis dorsata* to *Coriandrum* flowers gradually increased from 700 hrs to 1200 hrs. However, more bees visited the umbels during 900 hrs to 1200 hrs (4-5 bees per umbel) which was considered as time of peak bee activity. The bee visits decreased from 1500 hrs to 1700 hrs (1-2 bees per umbel) and no bee visits were observed at 1800 hrs. This may be due to the fact that the maximum pollen occurs in between 900 hrs to 1200 hrs.

It was also found that during cloudy and rainy weather bees started foraging late and their activity was low. From here, it is important to indicate that honeybees are not only pollen collectors but main pollinators for *Coriandrum.*

The results show that insect pollination is superior in respect of seed set and seed yield.

The collected seed yield of two years results indicate that insect pollination is very important for high yield crop production. This study found that honeybee and other insect pollinators had a significant effect on seed yield of *Coriandrum sativum.* The most important period for pollination was the morning in the studied crop. *Coriandrum* crops are cross pollinated which require frequent visits of insect pollinators. Therefore, it was necessary to keep sufficient number of honeybee colonies in nearby fields during its flowering period to increase the pollination efficiency and thereby enhance seed productivity.