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Investigation of Pollination values of *Nigella sativa* Linn.

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Abstract

Pollination is an essential forerunner of seed production and the mean by favorable adaptation can spread through a pollination. It will result in the production and formation of fruits in angiospermic plant. The present paper deals with the investigation of pollination value of *Nigella sativa*.

Key-Words: Pollination value, *Nigella sativa*

Introduction

Pollination is the process by which pollen is transferred to the female reproductive organs of a plant, thereby enabling fertilization to take place. Like all living organisms, seed plants have a single major goal: to pass their genetic information on to the next generation. The reproductive unit is the seed, and pollination is an essential step in the production of seeds in all spermatophytes (seed plants).

For the process of pollination to be successful, a pollen grain produced by the anther, the male part of a flower, must be transferred to stigma, the female part of the flower, of a plant of the same species. The process is rather different in angiosperms (flowering plants) from what it is in gymnosperms (other seed plants). In angiosperms, after the pollen grain has landed on the stigma, it creates a pollen tube which grows down the style until it reaches the ovary. Sperm cells from the pollen grain then move along the pollen tube, enter the egg cell through the micropyle and fertilise it, resulting in the production of a seed.

The pollination mechanism in flowering plants occurs by number of elaborate devices which have been evolved favoring cross pollination between different parts of the same species, but at the same time minimizing the chance of self pollination. The present paper deals with the pollination value of *Nigella sativa*.

Methodology

Pollination values of *N. sativa* were investigated as per method suggested for open, self and insect pollination. To study the self pollination the floral buds were bagged 10 days earlier to the day of anthesis. At the early stage of development, the stamen and carpel are of equal length. Later the carpel elongates and stamen remains in the previous position. After this stage, the growing stamens resume their growth and reach near to stigma. At this time anthesis stamen lies just parallel to stigma. Now a special type of curling occurs in stigma toward lower side. During this period the stigma touches the anther lobe. At this time anther lobes burst and a powdery mass of pollen adheres to the stigma.

Results and Discussion

Table 1 shows the pollination value of *Nigella sativa* in different fruit setting months in a year. Pollination value was maximum (95 %) in the month of November. A gradual decrease in this value was noted in the following month for all three pollination conditions. Minimum pollination value (45.1%) was recorded in the month of March in insect pollination. Likewise, self pollination and open pollination showed a minimum value of 47.0 and 50.2 percentage respectively in the month of June. The months of rainy season like July, August, September and October were

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not seen to support fruit setting for the species under study.

Table 1: Fruitset % in different pollination of *N. sativa*

Pollination condition	No. of flowers sampled	No. of flower set fruits	Fruit set %
Self Pollination	150	70	46.6
Open Pollination	100	95	95.0
Under Insect enclosures	50	4	8.0

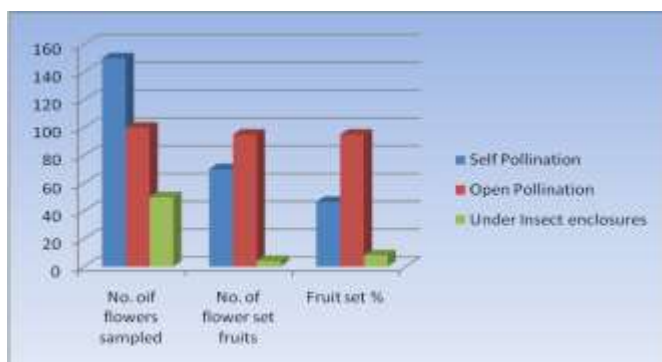
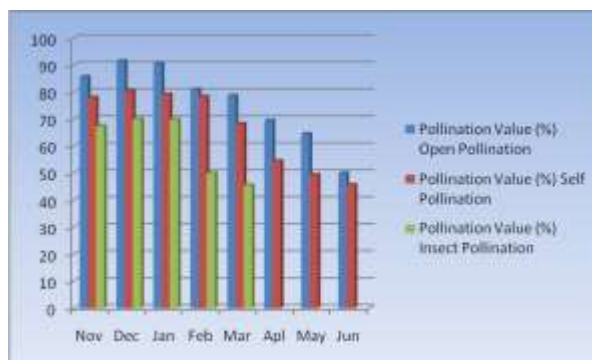


Table 2: Pollination value (%) of *N. sativa* in different months

Month	Pollination Value (%)		
	Open Pollination	Self Pollination	Insect Pollination
Nov	85.7	78.0	67.5
Dec	91.6	80.5	70.0
Jan	90.7	79.2	69.9
Feb	81.0	78.4	50.0
Mar	78.7	68.3	45.5
Apl	69.5	54.5	-
May	64.6	49.4	-
Jun	50.0	45.7	-

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