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Studies on the coleopteran pests infesting certain vegetables in Madhepura district, Bihar

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Abstract- Various studies are going on to restrict the extent of pest manifestations. Many varieties like cabbage, cauliflower, kohlrabi, broccoli, kale, etc. are derived from wild species of cabbage, via hybridization techniques. *Phyllotreta crucifera* is a major destructor, creating spot holes, on leaves of cabbage & cauliflower. By performing few prevention measures, large scale destructions can be avoided. Monitoring, especially during the seedling phase can help create healthy variants. In the present study a survey has been done in 7 various parts of Madhepura district, during the months of February, March and April to sample coleopteran pests infesting certain vegetables.

Keywords- *Phyllotreta crucifera*, manifestations, spot holes, vegetables, flea beetles.

INTRODUCTION

Madhepura is blessed with geographical conditions that suit a wide variety of vegetables, fruits & medicinal and aromatic crops. Though crops like rice, wheat, maize, jute & oilseeds occupy major area under cultivation, vegetables like potato, tomato, cauliflower, brinjal, cabbage and sponge gourd add extra income to the farmers. Packed with nutrients, vitamins and minerals these form a cheap staple, not only for the people of Madhepura but also for other parts across India.

The investment of finances and time required to gain maximum profit by increasing the yield as well as quality. Plant hybrid technologies and irrigation method has acted as a boon in increasing profit. But as known, in every boon there is a hidden curse. Same goes with growing

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these vegetables. These vegetables become a feast for never ending insect infestations. If not taken care of, these infestations can cause a great deal of loss, hampering even the entire batch. Cabbage and cauliflower are generally called as cruciferous vegetables belong to the family Brassicaceae. In its uncultivated form, it is called wild cabbage and is native to coastal southern and western Europe.¹

Cabbage is a leafy green red or white biennial plant multi layered vegetable. Due to its high level of nutrient requirements is prone to nutrient deficiencies, and many diseases like internal tip burn, necrotic spot, wire stem, black leg and black rot. In India diamond back moth has caused several losses.² Cauliflower's head is composed of a white inflorescence meristem. Among major pests affecting cauliflower are aphids, root maggots, cut worms, moths and flea beetles.³

Cabbage is damaged by flea beetles that belong to order coleoptera. Flea beetles are very small brown to black beetles that may have some yellow markings on their wing covers. The eggs are generally laid at the base of the plants. The white brown headed larvae have three pairs of legs. Flea beetles can cause damage to seedlings and small plants. Larvae are found in the soil and attack roots. Adult leaf beetles feed on cabbage plants making small round pits in the cotyledons and leaves.⁴⁻⁵

Phyllotreta crucifera is a species of flea beetle in the family Chrysomelidae⁶. The young larvae feed on the epidermal leaf tissues between the upper and lower leaf surfaces. The older larvae feed on all plant parts whereas they prefer to feed around the buds and leaves. They create irregular shot holes and disfigure the bud so that the cabbage head will not develop properly.

Flea beetles live through the winters as adults in leaf litter and become active in early spring. Female either lays cluster of eggs in small holes or single egg in roots, soil or leaves. Larvae transform into pupa in the ground.⁷⁻⁸ The adults feed on leaves, scraping away leaf tissues and making characteristic perforation. In high populations, cause severe infestations even kill young plants.

MATERIALS AND METHODS

Protection against flea beetles can be achieved by proper monitoring, especially during springs, when seedlings have emerged. To determine the extent of effect & its control a survey was done in Madhepura via random sampling 7 agricultural plots were taken, during the months of February, March & also April. The survey was restricted to early morning hours (between 6 am to 8 am).

The foliage is rendered unfit for consumption, by larva. Larva skeletonizes it. It firstly feeds on leaves & then on the flower (in case it is a cauliflower). When larvae are small, they make irregular shot holes. In case of numerous infestations, they eat up the entire leaf leaving only veins.

Also immature forms (eggs, larvae) & adults (beetles) were collected from the vegetables crop fields & taken to the lab for further study. *Phyllotera crucifera* or as commonly called the crucifer flea beetle were found to be the main cause of damage, done by the coleopteran family.

OBSERVATIONS

Phyllotreta crucifera though very harmful, still isn't the cause of major destruction. Diamond back moths (*Plutella xylostella*) of the family lepidopteron still hanks first in cabbage & Cauliflower destruction.

CONCLUSION

Several simple methods may be adapted to prevent serious damage. At first by checking the presence of flea beetles by putting yellow sticky traps in the field. If on an average more than 5 beetles are found in each plant, proper treatment must be given to the seedlings. Secondly, keep the flea beetles out of the vegetables crop, by using row covers or others screenings. Using pesticides contain active ingredients such as pyrethrins, carbaryl, malathion, spinosad, etc.

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