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RESEARCH ARTICLE

STUDY OF SERIOUS PEST OF BRINJAL AT RAMGARH, (JHARKHAND, INDIA): PREVENTION AND CONTROL

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ABSTRACT

Assessor/Auditor key responsibility is assessment/ audit of testing & calibration laboratories, management system, manufacturing process, service, or documentation procedure has all the requirements for standardization and quality assurance. Assessors/auditors are appointed are responsible for the assessment/audit of the conformity assessment body. The assessors are appointed or hired by accredited body (AB) on regular basis or add assessors/auditors in panel. It is prime responsibility of an assessor/auditor, to assess/audit of any CAB, impartially, in comfort environment, free from undue pressure and fair reporting. A good assessor/auditor should be professional competent and experiences of the system. Attitude & behavior is the other name of quality. Knowledge of procedures of quality management in the fields testing, calibration, inspection or certification based on practical experience and/or successful participation in relevant training, courses and able to communicate/write in the required languages both verbally and in writing. Simultaneously, any assessor/auditor should refrain from to tell solution to laboratory representative, for laboratory improvement, then it will count consultancy and it is violation of impartiality.

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INTRODUCTION

The main dietary component for human beings are the vegetables. The tremendous production of vegetables makes it suitable and easily available for the even poor population. Brinjal is one of the most important, cheap and omniavailable vegetables. It is the cheap source of, carbonate, calcium and vitamins. Its food items are delicious and are always on demand even in star hotels and restaurants also. Ramgarh is located at lat. 23.38^0 N and long. 85. 34 ^{0}E, a district town. N. H. 31 passes through it. It is very near to Ranchi, the capital of Jharkhand about 40 k. m. west. Ramgarh is a very beautiful town, full of hills and forest. The people of this locality are mainly farmers depends on agriculture. The poor quality of irrigation force the farmers to cultivate vegetables like potato, brinjal, cauliflower etc. Brinjal is one of the main vegetable give very high production with low cost and labour. There were five villages selected for experiment. They were 1. Chhatarmandu, 2. Gosa, 3.Jara, 4.Kankebar and 5. Koiritola. Farmers of these villages cultivate brinjal as cash crop but populationof pest destruct their brinjal plants as well as the fruits also. The pests declines the quality and quantity but also the taste of brinjal product.

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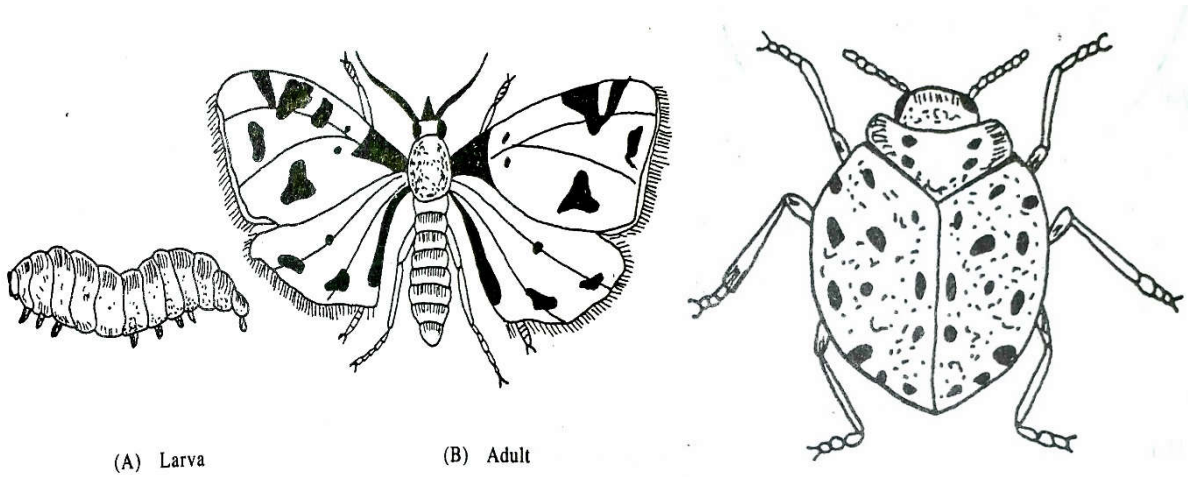
To control these most destructive pests farmers were advised to adopt chemical pesticides control and spray carbaryl (0. 1 %), Endrin (0. 04 %), Malathion (0.1%) at regular interval. Farmers are advised to apply the eco-friendly biological method of paste control. Some hyperparasites were to introduced in the brinjal farm.

MATERIALS AND METHODS

Standard methodology were applied for the experiment of brinjal pest. Observation of life cycle of pests, the nature of damage of brinjal plants and fruits were recorded. The study in crop field as well as in the laboratory were recorded carefully. In the experimental selected villages two healthy brinjal plants were totally covered with mosquito net separately. Observation of pest were take carefully for studies. The eggs, larvae and the pupae were separated from the plant and prepare table. In the laboratory five plants were separately covered with mosquito net. The eggs were collected carefully keep them for hatching at room temperature. Eggs, larvae, pupae and the nature of damage parts of plant and fruits were recorded. Tables were prepare for further study.

Observation: Different types of vegetables were infested by different type of pests which causes considerable loss not only the quantity of products but the quality of product also decline.



***Leucinodes orbonalis*, Guen. *Epilachna dodecastigma*, Mulsant**

Table showing the life cycle of brinjai pests

S.N	*Name of the pest.*	*No. of eggs laid*	*Hatching period in days*	*Larval periods in days*	*Pupation periods in days*	*Complete life periods & Generation.*
1.	*Leucinodes orbonalis,* Guen.	250-300	3 -5	10 -15	6 -8	20 -45 days. 5generations.
2.	*Epilachna dodecastigma*, Mulsant.	150 -180	3 -9	10 -17	2 -5	17 -20 days.7-8 generations.

Hot climate and lack of irrigation increase the attack of pests on brinjalcrops. The following most serious pests were studied. 1. *Leucinodes orbonalis,* (Guen*):* It is the most destructive pest of Brinjal. Damage is caused by the larvae. The adult is greyish –brown moth with white wings. The margins of the fore and hind wings having small hairs. The wings bear pinkish – brown spots. The adult wing spawn is about 20 m. m. After copulation the female lays about 300 eggs, 50 to 60 eggs per days, the duration of egg laying were 5 to 6 days on soft young leaves, flowers or on fruits. The eggs were white After 3 to 5 days larvae hatched from the eggs. The larvae enters in to the plant tissue or in fruits immediately. After five moultings it become fully matured. The fully grown larva is rough warty pink coloured with brown head. The body bears warts all over the body. The larval period last for about 10 to 15 days. The matured larva comes out from the host tissue and form pupa among the fallen leaves, or on the surface of stem or in fruit of the host plant. Pupation occurs in side a grey tough cocoon. The pupal stage lasts for 6 to 8 days after which adult appears. The adult moth lives for 2 to 5 days. The life cycle complited in 20 to 45 days. There are five overlapping generations were observed in a year. In winter the larva hibernate inside the soil.

Prevention and control

- The infested whole plant should be uprooted and destroyed.
- Spraying of pesticides Carbaryl (0.1%) or Endrin (0.04%) or Malathion (0.1%),
- or Endosulphane (0.05%).
- Biological control ; To control the pest some hyperparasites as *Pristomerus testaceus*
- (Morl)*, Cremastus flavoorbitalis (cam), Bracon sps. etc.*

Epilachna dodecastigma, (Mulsant): It is one of the most serious destructive pest of brinjal. Larva and adult pests are also destructive. In general they feed on the green tissue of the leaves and skeletonize the plant which ultimately dried up.

The adult beetle is 8 m.m. in length and 5 to 6 m.m. in breadth. It is copper colour having 12 black spots on the dorsal parts, body is hemispherical and smooth. Adults are good fliers and move from plant to plant. After copulation female lay 150 to 180 eggs. Eggs were laid in a cluster of 40 to 50 on the lower surface of the leaf, they were cigar shaped yellowish in colour arranged side to side on the surface of the leaves. In summer the larva hatched in 3 to 4 days and in winter 5 to 9 days. The grubs are oval, fleshy and yellow in colour bearing hairs on the body. The grubs restrict their feeding to the epidermis of the leaves. A fully grownlarvae measures about 8 m.m. in length. The larval period lasts in 10 to 17 days which passes four different stars. The larva changes in to pupa at the surface of the leaf or on stem or at the base of the plant attached with the help of sticky secretions from the last abdominal segment. The skin of the larva act as pupal case. The pupa is dark in colour. The pupal period lasts for 2 to 5 days. The life cycle of this pest completed 7 to 8 generations during March to October. In winter the beetle hibernates in the soil. The adults are voracious eater and lives one to two months.

Prevention and Control

- Manually the beetles and their larvae can be collected and destroyed.
- Spraying pesticides Malathion (0.1 %) or Diazinon (0.0 2%) or Carbaryl (0.1 %) etc were quit effective for keep the pest under control.
- Thorough irrigation of infested crop can control the pest population.
- *Biological control can be applied to introduced Tetrastichus ovulorum, Ferr and*
- *Achrysocharis appannai to the crop to parasitize the eggs and larvae of the beetles.*

DISCUSSION

The pest of Brinjal were very destructive in nature. The experimental pests 1. *Leucinodes orbonalis*, (Guen.) and 2.

Epilachna dodecastigma,(Mulsant) were the most serious destructive pest of Brinjal. There larva and adults were equally destructive for the brinjal plants and fruits. Spraying of pesticides in the brinjal crop field for the protection of brinjal, these pests escape from brinjal fields to near by other fields of Potato plants or Tomato plants, and cause serious damage to these vegetables. During summer the attack of pest population increases, and their life cycle complited in very short periods. Atmospheric temperature directly affect their life cycle (Upadhyay and Verma 2004), High temperature directly increase the metabolic rate till the lithal temperature attain. All organismposses well defined limit of temperature tolerance (Upadhyay et al., 2010). The pests were not only destroy the quantity but the quality of the vegetables also, it changes the various essential components regards the nutritive values and even taste of the vegetables (Upadhyay and Bakshi 2019). The climatic condition of Ramgarh is very much suitable for the plant growth and vegetable production is also suitable for the growth of plant population (Upadhyay 2017). The pest population can be control after the destruction of eggs, larvae, pupae and adults of the pest (Kumar & Tiwary 2009), (Prabhakar and Roy 2009). The chemical pesticides are not easily decomposed, hence harmful to the health of man and environment (Upadhyay and Verma 2005). Farmers are advised to apply the biological method of pest control and introduced the hyper parasites to the brinjal fields, it will eco-friendly to human and no way harmful to the environment.

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