EFFECT OF HOST-PLANT RELATIONSHIP ON DEVELOPMENT PARAMETERS OF *Spodoptera litura*

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ABSTRACT *Spodoptera litura* (Lepidoptera: Noctuidae) is a polyphagous pest. It feed on more than 120 host plants. It causes economic losses of crops from 25.8%-100% based on crop stage and its infestation level in field. In the present study, *Spodoptera litur*a feed on five tomato varieties (Pant Bahar, Ratna, Arka Saurabh, Pusa Gaurav, Arka Abha). Different growth parameters (fecundity, incubation period, hatchability) of pest were assessed on different tomato varieties in the laboratory. Results indicated that the maximum fecundity (695.33%) of pest was recorded on tomato variety Pant Bahar while minimum fecundity on tomato variety (672.33%) Arka Saurabh which was followed by Ratna (681.67%), Arka Abha (682.33%) and Pusa Gaurav (689.67%). Maximum incubation period was observed on tomato variety Arka Saurabh (8.65 days) and minimum on Pant Bahar (5.46 days) which was followed by Pusa Gaurav (6.33), Arka Abha (6.81) and Ratna (7.33). Maximum hatchability (94.33%) was found on tomato variety Pant Bahar while minimum (86.32%) on Arka Saurabh. It was clearly observed that Pant Bahar variety of tomato was proved to be most susceptible for the development of pest while Arka Saurabh was the most resistant variety against *Spodoptera. litura*.

KEY WORDS: Arka Abha, Arka Saurabh, Pant Bahar, *Spodoptera litura*, Fecundity, Hatchability

1.0) INTRODUCTION Tomato is a warm season crop and thrives well in those regions that are free from frost. During adverse climatic conditions, monetary return from tomato crop is most fluctuating depending on the season of production and ruling market price because of the genetic potential of the germplasm material. Tomato production is greatly influenced by environmental factors and cultural practices. *Spodoptera litura* is economically important pest for tomato production. It causes damage to the leaves and fruit. It also become resistant to many currently used chemical pesticides. Chemical control alone is not sufficient for pest control. An effective time and money saving management practice adopted by the farmers is the utilization of insecticides to control which needs right time, doses and application tools for its proper control. Therefore, the knowledge of the life parameters of *S. litura* and understanding components of its fundamental life history on different host plant species may help to make progress in efficient strategies to control this economic pest. In regards to host-plant interactions, it is very useful to determine the influence of different host plant cultivars on the performance of herbivores. Host plant quality is a key determinant of the fecundity insects. It also affects the reproductive stages. Therefore, the study of influence of different host plant on the growth and development is very useful to understand the suitability of plant infesting insect species. These help us to better forecast pest's potential of crop damage and their methods of control.

2.0) MATERIAL AND METHOD

2.1) Rearing of pest Freshly laid batches of eggs of *Spodoptera litura* were collected from the vegetable farm of C.S.A. University, Kanpur. Eggs were allowed to hatch under laboratory conditions. Larvae were reared in the laboratory in the sterilized earthen pots. Mouth of pots covered with muslin cloth. Larvae were fed on fresh castor leaves and maintained

temperature of 26 ℃, relative humidity of 65%. Larvae were allowed to pupate in moist and sandy soil. Pupae were sexed and placed separately. Adult moth allows to mate and then used for experiment.

2.2) Used tomato varieties Following tomato varieties were used in the laboratory experiment: -

V1- Pusa Gaurav

V2- Ratna

V3- Arka Saurabh

V4- Pant Bahar

V5- Arka Abha

V6-Control

2.3) Procedure of treatment application: 100 gm fruit of each tomato variety placed in beakers with a pair of pest. Beakers were covered with muslin cloth. Laboratory experiment was set up in three replications with one control for each tomato variety.

2.4) Data collection: Data collection takes place on each alternate day.

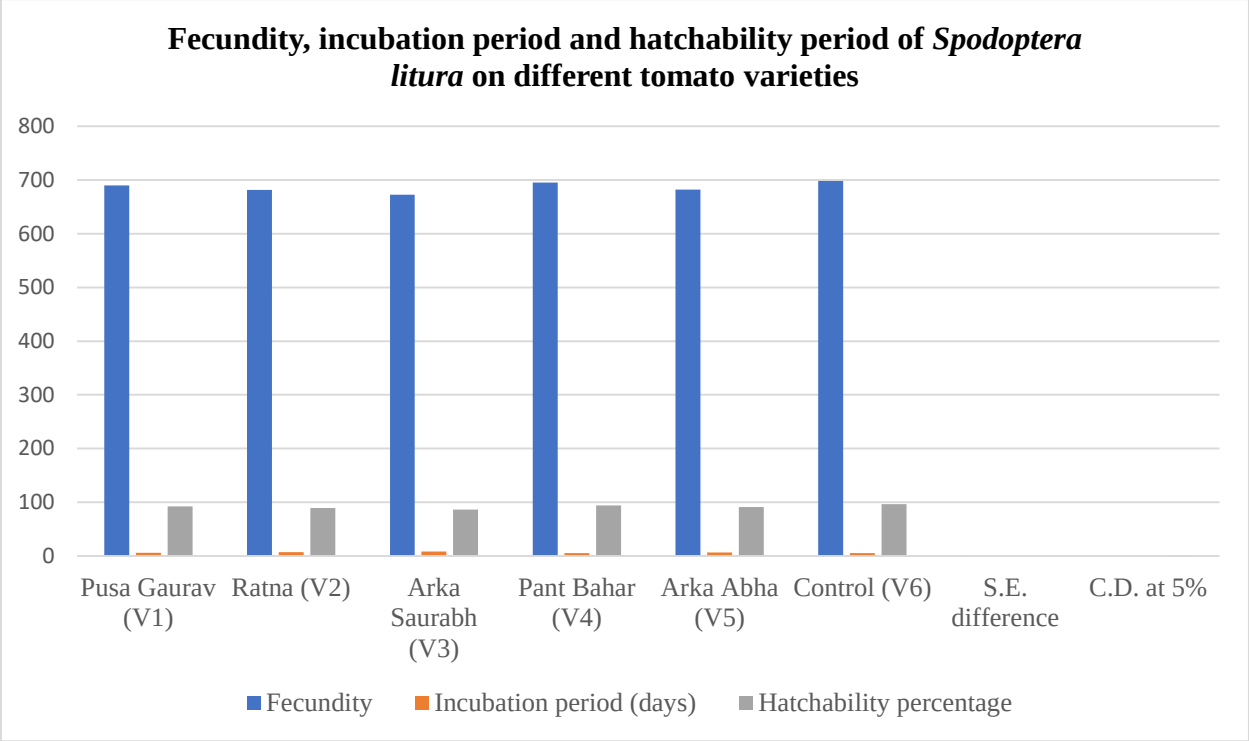
2.5) Statistical analysis: The effect of different tomato varieties on *Spodoptera litura* fecundity, incubation period and hatchability were analyzed by Statistical package SPSS .8.

3.0) RESULT AND DISCUSSION: It is apparent from data that the maximum fecundity (695.33%) of pest was recorded on tomato variety Pant Bahar while minimum fecundity observed on tomato variety (672.33%) Arka Saurabh which was followed by Ratna, Arka Abha and Pusa Gaurav being 681.67%, 682.33% and 689.67% respectively. Observation recorded on incubation period of *Spodoptera litura* revealed that the incubation period varied significantly at 5% level of significance. Maximum incubation period was observed on tomato variety Arka Saurabh (8.65 days) and minimum in Pant Bahar (5.46 days) which was followed by Pusa Gaurav, Arka Abha and Ratna being 6.33, 6.81 and 7.33 days respectively. Hatchability of eggs were also affected by host plant. Results indicated that maximum hatchability (94.33%) was found on tomato variety Pant Bahar which was at par 92.63%, 91.33%, 89.65% and 86.32% being Pusa Gaurav, Arka Abha, Ratna and Arka Saurabh.

Fecundity, Incubation period and Hatchability percentage of S*podoptera litura* on different tomato varieties

Tomato variety	Fecundity	Incubation period (days)	Hatchability (%)
Pusa Gaurav (V1)	689.67	6.33	92.63
	(26.26)		(74.21)
Ratna (V2)	681.67	7.33	89.65
	(26.10)		(71.19)
Arka Saurabh (V3)	672.33	8.65	86.32
	(25.92)		(68.28)
Pant Bahar (V4)	695.33	5.46	94.33
	(26.36)		(76.19)
Arka Abha (V5)	682.33	6.81	91.33
	(26.12)		(72.84)
Control (V6)	698.32	5.65	96.33
	(26.42)		(78.91)

S.E. difference	0.068	0.042	1.39
C.D. at 5%	0.906	0.103	2.16



4.0) CONCLUSION: It is concluded from the results that fecundity, incubation period and hatchability of pest *Spodoptera litura* is significantly affected by host plant. These parameters vary from variety to variety. Fecundity and hatchability recorded maximum on Pant Bahar while incubation period was least on Pant Bahar variety. These results clearly indicated that Pant Bahar variety of tomato is most susceptible for the development of *Spodoptera litura*. Tomato variety Arka Saurabh found to be most resistant variety against the pest with least fecundity, hatchability and highest incubation period.

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