



STUDY OF THE LIFE HISTORY AND BIOLOGY OF A SERIOUS PEST OF POTATO (*Solanum tuberosum*) *Agrotis ipsilon* (Hufn) IN U.P.

DR. RAKESH CHANDRA (Principal) Department of Zoology V.S.S.D. Collage
Rama Devi Road Sanigawan Kanpur Nagar U.P.

ABSTRACT

Potato is a very important vegetable crop of U.P. in india. Many agricultural pests create problems for farmers leading to production loss. This pest occurs in all potato growing areas. The life cycle and biology of this cut worm studied in the laboratory on potato. The life cycle duration of this pest is varied between 32-67 Days. The life cycle of this pest *A. ipsilon* consist of egg, larva, pupa, and adult forms respectively.

Key Words- Pest, Host(Potato)Biology, Caterpillar, Durability(longe life) and Productivity, cannibalistic.

INTRODUCTION

The potato is a ideal food crop. Potatoes are frequently served whole or mashed as a cooked vegetables. The major production of potato in India, i.e. about 74% is located in three states of India, manly U.P. Bihar and West Bangal 100 pest are attacked on potato crop but in which about 80% pests are reported in India.

Black cut worm *Agrotis ipsilon* is very serious pest of potato in U.P., this pest commonly fount in plain aria. The llife cycle of this pest is consists of egg, larva, pupa, and adult. The larva/caterpillan of this pest damage the potato crop in initial stage by cutting the young plants and near the ground level and later on by feeding on shoots and resulting to control the plant growth and crop yield. After some time, they feed by boring and nibbing in to tubers.

According in this vew, this is a seriousness problem, present, investigation were carried out to study of the life history and biology of pest- *Agrotis ipsilon* (Hufn).

MATERIAL AND METHOD

The life cycle and biology of cut warn, *Agrotis ipsilon* is studied in the laboratory at the room temperature 25° c -30°c The rearing started with a pair of adult moths in the coupling Jar. The mouth of jar is covered with time cloth. The study the life history of this pest on the host plant potato (*solanum, tuberosum*, family *solanacy*). The glucose is used as food material of adult moth in coupling Jar. The fecundity (reproductive potential) and longevity (durability) are noted for each pair of adult

moth. After some time, hatching the eggs, and tender leaves of host plant (potato solanum tuberosum) is kept in plastic coupling Jar and the newly hatched larvae is transferred on the host plant by the fine channel brush. Different plastic coupling Jar used for the larval feeding and this Jar filled with soil, used for population. The incubation, larval, pupal period is noted. The sex ratio (male and female) and cannibalism is also noted accordingly.

RESULTS

Result obtained on the average duration of life cycle, durability, productivity, sex ratio and cannibalistic are summarised in table. From the data of the table, it is evident that the duration of incubation period, larval period and pupal period ranged between 3-6 days, 17-32 days and 12-20 days respectively. The total life cycle duration varied between 32-67 days, larvae are five to nine in stars, with a total of six to seven in stars most common. The durability of this pest, recorded the male and female are 5-10 days and 10-20 days respectively while the sex ratio of males and females are recorded to 2.0:1.5 respectively. The productivity rate of this cutworm is recorded 55-280 eggs/females. The cannibalistic rate is recorded 22%.

DISCUSSION

Talpur et. al.(2002) studied the effectiveness of different insecticides against gressy cut worm *Agrotis ipsilon* on cauliflower crop, while Simpson (1977) has reported more than 100 arthropod pest on potato group from various regions of the world. In 1989, Mishra and Agrawal have given a comprehensive list of insect and non insect pest damaging potato in different states of India. Bhattacharya et. at. (2014) presented the management of potato cut worm - *Agrotis ipsilon* (Hufn) in Assam in India. Chandel et.al. (2013) has reported the biology and management of India. Rivnay (1964) has reported that incubation period of *Agrotis ipsilon* was 3 days in summer while about 7 days in spring and autumn at 18° -22°C. The life cycle of *Agrotis ipsilon* is completely between 32-67 days. The longevity of male and female ranged between 5 -10 and 10- 17 days respectively. The productivity is observed 55 - 280 eggs and sex ratio of male and female is 2.00:1.5 respectively.

Laboratory studies on the life history of *Agrotis ipsilon* (Hufn) on potato (*Solanum tuberosum*) in Kanpur.

S.No.	Parameters	Days	No./%
1.	Incubation Period	3-6	
2.	Larval Period	17-32	
3.	Pupal Period	12-20	
4.	Total Life Cycle	32-67 5-	
5.	Durability of Male	10	
6.	Durability of Female	10-17	
7.	Sex Ratio(Male:Female)		
8.	Productivity (eggs/Females)		2.0:1.5
9.	Cannibalistic		55-280 22%

Reference

1. Bhattacharya B, Pujari D, Bhuyan U, and Baruah A.L.H. (2014) management of potato cutworm *Agrotis ipsilon* (Hufn) in Assam, Pesticide Research Journal 26:82-85.
2. Brros N.M. (2013) life cycle of *Agrotis malefida* (Lepidoptera:- Noctuidae) a diapausing cutworm Zoologia 30:371-378.
3. Chandel R.S., Chandela V.K., Verma K.S. and Pathania, M. 2013. Inset pest of potato in India: Biology and management 227- 268.
4. Dahi H.F., Ibrahem W.G. Ali M.M. (2009) Heat requirement for the development of the black cutworm *Agrotis ipsilon* (Hufn)(Noctuidae - Lepidoptera). Egyptian academic Journal of Biological Sciences, 2, 117 124. [https://doi.org/ 10.21608/eajbsa.2009.15502](https://doi.org/10.21608/eajbsa.2009.15502).
5. D. Auria, E.M. Wohleb, C.H., Waters, T.D. and Crowder, D.W. 2016. Seasonal Population Dynamics of three potato pest in Washington state Environmental Biology.
6. Ebssa, L. and Koppenhofer, A.M. Efficacy and persistence of entomopathogenic nematodes for Black cutworm control in turf grass. Biocontrol. Sci. Technol. 2011;21:779-796.
7. Fetoh, B.A., Amani S.K. and Thoria, F.K.E. Combined effect of entomopathogenic nematodes and biopesticides to Control the greasy cutworm, *Agrotis ipsilon* (Hufn) in the strawberry fields. Egypt Acad.J. Biology Science. 2009;2(1):227-236.
8. Gupta, A. 2014. Studies of potato apical leaf curl virus disease in potato.
9. Hemaish, M. and Elenetwaly, N. (2020) Identification and taxonomic notes of Spodoptera species (Lepidoptera:- Noctuidae) known to occur in Egypt. Academic Journal of Biological sciences. A. Entomology, 13(2), 161-175.
10. Mishra. S.S. and Hariom Agrawal (1989). Management of potato cutworm, seeds and Forms. V.15(9-10), PP12-15, 21, 34.
11. Mishra V.K. (2020), Insect pest of Cumin and their management . In management of insect pest in vegetable Crops; Concepts and Approches, p.73.
12. Mogahed, M.I. 2003. Influence of intercropping on population dynamics of major insect pests of potato (*Solanum tuberosum*) in north Sinai Government, Egypt. Indian Journal of Agricultural Science 73(10):546-549.
13. Rivnay.E. 1964. A contribution to the Biology and Phenology of *Agrotis ipsilon* Rott. in Israel.Z. Agnew, Entomn form.53:295-309.
14. Simpson, G.W.1977. potato insect and their control. Potato production storage processing .o.Smith(Ed)A.VI. Publishing Co. West Port Connectivity U.S.A. PP. 550-605.
15. Talpur M.A., Qureshi, K.H. and Nizamani, I.A. (2002). Effectiveness of different insecticides against greasy Cutworm, *Agrotis ipsilon* (Hufn) on cauliflower crop Pakistan Journal of Applied Sciences, 2(2)216-218.