

Influence of Moringa Oleifera Powder on Larval Mortality and Emergence of Tribolium Castaneum Herbst

Nidhi Srivastava



Abstract: The larval development clearly showed that Drumstick (Sahjan) powder is quite toxic. The data recorded was noted at every five days interval i.e. on the 5th day, the 10th day, the 15th day, the 20th day, the 25th day, the 30th day and the 35th day. Three doses were taken for each treatment i.e. 2gms and 3.5 gms. The data was noticed on the mortality rates and emergence of the larvae. The lowest dose 1 gm brought 9% on the 5th day, 28% on the 10th day and 38% on the 15th day.

Key words: Larval, Sahjan, Toxic, Tribolium castaneum Herbst

I. INTRODUCTION

A part from the insects, rodents and microorganisms are also the major cause of post harvest loss of grains. The loss by the insects is not merely attributed to change in chemical components such as protein, carbohydrate, amino acid fatty acid and vitamins of food grain and to deteriorative change by contamination with uric acid, insect body fragments dead body of insects and other toxic substance, which affect the consumer's acceptability and market value. Varied complex factor responsible for the resistance, have been suggested by various workers. Among physical characteristics of grain, Kernel hardness, husk covering, grain size and moisture play an important role in the resistance to insect- pests in case wheat, barley, sorghum and oats. Similarly, the chemical factor responsible for the resistance have also been established in few cases. Amylose amino acid protein sugar, starch, oil and minerals are complex chemical factors which are responsible for insects resistance and can be genetically modified. Considering the aforesaid facts in view, the following studies have been planned against *Tribolium Castaneum* Herbst. So as to develop, economic and feasible management of this noxious pest of barley in storage.

II. MATERIALS & METHODS

The test insect *Tribolium Castaneum* Herbst is a serious pest, causing enormous quantitative and qualitative losses to various stored cereals.

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The collection of adults for mass rearing was made from local granaries of Naubasta Mandi, Kanpur. The insect, thus collected were carefully examined for their taxonomic characters. Further the mass rearing for breeding of individuals was carried out on the barley grains in plain glass jars of 2 kg capacity and mouth of glass jars were covered with muslin cloth and tied with the help of rubber bands. The glass jars were kept at the room temperature in Entomological laboratory till the emergence of fresh adults. The Newly emerged 1st to 5 days old adults were taken as parental population thought the course of study.

The pest were under taken department of Zoology (Entomology) D.A.V. P.G. College, Kanpur. Newly emerged 1-5 days old adults were separated. In case of males, the rostrum is distinctly shorter and wider than that of females in which it is distinctly longer and narrower. Six differences were observed with the help of hand lens in laboratory through out the course of investigations.

The following varieties were obtained from Rabi Cereal Research Station, C.S. Azad University of Agriculture and Technology, Kanpur. The representative samples of each variety were taken as test material. K-898, K-551, K-603, K-851, Jyoti, Jagrati, K-139, K-889, Manjula, K-329, K-508, K-822, K-927, K-890 and K-713. The various experiments were carried out under controlled conditions at 75% relative humidity and 27°C temperature. Mating, Pre-oviposition and oviposition 5 pair of newly emerged male and female beetles isolated from the stock culture, were introduced in the tubes of 10x4 cm size, containing 30g conditioned grains of each variety, selected at random.

The mouth of each tubes was covered with perforated polythene paper and tied with rubber band to prevent the escape of beetles. All the tubes were kept in desiccators at 75% relative humidity and 27°C temperature. The experiment was replication thrice. Observation of mating, preoviposition and oviposition period were recorded from each variety.

III. RESULTS & DISCUSSIONS

The larval development clearly showed that Sahjan powder is quite toxic. The data recorded was noted at every five days interval i.e. on the 5th day, the 10th day, the 15th day, the 20th day, the 25th day, the 30th day and the 35th day. Three doses were taken for each treatment i.e. 2gms and 3.5 gms. The data was noticed on the mortality rates and emergence of the larvae.



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The lowest dose 1 gm brought 9% on the 5th day, 28% on the 10th day and 38% on the 15th day. 2.5 gms concentration caused 45% mortality on the 5th day, 65% on the 10th day and absolute mortality on the 15th day of exposure. The higher concentration i.e. 3.5 gm gave instant mortality on the 1st day of recorded. No mortality untreated check. (Table 1). Similar results are also found by Bhatnagar, A. (1998), Broadley, R.H. (1984). Seasonal incidence and Parasitism of *Heliothis* Sp. (Lepidoptera : Pyralidae) larvae in South Queensland Sunflower, Diraviam, J. *et. al.* (1993), Lal, S.S. (1981), Mahto, Y. (1990), Mishra, B.A., *et. al.* (1992), M.M. H. Khan (2019). Effect of temperature and relative humidity on the population dynamics of brinjal and tomato infesting whitefly, *Bemisia tabaci*, Patel, C.C., and Koshiya, D.J. (1997), Pimpale, T.D. and Summanwar, A.S. (1983), Sekhon, B.S. and Singh, S. (1985). Effect of temperature, relative humidity and rainfall on the population build up of cotton jassid, Sethi, G.R., *et. al.* (1979), Singh, K.M. and Singh, R.N. (1977), Yumamura K, *et. al.* (2006) and Zhang S, *et. al.* (2014).

Table 1 : Effect of Moringa oleifera leaves powder on Larval Mortality and emergence of Tribolium castaneum Herbst.

Doses		Durations						
		5 th Day	10 th day	15 th day	20 th day	25 th day	30 th day	35 th day
1 gm	M	9%	28%	38%	40%	-	-	-
	E	-	-	-	-	-	-	20%
2.g gm	M	45%	65%	90%	100%	-	-	-
	E	-	-	-	-	-	-	-
3.5 gm	M	100%	-	-	-	-	-	-
	E	-	-	-	-	-	-	-
Control	M	-	10%	-	-	-	-	-
	E	-	-	-	-	-	-	-

Figures in parentheses are transformed value. * Based on 5 observations M= Mortality E= Emergence

IV. CONCLUSION

The effect of Moringa oleifera powder was observed in the case of larval development of the Tribolium Castaneum barley. The impact of toxicity was much more in larva than in adults. The mortality and emergence of larval are as shown above in result and discussion. Observation has a significant result in the development of insects that can be checked by powder of said plants. The use of plant products is the least harmful for man and other animals.

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