

Agri. Res. J. Kerala, 1972, 10 (2)

**EFFECT OF LARVAL AGE AND DOSAGE OF VIRUS ON THE
SUSCEPTIBILITY OF *SPODOPTERALITURA* F. TO A
NUCLEAR POLYHEDROSIS***

Many factors such as physiological, genetic, physical and environmental are known to influence the susceptibility of an insect to virus infection (Bergold, 1943, 1953; Steinhaus, 1954). The present investigations were undertaken to study the effect of larval age and virus dose on the susceptibility of tobacco caterpillar *Spodoptera litura* to a nuclear polyhedrosis virus.

Larvae used in these experiments were from stocks reared in the laboratory on castor leaves. A purified suspension of freshly isolated polyhedra from diseased dead larvae of *S. litura* was used as infective material. Inoculations were done by a spot feeding technique. All test larvae were within 6 to 8 hours of their moulting into the required instar. After ingesting the inoculum larvae were transferred to individual plastic containers and supplied with virus-free foliage. Control larvae were treated similarly except that the leaf spot lacked the infective material. Susceptibility determinations were based on the incubation period and larval mortality from virus infection. The experiments were conducted at room temperature and humidity. Two tests were conducted and the different larval instars used and dosages of polyhedra tried are given in Table 1. Fifty larvae were used in each treatment including control.

The results presented in Table 1 show that there was an increase in the mean incubation period and a decrease in percent mortality as the larvae matured indicating thereby a decrease in susceptibility. Differential susceptibility to virus infection of larvae of different ages has been observed by Bergold (1943), Morris (1962) and Tanada (1953). This increase in resistance associated with the growth of the larvae is regarded by some authors as a "maturation immunity." Ignoffo (1966) has attributed this partly to the normal increase in body weight which may serve to "dilute" a constant virus dose.

The data further reveal that the rate of mortality varied directly with the virus dose. But there was no difference in mortality between the two higher dosages of 10^5 and 10^6 polyhedra per larva. The virus dose inversely affected the incubation period and the initial mortality with

*From a Doctoral thesis approved by the Tamil Nadu Agricultural University, Coimbatore, 1972

Tale 1
**Mortality of tobacco caterpillars fed with known quantities
of nuclear-polyhedrosis virus**

	Stage of larvae at inoculation	Dose of polyhedra per larva	Incubation period (days)		% Mortality due to polyhedrosis	
			Range	Mean	Treated	Control
Experiment I:	2nd instar	10 ⁶	3-5	4.0	98	Nil
	3rd instar	„	3-6	4.4	96	„
	4th instar	„	4-6	5.3	100	„
	5th instar	„	5-7	6.1	74	„
	6th instar	„	7-9	7.7	18	„
Experiment II:	4th instar	10 ⁸	6-9	6.5	44	„
	„	10 ⁴	6-8	6.3	66	„
	„	10 ⁵	5-7	5.8	100	„
	„	10 ⁶	4-6	5.2	100	„

higher doses was sooner than that with the lower doses. Similar observations have been made by Morris (1962) in *Lambdina fiscellaria sommaria* and Stairs (1964) in *Malacosoma disstria*. Aizawa (1963) reported that at constant temperature, the lower the virus concentration, longer would be the incubation period.

The authors are grateful to Dr. K. Ramakrishnan, Dean, University of Agricultural Sciences, Bangalore and Dr. Jean R. Adams, Insect Pathology Laboratory, Beltsville, U. S. A. for helpful suggestions.

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(MS. received: 11-6-1973)