

GENETIC EVIDENCE OF NUTRITIONAL DIFFERENCES IN LAC INSECTS

The so called *rangeeni* and *kusmi* strains of the lac insect *Kerria lacca* (Kerr.) (Syn. *Laccifer lacca* Kerr.) are morphologically similar, but they differ in their biology and also in the quality of lac produced (Glover, 1937). Both are bivoltine having the broods as follows :

Rainy Season :

Kusmi—June-July to January-February

Rangeeni—June-July to October-November

Dry season :

Kusmi—January-February to June-July

Rangeeni—October-November to June-July

The *kusmi* strain occurs in nature on *Schleichera oleosa*. This host, however, does not support the *rangeeni* strain. The difference could be due to either differential nutritional requirements of these strains or to differential physiological state of the plant during their different periods of growth and reproduction. The work reported here was undertaken to test these possibilities.

Previous unpublished work of the senior author had shown that the F_1 progeny from *rangeeni* mother and *kusmi* father retains the *rangeeni* cycles. The *rangeeni* and the hybrid progenies could thus be reared during the same *rangeeni* periods and survival differences on *S. oleosa* could then be attributed to genetic factors introduced from the *kusmi* stock. Ten progenies each of *rangeeni*, *kusmi* and hybrid insects were reared on *S. oleosa* under the cover of 80 mesh wire-net to check the ingress of insects from outside. Their survival behaviour is shown in Table 1.

Table 1
Survival behaviour of *kusmi*, *rangeeni* and hybrid progenies on *S. oleosa*

Cross		Progeny survival		
Mother	Father	Total tested	Per cent survival	Life cycle behaviour
<i>Kusmi</i>	<i>Kusmi</i>	2717	64.6	<i>Kusmi</i>
<i>Rangeeni</i>	<i>Rangeeni</i>	2260	0.7	<i>Rangeeni</i>
<i>Rangeeni</i>	<i>Kusmi</i>	1938	59.7	<i>Rangeeni</i>

Table 1 shows that while the *rangeeni* strain has a negligible survival on *S. oleosa*, the hybrid progeny survives almost as well as does the *kusmi* strain during the same *rangeeni* period. This evidence shows that *rangeeni* and *kusmi* strains differ in their nutritional requirements. The *kusmi* is endowed with the proper genetic mechanisms to survive on *S. oleosa* but not the *rangeeni*, and the virulence of *kusmi* is dominant to the avirulence of *rangeeni*. The chemical basis underlying the differential survival of these strains on *S. oleosa* presents an interesting field of enquiry for future work on lac insects.

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REFERENCE

Glover, P. M. 1937. Lac cultivation in India. Indian Lac Research Institute, Namkum, Ranchi. 147 pp.

Section of Insect Genetics,
Indian Lac Research Institute,
Namkum, Ranchi (Bihar).

N. S. CHAUHAN
Y. D. MISHRA

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Year	Area (ha)	Production (kg)	Yield (kg/ha)
1968	100	1000	10
1969	150	1500	10
1970	200	2000	10

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