

Relative Susceptibility of Different Varieties of Paddy Seeds to Infestation by the Grain moth *Sitotroga cerealella* Oliv.*

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In Kerala, stored paddy suffers considerable damage due to a variety of pests of which the Angoumois grain moth, *Sitotroga cerealella* Oliv., is the most important. It has been indicated that different varieties of paddy show different susceptibilities to infestation by this insect. Thus Ramiah (1937) found glutinous varieties and those with golden brown glumes comparatively more susceptible than others. Israel and Vedamurti (1958) observed that fine grained, scented varieties are more susceptible than coarse grained ones. Different varieties of rice are cultivated and stored in Kerala. No information is available on the relative susceptibility of these different varieties to attack by *S. cerealella*. Hence the present study was undertaken to grade the different varieties of paddy seeds in use in this State with reference to their susceptibility to attack by *S. cerealella*.

Materials and Methods

Twenty nine varieties of paddy seeds were used in the present study. Of these, the variety Japonica (Gimbozu) was obtained from the Central Rice Research Institute,

Cuttack and Mo₂ from the Rice Research Station, Moncompu. All the rest were obtained from the Central Rice Research Station, Pattambi. Names of these varieties are given in Table I. Moisture content of the different seeds were maintained at a level of $13.4 \pm 0.41\%$.

Each variety of seed after proper cleaning and fumigation with ED/CT mixture to destroy any latent infestation was put in small gunny bags in lots of 100 g each, there being three replications for each variety. These bags were then distributed at random on a stack of bagged paddy (PTB 10) in a godown which was severely infested with *S. cerealella* and allowed to remain there for 10 days. After this the grains in each lot were transferred to polythene bags and kept in the laboratory for observation. The moths emerging from each bag were daily collected and removed. This was continued till no moths emerged from the grains. The percentage of infestation was calculated from random samples of grain drawn from each lot and counting the grains damaged by the caterpillar.

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TABLE I

Extent of damage caused to different varieties of paddy seeds by *S. cerealella* and number of grains per gram weight of the different varieties

Sl. No.	Varieties	Percentage damage	Number of grains/gram weight
1.	PTB. 1	1.330	34.50
2.	PTB. 2	..	35.64
3.	PTB. 4	1.500	34.87
4.	PTB. 5	1.830	34.50
5.	PTB. 7	0.330	37.00
6.	PTB. 8	0.410	39.01
7.	PTB. 9	1.330	46.81
8.	PTB. 10	1.030	37.00
9.	PTB. 12	0.330	36.57
10.	PTB. 15	0.060	51.31
11.	PTB. 16	0.330	54.30
12.	PTB. 18	1.416	36.12
13.	PTB. 20	2.830	37.80
14.	PTB. 21	0.330	38.50
15.	PTB. 22	1.410	30.80
16.	PTB. 23	2.000	36.40
17.	PTB. 24	1.330	40.10
18.	PTB. 25	0.660	32.20
19.	PTB. 26	4.830	36.40
20.	PTB. 27	5.000	33.90
21.	PTB. 31	1.330	37.60
22.	PTB. 32	0.330	34.80
23.	PTB. 33	3.000	39.60
24.	PTB. 34	0.500	34.10
25.	MTU. 3	1.660	40.15
26.	GEB. 24	0.016	50.94
27.	Japonica	6.830	42.30
28.	Mo. 2	0.830	41.01
29.	Co. 25	0.030	45.40

Results and Discussion

Table I gives the percentage damage caused by one generation of the grain moth in the different varieties of paddy seeds. It is observed that no damage is caused to

PTB. 2. The PTB strains 7, 34, 32, 8, 21, 25, 16 and 15, Co. 25 and GEB.24 show only slight damage ranging from 0.016 % in GEB.24 to 0.5% in PTB 34. The varieties Japonica and the PTB strains 27, 26 and 3

suffer the greatest damage of 3 to 6.83%. The remaining varieties show intermediate susceptibilities causing 1.25 to 2.80 % damage. Analysis of variance has shown that the percentage of damage is significantly different in the different varieties. (C. D. at 5 % level = 0.3580 and variance ratio 2.3623).

Fig. I gives a rating of the different varieties with reference to damage caused by *S. cerealella* in which the varieties are represented from 1 to 29 in the ascending order of the number of grains per gram weight (i. e. in the ascending order of the fineness of the grain). It is evident that fineness or coarseness of the grain has no relation with susceptibility to damage by *S. cerealella*. This observation is in conflict with that of Israel and Vedamurti (1958) who found that generally fine grained varieties are more susceptible to attack by the insect than the coarse grained ones.

Ramiah (1937) observed that glutinous rices are more susceptible to damage by *S. cerealella*. According to Isaburo Nagai (1959) Japonica rice grains are highly glutinous and their kernels soft. The high susceptibility of Japonica rice seen in the present study may then be correlated with this factor.

Summary and Conclusions

Twenty nine varieties of paddy seeds were subjected to infestation by one generation of *S. cerealella*. PTB.2 shows maximum resistance, it being not attacked by the pest. PTB strains 7, 15, 16, 8 and 32, Co.25 and GEB 24 suffer very slight damage (0.016 to 0.5%). Japonica, PTB 27 and PTB 26 are highly susceptible to attack by the pest showing 4.83 to 6.83% damage. Rest of the varieties show intermediate susceptibility ranging from 1.25–3%.

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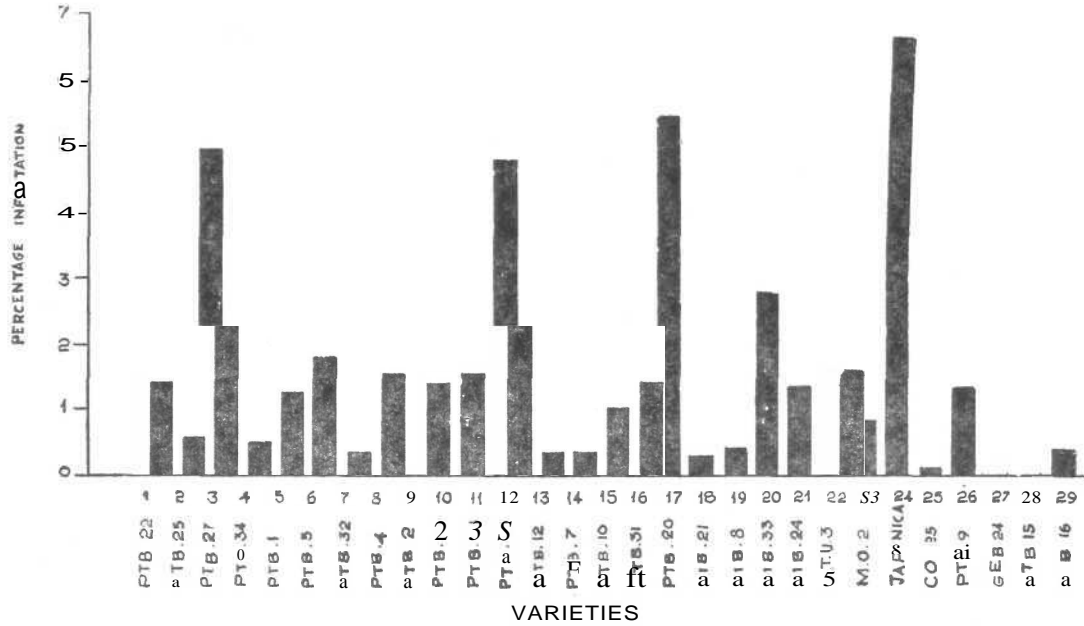


FIG. 1. Bar diagrams showing percentage infestation of *S. cereallela* in different varieties of paddy seeds