

Studies on Preference of *Tribolium castaneum* Herbst (Tenebrionidae: Coleoptera) for Flour of Different Sorghum Varieties

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Rust red flour beetle, *Tribolium castaneum* Herbst is one of the important and destructive pests of sorghum flour and its products under storage. The beetle has been reported damaging large number of cereals, but all the varieties are not preferred and damaged equally. This is due to differential response of the beetle to different hosts. Krishnamurthy *et al.* (1969) reported CSH-5 as fairly resistant against *T. castaneum*, *Sitophilus oryzae* L. and *Rizophertha dominica* Fab. They have also reported that CSH-4 had the largest population of *T. castaneum* followed by CSH-1 and CSH-2, whereas seed of CSH-3, CSH-5 and M-35-1 had lower population. Doraiswamy *et al.* (1971) also studied the varietal preference in sorghum by *Sitophilus oryzae* L. However, no information is available on preference of *T. castaneum* for flour of different varieties of sorghum. Trials were therefore conducted to screen various genotypes of sorghum to determine preference of *T. castaneum* to some of the high yielding hybrids and varieties as well as locals.

The culture of *T. castaneum* was raised in the laboratory under controlled conditions. Thirteen varieties and

hybrids viz. CSV-1, CSV-2, CSV-3, CSV-4, CSV-5, CSV-6, CSV-7R, CSH-8R, CSH-1, CSH-5, CSH-6, Surat-1 and Sona-108 were obtained from Sorghum Research Centre, All India Co-ordinated Research Project on Sorghum, Gujarat Agricultural University, Navsari. Flour of each variety was prepared in the laboratory with grinder and 25 g. flour of each sorghum variety was kept in heaps separately in an enamelled tray (Size-45 cm x 38 cm x 5 cm) in a circular fashion equidistantly from the centre. Three such replicates were maintained. One hundred adults of *T. castaneum* of about the same age were released in the centre of the tray to choose their food freely. The place of each sorghum variety was changed randomly every third day and the observation for number of adults in each variety was recorded daily up to 30 days. The study was carried out at room temperature from 16th June to 17th July, 1980. The assessment of the food preference was made on the basis of percentage of insects found daily in each sorghum variety. The insects showing no preference or those escaped from the tray were ignored while calculating the percentage insects for food preference. The data obtained were statistically analysed after square root transformation (Split-plot design) and are presented in Table 1.

It can be seen from Table-1 that though the differences between the va-

TABLE I

Preference of *Tribolium castaneum* Herbst for flour of different sorghum varieties.

Sorghum variety	Average percentage of Insects/Day			
	Replication			Mean
	I	II	III	
1 CSV-2	2.24	2.28	2.39	2.30 (5.30)*
2 CSV-4	2.35	2.50	2.32	2.39 (5.71)
3 CSH-6	2.51	2.59	2.24	2.45 (5.98)
4 CSH-5	2.53	2.35	2.58	2.48 (6.17)
5 CSV-5	2.45	2.50	2.63	2.53 (6.39)
6 CSV-1	2.72	2.49	2.48	2.56 (6.57)
7 CSH-8R	2.69	2.48	2.58	2.58 (6.67)
8 CSV-6	2.66	2.88	2.66	2.73 (7.46)
9 CSH-1	2.80	2.82	2.83	2.82 (7.93)
10 Surat-1	2.89	2.91	2.81	2.87 (8.24)
11 CSV-3	2.73	3.12	2.85	2.90 (8.41)
12 CSV-7R	2.95	2.91	2.96	2.94 (8.65)
13 Sona-108	3.82	3.41	3.61	3.62 (13.07)
S. Em. $\pm$				0.082
C.D. at 5% level				0.213
C. V. %				25.081

*Figures in parentheses are not significant

*Figures in parentheses are retransformed values.

varieties are only marginal, they were statistically significant. Variety CSV-2 was least preferred by the *T. castaneum* having 2.30 as mean percentage of insects per day. However, it was at par with the varieties CSV-4, CSH-6 and CSH-5. Varieties CSV-4, CSH-6, CSH-5 were at par with varieties CSV-5, CSV-1 and CSH-8R and less preferred than the rest of the varieties. Variety Sona-108 having 3.62 as mean percentage insects per day was the most preferred variety and was significantly different from all the other varieties. Varieties CSV-6, CSH-1, Surat-1, CSV-3

and CSV-7R were at par and next to Sona-108 in preference. The cause of preference may be due to the difference in bio-chemical constitution of different varieties which is open for further research.

It was also observed during the study that all the varieties were not preferred in a similar fashion on different days by the beetle, however the effect of days over varieties could not be worked out as it was of random nature.

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