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RESEARCH ARTICLE

SUITABILITY OF DIFFERENT HOST FOODS OF *SITOPHILUS ORYZAE*

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ABSTRACT

Training Research study on the suitability of different host foods of *sitophilus oryzaerice* weevil, *Sitophilus oryzae* (Linnaeus) on stored sorghum was carried out during the year 2007-08 at the Main Sorghum Research Station, Navsari Agricultural University, Surat, Gujarat state. The results of study revealed that cereals were more suitable host among the different commodities tested. The order of host suitability of different commodities was paddy> sorghum> maize> wheat> coriander> cumin> chilli> fenugreek

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INTRODUCTION

The harvested sorghum grains are attacked by pests during the storage. Major pests of storage sorghum are rice moth, *Corcyra cephalonica* (Stainton); rice weevil, *Sitophilus oryzae* L.; maize weevil, *Sitophilus zeamais* Motschulsky; angoumois grain moth, *Sitotroga cerealella* (Olivier). Among them rice weevil is economically important storage pest on sorghum and other cereals in tropical and subtropical regions of world. Rice weevil infestation alone resulted in sorghum seed loss of 61.3% over a period of five months (Venkat Rao *et al.,* 1958). Both larval and adult stages are destructive being internal feeder. The infested seeds are unfit either for sowing or for human consumption. Rice weevil prefers sorghum although its occurrence on variety of alternate host plants has been recorded by various workers. Host preference studies would help to determine destructive potential of a pest and hence a study was carried out.

MATERIALS AND METHODS

For study the suitability of different host foods, fifty grams healthy grains of each host *viz.,* maize (*Zea mays* L.), wheat (*Triticum aestivum* L.), paddy (*Oryza sativa* L.), coriander (*Coriandum sativum* L.), cumin (*Cuminum cyminum* L.), chilli (*Capsicum annum* L.) and fenugreek (*Trigonella foenugraecum* L.) were taken separately in plastic jars (diameter 8 x 10 cm). Ten pairs of newly emerged male and female weevil were released in to each jar for oviposition. The jar was closed from the top by tying a piece of muslin cloth to prevent the escape of weevil. Three days later, the weevil was removed and the jars were left as such till the development of adults from the eggs laid in the jars. The experiment was replicated thrice in complete randomized block design. From the day the weevil emergence started, weevils were counted daily and removed immediately from the jars to prevent fresh oviposition. The emergence was recorded till its end. The period required from the oviposition to adult emergence was considered as developmental period. The susceptibility index was worked out by adopting the formula suggested by Dobie (1977) as under:

$$\text{Susceptibility index} = \frac{\text{Natural log F}}{\text{D}} \times 100$$

Where,
F = Number of adults emerged
D = Mean developmental period
On the basis of the index host suitability was determined.

RESULTS AND DISCUSSION

Eight different commodities were studied in laboratory for their susceptibility in host of *S. oryzae*. The commodities were

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Table 1. Host preference of *S. oryzae*

S.No.	Host	Percent damage	No. of adult emerged	Susceptible index
1	Maize	58.04 b(72.00)*	41.00	3.13
2	Wheat	58.26 b(72.33)	46.00	3.10
3	Sorghum	64.90 c(82.00)	57.33	3.57
4	Coriander	0.41a(0.00)	0.00	1.00
5	Cumin	0.41a(0.00)	0.00	1.00
6	Chilli	0.41a(0.00)	0.00	1.00
7	Fenugreek	0.41a(0.00)	0.00	1.00
8	Paddy	69.16d(87.33)	59.00	4.48
	S.Em. ±	0.63	0.82	0.12
	CD at 5%	1.90	2.47	0.37
	CV %	0.48	5.39	8.92

*Figures in the parentheses are original values and those outside the parentheses are arcsine transformed values.

evaluated on the basis of susceptibility index. The results obtained are presented in Table 1. From the Table 1, it can be clearly seen that out of eight commodities tested, the pest could developed only on four commodities *viz*., maize, wheat, sorghum and paddy. The average number of adult emerged in these commodities range from 41 to 59. The data on susceptibility index indicated that highest susceptibility index was recorded for paddy (4.48) followed by sorghum (3.57). Susceptibility index for maize was 3.13 and it was at par with wheat having susceptibility index 3.10. The remaining four commodities *viz*., coriander, cumin, chilli and fenugreek had low susceptibility index. So that it is proved least suitable to *S. oryzae* as host.

Thus, from the above results it can be concluded that the cereals were more suitable host among the different commodities tested. The order of host suitability of different commodities was paddy> sorghum> maize> wheat> coriander> cumin> chilli> fenugreek. According to Jacob (1992), under laboratory condition development period was shorter and the emergent adult's weights were greater on wheat when tested with five hosts for host plant resistance study. The variation in results is due to difference in place, host and environmental condition.

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