was removed after it produced a nymph. The date the nymph was born was recorded. The nymph was kept in the clip cage until it produced offspring, which were counted and removed each day. The total number of days the greenbug in each clip cage lived was recorded.

Results and discussion

The number of greenbug nymphs produced per day differed significantly among the grass hosts (Wilk's Lambda = 0.045, $F_{(32.52)}$ = 34.73, P < 0. 0001). Significantly fewer greenbug nymphs were produced on western wheatgrass than on the other hosts (a = 0.05, LSD = 11.9) (Table 1). A total of only about 35% as many nymphs (22.8) was produced per greenbug on western wheatgrass as on the susceptible sorghum (64.4 nymphs). The total number of greenbugs produced on resistant sorghum was not significantly different from those produced on susceptible sorghum. Longevities of greenbugs were significantly less (a = 0.05, LSD = 4.6) on jointed goatgrass and western wheatgrass (19.2 days) than on grasses of the genus *Sorghum.* The mechanism of resistance of biotype I-resistant sorghum is not known, but resistance seems to be due to antixenosis or tolerance rather than antibiosis.

Table 1. Mean total number of nymphs produced and longevity per biotype I greenbug

Host	Mean number of nymphs^{-1}	Mean longevity (days)
RTx 430 sorghum	64.4 a	26.9 a
Johnsongrass	60.1 a	27.6 a
LG-35 sorghum	57.4 a	28.2 a
Jointed goatgrass	61.0 a	19.2 b
Western wheatgrass	22.8 b	19.2 b

1. Means followed by the same letter within a column are not significantly different at P = 0.05 (Fisher's LSD).

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Shoot Bug Incidence on Sorghum in Southern India

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Of the insect pests of sorghum *[Sorghum bicolor* (L.) Moench], shoot bug (*Peregrinus maidis* Ashmead) (Delphacidae: Homoptera) has attained serious pest status due to the introduction of hybrids that mature at different times in certain parts of Andhra Pradesh, Karnataka, and Tamil Nadu. In India shoot bugs can cause 41% losses (Hosmani and Chittapur, 1997). Both nymphs and adults suck the sap of young leaves, resulting in leaf chlorosis that in severe cases causes stunted growth and shrivelled, chaffy grains (Prabhakar et al. 1981). Severe infestation at the boot stage results in the top leaves twisting and preventing the emergence of the panicles (Agarwal et al. 1978). In the Telangana region of Hyderabad, Andhra Pradesh, this pest causes severe damage to sorghum crops. Shoot bug incidence on 20 promising sorghum genotypes was studied.

A field trial was carried out to determine the incidence of shoot bug during the rainy season *(kharif),* 1998 at the farm attached to National Research Centre for Sorghum (NRCS), Rajendranagar, Hyderabad, India. Twenty promising and high-yielding genotypes were sown on 17 July, 1998. The genotypes were sown in 10-m row plots at a 45 x 15 cm spacing in three replications in a randomized-block design. Standard agronomic practices were used to raise the crop successfully. Shoot bug incidence began in the second week of September 1998. The number of shoot bug adults and nymphs plant^{-1} were recorded on 5 plants at 10-day intervals.

The shoot bug incidence is shown in Table 1. Among genotypes, the maximum number of shoot bugs plant^{-1} was recorded on M 35-1 (25.80) followed by Swati (23.40), SPV 462 (22.40) and ICSV 705 (20.00). The smallest number of shoot bugs was registered on DJ 6514 (3.50) followed by ICSV 700 (5.90), IS 2205 (6.40) and CSH 13 (6.80). After an interval of 10 days, the second monitoring was carried out and it was noticed that in all the genotypes the population of shoot bugs was lower than that during first monitoring, except for ICSV 700 on which there was a slight increase over the first monitoring. Of all the genotypes, the highest numbers of shoot bugs plant^{-1} was recorded on M 35-1 (9.50) followed by ICSV 700 (7.60), CSV 15 (6.40), and ICSV 745 (6.10). The smallest number was recorded on DJ 6514 and CSG 9 (1.60) followed by CSH 13 (2.00), and CS 3541 (2.90).

Table 1. Incidence of shoot bug on 20 genotypes of sorghum, Rajendranagar, Hyderabad, India, postrainy (*rabi*) season, 1998

Genotype	Number of shoot bugs plant^{-1}			Plants infested (%)
	64 DAE[1]	74 DAE	Mean	
ICSV 700	5.9	7.6	6.8	18.9
ICSV 705	20.0	5.5	12.8	28.2
ICSV 745	11.6	6.1	8.9	48.1
SPV 462	22.4	4.5	13.5	23.8
SPV 492	9.1	4.7	6.9	11.7
SPV 839	12.5	4.3	8.4	37.5
CSH 6	8.6	4.1	6.4	9.5
CSH 9	13.2	1.6	7.4	31.3
CSH 13	6.8	2.0	4.4	33.3
CSH 14	9.2	4.3	6.8	28.8
CSH 16	8.3	4.6	6.5	26.7
CSV 15	9.3	6.4	7.9	50.5
Swati	23.4	4.4	13.9	41.8
RS 29	17.8	5.4	11.6	44.5
M 35-1	25.8	9.5	17.7	33.2
CS 3541	9.0	2.9	6.0	17.2
DJ 6514	3.5	1.6	2.6	27.1
IS 2205	6.4	3.6	5.0	29.6
IS 2212	8.3	4.2	6.3	38.5
IS 18551	9.1	4.2	6.7	39.8
CD (*P* = 0.05)	-	-	-	NS[2]

1. DAE = Days after emergence
2. NS = Non-significant

The mean populations in both monitorings clearly indicated that M 35-1 (17.70), Swati (13.90), SPV 462 (13.50), and ICSV 705 (12.80) are genotypes highly susceptible to shoot bug damage. DJ 6514 (2.60), CSH 13 (4.40), IS 2205 (5.00), and CS 3541 (6.00) are less susceptible to shoot bug. When the percentage of plants infested is considered, the maximum number of damaged plants was recorded on CSV 15 (50.5%) and minimum on CSH 6 (9.5%), but the difference among genotypes was not significant. The highest population of shoot bugs (adults and nymphs) was recorded on M 35-1 and the lowest on DJ 6514 in both monitorings. The present experimental results are similar to work by Agarwal et al. (1978) who screened 127 cultivars of sorghum for shoot bug and noticed that I 753, H 109, GIB 3677B, and BP 53 were free from infestation, and Rajasekhar (1989) who evaluated 88 sorghum genotypes and found that hybrids MSH 65 and SPH 3888, and varie-ties SPV 475, 678, 736, 741, 756, 775, 819, 858, and CSV 10 showed promising resistance to shoot bug. Genotypes DJ 6514, CSH 13, IS 2205, and CS 3541 have potential for incorporation in sorghum shoot bug resistance breeding programs.

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Sorghum Diseases in Eritrea - A Survey Report

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Introduction

Sorghum [*Sorghum bicolor* (L.) Moench] is one of the main food crops of Eritrea. It is particularly important in the lowlands where rainfall is erratic but it is grown in nearly all Zobas (zones), including the highlands. Average yields are about 0.5 t ha^{-1}. The most common reasons for low yields are drought, pests, diseases and weeds (Shattercane, *Striga,* wild sorghums and their intermedia-tes with cultivated sorghum) and lack of improved practices (Tesfamichael 1999; Obilana et al. 2002). A survey of diseases in major sorghum-growing areas was carried out under the collaborative sorghum and pearl millet research in Eritrea (Danida-Eritrea-ICRISAT collaboration).