AICSMIP 10, IE 581, IE 97, IE 120, IE 17, IE 2154, IE 2323, IE 46, AIGSMIP 8, and Ending had <15% panicles with *H. armigera* damage compared with 37% in Nagaikuro, Time of flowering seemed to influence *Helkoverpa* incidence. Compact-panicled genotypes suffered greater damage than those having loose/separate fingers. There were considerable genotypic differences for susceptibility to *H. armigera* in finger millet, and this information can be used to develop Finger millet genotypes with resistance to this insect. Seeds of the less susceptible lines can obtained from ICRISAT, EARCAL, Nairobi, Kenya. Since this is one of the most difficult pests to control with insecticides, it is important that crop improvement programs focus on selecting genotypes that are less susceptible to this pest. Low to moderate levels of resistance can be combined with natural enemies to minimize the extent of losses due to this insect in finger millet.

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Striga

Striga hermonthica Infection of Wild *Pennisetum* Germplasm is Related to Time of Flowering and Downy Mildew Incidence

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Introduction

Infection by *Striga hermonthka* (Del.) Benth., on corn (*Zea mays* L.) and sorghum (*Sorghum bicolor* (L.) Moench) can be managed by sound cultural practices and, where available, use of resistant cultivars (Berner et al. 1995; Hess et al. 1992; Ramaiah and Parker 1982). Cultural practices that reduce *Striga* populations in other crops can be adapted to pearl millet (*Pennisetum glaucum* (L.) R. Br.) cultivation; however, little information is available concerning genetic resistance in pearl millet. The objective of this experiment was to evaluate a collection of wild *P. glaucum* ssp *monodii* and ssp *stenostachyum* accessions for resistance to *S. hermonthka.* 'Resistance' in this report is defined as supporting few emerged *Striga* plants.

Materials and methods

Two-hundred-seventy-five wild *P. glaucum* accessions were sown in Bamako, Mali on 11 Jul 1997. Accessions were sown in two-row plots spaced 50 cm apart. Within each row, four hills spaced at 60 cm were sown, and plots were infested with 3 g seed (approximately 230 000 viable seeds) of *S. hermonthka.* Stands were thinned to a single *Pennisetum* plant per hill Incidence of downy mildew (*Sclerosporagraminkola* (Sacc.) J. Schrot.) infection was assessed by counting the number of symptomatic plants in each plot. Metalaxyl (0 5 g $L.^{-1}$) was sprayed on diseased tissue to runoff on 20 Aug and 3 Sep to halt the epidemic.

Numbers of emerged *Striga* plants within plots were counted on 25 Aug, 8 and 23 Sep, and 7 Oct. Due to erratic emergence of the *Pennisetums,* not all accessions were represented by eight hills so the mean number of *Striga* per hill for each plot was calculated and analyzed. Data were transformed to log (*Striga* + 0.05) prior to analysis of variance. Sums of squares for transformed *Striga* emergence at each evaluation date, and for maximum *Striga* were partitioned into replication and accession effects. Maximum *Striga* (strigamax) for each plot was determined as the emergence count of the four evaluation dates that had the greatest number of *Striga.* Correlation coefficients and simple linear and multiple linear regression equations were calculated for the relationships between mean values for log (strigamax + 0.05) with days to flowering and downy mildew incidence. Maximum *Striga* counts were used to determine relationships between days to flowering and downy mildew reactions since counts frequently declined on the last evaluation date, which is typical of *Striga* infection and independent of *Pennisetum* genotype.

Results and discussion

In the analyses of variance, *Pennisetum* accession was a significant source of variation *(P* <0.01) for *Striga* emergence on the last three dates of evaluation, and for maximum emergence. Transformed *Striga* data was correlated with days to flowering (r = 0.82, *P* <0.0001), and negatively correlated with downy mildew incidence (r = -0.65, *P* <0.0001). Linear regressions revealed that *Striga* emergence was lower on early flowering accessions and accessions with a high incidence of downy mildew infection. The multiple linear regression equation predicting log (strigamax + 0.05) (Y) considering both independent variables was calculated as Y = 0.103 + $(0.014X_1)$ - $(0.008X_2)$ where X_1 = days to flowering and X_2 = downy mildew incidence.

Selection of *Striga* resistance could be confounded by the relationships between *Striga* emergence with date of flowering and downy mildew incidence. If selection were based only on low *Striga* emergence, early flowering and/or downy mildew-susceptible accessions would tend to be selected. A relationship between *Striga* infection and date of maturity has been previously Observed in com (Ransom and Odhiambo 1995). While early maturity can be a useful selection criterion for reduced *Striga,* early maturity is not necessarily desirable in all cropping systems. Selection for low *Striga* emergence without considering downy mildew infection will tend to select accessions susceptible to *S. graminicola.*

An alternative means of selecting *Striga* resistance is to calculate the predicted log (strigamax + 0.05) from regression equations using data of days to flowering and downy mildew incidence. Entries with observed values at least a standard error less than the predicted values may be more likely to express resistance. Fifty-four entries were identified that had observed values lower than the (predicted - one standard error) values calculated by the linear regressions of transformed *Striga* on days to flowering and downy mildew incidence, and by the multiple linear regression considering both independent variables.

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