Effects of Time and Level of Striga Infection on Pearl Millet Varieties in North Darfur

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Introduction

Pearl millet (*Pennisetum glaucum (L.) R. Br.*). is the sixth most important cereal globally. In Eastern and Southern Africa, pearl millet is cultivated on about 2 million ha, with productivity ranging from 800 kg ha^{-1} to 920 kg ha^{-1}

Among biotic stresses, *Striga* infestation is the major constraints to the production of pearl millet.

Differences in time of infection have been suggested as one of the possible causes behind these genotypic differences in response to parasite infection.

The research aimed to determine the role of time of infection on the subsequent

Materials and Methods

In this study millet seeds of (Ashana) tolerant, (Dimbie) sensitive obtained from Agricultural Research Corporation Alfasher, north Darfur, Sudan. *Striga hermonthica* seeds collected from pearl millet fields near Alfasher City. A completely randomized block design was used with five blocks. resulting in a total of 200 (5 × 4 × 10) pots.

Ten destructive harvests, in which a single pot per treatment was harvested per block, were carried out within the first 5 weeks after emergence of the millet plants at 3, 6, 10, 13, 17, 21, 25, 28, 32 and 35 Days After Emergence (DAE).

Treatment effects on total dry weight, root length, leaf area, stem length, leaf number, root dry weight, and number of Striga attachments were analyzed by ANOVA, using the statistical package General Linear Model.

Results

Data analysis showed that there was significant (p differences between varieties and treatments as well as the interaction of millet genotypes and Striga infection on millet root length, leaf area and root dry weight.

There were relatively mild effects of *S. hermonthica* on Ashana, compared with Dimbie, and were accompanied by a delayed attachment of the parasite plants in pots with Ashana.

The absolute amount of root material in the top 6 cm of the soil hardly differed between cultivars. For Ashana, the amount upper root layer of overall root dry weight is lower; indicating that most of the total root dry weight was present in the lower soil layer.

As a result, *S. hermonthica* infection resulted in a relative increase in the allocation of total dry weight to the roots.

Observed differences between cultivars in the timing of the first parasite attachments and their expected influence on the final yield reduction are a strong indication that control practices based on a delay in first attachments could contribute to a reduction in the *S. hermonthica* problem

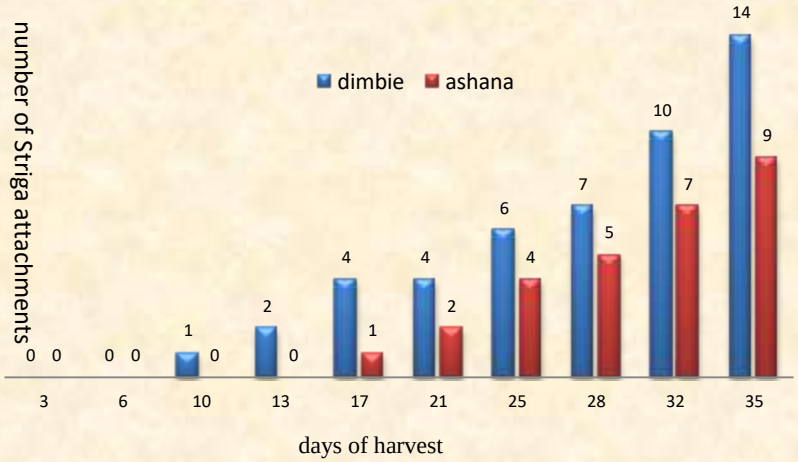

Figure (1) time course DAE for *S.hermonthica* attachments on the Dimbie and the Ashana Pearl millet.

Table (1) parameter values of uninfected and infected Dimbie and Ashana Pearl millet cultivars from the final harvest (35 DAE).

Treatment	(Ashana)		(Dimbie)	
	Uninfected (control)	Infected	Uninfected	Infected
dry weight(g)	10.5	7.6	5.3	3.9
root length (m)	134.2	173	122.3	147.6
root dry weight(g)	3.81	3.18	1.25	1.65
leaf area(cm2)	848	680.3	611	422.3
Stem length(cm)	2.3	2.6	1.9	2.2
Leaf number	11	10	9	8
No. of S. *hermonthica* attachments /plant	----	9	----	14

Conclusions:

The current study results suggested that the pearl millet genotypes have different compassion to *Striga* infection. The millet released variety Ashana showed high tolerance to Striga infection compared to population Dimbie which is slightly tolerant to the weed *Striga* infection.