SPITTLEBUG EGG DENSITY IN *Brachiaria* PASTURES IN CENTRAL BRAZIL

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RESUMO

Densidade de ovos de cigarrinhas em pastagens de *Brachiaria* no Brasil Central

A amostragem de ovos de cigarrinhas-das-pastagens em *Brachiaria decumbens*, em duas áreas no Brasil Central, mostrou diferenças significativas (P<0,05) em relação ao número de ovos que foi maior junto ao solo na base da planta do que nas áreas entre as mesmas ou na parte aérea basal. O número de ovos recuperados foi significativamente maior (P<0,05) nos pastos de *B. decumbens* do que em *B. brizantha* e *B. humidicola*. Foi recuperado maior número de ovos em áreas sombreadas entre as plantas do que em áreas semelhantes expostas ao sol, mas as diferenças não foram significativas (P<0,05). A eclosão dos ovos recuperados das áreas sombreadas foi maior (56%) do que nas áreas expostas (25%) num local entretanto em outro local as percentagens respectivas foram 60 e 83.

INTRODUCTION

The spittlebugs *Zulia entreriana* (Berg) and *Deois flavopicta* Stal which are important pests of monocultures of *Brachiaria decumbens* Stapf. in Central Brazil lay eggs primarily in the soil around plants and in trash. NILAKHE *et al.* (1984) in a population study pointed out that eggs were laid primari

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ly in grass clumps but the number of eggs located between clumps tended to increase as plant debris increased. Any information on egg densities in different microhabitats should be beneficial when planning control strategies such as the use of fire or the implementation of pasture management techniques. This egg sampling study was planned to determine where diapause spittlebug eggs are actually laid in *Brachiaria* pastures and determine what effect partial shade might have on egg density and percent hatch.

MATERIALS AND METHODS

Spittlebug eggs were sampled during the 1985 dry season (June-September) in Central Brazil at two locations: Fazenda Telez near Dourados-MS and Fazenda Bracinho near Campo Grande -MS. A sample consisted of the soil and debris in a circle 10 cm in diameter to a depth of 2 cm. Eggs were separated from the soil and debris particles using the method described by NILAKHE *et al.* (1984). The percentage of eggs hatching was determined from the eggs collected during the last sampling time in August. Eggs were placed on moistened filter paper in petri dishes for a period of six weeks and the number hatching recorded daily.

At Telez egg samples were collected four times (June 20, July 11, August 3, and August 22) from a *B. decumbens* pasture. A total of 80 samples were obtained on each collection date. Twenty plants about 10 cm in diameter at the base were selected on each date and four samples were collected as follows: 1. Sample next to plant on side exposed to sun. 2. Sample next to plant on side partially in the shade of the plant. 3. Sample in open-exposed area at least 20 cm from nearest plant. 4. Sample of plant base obtained after plant was clipped to 4 cm above the ground level. All plants selected were measured to determine the mean plant heigth before the samples were removed.

At Bracinho egg samples were collected also four times (May 29, June 27, July 22, and August 22) from six pastures; two pastures of *B. decumbens*, two of *B. brizantha*, and two of *B. humidicola*. Twelve plants were selected randomly in each pasture on each date and two samples were taken near each plant; one on the sunny side of the plant and one in the partial shade of the plant. Thus a total of 24 samples was obtained from each pasture and 48 samples from pastures of each grass species on each sampling date.

RESULTS AND DISCUSSION

A total of 388 eggs were recovered from samples taken at Telez. The mean number of eggs recovered from the base of the plant was 53 ± SE of 16.11, in the adjacent partially shaded area, 25 ± 4.92, in the adjacent sunny area 13 ± 3.32, and in the area totally exposed, away from all plants 6 ± 3.16. The base of the plants contained significantly ($P<0,05$) greater numbers of eggs than found in the other three locations sampled. There were no significant differences between the number of eggs recovered in the other locations.

A total of 800 eggs were recovered from samples taken in pastures at Bracinho. However, only 16 eggs were recovered in the *B. brizantha* pastures and so these eggs were not included in the analysis. The data from the Bracinho site were analyzed as a two factor analysis: one factor was the plant species (*B. decumbens* and *B. humidicola*) and the other was sample location (shade or sun). Significantly ($P<0,05$) more eggs were recovered from the pastures of *B. decumbens* than in the pastures of *B. humidicola*. The mean number of eggs recovered from the partially shaded areas in *B. decumbens* pastures was 36.3 ± 13.46 and from the *B. humidicola* pastures 17.3 ± 6.94. The mean number of eggs recovered from the sunny locations in *B. decumbens* pastures was 34.8 ± 12.76 and from *B. humidicola* pastures 9.8 ± 3.29. None of the differences in egg numbers between shaded and sunny areas were significant ($P>0,05$).

In pastures of both grass species more eggs were recovered from the partially shaded areas. For example, at Telez 100 eggs were recovered from the partially shaded areas compared to 52 in the sunny areas. It is possible there would be less temperature and moisture variation in the shaded microhabitat and thus this area could be favored for oviposition.

At the Telez site 56% of the eggs recovered from the partially shaded areas hatched compared to 25% from the sunny areas. At Bracinho 60% hatched from the shady areas in *B. decumbens* pastures and 83% from the sunny areas. The percentage of eggs hatched could not be determined for the other pastures at Bracinho since only a few or no eggs were recovered on the last sampling date.

The mean grass height at the Telez site could not be correlated with egg density. The mean grass height did decrease as the dry season advanced. For example, in June at the beginning of the dry season the mean grass height was 17.9 cm and 8.6 cm in August.

Results from this study showed that *B. decumbens* pastures are definitely a favored oviposition site for spittlebugs. The majority of the eggs are laid within the base of plants

and the fewest in the exposed areas away from plants. There appeared to be little difference in the number of eggs deposited in the partially shaded areas adjacent to plants compared to adjacent sunny areas. However, the percentage of eggs hatching was inconsistant between sunny areas and areas of partial shade at the two locations. From these results it is evident that any control method selected for reducing egg numbers in pastures must taken into account the difficulty of destroying eggs without demaging growing plants. Also, any pasture management techniques that would reduce or increase the amount of shade would probably not influence the number of viable eggs.

LITERATURE CITED

NILAKHE, S.S.; SOUZA FILHO, J.A.G. de,; SILVA, A.A. da,; PASCHOAL, G.O. Spittlebug eggs: Improved extraction method, location in pasture, and subsampling for population estimates. *An. Soc. Ent. Brasil 13:* 379-388, 1984.

ABSTRACT

Sampling spittlebug eggs at two sites in central Brazil showed that significantly (P<0,05) more eggs were laid in the base of *Brachiaria decumbens* plants than areas adjacent to the plant or grass-free areas away from all plants. Significantly (P<0.05) more eggs were recovered from *B. decumbens* pastures than pastures of *B. brizantha* or *B. humidicola*. More eggs were recovered from shaded areas adjacent to the plants than in adjacent sunny areas but differences were not significant (P > > 0.05). More eggs hatched from the partial shady areas (56%) than from the sunny areas (25%) at one site but at the 2nd site the respective percentages were 60 and 83.