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# Evaluation of spittlebug incidence on two grasslands from Mojui Dos Campos Para, Brazil

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## Introduction

Spittlebugs (Homoptera: Cercopidae) are considered the main pests of forage crops, particularly of the genus *Brachiaria* (Miles *et al.* 2006) with severe damage caused by the sucking of nymph and adult insects which often leads to reduced dry matter production and forage quality, and may result in death of the above-ground part of plants when spittlebug populations are high (Holmann and Peck 2002). In Brazil, spittlebug incidence is one of six major causes for degradation of Amazon pasture degradation.

This work was carried out to evaluate pastures conditions and spittlebug incidence on marandu grassland (*B. brizantha* cv. marandu) and Mombasa grassland (*Panicum maximum*) during ten months (from April 2012 to January 2013) in paddocks located on two farmers in Mojuí dos Campos, Pará, Brazil.

## Methods

Samples from each paddock were assessed using a 0.25 x 25 cm quadrat. The quadrat was randomly placed, ten times in an area approximately one ha in size following a zig-zag route with points well distributed in the area.

Pasture measurement performed included sward height (cm) and the density grass plants (plants/m<sup>2</sup>). Spittlebug nymphs (nymphs/m<sup>2</sup>) were counted at ground level and spittlebug adults (adults/m<sup>2</sup>) were captured in every quadrat by ten swipes with entomological net (30 cm of diameter). After the tenth swipe at every sampling point, the insects

were moved from entomological net and placed in plastic bags for subsequent counting and separation of species in the Entomology Laboratory of the Federal University of Western Para.

The mean of sward height, number of grass plants, spittlebugs nymphs and spittlebug adults were subjected to analysis of variance, using the following factors: 2 farms (FP and FS) x 2 grasses (*B. brizantha* cv. marandu and *P. maximum* cv. mombasa) x 10 sampling dates, in case of significance were compared by Tukey test ( $P < 0.05$ ).

## Results

Significant differences were founded between sward height for sampling date x grass interaction ( $P < 0.05$ ). Spittlebug nymphs and spittlebug adults were also significantly different for farm x grass x sampling ( $P < 0.01$ ). Differences were even founded to relate to the number of plants for farm x grass and date x grass interactions ( $P < 0.001$ ).

There were no difference in mean sward height of marandu grass (*B. brizantha*) on the farms, whereas mombasa grass (*Panicum*) was higher in January 2013 on both farms (50.7cm for FP and 86.7cm for FS) and lower values in October 2012 (20.5 cm) for FS farm. In November 2012 the lowest sward height value was 15.8 cm on FP farm (Table 1).

The peak infestation of adult spittlebug occurred in June 2012 on the marandu grassland of FP farm (6.9 adults/m<sup>2</sup>) whereas on mombasa grassland the peak adult population occurred in July 2012 (2.8 adults/m<sup>2</sup>) (Table 2).

**Table 1. Marandu grass (*B. brizantha*) and Mombasa (*P. maximum*) grass height in two farmers (FP and FS) in ten sampling dates.**

Sampling	FP		FS	
	<i>B. brizantha</i>	<i>P. maximum</i>	<i>B. brizantha</i>	<i>P. maximum</i>
April 2012	24.2a	37.5ab	24.3a	42.0b
May 2012	21.3a	34.5ab	25.0a	42.1b
June 2012	42.3a	32.0ab	41.8a	40.2b
July 2012	28.4a	41.2ab	43.9a	38.7b
August 2012	45.0a	36.1ab	38.8a	39.0b
September 2012	38.8a	39.0ab	27.3a	32.0b
October 2012	14.0a	36.8ab	22.2a	20.5b
November 2012	27.8a	15.8b	43.4a	29.8b
December 2012	43.4a	29.8ab	54.0a	47.1b
January 2013	39.7a	50.7a	49.2a	86.7a

Note: In each column followed by the same letter is not different according to Tukey ( $P < 0.05$ )

**Table 2. Spittlebug adults on Marandu (*B. brizantha*) and Mombasa (*P. maximum*) grassland in two farmers (FP and FS) in ten sampling dates.**

Sampling	FS		FP	
	<i>B.brizantha</i>	<i>P. maximum</i>	<i>B.brizantha</i>	<i>P. maximum</i>
April 2012	1.9b	1.0ab	0.1a	0.0a
May 2012	0.8b	0.9ab	0.4a	2.2a
June 2012	6.9a	2.0ab	0.4a	0.4a
July 2012	0.8b	2.8a	0.4a	0.2a
August 2012	0.8b	0.0b	0.0a	0.0a
September 2012	0.0b	0.0b	0.0a	0.0a
October 2012	0.0b	0.0b	0.0a	0.0a
November 2012	0.0b	0.0b	0.0a	0.0a
December 2012	0.0b	0.0b	0.0a	0.0a
January 2013	0.0b	0.0b	0.4a	0.8a

Note: In each column followed by the same letter is not different according to Tukey ( $P<0.05$ )

**Table 3. Spittlebug nymphs on Marandu (*B. brizantha*) and Mombasa (*P. maximum*) grassland in two farmers (FP and FS) in ten sampling dates.**

Sampling	FS		FP	
	<i>B.brizantha</i>	<i>P. maximum</i>	<i>B.brizantha</i>	<i>P. maximum</i>
April 2012	0.0b	0.1a	0.0b	0.0a
May 2012	0.0b	0.0a	0.16a	0.0a
June 2012	0.6a	0.1a	0.0b	0.0a
July 2012	0.14b	0.12a	0.02ab	0.0a
August 2012	0.0b	0.01a	0.0b	0.0a
September 2012	0.0b	0.0a	0.0b	0.0a
October 2012	0.0b	0.0a	0.0b	0.0a
November 2012	0.0b	0.0a	0.0b	0.0a
December 2012	0.0b	0.0a	0.0b	0.0a
January 2013	0.0b	0.0a	0.02ab	0.12a

Note: In each column followed by the same letter is not different according to Tukey ( $P<0.05$ )

There was no difference in spittlebug nymph numbers between sampling dates on mombasa grassland on either farms. However, on marandu grassland there was higher spittlebug nymph values in June 2012 (0.56 nymphs/m<sup>2</sup>) for FP farm and in May 2012 (0.16 nymphs/m<sup>2</sup>) for FS farm (Table 3).

## Conclusion

The spittlebug adults and nymph incidence was greater in June on the marandu grassland however in the Mombasa grassland they occurred in May and July 2012. Further

monitoring will be undertaken to confirm if these peak periods represent the long term temporal pattern of spittlebug incidence.

## References

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