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Presenter Information

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Preliminary evaluation of *Brachiaria humidicola* hybrids

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Key words : apomixis , brachiariagrasses , hybrids , koronivia grass , mode of reproduction , tropical grasses

Introduction Brazil has about 100 million hectares of cultivated pastures , of which about 85% are covered with grasses from the *Brachiaria* genus . *B . humidicola* , also known as koronivia grass , is an African species well adapted to acid and poorly drained soils and of widespread use in millions of hectares of pastures in tropical Latin America . Breeding was only achieved recently at Embrapa Beef Cattle , using a sexual tetraploid ecotype crossed to an apomict . Controlled pollination in the greenhouse was used and progeny obtained was evaluated to determine mode of reproduction and the inheritance of apomixis in this species .

Material and methods Hybridization was performed in the greenhouse , using potted plants of the sexual tetraploid accession H1 of *B . humidicola* . Pollen from the apomictic cultivar BRS Tupi was collected in petri dishes from inflorescences brought in from the field . Pollination was achieved by brushing stigmas with the fresh pollen . Seeds were collected after 21 days and stored to overcome dormancy . After five months , seeds were germinated individually and transplanted to the field . Of 364 plantlets obtained , 348 survived , and of those 285 were hybrids . As flowering occurred , flowers were collected , fixed in FAA , ovaries extracted and clarified using methyl salicylate according to the Young et al . , (1979) procedure . Ovaries were examined using interference contrast microscopy to determine mode of reproduction . At least 50 ovaries were examined per hybrid plant .

Results Among the 285 hybrid plants obtained , 217 have been analyzed . Some have never flowered , and for others , results are still pending . Hybrid plants were confirmed using RAPD markers as presented in another paper (Valle et al . , 2008) . Plants presenting only meiotic embryo-sacs and sterile ovaries were classified as sexual , adding up to 120 in this progeny . Plants with single or multiple aposporic embryo-sacs were classified as apomictic and these were 97 in this progeny . Table 1 presents the preliminary results obtained , indicating monogenic inheritance of apomixis in *B . humidicola* , with apomixis (Aaaa) dominant over sexuality (aaaa) as previously reported (Valle and Savidan , 1996) . Figure 1 depicts ovaries of examined plants from the progeny .

Table 1 Mode of reproduction of a hybrid progeny of *B . humidicola* as determined .

Mode of reproduction	Number	Levels of sexuality	% Sterility
Sexual	120	22,8-92,7%	Up to 47
Apomictic	97	0-62,1%	~ 44
Total	217		

$\chi^2 = 2.23$ (n.s. at 5% level probability)

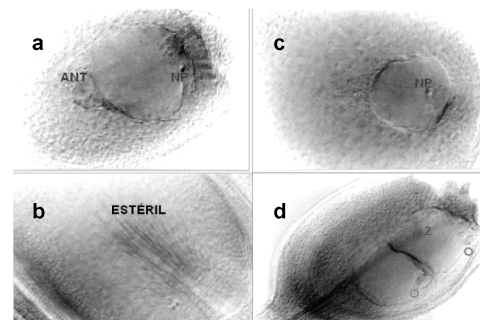


Figure 1 Ovaries of sexual (a, b) and apomictic (c, d) origin .

Conclusion Hybridization has been accomplished in *B . humidicola* and apomixis is simply inherited in this species .

References

- Valle , C . B . do and Y . H . Savidan . 1996 . Genetics , cytogenetics , and reproductive biology of *Brachiaria* . In *Brachiaria : Biology , Agronomy , and Improvement* , Miles , J . W . , Maass , B . L . , and Valle , C . B . do , eds . , Cali : CIAT/Brasília : EMBRAPA-CNPq , 147-163 .
- Valle , C . B . do , L . Chiari , G . A . Bitencourt , L . R . Salgado , G . O . C . Leguizamón . 2008 . Use of RAPD markers to identify hybrids of *Brachiaria humidicola* . In : *International Grassland Congress* , Hohott . Submitted Paper .
- Young , B . A . ; Sherwood , R . T . ; Bashaw , E . C . 1979 . Cleared-pistil and thick-sectioning techniques for detecting aposporous apomixis in grasses . *Canadian Journal of Botany* , 57 : 1668-1672 .