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Search of molecular markers linked to apomixis in species of the genus Paspalum (Plicatula Group)

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Belonging to the family Poaceae, the genus Paspalum has 330 to 400 described species and some of them have a great potential as forage. The Germplasm Active Bank of Paspalum of Embrapa Southeast Livestock shows an outstanding importance, since it has more than 400 accessions with broad genetic diversity. Apomixis (seed formation without the advent of oosphere fertilization) is an asexual reproduction mechanism that occurs widely in several species of the genus and has a great importance, since it induces the fixation of genotypes. Molecular markers that co-segregate with apomixis are considered with a great value in the germplasm characterization and in the genetic improvement, and can provide information quicker than the techniques currently used. The present study had as main objective the search for molecular markers potentially linked to apomixis in species of the genus Paspalum of the Plicatula informal group. Molecular markers previously described as apomixis-linked in Paspalum from other informal groups and other grass species were chosen: RAPD BCU243 and BCU259 markers of P. notatum, P. simplex SCARs (18 markers of the series Psapo and the marker Psapow5) and p779 / 780, a marker that was described as associated with apospory in Brachiaria. We also selected 44 nuclear microsatellite markers developed for P. atratum and P. plicatulum, which have not yet been associated with apomixis. All markers were evaluated in two apomictic bulks, one with P. compressifolium and the other with P. lenticulare, a bulk of hybrid sexual plants obtained by the crossing between P. plicatulum and P. guenoarum and two sexual accessions (one from P. compressifolium and one from P. lenticulare). All markers were amplified by PCR reaction and visualized as described in the literature to verify polymorphism between apomictics and sexuals. The RAPD, SCAR and p779 / 780 markers showed no amplification or no polymorphism among samples with different modes of reproduction. Among the microsatellites evaluated, seven loci (PP14, PP16, PP18, PP22, PP02A5, PP01B3 and PA02G11) were polymorphic among the apomictics and the sexual bulks, presenting a possibility to be linked to the apomixis character. However, all samples must be analyzed separately to confirm the association of the markers with the genetic region of apomixis.

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