

Identification of types of male sterile cytoplasm in maize

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The cytoplasmic male sterility (CMS) is an interesting characteristic in the production of commercial maize (*Zea mays* L.) hybrids, since it allows to reduce costs by eliminating much of the labor employed in the female line detasseling, and also with less damage to plants. The major types of male sterile cytoplasm identified in maize are: T (Texas), S (USDA) and C (Charrua). Among these, the use of the CMS-T had been suspended due the susceptibility to T toxin produced by the fungus *Bipolaris maydis* race T. The male sterility conditioned by CMS-C, depending on the genotype and conditions, can present some reversal of sterility, however, it is more stable than that conditioned by CMS-S. Therefore, it is important to include in the breeding program routine a methodology to identify the type of male sterile cytoplasm, allowing the selection of desired plants. In face of this, the objective of this study was to test a methodology, based on PCR, LIU et al., 2002 (Crop Science, v.42, p.566-569), to discriminate the different CMS in tropical maize genotypes. For the detection of CMS-C, some adjustments were necessary, and the best PCR conditions were defined as: 94 °C for 2 minutes; 25 cycles of 94 °C for 1 minute, 65 °C for 20 seconds, and 72 °C for 30 seconds; and 72 °C for 5 minutes. After the optimization of the methodology, it was applied in 106 maize genotypes using DNA extracted from leaves and seeds. Among these genotypes, 3.7% were identified carrying the CMS-C and 0.9% CMS-S. The optimization of the methodology and its use in the identification of different types of CMS are useful and important for the maize breeding programs aiming commercial maize hybrids production and studies of the male-sterile characteristic. Financial Support: Embrapa e FAPEMIG