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### **Advances in developing sweet sorghum cytoplasmic male sterile A and B-lines**

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A major bottleneck in developing sweet sorghum hybrids in the past has been the lack of adequate sweet sorghum A and B lines. The first attempt in developing sweet sorghum hybrids by the private seed sector was to use non-sweet juicy female lines. This was not successful due to the fact that the sugar content of the hybrid was very near the midpoint of the two parental lines, resulting in hybrids with sugar content less than the male parent sweet sorghum R-line. Historically, the sweet sorghum varieties developed and released were also R-lines for the A1 cytoplasmic male sterility system. Embrapa began developing juicy stem high sugar A and B lines in 2009 by crossing elite juicy B-lines with elite R-lines and selecting short stature (three dwarf), sweet non-restoring progeny. More recently we identified eight historical sweet sorghum B-lines for crossing in developing superior male sterile lines. Simultaneously we have developed a random mating B population with these historical B-lines for use in recurrent selection for sucrose content. These new sweet sorghum male sterile sweet sorghum lines have been evaluated for the past two seasons, per-se and in hybrid combinations. The selected sweet sorghum lines have juice extraction and sugar content exceeding 60% and 17% respectively. The experimental sweet sorghum non-photosensitive hybrids have total biomass productivity exceeding 70 t ha<sup>-1</sup>, juice extraction exceeding 60% and total sugar content exceeding 18% extracted juice. Experimental sweet sorghum photosensitive hybrids have total biomass productivity exceeding 120 t ha<sup>-1</sup> during 150 days exceeding 12 hours and 20 minutes of daylight, juice extraction exceeding 60% and total sugar content exceeding 18% extracted juice. d traditional breeding methods.