



Combining ability of S_3 progenies for key agronomic traits in popcorn: comparison of testers in top-crosses

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ABSTRACT. The successful development of hybrid cultivars depends on the reliability of estimated combining ability of the parent lines. The objectives of this study were to assess the combining ability of partially inbred S_3 families of popcorn derived from the open-pollinated variety UENF 14, via top-crosses with four testers, and to compare the testers for their ability to discriminate the S_3 progenies. The experiment was conducted in the 2015/2016 crop season, in an incomplete-block (Lattice) design with three replications. The following agronomic traits were evaluated: average plant height, grain yield (GY), popping expansion (PE), and expanded popcorn volume per hectare. The top-cross hybrid, originating from the BRS-Angela vs S_3 progeny 10

combination, was indicated as promising, showing high values for specific combining ability for GY and PE. For the S₃ progenies that showed high and positive GCA values for GY and PE, the continuity of the breeding program is recommended, with the advance of self-pollination generations. Fasoulas' differentiation index discriminated the BRS-Angela tester as the most suitable for identifying the superior progenies.

Key words: Popcorn; *Zea mays* L.; General ability; Specific ability; Partial diallel; Hybrid