

Studies on Heterosis of Growth and Some Physiological Traits in Hybrid Bt-cotton Cikangza 3

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Abstract: The characterization of growth, yield formation, and some physiological traits was compared among hybrid Bt-cotton Cikangza 3, its parents, hybrid CCRI 29, conventional cultivar Simian 3. The results showed that square number per plant of Cikangza 3 was 14.75%, 34.01%, and 15.04% significantly higher than that of the mean of its parent and Simian 3 (CK₁) and CCRI 29 (CK₂). The daily increases in boll number per plant of Cikangza 3, during the peak of boll setting period, was 18.03%, 16.60%, and

28.57% higher than that of its male and female parent, and Simian 3, but no significant difference with CCRI 29. In addition, chlorophyll content of functional leaves in Cikangza 3 was significantly higher than that of its parents, CK₁ and CK₂ during the beginning/full flowering and early boll-opening stages. Moreover, relatively higher SOD and POD activities of functional leaves during full flowering and boll-opening stages, while lower in MDA content, was observed in Cikangza 3, compared with its parent, CK₁, and CK₂, which was beneficial to increase the capability in eliminating O₂ and H₂O₂, and then to improve the vegetative and reproductive growth and the accumulation of assimilating for boll setting and fiber development of Cikangza 3.

Key words: cotton; heterosis; SOD; POD; MDA; chlorophyll