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Assessing the tolerance of cocoa (*Theobroma cacao* L.) progenies to the black pod disease caused by *Phytophthora megakarya* bras. and griff

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Abstract

Cocoa (*Theobroma cacao* L.) belongs to the Malvaceae family and it is a diploid plant ($2n = 20$). It originated in the Amazon Basin (Central America) from where it spread to the other parts of the world including Africa that is today the highest producer. The greatest limitation to cocoa production is the black pod disease caused by the *Phytophthora spp.* This work aims at evaluating the tolerance of five IRAD developed cocoa hybrids of clones (PA107*SNK614, IMC67*SNK109, SCA12*SNK16, IMC67*SNK64 and T79/501*SNK64) to the black pod disease, with respect to the parental clones. Mature pods (approximately 5 months old) were harvested from the field in the early hours of the day and used to test for tolerance to the black pod disease using the Iwaro's detached pod test (DPT-SM). The means were separated using the General Linear Model (GLM) and ranked using the Student Newman-Keuls (SNK) multiple comparison test. The ANOVA showed significant difference at $p < 0.01$ on tolerance between hybrids of clones and $p < 0.001$ on tolerance between hybrids of clones and clonal groups. Forty percent of the hybrids of clones tested were more tolerant than all the clonal groups. The IMC clonal group was the most tolerant of the six clonal groups tested and it occupied third place in the overall ranking of the hybrids of clones and clonal groups tested. Although the tolerance score varied between hybrids of clones PA107*SNK614 was the most tolerant (0.79) and T75/501*SNK 64 being least tolerant (2.00), all of these hybrids of clones possesses real potential to the tolerant to the black pod disease.

Keywords: Clones, hybrids of clones, *Phytophthora megakarya*, *Theobroma cacao*, tolerance