ABSTRACT

Evaluation of root system distribution in Tall coconut cultivars

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Root system distribution was evaluated in Tonga Tall, Rotuma Tall, Rennell Tall, Polynesia Tall, West African Tall and Praia do Forte Brazil Tall coconut cultivars, with the aim of identifying the materials most suitable for planting in northeastern Brazil, the country's main coconut producing region, based on root system performance. The poor rainfall distribution and the occurrence of extended water deficits sometimes exceeding 500 mm/year have a major impact on coconut development, hence the low mean national productivity of 30 fruits/tree/year. The samples were taken after the dry and rainy seasons at lateral distance from the coconut stem of 0.6 m, 1.8 m, 3.0 m and 4.2 m and at depths of 0 to 0.2 m, 0.2 to 0.4 m, 0.4 to 0.6 m and 0.6 to 0.8 m. The Polynesia Tall and Praia do Forte Brazil Tall cultivars performed better than the others in terms of both total root production and fine root density, and they also reacted more effectively to water stress by better deep root production. Excluding the other factors that influence water supply, these characteristics suggest that these materials are more suitable for planting zones subject to extended water deficits. As regards root system distribution throughout the soil profile, around 70% of roots were found within a 1-metre radius around the stem, at a depth of between 0.1 and 0.5 m, irrespective of the cultivar.

Key words. — *Cocos nucifera* L., roots, water deficit, root system, water stress, Tall coconut.