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"Bridging the gap between increasing knowledge and decreasing resources"

Yield Efficiency of Citrus Scions and Rootstocks in Northeastern Brazil

Carlos Roberto Martins, Adenir Teodoro, Hélio Wilson Lemos de Carvalho

EMBRAPA Coastal Tablelands, CPATC, Brazil

Abstract

The Brazilian northeastern states of Bahia and Sergipe encompass the largest tropical citrus-producing region in the world. Orchards throughout this region are cultivated by smallholders under limiting conditions of cohesive soils and hydric stress. In this region, most farmers cultivate the sweet orange 'Pera' (*Citrus sinensis*) grafted on 'Rangpur Lime' (*Citrus limon*ia). Although this scion-rootstock combination presents positive characteristics it is evident the need for new combinations to increase varietal diversification in order to avoid problems with pests and diseases as well as to favour management practices leading to reduced production costs and natural resource use. Here, we evaluated yield efficiency of new scion and rootstock combinations under field conditions of northeastern Brazil. The experiment was installed in 2008 in a completely randomised block design with 8 scions grafted on 18 rootstocks. We periodically evaluated phenology, growth, drought tolerance, early-bearing yield, fruit quality and yield of scion-rootstock combinations over a period of 5 years. Among rootstocks the hybrid HTR-051 had a smaller crown volume compared to control, leading to high yields. The Citrandarin rootstocks Indio, Riverside and San Diego also presented high yield efficiency. These rootstocks together with LVK-010, Tropical Sunki Mandarin and Santa Cruz Rangpur Lime adapted well to hydric stress conditions of the region. Also, there was a variation in phenological patterns in different scion-rootstock combinations. We conclude that the sweet oranges Sincorá and Valencia Tuxpan, Tangerine Piemonte, Tahiti acid lime grafted on the rootstocks HTR-051, LVK-010, Indio, Riverside and San Diego citrandarins, Tropical Sunki Mandarin and Santa Cruz Rangpur Lime could be recommended to smallholder citrus farmers as these combinations allow a better yield efficiency under conditions of cohesive soils and hydric stress of northeastern Brazil.

Keywords: *Citrus* sp., earliness, natural resource, smallholders, water deficit

Contact Address: Carlos Roberto Martins, EMBRAPA Coastal Tablelands, CPATC, Av. Beira-Mar 3250. Bairro Jardins Po Box 44, 49025-040 Aracaju, Brazil, e-mail: carlos.r.martins@embrapa.br