

ABSTRACT

CITRUS CULTIVATION AND ASSOCIATED SOIL CONSTRAINTS
ON THE COASTAL PINE RIDGE SOILS OF BELIZE

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A survey of citrus cultivation on the Coastal Pine Ridge (CPR) revealed that a total of 3600 ha at an estimated investment value of \$ US 7.7 million had been established. Most of this acreage was planted on coarse textured Ultisols (planosols) in the Stann Creek and Toledo districts and over 90 % of the trees were under three years of age. Expansion was dominated by large farmers and is expected to double over the next five years. Agronomic practices, especially fertilizer use and drainage, were inadequate for the soil conditions, and resulted in growth retardation and the development of N, Mn and Zn deficiencies. Calcium and P also tended to be low, while Na was high.

Profiles of the cultivated Coastal Pine Ridge soils were characterized by sand, loamy sand or silt loam topsoils overlying compact clay or sandy clay subsoil at depths of 35 cm to just over one metre. Rapid hydraulic conductivity of the upper horizons, in combination with extremely low conductivity of the subsoils resulted in the persistence of perched water tables, which fluctuated between 10 - 80 cm from the soil surface, depending on the depth of the subsoil

clay and the nature of cambered beds. In the dry season, water tables were absent, but severe soil moisture deficits (approximately -15,000 kPa) developed in the upper 50 cm of the soil and persisted from six weeks to over three months, depending on the rainfall pattern.

Physical limitations to root development in the coarse textured horizons are not expected to be severe if adequate drainage is provided, but high soil strength, high bulk density, unfavourable porosity and extremely low available water in the subsoils may be serious impediments. Chemical constraints are also widespread and include low organic matter content, extremely low CEC, very low levels of macro- and micro- nutrients, and high Al saturation. The scope for citrus cultivation on these soils is discussed in relation to the soil and climatic conditions.