

Abstract

A study to determine the association of fertilizer with soil water deficit in tea [*Camellia sinensis* (L.) O. Kuntze] was conducted in a rain-out shelter using potted plants, in which five rates of fertilizer (0, 75, 150, 225 and 300 kg Nitrogen ha⁻¹) and six levels of soil water content (38, 34, 30, 26, 22 and 18% v/v) were applied in a complete randomized design and replicated three times. The soil water treatment was maintained for a period of 12 weeks during which shoot growth, plant water relations, and dry matter partitioning in tea were determined. A parallel field experiment with the above fertilizer rates was conducted at three sites in which shoot density and shoot weight were determined during the dry season. Fertilizer improved leaf-to-root and leaf-to-total mass ratios ($P < 0.001$), reduced shoot growth, shoot water potential and specific leaf area ($P < 0.001$). The fertilizer exacerbated drought effect on tea through disproportionate assimilate partitioning which consequently weakened the ability of tea to tolerate water stress. Results suggest an indirect contribution of fertilizer supply to drought susceptibility in tea.