

Growth and Physiological Processes in *Coffea Canephora* Clones in Response to Water Deficit Stress

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SUMMARY

Leaf water potential (LWP), stomatal conductance (g_s), rate of net photosynthesis (P_N) and leaf fall in response to imposed water deficit stress and rate of recovery in growth, LWP and g_s after rewatering were studied using 12-month-old seedlings of six *Coffea canephora* clones (IC-2, IC-3, IC-4, IC-6, IC-8 and R-4). The seedlings were subjected to soil drying by withholding water in a rain shelter for about two weeks. The plants were rewatered when severe water stress developed (as shown by the degree of wilting and leaf fall) and the rate of recovery was measured. In all the clones, LWP, P_N and g_s significantly declined as the period of soil drying was prolonged. The decrease in the former two parameters was more obvious and greater after a week, while the rate of decline in g_s was faster at the early stages of stress development (until day six). The difference between the clones was significant for leaf fall and rate of recovery from drought up on rewatering. The rate of leaf fall was higher for IC-2, IC-4, IC-8 and R-4, which also exhibited lower rate of recovery after rewatering. On the other hand, IC-3 and IC-6 had lower rate of leaf fall but showed higher rate of recovery in LWP and g_s . These observations suggest that it is possible to detect the level of drought tolerance in Robusta coffee clones based on such growth and physiological parameters.