

Water Stress Effects on Leaf Transpiration and Photosynthesis of *Coffea arabica* L. Under Different Irradiance Conditions

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ABSTRACT

Coffee trees are growing under typically different light conditions depending on their cultivated areas, shaded with shade trees and unshaded without them. The microclimate surrounding coffee plants become mild under shaded conditions compared with unshaded ones, which means decreases in both leaf temperature and vapour pressure deficit (VPD). We have been attempted to explain effects of chronic soil water depletion on the leaf transpiration and photosynthesis of *Coffea arabica* young plants growing under shaded or clouded and unshaded or sunlit conditions. Both turgid and wilted leaves had higher rates of transpiration on a cloudy day than on a sunny day. There was a positive proportional response of transpiration to light intensity on a clouded day, but sunlit leaves showed no significant increase in transpiration as a light intensity increased under drought conditions. This might be explained by the stomatal regulation in response to VPD which increased due to a raising leaf temperature when leaves were exposed to a direct sunlight.