Original Article

Diurnal Variations of Gas Exchange Characteristics in Leaves of Anise Hyssop (*Agastache foeniculum*) under Normal, Drought Stress and Recovery Conditions

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Abstract

Net photosynthesis rate (*Pn*), stomatal conductance (*gs*) and transpiration rate (*E*) of anise hyssop were measured during the four cloudless days, in reference to diurnal fluctuations of leaf temperature (*Tleaf*), leaf vapor pressure deficit (*VPD leaf*) and photosynthetic photon flux density (*PPFD*) in well watered (WW), stressed (S) and recovered (R) plants. An analysis of measured data showed that there was an evident midday depression of photosynthesis at stress and recovered plants. The highest of net photosynthesis was observed at 11:00, 8:00 and 7:00 a.m for well watered, stressed and recovered plants, respectively. Net photosynthesis rate, stomatal conductance and transpiration rate were higher in well watered than stressed plants while leaf vapor pressure deficit and leaf temperature was lower in well watered plants. Stomatal conductance and transpiration were also positively correlated with leaf vapor pressure deficit and net photosynthesis rate in well watered plants while correlation between these parameters was not significant in stressed plants. In total, the midday depression of net photosynthesis might be due to stomatal and non-stomatal limitations.

**Key words**: Anise hyssop, Net photosynthesis, Stomatal conductance, Transpiration, Leaf temperature