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Effect of gradually water stress and recovery on photosynthesis ,transpiration ,and stomatal conductance in two plantago species

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Key words : Photosynthesis ; Stomatal conductance ; Transpiration ; Drought stress ; Recovery

Abstract Photosynthesis ,transpiration ,stomatal conductance and leaf water potential characteristics were examined in two plantago species (*Plantago ovata* and *P .psyllium*) ,with developing gradually water stress for several days after watering and then permitted to recover by re-watering .The photosynthetic rate ,transpiration rate and stomatal conductance decreased rapidly by withholding water for 2 days .After re-watering the rate of recovery of photosynthesis ,transpiration ,and stomatal conductance decreased gradually as the days without watering became longer .The differences existed in rates of recovery of photosynthesis ,transpiration and stomatal conductance following drought stress .Among the fractional recoveries the highest was photosynthesis ,and the lowest was stomatal conductance .Photosynthesis rate following drought stress was rapidly recovered until 2 days after re-watering ,and then recovered slowly .The critical time for the recovery of photosynthesis was recognized .The results show clearly a close correlation between the leaf water potential and the recovery level and speed of photosynthesis ,transpiration and stomatal conductance .