

## 변재 면적과 임관 전도도를 연결한 잣나무 조림지 임분 증산 모델 개발

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### Developing Stand Transpiration Model Relating Canopy Conductance with Stand Sapwood Area in a Korean Pine Plantation

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As increasing concern on forest water use and anthropogenic alteration of forest structure, understanding the effects of forest structural changes on transpiration is important. Our aim was to estimate interannual variation of stand transpiration by developing the stand transpiration model which related canopy conductance ( $G_c$ ) with stand sapwood area (SA) and environmental conditions. Stand transpiration model was developed based on multiplicative empirical  $G_c$  estimation from eight Korean pine stands with different SA. The model considered a set of serial limitations by environmental variables like vapor pressure deficit (D), photosynthetic active radiation (Q), air temperature ( $T_a$ ) and soil water contents ( $\Theta$ ). The relationship between parameters in each limiting function and SA was analyzed. The reference  $G_c$  ( $G_c$  at  $D = 1$  kPa) and stomatal sensitivity to D had significant relationship with SA. Other parameters showed insignificant interaction with SA. The  $G_c$  model successfully reproduced the changes of stand transpiration with changes of SA and climatic conditions. Since this model used the simple and easily-measurable structural variable, SA, it could be easily applied to other Korean pine forests, and help to estimate the spatial and temporal variation of stand transpiration.

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