



Effects of Emergent Wetland Plants on Evapotranspiration

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Texas A&M University engineering student Louise Reisner measures water use in wetland plants in Temple, TX. Photo by Jim Kiniry.

Wetlands are an important component of many landscapes. Emergent plants there, by transpiring, potentially accelerate water loss, adding to evaporation (ET).

A team from the USDA-ARS and Dankook University in South Korea studied how two common wetland plants, black willow and Pennsylvania smartweed, impacted water loss in pans of standing water compared with a control of standing water with no plants. As recently reported in *Agrosystems, Geosciences & Environment*, the Texas-based team measured water depth, water temperature, and plant growth during several growing seasons. They partitioned water loss between evaporation and transpiration by calculating the difference between pans with and without plants.

The researchers found that the mean increases in water use relative to the control were 37% for smartweed and 66% for black willow. These differences were even more dramatic when calculated for only the last two years after the plants became established. Smartweed increased water use by 40% relative to the control and black willow by 92%. These results provide valuable information for quantifying the water balance of wetlands by simulation models. As the leaf area cover increases for these and similar emergent wetland plants, the simulated ET must increase by values similar to those reported.

Adapted from Kiniry, J.R., Williams, A.S., Reisner, L.M., Hatfield, J.L., & Kim, S. (2023). Effects of two categorically differing emergent wetland plants on evapotranspiration. *Agrosystems, Geosciences & Environment*, 6, e20331.
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