A genetic component to ecosystem processes: variation in foliar condensed tannins determine rates of mineralization in a riparian soil. (S03-schweitzer153427-Oral)

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Abstract:

The effects of genetic variation or specific genes on ecosystem function are little understood but may be critical to future conservation policies. Using the genetic variation arising from the natural hybridization of two native cottonwood species along the Weber River in northern Utah, we examined the effects of genetic variation on leaf litter quality, quantity and net N mineralization in the field and in the lab. We found a significant negative relationship between the quantity of condensed tannin that enters the site via litterfall and net N mineralization. Condensed tannins were the best predictor of mineralization explaining >55% of the variation between 12 sites. This pattern was confirmed in a lab incubation with soils from the same sites, where we found an even tighter relationship, with condensed tannins explaining >58% of the variation in net N mineralization. This pattern is especially important to consider as the expression of condensed tannins has been linked to a QTL in this system and indicates that not only does genetic variation have a role in ecosystem-level processes but that specific genes or alleles may be more crucial than has been appreciated.

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Presentation Information:

Presentation Date: Thursday, November 14, 2002
Presentation Time: 9:45 am

Keywords:
genetic variation, condensed tannins, N mineralization, riparian soils