Estimating Nitrogen Use Efficiency Under Field Conditions to Improve Switchgrass Production in Virginia. (C03-lemus230515-Poster)

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Abstract:

Biofuels crops may differ in yield because of differences in their ability to take up nutrients or differing efficiencies in assimilating nutrients into biomass. Switchgrass (P. virgatum L.) appears to be rather thrifty in its use of N; it produces relatively high yields on low N soils, and it is relatively unresponsive in our hands to higher rates of applied N. The objectives of this study were to look at N use efficiency (NUE) in switchgrass and to begin modeling N fluxes in a switchgrass stand. Experiments were conducted at Orange and Blacksburg, VA in 2001 using stands of Cave-in-Rock switchgrass. The experimental design was a randomized complete block replicated four times and with N rates of 0, 90, 180, and 270 kg N/ha. Shoot, root, and soil samples were collected during the growing season and nitrogen content was determined using a CN analyzer. There were no significant differences in yield between N treatments. Nitrogen content in shoot decreased with maturity and there were no differences with N application. Root N content increased with time and N application. No differences in biological NUE ((biomass NX - biomass N0)/(plant N NX - plant N N0)) were observed.

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