# Influence of Lumbricus terrestris on Spatial Distribution of Roots and Plant Nutrients. (S03-amador142611-Oral)

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## Abstract:

Anecic earthworms are believed to enhance soil fertility and plant nutrition, but the mechanisms involved are not well understood. The spatial distribution of nutrients and roots in relation to earthworm burrows is an important aspect of the plant-worm interaction. We examined the distribution of corn roots, nitrate, ammonium, phosphate, pH, and microbial mineralization in relation to Lumbricus terrestris burrows and to artificial burrows in plexiglass mesocosms (60 cm high X 60 cm wide X 2.5 cm deep) at a resolution of 5 cm. A greater proportion of root biomass was associated with areas in which L. terrestris were present than those in which burrows were present. Horizontal concentration gradients of ammonium and nitrate were detected 10 to 15 cm from L. terrestris burrows. The presence of elevated nitrate concentrations was associated with acidic pH, suggesting that nitrification occurred post ammonium migration from burrows. By contrast, the spatial distribution of phosphate was not affected by either type of burrow. Enhanced microbial respiration was observed in L. terrestris burrow soil relative to artificial burrows, but the effect was limited to the burrow area.

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## Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 3:00 pm

## Keywords:

spatial distribution, nitrogen, phosphorus, earthworms