NITROGEN RELEASE FROM PEANUT RESIDUE

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ABSTRACT

Residue management is an important aspect of crop production systems. Availability of plant residue nitrogen (N) to succeeding crops is dependent on N mineralization rates and therefore on rates of N release during decomposition. Much of the information available on N release rates from peanut residue is based on controlled-environment studies. The objective of this study was to assess N release rates in the field from the residues of three peanut varieties (NC-V 11, GA-02C and ANorden) at two depths (surface and 4 in deep) and two locations (Upper Coastal Plain Experiment Station in Edgecombe County, North Carolina and Wiregrass Experiment Station in Henry County, Alabama), representing the northern and southern limits of commercial peanut production in the US. Litterbags containing the equivalent of 2.0 tons ac^{-1} were placed in a completely randomized design, blocked by location, with four replications and retrieved periodically up to 335 days after application. Results show a statistical difference for depth by time (within location) interactions and fit single or double exponential decay models. Buried residues mineralized N at higher rates than surface residues in North Carolina during the initial 49 days of decomposition. The Virginia type cultivar NC-V 11 released N at higher rates than the two runner types tested in North Carolina. After the initial rapid phase of decomposition, there was no difference in rates of N release at either experiment station. No treatment differences were found at the Wiregrass Experiment Station. The data suggest that N is released quickly after peanut harvest if residue is left in the field.