

Fertilizer application method and cropping system influence on release of fixed NH_4^+

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Fixed NH_4^+ , which historically has been seen only as a sink for available N is shown to also act as a source for N. Release of fixed NH_4^+ fractions along with N dynamics were investigated over two years in a randomized block experiment on a micaceous loam under three cropping systems. At the end of two years all cropping systems showed loss of fixed NH_4^+ , particularly the strongly fixed fraction. Tanner grass showed a lower concentration of NO_3^- and strongly fixed NH_4^+ in comparison to corn-bare cropping system at 275 days after fertilization (DAF). Banding resulted in a greater strongly fixed NH_4^+ and NO_3^- concentration at 17 and 73 DAF respectively. Corn dry matter (DM) for the 1st harvest was significantly lower for control plots. Release of fixed NH_4^+ indicated by lower weakly fixed NH_4^+ fractions at the 3rd and 5th sampling did not further influence plant N or DM. The influence shown by these crops on fixed NH_4^+ dynamics reinforces the importance of that fraction as a potential N source.

Palabras Claves/Key Words: Fixed NH_4^+ release, available nitrogen dynamics, cropping system, method of application