# CAN CROP RESIDUES AND GLUCOSE CARBON STIMULATE DENITRIFICATION AND N MINERALIZATION IN SOIL UNDER SUBMERGED CONDITION

*Zahir Shah, Riaz Ullah and Tahir Hussain* *

## ABSTRACT

*Two studies were conducted to assess the influence on denitrification of 3 pulse legumes (lentil, garden pea, mung bean) and one cereal (wheat straw) residues at 3% (w/w) in one experiment, and of glucose C at 0, 0.01, 0.05, 0.1, 0.2% in second experiment in the laboratory. After necessary amendments, the samples were submerged in water and incubated at 30°C. The disappearance of $NO_3$ (denitrification) and accumulation of mineral N (mineralization) were measured at 0, 5, and 10 days. The results of experiment I showed that $NO_3$-N content of soil decreased substantially in all the residue treatments during 10 days of incubation. Around 95-99% of $NO_3$-N disappeared from soil in all the residue treatments during the first 5 days of incubation, relative to only 13% in the non-residue $NO_3$ amended treatment. During the following 5 days, the $NO_3$-N loss reached to almost 100% in the residue and 22% in the non-residue $NO_3$ amended treatment. Similarly in experiment II, the $NO_3$-N content of soil decreased substantially from 355 ug $g^{-1}$ in the absence of glucose to 204 ug (37%) in the 0.01%C and to 2 ug (99.8%) in the 0.2%C treatment during 10 days of incubation. The results of both experiments showed that N mineralization was promoted substantially by the lentil and pea residues with no considerable effect by mung and wheat straw residues whereas glucose encouraged immobilization during 10 days under submerged condition. These results suggested that the test soil had large potential for denitrification and that crop residues and glucose amendments stimulated the rate. Only lentil and pea residues promoted nitrogen mineralization.*