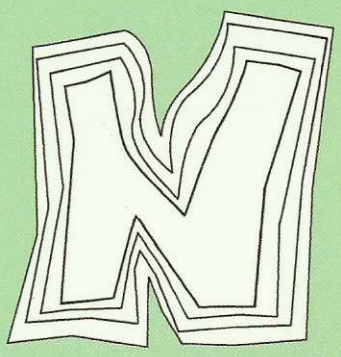

18th NITROGEN WORKSHOP

THE NITROGEN CHALLENGE: BUILDING A BLUEPRINT FOR NITROGEN USE EFFICIENCY AND FOOD SECURITY

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EFFECT OF PIG SLURRY ACIDIFICATION AND FORM SOIL APPLICATION IN N APPARENT LEACHING UNDER FIELD CONDITIONS

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The soil application of the slurry technique is, usually, accomplished by important gaseous losses of N, reducing the efficiency nutrient application. Acidification or manure soil incorporation are strategies used in reducing gaseous N losses. In order to make these strategies more environmental compatibles, the respective potential dimension effects on the processes such N soil lixiviation is an obligate task.

For this purpose, a field incubation experiment without plants carried out during a 140 days period. Five treatments, with an equivalent of 80 kg of N per hectare in form of pig manure, were considered: (i) slurry non-acidified (pH 8.2) and surface applied (T1); (ii) slurry acidified (pH 5.5) and surface applied (T2); (iii) slurry non-acidified (pH 8.2) and buried (T3); (iv) slurry liquid-fraction non-acidified (pH 8.2) and surface applied (T4); and (v) slurry liquid-fraction acidified (pH 5.5) and surface applied (T5). A sixth treatment was also considered, in which no manures applications were performed, serving as control (T6). For each treatment, three samples data was performed, relative to 56, 84 and 140 incubation days. For each sample date performed four repetitions reactors per treatment were collected, destroyed and the N retained by ion exchange resins analyzed. The apparent N leaching was determined based in N retained by ion exchange resins in treatment with organic manure minus the control, and the results expressed in mg per g of N added.

For all sample date performed, the results revealed significant differences ($p<0.05$) between all treatments studied.

The more significant higher apparent leaching values were register in treatments subject to acidification, as T5 (412.3 mg/g N) and T2 (393.9 mg N/g N), or soil incorporation, as T3 (195.8 mg N/g N). Apparently, these results reveals that treatments for more effective technique in reducing N gaseous losses increase, simultaneous, the mineral N soil content and subsequently, the N availability for plants and/or for N losses by leaching.