

UREA AND AMMONIUM SULPHATE TRANSFORMATIONS IN ACID TEA SOILS

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Hydrolysis, leaching and nitrification of fertilizer urea and ammonium sulphate added to tea soils were studied under simulated field conditions in 0.6 x 1.2 x 1.2 m rectangular pots using seven year old tea plants. Soil was packed according to the field profile and the soil solution sampled using soil solution samplers placed at different depths ranging from 10 to 100 cm.

Plants were fertilized with urea and ammonium sulphate equivalent to 7g N per pot (100 kg N/ha/application). Soil solution was sampled and analysed for unhydrolysed urea (1) NH_4^+ NO_3^- , K^+ Ca^{++} and Mg^{++} daily during the first week after fertilizer application and at weekly intervals thereafter.

Because of the rapid conversion of urea to ammonium ions by the activity of urease in tea soils (2) unhydrolysed urea was not detected even at the 10 cm depth after irrigation at 1 cm and 2 cm irrigation per day. Even under forced irrigation equivalent to 5 cm rain per day unhydrolysed urea was detected only at the 10 cm depth. This clearly rules out the possibility that urea, being neutral, could get leached rapidly beyond the root zone and become unavailable to the plants on these soils.

The degree of nitrification and subsequent leaching of the nitrate were found to be similar with both urea and ammonium sulphate fertilizers. The release of K^+ , Ca^{++} and Mg^{++} to the soil solution was again similar in both instances.

These findings and observations suggest that urea can be used as effectively as ammonium sulphate in fertilizing tea.

References

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