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THE INFLUENCE OF PHENOL-RICH PLANT RESIDUES ON SOME BIOCHEMICAL CHARACTERISTICS OF AN ACID TEA SOIL

Part II: Effect on Soil Urease Activity

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The major problem encountered in the use of urea as a fertilizer is the rapid hydrolysis of urea by the soil urease enzyme and the subsequent loss of ammonia by volatilization. Hence the use of soil urease inhibitors has been studied with some interest by many workers.

Most of these studies established the effectiveness of dihydric phenols (Bremner & Douglas, 1971), quinones (Bundy & Bremner, 1973), and naturally occurring polyphenols (Fernando & Roberts 1976) as inhibitors of soil urease activity. All these studies involved the use of a compound which inhibited soil urease *per se*.

The preconditioning treatment of soils so that the production and activity of soil urease can be minimized is therefore of great interest to agriculturists.

The results of the present study show that soils amended with phenol-rich residues had a urease activity which was about 50% lower than that of soils amended with low-phenolic residues. The results also reveal that free phenols or adsorbed phenols appeared to be degraded in the soils and could not be detected.

The practical implication of these results is that tea soils humified with tea leaf litter would have a lower soil urease activity; this is a desirable feature in terms of loss of NH_3-N by volatilization.

References:

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