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SOME ASPECTS OF MICROBIOLOGY OF PADDY SOILS IN WET ZONE OF SRI LANKA

BY

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Thesis submitted to the
University of Kelaniya,
in partial fulfilment
of the Degree of Master
of Science in Microbiology.

June, 1984.

A B S T R A C T

This study was carried out to study the microbiology of paddy soils with special reference to the changes of microbial activity in the nitrogen cycle with the addition of fertilizers in a rice cycle.

With the addition of fertilizers the soil P^H increased. In an alkaline state the bacterial numbers have decreased. With the increase in P^H, the availability of phosporus is great and the nitrate content of soil has decreased. When NPk fertilizer was added, the bacterial numbers increased due to the presence of phosphorus. About 9 Bacillus species were isolated of which B.megaterium , B.subtilis and B.coagulans were predominant. There were also gram negative Aeromonas,sp Proteus,sp, Chromobacterium violaceum and Enterobacter of the gram positive coccoi forms Micrococcus,sp and Staphylococcus,sp dominate. The study of nitrogen fixers, denitrifiers and nitrifiers indicated that with fertilizer application and P^H changes taking place in the soil, their numbers and activity also changed. With addition of phosphorus fertilizers, the number of nitrogen fixers increased. Urea fertilizers seems to show a inhibitory effect on nitrogen fixers. There is an increase in the number of denitrifiers, with urea fertilizer applications, but with prolonged water logging their numbers have decreased.

The nitrifiers (phase I) does not show a remarkable increase or decrease during the rice cycle. With fertilizer application there has been an increase in the Phase II nitrifiers. There is a negative corelation between Phase II nitrifiers and denitrifiers.