

# Research investigations of the Department of Agronomy of Ruhuna University College.

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## Studies on nitrogen

- (i) **Nitrogen losses** — Nitrogen is extremely essential for plant growth. Deficiency of this element causes a reduction in growth and depresses yield. However, most of our agricultural soils do not contain this nutrient in sufficient amounts. Hence application of nitrogenous fertilizers become important. Large quantities of these materials are used in crop production. In rice alone, nearly 125,000 tons of N containing fertilizers are applied annually. Studies carried out by a number of institutions within and outside the country indicate that as much as 50-60% of N applied to rice soils could get lost.

Studies are being carried out in the Agronomy Department to determine how much N applied to rice soils get lost and also methods of reducing these N losses. In these studies, laboratory investigations, pot and field experiments are carried out.

- (ii) **Nitrogen fixation** — Although N is applied as fertilizers or organic manures, a large fraction of the atmosphere (78%) constitutes nitrogen. If this N could be used by all crop plants, the need to apply nitrogenous fertilizers does not arise. However some bacteria and algae have the capacity to make use of atmospheric N. Plants which symbiotically associate with these bacteria and algae are in turn benefited by the N fixed. Studies are also being carried out on various aspects of this N fixation and utilization. Relationship between the nutrient uptake and N fixed by *Azolla*, pattern of nodule formation and types of bacteria that fix N in association with legumes such as ground nut, winged bean, etc., are also under investigation.

## Studies on minor export crops

- (i) **Cinnamon** — Minor export crops have become an important foreign exchange earner during the last few years. Cinnamon is one of these crops, cultivated widely in Matara District.

In the Dept. of Agronomy, studies are being carried out on weeds in the cinnamon crop and the best combination of NPK fertilizers for young and mature cinnamon.

- (ii) **Cardamom** — This too is an important minor export crop cultivated in some parts of the district. Investigations on suitable fertilizer mixtures and times of application are carried out in Deniyaya.

**Studies on irrigation** — Irrigation is an important operation in the cultivation of any crop. While insufficient irrigation could cause crop failures or losses, excess irrigation also brings about a number of undesirable results. Yields may be reduced, soils could get leached.

Studies are being carried out to determine the most suitable methods of irrigation for maize and cotton under the soil and climatic conditions prevailing in Mapalana.

**Physical parameters of soils** — Properties of soils are important in any agricultural programme. Studies are being conducted on the more important physical properties of soils found in Mapalana. The variation in these properties in a catenary sequence is also under investigations.