EFFICIENT USE OF DOLOMITE IN COCONUT CULTIVATION

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Magnesium deficiency is fairly widespread in coconut, particularly in the wet zone of Sri Lanka. In many instances it is the yield limiting nutrient, second to potassium. Once magnesium deficiency symptoms appear in adult coconut, it is necessary to apply relatively expensive imported kieserite fertilizer at the rate of 1 kg per palm at six monthly intervals until the palms recover. Hence regular application of dolomite is essential as a long-term preventive measure. Dolomite is a locally-available cheap source of magnesium and its regular application, at about 1 kg/palm/year would generally provide the magnesium requirements of coconut. Questions are often asked about the use of dolomite and urea in fertilization of coconut and the restrictions in mixing dolomite and coconut fertilizers.

Dolomite is a naturally-occurring mineral containing carbonates of magnesium and calcium. It is excavated from large deposits in Matale region and ground and sold in Sri Lanka as a magnesium (Mg) fertilizer. Generally, dolomite contains 18% MgO with particle sizes to allow 100% to pass through 30 mesh (0.6 mm) and 50% to pass through 100 mesh (0.15 mm) sieve.

The water solubility of dolomite is about 1% and hence the availability of Mg to plants is slow, compared to that of kieserite ($MgSO_4.H_2O$; 24% MgO) and epsom salt ($MgSO_4.7H_2O$; 16% MgO) which have water solubilities of about 40% and 100%, respectively. However, dolomite is produced locally and is much cheaper, whereas both kieserite and epsom salt are imported and expensive. The current prices of a metric ton of magnesium fertilizer are - Rs 750 for dolomite, Rs 6,600 for kieserite, and Rs 9,600 for epsom salt.

Dolomite is a basic material having a pH around 9.0 in 1:1 water. Hence if dolomite is mixed or stored with nitrogenous fertilizers such as urea or ammonium sulphate under moist conditions, there can be a loss of nitrogen in the form of ammonia gas to the atmosphere. Studies show that when NPK fertilizer is mixed and stored with dolomite for seven days under moist conditions, about 22% of nitrogen is lost. However, when dolomite was applied to a damp mixture of a clay soil and NPK fertilizer, in a proportion similar to field application, there was hardly any loss of nitrogen even after six weeks. Under similar conditions, about 6% of applied nitrogen was lost in sandy loam soil and 10% of applied nitrogen was lost in sandy soil.

Hence, dolomite should not be mixed and stored with fertilizers containing nitrogen, such as the Young Palm Mixture (YPM, 13-12-17), Adult Palm Mixture (APM, 12-6--32), urea, ammonium sulphate etc.

In order to reduce the loss of nitrogen from nitrogenous fertilizers, dolomite is best applied with a time lag before or after the application of YPM (13-12-17), APM (12-6-32), urea etc. However, this would involve two separate applications incurring extra labour and cost.

Considering the available research data on efficiency and economics, dolomite could be broadcast immediately after YPM or APM is broadcast within the recommended manure circle area. Fertilizers, specially YPM (13-12-17) or APM (12-6-32) or urea, should be applied during the rainy season when the soil is moist, after the heavy showers. The soil needs to be turned over to cover the fertilizers and the area should be mulched with weed trash, fronds, husks etc.