

A STUDY OF DOLOMITE FROM A DEPOSIT AT GAMMEWELA,
PASSARA AND THE UTILIZATION OF THIS DOLOMITE IN TEA CULTIVATION.

J. Abeywicrama and S. Amaratunga,
Dept. of Chemistry, Sri Jayewardenepura University.

Deposits of dolomite cover a very wide area of Sri Lanka. In addition to its various other uses dolomite is used as a fertilizer in tea plantations. It is used to correct magnesium and calcium deficiencies in the tea soil and when the highly acidity of the soil has to be reduced. The deposit discovered at Gammewela, Passara in 1990¹ contained different coloured rocks with different physical appearances. Experiments were carried out to determine the suitability of these different rocks as a fertilizer in tea cultivation. Five samples of dolomite—white, grey, black, a mixture produced by Gammewela Estate and the commercially available dolomite from Digana, were studied. Parameters considered were the total percentage of calcium, magnesium and iron, solubility at different pH values (highly acidic, pH 4 and pH 7), the percentage of soluble calcium and magnesium at different pH values, percentage of calcium and magnesium after mixing with soil samples from a tea estate with different pH values and pH of the soil after mixing with the dolomite samples. The amount of calcium and magnesium was measured by complexometric titrations with Ethylenediamine tetraacetic Acid and calculated as their oxides. Gravimetric analysis were carried out for the moisture, combined oxides, silica and carbon dioxide. The 'White' sample contained 19.52% MgO and 34.27% CaO compared to the commercially available sample which contained 18.22% MgO & 30.91% CaO. At pH 4, which is the acidity of the tea soil, the percentage of soluble magnesium and calcium were very low in all the samples. Solubility of dolomite in highly acidic medium was 98%-85%. At pH 4 it was 29%-14% and at pH 7, 17%-8%. The 'White' sample gave the best results for the reduction of acidity of the tea soil.

Sample	At pH4		
	% Calcium	% Magnesium	% Silica (Sand)
White	0.240	0.080	5.90
Black	0.220	0.068	16.87
Grey	0.190	0.110	16.86
Mixture	0.090	0.038	23.86
Digana	0.200	0.092	24.67

These studies showed that the white rocks of the dolomite deposits at Gammewela are the best for lowering the acidity of the soil and as a magnesium and calcium source. The grey rocks are the best as a magnesium source at pH 4.

Reference : 1. P.W.Vithanage. 'Dolomite deposit in Tonacombe and Gammewela Estate'. Dept. of Geology, University of Peradeniya, (1990 June).