



Research Paper

EFFECT OF APPLICATION OF DIFFERENT SOURCES AND LEVELS OF LIME IN SOIL ON THE LEAF YIELD OF RAIN-FED MULBERRY IN THE ACID RED SOILS OF EASTERN GHAT HIGHLAND ZONE OF ODISHA, INDIA

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ABSTRACT

A field experiment was undertaken for four years (2003-07) in the Farm of Regional Sericultural Research Station, Koraput by using three different sources of lime viz., Calcitic Lime Stone Powder (91% CaCO₃), Paper Mill Sludge (71 % CaCO₃) and Basic Slag (55 % CaCO₃) at two levels each (0.125 LR and 0.062 LR) to find out their effect on leaf yield of rain-fed mulberry. The plantation was raised in June, 2003 using S₁₆₃₅ mulberry genotype with a spacing of 90 x 90 cm, the gross plot size being 6.7 x 6.7 m. The experiment was laid out in a Randomized Block Design in three replications and six treatment combinations compared against a no lime control. Liming materials were applied in two equal split doses in June and September. Farm Yard Manure at 10 MT/ha/yr and N: P₂O₅:K₂O at 150:50:50 kg/ha/yr with N in two equal split doses were applied in July and September after 15 days of application of lime. Application of 0.125 LR lime was found to neutralize the acidic soil to the desired level which went down to acidic level again by March every year. Average annual leaf yield over three years (2004-05 to 2006-07) indicated that application of 0.125 LR (i.e., 1670 kg/ha/yr of CaCO₃ equivalent) lime in the form of Calcitic lime stone powder recorded the highest leaf yield of 12356.66 kg/ha/yr followed by Basic Slag (11876.42 kg/ha/yr) and Paper Mill Sludge (11656.82 kg/ha/yr) registering 43.68, 38.09 and 35.54 % increase in yield over no lime control (8600.22 kg/ha/yr). However, economics calculated on the basis of cost of cocoon production, prices of dfls, sale price of cocoons prevalent during the period of investigation revealed that the net income with Basic Slag, Paper Mill Sludge and Calcitic Lime Stone Powder were \$ 637.335, \$ 621.572 and \$ 554.465, respectively vis-à-vis no lime control (\$ 389.658) from one hectare of rain-fed mulberry with benefit-cost ratio of 2.41:1, 2.42:1 and 1.97:1. Hence, it is recommended to use any of these three liming materials in order of preference @ 0.125 LR (1670 kg/ha/yr of CaCO₃ equivalent) every year by the farmers depending on their availability in the particular locality having acidic soils.

Key words: Acid red soil, leaf yield, lime, mulberry, rain fed conditions.