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Technical Paper

EFFICIENCY OF ENRICHMENT OF FERTILITY AND REGULATION OF SOIL ACIDITY ON GROWTH AND YIELD OF MULBERRY

H. S. Homidy
Rwanda Agricultural Board, P.O. Box: 5016, Kigali, Rwanda.
E-mail: khomid_khomidy@mail.ru

ABSTRACT

Rwanda, located in Central Africa between $1^0$04' and $2^0$51' latitude south and between $28^0$45' and $31^0$15' longitude east, enjoys a tropical temperate climate due to its high altitude (900 ~ 4507 m ASL). It receives an annual rainfall of around 700-1000 mm / year. Almost all soils of Rwanda are reported to be acidic (pH 4.8-5.8), which negatively affects soil fertility and results in 50 % reduction in productivity of all basic grains and root crops. Of late, development of sericulture as a new branch of agriculture has started receiving great attention in Rwanda, as the state has big hopes to increase its export potential through it. Since mulberry plantation being the major economic component in sericulture, the quality of soil indirectly has a profound influence on silk production. Soils with the slightest tinge of acidity (pH 6.8) are ideal for good growth of mulberry plants. Both the lateritic and sandy types of soil observed in Rwanda are characterized by low concentration of K, Mg and other basis vital elements, low water holding capacity and low pH. Hence, administration of suitable soil reclamation measures is an essential step towards raising superior quality mulberry leaf. Usually dolomite limestone or wood ashes are recommended for regulation of soil acidity. Chemical analysis of mulberry wood ash (MWA) has shown that the composition of basic elements, necessary for a plant, except for Ca, Mg and Zn surpass that in lime since the young branches are rich in macro and micro elements. Average calcium carbonate equivalent (CCE) in mulberry wood ash is 43.0 %. Use of mulberry wood ash as fertilizer in combination with other mineral and organic fertilizers improves the soil fertility, regulates acidity and enriches chemical components of soil, incidentally decreasing the incidence of diseases in a mulberry plantation and ultimately improving productivity and quality of leaves.

Key words: Leaf yield, mulberry, mulberry wood ash, soil chemical composition, soil fertility, soil pH