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Plantain (*Musa spp.* AAB) Bunch Yield and Root Health Response to Combinations of Physical, Thermal and Chemical Sucker Sanitation Measures

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Abstract

Plantain is an important staple in West and Central Africa and the Congo basin. The crop is largely grown in extensive ‘slash and burn’ systems, drawing heavily on the natural resource base, yet it is low yielding due to its high susceptibility to a complex of root and corm pests and diseases. Farmers are unaware of nematodes, banana weevil eggs and fungi and there is virtually no pest and disease control. This study evaluated the effects on plantain bunch fresh yield of factorial combinations of a simple physical sanitation method, paring, followed by five different treatments (control, ash-coating, hot-water treatment, boiling-water treatment and nematicide application). Paring reduced plantain establishment. It had no effect on fresh bunch yields but reduced uprooting and improved root health status. Without previous paring, bunch yields after the traditional ash-coating (5.7 Mg ha⁻¹) and nematicide application (6.3 Mg ha⁻¹) were not different from control (4.6 Mg ha⁻¹). Hot-water treatment (12.0 Mg ha⁻¹) and boiling-water treatment (14.2 Mg ha⁻¹) increased yield significantly. Boiling-water treated plantains attained 90% of the total yield earlier than any other treatment. Yield losses were mainly caused by pseudostem break. Uprooting caused only minor losses. Yield losses in this study can not be attributed to a particular group of pests or diseases but all factors contributing to water deficiency leading to low turgor permitting pseudostem break. Root health parameters were positively related to bunch yield and to bunch mass per producing plant. Due to its simplicity, flexibility, low cost, absence of negative environmental consequences and the accelerated production boiling-water treatment is the most labour efficient and profitable sucker cleaning method.

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