ABSTRACT

The Influence of Nutrition on Banana (*Musa acuminata* Colla) Fruit Pulp Quality, Plant Performance and Sigatoka Disease Symptoms

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The banana industry is the second biggest agricultural industry in Jamaica. It produces over 160, 000 tonnes of fruit a year; half for export as dessert fruit and half for the local market, consumed as ripe fruit or at the green stage as a staple food. In addition, fried slices or chips, flakes, powder, juices, jams and puree, are also products of the fruit.

The drink manufactured from pureed fruit caused deterioration of the lining of the metal containers in which it is canned by the time the product was purchased by the consumer. This was due to the very high nitrate levels of the banana fruit pulp; ten to twenty times the accepted level of 25 ppm.

Another problem facing the industry is the yellow Sigatoka and black Sigatoka diseases, which have devastating effects on the banana cultivations.

The main objectives of the study are to investigate if fertilizer composition and the use of micronutrients, known to be cofactors for the nitrate and nitrite reductases, can control the nitrate content of the fruit pulp, and if they would also control the expression of the Sigatoka disease as manifested on the foliage.

The use of the two blends of NPK fertilizers neither affected the growth pattern of the banana cultivars nor the fruit yield. However, there were no detectable nitrates in the pulp of fruits produced by unfertilized plants (not included in the fertilizer treatments) whereas there were high nitrate levels (200 – 300 ppm) in the fruits of fertilized plants. This indicated that the nitrates in the banana fruits resulted from the high levels of nitrogen fertilizers used in commercial banana production.

Molybdenum was the only micronutrient that significantly reduced the nitrate content of the ripe fruits of the Robusta cultivar. The micronutrient cocktail of Cu, Mn, Fe, and B caused browning of the leaf margins followed by necrosis and a statistically significant reduction in the number of leaves present at flowering. The fruit yield was not adversely affected.

The use of micronutrient sprays had no marked influence on the Sigatoka disease symptom expression.

Vegetative growth responses to the applied macro- and micronutrients, as well as the uptake of these nutrients by the banana plants and their inter-relationships, are also discussed.