

An Investigation of the Causes of Black Speck Disease on Sugar Apple Fruits

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Abstract

The causes of the black speck disease fruits of sugar apples (*Annona squamosa* L.) were investigated in 1994, the preliminary data showed that the skin and pulp Ca contents were remarkably higher than that of black speck disease fruits. For further confirming the causes, young fruits and ripe fruits suffered from varied disease index were sampled for mineral and chemical composition analysis to detect the difference between normal and black speck disease fruits on Ca contents and establish the criterion for diagnosing the Ca nutrient level. Upon the soil Ca and leaf Ca contents from normal and black speck disease orchards were hard to tell whether Ca stress could induce black speck disease or not. The average Ca contents of normal young fruits and ripe fruits on fresh or dry weight basis in summer crop being 20.6 and 27.9, or 82.6 and 95.2 mg/100g were significantly superior to that of black speck disease fruits being 14.8 and 16.1, or 56.6 and 53.5 mg/100g, respectively. The skin Ca and pulp Ca contents on different disease index ripe fruits in winter crop did not remarkably different from each other, but had the tendency of the severe the disease, the less the Ca content. The disease was classified into A (disease area 75% over), B (50–75%), C (25–50%), D (12.5–25%), E (0.1–12.5%) and F (non), and which mean pulp Ca contents on fresh and dry weight basis were 12.7, 13.1, 11.2, 12.5, 14.4, 16.3 and 41.3, 41.3, 37.5, 42.4, 51.3, 56.4 mg/100g, while the mean skin contents were 19.8, 22.6, 22.7, 27.7, 28.8, 34.6 and 64.2, 74.2, 68.4, 83.2, 89.0, 99.6 mg/100g, respectively. It is obvious that the correlation between black speck disease and skin Ca content is higher than black speck disease with pulp Ca content, therefore the skin is recommended as the diagnosis part.

The tentative diagnosis criterion of Ca contents for young fruits is 70 mg/100g dry, for summer and winter fruit skin are 33 mg/100g fresh and 90 mg/100g dry. It means that the Ca concentrations below the criterion, Ca deficiency and black speck disease might be occurred.

Key words: Sugar apples, Black speck disease, Calcium deficiency.