

Thitipat Weeplian 2011: Effect of Plant Nutrients and Soil Moisture on Growth and Quality of 4 Melon Cultivars (*Cucumis melo* L.). Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Miss Pariyanuj Chulaka, Ph.D. 95 pages.

The study on effect of plant nutrients and soil moisture on growth and quality of 4 melon cultivars was carried out at the farmer field in Bangsai, Ayutthaya and experimental field, Department of Horticulture, Faculty of Agriculture, Kasetsart University, Bangkok during May 2008 to February 2010. The relationship between plant nutrients and growth and quality of 4 melon cultivars; Jin Yuan, Orange Rocky Melon, Green Rocky Melon and Honey Ball was studied. The results showed each nutrient played an important role in different function on growth and quality, and correlated with specific characteristics of each cultivar. However, the calcium content showed the highly correlation with fruit firmness, and potassium contents showed the highly correlation with total soluble solids. These correlations were positive in 4 cultivars. In addition, 'Honey Ball' was found it was sensitive to soil moisture content, therefore it was chosen for study on effect of soil moisture and calcium concentration on growth and fruit quality. The results showed the soil moisture and calcium concentration did affect on fruit quality. The soil moisture content at 0 kPa showed highest fruit weight (1.30 kg/fruit), but highest fruit firmness was gained from plant grown in -15 kPa of soil moisture content (50.8 N). Fruit from -30 kPa of soil moisture content showed highest total soluble solids (9.5 °Brix). In addition, the soil moisture content at -15 kPa and 10,000 ppm of calcium gave highest fruit firmness (65.8 N). It can conclude that when the soil moisture content increased, fruit firmness decreased. The applying of high calcium concentration at fruit developing stage could improve the fruit firmness, but could not substitute the loss of total soluble solids of the flesh.

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Thesis Advisor's signature