

Abstract

The study on the soil and plant nutrients management of citrus on high land to reduce the cost of production and increase the quality of three types of citrus, i.e. kumquat, lemon and grapefruit was investigated. The experiments were carried on Pongnoi Citrus Experimental Unit (Royal Agricultural Station PangDa) Mae Wang District, Chiang Mai, and Mae Lod Royal Project Research Station, Mae Tang District, Chiang Mai. There were 4 treatments consisted of 1). Fertilizer application according to the farmer's practice, 2) fertilizer application 1 x for the amount of nutrient removed to the yield (1 x crop removal), 3) fertilizer application 2 x the amount of nutrient removed to the yield (2 x crop removal) and 4) fertilizer application with soil analysis value. The result showed that the properties of the soils were acidic, macro nutrients were relatively high to very high. However, micronutrients such as calcium and magnesium had lower except grapefruit orchard.

Kumquat

Different fertilizer management does not cause Kumquat to have different leaf sizes. Although the management of fertilizer according to farmers' methods is likely to cause larger leaves. But fertilizing in accordance with the method of farmers who use higher amounts of fertilizers. Treatment did not make difference flowering and leaves APAD value, there is a tendency to increase according to the amount of nitrogen received.

For the effects of soil and fertilizer management on nutrient concentrations in Kamquat leaves from the Pong Noi research unit, it was found that the amount of nitrogen and potassium in the leaves increased in the same direction as the amount of fertilizer. By providing fertilizer according to farmers' methods, tendency of nitrogen Potassium concentration was higher than other methods. The amount of potassium has a tendency to make kumquat from the experimental unit of the Pong Pong research unit with lower leave calcium concentration.

For the experimental plot at Mae lod Royal project research station was found that the concentrations of nitrogen, potassium, and calcium in the leaves were higher than those from the Pong noi Pong-research unit, The effect of nutrient management on the amount of nutrient concentrations in kumquat, the results showed that the

concentration of the macro nutrient, especially nitrogen, potassium, decreased as ณ size of the fruit. Calcium, Magnesium and micronutrients will change slightly,

The effect of nutrient management on the fruit development (fruit weight) were no statistical significance. The harvesting period has a weight of 15 grams per fruit. The experimental plot of Mae lod Royal project research station was found that the weight of the fruit at harvest stage, management according to the method of farmers (treatment 1). Kamquat, Kumquat from the research unit of the Pong noi research unit, yielding 15-24 kg per plant, the weight per fruit was 12-15 grams. Mae Lod Royal Project Research Station produce 73-85 kilograms per plant. With a weight of 13.7-16.6 grams

Lemon

Different fertilizer management did not cause different leaf sizes, although the management of fertilizer according to farmers' methods tends to make larger leaves. SPAD value, flowering and fruit yield were not significant difference. For the effects of soil and fertilizer management on nutrient concentrations in leaves of Lemon from the Pong Noi research unit, it was found that the concentration of nitrogen and potassium in the leaves increased in the same direction as the amount of fertilizer received. By applied fertilizer according to farmers' methods, tendency of nitrogen concentration Potassium is higher than other methods. And tend to make potassium in the leaves higher than other methods but the more potassium application was likely to make Kumquat and Lemon from Pong noi Pong research unit with lower leave calcium concentration

In addition, fertilizer management did not cause the weight of the fruit (grams per fruit) of lemon at different stages, except the fertilizer management according to the farmer's method in the experiment at the Pong noi research unit. As a result of nutrient management on the concentration of nutrient concentrations in fruit was found that the concentration of the nitrogen, potassium decreased micronutrients being slightly changed and treatment 1 (farmer's method) tended to have a less concentration of micronutrient in leave than other treatments Due to soil micronutrients application. For the yield at this harvest year Fertilizer management did not produce different results. Each treatment did not cause the yield and chemical quality of the fruit.

Grapefruit

For the grapefruit, the effect of nutrient management on leaf size, leaf SPAD value, fresh leaf weight and leaf dry weight was no significant difference. And the concentration of nitrogen and potassium in leaf leaves increased in the same direction as the amount of fertilizer received. But in the year of the experiment, grapefruit had

very little flowering, resulting in the inability to collect information related to the production.

