Abstract

The study on nutrients management for citrus plants in the highland to reduce production costs and improve the quality of the 3 types of oranges; kumquat, lemon and grapefruit. The research was conducted at Pong Noi orange research unit, Mae Wang District, Chiang Mai and Mae Lod Royal Project, Mae Rim District, Chiang Mai. Soil and Leaf samples and yield of citrus plants were collected to study nutritional requirement and guideline for nutritional management.

The result showed that the properties of soils are acidic(pH 4.5-5.5). The calcium, magnesium and micronutrients in soil were lower value. The macro nutrient level is at the optimum level. The study on nutrient requirements during fruit development indicated that most of the potassium, magnesium, calcium, and magnesium in the leaves of the citrus plants were decreased during fruit development. The change of nutrient content in fruit found that kumquat and lemon trees demanded high nitrogen and potassium levels until June and increasing at a reduced rate in the following month. However, the change of phosphorus content in fruit had very little requirement compared to nitrogen and potassium. But the demand for phosphorus increased slightly as the fruit age increased. The analysis of leaf nutrients from the index leaf (4-7 month old) was found that most of the nitrogen is below the optimum value except lemon and grapefruit from PongNoi. Phosphorus is in the optimal range. Potassium in other citrus leaves is lower than the optimal value except grapefruit at Mae Lod and Kumquat at PongNoi. Other nutrients, it was found that most of nutrient were lower than the optimum value. The nutrients are primarily issues of micronutrients due to soil acidity causes calcium, magnesium and micronutrients. Micronutrient (zinc, manganese, magnesium and iron) deficiency symptoms are common symptoms. Although the amount of steel in the leaves is within the optimum range for the typical orange plant. This will be studied further.

The amount of plant nutrients that were attached to the crop removal at the harvest. The harvesting time, the nutrient content was analyzed and using the mean yield of 2017. The nutrient levels were calculated as 1 kg of yield found that kumquat fruit required 1.16 grams of nitrogen, 0.34 grams of phosphorus (P_2O_5) and 1.12 grams of potassium (K_2O) respectively. Lemon fruit required 1.03 grams of nitrogen, 0.47 grams of phosphorus (P_2O_5), 1.26 grams of potassium (K_2O) respectively. Moreover, grapefruit (yield in 2016) 1 kg consisted of 0.51 grams of

nitrogen, 0.23 grams of phosphorus (P_2O_5) and 0.99 grams of potassium (K_2O) respectively. The experimental nutrient management used values from soil analysis, plant analysis and crop removal in yield. The method was guide the management of soil and fertilizer for the three orange plants in the highland.