

Study on the Effect of Modifying Root Region for Fruit Trees

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Abstract

The effect of modifying root region for valencia in Kuan-San plot (soil condition as Chulu series, FCC:G, schist old alluvial soils) by mixing bark compost, or vermiculite and perlite with soil, or just digging but mixing none in 120x50x60cm volume under tree canopy might induce root system depth from 20 cm to 30 cm under the ground surface after 4 months and to 50 cm (concentrated from 30-45cm) after 1 year. The most satisfactory one was mixing bark compost treatment, which caused the deepest root system and with the highest CEC and organic matter content in 3 years' investigation. The soil of the mixing bark compost treatment had the lowest soil pH and the lowest leaf N content among these treatments just in the first year. There were no significant differences on leaf P and K content, fruit yield and quality of valencia fruits in all treatments during the 3 years.

The results of root growth for sweet apple trees in Pei-Nan plot (soil condition as Feng-Lo series, FCC:L, schist old alluvial soils) were the similar to the valencia's. The bark compost treatment was also the most satisfactory treatment which induced the deepest root system to 50 cm (concentrated from 30 to 45cm) after 1 year.

There were no significant differences on the soil pH and the leaf nutrient contents by leaf diagnosis in all treatments, but the mixing bark compost treatment which showed very good effects on yield and quality in 3 years' investigation was significantly different from fruit size or yield in summer and winter fruits compared with non-bark compost treatments.

Key words: Valencia orange, Sugar apple, Root, Soil reclamation, Media.

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