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Evaluation of Physical Land Suitability for the "Thanh Tra" Pomelo Crop in Hue, Viet Nam

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Abstract

"Thanh Tra" pomelo (*Citrus grandis* L. Osbeck) is one of the major fruit crops in Hue, Central Viet Nam. Its commercial production is an important source of income for many farmers. The production of "Thanh Tra" pomelo is being rapidly developed both in terms of quality and quantity. However, productivity and production of "Thanh Tra" pomelo are low when compared to those in south and north of Viet Nam and other countries. There are some considerable constraints facing "Thanh Tra" pomelo development, including socio-economic factors and physical conditions. Evaluation of physical land suitability for "Thanh Tra" pomelo is a prerequisite for sustainable agricultural production and it involves of the multi-criteria evaluation.

This study aims to determine physical land suitability areas for the "Thanh Tra" pomelo production and sustainable agriculture development of a representative village Thuy Bang, Hue, Viet Nam.

The methodology used for the physical land suitability analysis for "Thanh Tra" pomelo is a multi-criteria evaluation approach within GIS context, based on FAO land evaluation framework (1976, 1983), modified for Vietnamese conditions. The methodology consists in matching soil/land qualities against ecological requirements of "Thanh Tra" pomelo.

Thuy Bang was selected as a representative village for this study, with an area of 2298 hectares with 16 soil units (FAO/UNESCO/WRB). Slope varies from 3°-25°, soil depth is 30 cm to more than 100 cm, water resources are scarce, and soil fertility is poor to moderate. The study was carried out by overlapping all individual maps (soil map, soil depth map, slope map, texture soil map, and soil fertility map) with GIS techniques for land evaluation mapping of units and for physical land suitability classification. Results showed that there are 32 land evaluation mapping units in the study village. A total of 1322 ha were suitable for "Thanh Tra" pomelo production, of which 10 % was moderately suitable (S2), 90 % was marginally suitable (S3). Lack of irrigation, erratic rainfall and poor soil fertility are the two most serious problems influencing yield and quality of "Thanh Tra" pomelo.

Keywords: Evaluation, GIS, land evaluation units, physical land suitability, "Thanh Tra" pomelo

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