Research on Change in Sugar Apple Orchard's Environment, Growth Qualities, Pests and Diseases Occurrence After Organic Cultivation in Summer Growing Season

Yi-Chun Chen[1] , Chih-Wei Wang[2] , Hsiao-Chun Chen[2] , and Chi-Chung Chang[1]

Abstract

The objective of this study was to investigate changes in environment, growth properties, pests and diseases occurrences, fruit qualities as well as the yields of sugar apple (*Annona squamosa* L.) orchard after the conversion of conventional cultivation to organic cultivation during summer growing seasons. The evalutions in this study could provide references for developing organic cultivation techniques in the future. The experiments were conducted in February to August of the summer growing seasons in 2021 and 2022. To summarize the 2 year's experimental results were: In orchard environment: the chemical properties of the soil and grass diversity of ground cover were better in organic cultivation area (Org) than in conventional cultivation orchards (CK). There were no differences in temperature and relative humidity between Org and CK. In growth properties: there were no significantly differences in nutritional properties of leaves, cumulative number of leaves, and branch length growth. In contrast, the SPAD value of leaves, cumulative number of flowers per tree, and the length as well as the width of flowers were higher in CK. In conclusion, there were no significantly differences in growth properties between Org and CK. In disease occurrence, degree of mite injury and anthracnose disease were well controlled both in Org and CK. Degree of mealybug injury in fruits were severerer in Org. In yields, the average total yield and the single fruit weight of Org were 72.3% and 81.9% of CK respectively. Percentage of big sized fruits were higher in CK. Org have more fruit development days. In fruit quality, there is not much difference overall. In conclusion, after conducting organic cultivation methods, the growth qualities were as well as CK except for severerer degree of mealybug injury, lower yield, and lower percentage of big sized fruits, indicating that organic cultivation was applicable in sugar apple. The ecology in Org was significantly improved in this study.

Keywords: Sugar apple, Organic cultivation, Environment, Growth and Development, Pests, Fruit quality, Yield

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[1]Associate Researcher of Taitung DARES, COA.

[2]Assistant Researcher of Taitung DARES, COA.