

# Good agricultural practice - a strict direction in future for sustainable vegetable cultivation systems in red river Delta, Vietnam

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## Abstract

Urbanization and industrialization in many parts of the world leads to rapidly changing environmental conditions along urban-rural interfaces. This has a direct impact on the people who are involved in urban and peri-urban horticulture, in particular on vegetable production. Because of increasing concerns about the risk of contamination of water, soil and agricultural products, the introduction of Good Agricultural Practice is being actively encouraged. This research was carried out in selected urban, peri-urban and rural regions in the Red River Delta, the largest vegetable cultivation area in Vietnam. The results show that there are many problems affecting vegetable production. Small-scale vegetable and mixed vegetable-rice farms, many of which are fragmented and threatened by urbanization, are currently using high amounts of soil amendments and pesticides. The use of organic fertilizer has declined, while the use of chemical fertilizer has increased. In addition, the high use of pesticides is not sustainable. Other problems include the farmer's concerns about the declining income from their farm, limited access to credit and limited access to agricultural extension services. To investigate the sustainability of farms, a multi-criteria evaluation was done by pair-wise comparison using different weight factors based on five environmental sustainability indicators, four social sustainability indicators, and three economic sustainability indicators. The aggregate value for the overall sustainability index of vegetable cultivation systems in the urban area was 0.36, in the peri-urban area 0.52, and in the rural area 0.62, respectively. To achieve sustainable horticulture in the Red River Delta in Vietnam, the farmers need improved internal controls and traceability systems, as well as strict social control to implement good agricultural practice guidelines.