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“Development on the margin”

Sustainability Assessment of Peri-urban Vegetable Cultivation Systems in the Red River Delta, Vietnam

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Abstract

Urbanisation and industrialisation in many parts of the world leads to rapid changing environmental conditions along urban-rural interfaces. This makes direct impact people who are involved in urban or peri-urban agriculture. These trends are particularly evident in Vietnam, where became larger the concerns about the risk of contamination of waters, soils and agricultural products due to heavy, or inappropriate use of fertilisers, pesticides, and poor quality irrigation water. The case studies were conducted in three selected communes in peri-urban areas of Thanh Tri district in Hanoi in Red River Delta, Vietnam. The farms in these communes are small-scale vegetable and/or mixed vegetable-rice farms, using high inputs of soil amendments and pesticides for diversified cropping systems. The agricultural land and vegetable area in the study area had significant changed from 2000 to 2009. The agricultural land decreased by 36.7 % (3815 hectares in 2000 with 2416 hectares in 2009 in comparison). The vegetable area in 2009 was 1027 hectares, decreased by 549 hectares (34.8 %) compared with the year 2000. The agricultural used land has changed to other land use types, *e.g.* for residences, business, and public works. Following the investigations a small number of vegetable species is cultivated in the study area, *e.g.* indigenous vegetables as cucumber, leafy cabbage, yard long bean and water morning glory and non-indigenous vegetables as headed cabbage, cauliflower, kohlrabi and tomato. The average of farm size was 0.152 hectares in which 0.1 hectares for vegetable production, the number of plot was 5.7 and plot size was 0.027 hectares. The sustainability assessment by multi-criteria evaluation was done with the weight factors were estimated by pair-wise comparison method based on twelve indicators. The aggregate value for environmental sustainability indicators was 0.42, the social sustainability indicator was lowest (0.37), and economic sustainability was highest (0.74). The overall sustainability of vegetable cultivation systems in the study area was conditional sustainability (0.52).

Keywords: Multi-criteria evaluation, Red River Delta Vietnam, sustainability assessment, vegetable