ACTA SCIENTIFIC AGRICULTURE (ISSN: 2581-365X)

Volume 2 Issue 12 December 2018

Conceptual

Agriculture in Urban Environments: The Way Forward to Feed the World?

David J Simbo* and Terence N Simbo

Alberta Wheat Commission and Alberta Barley, Canada

***Corresponding Author:** David J Simbo, Alberta Wheat Commission and Alberta Barley, Canada

Received: November 05, 2018; **Published:** November 12, 2018

The world is now experiencing its biggest growth in urban population in history with more than half the world's population now living in cities and towns around the globe [1]. By 2030, this number is expected to reach 5 billion, bringing large economic, social and environmental changes to the planet. According to the Harris-Todaro model [2], rural migrants based their migration decisions mainly on wage differentials, economic incentives and a likelihood of getting a job in their destination usually an urban centre. In both the developed and the developing world, not all rural-urban migrants realize their dreams of landing a job. This results in a rise in urban joblessness which leads to high urban poverty rates especially among migrants [3]. In most countries in the world, the urban migrants are challenged by access to adequate shelter, health, and social services, often paying off higher percentages of their limited financial resources to house, feed and cloth themselves compared to the rest of the population [3]. Faced with these problems, people turn to what they know how to do; grow their own food for subsistence. Urban agriculture is one of the strategies being adopted to improve well-being and reduce poverty among city dweller [4].

Studies on food composition data from several developed countries show significant declines in mineral composition of fruits and vegetables from 1930s to 2004 [5]. Food composition data from the U.S. (1930s vs. 2004) and the U.K. (1930s vs. 1980s) were collected to test the hypothesis that mineral composition of fruits, nuts and vegetables show a historical dissimilarity [6]. The findings showed reductions of between 10 to 75% in the Ca, Cu, Fe, K and Mg contents in fruits and vegetables. A similar comparison of the mineral concentration of vegetables, fruits and cereals from Finland with the results of the same food published in the 1930s reported significant decreases in trace elements Cu, Mn, Ni, and Zn [7]. These reductions in nutrient concentration, described as the diluting effects, were attributed to plant breeding that breeds for high yielding varieties which demonstrate rapid growth, pest and disease resistance but may not be good at extracting and transporting soil nutrients within the plant and consequently may not be nutrient rich [8].

There is a common belief, proven or not, that the chemicals used in conventional agriculture are having a negative effect on crops and therefore human health [9]. The market for organic food has increased dramatically as its consumers seek to avoid pesticides and genetically modified foods as a reaction to concerns about their safety and effects on human health [7]. An estimated 37.2 million hectares was devoted to organic food production in 2011, a threefold increase from 1999 with a current global market of US$ 63 billion [10]. With price as the main constraining factor for consuming organic food worldwide [11], people in urban centres, mostly the urban poor, tend to grow their own organic food in either backyard gardens or community gardens.

With access to fresh fruits and vegetables increasingly becoming a challenge in cities [12], thus the rise in urban agriculture in these cities and their peripheries. One study estimated up to 90% of a city's demand for perishable vegetables and 41% of total food supply has been met by urban agriculture [13]. Rates of urban population involved in agriculture have been estimated to be as high as 80% in Brazzaville (DR Congo), 68% in five of the biggest cities in Tanzania [14]. Urban agriculture has also been reported to contribute significantly to household incomes with figures varying from 11% in Indonesia to 70% in Vietnam and Nicaragua clearly demonstrating the importance of urban agriculture [4]. Urban dwellers in the developed countries also practice urban agriculture in the Austria, Canada, Japan, the United Kingdom, the United States among others [12], although income generation may not be their main motive. The cultivation of a home garden or participation in a community garden has been shown to result in an increased intake of fresh vegetables and reduce food insecurity [15]. Encouraging such gardens among urban dwellers could be a strategy in

reducing non-communicable diseases which have been linked to lower intake of fresh fruits and vegetables. They could serve as a source of local medicinal plants whose use is on the rise for mostly urban dwellers and create green spaces which are known to positively impacts on human health [16,17]. As good as this may sound, the source of irrigation water for such urban gardens is important. In some developing countries where urban gardeners rely on waste water for irrigation, the result has been an increase in infectious diseases caused by pathogenic bacteria found in the waste water used for irrigation [18]. Similarly, the use of waste water for irrigation in urban agriculture has been related to the spread of antibiotic resistance, a growing global problem. Besides the risks of contamination, home gardening for vegetables and fruits could be a means of increasing food production which will need to more than double current production levels within the next decades to meet the nutritional needs of the world's population that has been estimated to reach 9 billion by 2050 [19].

Bibliography

1. United Nations Population Fund. (2016).
2. Harris JR and Todaro MP. "Migration, Unemployment and Development: A Two-Sector Analysis". *American Economic Review* 60.1 (1970): 126-142.
3. International Labour organization. "The future of urban employment. Second United Nations Conference on Human Settlements (HABITAT II)". International Labour Office, Geneva (1996).
4. Orsini F., *et al*. "Urban agriculture in the developing world: a review". *Agronomy for Sustainable Development* 33.4 (2013): 695-720.
5. Marles RJ. "Mineral nutrient composition of vegetables, fruits and grains: The context of reports of apparent historical declines". *Journal of Food Composition and Analysis* 56 (2017): 93-103.
6. White PJ and Broadley MR. "Historical variation in the mineral composition of edible horticultural products". *Journal of Horticultural Science and Biotechnology* 80.6 (2005): 660-667.
7. Ekholm P., *et al*. "Changes in the mineral and trace element contents of cereals: fruits and vegetables in Finland". *Journal of Food Composition and Analysis* 20.6 (2007): 487-495.
8. Davis DR. "Declining fruit and vegetable nutrient composition: what is the evidence?" *HortScience* 44.1 (2009): 15-19.
9. Doran JW and Zeiss MR. "Soil health and sustainability: managing the biotic component of soil quality". *Applied Soil Ecology* 15 (2000): 3-11.
10. Hughner RS, *et al*. "Who are organic food consumers? A compilation and review of why people purchase organic food". *Journal of Consumer Behaviour* 6.2,3 (2007): 1-17.
11. Reeve JR, *et al*. "Organic Farming, Soil Health, and Food Quality: Considering Possible Links". *Advances in Agronomy* 137 (2016): 319-367
12. Morgan K. "Nourishing the city: the rise of the urban food question in the Global North". *Urban Studies* 52.8 (2015): 1379-1394.
13. Drechsel P and Dongus, S. "Dynamics and sustainability of urban agriculture: examples from sub-Saharan Africa". *Sustainability Science* 5.1 (2010): 69-78.
14. Kehane, R., *et al*. "Agrobiodiversity for food security, health and income". *Agronomy for Sustainable Development* 33 (2013): 671-693.
15. Algert S., *et al*. "Community and home gardens increase vegetable intake and food security of residents in San Jose, California". *California Agriculture* 70.2 (2016): 78-82.
16. Simbo DJ. "An ethnobotanical survey of medicinal plants in Babungo, Northwest Region, Cameroon". *Journal of Ethnobiology and Ethnomedicine* 6 (2010): 8.
17. Yang J., *et al*. "Urban biodiversity in China: Who are winners? Who are losers?" *Science Bulletin* 61.21 (2016): 1631-1633.
18. Bougnom, BP. "Wastewater used for urban agriculture in West Africa as a reservoir for antibacterial resistance dissemination". *Environmental Research* 168 (2018): 14-24.
19. Assmann SM. "Natural variation in abiotic stress and climate change responses in Arabidopsis: Implications for twenty-first-century agriculture". *International Journal of Plant Science* 174.1 (2013): 3-26.

Volume 2 Issue 12 December 2018
© All rights are reserved by David J Simbo and Terence N Simbo.