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Editorial

Sustainability of food resources and the supply chain

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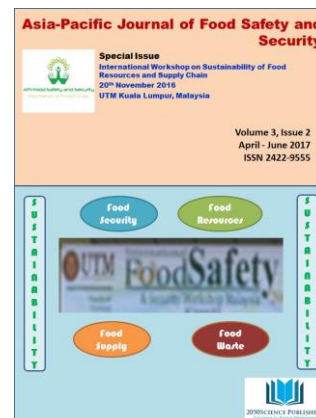
Highlights

- Food resources and supply need to close 70 percent “food gap” to cater the growing world’s population by 2050
- Sustainability of food system relates to three main issues of economic, social and environmental
- By reducing half the rate of food waste in food supply chain it is expected that the “food gap” can be closed by 22 percent

About Author

Dr. Dayang Norulfairuz Abang Zaidel is a senior lecturer at the Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia in Johor Bahru, Malaysia. She is an active member of Food and Biomaterial Engineering Research Group (FoBERG). Her research is focusing on the food processing and technology, food rheology, food nutrition, and green technology involving enzymes. She has published more than 30 articles in international journals and presented in more than 20 international conferences.

Food is essential to life, and it is one of the important factors that can affect human health. Other than that, it also affects the economy and, most importantly, the world’s resources. By 2050, the world



population is expected to grow to 9.7 billion from its current 7.3 billion (UN DESA 2015). Considering the challenge of feeding 2 billion more people, our current food system is facing major sustainability challenges. It is expected that the world needs to produce about 70% more food to cater to the growth of the world's population by 2050, which is referred to as the "food gap" (WRI 2014). It is a challenge for food producers and industries to close this "food gap" while at the same time maintaining sustainability in the food system. Three main food sustainability issues within the food system involve economic growth, social responsibility and environmental integrity. These issues include the security of food resources and supply, food safety, nutrition and health, alleviating poverty, affordability, quality, waste management, water and land management, climate change, biodiversity and many more.

Ever growing food demand and supply has a significant impact on the environment, where agriculture is the main activity for food resources. Accordingly, farmers need to increase production to close the "food gap", while maintaining the sustainability of the ecosystem and food resources. One of the environmental issues involves greenhouse gas emissions from agriculture that contributes about 13% of global total greenhouse gas emissions. As the demand for food increases, so does the usage of land for agriculture. The amount of land used for crops planting and animal farming has grown by more than 10 million hectares per year since the 1960s (WRI 2014), this has increased pressure on tropical forests. It has also been reported that animal-based foods are more resource intensive in terms of land use and freshwater consumption as compared to plant-based foods. Therefore, it is important to take measures to ensure the sustainability of food resources. For instance, to sustainably increase crop yield, it is important to improve soil and water management, improve crop breeding, and expand onto low-carbon degraded land while sustainably increase livestock productivity, thus improving the productivity of pasture and grazing lands (Bruinsma 2009).

The traditional food supply chain involves the distribution of food from "farm to fork" via processing or manufacturing, distribution and retailing. A significant amount of food intended for human consumption was lost or wasted from the "farm to fork" food chain. Food waste management is one of the key elements that was introduced aside from updating the current food supply chain. By reducing half the rate of food waste in the food supply chain, it is expected that the "food gap" can be closed by 22% (Bruinsma 2009). Each step in the food supply chain must contribute to sustainability: for instance, better land management, lower pollution and better hygiene during processing, usage of safe and sustainable packaging, reduced discrepancies in supply-demand, creation of consumer trust for food products, use of bio-fertilizers, and waste segregation and composting. Food manufacturers, distributors and retailers must play their roles in facilitating the sustainability of the food supply chain and in insuring that the source of raw materials and final products are distributed well for the consumers.

The challenges in the sustainability of food resources and the supply chain cannot be addressed as a single issue, but they need to be dealt with as an interrelated set of challenges. Other than the issues, food prices are also expected to increase and thus the growing number of people at risk of hunger in the developing countries. The issues of balanced diet, nutrition and health are also important and should be addressed accordingly. While aiming to close the "food gap" for the increasing world's population, it

would be best to also consider better production and better food systems while ensuring the provision and sustainability of food resources and the supply chain.

References

Bruinsma, J. (2009). The resource outlook to 2050. By how much do land, water use and crop yields need to increase by 2050?

Available online: http://www.fao.org/fileadmin/templates/esa/Global_perspectives/Presentations/Bruinsma_pres.pdf. (Accessed on 12 February 2017)

WRI [World Resources Institute]. (2014). The great balancing act. In *Creating a Sustainable Food Future*. Available online: <http://www.wri.org/publication/great-balancing-act>. (Accessed on 12 February 2017)

UN DESA [United Nations Department of Economic and Social Affairs]. (2015). *World Population Prospects: The 2015 Revision*.

Available online: https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf. (Accessed on 12 February 2017)

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