ABSTRACT

As the world’s population increases, the issue of food security presents a serious challenge. Currently, food security is reliant on a very narrow range of cultivated plant species and is also limited to traditional animal husbandry practices. The use of edible wild plants can be considered to support food security efforts. Such plants have shown to be more resilient compared to traditionally cultivated crops and also have superior nutritional attributes. The issue of protein food security can be addressed through production improvements for local or indigenous chickens, livestock production systems and wildlife to some extent. Food security in developing countries would increasingly become more dependent on widening the biodiversity from which food is selected and utilized and insects, like wild plants, provide another such opportunity. Contemporary reproductive technologies such as lactation induction, embryo transfer and artificial insemination among others can bolster food security efforts in developing countries. Improvements in forage species as well as processing technologies to improve nutritional value of low quality forages can improve overall animal nutrition. Irrespective of the concerns related to genetically modified organisms (GMOs), these sources of food could be beneficial globally. The formation of farmers’ groups can be a strategic approach to food security in resource poor developing countries for the purposes of collective action and resource sharing. Sustainable food security requires the integration of several multi-dimensional approaches into a holistic management model to achieve the food security objectives in many developing nations.
INTRODUCTION

Global food security objectives, amidst increases in the world’s population and environmental changes, would require the implementation of multidimensional strategies to significantly improve the future sustainable production of food. According to Food and Agriculture Organization (FAO, 2009a), the world population is expected to be just over 9 billion by 2050 and most of this population increase is expected to occur in developing countries. While China (1.4 billion) and India (1.3 billion) remain the two largest countries of the world, representing 19 and 18 per cent of the world’s population, respectively, Africa has been cited as the fastest growing major area (2.55% annually, from 2010-2015) and is expected to account for more than half of the global population increase between now and 2050 (United Nations, 2015). Africa is followed by Asia, Northern America, Latin America and the Caribbean and Oceania. It is therefore instructive that if population growth is to be concentrated in many of the underdeveloped and developing regions of the world then food production, sustainability and security become a major center piece in policy development for these regions. Rijsberman (2012) in a report related to the future of food indicated that agricultural production is unable to keep up with the global demand for food resulting from an increase in world population levels. The report further suggests that annually there are almost 80 million more mouths to feed. There have been estimates that food production would need to increase by 70% by 2050 (FAO, 2009b). It was recommended that this estimate can be reduced to 60% by drastically reducing huge losses and wastage of food and through the sustainable management of natural resources (Nwanze, Graziano da Silva, Cousin & Frison, 2012). The amount of food globally lost or wasted per year is predicted to be around 1.3 billion tons (Gustavsson, Cederberg, Sonesson, van Otterdijk & Meybeck, 2011). As a result of a myriad of biological, environmental and socio-economic factors, food losses in developing countries are considerably high and urgent intervention is required to address this occurrence.

The urbanization phenomenon has the potential to impact agricultural productivity in the rural regions of developing countries. The pressures of urbanization such as rural to urban migration and rural urbanization would see the removal and reduction of labour and land resources away from agricultural activities. The reality of a shrinking agricultural work force, resulting from employment preferences in other economic sectors, is further negatively impacting agricultural production. The shift of labour from low productivity agriculture sector to the more productive industrialized sectors has increased the level of income derived for Caribbean countries. Notwithstanding the need for industrial development, Lewis (1954) pointed out that “industrial and agrarian revolutions always go together and is the reason why economies in which agriculture is stagnant do not show industrial growth.” The industrial development of the Caribbean and other developing countries should not occur with agricultural neglect. It is necessary for governments in the developing regions around the world to place focus on developing and employing sustainable agricultural polices to ensure national food security. Although, urbanization is seemingly a positive driver for economic growth and development within developing countries (Overman & Venables, 2005) there are noticeable effects on the availability, stability, safety and access to food as reported by Matuschke (2009). It should be noted that rapid urbanization may have a long term effect on the sustainable production of food as there would be extreme demands to intensify the agricultural productivity of rural areas beyond their capacity.

The national food security of any country can be improved by either accelerating food production or through the importation of food (Trueblood & Shapouri, 2001). Currently, the agricultural sectors in the Caribbean and many other developing countries have been underperforming resulting in unfulfilled