

The Role of Vegetables in Ensuring Food Security and Poverty Alleviation: The Case of Ethiopia

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ABSTRACT

This review is assessed in Debre Berhan university and the review mainly focused on the role of vegetables for income generation, employment opportunity and food security. The definitions of vegetable vary place to place, however their definition mostly related to their uses. Vegetable is an edible, usually a succulent plant or a portion of it eaten with staples as main course or as supplementary food in cooked or raw form. Vegetables are sources of vitamins, minerals and income for those involved in production and marketing. An increase in the availability, affordability and consumption of nutrient-dense vegetables is one way of reducing malnutrition. Recently, the governments of developing countries have sought to promote diversification of production and exports away from the traditional commodities in order to accelerate economic growth, expand employment opportunities, and reduce rural poverty.

Keywords: Vegetables; Poverty alleviation; Food security; Economic growth; Marketing

INTRODUCTION

A vegetable is an edible, usually succulent plant or a portion of it is eaten with staples as a main course or as supplementary food in cooked or raw form. Vegetables are sources of vitamins, minerals and income for those involved in production and marketing. Having first-hand information about vegetable production and marketing system is essential to devise appropriate strategies aimed at enhancing vegetable value chain development. It was in line with this view that a study was conducted to characterize vegetable production and marketing systems at selected sites in the humid tropics of Ethiopia [1].

A nutritious and varied diet is a critical means by which good health can be maintained. Consumption of less than 200 g of vegetables per person per day in many countries today is common and this low amount, often in conjunction with poverty and poor medical services, is associated with unacceptable levels of mortality and malnutrition in preschool children and other vulnerable groups. An increase in the availability, affordability and consumption of nutrient-dense vegetables and pulses is one-way malnutrition may be substantially reversed yet nutritional security appears to be less valued than food security by key decision makers, and vegetable crops thus receive inadequate research investment.

Opportunities exist for the poor to improve their access to vegetables, particularly if they are willing to grow home gardens. Research continues on defining appropriate nutrient-dense vegetables for such activities, but these efforts may be compromised by failure to adopt good agricultural practices, resulting in contamination and unhealthy produce for producers and consumers [2].

In recent years, awareness of the nutritional and health benefits of vegetables in Ethiopia has been increasing due to public health advocacy on the role of vegetables in human nutrition and health through its provision of antioxidants such as vitamin A, C and E that are important in neutralizing free radicals (oxidants) known to cause cancer, cataracts, heart disease, hypertension, stroke and diabetes [3]. As such the increasing consumption of vegetables helps to fight hidden hunger, malnutrition. Vegetables are also used as a source of raw material for the local processing industry. Processed products such as tomato paste, tomato juice, and oleoresin and ground spice of hot pepper/chili (*Capsicum* spp.) are produced for exports making a significant contribution to the national economy [4].

One of the major development problems facing the world today is growing phenomenon of poverty. It is estimated that over 1.3 billion people live on less than one dollar per day, and one

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billion people cannot meet basic requirements [5]. Furthermore, 315 million people (one in every two people) in Sub Saharan Africa survive on less than one dollar per day and 184 million people (33% of the African population) suffer from malnutrition. The production of horticultural commodities typically vegetables has a great role to reduce poverty. One of the reasons is that vegetables can grow in small marginal lands, they have short cropping system so possible to produce 2 times-3 times per year and moreover these commodities can give high yield per unit area than commonly grown cereals and legume crops. Therefore, this review is conducted to investigate the importance vegetables for food security and poverty alleviation.

LITERATURE REVIEW

Basic concepts

Vegetable: Is an edible, usually a succulent plant or a portion of it eaten with staples as main course or as supplementary food in cooked or raw form. Definition of vegetable generally centers on its use, a plant may be a vegetable in one country but a fruit, a weed, an ornamental, or a medicinal plant in another country, depending on the crop.

Food security: Mean when all people at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life [6].

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).

Utilization: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.

Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

Status of vegetable production in Ethiopia

It is obvious that vegetables are important as a source of micro-nutrients for human nutrition, a means of income, food security, employment, and foreign exchange. In Ethiopia, most of the soil types suited for fruits and vegetables productions. However, the production of vegetables in Ethiopia does not meet the need of the country's population for vegetable

products. Even though the production of vegetables is increasing it is still far below their potential and in general, there was inefficiency in the production of vegetables [7]. Although there is a wealth of literature on smallholder commercialization in Ethiopia, it is mainly on grain crops and livestock and livestock product however market participation of the smallholder horticultural vegetable crops farmers in the country is still limited. Accordingly, various empirical studies pointed out that, in Ethiopia, smallholder commercialization determined by institutional factors, infrastructural and market related factors, household resource endowments, and household specific characteristics.

The production of vegetable in last year's shows, a lot of the ups and downs were observed. But now their production and demand for vegetables especially for export is increasing dramatically [8]. On the other hand according to CSA 2021 of Ethiopia vegetable yield sin 2005 and 2018 were increased by 80% by increasing the production areas. According this increment in production vegetables in Ethiopia has a comparative advantage in a number of vegetable commodities due to its favorable climate, proximity to European and Middle Eastern markets and the regional markets, cheap labor, government policies and strategies of Ethiopia are good for investment having its own proclamations.

Vegetables and income generation

Recently, the governments of developing countries have sought to promote diversification of production and exports away from the traditional commodities in order to accelerate economic growth, expand employment opportunities, and reduce rural poverty [9]. Market oriented production can allow households to increase their income by producing output with higher returns to land and labor and using the income generated from sales to purchase goods for consumption [10]. Similarly, in Ethiopia, the current policy environment and in its growth and transformation plan launched for the period 2010 and 2011 up to 2014 to 2015, the Ethiopian government attempts to promote production and marketing of high value agricultural products (with the most participant portion inclined to vegetable) with a view to increase competitiveness in domestic, regional, and international markets [11].

Nowadays, vegetable crops are becoming attractive for many poor farmer sin Ethiopia. Thus the production of vegetable crops has grown faster than that of cereal crops [12]. Vegetable crops play a significant role in developing country both in income and social spheres for improving income and nutrition status. Farmers involved in vegetable production usually earn much higher farm incomes as compared to cereal producers and per capital farm income has been reported up to five times higher. In addition, horticultural products are considered to be income-boosting alternatives to basic grains for smallholder farmers, and they contribute to increasing employment opportunities [13].

Vegetable production is an important source of income for smallholder farmers and demand for the products is raising in both domestic and international markets thus increase smallholder farmers' participation in the market [14].

As income determines the purchasing power at household level, such that the higher the income, the higher the ability of the households to secure the food requirements of the households and the higher the income, the higher the ability of the households to access better medical and education services and to meet the requirements of the self and his/her households basic needs on a sustainable basis with dignity. Smallholder access to markets for higher-value agricultural products is recognized as a vital opportunity to enhance and diversify the livelihoods of lower-income farm households and reduce rural poverty more generally.

Moreover according to Adejumo, et al., commercial horticulture provides appealing outlook for the environment by greening the environment, and promote the development of healthy community; social values of the communities and promote economic development. He explains practice of horticulture in three main ways. First, plants enhance the economic and social values or developments of the community. Second, horticulture activity promotes the development of healthy community by utilizing carbon gasses (gases that are generated in the cities) during plants' photosynthesis and then oxygen is released as byproduct which is the most important air for human beings. Third, it enhances environmental management and it provides appealing outlook for the environment.

Vegetables and employment opportunity

As compared to the dominant share of the agricultural sector in the Ethiopian economy, horticulture sub-sector is relatively new and its overall contribution to the economy of the country not much significant. As a source of their livelihood, few business oriented farmers and urban dwellers are participating to cultivate small scale vegetables for domestic consumption, especially, in and around cities. Central statistics data of 2017, shows that in Ethiopia fruits domestic supply was estimated about 3,894 in 2017. This trend is increasing overtime and the activity is becoming income generating for farmers around and nearer urban areas of the country. Vegetable suppliers and retailers are also increasingly linked to this type of activity and become famous economic activity.

The generation of additional employment opportunities in rural areas where labor is abundant is critical for achieving widespread and equitable growth. The production of vegetable products offers opportunities for poverty alleviation, because it is usually more labor intensive than the production of staple crops. Often, vegetable production requires twice as much, sometimes up to four times as much labor than the production of cereal crops.

Indigenous vegetables provide food security and sustainable food production

African indigenous vegetables were once considered as a famine food (poverty food) that were mainly consumed in rural areas. Ethiopia is well known for its diversity of indigenous food plants, including vegetables. The cultivated vegetables are mainly grown by traditional farmers in home gardens, although some are grown in fields and along field margins. About 27% of the crop species cultivated in home gardens in Ethiopia, many of

them indigenous, are used as vegetables. Non-cultivated species sporadically used as vegetables are estimated to comprise about 29% of the total wild food plants of the country, most of these being indigenous. Traditional Ethiopian vegetables do not figure very prominently in modern crop research and conservation programmes. Traditional vegetable crops are marginalized in modern agriculture while the wild and weedy vegetable species receive no special attention.

The vegetable resources of Ethiopia can be developed through a strategy of complementing and augmenting traditional practices with modern scientific approaches. The vegetable industry could benefit from tapping the potential of the indigenous taxa as this would improve local and national food security, augment farmers' incomes and help surmount some health problems associated with nutrient deficiency. Vegetables are a significant component of the Ethiopian diet, and traditional vegetable species are particularly important. These traditional vegetables have been relatively neglected, and their potential remains to be fulfilled. The enhancement of some traditional systems, in conjunction with modern scientific approaches, can contribute to the growth of the vegetable industry, thereby augmenting the national economy and improving people's health and standard of living. Increased attention needs to be focused nationally on traditional Ethiopian vegetables through research, conservation and promotion of use.

According to Dandena, et al., indigenous vegetables are known as insurance crop which may constitute the only source of certain nutrients especially related to health issue and major source of food between grain harvests or when harvests fail. Limited access to resources means that land poor women are more likely to be under employed. Since women are frequently the principal providers for family diets, enhancing their purchasing power and food production capacity has a direct impact on household nutrition and health. In line with this, it was indicated that in most rural areas of Ethiopia home garden based cultivation of indigenous vegetables have been practicing which is undertaken mainly by women's and children's. Most of those indigenous vegetables know a day are demanded highly and compute effectively in the local markets, supermarkets and hotels especially at Addis Ababa with exotic vegetables because of its nutritional and cultural food value.

For instance, *Coccinia abyssinica* from Wollega/Oromia region, *Corchorus olitorius* from Afar region and *Moringa olifera* from South Nations Nationalities and Peoples region are a good examples of those indigenous vegetables demanded highly in the supermarket and cultural food preparation. On the other hand the survey result indicated that Afar women's collect the leaf of some vegetables like *Corchorus olitorius*, dried, packed and selling to foreigners coming to Afar region or send to Djibouti which is indicating the income generation potential of those vegetables.

Vegetables and food security

Fruits and vegetables are providing an abundant, cheap source of fiber and several vitamins and minerals. In general, they have the highest nutritional value when eaten fresh. An individual who involved in Fruit and vegetable production can assure

his/her household food security, and anemia levels for individual women caregivers of childbearing age.

In Ethiopia, there have been increased efforts to promote market-oriented vegetable production. Given that food security is a crucial issue in Ethiopia, the question is whether market-oriented vegetable production will actually help farmers to become more food secure. Using a mixed methods approach, the present research gathered empirical evidence on the determinants of participation in the vegetable business and its food security impacts. The number of small-scale producers involved in horticulture is estimated at 5.7 million farmers in Ethiopia. The area under vegetables increased from 350,600 ha with production of 2.36 million tons in 2010 to 396,510 ha with production of 4.48 million tons in 2013 for smallholder farmers.

Shift in the paradigm of strategy for food security from food production oriented to improving food access through improving household income and promoting market oriented production has opened the window for engagement of smallholder farmers in market oriented production.

The effects of cash crop vegetable cultivation on smallholder's food security is obvious and it is found that participation in the vegetable business improves farmers' income, food access, availability and consumption. The production of vegetables is found to stimulate exports, the development of rural labour markets and female wage employment in companies. Evidence also supports the positive effects of vegetable production on income due to a higher market value and profitability. With relatively better cropping intensity; vegetables generate more farm income compared to other crops. Moreover, vegetables are sources of vitamins, minerals and antioxidants that are important for human health. It has also been noted that the promotion of vegetable production increases food availability at local markets and enhances its consumption. This leads to a reduction in hidden hunger, *i.e.*, dietary health problems related to micronutrient deficiency.

Vegetables have a high export potential and can substantially contribute to foreign exchange earnings. In 2013, for example, Ethiopia exported 220,213 tons of vegetables and generated USD 438 million. Furthermore, the development of a processing industry and the intensive production practices of vegetable crops also contribute to employment creation. As such, smallholders' vegetable production is perceived as an important economic activity in Ethiopia. These findings highlight the potential of smallholders' engagement in cash cropping to improve food security for society as a whole. Despite the increasing importance of vegetables in the Ethiopian economy, there is inadequate knowledge on the impacts of the vegetable business on several dimensions of food security.

DISCUSSION

Importance of root and tubers to improve food security

Cassava and sweet potato and potato are ranked within the top root and tuber crops produced and consumed in the many parts

of the world. These traditional staples are particularly attractive for their nutritive and caloric value and contribution to livelihood systems, and also their adaptability to a wide range of growing conditions and their low susceptibility to natural disasters. Traditionally, these root and tuber crops are grown by small farmers on small parcels of marginal land with low input. However, as they gain more importance, the global production systems are transitioning to commercial sized acreages and the use of good agricultural practices.

Globally, rising food prices and the reduced availability for staples (such as cereals and grains) have led the governments of CARICOM member states to establish food and nutrition security goals that seek to reduce the region's reliance on imported staples through the increased use of traditional staples. Studies conducted in several CARICOM countries indicate that there are huge, untapped import-substitution market opportunities that can be addressed by the utilization of traditional root and tuber crops such as cassava and sweet potato. Moreover these commodities have significant nutritional properties that make them attractive substitutes to imported grains and cereals. Dietary properties associated with traditional staples such as, cassava and sweet potato include: Dietary fibre, beta carotene and a range of vitamins and micro-nutrients that exceed many of the imported starches.

CONCLUSION

Production of vegetables especially of short term vegetables has significant role in ensuring food security and poverty alleviation. They generate income since they are high value crops, create employment opportunity for abundant labor source rural population like Ethiopia, have great role in satisfying food security and food diversification and they are alternative means of cash generation for rural women. Having these good characteristics vegetables in developing countries like Ethiopia they did not give emphasis for them. Therefore it is necessary to developed through a strategy of complementing and augmenting traditional practices with modern scientific approaches.

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