

## Review of the status of vegetable crops production and marketing in Ethiopia

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**Key words:** vegetable production, yield of vegetable crops, constraints to vegetable production

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### Introduction

The currently population of 70 million people in Ethiopia is expected to double within the next 30 years. Almost 80% of the population live in the country side while the rest situated in urban area. An estimated five million people suffer from lack of vitamins and essential minerals, of which 80% are children. Vegetables are the major source of most micronutrient and the only practical and sustainable way to ensure their supply (Anonymous, 1998).

The economy of the country predominantly depends on agriculture, which contributes about 50 percent to the total GDP and 90 percent of export items of which horticultural crops are the leading component.

The county has favorable conditions for the production of a a number of vegetable crops. The wide range of altitude, ranging from below sea level to over 3000m above sea level, gives it a wide range of agroecological diversity ranging from humid tropics to alpine climates, where most types of vegetable crops can be successfully grown. Further, the abundant labor, vast land and water resources give her an opportunity and facilitation for the production of different types of vegetable crops.

Vegetable crops are valuable sources of vitamins, minerals and proteins especially to a

country like Ethiopia where the people experience malnutrition due to heavy dependence on cereals such as tef (*Eragrostis tef*), maize (*Zea mais*), wheat and other cereals. Vegetable crops are also important for food security in times of drought, famine and food shortage. They provide a source of income for the farmers/producers, create employment opportunity and contribution to the national economy as export commodities.

The current investment policy in the country are favorable for expansion and diversification of vegetable crops both in the production and marketing sectors for export and foreign exchange earnings. There are a number of strong vegetable research programs across 15 research stations throughout the country. In collaboration with regional research centers, and universities, the centers have generated a number outputs including improved varieties, appropriate agronomic practices and crop protection measures for the vegetable production sector.

Different types of leafy, root, tuber, bulb and fruit vegetables are grown in the country both under rain fed and irrigated conditions. Onion, Tomato and *Capsicum* are grown mainly in the central rift valley part under irrigation. The cool season vegetables like Cabbage, Garlic, Shallot, Carrot, Ethiopian Mustard, Ethiopian Kale, Irish potato and the likes are under cultivation on

enormous area under seasonal rain fed agriculture in the highland part of the country.

Up to 30% of vegetable harvests in Ethiopia is reported to be lost due to poor post-harvest handling. Hence, of the vegetable production value chains should include productive diseases resistant varieties, agronomic practices, postharvest handling capacity for bulking, increased shelf life, new product development and delivery systems to markets.

### **Contribution of Vegetables to Ethiopia Economy**

Vegetable crops make significant contributions to the Ethiopian household and national economy. Potato and sweet potato are valuable food security crops for densely populated highland regions and drought-prone areas respectively. Vegetables like hot pepper and onion are also used for flavouring local dishes and as well important as sources of vitamins and mineral. This indicates that a considerable proportion of Ethiopians could derive their livelihood from growing vegetables.

High yields across diverse climatic conditions is the primary attribute for the economic and social value of vegetable crops. Root and tuber crops can yield as much as 40-60 tonnes per hectare and can provide food security especially in times of drought, famine and food shortages. They can be grown through out the year and provide a continuous food supply, help in balancing nutrition and protecting vulnerable groups of the local populations from disorders associated with low mineral and vitamin intake. Commonly the highest yield of commonly grown tef, the staple food of the country, is on average 1 tonnes per hectare which is sixty times less yield per hectare of potato (60 ton ha<sup>-1</sup>). The high returns to labour is sufficiently attractive to otherwise idle labour and improve the external trade balance in export value of processed products.

### **Current status of Vegetable Crops in the Country**

At present, different vegetable crops are produced in many home gardens and also

commercially in different parts of the country. These include Onion, Garlic, Shallot, Capsicum, Tomato, Cole crops, Ethiopian Kale, Head Cabbages, Ethiopian Mustard, Water-melon, Musk-melon, Pumpkin, Beet root, Carrot, Snap bean, Sweet potato, Irish Potato, Anshote, Colocosia yam, Taro, *Moringa olifera*. Most of them are produced by individual growers and others by private investors as well as state enterprises. There is, however, no reliable database on the production trends of these crops.

In recent years, there has been a steady increase in the demand for vegetable crops both for local and export markets. Consequently, the area under these crops has been expanded even if the extent of their cultivation in the peasant sector is difficult to indicate numerically because it is scattered throughout the country and in small plots commonly by the side of homestead. Nevertheless, in 2005 the production of all the vegetable crops was estimated to be 131,962 ha planted to about 2.8 million tones per year, from a total area of major vegetable crops production excluding tuber crops in the country.

The total area under some crops like tomato production has been reduced by about 22% and productivity by about 15% in 2005 as compared to 2004. This is mainly due to the prevalence of severe viral and viral like disease accompanied by absence of effective control measures so far.

In general, in view of the existing deficit of food crops, vegetable production is one of the key alternatives to improving the country's deteriorated food supply situation and alleviate malnutrition and under-nourishment, particularly in the rural areas.

### **Contributing factors for Investment Expansion of Vegetable Crops of the Country**

Ethiopia has got an immense potential to develop intensive vegetable production especially at commercial scale. Some of the favourable factors that contribute to an overall

investment include proximity to profitable markets, agro-climatic suitability and rich water resources for irrigated vegetables, rise of demand for vegetable crops particularly in the urban areas, diversity of agro-climatic conditions that facilitate the diversification of the crops and the current malnutrition problem in the country that calls for an increased need for vegetables. Further, the high productivity of vegetable crops (root and tubers) compared to cereals can be the viable alternatives to supplement the good supply of farmers living at subsistence level. On the other hand, export possibilities for these crops are very encouraging and if fully exploited,

vegetable crops would unquestionably help to improve the standard of living of the nation, especially small-scale resource-poor farmers.

### Foreign Trade Development, Market Destination and Prospect for Ethiopian Vegetable Products

#### Export development

In the export of vegetable and fruits, the share of vegetables was reported to be 46% in terms of quantity and 52% in value in 1974. However, the average share of vegetable was raised to 79 % in quantity and 74% in value over the years 1999-2005 as indicated below in table 2.

**Table 1. Estimate of area and yield of major vegetable crops for 2004 and 2005 in Ethiopia**

Crop	Area (ha)		Production (tonnes)		Yield (tonnes ha <sup>-1</sup> )	
	2004	2005	2004	2005	2004	2005
Head Cabbage	1843	2120	8577	15208	4.7	7.2
Ethiopian Cabbage	22377	27143	213592	265455	9.6	9.7
Tomatoes	3761	2919	54871	31655	14.6	12.4
Hot Peppers (for green pod)	4471	4783	43187	44273	9.3	9.3
Hot Peppers (for dry pod)	49611	59991	66908	72466	1.4	1.3
Swiss Chard	140	142	1075	680	7.6	4.8
Beetroot	1216	1486	140956	16480	11.6	11.1
Carrot	1808	1741	10023	17895	9.1	10.3
Onion	17017	17980	216689	229678	12.7	12.8
Garlic	9465	13657	135394	196741	14.3	14.4
<b>Total</b>	<b>111,709</b>	<b>131,962</b>	<b>891,272</b>	<b>890,531</b>	-	-

Source: Central Statistical Authority of Ethiopia, 2005

**Table 2. Export quantity (tonnes) and value (US dollar) of major fruits and vegetable crops in Ethiopia**

Year (G.C.)	Vegetable		Fruit		Total	Total	Share of vegetable (%)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1999	11554	1992926	3562	781343	15116	2774269	76	72
2000	14946	3477508	4180	981013	19126	4458521	78	78
2001	14035	3387453	3561	939876	17596	4327329	80	78
2002	13440	3673921	3185	1233757	16625	4907677	84	75
2003	22610	5315547	5096	1376134	27706	6691681	82	79
2004	21987	5502998	4695	2675396	26682	8178394	82	67
2005	21165	4779410	7260	2111028	28424	6890438	74	69
<b>Total</b>	<b>119737</b>	<b>28129762</b>	<b>31539</b>	<b>10098547</b>	<b>151275</b>	<b>38228309</b>	<b>79</b>	<b>74</b>

Source: Ethiopian Export promotion Agency (compiled from raw data, unpublished)

In general, the export of horticultural produces of the country has increased tremendously over years. However, as indicated in Table 1, the export of vegetable produce is by far better than fruit both in quantity exported and value earned for the same period of time, 1999 to 2005.

### **Market Destinations**

The country has various advantages for the development of export sector. These include the abundant and capable labor forces, low wage levels, pre-financial access to some of the major world markets such as Europe, USA, and the Common Market for Eastern and Southern African states (COMESA). The major markets of the fruit and vegetable exports of the country has been the Republic of Djibouti, Middle East countries and the Western European countries.

Recently, in the year 2005 about 32,000 tons of vegetables that worth about 12 million US dollar were exported mainly to Djibouti and other countries (Table 3) which indicates an increase of about 8 million US dollar over the last year (2004).

Major vegetable export product of Ethiopia includes Potato, Beans, White and Red Onion, Shallots, Cabbage, Leeks, Beetroot, Carrots, Hot pepper (green pod as well dry pod), Tomato, Asparagus, Okra, Sweet pepper, Garlic and Lettuce (Anonymous, 2005b).

Processed vegetable products exported include tomato ketchup, paste and concentrated. Further, the country is one among few countries that produces *Capsicum Oleoresin* for the world market. However, the most important and major vegetables export from Ethiopia is fresh produce of green beans and tomatoes.

### **Market Prospects**

The Republic of Djibouti and Saudi Arabia have been the important traditional export market for Ethiopian vegetable products. Djibouti still remains by far the largest market target. European markets such as the Netherlands had also significant shares as indicated in Table 3.

Despite the advantage in proximity, the Ethiopian vegetable produce has not yet fully broken into the quality market of those countries due to poor grading, substandard packaging and inappropriate transport methods. However, there is good prospect for exporting all kinds of vegetable produces to these markets if these situations are improved and good quality produce is delivered.

### **Constraints to Vegetable Crops' Production of the Country**

In general, the drawback to this sector include social and cultural habits of the population like dietary preferences for meat and other animal products, and distaste for vegetable crops, lack of consumer awareness, economic reasons of the local consumers, absence of nutrition intervention programme using vegetables and their processed products and certain environmental limitations. However, many other commodities such as onion, garlic and hot paper are part and parcel of every Ethiopian diet in flavouring and garnishing local food.

Drawback related to produce marketing and preservation such as heavy losses that are caused mainly due to price fluctuations, lack of guaranteed prices and unplanned planting patterns. Such constraints are aggravated by underdeveloped infrastructure and weak transportation facilities. Vegetable produce to market are yet transported as bad packs on animals and human load. This causes heavy post-harvest losses. Trucks and private buses are also used by traders between local market, regional and terminal markets but they are not also designed for the purpose.

Noteworthy is the lack of processing facilities because the existing processing facilities are not easily accessible to producers. Most vegetables are sold in unprocessed form. Lack of storage facilities, poor traditional storage system, which are prone to storage pests and diseases, lack of on-farm storage system and absence of cool storage facilities are among the important limitation to the vegetable production sector of the country. Packing

**Table 3: Vegetable export from Ethiopia for the year 2004-2005 and value earned**

Destination	2004		2005	
	Wt ( tonnes)	Value (USD)	Wt ( tonnes)	Value (USD)
Australia	0.745	187	7.565	1,749
Austria	0.150	200	0.300	368
Djibouti	21,072.860	4,708,588	28,817.822	6,512,955
Israel	1.226	556	0.199	90
Italy	250.000	156,412	483.247	264,657
Kenya	0.0	0	0.005	175
Netherlands	2.176	940	2,451.158	4,933,634
Norway	0.0	0	24.970	45,902
Saudi Arabia	3.450	1,500	41.859	92,184
Sudan	26.576	5,582	53.175	33,255
United Arab Emirates	0.0	0	43.263	153,938
UK	0.0	0	32.570	47,705
USA	1.503	1,196	0.005	175
<b>Total</b>	<b>21,358.686</b>	<b>4,875,161</b>	<b>31,956.137</b>	<b>12,086,787</b>

*Source: - Ethiopian Customs Authority, 2006 (compiled from raw data, unpublished)*

facilities were not also well developed to bridge gap between growers and lessen the time interval between harvesting and consumption.

### Conclusion

The status of vegetable production in the country yet needs further improvement. Despite an enormous potential and a favourable environmental advantage in the country, vegetable is relatively under-developed. The majority of private farms in the countryside are using traditional practices to grow the crops and need much benefit from the research results, including inputs like improved seeds. Research attempts have been made to address some of the production constraints but there is still much to be achieved and many constraints to be resolved. The major problems are lack of high-yielding, multiple pest and disease resistant cultivars with specific attributes for growth in to the different agro-ecological zones, proper agronomic practices, appropriate pest and disease control techniques, proper post-harvest handling, poor marketing and transportation systems, lack of sufficient quantity of seed supply, and insufficient orientation of people to make them aware of

the nutritive and economic advantages of these crops.

### Acknowledgement

The authors are grateful for the support of AVRDC–The World Vegetable Centre, *Regional Centre for Africa* to organize this review article.

### References

- Anonymous, 1998. Vegetables for poverty Alleviation and Healthy Diets. Asian Vegetable Research and Development (AVRDC), a plan for 1998-2002. Taiwan 744, Roc.
- Anonymous, 2005a. Central Statistic Authority (CSA), Agricultural Sample Survey Report on Area and Production of Crops (private peasant holdings). The FDRE statistical bulletin 331 vol 01, Addis Ababa, Ethiopia.
- Anonymous, 2005b. Export Products of Ethiopia, Ministry of Information Press and Audiovisual Department, Addis Ababa, Ethiopia.