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## 5. Marketing Channels for Irrigated Exotic Vegetables

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*This chapter provides qualitative and quantitative information on the distribution pathways of irrigated vegetables, with a focus on lettuce, produced in Kumasi and Accra from the farm to the consumer. The data from a survey carried out in 2005 show the contribution of irrigated urban farming and the size of the beneficiary group in Accra, which is also the group at risk from crop contamination which has been quantified.*

### 5.1 Background and Survey Details

In the context of wastewater-contaminated vegetables from urban agriculture, the objective of this chapter is to present the different lettuce distribution channels and to categorize the groups of sellers and consumers, in order to identify entry points and target populations for risk reduction programs. To get an impression of the dimensions of the lettuce market and its consumer groups, an attempt was made to estimate the total amount of lettuce produced and the size and type of lettuce-consuming population.

The vegetable marketing channel surveys included farmers, wholesalers and retailers (Box 5.1). For the related risks assessment along the food chain, researchers followed from different farms certain batches of lettuce up to the final consumer (Amoah et al. 2005, 2007a). In Accra, six central markets (CM) and five neighborhood markets (NM) were visited, whereas in Kumasi the three main markets (Central Market, Railway Market and Asafo Market) and 12 neighborhood (or community) markets were included in the survey. At each market, a representative number of lettuce traders was interviewed as well as their customers. The survey was repeated in intervals over the dry and rainy seasons.

Most lettuce buyers in both cities were related to year-round fast food selling points in the street food sector. Eighty-three fast food sellers serving lettuce as a side dish in Accra and 144 in Kumasi were interviewed. Likewise, 161 and 212 fast food customers were interviewed in Accra and Kumasi, respectively. In addition, 34 fast food stands were also visited in five different suburbs of Accra, in order to assess the knowledge about the lettuce bought, to explore vegetable washing habits and to calculate the average weight of lettuce in the common fast food meal of rice and chicken (*check-check*). Twenty salad samples were taken to the laboratory, where the lettuce was sorted, weighed (Henseler et al. 2005) and analyzed (Amoah et al. 2005, 2007a). Based on the statistics of the Accra Municipality, the Food

Research Institute (Ghana) and local fast food seller associations, the number of fast food sellers in Accra selling food known for its lettuce supplement was estimated. About 90 fast food vendors in different parts of Accra were then visited at different times over a day to record the absolute number of people who buy food with lettuce (in contrast to other food or the same but without lettuce).

**Box 5.1: Definitions used for this survey**

*Wholesalers* were defined as dealers who buy large quantities and concentrate on one or very few sorts of vegetables. However, distinction between wholesalers and permanent retailers is often not easy as frequently they show mixed behavior (also crop- and season-dependent).

*Permanent Retailers* have permanent stands in a market to display and sell their produce.

*Independent Vegetable Dealers* have permanent stands but are not located in the official market.

*Mobile Retailers* do not have permanent stands but rather roam around with their produce or temporarily install themselves at certain sites.

*Fast Food Stands* are stationary street food vendors that sell ready made food. This survey concentrated only on stands selling fried rice, plain rice, *jollof* rice, *waakye* rice and fried eggs as these dishes usually have a raw salad component. Traditional ‘*chop bars*’, which serve so-called *kenkey*, *fufu*, *banku* etc. were not included, as these meals do not contain raw salad greens.

## **5.2 Marketing Channels**

### **Traditional Marketing Structures**

Wholesale marketing of exotic vegetables, which are *produced in peri-urban areas*, takes place at certain distribution points on specific days during the week. In Kumasi, for example, traders from the city and distant traders from Accra, Cape Coast, Obuasi and Takoradi-Sekondi come for business. The presence of traders from outside Kumasi can influence market prices as they usually make better offers (Cornish and Aidoo 2000). Urban and growing numbers of peri-urban farmers who are not selling to traders on farm, send their produce to various distribution points relatively early in the morning (normally by 5.30 am), where wholesalers, retailers and hawkers converge to purchase the vegetables. In addition to the main markets there are other small sale points located at strategic places within the city.

Once the local market has been satisfied and the nonlocal traders are gone, the market for exotic vegetables on any other day is small and prices are highly erratic (Cornish et al. 2001). However a significant proportion of the exotic vegetables *produced in the city* is sold at the farm gate, i.e. directly to wholesalers or retailers who harvest the (best) crops themselves.

While many agriculture sectors in Ghana are being financed either by the government or external aid, urban farmers specialized in market production can only rely on self-financing (usually to start the business) or market women who can provide credit for the purchase of inputs (especially seeds and chemicals). These women can be intermediaries, wholesalers or actual market sellers. They visit the urban farms and reserve beds of vegetables in advance, thus financing the venture. The contract is oral. The price per bed depends on the season, crop and the size of the bed (approximately USD1.4 to 3.6 per bed) and farmers are not allowed to sell the vegetable to any other person. The total amount of money eventually received may differ from the agreed figure as demand and supply might have changed during the growing period, but seldom to the advantage of the (male) farmers. Thus farmers usually complain about this dependency on the traders (see chapter 3).

When interviewed, vegetable wholesalers in Kumasi stated categorically that they preferred going to the farms within the city to buy fresh vegetables without having to pay intermediaries or transportation costs. This strategy is supported by the lack of cold transport and storage capacity. If the type and quantity traders need cannot be acquired on urban farms, the rest is bought in wholesale markets or other distribution points (see Figure 4.2).

Common challenges of the marketing system are:

- Limited transparency about price information;
- Farmers' associations not strong enough to lobby with traders;
- Lack of safe water and hygiene in markets for handling of produce.

### **Alternative Marketing Strategies**

There are only a few examples of (male) urban farmers who escaped from their dependency on market women. Danso and Drechsel (2003) reported the case of a small group of about three to five farmers within the La area in Accra who farm around a wastewater treatment pond. In 2003 two senior farmers managed the group: one supervised crop production, while the other tried to market the vegetables. The junior members of the group were a mix of laborers or apprentices in charge of vegetable bed preparation, cultivation, watering of crops, spraying of pesticides and harvesting of produce. The 'marketing manager', who is still today

(2014) at the site, was responsible for input supply and marketing of the produce and all the necessary farming information concerning production techniques and marketing strategies. He had a long history in trading of nonagricultural commodities from Nigeria to Ghana, but had never worked as a farmer before he started cultivation in the La area.

At peak production, each of the junior farmers was supposed to have up to 100 beds under cultivation. According to the marketing manager, their cropping pattern depends entirely on the demand (price) for a particular product at a particular time. He studied the market in order to know when to produce what to meet demand peaks and used the following commodity chart at the time of interview:

<b>Main crop</b>	<b>Cropping period</b>
Lettuce	March to April
Cabbage	April to June
Sweet pepper	August to November
Spring onions	September to December

Source: Emmanuel Opare, personal communication.

As many vegetables are grown in short rotation (e.g. lettuce can be cultivated nine to 11 times a year) flexibility is crucial, and the main crop is accompanied by others.

Marketing of the vegetables was carried-out in two ways: a greater portion of the produce will be sent to certain vegetable markets in Accra while the remainder is sold on the farm. During high demand periods, the marketing manager purchases from other producers at different sites in order to improve his profits but also to provide sufficient produce to meet demand. In this way he is partially taking over the function of a wholesaler.

The leaders paid themselves at the time of the interview a monthly wage of USD57 each and USD29 each to the other five members leaving a quarterly net profit of USD286. This amount was used to buy the necessary input for the next crop. In addition, the farmers managed to have a special budget, which was used only when there was loss in production or a member of the group had a problem (family, health, funeral, etc.) (Danso and Drechsel 2003).

### 5.3 Quantifying Food Flows

The analysis of the interviews with lettuce farmers, dealers and their customers allowed mapping of the information in flow charts (Figures 5.1 and 5.2). The charts visualize the flow from the sources of lettuce (top), through its distribution pathways (center) to the target groups who finally buy the lettuce on the market (bottom).

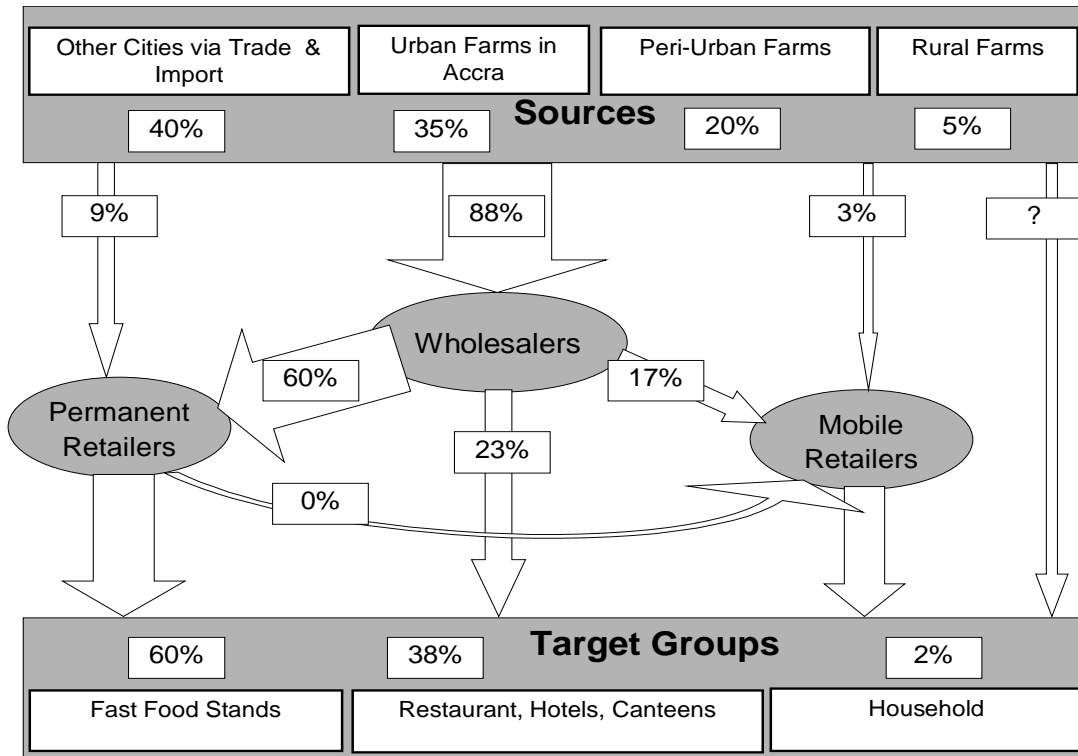


FIGURE 5.1. Flow chart of lettuce distribution in Accra (Henseler et al. 2005).

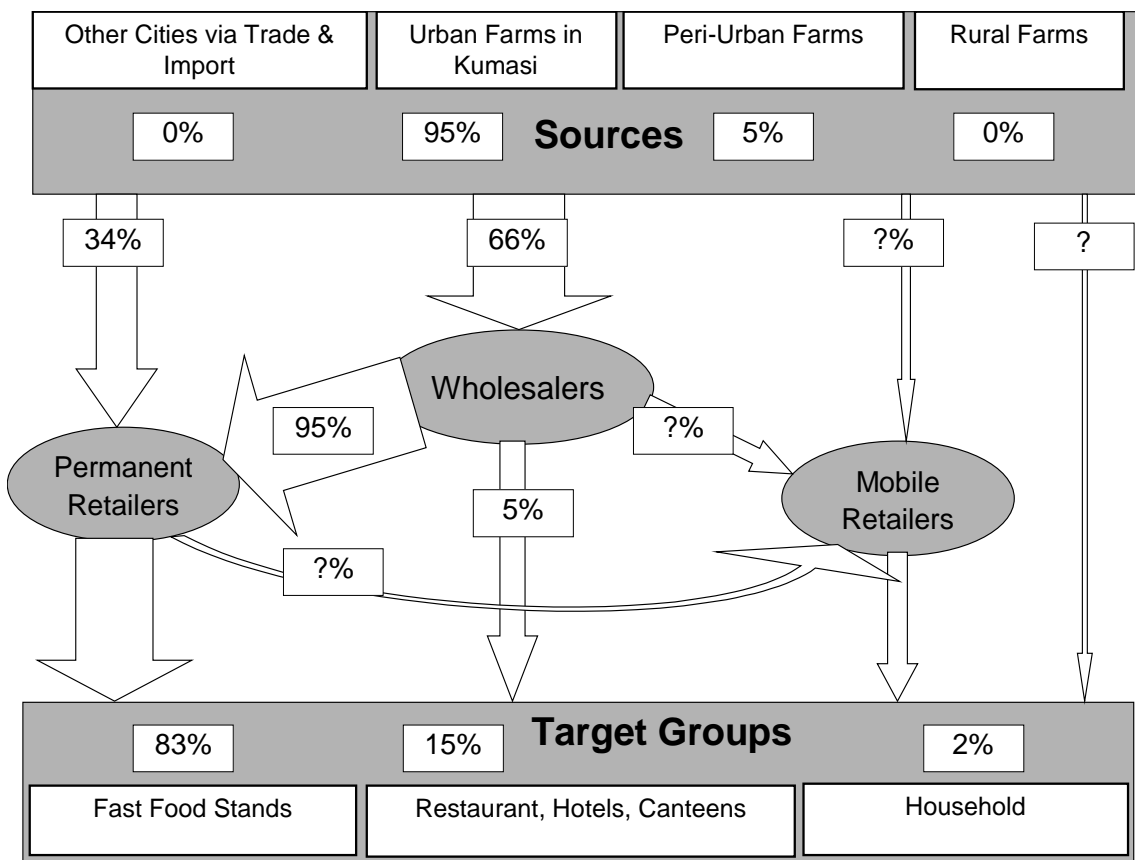


FIGURE 5.2. Flow chart of lettuce distribution in Kumasi (Henseler et al. 2005).

### National Trade and Import of Lettuce

The major sources of lettuce in Accra are urban farms in Accra and other cities (Figures 5.1 and 5.2). *Trade and Import* means in most cases lettuce harvested at farms from urban Kumasi. In a few cases Aburi and Koforidua in Ghana, and Lomé in Togo were mentioned as sources. A large fraction of the lettuce coming from these cities is organized by a small group of seven to 10 female wholesalers. They bring their produce (five to 10 sacks each) in public buses (USD1.1 fee per sack in 2005) or lorries to Accra's Agboghloshie market and sell it there for USD16 to 39 (depending on the season) to other wholesalers and retailers. The Agboghloshie market therefore plays a crucial role in lettuce distribution in Accra. One of such sacks weighs on average 50 kg (wet weight). Sacks used for sales within Kumasi are smaller (average of 30 kg lettuce per sack). These sacks are sold in Kumasi for USD3 to 13, depending on the season. Some wholesalers in Kumasi bring their produce to local bus stations where they sell it to other wholesalers who transport the lettuce in lorries or buses to Accra, Takoradi/Tarkwa, Cape Coast and other cities in Ghana (Figure 5.3). Lettuce from Togo is transported with lorries that also carry other vegetables, including carrots and spring onions.

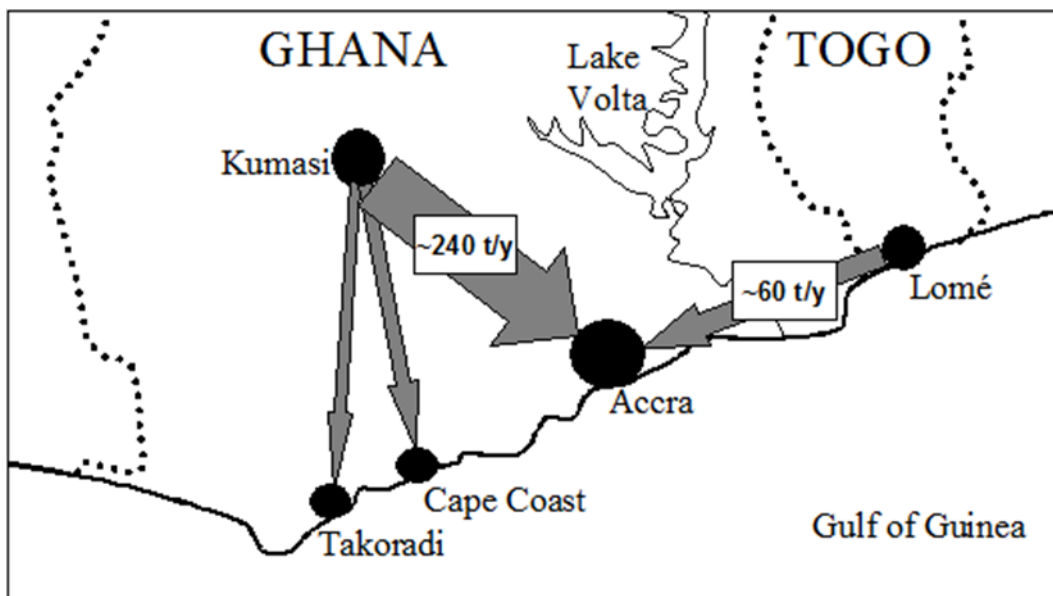


FIGURE 5.3. Import and national trade of lettuce in Ghana.

On market days (Mondays and Thursdays), approx. 50 sacks are brought to Agboghloshie market, mostly from other cities. On Tuesdays, Fridays and Saturdays, less lettuce (approximately five sacks) arrives, whereas on Wednesdays and Sundays, the local supply is

allowed to dominate the market and hardly any lettuce is brought to Agbogbloshie from other cities. Based on these numbers, it was estimated that in 2005 a total of over 300 t of lettuce per year is brought to Agbogbloshie market from these sources. There are probably other smaller markets in Accra for lettuce wholesale.

#### **Lettuce from Urban and Peri-urban Farms**

In Kumasi, 95% of the lettuce came from urban farms. In Accra 35% came from urban sources within Accra, whereas a reasonable amount (approximately 20% of total lettuce on the market) also came from peri-urban farms. Rural farms obviously contribute very little to lettuce supply in the two cities, probably due to its easily perishable nature. As the lettuce brought from other cities has its origin mostly in urban farms, it is assumed that this source ('irrigated urban agriculture') accounts for about 70% (in Accra) and 95% (in Kumasi) of the total lettuce sold in the cities' markets.

The importance of the different sources of lettuce certainly varies during different seasons. During the major dry season in Accra (November to April), more lettuce is brought from other cities. The shares of the different external sources (i.e. Kumasi and Lomé) again depend on the climatic conditions in those areas. The present survey was conducted when Accra had dry weather, whereas Kumasi was already in its rainy season, which could explain the large share of externally-grown lettuce on Accra's market. The situation during other periods needs to be assessed in a repeat survey in different seasons.

#### **Lettuce Distribution Pathways**

In both investigated cities, the major distribution pathway is from farm gate to wholesalers, from wholesalers to permanent retailers and from retailers to the final target groups (Figures 5.1 and 5.2). Based on the information gathered on the markets, an estimation of the number of lettuce dealers in the two cities was made. Assuming there are seven to eight central and 43 neighborhood markets in Accra (modified from De Lardemelle 1996), a total number of 40 wholesalers and 400 permanent retailers was calculated (excluding *Independent Vegetable Sellers*). Due to the outstanding importance of the Agbogbloshie Market in vegetable trade, this market was considered as a separate type of central market. For Kumasi, based on the three larger and 18 neighborhood markets, about 20 wholesalers and 160 permanent retailers were estimated. In Kumasi, hardly any *Independent Vegetable Sellers* were found.



The importance of mobile retailers is uncertain and difficult to determine, as they are hard to spot. In Accra, 21 of them were found during this survey, whereas in Kumasi no mobile retailers were spotted at all.

### **Total Amount of Lettuce Traded in Accra Compared to Kumasi**

The total amount of lettuce handled and purchased in the two cities in 2005 was extrapolated based on amounts, the stratification of traders and number of traders. An alternative assessment was based on areas and production figures.

The total lettuce production during the dry season in urban and peri-urban Accra ranges between 900 and 1,000 t year<sup>-1</sup>. Another 300 t year<sup>-1</sup> are added from other cities totalling approximately 1,250 t of lettuce per year purchased and consumed in Accra.

For Kumasi, this can be calculated on the basis of cultivation area and information on productivity that about 1,000 t of lettuce are produced per year. The market turnover was estimated at 850 t year<sup>-1</sup>. As large quantities of lettuce produced on Kumasi's urban farms are transported to Accra and other cities without ever going to Kumasi markets, this difference seems to be justified. Further, it agrees with the figure calculated by Leitzinger (2000), who estimated total lettuce consumption of 615 t year<sup>-1</sup> in Kumasi. His survey was based on interviews at the household level. It can be confidently expressed that nearly all lettuce actually consumed in Kumasi is also produced there.

### **5.4 Customers and Consumers**

The largest clients of the lettuce marketing chain are the **fast food sellers**, buying 60% of the total lettuce in Accra and 83% of the lettuce in Kumasi. Restaurants, hotels and canteens buy 38% of the total lettuce traded in Accra and 15% in Kumasi. Private households in Accra and Kumasi rarely purchase lettuce, constituting only 2% of the total lettuce sold on the assessed markets. This reflects the fact that lettuce is not part of the traditional Ghanaian diet. It is certainly possible that especially upper class households rather buy lettuce from *independent vegetable dealers* or from *supermarkets*, which were not covered in this present survey. However, there are only very few supermarkets (all in Accra) that sell fresh vegetables. A rapid assessment in two typical (upper class) suburbs showed that the share of households would still remain in the 2 to 4% limit when compared with the quantities bought by fast food sellers, canteens and restaurants.

### Fast Food Stands

Almost all fast food stands purchase their vegetables from markets, i.e. not at the farm gate. In fast food stands, lettuce is normally mixed with other vegetables like cabbage, carrots and onions, with cabbage and carrots also mostly coming from urban farms. The content of lettuce in the offered meals varies. Most fast food stands serve lettuce as a side dish along with fried rice and chicken (check-check), plain rice, *waakye* rice or with fried eggs; in few cases also with *jollof* rice or bread.

Sizes and appearances of the stands vary. Most commonly, they consist of a square-shaped wooden box with a small opening in the front to sell the dishes. Other stands simply have a table and a few pots or thermo-boxes for the food. The (home) ready-made salad is usually stored in plastic plates and sometimes covered with foil.

Dr. P. Johnson of Ghana's Food Research Institute (NRI/DFID/FRI 2000) estimates from field surveys that there are approximately 15,000 street food vendors in Accra. According to unpublished Accra Metropolitan Assembly (AMA) statistics gathered from different suburbs in 2008, about one-third of the registered vendors sell food known for its salad (lettuce and/or cabbage) supplement mostly from urban agriculture. A survey among 90 sellers from this group showed in 2008 that on average 50 units per fast food seller are sold with a salad component per day. This gives a total of about 250,000 units or fast food consumers; but this is certainly a rough estimate. About 60% (or 150,000 meals) of these units contain lettuce, the others only cabbage and other vegetables.

We also estimated the number of fast food consumers by considering the total amount of lettuce traded on Accra's markets (950 t year<sup>-1</sup>), and extracting the fraction that goes to fast food stands (60%) and dividing it by the average weight of the lettuce in one fast food dish (12 g); thus about 130,000 fast food meals with lettuce are sold per day. Combining both assessments, it seems that about 130,000 to 150,000 units of lettuce are served per day. Under additional consideration of cabbage and spring onions, it can be assumed that in Accra every day, probably more than 200,000 people consume uncooked vegetables outside their household. If we consider also canteens and restaurants another 80,000 beneficiaries from urban agriculture are possible. However, this large group also comprises the part of Accra's population at risk of food contamination (see chapter 9).

Although sellers claim to wash their vegetables with tap water, the washing methods and procedures described by them are in most cases insufficient to clean the lettuce properly according to a laboratory test by IWMI (Amoah, unpublished). It is therefore not surprising that salad from street food vendors was found to be contaminated with pathogens (Mensah et

al. 2002). A study conducted in Kumasi (Olsen 2006) showed, however, that street food vendors are convinced that they have eliminated risks via their washing practices. For health campaigns to be effective it is important to target these beliefs of risk-control and correct the misunderstanding about presumed safe practices related to washing of lettuce, safe food temperatures etc.

### **Consumers**

Street food containing lettuce is available in the areas of all income groups, with relatively more frequent lettuce supplement in low-income areas. Customers are mostly men (70%) who buy three to four times a week. Like the typical urban dweller, most live in low-class (50%) and middle-class (approximately 38%) areas, and often work in the small-scale private sector, but they can also be entrepreneurs or students. Some of the fast food with lettuce supplement belongs to the cheapest food available in town attracting the poor and their dependents, as noted by Essamuah and Tonah (2004). Consumers translate their general risk awareness into decisions by selecting food vendors they have personal trust in through the physical appearance of their stand and food.

### **5.5 Conclusions**

The survey has confirmed that most of the lettuce coming to urban markets has its origin in urban farms, many of which only have access to contaminated water for irrigation. While there should be the awareness of the potential health risks to consumers, it is also important to realize the important role of this new and growing economy to the city's food supply. In Accra, at least 200,000 people benefit every day from vegetables produced in urban agriculture. Both benefits and risks should therefore be taken into account when intervention strategies are discussed.

It has been shown that although more direct pathways exist, most lettuce distribution from the farm gate to customers runs through the urban markets. Further, this survey has identified fast food sellers as the major customer group of the lettuce market. Raw salads are a typical modern street food and not common in traditional households where vegetables are eaten cooked in stews. The situation is different in Ghana's neighboring countries which were formerly French colonies and where green salads were introduced into the normal diet of different income groups and green salads are also served at home (Amoah et al. 2007ab).

In order to reduce consumer health risk resulting from eating contaminated lettuce, fast food sellers should be targeted by health campaigns. Also, restaurants and canteens, which sell a reasonable fraction of the total amount of lettuce produced in the two cities, should be included in such programs. Although they often have better infrastructure for hygienic preparation of vegetables eaten raw than dealers in markets or fast food sellers, this also depends on the washing method in order to ensure that the lettuce is thoroughly clean of bacterial load. As most restaurants and canteens are registered, they should be easier to access and control than street vendors.

Vegetable dealers and street food vendors could be approached through the activities of extension agents, including units from the Ministry of Food and Agriculture (MoFA), AMA and other government bodies. MoFA programs directed at vegetable sellers and market infrastructure have already been launched and are ongoing. Different existing programs should be coordinated and focus on the health risk of vegetables eaten raw. MoFA's extension services should also be involved in health implementation activities directed at farmers and street food sellers.

A good entry point for intervention programs could be found in the already existing associations. Various vegetable sellers associations and the so-called Maggi<sup>®</sup> Fast Foods Association of Ghana would be suitable networks to access the described target groups. Their organizational structures should be strengthened so that they can be used for training purposes or as a platform for information exchange with government bodies. Unfortunately, many vegetable dealers and fast food sellers are not yet members of the existing associations.

A legal framework, consisting of a set of municipal by-laws, to regulate hygiene standards in markets and food stands exists (Laryea 2002), although it is not well adapted to reality. By-law enforcement, which should be the task for example of AMA's health department, is unsatisfactory due to common lack of resources and the ignorance of dealers and sellers. As many fast food sellers are not registered and have neither permanent stands nor association membership, it is difficult to physically contact them or control their movement. A health campaign broadcast via radio, TV, and street banners, or transmitted through wholesalers could probably reach this group better as well as consumers and restaurants to increase risk awareness and if needed put pressure on vegetable dealers and fast food sellers to comply with the recommended hygiene standards. On the other hand, education and risk awareness will not be enough to change behaviour, and incentives will be needed for compliance with recommended practices, especially where control is weak (Drechsel and Karg 2013).