

2. Study sites, cropping systems and profile of farmers

Most information in this book was obtained from our field studies carried out in Ghana's three major cities of Accra, Kumasi and Tamale. Additional surveys were carried out in Cape Coast and Takoradi. This chapter gives a description of the cities in view of urban agriculture. It also shows the main cropping systems and characteristics of urban farmers involved in irrigated open-space vegetable production.

2.1. The study sites in Ghana

Ghana lies at the shore of the Gulf of Guinea in West Africa and occupies a total area of about 24 million ha. To the North, it borders Burkina Faso, Togo to the East and Ivory Coast to the West. The country is divided into ten administrative regions and six ecological zones, dominated by semi-deciduous forest and Guinea savannah (Figure 2.1).



Figure 2.1: A map showing the location of the major study cities in Ghana

The topography is predominately gently undulating with slopes less than 5%. Rainfall ranges from 600 mm/yr in the coastal zone to 2200 mm/yr in the southwestern rainforests. In most parts of the country there is one distinct rainy season and one dry season lasting longer in the Northern parts of Ghana than in the South (Quansah, 2000).

About 64% of Ghana's surface falls on the Volta Basin, but with Tamale only one of Ghana's major cities. Ghana has a population of about 19 million, with an annual growth rate of 2.7% and its population density stands at 79 persons per km², going up from 55 persons per km² in 1984. Forty four percent of the population lives in urban areas. The Greater Accra region (hosting the Capital City Accra) is the most densely populated with almost 900 persons per sq. km and the most urbanized as 88% of its almost 3 million people live in the urban areas (Ghana Statistical Service, 2002).

Agriculture is the mainstay of the Ghanaian economy. It contributes to 36% of the GDP and employs 60% of Ghana's labor force (ISSER, 2002). About 36% of Ghana's population lives below the poverty line (US\$ 1/day) (Lamprey, 2006). Poverty is substantially higher in rural areas and northern Ghana than in urban areas and southern Ghana (Ghana Statistical Service, 1999).

The three largest cities, Accra, Kumasi and Tamale, were selected for this study as they represent a cross-section through the agro-ecological zones of Ghana. Accra lies in the Greater Accra and administrative region and falls under the coastal savannah zone, Kumasi in the Ashanti Region falls under the humid forest zone while Tamale is in the Northern Region and falls under the Guinea savannah zone (Figure 2.1, Table 2.1). The following pages present brief descriptions of the three cities and their urban agricultural activities with focus on irrigated open-space farming. Some additional information is provided for Takoradi and Cape Coast.

Table 2.1: Mean annual climate data of Accra, Kumasi, Tamale

	Rainfall (mm)	Tempe- rature (°C)	Relative humidity (%)	Sunshine duration (hrs)	Wind velocity (km/day)	Potential evaporation (mm)
Accra	810	27.1	81	6.5	251	1504
Kumasi	1420	26.1	77	5.4	133	1357
Tamale	1033	28.1	61	7.3	138	1720

Source: Agodzo et al., 2003

2.2 Irrigated urban agriculture in Accra

Accra is the capital city of Ghana and covers an area of about 230 to 240 km². In its current administrative boundary, it has an estimated population of 1.66 million (Ghana Statistical Service, 2002). Accra's population growth rate is about 3.4 % annually, which is constrained by the outdated boundary of the city. The actual population growth takes place behind this boundary where the Ga and Tema districts grew between 1984 and 2000 at a rate of 6.4 and 9.2%, respectively. Including both districts, we get the functional boundary of (Mega) Accra, as the urban dwellers perceive it, with 2.7 million inhabitants (Twum-Baah, 2002). About 60 percent of Accra's population lives in informal settlements or slums in the centre of the city while the middle and upper class moves to its periphery. About 10 % of Accra's inhabitants are Moslems in an otherwise mostly Christian community.

Accra lies within the coastal-savanna zone (Figure 2.1) with low annual rainfall averaging 810 mm distributed over less than 80 days (Table 2.1). The rainfall pattern of the city is bimodal with the major season falling between March and June, and a minor rainy season around October. Mean temperatures vary from 24 °C in August to 28 °C in March. Natural drainage systems in Accra include streams, ponds and lagoons (e.g., Songo, Korle and Kpeshie). Floodwater drains and gutters are used for grey water, and often drain into the natural system, polluting heavily the lagoons and Accra's beaches.

In Accra, about 680 ha are under maize, 47 ha under vegetables and 251 ha under mixed cereal-vegetable systems (Figure 2.2; 2.3). Irrigated urban vegetable production takes place on more than seven larger sites. IWMI (unpublished) estimated on average about 100 ha under vegetable irrigation in the dry season. Some of the sites have been in use for more than 50 years (Anyane, 1963).

About 50-70 additional hectares are distributed over 80,000 tiny backyards (often just a few plantain and chicken) involving nearly 60% of Accra's houses (IWMI and RUAF, unpubl.). This figure is much higher than the one of Maxwell and Armar-Klemesu (1999) who surveyed mostly low-income and high-density suburbs.

The extent of the peri-urban area of Accra was estimated following the methodological approach described by Adam (2001) for Kumasi. Based on the results, we propose an average radius of 38 km from the city center (Figure 2.4), with more outreach along the Accra-Kumasi road, and less in-between the major roads. In this peri-urban area, farmland is increasingly converted into settlements but agriculture still plays a significant role. A major feature are large-scale pineapple plantations which support, among others, the European market.

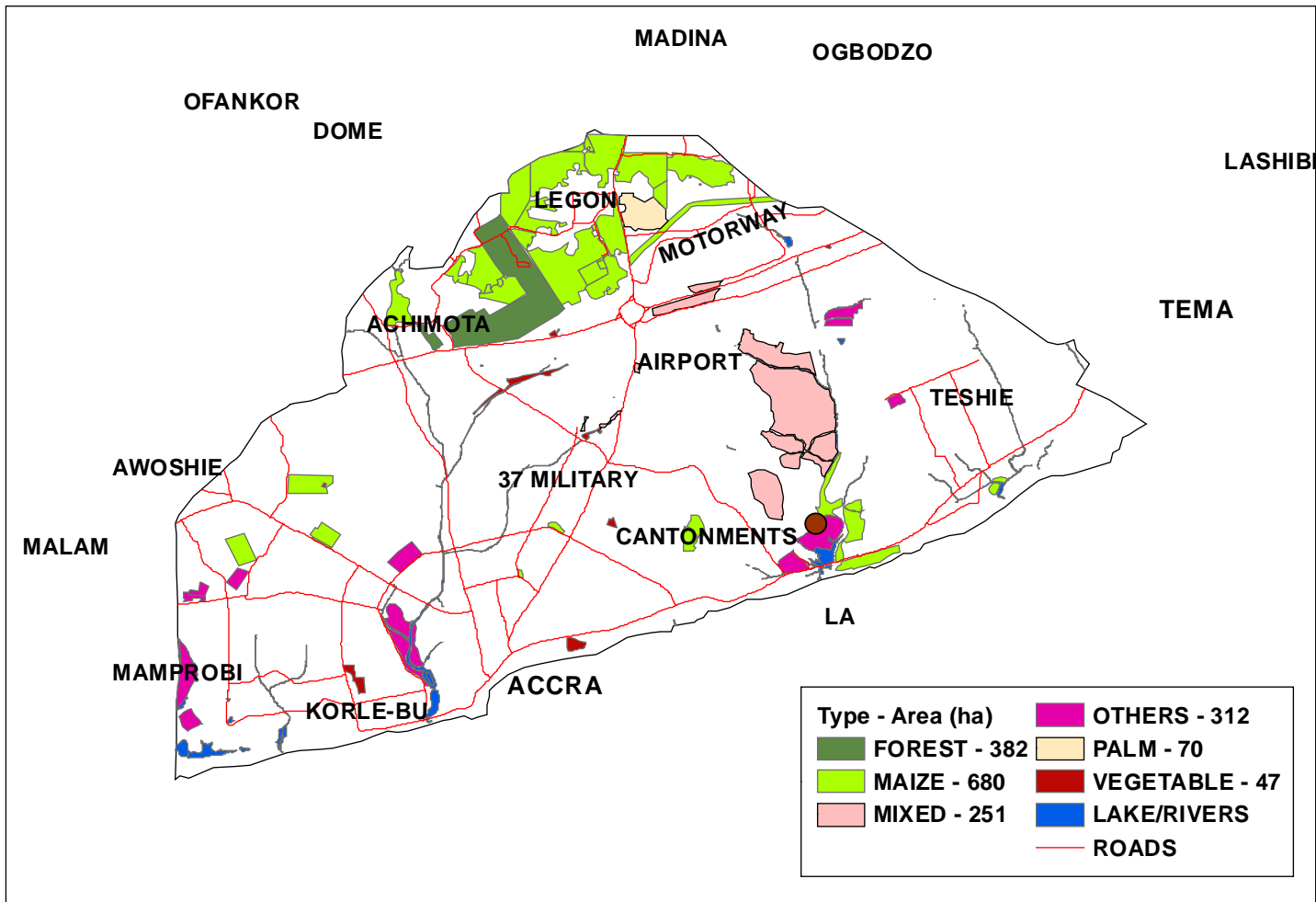
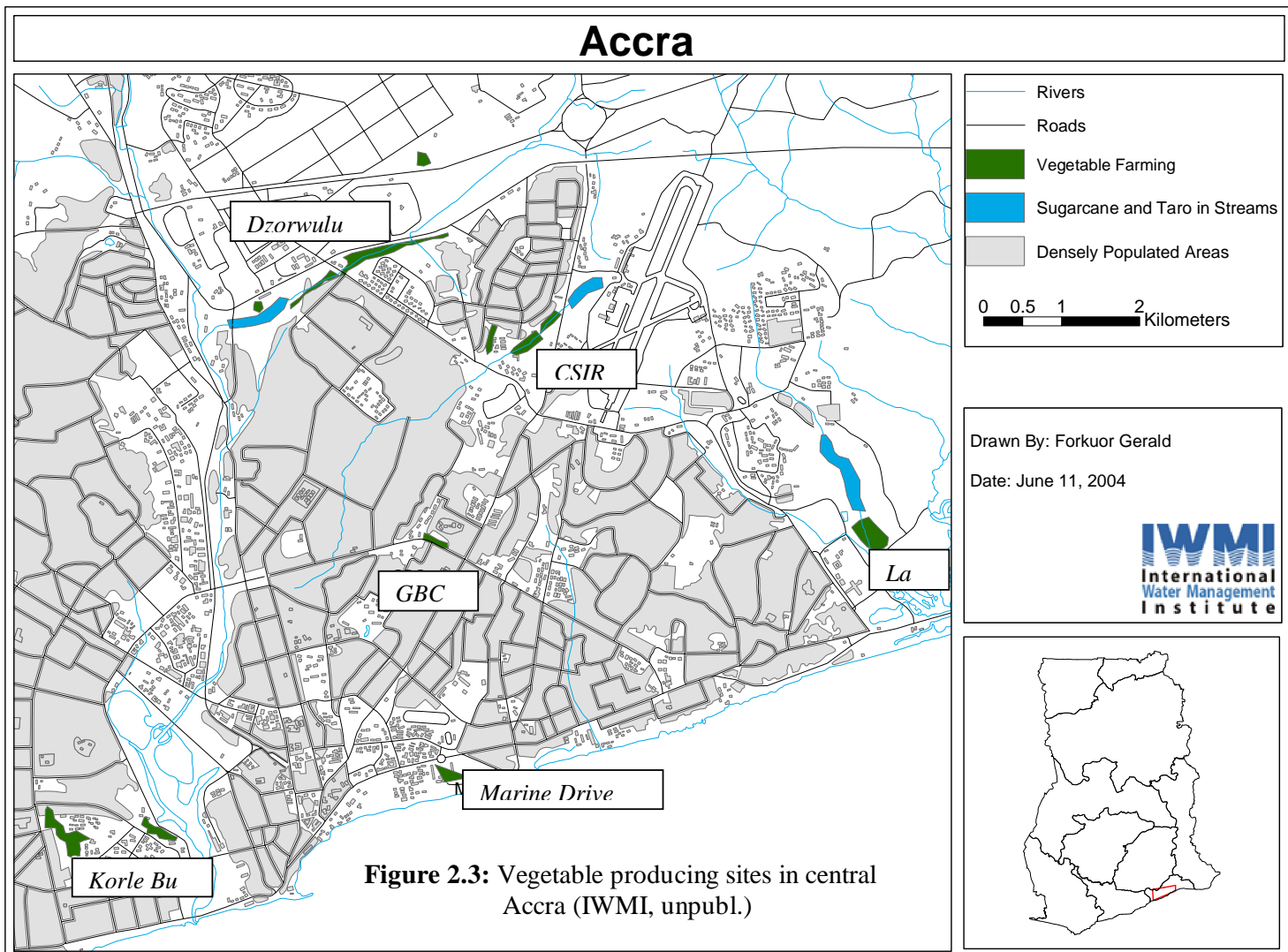


Figure 2.2: Map showing open spaces and (farming) activities on them in Accra (Kufogbe et al., 2005)



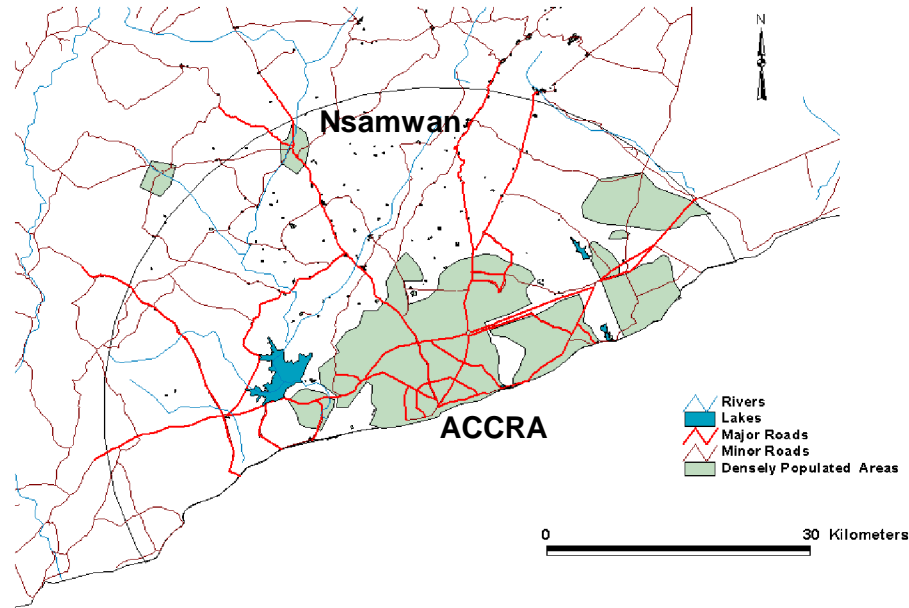


Figure 2.4: Approximate boundary between Rural and Peri-Urban Accra. The identification of the boundary followed the methodology described by Adam (2001).

Major irrigated vegetable farming sites in Accra

In Accra, there are about 800-1000 vegetable farmers of whom 60% produce exotic and 40% indigenous local or traditional vegetables. Some of the modern or exotic crops cultivated are lettuce, cabbage, spring onions, and cauliflower while the more traditional crops are tomatoes, okro, garden eggs (aubergine) and hot pepper. Plot sizes under cultivation in the city range between 0.01-0.02 ha per farmer, and max. 2.0 ha in peri-urban areas. The plot sizes of most of these sites have diminished over time because of land loss to estate development and widening of drains. This has led to reduced land reservations along the drains which used to be cultivated. An additional problem faced by farmers in relation to their farm size is tenure insecurity and low soil fertility. The locations of some of the irrigated (open-space) vegetable farming sites in the city is shown in Figures 2.2 and 2.3.

Some mayor areas are:

- **“Marine drive”** at the Independence Square: Farming in the area began before 1983 by a religious organization and was aimed at providing employment for the youth and

reclaiming the land. The land being cultivated belongs to the department of Parks and Gardens and was originally zoned by AMA as an open space in line with the beautification of the metropolis. However, lack of funds, time and logistics have motivated the Department of Parks and Gardens to enter into informal agreement with farmers and release the land to them to promote “agro-forestry with inter-cropping”. Though they have no formal farmer’s organization, farmers have a spokesman. The site currently has 98 farmers (97 male, 1 female) aged between 18 and 60 years. The potential farming area covers 3.6 ha. Water is provided through a narrow wastewater drain connecting the inner-urban area called “Ministries” and the ocean.

- **“Dzorwulu/Plant Pool”**. The site covers an area of 15 ha. It is divided into two sites by a major road with in total about 60 male farmers and 2 female farmers. One part, “Plant Pool”, next to the high-tension area of Volta River Authority (VRA) has 34 farmers, two of whom are women. The other side has 28 male farmers. A mutual agreement has been formalized with VRA for farming in the area as a way of maintaining it and to prevent any non-agricultural encroachment. River Onyasia cuts across the farming sites. The river is channeled in this part of Accra like a drain and has a similar function. Some farmers use pipe-borne water, most however water from the major drain or smaller drains channeled into shallow reservoirs (dug-outs). There are about 77 of such small ponds on this site. Some are also filled with piped water.
- **“La”**: This is the oldest and largest irrigated site in Accra with up to 400 vegetable farmers. The majority of them use wastewater from the drains of the nearby (military) “Burma” camp. About 50 farmers use pipe-borne water while five use water from a treatment pond of the only partially functioning treatment plant. It is the only site in Ghana where “treated” wastewater is used and in Accra where furrow irrigation is practiced. La is also unique as there are an equal number of men and women farming. The site has a functional farmers association and measures in total nearly 100 ha, with about 40% under irrigation, otherwise rainfed farming or fallow land.
- **“Korle-bu”**: The farming site neighbors the largest hospital in Ghana. Most farmers are junior hospital staff like watchmen, cleaners, etc. who farm to supplement their income. The cultivated land area covers about 10 ha, but is decreasing due to building activities. Several attempts have been made at forming a farmers association but without success.

The site has about 80 farmers (only one female), most of them being migrants from the northern regions of Ghana and Burkina Faso. The land belongs to the hospital and farming is done under an informal arrangement to keep the area clean and prevent non-agricultural encroachment. Water is derived from drains, which pass through the hospital compound and staff flats.

Other sites are, for example in the Airport Residential Area around the CSIR and IWMI offices or close to the Ghana Broadcasting Company (GBC).

2.3 Irrigated urban agriculture in Kumasi

Representing the middle belt of Ghana, Kumasi is the capital town of Ashanti Region and the second largest city in Ghana with a population of 1.0 million and an annual growth rate of 5.9% (Ghana Statistical Service, 2002). Daytime population – attracted by Kumasi’s large central market - is estimated at 1.5 to 2 million people. Kumasi itself has a total area of 225 km² of which about 40% is open land. Kumasi has a semi-humid tropical climate and lies in the tropical forest zone (Figure 2.1) with an annual average rainfall of 1420 mm with about 120 days on which it rains in the year. The rainfall pattern of the town is bimodal with the major season falling between March and July and a minor rainy season around September and October. The mean monthly temperature of the area ranges from 24⁰C to 27⁰C. Important streams and rivers include the Owabi River, which flows through the suburb of Anloga; Subin River, which passes through Kaasi and Ahensan; and Wiwi River, which runs through the local university campus (KNUST). Due to the hilly landscape of Kumasi, most streams run through inland valleys unsuitable for construction and of high value for urban vegetable production.

The population of Kumasi comprises mainly Ashanti and other ethnic groups, with about 20% being Moslems. At least two of three households have some kind of backyard farming. A much higher percentage has at least a few plantain crops or chickens (IWMI, unpubl.). This corresponds with the estimates of KNRMP (1999). The peri-urban area of Kumasi has a radius of approximately 40 km from the city center (Blake and Kasanga, 1997, Adam, 2001). It is characterized – among others - by a concentration of large poultry farms (the largest farm has depending on the season up to 300,000 birds). Lying in the “tuber belt” of West Africa, cassava, plantain, maize and other traditional staple food crops are dominant on upland sites, often accompanied by dry-season vegetable farming especially along streams.

Major irrigated vegetable farming sites in Kumasi

In urban Kumasi, most land where farming is done belongs to government institutions, private developers etc. There are about 41 ha in the urban area under vegetable irrigation¹ while the peri-urban area has more than 12,000 hectare under irrigated vegetable farming mostly during the dry season (Cornish and Lawrence, 2001), twice as much as under formal irrigation in the whole country. The main farming sites in the urban area are shown in Figure 2.5.

Some well-known sites are:

- § **Gyinyase/Engineering:** This is the largest urban vegetable-farming site in Kumasi (21.8 ha). It is located next to the local university (KNUST²) in an inland valley. The site has a diversity of crops, and farmers practice in part organic farming. Shallow wells are used extensively and there is a well-established farmers organization.

- § **Georgia Hotel:** This farming site is located behind Georgia Hotel and covers about 0.4 ha. It has 3 male farmers with their families cultivating spring onions, cabbage, green pepper, garden eggs and red onions. The land belongs to the hotel and the farmers are allowed to cultivate it. This is the only urban site in Ghana where farmers use sprinkler irrigation so far. Farmers use pipe borne water although the pipe connection does not appear to follow official regulations.

- § **“D-Line/Weweso”:** Covering an area of about 3.1 ha, this site is located beside the Kumasi-Accra road (next to the KNUST police station) and farmers predominantly cultivate spring onions. It has about 30 farmers organized in an association. The water source is a small stream, which receives untreated effluents from a significant number of households.

¹ Total area used for open space farming in the city (incl. tubers, cereals) is about 70 ha.

² Kwame Nkrumah University of Science and Technology

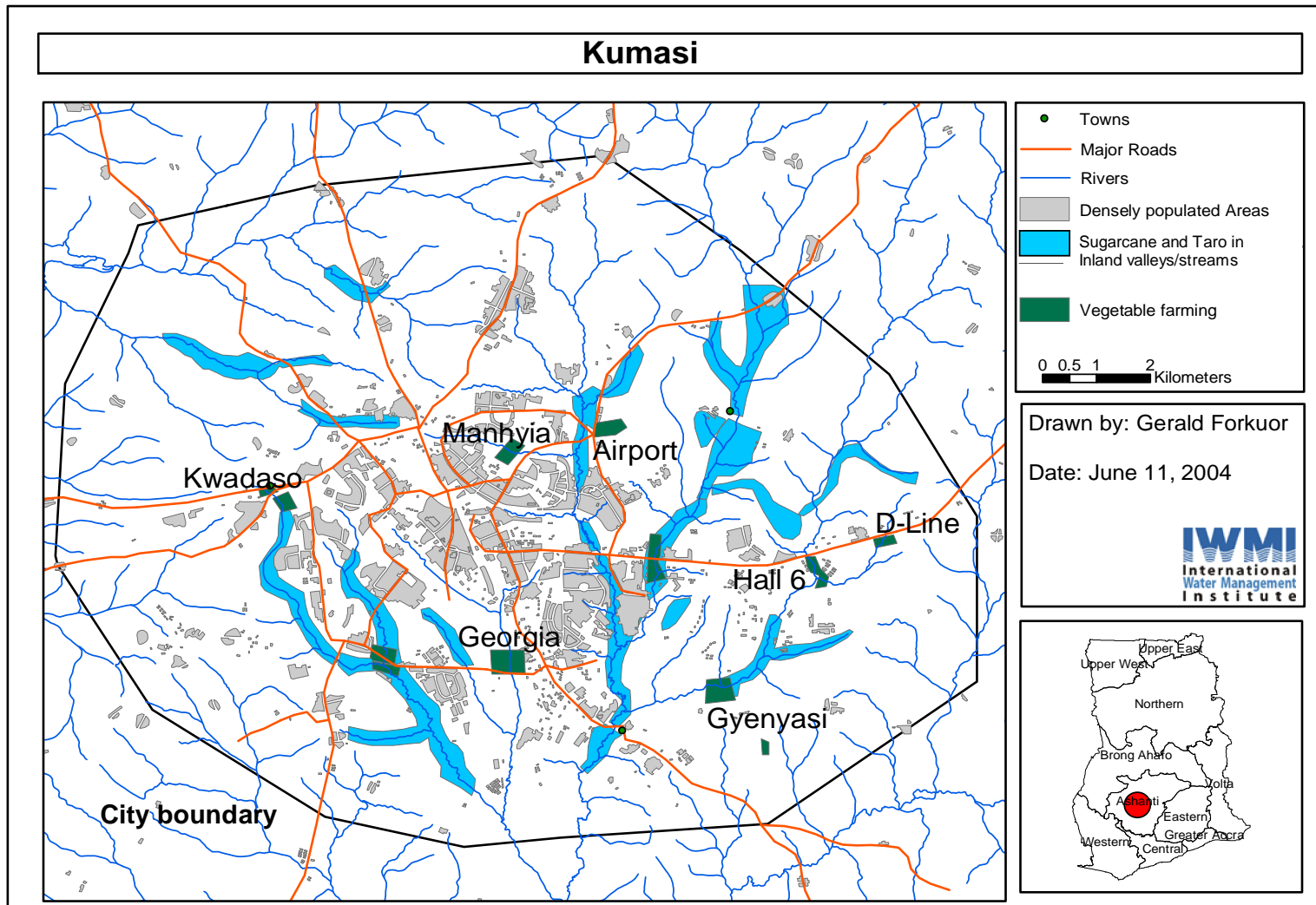


Figure 2.5: Vegetable producing sites in urban Kumasi (IWMI, unpubl.)

2.4 Irrigated urban agriculture in Tamale

Tamale is the capital of the Northern Region. The Tamale district is covering a large area of about 930 km² including the city itself and about 30 surrounding villages. Urban Tamale extends up to 10 km from the city center, while peri-urban Tamale extends in average up to 40 km along its major East-West and North-South roads, but only about 15 km in-between (IWMI, unpubl.)³.

The population of Tamale city is about 200,000 and of the whole district about 300,000 with a comparatively low growth rate of 2.5% (Ghana Statistical Service, 2002). Tamale lies in the Guinea-savanna belt (Figure 2.1) with only one rainy season from April/May to September/October, followed by a prolonged dry season. As a result the Municipality is poorly endowed with water bodies. There are few seasonal streams, with enough water during the rainy season but which dry up during the dry season. However, the average annual rainfall is higher than in Accra with about 1033 mm over about 95 days of intense rain. The dry season lasts usually from November to March. Maximum day temperatures range from 33°C – 42°C while minimum night temperatures range from 20°C – 22°C. Average relative humidity is 90% during the day and 96% in the night.

Tamale generally lags behind the municipalities in the southern part of the country in providing various services. The dominant ethnic group is Dagomba with Dagbani the widely spoken local language. About 60% of its population are Muslims. Every fourth household has a backyard with at least a few crops or poultry (IWMI, unpubl.).

Main irrigated vegetable farming sites in Tamale

As there is no main stream passing through Tamale and since the groundwater table is low, most farming is done along wastewater drains, near dams with small reservoirs, broken sewers or near dugouts. About 40% of the vegetable farmers are farming all year round. Fifty-two per cent depend on polluted water sources (Zibrilla and Salifu, 2004). Most attempts to explore groundwater in the municipality failed. The average depth of successful wells is about 60 meters.

Figure 2.6 shows some of the major farming sites in and around the city center. The total area under informal irrigation is about 33-40 ha in urban Tamale and 70 ha in the urban fringe. Apart from a few sites, farmers in the other areas cannot farm year-round due to lack of water,

³ The assessment of the area was based on the approach outlined by Adam (2001).

or because landowners (who are also farmers) take back their land in order to grow their own cereals during the rainy season (Zibrilla and Salifu, 2004; Amarchey, 2005).

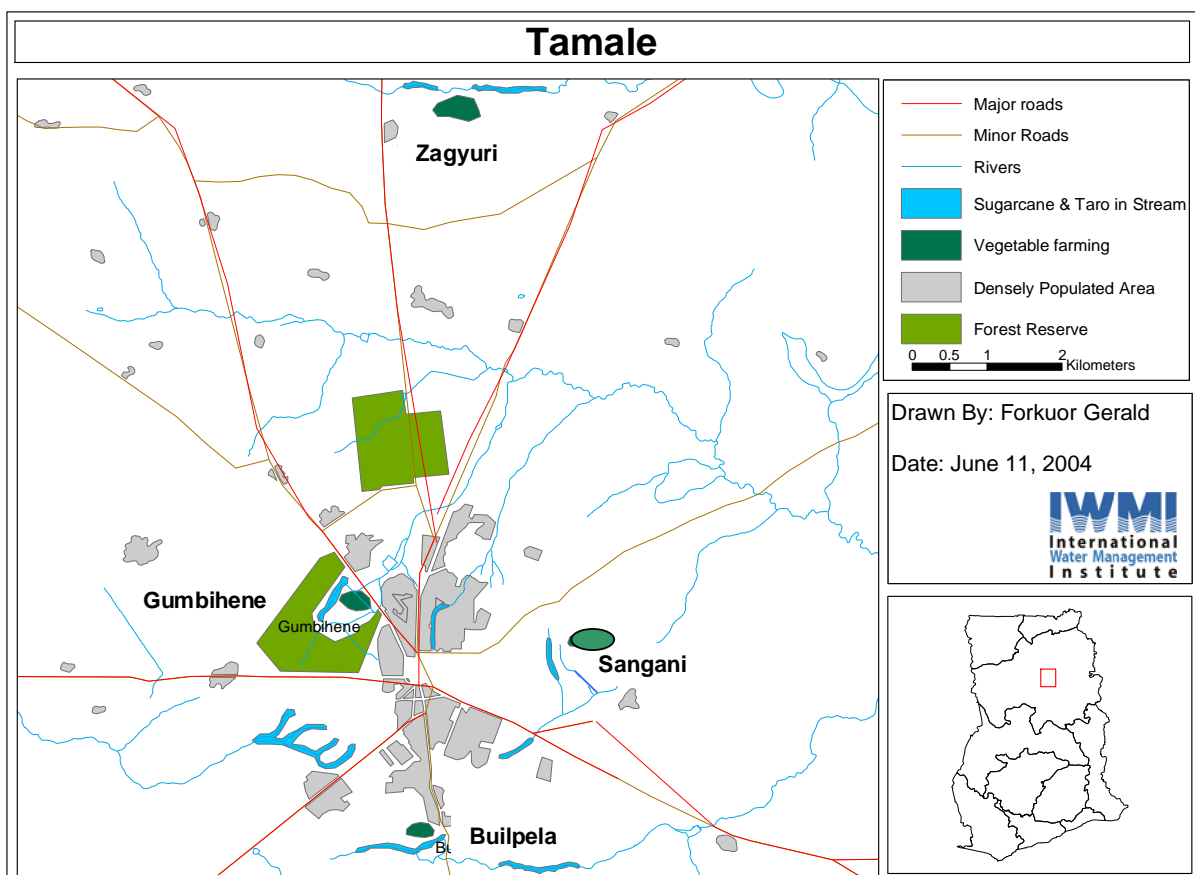


Figure 2.6: Selected urban vegetable production sites in Tamale (IWMI, unpubl.)

Examples of some well-known urban farming sites are:

- § **Builpela (Bulpeila):** this site is about 2 km from the center of Tamale. Farmers use a dam that was built in 1960 to supply water for domestic use, livestock and vegetable cultivation. The area under vegetable cultivation is about 2.6 ha. Other reports mention 6.8 ha (Zibrilla and Salifu, 2004).
- § **Sangani:** it is located 2 km North-East of Tamale town center. Farmers use a dugout well meant for domestic use. Depending on the source, the area under cultivation varies between 0.5 to 4 ha.
- § **Water Works:** named after a dam originally built to provide water for Tamale Municipality, the reservoir is now heavily polluted. Water flows through it and is used by farmers who have farms next to the stream originating from the dam. Vegetable

irrigation at Gumbihene Water Works, Gumbihene New Dam and Gumbihene Old Dam cover in total 13.5 to 22 ha.

§ **Zagyuri:** this site is near Kamina Barracks and farmers use untreated sewage from a broken sewer. The site is 8 km from the city center and covers according to different sources in total about 7-12 ha.

In Tamale, some farmer associations, NGOs, municipal authorities and research institutions form the 'Urban Agriculture Network – Northern Ghana' under facilitation of *Action Aid*. A main task of the network is advocacy for land security (Amarchey, 2005).

2.5 Irrigated urban agriculture in other cities

Cape Coast: The Central Region in general and the Cape Coast municipality in particular are known for their high tourist potential. A large number of beach resorts, hotels and guest lodges warrant a high and unceasing demand for vegetables within this area. However, our surveys showed that there is almost no irrigated vegetable farming taking place within Cape Coast except for the premises of Cape Coast University where almost a hectare of exotic vegetables is cultivated year round using pipe-borne water. The bulk (over 90 %) of the vegetables consumed in and around the Cape Coast municipality comes from as far as Togo or Kumasi and rural areas surrounding the Cape Coast District (e.g. Nsadwir).

Based on interviews and observations, reasons assigned to the insignificant level of urban vegetable production include: (1) general scarcity of non-saline surface or ground waters including perennial streams; (2) saline nature of soils, and (3) unsuitable hilly topography with flood-prone flat lands. Particularly during the dry season (October-March) when vegetable prices would allow high returns, the biophysical potential for irrigated urban agriculture is very low. Significantly fewer migrants from the North (than e.g. in Accra) and a local preference for fishing are further factors limiting the in-situ development of irrigated vegetable production.

Takoradi: In the Takoradi municipality, there exist a number of urban and peri-urban irrigated vegetable production sites where a considerable amount of vegetables is produced. These are located in areas commonly known as Air force, Airport Ridge, PTC⁴ and Kwesimintsim (near 'Obiri' lotteries). The total area covers about 3 hectares (Figure 2.7). Farm sites at both the Air force and Airport ridge are all located on lands that belong to the

⁴ Pioneer Tobacco Company©

Air force. Almost every farmer cultivates year round. Majority of farmers in Takoradi use streams as water source. Streams crossing the town are highly polluted as they function as natural drains for urban wastewater.

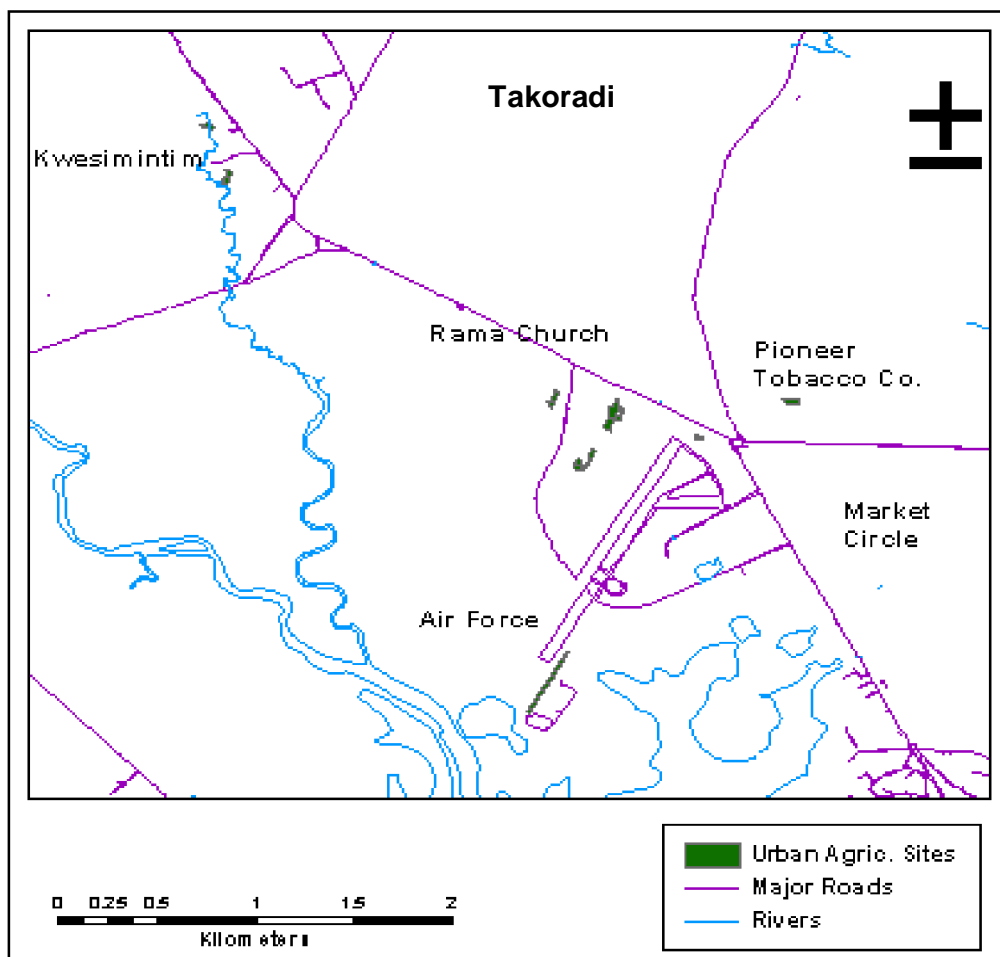


Figure 2.7: Location of some urban vegetable production sites in Takoradi (IWMI, unpubl.)

2.6 General farming characteristics

Open space vegetable farming is mainly for commercial purposes. Only farmers specialized in traditional (indigenous) vegetables consume a part of their produce. In Kumasi, vegetable farming is done all-year-round, whereas in Accra and especially in Tamale many of the vegetable sites are (also) used for maize and sorghum in the rainy season. Also in peri-urban areas, in particular around Kumasi, vegetables are mostly produced in the dry season when

prices are high. Farm sizes are increasing from urban to peri-urban areas with usually less than 0.1 ha in the cities and up to 1.5 ha in peri-urban areas. Vegetable farming is done on raised beds and an average bed covers an area of 3-8 m². Due to high labor requirements (land preparation, weeding, watering etc) farmers with bigger land areas have to hire labor or rent a water pump. Urban farmers use their own labor, although a “brother” might help. In peri-urban areas more family labor is used. Poultry manure is all-over the preferred and cheapest nutrient source, but also fertilizer is used, especially on cabbage.

Most urban farming sites are on lands belonging to government institutions and departments and private developers who have not yet started constructing. Preferably, farming is done in reserved areas along streams and other water sources. Farmers normally do not pay for such land and only have an informal agreement with the landowner. As such there is no security of tenure as they are allowed to farm only as long as the owners do not need the land. On other sites, belonging for example to the Air force authorities in Takoradi, farmers pay a fee to use the land. Such arrangements are, however, seldom enforced. In general, as you move to the peri-urban areas, land tenure becomes more secure because land is owned under customary rights and distributed according to traditional regulations (Flynn-Dapaah, 2002). One exception in the urban context is the site of La, Accra. The customary owners of land are the members of the La stool, one of the Ga chieftaincies. Non-indigenous farmers who want to farm in the area have to enter into some kind of agreement with customary owners by paying rent (e.g. US\$ 4 per ha/season) or agree on sharecropping. With the existence of inheritance land tenure arrangement, a piece of land continues to remain in a family for a long period of time until the land is disposed off by the family. Nevertheless, parts of the La land has been cultivated for more than 100 years. For a more detailed account on land tenure and rights in and near Accra, see Flynn-Dapaah (2002) and Obuobie et al. (2003).

More than 15 types of vegetables are cultivated in the study areas. Table 2.2 shows that the most commonly grown urban vegetables are also the most perishable (leafy) ones, which have to be produced in market proximity as long as cold transport is lacking. These are often “exotic” (non-traditional) vegetables, which reflect imported diets and are consumed raw in salads, such as lettuce, spring onions, and cabbage. In peri-urban areas, on the other hand, more traditional diet vegetables like ayoyos (*Corchorus sp*) and alefi (*Amaranths*) or less perishable (fruity) vegetables like garden eggs and tomatoes are grown. Another noticeable feature is the specialization that sometimes occurs in farming sites. For instance, farmers in

D-line in urban Kumasi predominantly plant spring onions while their counterparts at Gyinyase plant lettuce. It is summarised that availability of water is one of the factors influencing such a decision and the nature of the soil as well. Specialization is another reason; in some villages around Kumasi, farmers prefer certain vegetables, while in the neighbouring villages other vegetables are grown. In Tamale, quite a number of local vegetables are cultivated in the urban areas, a response to a less multi-cultural demand.

Table 2.2: Common crops and crop combinations in urban Kumasi (IWMI, unpubl.)

Main crops		Associated crops	
Crops	Harvest/year	Crop	Harvest/year
Lettuce	9-10	Cabbage	1
Spring onions	6	Cabbage	2
Cabbage/cauliflower	3-4	None	None
Carrots ¹	6	Spring onions	2
Green pepper ²	6	Lettuce	6
Radish: Red	8	Green pepper	2
Radish: White	5		
Ayoyo, Alefi	6	Red onions	3

¹ Rotation and intercropping pattern depends on the season, rotation is the most common.

² Mostly intercropping

Table 2.3 shows the most common peri-urban crop combinations within a given year. Crop rotation is carried out depending on the demand for a particular product and as a strategy to control pests and diseases.

Though vegetable farming continues in the urban areas in the rainy seasons, in many farming sites, farmers also cultivate some maize, yam etc., alongside, which are used for subsistence. In marshy areas the parallel crops are sugarcane and cocoyam. During the rainy season, only a minority of **peri**-urban farmers shifts to year-round vegetable farming (e.g. tomatoes in the Akumadan area). There are three reasons for this: the importance of maize and cassava for home consumption (mentioned by 52% of the farmers interviewed); the lower price of vegetables in the rainy season (40%); and the increased risk of pest attacks (8%).

Table 2.3: Common crop combinations in peri-urban Kumasi.

Main crop	Subsidiary crops in rotation*
Cabbage	Lettuce/spring onion, cabbage, green pepper/sweet pepper
Lettuce	Cabbage/spring onion
Maize	Cassava, plantain/cocoyam/cassava
Okro (okra)	Tomato, cocoyam, cassava, garden eggs
Spring onion	Pepper, garden eggs, okro
Pepper	Cabbage, tomato, garden eggs
Tomato	Cabbage, pepper, okro
Plantain	Cocoyam, cassava, maize
Oil palm	Cassava, cocoyam, maize

*In order of importance in the rotation

Source: Gyiele (2002a)

2.7 Profile of urban vegetable farmers

Most urban open-space farmers in Ghana have rural backgrounds and had some experience in farming before coming to the urban areas. They come to town mainly to seek good employment opportunities, to trade, or to attend school for higher education. They take up urban agriculture to earn enough money to open the way for these principal targets. With low investments and returns possibly after a few weeks, many farmers have realized that urban vegetable production is a profitable venture. A study conducted by Obosu-Mensah (1999) in Accra revealed that out of 200 urban farmers interviewed, 66% had no intention to stop farming even if they were offered regular salaried employment. This was because open-space urban agriculture could bring in very good earnings in spite of the risks of crop loss etc. Those who expressed that they would stop one day, mentioned sickness and loss of land as major factors that could compel them to stop farming.

Table 2.4 shows the religious status of farmers interviewed in comparison with the regional data from the population census carried out in 2000. We see that mostly Muslims are found in open-space farming. This may be explained by the fact that mostly Muslims from the Northern part of the country migrate towards the cities in search of job opportunities. Urban agriculture might be their first choice but could also be the second if they do not succeed otherwise because of low levels of education.

Table 2.4: Religious status of urban farmers compare to the regional average

Religious affiliation	Northern Region (%)	Farmers in Tamale (%)	Greater Accra Region (%)	Farmers in Accra (%)	Ashanti Region (%)	Farmers in Kumasi (%)
Christians	19	13	83	30	78	61
Moslems	56	86	10	67	13	37
Others	25	1	7	3	9	2

Sources: IWMI, unpubl.

A random sample of farmers from the three cities showed that 50-80% were between 20 and 40 years of age (Table 2.5). This group represents those in the working class who migrate to cities to look for jobs and end up in farming to either supplement their income or because they failed to get paid jobs. Accra had the highest percentage of farmers over 40 years.

Table 2.5: Age distribution of farmers in the cities

Age	Kumasi		Accra		Tamale	
	Frequency	%	Frequency	%	Frequency	%
Below 20	4	4	7	5	1	1
20-30	33	33	45	33	19	25
31-40	35	35	30	21	41	54
Above 40	28	28	56	41	15	20

Sources: IWMI, unpubl.

Gender and household size. Open space irrigated urban vegetable farming in Ghana is predominantly male dominated (Chapter 3). On the average, only less than 10% of all urban open-space farmers were women and many of them cultivate indigenous vegetables. This concurs with earlier findings (e.g. Obosu-Mensah 1999, Gbireh 1999, Armar-Klemesu and Maxwell, 1998). In all the cities, more than a half of the farmers are married and occasionally involve their wives in the marketing of produce. In contrast to farming, women dominate vegetable marketing, especially retail. Chapter 3 will have a special look at gender issues.

Table 2.6 shows the household sizes of the farmers in the three cities. While Accra and Tamale showed a wide distribution in household size, Kumasi was exceptional in that farmers were either single migrants or had households of up to 5 members. Very few farm households exceeded this. In all, the mean household size was 2 for Kumasi and 4 for Accra and Tamale against the average figures of 2000 population census of 5.1, 4.5 and 6.1 for Kumasi, Accra and Tamale respectively. The largest households had 8, 16 and 18 members in Kumasi, Tamale and Accra respectively.

Table 2.6: Household size of farmers in the three cities

Family size	Kumasi		Accra		Tamale	
	Frequency	%	Frequency	%	Frequency	%
Alone	35	35	28	20	11	15
1-5	59	59	67	49	38	50
6-10	6	6	36	26	23	30
Above 10	0	0	7	5	4	5
Total	100	100	138	100	76	100

Source: IWMI, unpubl.

Educational level. Though there is a wide variation in literacy levels, many urban open-space farmers are illiterate. Kumasi and Accra show higher levels of literacy among farmers compared to Tamale (Table 2.7) where most farmers are illiterate. However, the illiteracy in Tamale is not restricted to urban farmers but a general issue in Northern Ghana.

Table 2.7: Educational status of farmers

Educational attainment	Northern Region %		Greater Accra Region %		Ashanti Region %	
	Regional	Tamale	Regional	Accra	Regional	Kumasi
Illiterate	79	79	29	48	43	35
Primary	15	17	45	4	45	51
Secondary	4	3	18	44	8	12
Tertiary	2	1	8	4	4	2

Source: IWMI, unpubl.

These findings should not be extrapolated to urban agriculture in general. Backyard gardens, for example, can be found in all parts of the society.

Economic profile. Urban farming provides employment and income for a chain of beneficiaries, such as farmers, market sellers, suppliers of agricultural input, etc. and therefore contributes to the national economy, also in Ghana (Obosu-Mensah, 1999, Danso et al., 2002a, Drechsel et al., 2006a; see Chapter 4). Out of 138 farmers interviewed in Accra, about 60% totally rely on irrigated vegetable cultivation as their only source of income, while 33% do it as a supplementary source of income. In Tamale, with more seasonal vegetable production, majority of vegetable producers use it to supplement their incomes from staple crop farming. Only a minority of open-space cultivators uses urban vegetable farming as a one-off means of getting money for a later investment or as source of food (Figure 2.8). In general, farmers of exotic vegetables do not consume their own produce.

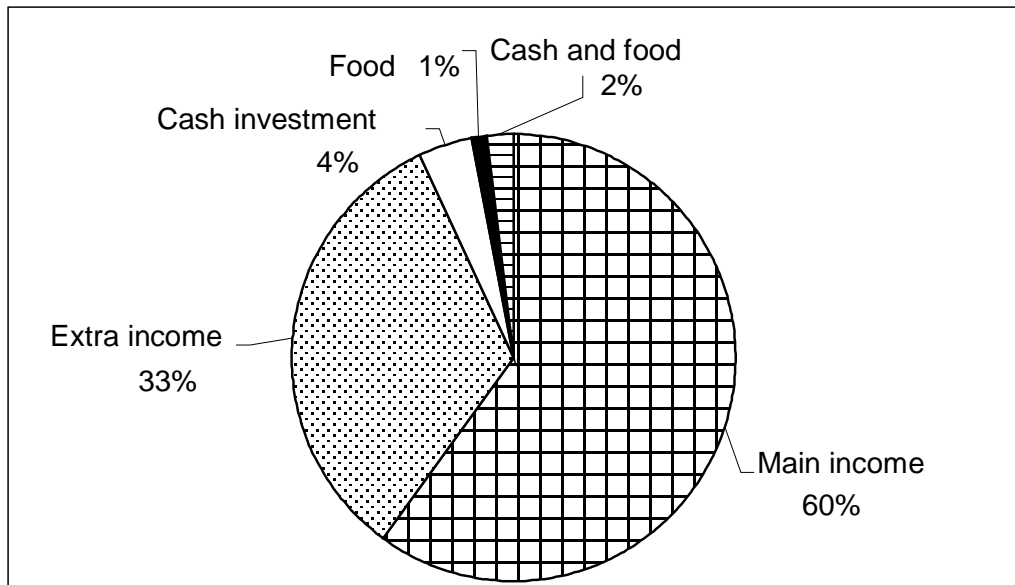


Figure 2.8: Main objectives of farmers cultivating vegetables in Urban Accra

Among those for whom farming was a secondary activity in Accra, watchmen/security guards were predominant (57%) while others were masons, painters, mechanics or cleaners. The case of Kumasi is similar to that of Accra.

In summary, we can describe the average urban vegetable farmer in Ghana as portrayed in Box 2.1.

Box 2.1: The “average” vegetable farmer in urban open spaces of Ghana.

The typical Ghanaian urban vegetable farmer cultivates exotic vegetables like cabbage, cucumber, lettuce, onion, cauliflower, and green pepper on an area of land between 0.01 and 0.12 ha. Cultivation is done year-round. The average vegetable farmer is a male and within the age group of 31-40 years.

About education, the average farmer could have either acquired a primary or secondary school education or be an illiterate, often with some education from an Arabic (language) school. The average urban farmer is religious. In Kumasi, the chances that he is a Moslem (vs. Christian) are 2 out of 5 farmers; in Accra 3 out of 5; and in Tamale, it is 4 out of 5. He is married and occasionally his wife markets his produce. In many cases however, he would have regular visits from market women who also might provide him with credit. The average vegetable farmer, if he is in Accra or Kumasi will grow vegetables as his main occupation and primary source of income. His major extra occupation, if in Accra, would be security guard job. In Tamale, cultivating vegetables will be his major occupation. He has on the average 5 dependants in Accra and Kumasi and between 6 and 10 in Tamale. Usually, his dependants are supported by income from his farm. A cousin might assist him; otherwise the farm work is not a family business.

The average urban vegetable farmer is a migrant from a rural area in Ghana and has some experience in farming before coming to the city. Normally, farming is not his main aim for coming to the city. He gets into farming some time after arriving in the city when he finds out that he is not able to favourably compete for a job in other sectors. However, once he is established in producing vegetables, it becomes a serious business and he does not want to quit even when he finds better salaried employment. He knows his extension officer but has stopped expecting any advice on his key problems like price fluctuations and marketing of produce, pest control and quality seed supply.

His main source of irrigation water is an open drain if he is in Accra or Tamale, or (polluted) surface water if he is in Kumasi or Takoradi. In all cases, he does not own the land, but he uses it for free or for an informal fee. His “informal” status and low tenure security limit his access to credit and investments in farm infrastructure. When asked about his occupational health risks through his exposure to wastewater, he does not consider it an issue, like he does not perceive his normal living conditions (without own toilet and piped water) as peculiar or unhealthy.

Source: IWMI farm survey data (2000-2005).