ACCRA: URBAN AGRICULTURE AS AN ASSET STRATEGY, SUPPLEMENTING INCOME AND DIETS

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1. Introduction

Historically, Accra was a Ga fishing village. In 1877, the capital of the then Gold Coast, as Ghana was known before its independence in 1957, was moved from the Cape Coast to Accra. Accra is located on the east coast of Ghana, almost on the Greenwich meridian, and approximately 5 degrees north of the Equator. The climate is hot and humid, with mean temperatures varying from 24°C in August to 27°C in March. Rainfall is rather low, averaging 730 mm per year and falls mostly during the months of June, July and October (Ghana-MLG 1992).

Administratively, the Greater Accra Metropolitan Area is made up of the Accra Metropolitan Area and the sub-metropolitan districts of Ablekuma, Ashiedu Keteke, Ayawaso, Kpeshie, Okaikoi and Osu Klottey, the Tema Metropolitan Area and the immediate periurban area of the Ga district. The geographic areas included in this case study are the adjacent cities of Accra and Tema and their immediate peri-urban hinterlands.

The Greater Accra area accounts for 13 percent of the total population of Ghana. The city of Accra covers an area of 17,362.4 hectares and has an estimated population of 2,500,000. Population density is on average 100 people per ha, but varies from 20 people per ha in the newly developing high income areas to as high as 400-500 people per ha in the most densely populated, low-income neighbourhoods (Ghana-MLG 1992).

Ghana's economy declined from 1965 to 1983. This resulted in a general decline in living standards. The economy grew a little after the initiation of the Economic Recovery Programme in 1983, but this did not significantly improve the living conditions of the majority of Ghanaians, as prices of food rose faster than wages.

In Accra, poverty even increased and living standards declined in contrast to a decrease of poverty levels nationwide. Concerns about this led to a study on livelihoods, food and nutrition security in the Greater Accra Metropolitan Area.

At a stakeholder's meeting preceding the study, urban agriculture was identified as an important element to be included in the study. Virtually all the material
presented in this case study has been extracted from the two reports on the overall Accra Urban Food and Nutrition Study and its component, Urban Agriculture in the Greater Accra Metropolitan Area.

2. **Urban agriculture in Accra**

Out of 559 respondents in 16 enumeration areas in the Accra Urban Food and Nutrition Study (1997), a total of 88 reported a family member being engaged in some form of agriculture; 11 reported fishing as a livelihood. Of those engaged in agriculture, 12 farmed in their home villages outside the city and therefore outside the study area. The remaining 76 households, or 13.6% of the total sample, engaged in agriculture in the immediate urban or periurban area. Of these, 19 engaged in crop production, 49 in livestock production and 8 in both. The results give a good overview about urban agriculture but, since the number of respondents was small, it is difficult to draw hard conclusions.

Staple crops like maize and cassava are the most common crops. Vegetable production ranks slightly lower, with peppers, okra and tomatoes being the most widely grown. A wide range of other crops is grown in small amounts, like beans, cabbage, lettuce, cucumbers and other vegetables; plantains, sweet potatoes, other starchy tuber crops; and fruits, including pineapple, bananas and tree crops.

By far, poultry is the most commonly kept livestock. Over 70% of those keeping livestock reported keeping chickens or ducks. Small ruminants come second, with about 20% raising either goats or sheep. Only very small numbers of swine and various micro-livestock are kept. In all cases, the number of animals per household was relatively small: the greatest number of poultry was 40. Over 90% of people kept less than 10 animals.

Relatively few households were engaged in urban agriculture. Farming ranked ninth as a primary livelihood category, but ranked second as a secondary activity, and second as a tertiary activity. Other activities in which farmers engage include skilled and unskilled labour, and petty trading. Few patterns of income-generating activities emerged from the analysis. Men combining a day-time activity like farming with a night-time job such as watchman was one of the few that did emerge. Women often combine agriculture with petty trading.

The commodity traded, however, is rarely agricultural produce, and when it is, it is even more rarely one's own - trading is usually an off-season activity.
Major vegetable growing area in Dzowulu, along power lines and adjacent to a major residential area. Construction in vicinity of power lines is prohibited (Picture Margaret Armar-Klemesu).

Typical backyard livestock keeping near the Campus of Ghana University (Picture Margaret Armar-Klemesu).
2.1 Analysis of urban farming systems

Farming, in particular the keeping of small livestock, is fairly evenly spread across income groups. Only for vegetable growers and periurban farmers is crop cultivation the main activity. Much of the farming in the city is on household property, but informal access to land is also important.

2.1.i Vegetable-growing systems

Farmer characteristics (11 farms observed)
Generally, men dominate this category of farming. Quite a number are young school leavers and school dropouts who could not find other jobs. They cut across almost all the ethnic groups in Ghana and even include people from other West African countries. The majority of the young men are part-time farmers, while almost all the older men and women are full-time farmers. Those who farm on a part-time basis do so to supplement their income. For most of the farmers, including the part-timers, vegetable growing is their main source of income. The Vegetable Growers' Association, with an estimated 600 members, represents about a quarter of all vegetable growers in the city. The association does not have a clearly defined marketing strategy for the produce of its members.

Farming practices
Vegetable farming mainly occurs along big drains and streams, the water from which is used for irrigation. In a few cases, water from water pipes is used. Vegetables are grown throughout the year. Each farmer has only a small plot of land and practises intensive crop rotation to maximise the use of land, maintain the soil fertility, and rid the soil of pests and disease. As many as four different types of crops are grown on the same piece of land in a year. Vegetable farmers prefer the use of cow dung and chicken droppings as fertiliser because they are cheap. Some farmers use agrochemicals to treat their crops for pests. Mulching is also practised.

The extensive use of water polluted by human, animal and industrial waste has caused public criticism. The critics argue that this practice makes the vegetables dangerous to human health. The farmers themselves, however, doubt whether their produce is any more contaminated than vegetables bought in the market.

Crops grown include exotic vegetables such as lettuce, cabbage, carrots, sweet pepper, French beans, beetroot and herbs, which need intensive care. The farmers do almost everything themselves, without resorting to hired labour. This explains why farmers can be found on their farms all day, and do not engage in
direct marketing. The activities involve preparing beds for planting, applying compost, frequent watering of plants, and continuous weeding. Wives and children of the farmers do not usually assist the men, on account of the distances between the farms and the homes.

*Produce and its use*
The seeds for the exotic vegetables are usually imported. Also local vegetables are grown, like okra, pepper, tomatoes and green leafy vegetables important in the Ghanaian diet. During the rainy season, some farmers also plant a few staple crops, such as maize for home consumption.

Vegetables produced are almost entirely for sale, though a few local crops and maize are for home consumption. Usually, farmers have trading women as the farmers' regular customers, who buy whole beds of vegetables even before the crops mature. This allows the farmer to plant subsequent crops quickly and avoid extra costs of delay. In some cases, these market women give capital credit to the farmers and, when the crops are ready, buy them. In other cases, market women buy vegetables on credit and pay the farmers after selling. Other customers are individuals and some foreigners who buy for domestic use. Farmers confirmed that, although individual buyers offer a better price, the market women are a more reliable source of income.

2.1.ii Customary land-rights systems

*Farmer characteristics (9 farms observed)*
All the people in this category are located in the eastern part of Accra, between Labadi, the Ghana International Trade Fair Centre, Burma Camp and Teshie; the farmers, who are mostly Ga people from La, have customary land rights. The owner of this land is the La Stool (one of the Ga chieftaincies in Accra). All those born into the clan have usufruct rights to the land. A few people rent land for farming in the area. These people either do not come from La, or belong to clans or families in La who do not own land. The chairman of the La Farmer's Association estimated that about 400-500 people are farming on La lands.

Women are more involved in farming on customary lands than in other systems. The women have very little or no education and no skills other than trading, which some of them do during the dry season. Most men have had some formal education, usually up to middle school. Most have some skills in carpentry, masonry, driving or mechanics. All the farmers live in the nearby La township and go to their farms in the morning, or after working hours and on weekends. Both men and women have access to land; however, women tend to have smaller
plots than men, which is partly due to labour constraints. Husbands do not offer any help to their wives on the farms. Men, on the other hand, have access to their wives' labour. In some cases, groups of women, mostly sisters or other relatives, farm together, using a piece of land inherited from their father or a common ancestor, though some groups borrow or rent land. Tasks on the farms are not differentiated according to gender. However, women who usually farm with their husbands are more involved in the planting and harvesting of crops and the men do the work of weeding and clearing, as well as planting, spraying and harvesting.

Farming practices
Most farmers practise monocropping, with some intercropping and use of a crop rotation. Farmers use chemical fertilisers and insecticides in considerable amounts, as extension officers have taught them farming techniques and the proper use and application of chemicals.

Cow dung and chicken droppings are also used, and the use of compost is increasing because of the high cost of chemical fertiliser together with rising doubts about its effect on the soil. Previously, the sewage-treatment plant located in the area provided a source of irrigation water for most of the farms there. However, with the breakdown of the plant, some farmers use the raw sewage as the only alternative for irrigating their farms.

Most labour is household-based, and includes both men and women. Primary tillage is usually done with a hired tractor, but this is expensive and difficult to acquire. Before ploughing by tractor, the farmer has to uproot all young trees and tree stumps on the farm. When an entire household provides labour for farming, women and children usually help during the peak periods. When women farm by themselves, they have to rely on either help from their children or on hired labour, which increases their operating costs.

Produce and its use
Produce is either sold or used for home consumption, depending on the crop. Maize and cassava are subsistence crops and mainly used for home consumption, though some are sold when there is a particularly good harvest. Cash crops include okra, watermelon, pepper, cow peas, tomatoes and sometimes maize. These are sold to wholesalers who sell them in the markets in central Accra. A few women farmers and their spouses have stalls at the market and sell directly to the public.
2.1.iii Seasonal farming

Farmer characteristics (13 farms observed)
As a norm, men engage in seasonal farming. Most of them are married and have other additional jobs. Without exception, they are migrants, mainly from northern Ghana or Sahelian countries further north. Some of the men reported assistance from their wives on the farm at certain periods (see below). Women mostly farm with their husbands. Occasionally, a widow takes over land from her late husband, and sometimes a woman will get access to some land on her own and farm by herself. Even where women are involved in farming, they are very reluctant to call themselves "farmers".

Farming practices
Seasonal farming relies entirely on rainfall. The farmers invariably use land that has been informally accessed. This type of farming is found all over the city, but predominates in the low-density areas with open spaces, such as periurban fringes and undeveloped residential, educational and industrial sites. The farmer uses his own labour almost exclusively. Extra labour is rarely employed, but in some cases, especially during planting and harvesting, wives and children assist the farmer. Farms are small and farmers live quite far away from their land, which makes it difficult for other household members to participate. Most farmers in this group own bicycles, which make the transport to their farms easier.

Produce and its use
Mainly food crops are grown, most commonly maize, but also cassava and beans are common. Crops grown for sale include tomatoes and pepper and, in a few cases, okra, groundnuts and other specialised crops. Since this type of agriculture relies on informal access to land often located far away from the household, it is unusual to grow high-value crops or to keep livestock.

Average yields are low (2-3 bags of maize/acre). Total harvests reported were in the range of 1-5 bags. For a typical household, this amount of maize was reported to be enough for three to four months, and up to six months in some cases. In only one case did a household actually produce enough staple food to last the whole year; both husband and wife were full-time farmers without other sources of income.
2.1.iv Commercial livestock

Livestock-keeper characteristics (5 farms observed)
Raising livestock commercially differs from the keeping of small ruminants and poultry by virtue of its scale and market orientation. Most of the commercial livestock keepers are men ranging between 30 and 50 years of age, the older men being more established in the business. They are married, cut across all ethnic groups and have some level of formal education. Some women also engage in commercial production. Most rely on assistance from hired labour, as the scale of operation is quite large and cannot be managed by household labour alone. The Ghana Poultry Farmers' Association exists to meet the needs of poultry farmers by providing feed at reduced prices.

Livestock-keeping practices
The main livestock kept for commercial purposes is poultry and pigs. The keeping of poultry is more prevalent in middle/high-income communities, which can afford start-up costs. Much of this activity takes place on the outskirts of the city, but some occurs within Accra, despite bylaws controlling the practice. Waste from livestock is generally disposed of at the refuse dump, though a few keepers sell refuse to crop farmers for fertiliser use. In lower-income neighbourhoods, pigs and even small ruminants are commercially raised.

2.1.v Small ruminant and poultry farming systems

Livestock-keeper characteristics (8 farms observed)
This group is by far the largest farming category within the city. The keeping of some animals in homes is a common feature in almost all communities in the city, but especially in low-income migrant communities. The survey showed that only 8-9% of low-income migrant households do not keep such livestock. Both men and women are involved in the keeping of small livestock, most also have other forms of employment, and most are married. The majority of those keeping small livestock and poultry are women, assisted by their children. Their husbands do not usually contribute to the upkeep and care of the animals. When men are the owners, they have access to their wives' and children's labour, which is not the case for women who keep livestock.

Farming practices
The environment in which the animals are kept varies from one community to another. In high-density, low-income communities, poultry are allowed to move freely and share the same limited compounds with other household activities. Goats and sheep are confined for fear of theft. Plantain and cassava peels and
leftovers from “chop bars” are collected and fed to these animals. In high- or middle-income low-density neighbourhoods, however, where fewer households keep animals, they are penned and given specially prepared feed, and obtain the services of veterinary officers. Labour is provided by household members; this includes the feeding and cleaning of pens and compounds. Hired labour is not used.

*Produce and its use*

The livestock kept includes chickens, goats, sheep and ducks. In some cases, livestock may provide a regular source of income or a source of supplementary food for the household. In the majority of cases, however, small livestock represent a kind of asset strategy. Young livestock (especially chickens) is bought cheaply and kept at low cost, since these animals scavenge for much of their upkeep. The animals can be readily sold for cash if a crisis arises. Sometimes a crisis may be a simple shortfall in cash to buy food, but more commonly it involves major expenses such as school fees, a medical emergency or a funeral.

2.1.vi Backyard gardening

*Farmer characteristics*

This system basically comprises the cultivation of crops for home consumption. It is usually carried out within the compound, especially in middle- and high-income, low-density neighbourhoods and newly developing estates. Backyard gardeners are mostly middle-aged men and women with some level of formal education. Apart from providing households with some food, the quality and safety of crops from backyard gardening are appreciated and ensured. Often, the whole family is involved in planting, weeding and harvesting. In most cases, labour is not hired, as plots are small. Backyard gardening is invariably a part-time activity that supplements people's regular incomes and, in some cases, it is regarded as a hobby.

*Farming practices*

Backyard gardening is carried out throughout the year and both rain and piped water is used. Intercropping is normal practice, as several crops are usually planted on the same piece of land. However, a few crops, like maize, are grown as sole crops during the rainy season. Mainly animal dung as well as other household wastes are used as fertilisers. Very few agrochemicals are used. Most backyard gardeners prefer to grow their crops free of chemicals to ensure that healthy crops free of contamination are harvested.
Produce and its use
Crops grown in the backyard include vegetables, legumes and maize, especially during the wet season. Some backyard gardeners grow fruits like citrus, not only to enrich their diets but also to provide shade and an airy environment for their houses. All of the production is for home consumption. In a few cases, where the harvest is plentiful, not all food is consumed by the household and some is given away or sold to generate extra income.

3. The impact of urban agriculture on food security, nutrition and health

Farming is done for three main reasons: namely cash (vegetable growers and commercial livestock group); food subsistence (seasonal, customary land rights and backyard farming groups); and assets to be sold in case of an emergency (small ruminants and poultry group).

Data were collected between January and March, a time of year when seasonality of income would be roughly average for the year; that is, between the harvest season when income from farming would have peaked, and the lean season when income would be close to zero.

With a few exceptions, cash income from urban farming is low (varying from US$20 –30 a year to several hundred dollars a month) and seasonal. The exceptions are predominantly in vegetable farming and commercial livestock production. Income from the sale of own stock forms an insignificant proportion of total household income. Nevertheless, for households in a cash-flow crisis, it contributes a substantial portion to income during the crisis period - nearly 15% of total household income for the previous month for those reporting distress sales. There is substantial evidence that food consumption is cut when a cash-flow crisis occurs, implying that strategies to accumulate assets have a direct impact on food consumption during household cash-flow crises.

Three specific kinds of impact in terms of direct access to food can be distinguished:

- farmers who produce enough maize and/or cassava to provide their households with staple food from one to eight months of the year;
- a small group of farmers who use cassava as a kind of food reserve so that, during times of the year when other staple foodstuffs have run out and no household cash is available, cassava is eaten; and
- most of those interviewed, including wives of farmers who were not directly engaged in farming, noted that farming is part of livelihood diversification
strategies. It helps to minimise the risk of an overall shortage of income, and thus reduces the household's overall vulnerability to food insecurity.

Only about 1% of food at the household level comes from direct production in urban agriculture. In farming households, in terms of value and calories, about 7.5% of total food originates from urban farming. Among seasonal farmers and the customary land rights group, enough staple (usually maize) can be harvested to provide as much as two-thirds of the household's annual needs.

No positive association of urban farming with child nutritional status was found. Several reasons can be suggested for this. Firstly, many households engage in farming, particularly the keeping of small ruminants, because it is an "asset strategy". The assets provide cash through sales in an emergency, or are a source of direct food at special times. However, this strategy has relatively little impact on the general nutritional status of the family. Secondly, data were not collected at a time that cash income or consumption from agriculture would have been at a peak. Lastly, most farming in Accra is practised by men. While some of the produce is consumed within the household, income from urban agriculture is less distinguishable from other forms of male income in terms of the impact on food and nutrition security.

It is, however, clear that farming within the city is an important component of the city's food supply system, as the bulk of the city's supply of fresh vegetables comes from local production. There is still room for policy and programme initiatives to support and develop the sector further.

### 3.1 Health implications

There is little doubt that the water from the streams and drains used to irrigate much of the city's vegetables is heavily polluted with both industrial and human waste. Irrigating with these waters is prohibited, but the bylaws in question are never enforced.

To ascertain the microbial status of vegetables grown in Accra, lettuce samples were collected from a variety of sources: urban farmers relying on drainage water for irrigation; farmers relying on tap water; and retail vegetable sellers at major markets in the city, where it was not possible to trace either the location of production (rural or urban), the conditions of production or the potential contamination of water sources. The samples were analysed under standard laboratory conditions (Armar-Klemesu et al. 1998).
The levels of mesophilic bacteria detected in all the samples were high but unacceptably so in the market samples. Both the farm and market samples were contaminated by coliforms, faecal coliforms and *E. coli*. International standards do not allow any of these contaminations. Perhaps more worrying is the fact that pathogenic bacteria of any public health significance (i.e., Salmonella and Shigella spp) were detected in both market and farm samples.

Samples that were watered with tap water tended to be least contaminated by all types of bacteria tested. Farmers who used drain water tended to produce lettuce with more faecal coliforms and *E. coli* than those who used tap and other sources of water. Similarly, enteric pathogens were detected on lettuce irrespective of method of irrigation. It was observed that farmers used cow dung and chicken droppings as sources of manure, which is likely to be the source of this contamination. However, using animal manure is not exclusively associated with urban production.

The results show that, while tap water irrigation does decrease the level of contamination at the farm-gate level, the major sources of bacterial contamination of fresh vegetables may draw from the distribution, handling and marketing system, rather than from the production.

**Table 1: Level of contamination by location of sample collection**

<table>
<thead>
<tr>
<th>Location</th>
<th>N</th>
<th>Total counts</th>
<th>Total <em>Coli</em> forms</th>
<th>Faecal <em>Coli</em> forms</th>
<th><em>E-coli</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm</td>
<td>66</td>
<td>4.8 (1.0)</td>
<td>4.3 (0.9)</td>
<td>3.3 (1.6)</td>
<td>3.1 (0.8)</td>
</tr>
<tr>
<td>Market</td>
<td>60</td>
<td>5.2 (1.2)</td>
<td>5.0 (0.9)</td>
<td>4.7 (0.8)</td>
<td>3.6 (1.1)</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>5.0 (1.2)</td>
<td>4.7 (1.0)</td>
<td>4.0 (1.5)</td>
<td>3.5 (1.0)</td>
</tr>
</tbody>
</table>

Notes: ANOVA. Standard deviations are in parentheses.
1. *p*<0.05; 2. *p*<0.001; 3.*p*>0.05

*Source: Armar-Klemesu et al. 1998.*

4. **Urban agriculture and the environment**

Potential environmental benefits of urban agriculture are: the recycling of urban waste products (and substituting chemical fertiliser), the greening of vacant plots which otherwise would be used as garbage dumps, and the production of vegetables for the urban market, without incurring the congestion and pollution of long-distance transportation.

One of the adverse impacts is the improper use of agrochemicals in densely-
populated areas, creating hazardous run-off that poisons the city waterways. Although many of these are already contaminated, agrochemicals are a special cause for concern. Agrotoxins are potent and many users are unaware of the potentially harmful impact. Of even greater concern is the impact on human health of growing vegetables using contaminated water and the uptake of industrial pollutants by plants.

Accra has only one wastewater treatment plant. At the time of the study, the plant was not functioning, though the pond into which the treated effluent is discharged was being used for irrigation. Virtually all helminths and most bacteria and viruses can be removed by ponding. Wastewater can supply almost all the nitrogen and most of the phosphorus and potassium required by crops, as well as micronutrients. The pond effluent contains a lot of algal biomass, which acts as a slow-releaser fertiliser. The benefits of utilising wastewater for urban agriculture in Accra, however, require further investigation.

In appendix 1, farming practices and associated environmental impacts are summarised.

5. **Contribution of urban agriculture to the household economy**

For the seasonal farmers and backyard gardeners, the main reason for urban agriculture is to produce for household consumption, home gardening mainly complementing the diet. Among seasonal farmers, in many cases, a major portion of household consumption comes from their own produce. Both these groups are fairly small in number.

To generate cash income tends to be the main goal for vegetable growers and commercial livestock raisers. In these groups, the entire household may depend on the income from the agricultural enterprise, but little of the produce is directly consumed. Some of the livestock producers time their production so that they are able to sell during festive occasions when prices are more favourable. Vegetable growers produce year-round.

The "asset" rationale tends to dominate among the keepers of small ruminants and poultry on a small scale. While these households may consume some of the meat from the animals at the time of festivals, in general the animals are neither slaughtered for home consumption, nor are they regularly sold for a steady cash income. The average value of assets is about US$50. This figure is much higher for sheep, goats and pigs than for poultry. The negative mean income
investment in the asset being higher than liquidation of the assets in the year prior to the sale) from small ruminants and poultry production confirms the asset strategy.

The customary land rights group tends to produce both for home consumption and for sale. The miscellaneous group also tends to have different rationales. Vegetable growers and commercial livestock producers obtain higher annual incomes from urban agriculture. They usually also have higher levels of education.

Overall, roughly half of all produce is consumed within the producing household, but this makes for a very small proportion of total consumption, even among such households. The proportion of produce consumed directly by the household of the producer is considerably higher among the seasonal farming and periurban farming groups. The survey captured too few backyard gardeners to draw hard conclusions.

Table 2: Socio-economic characteristics of farming systems

<table>
<thead>
<tr>
<th>Farming System</th>
<th>Male</th>
<th>Female</th>
<th>Median annual farming income (per enterprise)</th>
<th>Proportion of harvest consumed</th>
<th>Average years of education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasonal</td>
<td>7</td>
<td>41,600 C</td>
<td>58.6%</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Customary land rights</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Vegetable growing</td>
<td>1</td>
<td>-</td>
<td>375,000 C</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Backyard gardening</td>
<td>1</td>
<td>12,300 C</td>
<td>74.5%</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>Small ruminants / poultry</td>
<td>19</td>
<td>24</td>
<td>-1,000 C</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Commercial livestock</td>
<td>1</td>
<td>-</td>
<td>452,000 C</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Periurban mixed farming*</td>
<td>6</td>
<td>2</td>
<td>90,000 C</td>
<td>36.8%</td>
<td></td>
</tr>
<tr>
<td>Periurban crop farming*</td>
<td>12</td>
<td>4</td>
<td>36,000 C</td>
<td>53.9%</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>47</strong></td>
<td><strong>31</strong></td>
<td><strong>8,000 C</strong></td>
<td><strong>49.3%</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Subgroups of the seasonal farming system
Source: Zakariah et al.1998.

6. Gender aspects of urban agriculture in Accra

Over 60% of those actively engaged in agriculture in Accra are men. Male farmers mainly give cultural reasons as to why women do not farm. Most of the
farmers are migrants, mostly from the north of Ghana, or countries in the Sahel where traditionally women do not farm by themselves. Other reasons given by men related to the tediousness of the work and the difficulty in acquiring land.

Women tend to give more economic reasons. Some wives of male farmers said that, if their husbands were farming, it made more sense to do something else, so that if they had a bad year for farming, the household would still have some income. A second reason is the distance between household and farm. This cost of going back and forth is one restriction, the need to be around the home and to look after children, another. Thus, as a first choice, most women prefer to engage in activities close to the household, such as trading. Most of the women in agriculture are engaged in keeping small livestock.

In Accra it is common for a husband to give his wife a certain amount of money for the purchase of food ("chop money"). Food from farming simply constitutes the contribution of the man towards the household. The wife often has to make up any shortfall through her own sources, hence the pressure for her to have another source of income. Non-farming wives report that they do not sell any of the food contributed by their husbands. The husbands report selling some food (which the wives clearly did not know about). Thus, farming is a source of cash income for men, as well as a source of food for the household.

Incomes are "pooled" only in terms of fixed contributions to consumption. Only rarely was one member of the household farming, while the other adult was engaged in selling. The most common explanation is that it is better for husbands and wives to keep their income-generating activities separate, to avoid disagreements over income.

Few differences were noted in the types of crops planted, though women tended to plant more pepper, because it is a less labour-intensive perennial crop. The men plant more watermelon, okra and tomatoes as cash crops.

The only aspect of farming where a gender division of labour is clearly noted is the marketing of crops, which women dominate. The women or farmers' wives sell directly to consumers or to wholesalers, who are also women, in most cases. Virtually all farmers, both men and women, said that by tradition men do not sell at the market. It was culturally unacceptable for men to carry their loads to the market.
7. Existing policies regarding urban agriculture

Urban farming received a big boost in the mid-1970s with the "Operation Feed Yourself" by the then government, in response to food shortages. City residents were encouraged to use their backyards and all empty spaces for crop production, at least for home consumption. The programme was heavily patronised but declined in the 1980s as people lost interest because of improvements in the food situation and as land being used for farming was lost to housing.

Currently there is no explicit policy for urban agriculture in Ghana. Neither is there any provision for urban agriculture in urban planning. The Ministry of Food and Agriculture formulates agricultural policy in Ghana generally irrespective of whether it is being undertaken within the urban, periurban or rural setting. Perhaps the closest thing to a policy on urban agriculture is the Accra Metropolitan Assembly bylaw ("Growing and Sale of Crops", August 4, 1995), which prohibits the watering and irrigation of crops by the effluent from a drain. Planning and control over the rapid change in land use has been inadequate; moreover, land management has received little attention under the various World Bank projects to support urban development.

Research initiatives highlighted the benefits of urban agriculture for urban livelihoods and food security, as well as concerns about the use of wastewater. Research also indicated the need for a more pragmatic holistic approach to address the latter, as the problem of food contamination is not just a question of wastewater irrigation.

The Accra study, in particular, provided valuable information on the changes in land rights and livelihoods in the periurban areas of the city. This was used in the development of land-use policy and guidelines for dealing with land-tenure transformation in periurban areas for the new national land-use policy document, which has just been formulated.

The main problems in urban agriculture as mentioned by the producers are:

- land both in terms of access and tenure security, which is at the top of the list of most groups, although this is less of a constraint for keeping small livestock
- theft of crops grown far from the household;
- marketing, both physical space for the activity and the organisational arrangements necessary to permit and promote direct farmer-consumer selling;
high production costs coupled with lack of credit facilities; and
• the use of polluted water for irrigation from the drains and streams.

In contrast to some other African cities, harassment by municipal authorities was not very frequently mentioned as a serious problem.

Especially in the periurban areas, where farming is the main livelihood, access to agricultural land is a cause for concern. The rate at which land is being converted from agricultural to urban uses is alarmingly high. In the period from 1990 to 1993, roughly 2,100 ha per year were converted from agricultural to urban use. Between 1993 and 1997 this increased to 2,600 ha and it is probably even higher in 1998. Apart from outright loss of agricultural land due to urbanisation, there is a growing destruction of the agricultural resource base through sand mining ("sand winning") in areas around the city.

Up to now, farming communities coped largely by pulling back, squeezing in and shortening the fallow cycle. It is becoming increasingly clear, however, that sooner rather than later, more of this will not be possible. What will people who depend on agriculture do, when that point is reached?

8. Perspectives for the development of urban agriculture

The formal and informal economic sectors of the city do not generate adequate income for the poor urban population. At the same time, urban agriculture supplements both diets and incomes of the urban poor, even in confined spaces. Therefore, urban agriculture should be regarded as a component in urban food systems.

The average income from farming may be low and farming may not have a big impact on household food security; however, it should be realised that, for those whose primary livelihood is farming, income from farming can be appreciable.

There is a need for deliberate intervention in the land market to reserve land for agricultural purposes if periurban agriculture is to survive.

Fortunately, the Ministry of Food and Agriculture has decentralised and today there is a Metropolitan Director of Food and Agriculture, who is the official link between the Ministry and the metropolitan authority, with jurisdiction over urban agricultural affairs. There are signs that several of the recommendations from the
study are already being implemented. These will go a long way toward protecting and promoting urban agriculture in Accra, and follow below.

8.1 Integration of urban agriculture into land-use planning

Urban agriculture is missing in most planning designs, because of the idea that “real” agriculture takes place in rural areas. The time has come to start integrating urban agriculture into urban planning. Especially for the periurban areas, the proposed law to establish greenbelt zones to halt urban development activities should be enacted and enforced.

8.2 Urban agricultural land management

Technical advice and training for farmers by agriculture extension officers is offered and should be sustained. Aspects of the training include soil erosion control techniques and bio-intensive farming practices to enhance soil fertility and check soil degradation.

8.3 Water resource management

The Environmental Protection Agency (EPA), in collaboration with the Metropolitan Assembly and the Water Research Institute, should put into place measures to minimise the pollution of water sources by farming. This could be achieved through the provision of guidelines and standards. At the farmer level, awareness of water pollution and of the benefits of water conservation and source protection should be promoted.

8.4 Control of wastewater discharges into surface/groundwater

According to the 1995 AMA (Growing and Sale of Crops) bylaws, it is an offence to water crops with effluent from a drain. Both the enforcement and bylaw compliance have been virtually non-existent. Alternative approaches to the problem, such as intense public education on both acceptable environmental and food hygiene practices, should be a priority. At the farm level, farmers should be encouraged to use groundwater sources instead of surface water. The use of boreholes to provide safe water for irrigation is currently being advocated.

8.5 Promoting use of organic manure

Farmers are already using organic manure (poultry droppings and cow dung). The Ministry of Food and Agriculture, in collaboration with environmental
NGOs, should sensitise more farmers on the advantages of using organic manure. A policy to maximise re-use and recycling of city organic waste should be vigorously pursued with the Waste Management Department in order to make organic manure available, safe and cheap.

### 8.6 Improving livestock management practices

The Ministry of Food and Agriculture, in collaboration with the Metropolitan Assembly and Veterinary Services, should provide farmers with guidelines and specific advice for proper livestock management practices. There is a need to educate farmers regarding the use of the guidelines (control and disposal of animal faeces, skinning of animals, etc.).

### 8.7 Institutional co-ordination

The Ministry of Food and Agriculture should play the lead in co-ordinating all stakeholders involved in the promotion, management and operation of urban agriculture. The creation of the position of Metropolitan Director for Food and Agriculture has given urban agriculture the official recognition it deserves. The necessary institutional co-ordination needed to develop urban agriculture is being put in place. At the farm level, the existing Farmers Association should be strengthened. Such an institutional arrangement will be useful for a two-way flow of information on environmental management practices between farmers and decision-makers.

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1. It should be kept in mind that the small number of cases makes solid conclusions impossible.
2. C = Ghanian Cedi. At the time of data collection 1 US$ = 2000 C. Since then the Cedi depreciated to around 6000-7000 C to 1 US$.
3. Most of these households are located in the densely-populated, low-income areas of the city, but the land for farming lies mostly on the outskirts.
References


### Appendix 1: Summary of field data on current farm practices and operation of urban agriculture in Accra

<table>
<thead>
<tr>
<th>Farming system</th>
<th>Land and land-use characteristics</th>
<th>Farming practice</th>
<th>Environmental issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable farming</td>
<td>• flat or gently sloping land; • wetland or nearness to water course and flood-prone areas; • sandy-clay to sandy-loamy soils; • open space; • undeveloped urban land for other uses where water is available; • service reservations and road corridors; • near school, industries and high-tension reservation.</td>
<td>• using simple tools; • no specific timing for any activity; • no farm extension services provided; • small-scale operation and farm size; • contiguous farm lots; • practising crop rotation; • irrigating crops with water from streams or dugouts which were previously fed with tap water; • cultivating same site for long periods; • removing all top soil; • creating planting beds.</td>
<td>• better use of undeveloped land or land used for dumping of refuse for urban agriculture; • illegal piped-water tapping for irrigation; • discharge of waste into surface water, altering water quality; • water and soil erosion; • siltation of waterways; • declining soil fertility; • chemical pollution and soil contamination; • introduction of new exotic species of plant and increasing barrier to normal replenishment of existing species; • poor-quality water (dirty, opaque or chalky, traces of oil and faecal matter) at Avenor; • no solid and liquid waste generated; • recycling of vegetable waste for mulching observed at Burma Camp; • use of herbicides and pesticides.</td>
</tr>
<tr>
<td>Livestock farming</td>
<td>Seasonal farming</td>
<td></td>
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</tbody>
</table>
| • located along watercourses (Korle/Odaw River);  
  • low-lying lands liable to flooding;  
  • located in high-density low-income communities and open spaces;  
  • land bare of vegetation;  
  • poorly managed urban open spaces;  
  • proximity to grazing sites. | • undulating land, slopes varying from 2-5%;  
  • relatively poor soils;  
  • coastal savanna and scrubs;  
  • vacant public and institutional lands (e.g. University of Ghana). |
| • no land prepared, livestock either confined to wooden structures or free-range grazing;  
  • feeding on grass and cassava peels and “chop bar” leftovers;  
  • varied degree of dependency on veterinary services;  
  • limited medication for sheep/goats;  
  • water from tap water;  
  • farmers forming association;  
  • poor farm management practices;  
  • varied degree of scale of operation, average 30 x 30 m space;  
  • storage of animal feed on site;  
  • slaughter process using car tires for burning;  
  • all domestic animals: goats, sheep, pigs, chickens;  
  • collecting wastewater in dugout or channelled to the main stream. | • clearing, slash and burn;  
  • some use of tractors for ploughing;  
  • labour-intensive techniques for planting, harvesting, etc.;  
  • inadequate advice from Agricultural Extension Officer;  
  • poor crop yields;  
  • use of chemical fertilisers. |
| • solid waste (faecal) collected and deposited along watercourse;  
  • wastewater collected into small dugouts and some channelled direct into lagoon;  
  • contamination from wastewater into stream  
  • unhygienic and unsanitary butchering of livestock;  
  • air pollution from tyre burning as a result of skinning of animals;  
  • smell from feed and left-overs and improper dumping of waste;  
  • livestock-vehicular accidents and nuisance. | • waste pollution from agrochemical very minimal;  
  • vegetal waste for composting;  
  • post-harvest losses;  
  • pressure from urban development to relocate/replace farming activity;  
  • conflict with livestock users. |
<table>
<thead>
<tr>
<th>Customary Land Right</th>
<th>Clearing and ploughing;</th>
<th>Declining soil fertility;</th>
</tr>
</thead>
<tbody>
<tr>
<td>flat, undulating land;</td>
<td>some extension services provided;</td>
<td>water and soil erosion;</td>
</tr>
<tr>
<td>grassland savanna;</td>
<td>chemical and organic fertilisers used;</td>
<td>increasing rate of flow of surface runoff and consequent siltation of river;</td>
</tr>
<tr>
<td>wetland or nearness to watercourse and flood-prone areas;</td>
<td>average farm size about 2 acres;</td>
<td>alteration in the course of flow of floodwaters;</td>
</tr>
<tr>
<td>sandy-loamy soils with loose topsoil;</td>
<td>farms not contiguous;</td>
<td>reduction of the habitat for some animal life leading to migration;</td>
</tr>
<tr>
<td>army barracks, Trade Fair Centre being overtaken by new housing development.</td>
<td>rainfed but limited watering in dry season;</td>
<td>proximity to other urban land uses;</td>
</tr>
<tr>
<td></td>
<td>recycle weeds for compost;</td>
<td>emerging housing developments and land ownership conflicts;</td>
</tr>
<tr>
<td></td>
<td>grow vegetables and legumes;</td>
<td>stream polluted by sewage from Burma Camp Treatment Plant.</td>
</tr>
<tr>
<td></td>
<td>rechanneled water flow during floods;</td>
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</tr>
</tbody>
</table>

Source: Anku et al. 1998.