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Constraints Associated with the Marketing Channel of Lettuce and Cabbage Trade in Ghana

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Abstract

The present study aims to identify inefficiencies or bottlenecks in the marketing channel for lettuce and cabbage trade in Ghana which may be lowering economic incentives for producers and traders. It also aims to assess better ways in which local communities could benefit from lettuce and cabbage trade for poverty alleviation and livelihood improvement. The study focuses on the following central research questions: What constraints are associated with the marketing channel of lettuce and cabbage trade in Ghana which may be lowering economic incentives for producers and traders? What are the ways in which local communities can better benefit from lettuce and cabbage trade for poverty alleviation and livelihood improvement? This study covers gaps in the existing marketing channels of lettuce and cabbage trade; proposes how the associated constraints could be solved to better protect the chain, and explores the application of the findings in other contexts. It presupposes a thorough understanding of the social, cultural, ecological and economic factors shaping lettuce and cabbage production in Ghana.

Keywords: Cabbage, Constraints, Ghana, Livelihood improvement, Marketing channel, Poverty alleviation.

INTRODUCTION

In a study, Bongarts (1995) realized that over half the developing world's population will reside in cities by the year 2025. Mushrooming urban areas – particularly in sub-Saharan Africa- mean that more and more consumers depend on horticultural marketing for their daily food requirements. Production of lettuce and cabbage in Ghana depends on the establishment of a proper marketing system. To promote lettuce and cabbage production, marketing improvements should be considered simultaneously with improvements in production. Scott (1995) reported that several agricultural projects have in the past emphasized increasing production without regard to marketing aspects; often, the results have been disastrous.

A recent expert report on pattern of vegetable consumption in the subcontinent lists common vegetables as onions, carrots, tomatoes and cabbage. Clearly, information on production, processing, distribution and marketing, preparation and consumption of vegetable species relevant to sub-Saharan Africa, for that matter Ghana, are vital and constitute the prop on which intervention programmes can be developed (Smith and Eyzaguirre 2007).

The joint FAO/WHO (2003) Consultation on Diet, Nutrition and the Prevention of Chronic Diseases recommended a minimum daily intake of 400g of fruits and vegetables (WHO 2004). WHO in 2004 again drew attention to this recommendation through its Global Strategy on Diet, Physical Activity and Health. Following the reasoning of FAO/WHO (2003), WHO (2004), the promotion of lettuce and cabbage can and should complement the objectives of rural and urban development. Addressing food security problems are crucial for the future development of Ghana.

According to Mark et al. (2006), about 70 percent of the millennium development goal (MDG)'s target group live in rural areas, particularly in Asia and Africa, and for most of the rural poor agriculture is a critical component in the successful attainment of the MDGs. Although structural transformations are essential in the long run, more immediate gains in poor households' welfare can be achieved through horticulture/agriculture, which can help the poor overcome some of the critical constraints they now face in meeting their basic needs. Thus, a necessary component in meeting the MDGs by 2015 in many parts of the world is a more productive and profitable agricultural sector.

It is argued (Mark et al., 2006) that horticulture contributes to MDG through agriculture-led economic growth and through improved nutrition. In developing countries economic growth, which enables increased employment and rising wages, is the only means by which the poor will be able to satisfy their needs sustainably. However, the role that agriculture can make in achieving the MDGs in this region depends on the particular constraints and opportunities prevailing within Ghana.

It is also noted that environmentalists have even shown a growing interest in horticultural/agricultural marketing. For example, if biodiversity is to be economically viable, commercial outlets need to be found for crops heretofore cultivated only for subsistence use. If particular ecologies are to remain vital sources of sustenance and culture, then horticultural/agricultural marketing systems linking such ecologies to adjoining environments need to be better understood, potential benefits from marketing activities more effectively exploited, and negative aspects of commercialization minimized (Scott 1995).

Scientific information regarding marketing channel for lettuce and cabbage trade in Ghana is relatively small. If the number of scientific literature dedicated to market research, can be increased, some of the challenges facing the supply chain might be mitigated. As noted by Scott (1995), a variety of forces – political, economic, technological, demographic, environmental, historic – will continue to converge and thereby generate pressure to improve domestic horticultural/agricultural marketing practices and procedures to satisfy the demands of the people that such activities are intended to serve. He added that the impact of these pressures is compounded by the relative scarcity of information and accelerating pace of change regarding domestic horticultural/agricultural marketing in developing countries and for that matter, Ghana.

This study focuses on one of the least studied areas in horticulture field - marketing channels for lettuce and cabbage trade in Ghana with particular reference to Accra. This combination of the subject of lettuce and cabbage production and marketing is still almost unexplored terrain. The few studies done on vegetables have largely been about the supply chain of local vegetable crops such as tomato, hot pepper, egg-plant, okra, onion and shallots produced in rural areas [Armar-Klemesu, (2000); Asomani-Boateng (2002): Danso et al. (2002): Drechsel et al. 2007)] Still fewer are the studies specifically on constraints associated with the marketing channels for exotic vegetables like lettuce and cabbage trade in Ghana [cf. Cencosad (1994), Amoah et al. (2007)]. On the other hand, there are only perhaps a handful of studies discussing contemporary devices that could be adopted to overcome constraints associated with the marketing channels for lettuce and cabbage trade [cf. Obuobie et al. (2006): Amoah et al. (2007)].

The dearth of studies on the subject of marketing channels for lettuce and cabbage trade does not match the actual importance of the vegetable production sector in the economies of many regions and cities in Ghana. This observation is consistent with the findings of Scot (1995) who found that studies on the internal distribution and sale of locally produced crop products – domestic horticultural/agricultural marketing – have tended to receive less attention for an assortment of reasons.

Contrary to popular perceptions, lettuce and cabbage still occupies a major role in the economy of Ghana. In the last two decades, vegetable production has become increasingly important in many West African capitals, for that matter Accra. It is the main source of income for an estimated 1000 to 3000 producers per capital, and benefits people all along the supply chain. In Dakar, for example, urban production supplies 60% of all vegetables consumed in the city, and 15000 people are estimated to benefit indirectly from vegetable production (Levasseur et al. 2006).

Departing from the above mentioned considerations, the central research question of the present study is formulated as follows: What constraints are associated with the marketing channel of lettuce and cabbage trade in Ghana which may be lowering economic incentives for producers and traders? What are the ways in which local communities can better benefit from lettuce and cabbage trade for poverty alleviation and livelihood improvement? The current study aims to identify the marketing channels for lettuce and cabbage trade in Ghana. More specifically, the study aims to identify inefficiencies or bottlenecks in the marketing channel for lettuce and cabbage trade in Ghana which may be lowering economic incentives for producers and traders and to

assess better ways in which local communities could benefit from lettuce and cabbage trade for poverty alleviation and livelihood improvement.

The study is made up of five chapters: The introductory Section spells out the relevance of the study, the problem it addresses itself to and the objectives. Section Two presents the definitions associated with the subject matter. A brief review of the materials and methods used in this study forms the Third Section. In Section Four, which forms the focal part of the study, a succinct analysis of results and discussion has been undertaken. The final Section embodies the conclusion and recommendation of the study.

LITERATURE REVIEW

Marketing and marketing channel defined

Generally, “marketing" refers to the promotion of products, especially advertising and branding. However, the term has a wider meaning when one refers to its professional usage as the practice and science of trading. According to the American Marketing Association (AMA), "Marketing is an organizational function and a set of processes for creating, communicating and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders." [Boone and Kurtz (1992), Scott (1995)]. With respect to marketing practice, it can be described as a creative industry, which comprises advertising, distribution, and selling. It also involves anticipating the customers' future needs and wants, which are often discovered through market research.

A marketing channel describes practices or activities that necessitates the transfer of ownership of goods, and mobility of goods, from the point of primary production the

point of consumption and, as such, consists of all the institutions and all the marketing activities in the marketing process [Boone and Kurtz (1992), Scott (1995)]. Marketing channel plays vital roles in marketing strategy. The major roles are: Links producers to buyers; Performs sales, advertising and promotion; influences the firm's pricing strategy; affecting product strategy through branding, policies, willingness to stock and customizes profits, install, maintain, offer credit, etc.

As noted by Scott (1995), the performance of horticultural/agricultural markets has long been recognized by economists, planners and policy makers as a critical component in the development process. He added that by the early 1980s, five emerging trends heightened interest in and concern over future directions in domestic agricultural/horticultural marketing on the part of not only economists and policy makers but also producers, consumers, and more recently environmentalists.

Lettuce and cabbage

Lettuce (*Lactuca sativa*) is described as a biennial plant belonging to the daisy family *Asteraceae* [Damon et al. (2005), Hamilton (2005)]. It is usually grown as a leaf vegetable. It is typically eaten cold and raw, in salads, hamburgers and many other dishes. In some countries e.g. China, lettuce is popularly eaten partially cooked and use of the stem is as important as use of the leaf. The stem of lettuce plant is short, initially (a rosette growth habit (Koopman et al., 1998). Lettuce is grown commercially worldwide. It does well in light, sandy, humus rich and moist soil. It dislikes dry conditions. It needs shade in sunny weathers.

The cabbage (*Brassica oleracea* var. *capitata*), is a leafy garden plant that belongs to the Family Brassicaceae (or Cruciferae), used as a vegetable. It is described as a biennial, herbaceous and dicotyledonous plant characterised by a short stem upon which is crowded a mass of leaves, usually green but in some varieties red or purplish, forming a

characteristic compact, globular cluster (*cabbagehead*). Cabbage is usually green, but, if left to rot, can turn a sickly brown. The cabbage plant is also known as *head cabbage* or *heading cabbage*, and in Scotland *bowkail*, because of its rounded shape. The Scots call its stalk a *castock* (OED, 2003) and the British call its head a *loaf*. Cabbage leaves often display a delicate, powdery, waxy coating called *bloom*. The sharp or bitter taste sometimes present in cabbage is due to glucosinolate (s). The leafy head is the part of the plant that is usually eaten; more precisely, the spherical cluster of immature leaves, excluding the partially unfolded outer leaves. The so-called 'cabbage head' is widely consumed raw, partially cooked, or preserved in a great variety of dishes [CRCSR (2005), Recipes (2004)].

Examples of destructive diseases affecting the cabbage and often other members of the cabbage family (CCFSL, 2005) are:

1. *Blackleg* or *black stem*, caused by certain fungi (such as *Phoma lingam*); lesions in the stem near the soil surface become sunken and dark, and may girdle the stem (UC IPM, 2002);
2. *Black ring* or *black ring spot*, caused by a virus; necrotic, dark and often sunken rings on the leaf surface (UVD, 2004);
3. *Black rot*, caused by a bacterium (*Xanthomonas campestris*);
4. *Cabbagehead*, abnormal growth in rutabagas caused by larvae of a gall midge (*Contarinia nasturtii*) feeding in basal part of the stalks (IPM, 2002);
5. *Cabbage yellows* or *cabbage wilt*, caused by a fungus (*Fusarium oxysporum*) or *Fusarium conglutinans*); yellowing and dwarfing;
6. *Clubroot*, common, caused by a protist (*Plasmodiophora brassicae*), formerly classified as a slim mold; swellings or distortions of the root, followed often by decline in vigor or by death and

7. *Wire stem*, caused by a fungus (*Pellicularia filamentosa* or *Rhizoctonia solani*); constricted, wiry stem; similar to damping-off but attacks older seedlings.

Many insects and other pests infest cabbage plants, among them is *cabbage worm*, any of numerous insect larvae that feed on cabbages (e.g. Lepidoptera).

MATERIAL AND METHODS

Description of the study area

Accra, the capital city, administrative, communications, and economic center of Ghana is located on the Gulf of Guinea near the Atlantic Ocean. The city is situated within the coastal-savannah zone. The topography east of the city is characterized by ridges and valleys, while to the west; the low plains contain broader valleys, and round, low hills with a few rocky headlands. The land is mostly flat and covered with grass and scrub, with thick patches of coconut palms along the coastline (Dickson and Benneh, 1977).

Accra experiences bimodal rainfall pattern, with the major season falling between the months of March and June, and a minor rainy season in September. The annual rainfall is low, averaging 810 mm, and is distributed over less than 80 days. Mean temperatures vary from 24 ºC in August to 28 ºC in March (Leonard 2006).

Natural drainage systems in Accra include streams, ponds and lagoons. The Odaw River flows through Accra, and the city's main water source is the Weija Dam on Densu River, with some water pumped from the Akosombo Dam in the Volta River. Accra covers an area of about 65 square miles (170 square kilometers) (Oduro-Afriyie, 1996).

The greater Accra Region is the second most populated region, after the Ashanti region, with a population of 2,905,726 in 2005, accounting for 15.4 percent of Ghana's total population. The population of the metropolitan area was 2,200,800 in 2005 a rank of 155 in the world, according to New World Encyclopedia (2008).

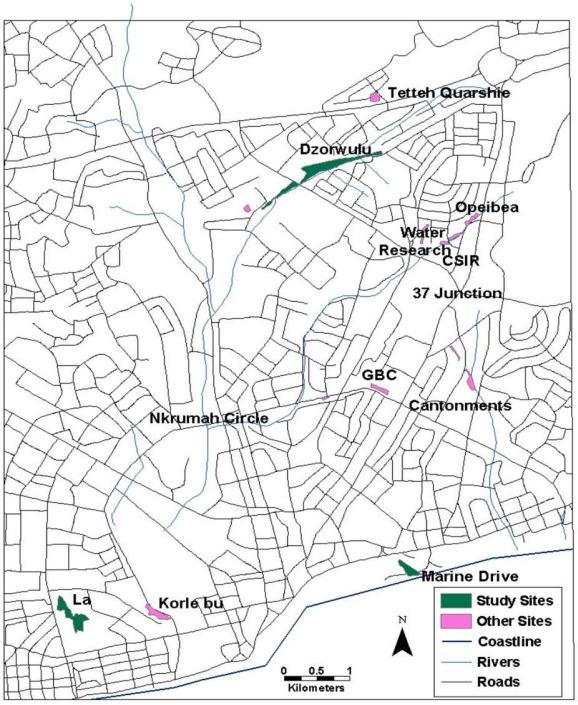

Figure 1. Part of Accra Metropolis showing urban agriculture sites (Danso et al., 2004).

Vegetable production in Accra

Irrigated urban vegetable production has been found to be the dominant agriculture activity within urban Accra [Armar-Klemesu (2000); Danso et al. (2002)]. It is mostly practiced along streams, drains and open spaces in the city. Vegetables commonly grown include lettuce, cabbage, cauliflower, green pepper, spring onions, onions, *Ayoyo*, *Alefi*

and *Gboma* mainly during the dry season while in the wet season, maize and okro are cultivated in addition. Besides open space farming, many households are engaged in some form of backyard gardening (Danso et al., 2004).

Factors such as climate, soil, access to water, insects and diseases, costs of production and, most importantly, the shelf life of the crop itself, influence the location of lettuce and cabbage production. The last factor explains why, for most urban markets, leafy vegetables are produced in urban and peri-urban areas. The season also influences the distribution of supply to the urban market from rural/urban areas in Ghana.

Even if the consumption of vegetables per person is relatively low, consumer demand remains the major driving force behind urban and peri-urban horticulture. In developing countries, the consumption of vegetables is generally lower than the FAO recommendation of 75 kg/year/inhabitant (205 g/day/capita) (Obuobie et al., 2006). The importance of vegetable consumption depends on the population group (Ibid.).

Methodology

Primary data collection methods

This section deals with appropriate methods of gathering information within the frame work of theories that are being used: The sources of data for the study include primary and secondary sources: Direct observation, a qualitative technique in primary data collection was employed in order to gather appropriate information to meet the objectives of the study. Qualitative data as defined by Kitchin and Tate (2000) consist of words, pictures and sounds and are generally unstructured and are not easily converted into numeric format. Bryman (2004) also points out that qualitative data could also be regarded as a research in which findings are presented in words and not in numbers. In this study, direct observation was the qualitative tool used in accessing information.

Besides, direct non participant observation was also used in gathering information. Robson (2002) pointed out that, the actions and behaviours of people are central aspects in virtually any enquiry and a natural and obvious technique is to watch what they do, record, describe analyze and interpret what has been observed. It was used to collect information on the day to day business activities of the wholesalers. Kitchin and Tate (2000) observed that, using this technique, the researcher is a detached observer of the situation. A safe location was chosen not far from where they operate and their activities observed over a period of time. In order for the subjects to behave normally, they were not informed about the presence of a researcher in the area and information was recorded as the observation went on. Information from here was used to complement those of the literature review and the compiling of available information. Secondary data were drawn from books journals, conference proceedings, and progress reports, articles on related studies, the internet and other publication that has background information relevant to the study. Information was also obtained through the analysis of grey literature and peer-reviewed academic documents.

There were three processes involved in conducting the literature review: 1) Collecting; 2) organising and recording; and 3) analysis and synthesis. To collect the literature we: Used standard university library electronic resources, such as on-line catalogues, indices and abstracts, as the principal sources for published books, journal articles, and theses; visited the collections of a variety of organisations and institutions involved in research or project implementation in tropical forest use and management; and contacted a number of individuals conducting research related to vegetable commercialisation. The latter two sources were the principal means by which we obtained the 'grey literature'.

Research design based on selected farming systems

In Ghana, many specific marketing channels have been developed or adapted specifically for urban areas. In this study, the major sources of lettuce and cabbage in Accra were categorized into four farming systems on the basis of location [Amar-Klemesu and Maxwell (1998), Asomani-Boateng (200), Henseler et al. (2005), Obuobie et al. (2006), Drechsel (2007)]: 1. *Urban farms, namely: (a) Household or home gardening* which takes place within and around homes and *(b) Vacant-space cultivation* is done in open spaces, undeveloped community and residential lands, stream banks, road sides, reservations along drainage channels, wetlands, abandoned waste dumps, rights-of-way and airport buffers; 2. *Peri-urban cultivation* takes place on lands just outside the built area of the city (With "peri-urban area", we refer in this context, to an average radius of 38 km from Accra's city center, with more outreach along the Accra-Kumasi road, and less in between the major roads (Obuobie et al. 2006). This is consistent with the delimitation of Kreibich and Tamakloe (1996). A major characteristic feature of peri-urban area around Accra shows large-scale pineapple plantations (Drechsel et al., 2007). 3. *Rural farms and*4. *Other cities via trade and import.*

Secondary data collected was assessed with special focus on the contribution of urban and peri-urban agriculture to urban lettuce and cabbage supply. "Urban" refers to, in this context, the city boundary, as a satellite image would show it, while the extent of the peri-urban area was analyzed in a separate study according to the outreach of urban services, commuter movement and market access, as described in detail by Adam (2001). The area beyond the peri-urban fringe was considered as rural. This paper reviews available literature on the marketing channels of lettuce and cabbage trade in Ghana, characteristics of urban production systems (e.g. farming constraints) in Accra. The paper seeks to provide an up-to-date evaluation of the potential of urban lettuce and cabbage production for Ghana.

RESULTS AND DISCUSSION

Constraints that are associated with marketing channel of lettuce and cabbage trade

Constraints that are associated with *marketing channel of lettuce and cabbage trade* are as follows:

1. Unorganized marketing system;
2. Deterioration of roads;
3. Poor cooling facilities and inappropriate transports;
4. Lack of processing and storage facilities;
5. Shortages of replacement and spare parts of trucks;
6. Lack of market information due to limited training on marketing offered to farmers and extension staff;
7. Access to adequate water is also a problem for most gardens.
8. Lettuce and cabbage cannot tolerate the high temperatures typical of this region in all but December and January.
9. Access to inputs such as high-quality vegetable seed, pesticides, fencing material, and fertilizer are in short supply.
10. Erratic governmental intervention in food marketing has led to severe shortages in the cities.

Similar study carried out by Amar-Klemesu and Maxwell (1998), and Obuobie et al. (2006), cited various *constraints associated with support institution* affecting the marketing channel for lettuce and cabbage trade in Ghana as follows:

1. Lack of tenure security regarding the land on which farmers cultivate;

2. In peri-urban areas, land has various competitive uses, such as residential, industrial and commercial, which is shrinking agricultural land;
3. Limited government and private sector support for production, marketing and processing;
4. Lack of clear policy and strategy on lettuce and cabbage trade;
5. Lack of trained staff with special skills on lettuce and cabbage research and extension; With respect to *access to extension,* several constraints associated with marketing channel of lettuce and cabbage trade derive more from a lack of knowledge of appropriate cultivation techniques rather than a lack of inputs per se. Many vegetable growers receive limited advice from extension personnel, and learn techniques through trial and error and through copying techniques from other gardeners.
6. Ineffective and inefficiently managed farmer associations due to poor leadership and management skills of executive members;
7. Insufficient extension services and high interest rates;
8. Incidence of pests; diseases; bad seeds; the grazing of crops by cattle, sheep and goats; and the use of farms as defecating grounds by some residents in the city;
9. Limited and in some cases lack of access to financial credit by entrepreneurs in the lettuce and cabbage sector. (Various studies have shown that formal bank credit is hardly available to traders who are illiterate and without records and bankers do not consider lettuce and cabbage to be very satisfactory collateral. Even when traders are able to establish a line of credit with a bank, they find it of little help when they need money in a hurry to take advantage of good buys in the hintherland).

In short, marketing channels for lettuce and cabbage trade in Ghana suffer interrelated problems e.g. lack of organized markets in addition to the difficulties created by poor roads; poor vehicle maintenance; chronic shortages of spare parts, unpredictable telephone and inflation. Ignorance about supplies and prices in other markets, made worse by barriers to local price information, inhibits spatial arbitrage and increase risk.

Restricted financial resources and lack of trust further inhibit arbitrage (i.e. the simultaneous purchase and sale of the same commodities on one market for immediate resale on another market in order to profit from a price discrepancy), with the result that most stocks are held on farms, making their estimation more difficult.

4.2 Addressing major constraints associated with marketing channel of lettuce and cabbage

To promote the production of lettuce and cabbage, it is imperative to examine the major issues facing urban vegetable production. Each of these identified problems can in turn trigger a specific policy response that would benefit the market chain actors.

Results indicate that ***marketing*** requires serious attention if the lettuce and cabbage sector is to improve and contribute effectively to the economy of the country. The current system is unorganized in majority of cases, with no well-defined outlets for wholesale and retail markets. Distortions in the current marketing of lettuce and cabbage means prevailing prices do not reflect the real value of the services being rendered. Involvement of middlemen and/or vendors is not bad as long as they deploy professional marketing ethics in their transactions with the smallholder farmers on one hand, and the consumer on the other. Formal wholesale and retail lettuce and cabbage markets are part of the solution to this problem, but it would require government action to improve of some of the basic infrastructure such as roads, power supply and telecommunication. Adding value in processing, packaging, grading and sorting is also very limited and this contributes to the price distortions in the marketing chain. There is a need to invest in proper marketing infrastructure, which must include pack houses and refrigerated vans.

Various studies [e.g. Glover (2005), Glover, Hassan and Glover (2013)] have shown that insecurity of ***land tenure*** shortens the time-frame used by farmers, making it less likely that measures that protect against land degradation will achieve a return in the planning horizon of the land user. It is known that where the occupier of land is unsure of the

future, extraction (or 'soil mining') will occur to ensure that these resources are not lost to the individual. A farmer with clear title to the land is more likely to consider investment of money, labour and land in conservation, because benefits in production which may only accrue after many years will still be retained by the individual who implemented the measures. A careful and deliberate move is needed towards a more secure land tenure system so as to prevent the loaming crisis of land utilization and its consequences for agricultural and overall economic development in Accra. Allocation of land to landless and marginal farmers and giving the farmers more permanent and individual crop ownership rights would probably also improve farmers' living conditions and protect the environment from further degradation [Glover (2010), Glover and Elsiddig (2013)].

Findings from current study suggests that the problem of inadequate number of ***farmers associations*** and limited capacity to lobby could best be tackled if the government, in collaboration with the lettuce and cabbage farmers, and other stakeholders within the industry should sensitise and encourage the lettuce and cabbage farmers to form and/or actively participate in grassroots membership associations. There is a general consensus that such farmer associations would serve as a platform for lobbying central government and local authorities on better taxation policies. The associations would also help in building the required force for the farmers to resist the manipulations of middlemen, pool resources to meet the cost of an appropriate mode of transport, and enhance sub-contracting and enforcement of contracts amongst them. Associations will be responsible for coordinating activities such as training, procurement of inputs, access to markets and establishing a well-organized information system.

With respect to the issue of ***cold transport and storage (inadequate transportation)***, the private sector can also be encouraged to invest in the transport industry by buying and operating refrigerated trucks and cold storage facilities in the markets. Promoting

alternative investment in cold storage facilities is crucial in encouraging improvements in the production and marketing of the vegetable industry in the country.

Credit lubricates the marketing system in all directions. With respect to the problem of *the* ***inability to obtain loans from the banks for farming purposes***, findings from current research suggest enhancing access to credit and its affordability require formulation and implementation of appropriate policies that will facilitate effective participation of membership associations in mobilizing savings and the entrance of private sector in the provision of credit facilities. Our findings suggest that the government, in collaboration with the private sector and key stakeholders in lettuce and cabbage production and marketing should, therefore, undertake reforms and harmonize all laws that govern the operations and institutional management of cooperatives. This will facilitate the rejuvenation of the cooperative movement. Farmers should also be encouraged to form and/or actively participate in their membership associations. This is expected to promote mobilization of savings, capital creation and access to finance and credit through group lending schemes. The membership associations would also serve as platforms for lobbying government to formulate and implement appropriate lending policies and better business development services. In addition, the government in collaboration with key stakeholders should facilitate the establishment of a credit guarantee scheme to provide lending security to farmers. Lettuce and cabbage farmers in the far remote rural areas should also be sensitised on the available credit opportunities and effective credit utilization. In the end, effective production and commercialisation of lettuce and cabbage would lead to significant improvement in the standards of living of the rural population and the urban consumers of the produce.

It is known that an organized information system is one of the critical success factors in marketing. ***Market information*** is essential before beginning any venture of this type because there is the possibility that the price the producer wants to charge is too high for consumers to afford. Knowledge about the market is also required to ensure that the

production can be carried out efficiently and, hence, profitably. Farmers should monitor their markets as an ongoing activity. Market conditions can change overnight and producers need to be aware of such changes. It is therefore important for the government to strive to build a comprehensive and easily accessible information system for the sector. This should take in consideration production, marketing, research and training, financial services and other information relevant to the sector. Collations of information from the various commodity-specific groups are of vital importance if this task is to be made easier. One other approach in solving the access and knowledge problem created by the diversity of societies is the simple trading-partner system. This system is indisposed and makes bilateral trading relationships between diverse cultures.

Lettuce and cabbage improvement and selection efforts should focus on identified ***pests and diseases***. Post-harvest handling issues would require a concerted effort of market chain actors and an improvement of storage and transportation conditions. It must be emphasized that the promotion of farming in the city will require that the major suppliers of land (state, customary and private) work together to provide land in suitable locations for farming.

With respect to ***access to extension*** *and* due to the shortage of government ***extension*** workers trained in vegetable production, group instruction would seem the best way to extend knowledge.

It is important to promote and ***support off-season production*** in Accra and in surrounding areas for lettuce and cabbage markets of Ghana, to improve the revenue of lettuce and cabbage farmers and decrease the final price to consumers. To this end, it is recommended to enhance the infrastructure (shelters, greenhouse, irrigation machines etc.), as well as adapted varieties and plant protection techniques favourable to off-season production in order to limit the negative influences of natural conditions and of pests. Simple techniques of mulching and shading should be introduced to control temperature and winds.

Water retention techniques could be promoted and living windbreaks could be considered for gardens with secure land tenure. Storage tanks could also be introduced to improve water access.

Considering the small amounts of capital available to most vegetable growers, the encouragement of the private sector in the sale of ***inputs*** is perhaps premature and not advisable. This being the case, dependence on donations from the government and non-governmental organizations (NGOs) is not a viable solution. Promotion of subsidized prices from government agencies for the purchase of inputs may be preferable. Besides, soil improvement through the use of organic manure and pest management through sound cultivation techniques could reduce dependence on some of these inputs.

It is also important to have a clear ***code of conduct*** for the sector, which will include issues of phytosanitary services, chemical registration, training and extension messages, and marketing ethics, including storage and handling, and monitoring of transport services. Any public or private intervention in this direction would likely result in multiplied effects for the rural income and for future crop biodiversity.

CONCLUSIONS AND RECOMMENDATIONS

The survey has confirmed that the disorganized production and marketing currently are major features of the sector. Results indicate that essential support services needed to develop the sector are inadequate. Services such as research, extension, agro-processing and phytosanitary services need to be strengthened to support entrepreneurs in the sector. Government can develop a horticultural policy and ensure that infrastructure such as roads, telecommunications, and electricity spread out to areas of production. The private sector can seize the opportunity to develop the sector together with government. The

findings suggest that some targeted marketing development strategies might be followed to better exploit the economic potential of lettuce and cabbage at the same time maintain its contribution to the economy.

There is a need for deliberate financial and capital interventions in these areas. Results indicate urban sprawl is putting an enormous strain on agriculture as the primary livelihood of peri-urban farmers. It is recommended that the government must give priority to land use planning to accommodate urban farming and to protect agricultural land from urban sprawl.

The problem of inadequate number of farmers associations and limited capacity to lobby could best be tackled if the government, in collaboration with the lettuce and cabbage farmers, and other stakeholders within the industry should sensitise and encourage the lettuce and cabbage farmers to form and/or actively participate in grassroots membership associations. The membership associations would also serve as platforms for lobbying government to formulate and implement appropriate lending policies and better business development services.

Promoting alternative investment in cold storage facilities is crucial in encouraging improvements in the production and marketing of the vegetable industry in the country. A careful and deliberate move is needed towards a more secure land tenure system so as to prevent the loaming crisis of land utilization and its consequences for agricultural and overall economic development in Accra.

Knowledge about the market is also required to ensure that the production can be carried out efficiently and, hence, profitably. Crop improvement and selection efforts should focus on identified pests and diseases. Post-harvest handling issues would require a concerted effort of market chain actors and an improvement of storage and transportation conditions.

In spite of current efforts and some achievements, more still needs to be done to support the lettuce and cabbage sector and make an impact on vegetable production in Ghana. As long as the constraints remain unresolved, there can be very little progress in vegetable production. A concerted effort from public and private stakeholders can create an appropriate environment for vegetable production. Any public or private intervention in this direction would likely result in multiplied effects for the rural as well as urban income and for future crop biodiversity.

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