

UNIVERSITY OF GHANA

INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH

AGRICULTURAL INFORMATION NEEDS AND INFORMATION

SEEKING AMONG URBAN VEGETABLE FARMERS IN THE

LA DADE-KOTOPON MUNICIPALITY

BY

CELESTINE CHUKWUKA CHIME

(10372272)

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF
GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF MASTER OF ARTS IN DEVELOPMENT STUDIES

JULY 2019

DECLARATION

I, Celestine Chukwuka Chime, hereby, declare that apart from the references to the works of others which have been duly acknowledged, this thesis, “**Agricultural information needs and information seeking among urban vegetable farmers in the La Dade-Kotopon municipality**” is the result of my own research carried out at the Institute of Statistical Social and Economic Research, University of Ghana, under the supervision of Dr, Nana Akua Anyidoho.



.....

Celestine Chukwuka Chime

(STUDENT)

DATE.. 6TH JANUARY, 2020.....



.....

Dr. Nana Akua Anyidoho

(SUPERVISOR)

DATE.. 6TH JANUARY, 2020.....

DEDICATION

This work is dedicated to the Almighty God for seeing me through a successful period of study, and to my loving mother Mrs Millicent Mensah and my siblings for their encouragement, prayers and support.

ACKNOWLEDGEMENT

My utmost gratitude goes to the Almighty God for his provision, favour, and grace throughout the duration of this study.

I am highly grateful for all the minutes of effort, patience, and service rendered to me by my supervisor, Dr. Nana Akua Anyidoho. She was instrumental in helping me understand the tenets of conducting a study such as this one and guided me in every step of the way.

I will also like to thank my family for their immense support during the entire duration of the study and for spurring me on to achieve greater heights.

My sincerest appreciation goes to the Directorate of Agriculture at the La Dade-Kotopon Municipal Assembly for furnishing me with the needed farmer information, and to the farmers of the municipality for allowing me take time to interview them.

To all my colleague MA Development students at ISSER, I will like to say thank you for being great friends.

ABSTRACT

Farmers' access to relevant and useful agricultural information is key to improving their productivity. Research shows that the information needs of farmers differ and that the behaviour of farmers in seeking information is as varied as their production systems. The study was conducted to identify the information needs and assess the information seeking behaviour of urban vegetable farmers whose activities supplement the food needs of an increasingly urbanised population in sub-Saharan Africa. The study employed quantitative methodology and collected secondary and primary data in the La Dade-Kotopon municipality. Secondary data was collected from the Directorate of agriculture of the municipal assembly and primary data was then elicited from 60 vegetable farmers in the municipality using face-to-face interviews on their information search activities in the previous six months. Results were analysed using means, frequencies and chi-square, and were presented using descriptive statistics. The majority of farmers (62%) reported a need for information for their agricultural activities. This need for information had no significant relationship with the farmers' age, educational level, sex, major occupation, and their membership in farmer associations. Of the percentage that needed information, 38% needed information on disease and pest control with a third indicating this need was 'important' to them and 61% reporting the need only as 'somewhat important'. Information on pest and disease control was the highest (43%) information type obtained by the farmers in the six-month period. Most respondents (75%) contacted other farmers for information with at least five such contacts in the reference period by a majority (51%) of the farmers. However, farmers' preferences for information sources did not match their information-seeking behaviour: extension officers from the district assembly were the most preferred source of information (67% of respondents) but were second to 'other

farmers' in terms of the frequency of contact. A large majority (85%) of farmers reported being most constrained by their inability to use the internet. The study concludes that the information needs of farmers are varied, and farmers attach different levels of importance to these needs. It also concludes that farmers prefer inter-personal information sources to other sources of information, and that farmers' inability to use the internet is a major barrier to information seeking. Thus, the study recommends that information should be tailored to meet the needs of farmers, especially information on the control of pest and diseases. Finally, the study recommends that, since extension officers from the district officers were the most preferred source but not the most contacted, more should be done to make them more accessible by the farmers.

TABLE OF CONTENTS

| | |
|--|------------|
| DECLARATION | I |
| DEDICATION | II |
| ACKNOWLEDGEMENT | III |
| ABSTRACT | IV |
| LIST OF TABLES | IX |
| LIST OF FIGURES | X |
| LIST OF ACRONYMS | XI |
| CHAPTER ONE | 1 |
| INTRODUCTION | 1 |
| 1.0 BACKGROUND | 1 |
| 1.1 PROBLEM STATEMENT | 4 |
| 1.2 RESEARCH QUESTIONS | 6 |
| 1.3 RESEARCH OBJECTIVES | 6 |
| 1.4 SIGNIFICANCE OF THE STUDY | 7 |
| 1.5 ORGANIZATION OF THE STUDY | 8 |
| CHAPTER TWO | 9 |
| LITERATURE REVIEW | 9 |
| 2.0 INTRODUCTION | 9 |
| 2.1 DEFINITION OF CONCEPTS | 9 |
| 2.1.1 Concept of urban agriculture | 9 |
| 2.1.2 Concept of information | 11 |
| 2.1.3 Concept of information needs | 11 |
| 2.1.4 Concept of information seeking behaviour | 12 |

| | | |
|-------------|--|-----------|
| 2.2 | ROLE OF URBAN AGRICULTURE | 13 |
| 2.3 | CHARACTERISTICS OF URBAN VEGETABLE AGRICULTURE IN GHANA | 15 |
| 2.3.1 | Forms of urban agriculture | 16 |
| 2.3.2 | Types of vegetables grown | 17 |
| 2.3.3 | Production system of urban vegetable agriculture | 17 |
| 2.3.4 | Marketing of produce | 19 |
| 2.4 | CHARACTERISTICS OF URBAN VEGETABLE FARMERS | 20 |
| 2.4.1 | Sex of urban vegetable farmers | 20 |
| 2.4.2 | Age of urban vegetable farmers | 20 |
| 2.4.3 | Educational level of urban vegetable farmers | 21 |
| 2.4.4 | Association between urban vegetable farmers | 22 |
| 2.5 | INFORMATION DISSEMINATION TOOLS | 23 |
| 2.6 | INFORMATION NEEDS OF FARMERS | 24 |
| 2.7 | AGRICULTURAL INFORMATION SOURCES | 26 |
| 2.9 | SUMMARY AND CONCLUSION | 30 |
| 2.10 | CONCEPTUAL FRAMEWORK | 31 |
| | CHAPTER THREE | 36 |
| | METHODOLOGY | 36 |
| 3.0 | INTRODUCTION | 36 |
| 3.1 | STUDY AREA | 36 |
| 3.2 | TARGET POPULATION AND UNIT OF ANALYSIS | 39 |
| 3.3 | SAMPLE SIZE AND SAMPLING TECHNIQUE | 39 |
| 3.4 | METHOD OF DATA COLLECTION | 39 |
| 3.5 | METHOD OF DATA ANALYSIS | 40 |
| | CHAPTER FOUR | 42 |
| | RESULTS AND DISCUSSION | 42 |
| 4.0 | INTRODUCTION | 42 |

| | | |
|------------|---|-----------|
| 4.1 | DEMOGRAPHIC CHARACTERISTICS OF FARMERS | 42 |
| 4.1.1 | Gender distribution | 42 |
| 4.1.2 | Age distribution | 44 |
| 4.1.3 | Educational level | 45 |
| 4.1.4 | Experience level of farmers | 46 |
| 4.1.5 | Main crop produced | 46 |
| 4.1.6 | Change of farming location | 48 |
| 4.2 | INFORMATION NEEDS OF URBAN FARMERS | 49 |
| 4.2.1 | Farmer information needs | 49 |
| 4.2.1 | Farmer information needs and Importance of need | 51 |
| 4.3 | SOURCES OF INFORMATION AND FREQUENCY OF SOURCE CONTACT | 53 |
| 4.3.1 | Information sources contacted | 53 |
| 4.3.2 | Information obtained and sources | 56 |
| 4.3.3 | Frequency of information source contact | 58 |
| 4.4 | FARMERS' PREFERENCE OF INFORMATION SOURCES | 60 |
| 4.5 | CONSTRAINTS IN INFORMATION SEEKING | 63 |
| | CHAPTER FIVE | 65 |
| | SUMMARY, CONCLUSIONS AND RECOMMENDATIONS | 65 |
| 5.1 | INTRODUCTION | 65 |
| 5.2 | SUMMARY AND CONCLUSIONS | 65 |
| | REFERENCES | 69 |
| | APPENDIX | 79 |

LIST OF TABLES

| | |
|---|----|
| Table 4. 1: Experience level of farmers in the La Dade-Kotopon Municipality in Years | 46 |
| Table 4. 2: Main crop grown by farmers in the La Dade-Kotopon Municipality | 47 |
| Table 4. 3: Number of other vegetables cultivated by farmers in the Municipality | 47 |
| Table 4. 4: Change of Location in the past ten years | 48 |
| Table 4. 5: Need for information by Farmer characteristics | 50 |
| Table 4. 6: Farmer information needs and importance in the La Dade-Kotopon Municipality | 52 |
| Table 4. 7: Information sources contacted by farmers | 55 |
| Table 4. 8: Sources from which farmers obtained information | 57 |
| Table 4. 9: Frequency of information source use | 59 |
| Table 4. 10: Reason for preference of information sources | 61 |

LIST OF FIGURES

| | |
|--|----|
| Figure 3. 1: Wilson's second model of information behaviour (Case & Given, 2016) | 32 |
| Figure 3. 2: Map of the La Dade-Kotopon municipal | 38 |
| Figure 4. 1: Gender distribution of farmers in the La Dade-Kotopon Municipality | 43 |
| Figure 4. 2: Age distribution of farmers in the La Dade-Kotopon Municipality | 44 |
| Figure 4. 3: Educational level attainment of farmers in the La Dade-Kotopon Municipality | 45 |
| Figure 4. 4: Farmers' need for information for agricultural activities | 49 |
| Figure 4. 5: Most preferred source of information | 60 |
| Figure 4. 6: Constraints in farmer information seeking | 63 |

LIST OF ACRONYMS

| | |
|------|--|
| ICT | Information and Communication Technology |
| MoFA | Ministry of Food and Agriculture |
| NGO | Non- Governmental Organization |
| ODK | Open Data Kit |

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

Urban areas in developing countries mostly depend on the rural areas for their food needs. However, most farmers in the rural parts of developing countries farm with crude implements and are limited to a small land size, as such, an increase in the number of people in urban areas usually due to migration leads to increase in demand of food in the urban areas and the reduction of the workforce in the agrarian rural areas (Obosu-Mensah, 1998). This rapid urbanization brings problems such as food insecurity and increase in living cost. As a result of this, some urban dwellers have adopted urban agriculture either to cope with the rising food insecurity and living cost or as merely an investment strategy to compliment other sources of income (Orsini, Kahane, Nono-Womdim, & Gianquinto, 2013; Yeboah & Jayne, 2018).

Urban agriculture also serves a purpose of reducing transport requirements of agricultural produce between the rural production areas and urban areas, and tends to help urban households afford fresh products (UN-Habitat, 2014). Currently urban agriculture is practiced by more than 800 million people worldwide either as subsistence gardening or market oriented farming (Drechsel, Graefe, Sonou, & Cofie, 2006)

Jac, Ratta, & Bernstein (1996) defined urban agriculture as “food and fuel grown within a city or peri-urban area, produced directly for the market or for home consumption, and frequently

marketed by the farmers themselves or their close associates” (p.7). Usually, urban agriculture in sub-Saharan Africa focuses on perishables like vegetables and fruits for the urban market and can be practiced on small scale irrigated vegetable farms on vacant industrial plots to highly mechanized agribusiness in and around cities (Jac et al., 1996).

From the current statistics, the trend of urbanization in Ghana is increasing; currently 55.0% of the Ghanaian population is living in the urban parts of the country. This represents an increase from 29.0% in 1970 (The World Bank, 2018). This increase has mainly been attributed to rural-urban migration, and has led to urban agriculture becoming a livelihood strategy to many of the urban poor people, particularly migrant populations (MOFA, 2014). The main driving force for urban agriculture in Ghana’s major cities is the demand for fresh and perishable agricultural produce (RUAF Foundation, 2006). Added to this, the changing dietary patterns as a result of an emerging middle class in the urban areas in Ghana coupled with the challenges in rural–urban linkages, transport and traditional market chains have all contributed to urban agricultural growth (Pay & Bernard, 2014).

The rapid urbanization and increase in demand for urban agricultural products means that farmers need to get information about necessary technologies and the best ways to improve on their productivity levels so as to match this demand. With access to relevant agricultural knowledge and information, farmers could improve their work in order to sustain agriculture and also increase their economic benefits in the form of income from their production (Lwoga, Ngulube, & Stilwell, 2010).

Information -like land, labour, and capital- is a productive resource. Just like every other resource, it has the potential to influence the efficiency of agricultural production systems (Reddy, 2008). Farming is a knowledge-intensive industry and the need to obtain and process financial, climatic, technical and regulatory information to manage farms has become increasingly important (Just & Zilberman, 2002). This increase in the importance of information in agriculture can be mostly attributed to the changing conditions in the climate, technological advancement and more broadly globalization. Farmers now need a variety of information ranging from information on appropriate seeds, crop diseases, input and output prices, weather related information, market information, to pre and post-harvest management technologies in order to meet current market demands (Wanyama, Mathenge, & Mbaka, 2015).

Research on agricultural information have shown that access to information makes agricultural production systems more efficient (Abdul-Salam & Phimister, 2015). This efficiency is achieved because when farmers have relevant, reliable, and useful information, they can make the right decisions which will then enable them to get the best out of their limited resources (Demiryurek, Erdem, Ceyhan, Atasever, & Uysal, 2008). In view of this, information dissemination to farmers has shifted from being solely a government responsibility to one in which profit and non-profit organisations are concerned with for different purposes and to achieve different objectives.

1.1 PROBLEM STATEMENT

With the agricultural sector being an important sector in most developing countries including Ghana, farmers' access to relevant and useful agricultural information is key to improving their productivity levels and bringing about change in the social and economic aspects of communities around these countries (Lwoga et al., 2010).

Compared to rural farmers, urban agriculture farmers in Ghana are more likely to face challenges such as high risk of eviction from their farming space, limited land and water resources, and the lack of an institutional framework (Cofie et al., 2005; Pay & Bernard, 2014). Cofie et al. (2005), suggests that the inculcation of modern and best practices of cultivation would be an important tool to help urban farmers overcome some of the constraints they are faced with. Also, Larbi, Cofie, Amoah, & Veenhuizen (2014) adds that, to ensure that urban agriculture is sustainable, information dissemination is needed in order to convert best agriculture practices developed in research institutions ranging from integrated pest management to safe irrigation to improvements on farmers' fields.

To make maximum productive use of resources, it is necessary that farmers make use of the information available to them (Reddy, 2008). Agricultural information systems which serve as conduits to convey information to farmers can therefore help provide the needed information on land, labour, capital use and management so farmers can manage continuous changes that are likely to arise in their production systems (Demiryurek et al., 2008).

In urban Ghana, agricultural extension is the main system used in the dissemination of information to farmers. However, Pay et al. (2014) note that there is limited support by extension services to urban farmers because most of the information currently disseminated to urban farmers is from a curriculum which does not fit the production characteristics or situations faced by urban agriculture. Though this blanket curriculum used for information dissemination may yield some results, there is a need for information to be tailored to suit the farmers' needs. The information needs will vary from one individual to another depending on the functions or tasks they have to perform, the knowledge they already have, their past experiences, the need they seek to satisfy, and the nature of the issue at hand (Kuruppu, 1999). The varying nature of information needs between farmers is shown by research which has been done on agricultural information needs of farmers in other African countries, on rural farmers (Elly & Silayo, 2013; Lwoga et al., 2010) , or on general urban farmers (Daramola, Adebo, & Adebo, 2016; Edeoghon & Okoedo-Okojie, 2015; Ogunlade, Oladele, & Falaki, 2008).

In Ghana, research on urban vegetable farmers' information needs and information behaviour has however been scanty. The most notable is a study by Osei, Folitse, Dzandu, & Obeng-Koranteng (2017) that only focused on the sources of information to urban vegetable farmers in Accra. This study sought to fill the gap of identifying the information needs of urban vegetable farmers in the La Dade-Kotopon Municipality and to go a step further to find their behaviour in seeking information to meet these needs.

1.2 RESEARCH QUESTIONS

The specific research questions of this study are:

- What are the agricultural information needs of urban vegetable farmers in La Dade-Kotopon municipality?
- What are the sources of information used by urban vegetable farmers in La Dade-Kotopon municipality?
- What are the constraints to information search faced by urban vegetable farmers in the La Dade-Kotopon municipality?

1.3 RESEARCH OBJECTIVES

The main objective of this study was to assess the agricultural information needs and seeking strategies among urban vegetable farmers. Specifically, the study sought:

- To examine the information needs of urban vegetable farmers in the La Dade-Kotopon municipality;
- To examine the information sources and frequency of information source used by urban vegetable farmers in the La Dade-Kotopon municipality;
- To assess the preference of information source by farmers in the La Dade-Kotopon municipality;

- To examine the constraints to information search that exists in urban vegetable farming in the La Dade-Kotopon municipality.

1.4 SIGNIFICANCE OF THE STUDY

The study adds to the body of knowledge on urban agriculture in Ghana. The existence of urban agriculture in Ghana is recognized by the state as a component of the urban system (Obuobie, Keraita, Hope, & Agodzo, 2014); therefore, it is imperative that more knowledge is gained about how the production system works.

Also, the study on the information needs and seeking behaviour of farmers will help the agricultural directorate in La Dade-Kotopon Municipal Assembly and other local governments to structure effective information services or systems that will fit the needs of urban vegetable farmers. As Drechsel et al. (2014) explains, for knowledge or research to be useful, we must understand the pathways of information that exist in urban agriculture so the channels selected to reach the target groups are effective. Furthermore, studying how people go about satisfying their needs helps devise better strategies on how to reach their goals faster (Case & Given, 2016).

1.5 ORGANIZATION OF THE STUDY

The remainder of the study was organized into four chapters as follows:

Chapter two entails a review of the relevant literature on the topic.

Chapter three consists of the methodological approach of the study and the profile of the study area. Chapter four focuses on analysis of the data and presentation of results.

Finally, chapter five is made up of a summary of the main findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter reviews relevant studies undertaken on the subject of information needs, urban agriculture and information seeking, and includes key concepts and theoretical underpinnings. The concepts are discussed within the context of the study's focus area.

2.1 DEFINITION OF CONCEPTS

2.1.1 Concept of urban agriculture

There are varying definitions of the concept of urban agriculture in literature. These differences in defining the concept stem from the location of farming, type of animals or crops grown, purpose of engaging in the activity, the characteristics of farmers involved, and sometimes the method of marketing.

Zeza & Tasciotti (2010) provide one of the simplest definitions of urban agriculture, as “the production of crop and livestock goods within cities and towns” (p.1). Focusing solely on the location, urban agriculture has also been defined as “the practice of farming within the boundaries of towns or cities. Farming in this sense involves crop cultivation, animal rearing, fish farming, among others.” (Obosu-Mensah, 2002, p. 1).

Veenhuizen (2006), gives a more holistic definition of the concept of urban agriculture as “growing of plants and the raising of animals for food and other uses within and around cities and towns, and related activities such as the production and delivery of inputs, and the processing and marketing of products. Urban agriculture is located within or on the fringes of a city and comprises of a variety of production systems, ranging from subsistence production and processing at household level to fully commercialised agriculture” (p.1).

Dubbeling & Merzthal (2006) take the definition further by describing the systems involved. They defined urban agriculture as “a dynamic concept that comprises a variety of production (ranging from subsistence production at household level to fully commercialised agriculture), processing and marketing systems of food and non-food products. It takes place within heterogeneous resource situations, e.g. under scarce as well as abundant land and/or water resource situations, and under a range of policy environments that can be prohibitive or supportive to its existence and development” (p.1).

It can be deduced from these definitions that, for an agricultural production activity to be considered as urban agriculture, it has to be in the confines of the urban space or on the fringes of the urban area, and can range from the mere cultivation of vegetables in a backyard to a more commercial production of crops and rearing of animals within an urban area.

For the purposes of this study, urban vegetable agriculture is defined as the cultivation of vegetables, whether exotic or local in the urban space solely for the purposes of meeting market demand and earning income to either supplement a main source of income or as a main source of income.

2.1.2 Concept of information

Information is the basic building block of reality (Meijer, 2013). In studying the users of information, the concept of information may refer to the number of times an information seeker makes contact with an information source, or to denote the channel of communication between the seeker of information and the information source such as oral versus written information. Information must fulfil dual requirements as indicated by (Ingwersen & Jarvelin, 2005): information must be a product of an intentional transformation of an individual's cognitive structure, and it should be one which when received or perceived can change the individual's level of knowledge. This means that not everything out there is information in itself, but can become information when a conscious brain engages it at some point (Case & Given, 2016), and the same information transmitted through a medium can be used by different people to achieve different things (Wilson, 1981).

For this study, information is defined as contact with a specific information source and can be both passive and active contact. In passive contact, a vegetable farmer hears information he does not intentionally seek, such as through television, but in active contact the farmer intentionally seeks a source such as an extension agent.

2.1.3 Concept of information needs

The concept of information needs signifies “intentionally identifying a gap in knowledge available to an individual which may lead to the search for information and formulation of requests for information” (Ingwersen & Jarvelin 2005, p.20). This need for information by an individual is defined or shaped by the situation the individual finds him/herself and may differ

between time and space (Case & Given, 2016). Thus, it is important to identify the tasks or roles of the individuals necessary when studying the information needs of that individual that group of people (Ingwersen & Jarvelin, 2005). Wilson (1981) purports that a need for information is purely subjective and cannot be directly deduced by an observer but can only be discovered from observing and evaluating the behaviour of a person or through getting the individual in need to give reports.

2.1.4 Concept of information seeking behaviour

In literature, the terms ‘information seeking behaviour’, ‘information searching behaviour’ and ‘information using behaviour’ are often used to refer to the same concept of searching several available sources or channels and using that information for a specific task (Chinnasamy, 2016). The common ground between these terms or concepts is that when there is a need, the individual usually seeks information to fulfil the need (Moodley, 2013).

Information seeking behaviour arises as a result of identifying a need for information, and involves consulting a source of information (formal or informal) which may result in the information seeker or user getting the needed information or not being successful (Wilson, 1999). It can also refer to “human behaviour dealing with searching or seeking information by means of information sources” (Ingwersen & Jarvelin 2005, p.21)

In agricultural development research, the term information seeking behaviour is operationalized differently by different researchers. Lwoga et al. (2010) operationalize information seeking behaviour as a farmer attempting to find information and measured it in

terms of whether a farmer tried to find ways to solve their information-related problems, whether the solution applied was successful, and which sources these farmers contacted in the attempt to address their information-related problems. For Ogunlade et al. (2008), information seeking behaviour is the information sources used by farmers, the channels used in communication with these sources, the purpose for choosing specific sources of information, and the challenges they face in accessing the information. Another study on information seeking behaviour of farmers also operationalized it as the sources of information used by farmers, the source preferences, and the constraints to information seeking (Acheampong, Nsiah Frimpong, Adu-Appiah, Asante & Asante, 2017a).

This study operationalizes information seeking behaviour as the sources of information, the preference of farmers for sources, and the constraints to information search. This is a people-oriented approach to the study of information seeking behaviour as opposed to the system oriented approach to studying information seeking behaviour, the latter of which focuses solely on the sources of information specifically, the characteristics of the sources and how the sources are used (Case & Given, 2016). The use of a people-oriented approach acknowledges the searcher of information- in this case the farmer, as a finder, creator, and the user of information.

2.2 ROLE OF URBAN AGRICULTURE

Urban agriculture has become an important intervention strategy for the urban poor to earn extra income while also giving them the opportunity to grow their own food on plots inside or outside the city (Armar-Klemesu, 2001). For some of the farmers involved in urban agriculture,

it serves as the sole or main source of income; for others it is a second source of income (Danso, Hope, & Drechsel, 2014), thus making it an important component of the push towards development in the developing world, especially in sub-Saharan Africa. In Ghana, urban agriculture also serves as a source of employment and income, which provides more opportunities for urban households to improve their diet (Drechsel, Adam-Bamford, & Raschid-sally, 2014).

In most parts of Africa, urban agriculture affords urban households the opportunity of complementing household food consumption which leads to increased income because these families will spend less on buying foodstuffs (UN-Habitat, 2014). In Ghana, about 600,000 residents in Accra and Kumasi from all income categories engage in some form of backyard gardening mainly to relieve the household of its necessary budget allocation for foodstuff. However, this does not really play a key role in household livelihood strategies regarding food supply because of the space limitations (Danso et al., 2014).

Apart from backyard gardening as a form of urban agriculture which Danso et al. (2014) note usually serves primarily subsistence purposes and improves farmers' food security, urban market-oriented farming is done with the aim of providing some form of cash generation and contributes to poverty reduction. Armar-Klemesu (2001) however adds that an even more developed form of urban agriculture which is more commercial serves as a major component of the urban food system by supplying perishable products such as vegetables, fresh milk and poultry products. This means that urban agriculture complements the amount of food produced

in the rural part of the country and also makes food more accessible to people in the urban space.

Beyond the provision of urban poor livelihoods, employment, and food security, urban agriculture provides other benefits. One of these is the recycling of urban waste products such as organic waste from agricultural produce and animal manure into compost by farmers (Danso, Drechsel, Obuobie, Forkuor, & Kranjac-Berisavljevic, 2014). Added to this, urban agriculture serves as a buffer zone manager and flood control mechanism, thus supporting climate change adaptation strategies, land reclamation, land protection, resource recovery (from waste), urban greening, biodiversity conservation (Danso et al., 2014). The cultivation of the land also keeps the area managed and tidy and, helps in the beautification of the city by preventing land or open spaces in the city from becoming overgrown (Allen, Apsan-Frediani, & Wood-Hill, 2014). It is also important because cities need green open spaces which generally contribute to the well-being of citizens (Allen et al., 2014).

In summary, urban agriculture is significant in the development of the economy of a nation and brings about added benefits which may directly and indirectly impact the well-being of individuals in the society or nation. As such, it is an integral part of the developmental framework of any developing society.

2.3 CHARACTERISTICS OF URBAN VEGETABLE AGRICULTURE IN GHANA

Globally, there are some common features of urban agriculture, some of which include the “closeness of production sites to the markets where produce are sold; its high competition with

other infrastructural demands for limited space; use of available urban resources such as organic waste (solid and water) for production; low degree or sometimes non-existent farmer organisation; production of mainly perishable products; and, high degree of specialisation of production” (Veenhuizen, 2006, p.10).

However, across the world there are some variations from country to country with regards to its characteristics. The characteristics discussed in this review include the forms of urban vegetable agriculture, types of vegetables grown, production system practiced, and how produce are marketed in Ghana.

2.3.1 Forms of urban agriculture

Urban agriculture can be categorized on the basis of cultivation space employed and the purposes for which the farming is done.

On the basis of cultivation space employed, urban agriculture in Ghana usually takes any of these two forms; enclosed cultivation and open-space cultivation, the latter which is usually done by farmers of lower socio-economic status (Obosu-Mensah, 2002). Enclosed farming is usually done indoors using modern and more sophisticated technologies such as greenhouses, these are more capital intensive. Open-space farming on the other hand makes use of land available in the urban space.

Generally, vegetable production in urban agriculture can be for the purpose of either market or for home consumption (Jac et al., 1996), but in Ghana, only farmers specializing in traditional

(indigenous) vegetables consume a part of their produce, those specializing in exotic vegetables do not consume but produce solely for sale (Danso et al., 2014; Obuobie & Hope, 2014).

The forms of urban vegetable agriculture is an important characteristic in studying the information needs of urban vegetable farmers, because as Ingwersen & Jarvelin (2005) explain, the kind of tasks an individual performs will shape the kind of information he or she needs at a particular time.

2.3.2 Types of vegetables grown

Danso et al., (2014) reported that the most commonly-grown urban vegetables for intensive market production or on rain-fed farming on designated construction plots in Ghana are also the most perishable (leafy) ‘exotic’ (non-traditional) vegetables, such as lettuce, spring onions and cabbage.

Added to the exotic vegetables, local vegetables and other green leafy vegetables which are important in the Ghanaian diet are also cultivated, and some farmers also plant a few staple crops, such as maize for home consumption during the dry season (Armar-Klemesu, 2001).

2.3.3 Production system of urban vegetable agriculture

2.3.3.1 Land tenure system

The farming of vegetables in urban Ghana is usually done on open lands along streams which carry most of the waste water in the urban area, farmers usually use the waste water for irrigation of their vegetables (Armar-Klemesu & Daniel, 2000).

Most of the lands used are owned by the Government, and are usually lands either unsuitable or prohibited for construction purposes like lands underneath high-tension poles; but favourable for seasonal or year-round irrigation farming (Drechsel et al., 2014). Normally, farmers do not pay rent on these lands and only have an informal agreement with the landowner or caretaker and such there is no security of tenure, this means they can only use land as long as owners do not need them (Danso et al., 2014). Some farmers who farm under high tension cables enjoy some form of land security, because these lands cannot be built on (Allen et al., 2014).

Due to the threats of land insecurity and the fact that farmers would need to maximize returns on the land they cultivate, they have a higher probability of contacting available information sources with more preference for sources they see to be more reliable (Emmanuel, Owusu-sekyere, Owusu, & Jordaan, 2016). Also, Raungpaka & Savetpanuvong, (2017) note that where resources are scarce, small scale farmers are more likely to share information among themselves. This is likely to lead to more farmers accessing information from informal sources rather than formal sources as found by Lwoga, Stilwell, & Ngulube (2011) who reported that farmers consulted their friends and neighbours more than they did agricultural extension agents and other formal sources of information.

2.3.3.2 Irrigation system

An important aspect of the urban agriculture production system is the system of irrigation employed. Urban agriculture irrigation in Ghana varies from one urban part of the country to the other, mostly depending on the situations that prevail in the various systems.

Danso et al., (2014) reported about 60.0% of urban farmers grow vegetables only during the dry season using irrigation water. They reported that one common attribute of irrigation water used across the country is the highly polluted nature of the water and sources which range from streams, drains, reservoirs, piped water, to storm water drains. Keraita & Cofie (2014) note that the mechanisms of irrigation used by farmers are arduous, and farmers are not making use of new systems such as drip irrigation because it did not fit their farming practices.

Hence, it may be imperative that information on new irrigation technologies take into consideration the farmers' current production systems as this may affect the kind of information farmers may need.

2.3.4 Marketing of produce

Marketing of farm produce by urban vegetable farmers in Ghana is usually done by the farmers themselves or their close associates (Jac et al., 1996). Farmers have the option to sell their produce directly to wholesalers or retailers at farm gate or send it to wholesale points where these products are bought; the latter is however the most common form of marketing of exotic vegetables in Ghana (Henseler & Amoah, 2014).

One challenge of the marketing system in urban agriculture in Ghana is limited transparency about price information (Henseler & Amoah, 2014), as a result information on possible market opportunities and other related market information is likely to be an important information need for farmers.

2.4 CHARACTERISTICS OF URBAN VEGETABLE FARMERS

The characteristics of farmers who are engaged in urban vegetable farming and the kind of information needs they may exhibit are reviewed in this section. The characteristics include the sex of farmers, age, educational level, and their associations.

2.4.1 Sex of urban vegetable farmers

Urban vegetable farming in Ghana is male dominated; females are mostly involved in the retail of the produce as opposed to the farming and they form majority of the marketing population (Egyir, Cofie, & Dubbeling, 2014; Obuobie & Hope, 2014). This has been shown to be due to the limited access of women to resources such as land and financial resources needed for farming (Khataza, Doole, Kragt, & Hailu, 2018).

The sex of a farmer has been shown to have an effect on access to agricultural extension services with females having a lower probability of accessing information sources than men do (Emmanuel et al., 2016). This difference in access to information between male and female can also be attributed to males having more access to financial capital than females which means females have very limited access to complementary farm inputs needed to implement improved farm technologies or knowledge they may acquire (Khataza et al., 2018).

2.4.2 Age of urban vegetable farmers

As compared to other farming sectors in the country like cocoa, urban agriculture in Accra has a fairly young population (Egyir et al., 2014). Egyir et al. (2014) reported that the age range of

urban farmers was between 24 and 68 years while Obuobie & Hope, (2014) presented a slightly different report that majority of urban vegetable farmers were between 20 – 40 years of age.

The age structure of urban agriculture is likely to have an effect on the use and access of information. Young farmers are more likely to contact information sources or need information on farming practices because those between the ages 20 to 40 years are likely to have little experience and hence are more likely to rely on other information sources other than themselves, while older farmers can rely on their personal experiences to solve problems related to production (Emmanuel et al., 2016).

The age of farmers is also likely to affect their preference for methods through which information is disseminated; young people usually show a greater propensity for accessing information from computer-assisted methods than older farmers (Riesenberg & Obel Gor, 1989).

2.4.3 Educational level of urban vegetable farmers

With regards to their educational levels, the majority of urban farmers in Ghana have low levels of education or none at all (Obuobie & Hope, 2014). The information sources used by educated farmers is likely to be different than those used by farmers without formal education. The zeal or urge to search for new innovations and the ability to process information received have been noted to facilitate information seeking among farmers, and these attributes have been observed to be more prominent in farmers who are more educated (Khataza et al., 2018).

In addition, since most of the information on new technologies tend to be in English and are expensive, formally educated farmers are more likely to access information in sources like newspapers and publications (Aker, 2011). The level of education attained by farmers has been shown to have an effect on the method of information dissemination farmers prefer to use. It has also been noted by Just and Zilberman (2002) that farmers with higher education are more likely to use information from formal sources like public and private extension sources and even use raw data to make farming decisions, than farmers with little or no education.

2.4.4 Association between urban vegetable farmers

Most urban vegetable farmers do not also belong to any urban farmer organizations or farmer associations (Larbi et al., 2014). This has been attributed to urban vegetable farmers having low sales and therefore cannot accumulate adequate savings, acquire assets or contribute to cooperatives when they join one (Egyir et al., 2014).

The use of information between farmers in associations and non-member of associations have been shown to vary. Farmers in associations have been noted to use more personal information sources than public sources of information sources and have also been shown to prefer contacting other farmers within their associations for information rather than those not in their associations (Demiryurek et al., 2008).

2.5 INFORMATION DISSEMINATION TOOLS

Information dissemination can take different forms. It can be formal or informal depending on who is disseminating the information or the system used to disseminate the information (Just & Zilberman, 2002). Formal information is usually written and based on research and disseminated through extension agents from public agencies, commodity groups, and other commercial information agencies like media houses (Just & Zilberman, 2002). Informal on the other hand is usually obtained through conversations and can be between farmers, between farmers and produce buyers, and through other informal conversations.

In Ghana, as in many other sub-Saharan African countries, the use of extension agents as a means of disseminating agricultural information was birthed out of the existence of information asymmetries between farmers, especially poor farmers, who could not access other sources of information like radios and newspapers (Aker, 2011). This has been the main means of transmitting information from research facilities to farmers. This method of information dissemination has however not been able to bridge the gap between technological innovation centres and farmers.

Information and Communication Technology (ICT), which encompasses internet, mobile phones, radio and television has been touted as a tool for bridging the barriers that exist in of information between technological innovation and farmer access to information. The internet has been identified to increase the possibility of a farmer having access to market outside his farming area, as well as obtaining information on new techniques to increase production and meet market demands (Chhachhar, Qureshi, Khushk, & Ahmed, 2014).

Despite these benefits, the use ICT has not been fully utilized in developing countries for several reasons. These reasons include low usage of radios in sub-Saharan African countries coupled with the fact that radio communication is usually one-way and does not cater for farmer-specific problems, newspapers are also usually expensive to get and inaccessible by illiterate populations (Aker, 2011).

2.6 INFORMATION NEEDS OF FARMERS

Farmers, especially those who do not have enough resources, require information relating to their agricultural activity (Bachhav, 2012). Factors such as farm acreage, production problems faced by farmers, and diversified operations can also be a determinant in the kind of information needed (Byamugisha, Ikoja-Odongo, & Nasinyama, 2010; Larson & Duram, 2000). This means that the information needs may vary from farmer to farmer, usually ranging from information on pest and disease control to marketing information.

Information on pest and diseases control is an important information need for crop farmers especially in the rural areas. The need for information on pest and diseases is one of the very few information needs that stands out as similar in studies from different countries and across different production systems. Several studies have reported that majority of farmers mentioned information on the control of plant diseases and pests as the main information they needed (Lwoga et al., 2011; Ogunlade et al., 2008).

Aside the need for information for pest and diseases which is a common information need across different geographical areas, other information needs differ from place to place. In

general, in rural agricultural crop production, information on input availability such as fertilizer, improved seeds, equipment, and weather are some of the common information needs from places like rural India (Shanta Meitei & Purnima Devi, 2009), and rural Tanzania (Elly & Silayo, 2013), and in Ghana's rural rice sector (Acheampong, Nsiah Frimpong, Adu-Appiah, Asante, & Asante, 2017b). The level of importance of these needs, however, differs from place to place. Though the production systems in these rural settings are likely to be the same, information on irrigation are a need in areas like rural India (Shanta Meitei & Purnima Devi, 2009) but not a need in rural Tanzania (Elly & Silayo, 2013).

However, information need in Africa's urban agriculture shows a slight difference from the needs of rural farmers. Ogunlade et al. (2008) report that the information needs of urban farmers in Kwara state, Nigeria include disease and pest management, access to credit, input supply, use of agrochemicals, marketing of produce, improved practices, storage.

The needs of urban farmers, however, differ in a different Nigerian state like Ondo where Daramola, Adebo, & Adebo (2016) carried out a study on dry season vegetable farmers in Nigeria. They reported that majority of urban vegetable farmers needed information on finance more than any other information, other information needs such as: information on market, formation of associations for better bargaining; formation of marketing days to create awareness on produce, and care in handling of produce were important market information needs. Within the same country of Nigeria, Edeghon & Okoedo-Okojie (2015) observed that urban youth farmers in Lagos needed a different set of information with more focus on crop spacing, fertilizer application, improved variety, seed multiplication and irrigation. These

findings show that information needs by farmers are different between countries and within countries.

In summary, the different agricultural production systems that exist between urban and rural settings means that the type of information given to a group of farmers must be tailored to fit their needs. However, in Ghana, the Directorate Of Agricultural Extension Services (2013) reported that extension services in the country do not meet the information needs of farmers. From their report, the most common information delivered to farmers – general agronomic practices, was part of the least needed information by farmers. This suggests that the information currently relayed to the farmers might not be what the farmers really need and may be a constraint to the search for information by the farmers.

2.7 AGRICULTURAL INFORMATION SOURCES

Information sources used by farmers vary extensively from place to place even within the same country. Ogunlade et al. (2008) pointed out that the use of a particular source of information is dependent on the content carried by that source or channel and the choice of these sources of information is mostly based on the ease of access, reliability of the information based on experience, and ability to access practical knowledge from the source.

Larson & Duram (2000) compared the information sources of sustainable agriculture farmers to those organic farmers in the United States of America and found that the major sources of information to both sets of farmers varied. The study revealed that the major sources of information for organic farmers were other farmers, books and group activities. Extension

services and the internet formed a minimal source. On the other hand, sustainable farmers used group activities, other farmers, and farm magazines as their main source of information. Though the sources were mostly similar, differences existed between the two sets of farmers.

In Asia, some studies have been done to find out the information sources used by farmers. Zhong, Yang, & Chen (2015), revealed that the preferred information sources of vegetable farmers include contacting others in person, bulletin boards, mobile phones with or without internet- through phone calls, and computers. Bachhav (2012), in studying the information needs of rural farmers in India also noted that Newspapers, fellow farmers and government offices were the major sources of information to farmers in general. A minority of the farmers also sought information from other sources like television, magazines, agricultural exhibition. Another study done in India revealed that the main channels of information search were radio and Television, specifically those available in local dialects and regional languages (Shanta Meitei & Purnima Devi, 2009).

In Africa, some similarities run through literature. Akwango, Obaa, Turyahabwe, Baguma, & Egeru (2017), report that in Uganda, the preferred sources of information on drought early warning signs was mainly through parish chiefs, followed by extension staff and the use of drama. Radio was among the least used by the households to access information. Although it was the least used, radio featured as the most preferred channel of accessing information by the respondents followed by the Parish Chiefs and drama. The reasons given for radio, was that “it could easily be accessed through friends and neighbours” (Akwango, Obaa, Turyahabwe, Baguma, & Egeru, 2017. p. 8)

In Tanzania, Lwoga et al. (2011), revealed that farmers mostly sought information from friends and neighbours followed by extension officers, agricultural input suppliers, and family or parents. Farmers also used personal experiences, village leaders, farmer groups, district officials, middlemen, village meetings and cooperatives as sources of information. Overall the formal means featured more than the informal means. Another study on rural farmers in Tanzania by Elly & Silayo (2013), also revealed that farmers get their agricultural information through interpersonal communication, social gathering, farmer groups, village leaders, cell phones, input suppliers, extension officers, radio, public address systems, exhibitions, village signboards, and NGOs. The study also revealed that modern modes of dissemination of information like television and print media was not a prominent channel of sourcing information because most of these do not carry any information to help the farmer in the local context (Elly & Silayo, 2013).

Consolata, Msuya, & Matovelo (2016) in their research on the sources from which information was obtained by urban and peri-urban livestock farmers in Tanzania, revealed that a majority of the farmers acquired information from veterinary shops and extension officers. Fellow farmers, print sources, exhibitions and seminars were also other sources of information for farmers, though not prominent. In terms of frequency of information sourcing from these sources, the study observed that the veterinary shops were the most frequently used source of information. This was attributed to the low number of extension officers and the lack of access to seminars and unavailability of print media.

Edeoghon & Okoedo-Okojie (2015) observed that the most prominent source of information to urban farmers in Nigeria was through extension agents, with family and friends also being an important source of information. The use of radio and newspapers for sourcing agricultural information was low. Ogunlade, Oladele, & Falaki (2008) also found out that for most urban farmers in Nigeria, the main source of information was personal experience. In addition to personal experience, friends and print media were minor sources of information for urban farmers. Information from extension services and the internet were information sources that were not used by majority urban farmers. The use of personal visit was noted as a frequently used means for soliciting information. Group meetings and publications were used means but not very frequently used. Radio/TV and phone calls were the least used means of getting information.

In Ghana, this difference across farming specializations and geographical area is also evident. Acheampong et al. (2017), in their research on rice farmers reported that majority relied on personal experience, friends and family for most of their farming information. The study claimed that the use of extension services and radio were not important sources of information because, many of the farmers did not know their extension agents and did not also know if there were programs aired on radio from which they could get information. Although personal experience was the most used source of information, farmers indicated that it was the least preferred source of information; majority of them claimed that information from friends was the most preferred source of information followed by the family as an information source.

In urban vegetable farming in Accra, Osei et al. (2017) report that most urban vegetable farmers in Accra use radio as source of information, which they attributed to the addition of radio as an accessory on mobile phones. Friends and extension agents were other sources of information which was used by more than 50.0% of the respondents. Other minimally used sources of information were agrochemical shops and television.

2.9 SUMMARY AND CONCLUSION

Urban agriculture farming which plays an integral role in the livelihood, employment, and food security of the urban poor has been shown to be a more heterogeneous than homogeneous agricultural sector. The heterogeneity is observed in the farmer characteristics and production characteristics as shown in the literature reviewed.

Information which is a fundamental part of any task-oriented system also varies in terms of the needs expressed by these differing groups of farmers, the sources contacted, and the way the information is sought from these sources.

2.10 CONCEPTUAL FRAMEWORK

Over the past five decades, several models have been developed to describe or explain the information needs, and the information seeking behaviour of individuals in different fields. For this study, Wilson's second model of information behaviour formulated in 1996 will be adapted. An earlier model developed in 1981 was based on the propositions that information need is not a primary but secondary need which arises out a basic need, and that in trying to find information to satisfy a need the individual will face barriers (Wilson, 1999).

The 1996 model which was adapted in this study differs from the first in the sense that, the main antecedent in the second model is the person-in-context as opposed to the first model which focuses on the demand for information itself. The main intervening variables between the need for information and the sources contacted in the 1996 model are the psychological and demographic characteristics of the information seeker, role-related and environmental characteristics existing in the information seeker's space, and characteristics of the source of information. The first model however ignores these characteristics that may exist between the information need and the success or failure of the information seeking behaviour and depicts demands on the information systems as the main variable in the first model (Case & Given, 2016).

Wilson's model can be used to replicate an individual's information activities, from the inception of a need based on the particular individual in context to the stage where the individual contacts an information source in order to acquired information about his or her farming practices.

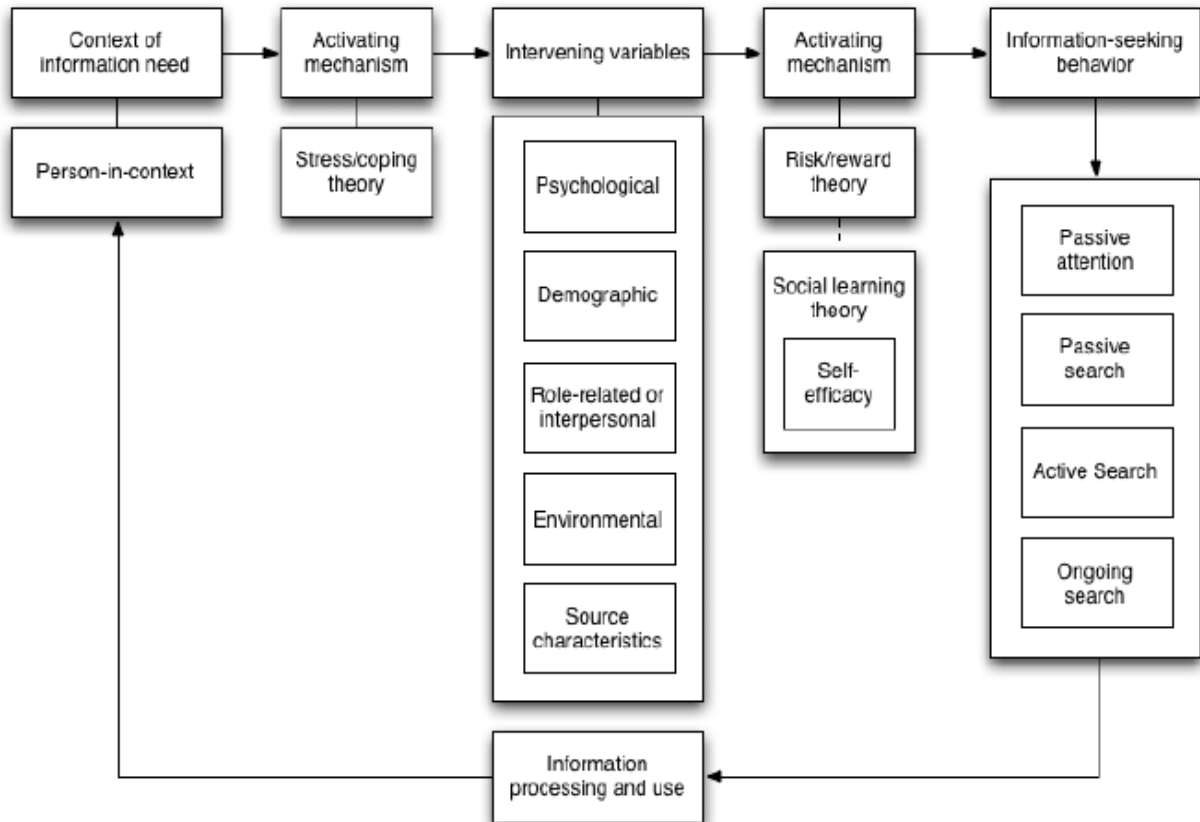


Figure 3. 1: Wilson’s second model of information behaviour (Case & Given, 2016)

The framework assumes that an individual’s need for information may arise as a result of the context of the need. This context may vary from time to time and is not static, and may vary from one individual to another, the context of the information need can be the features of the individual being studied, the work or social roles of the individual, or in a macro sense, the environment in which the urban individual finds him or herself (Niedźwiedzka, 2003).

There are certain motivators which will determine if a person searches for information and how they go about the search. These motivators, which Wilson (1999) terms as ‘activating mechanisms’, are explained by the stress/coping theory which is a problem-focused theory (Wilson, 1997). The theory explains that when individuals appraise that the demands of a

situation caused by their person-environment interaction exceeds their resources, they will resort to cope by regulating negative emotions in order to change the realities of this interaction and this will lead to the need for information. Coping serves two functions: the emotion-focused function which is internal, and the problem-focused function which is external. The latter would induce a search for information in that it regulates negative emotions of distress and management in an attempt to change the person-environment realities. The motivators of information search are affected by the intervening variables¹. The relative value of the intervening variables – whether high or low-- determines whether they will be a hindering factor in the exhibition of information behaviour or a supporting factor (Niedźwiedzka, 2003).

The risk and reward theory like the stress/coping theory is also seen as an activating mechanism in Wilson's model. The risk and reward theory tries to explain why people prefer to use some information sources more frequently than they use others (Case & Given, 2016). In summary, the amount and type of information source used by an individual to reduce the perceived risk is dependent on the amount and type of risk faced (Murray, 1991). Also, the amount and type of risk will define an individual's information needs and an individual who perceives a higher risk will seek more information than one who perceives lower risk (T. D. Wilson, 1997).

As is shown in the model, the particular source of information an individual contacts to get information is based on his or her preference for that source, this is same for the frequency at

¹ Intervening variables serve as moderating variables that represent effects of various external conditions on the information behaviour of individuals.

which the individual contacts the sources which are available to him or her and explains the individual's behaviour to information search.

This study focuses on the characteristic of the individual with the belief that it determines the choice of information need and also the level of importance a person accords to a particular information need. The work roles of the individual are not considered to influence the context of the need; this is because they are all vegetable farmers and their work roles are likely to be the same. The social roles of the individuals can also affect the information need based on the groups an individual belongs to. The urban farming environment can also shape the context of information needs of individuals, this means that the information services and systems in urban agriculture, the technology available to individuals, and the traditional roles of males and females in urban agriculture will condition information needs. These may stimulate or hinder information need behaviour.

The first set of the intervening variables which was be used in this study is the demographics characteristics of farmers. This includes the age, sex, experience as a vegetable farmer, and educational level attained by the individual. The role the individual plays will also affect his or her motivation to look for information; this includes an individual's role in an association or level of responsibility accorded him or her in the farming circle. These roles will either create opportunities in the access to information or act as stumbling blocks in the quest for information (Niedźwiedzka, 2003). The third of the intervening variables which is the environment is conceptualised in this study to be whether farmers act collectively in groups or individually, and will also include inequalities that exist in the search for information. Finally, the

characteristics of the source such as the availability, reliability, timeliness, appropriateness, and direction of information flow are also seen as intervening variables in this model.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter discusses the study area in which the study is conducted. The target population of the study, method of sampling, methods of data collection, and methods of data analysis are also discussed in this chapter.

3.1 STUDY AREA

This study was conducted in the La Dade-Kotopon Municipal Assembly of the Greater Accra Region of Ghana. The municipal was once part of the Accra Metropolitan Assembly until in June 2012 when it was separated and became a municipal assembly on its own. The capital of the municipal assembly is La. The municipal Assembly was established by the Local Government Act, 1993 (Act 462) with Legislative Instrument 2133 in line with the government of Ghana's objective of deepening decentralization and grassroots development by bringing larger Metropolitan, Municipals and District Assemblies to manageable sizes.

The municipal covers a land area of 360sq km and is located on Longitude 050 35'N and Latitude 000 06W. The municipality is bounded on both North and West by Accra Metropolitan Assembly, on the East by Ledzokuku Klowor Municipal Assembly and on the South by the Gulf of Guinea. The population of the Municipality stands at 183,528 with a sex distribution of 86,738 males and 96,790 females (La Dade-kotopon municipality, 2013).

The La Dade-Kotopon municipality lies in the Coastal Savannah zone and has two rainy seasons. The first begins in May and ends in mid-July while the second season begins in mid-August and ends in October. The average annual rainfall is about 730mm, which falls primarily during the two rainy seasons. There is very little variation in temperature throughout the year. The mean monthly temperature ranges from 24.7°C in August (the coolest) to 28°C in March (the hottest) with annual average of 26.8°C. The daylight hours are practically uniform throughout the year. Relative humidity is generally high varying from 65 percent in the mid-afternoon to 95 percent at night.

The vegetation of the Municipality consists of dense clusters of small trees, shrubs and grasses, which grow to an average height of six metres. The soils in the municipality are mostly not fertile for the cultivation of crops. However, there are pockets of small-scale agricultural activities where farmers mostly grow vegetables and fruits for both consumption and commercial purposes.

The percentage of the population in the municipality who are involved in agriculture, forestry and fisheries currently stands at 1.5%. According to Danso, Drechsel, Obuobie, Forkuor, & Kranjac-Berisavljevic (2014), the number of agricultural farmers in municipal assembly is estimated at 200 to 340 with these farmers cultivating an estimated aggregate land area of about 140 to 200 hectares. In the past, the municipal was an active location for urban gardening, this has however changed in the last few years due to the increased demand for land for urban development purposes (La Dade-kotopon municipality, 2013). This has caused most of the farmers to either move away from the municipality or quit farming (Allen et al., 2014). Allen

et al. (2014) estimate that between 2010 and 2011, about 47.0% of agricultural land was lost to residential development either from estate developers or from individuals (Allen et al., 2014).

The farming area of La in the municipal has been noted as one of the urban agricultural sites in Accra which is currently disappearing or shrinking (Danso, Drechsel, et al., 2014).

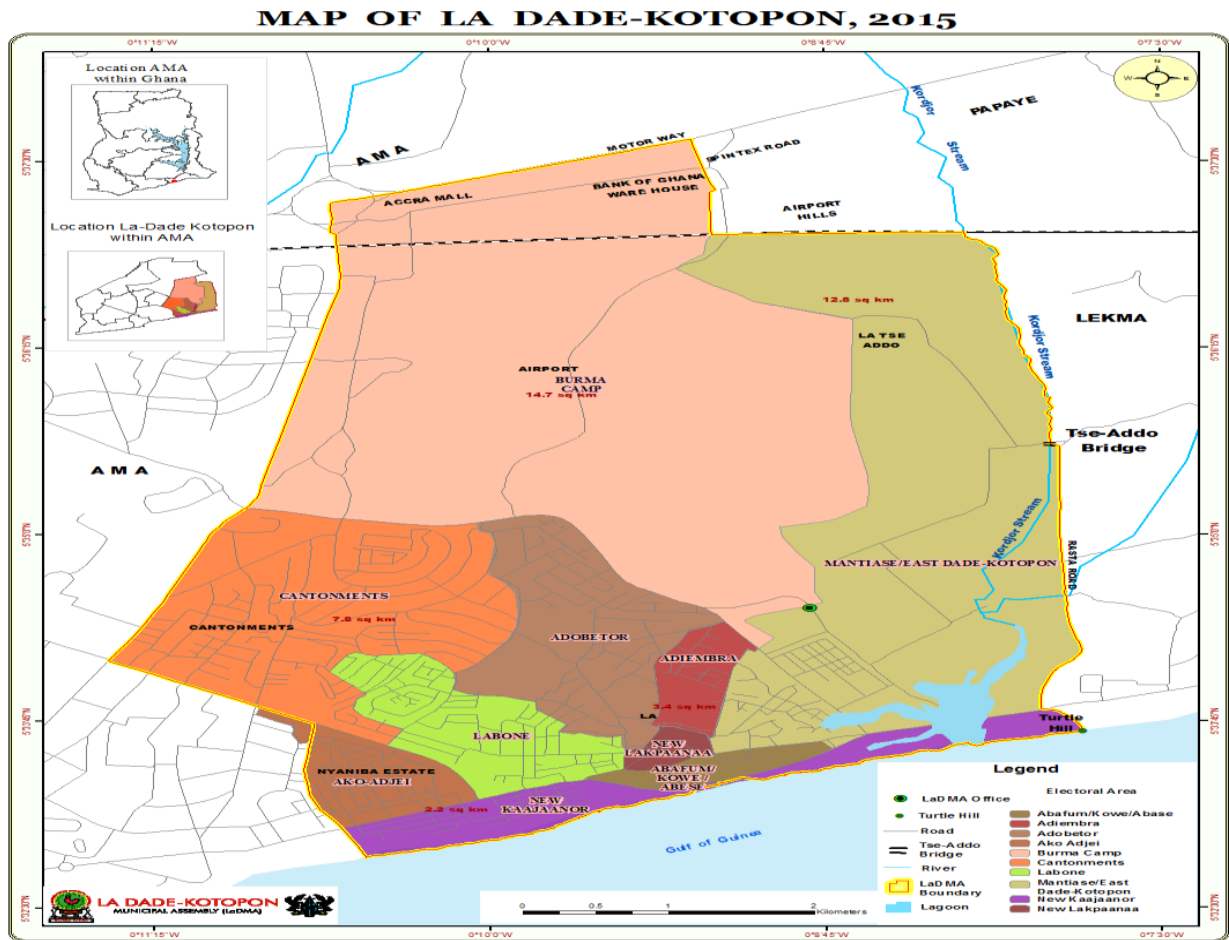


Figure 3. 2 Map of the La Dade-Kotopon municipal

Source: (Department of Agriculture LaDMA, 2017)

3.2 TARGET POPULATION AND UNIT OF ANALYSIS

The target population for this study were farmers who were cultivating local or exotic vegetables in the 2019 farming season beginning January, 2019, and who had their farms located within the boundaries of the La Dade-Kotopon municipal assembly (LADMA).

The farmers were selected from within five locations: La, Burma camp, Airport hills, Sowatey and Tse Addo. The unit of analysis used for the study is the individual farmer.

3.3 SAMPLE SIZE AND SAMPLING TECHNIQUE

The census survey technique was employed for this study because of the small population of 60 vegetable farmers in the municipal of interest, as estimated by a baseline survey by the Department of Agriculture LaDMA (2017). The census survey was used in this study because it accords everyone the opportunity to participate, reduces concerns about accuracy of the sample size, and provides information that is well representative of the vegetable farmers (Parker, 2011).

3.4 METHOD OF DATA COLLECTION

Primary data and secondary sources were collected and analysed for this study. Primary data was collected from vegetable farmers by administering questionnaires (see appendix) through face-to-face interviews. Secondary data on the number of farmers, farmers' location and contact details was obtained from the baseline survey conducted by the La Dade-Kotopon municipal assembly in 2017.

Face-to-face administration of semi-structured questionnaires was used to collect quantitative data from the vegetable farmers. The questionnaire was structured into four segments; the first segment focused on the demographics of the farmers, the second focused on the information needs of farmers, the third segment focused on the information sources, and the fourth contained questions meant to solicit information on farmers' constraints to information search. Closed ended questions were used to get responses from farmers.

The questionnaire was administered using a Computer-Assisted Personal Interviewing (CAPI) software called the Open Data Kit (ODK). The benefits of using the ODK include less errors in data collection and entry, shorter lag time between result collection and result analysis hence making data collection and analysis faster and more efficient.

3.5 METHOD OF DATA ANALYSIS

Quantitative data on the information needs of farmers was collected by asking farmers to identify multiple needs collated from literature on farmer information needs. They were also asked to rank the importance of the needs identified. The ranks were then analysed and represented in tables to show the level of importance farmers accorded the different information needs. This methodology was used by (Ogunlade et al., 2008) in their research on information needs and seeking behaviour among urban farmers in Kwara State, Nigeria.

In addition, farmers information needs was cross tabulated with their characteristics such as demographics which included age, sex, educational level; their associative characteristics represented by their membership in farmer associations; and their farming characteristics

represented by the number of additional crops they grow aside the major crop. The relationship between these characteristics and the need for information was tested using the chi-square analysis.

Farmers' were also asked to identify the information sources contacted in the last six months of production (from January - June 2019) and the frequency with which they contacted these sources. Descriptive statistics, specifically frequencies and percentages were used as the basis of analysing the results from the interviews in order to find out which sources farmers used the most and the frequency with which they had contacted these sources in the previous six months.

Farmers were also asked to identify which of the sources was their most preferred information source and they were asked to identify why the chosen source was their preferred source. This information was then analysed based on their frequencies to explain which sources were dominant in the production system and also what made farmers choose one source over another.

Constraints to information search were also identified from literature and pretesting of the questionnaire and presented to farmers to identify if they were severe constraints; were constraints but not severe; or were not constraints at all. Farmers responses were then analysed to describe what constraints existed in their search for information and the severity of the existing constraints.

All data management and analysis were conducted using the Stata 15 statistical package, data visualization was done using Microsoft excel 2016.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 INTRODUCTION

This chapter presents the analyses of data and discussions of the study findings. The broad objective of the study was to identify the information needs of urban vegetable farmers in the La Dade-Kotopon municipality and to assess their behaviour in seeking information to meet these needs. The study was conducted on sixty (60) smallholder vegetable farmers from the La Dade-Kotopon municipality.

4.1 DEMOGRAPHIC CHARACTERISTICS OF FARMERS

4.1.1 Gender distribution

From Figure 4.1, it can be seen that males make a majority of the farmer population. The percentage of males (82.0%) is shown to be more than four times the percentage of female farmers (18.0%). This is similar to what was reported by several studies that show that males make up a majority of the urban farming population in Ghana (Egyir et al., 2014; Emmanuel et al., 2016; Obuobie & Hope, 2014).

The low female representation can be attributed to the arduous nature of the urban vegetable production system and the differences in resource availability between the men and women. Obuobie et al., (2004) also claims that the inequality in resource availability between men and

women is likely to affect women's ability to employ additional labour, hence preventing more women from being in the urban vegetable production field.

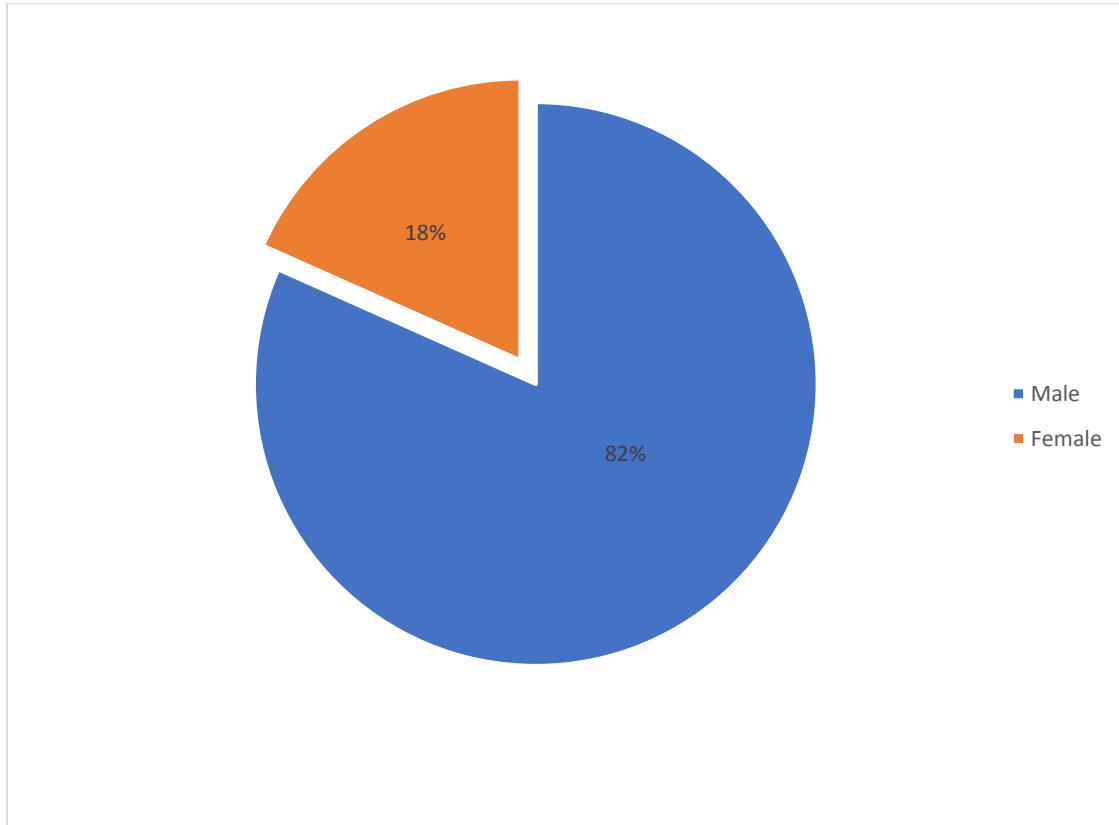


Figure 4. 1 Gender distribution of farmers in the La Dade-Kotopon Municipality

Source: Field survey, June 2019

4.1.2 Age distribution

The youngest farmer interviewed was 26 years old and the oldest was 80 years old. The average age of the vegetable farmers in the municipality stands at 57 years.

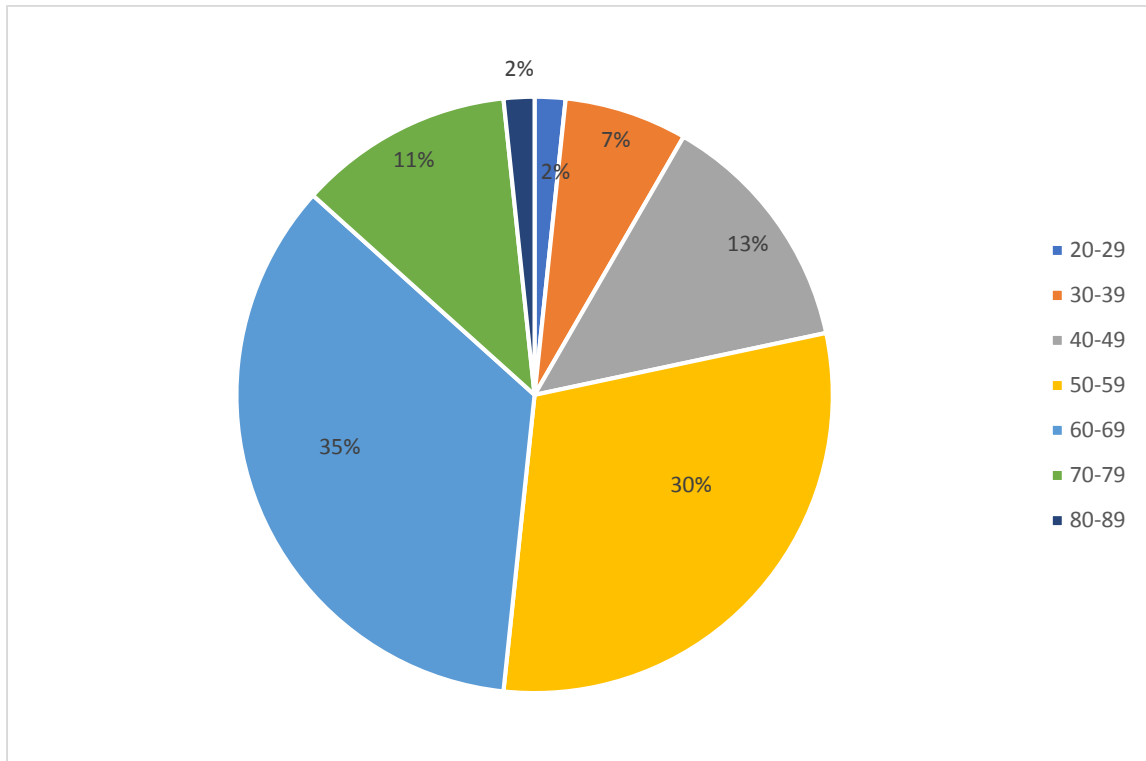


Figure 4. 2 Age distribution of farmers in the La Dade-Kotopon Municipality

Source: Field survey, June 2019

Out of the 60 farmers interviewed, a majority were in the age range of 60-69 years (35.0%) and 50-59 years (30.0%). The least represented age ranges were 20-29 years and 80-89 years which had only 2.0% of the farmer population each, as indicated in Figure 4.1. This shows that the youth population in urban vegetable farming is very low and the current farming population in the municipality is an aged population.

4.1.3 Educational level

Figure 4.3 shows the distribution of farmers according to the level of education they have attained. A majority (36.7%) of the farmers have completed either junior high school or have a Middle School Leaving Certificate. The number of vegetable farmers who have attained more than a secondary education was 16.6%, made of the 13.3% completing technical or vocational education and another 3.3% completing a tertiary education. The percentage of urban vegetable farmers in the district who have not attained any form of formal education is also low (11.7%), with the number of farmers who have completed only some level of basic primary education being represented by 11.7% as is shown in Figure 4.3.

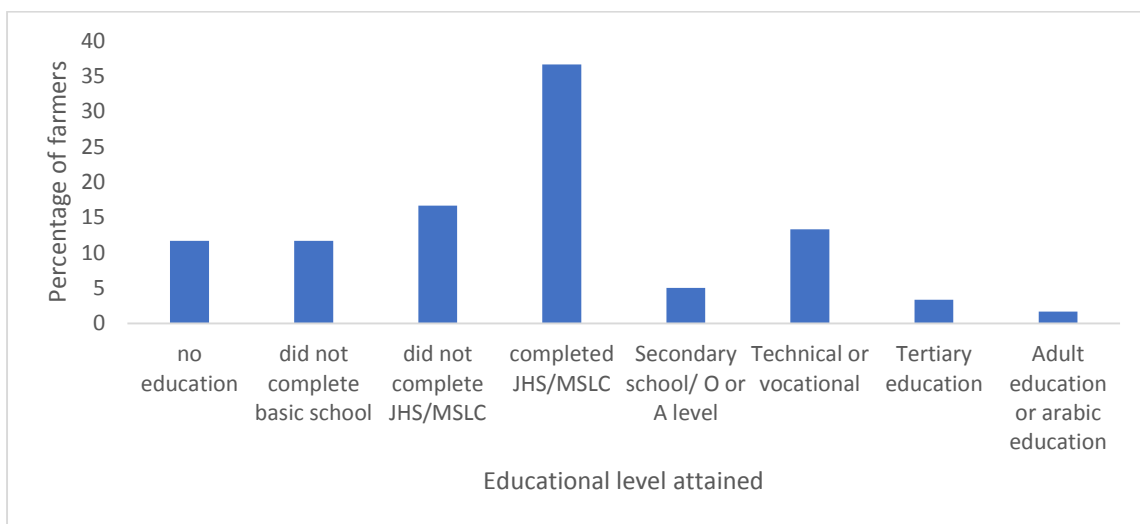


Figure 4. 3 Educational level attainment of farmers in the La Dade-Kotopon Municipality

Source: Field survey, June 2019

The results on the educational level of the urban farmers are not in accord with a study done on urban agriculture in Ghana which claimed that a majority of urban farmers in Ghana are illiterates with no form of formal education (Obuobie & Hope, 2014).

4.1.4 Experience level of farmers

From Table 4.1, it is noted that the minimum number of years of experience a vegetable farmer has had in the urban vegetable production system is one year and the maximum number of years is fifty-seven years. The most occurring experience level of the farmers was forty years². The average experience level is 27 years. This means that most farmers are likely to have accumulated information on their vegetable production over a long period.

Table 4. 1 Experience level of farmers in the La Dade-Kotopon Municipality in Years

| | |
|----------------|-----------|
| Mean | 27 |
| Mode | 40 |
| Minimum | 1 |
| Maximum | 57 |

Source: Field survey, June 2019

4.1.5 Main crop produced

Urban vegetable farmers in the La Dade-Kotopon municipality grow different types of vegetables. However, they have at least one vegetable which is their major crop cultivated. A majority of the farmers (78.3%) have okra as their main crop. Tomato had the least representation (1.7%) in the main crop category, as shown in Table 4.2.

² Most of the farmers could not give an exact number of years, but most estimated that they started vegetable farming “about 40 years ago”

Table 4. 2 Main crop grown by farmers in the La Dade-Kotopon Municipality

| Crop | Frequency | Percentage (%) |
|---------------------|------------------|-----------------------|
| Cabbage | 3 | 5.0 |
| Okra | 47 | 78.3 |
| Lettuce | 3 | 5.0 |
| sweet pepper | 6 | 10.0 |
| Tomato | 1 | 1.7 |
| Total | 60 | 100.0 |

Source: Field survey, 2019

Aside from the main crop cultivated by the urban farmers the majority of farmers (68.3%) cultivate two or three other crops, with the percentage of farmers who do not cultivate any additional crop being just 13.3%. In summary, over 86% of the farmers grow more than one crop on their urban farm lands in the municipality as shown in Table 4.3.

Table 4. 3 Number of other vegetables cultivated by farmers in the La Dade-Kotopon Municipality

| Number of Vegetables cultivated | Frequency | Percentage (%) |
|--|------------------|-----------------------|
| One | 8 | 13.3 |
| Two | 20 | 33.3 |
| Three | 21 | 35.0 |
| Four | 5 | 8.3 |
| Five | 4 | 6.7 |
| Six | 2 | 3.3 |

Source: Field data survey, June 2019

4.1.6 Change of farming location

Urban farmers in the municipality have been experiencing loss of lands (Allen et al., 2014). From the survey conducted, it was observed that 31.7% of the farmers have moved from their old locations to the current one, as shown in Table 4.4.

Table 4. 4 Change of Location in the past ten years

| Change of Location | Frequency | Percentage |
|---------------------------|------------------|-------------------|
| Changed | 19 | 31.7 |
| No Change | 41 | 68.3 |
| Total | 60 | 100.0 |

Source: Field data survey, June 2019

This movement of farmers was entirely (100%) due to farmers losing their lands to the rapid estate development currently occurring in the municipality, as reported by farmers in the interviews.

4.2 INFORMATION NEEDS OF URBAN FARMERS

4.2.1 Farmer information needs

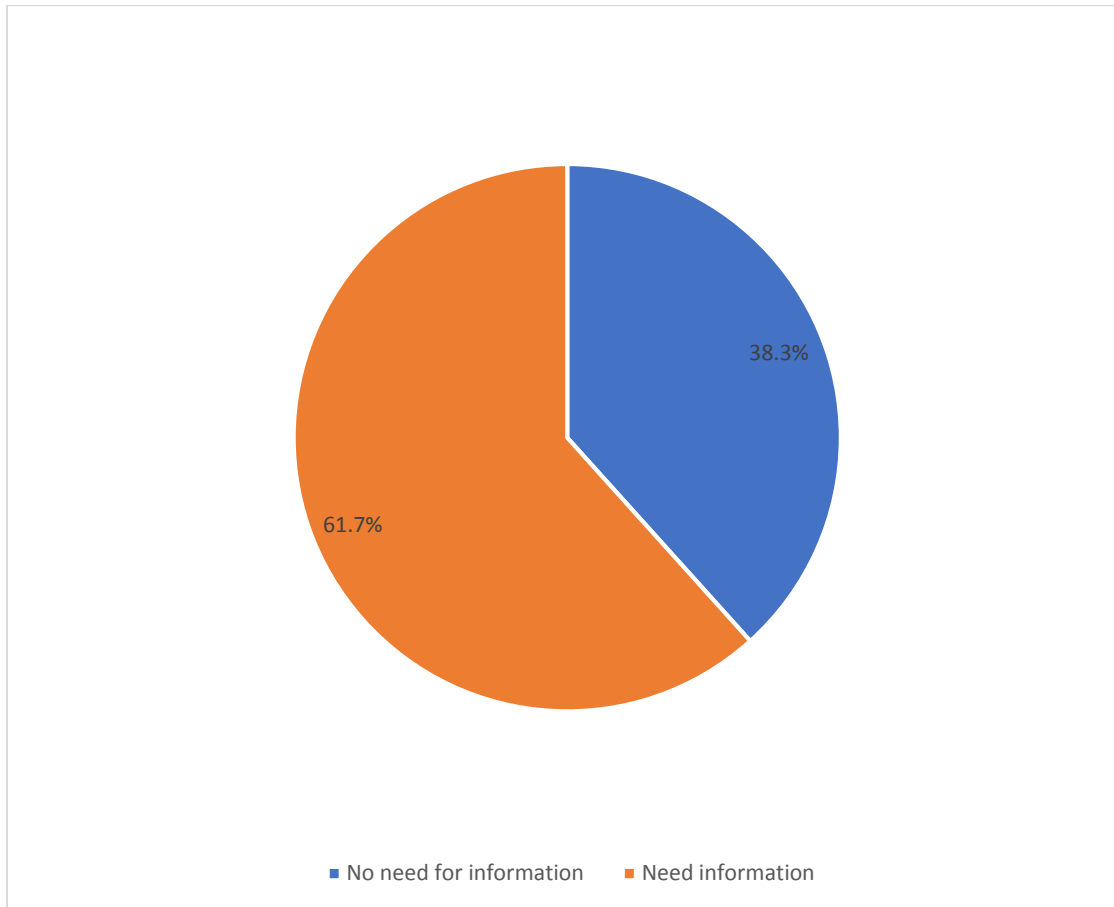


Figure 4. 4 Farmers' need for information for agricultural activities

Source: Field survey, June 2019

As shown in Figure 4.4, a majority of farmers (61.7%) needed information to assist in their vegetable production over the previous six months of production (January-June, 2019). Only 38.3% of the farmers did not need information for their farming purposes.

Table 4. 5 Need for information by Farmer characteristics

| | Need for information | | X ² value | P-level |
|-------------------------------|----------------------|--------|----------------------|---------|
| | Not Needed | Needed | | |
| AGE | | | | |
| 21-30 | 0.0 | 100.0 | | |
| 31-40 | 80.0 | 20.0 | | |
| 41-50 | 37.5 | 62.5 | 8.9045 | 0.113 |
| 51-60 | 36.4 | 63.6 | | |
| 61-70 | 18.8 | 81.3 | | |
| 71-80 | 62.5 | 37.5 | | |
| SEX | | | | |
| Male | 36.7 | 63.3 | 0.2890 | 0.591 |
| Female | 45.5 | 54.6 | | |
| ADDITIONAL CROPS | | | | |
| No additional | 50.0 | 50.0 | | |
| One additional crop | 50.0 | 50.0 | | |
| Two additional crops | 33.3 | 66.7 | 5.3584 | 0.374 |
| Three additional crop | 0.0 | 100.0 | | |
| four additional crops | 25.0 | 75.0 | | |
| five additional crops | 50.0 | 50.0 | | |
| EDUCATIONAL LEVEL | | | | |
| no education | 71.4 | 28.6 | | |
| did not complete basic school | 42.9 | 57.1 | | |
| did not complete JHS/MSLC | 40.0 | 60.0 | | |
| completed JHS/MSLC | 40.9 | 59.1 | 7.7089 | 0.359 |
| Secondary school/ O/ A level | 0.0 | 100.0 | | |
| Technical or vocation | 25.0 | 75.0 | | |
| Tertiary education | 0.0 | 100.0 | | |
| MAJOR OCCUPATION | | | | |
| urban vegetable farming | 41.2 | 58.8 | 1.1626 | 0.281 |
| Urban vegetable farming | 22.2 | 77.8 | | |
| ASSOCIATION MEMBERSHIP | | | | |
| Yes | 31.3 | 68.8 | 1.4554 | 0.228 |
| No | 46.4 | 53.6 | | |

Source: Field Survey, June 2019

Table 4.5 above shows the difference in the needs for information between farmers of different demographical characteristics like age, sex, and educational level. Other characteristics includes the occupational characteristics (major occupation), farm characteristics (number of additional crops cultivated), and associative characteristics (membership of an association).

The results reveal that none of the characteristics show a significant relationship with the need for information at P-level <0.05 . This result was a slightly different to that observed by Edeoghon & Okoedo-Okojie (2015) in their study information needs of youths involved in urban agriculture where sex, age did not exhibit a significant relationship with information needs. However, level of education and primary occupation of the urban farmers showed a significant relationship with the need for information.

4.2.1 Farmer information needs and Importance of need

The study further sought to investigate the information needs among the farmers who had expressed a need for information. The results from Table 4.6 show the specific kinds of information needed by farmers and the importance farmers attached to the needs. The results showed the information needs of farmers varied from farmer to farmer. Of the 61.7% of farmers who indicated that they needed information in the past six months, the most expressed need was for information on how to control pest and diseases on their vegetable farms (38.3%). This result indicates that information on pest and disease information is a major need of farmers is similar to results by Ogunlade et al. (2008) in the study of urban vegetable farming in Kwara state, Nigeria and a study on the information needs of farmers in Tanzania (Lwoga et al., 2011). In addition, 61.1% of farmers who expressed pest and disease control as an information need noted that it was 'somewhat important' to them.

Table 4. 6: Farmer information needs and importance in the La Dade-Kotopon Municipality

| Information type | Total | | Not important at all | | Somewhat important | | Important | |
|---------------------------------|-------|------|-------------------------|------|-----------------------|------|-----------|------|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| Disease and pest control | 18 | 38.3 | 1 | 5.9 | 11 | 61.1 | 6 | 33.3 |
| Inputs | 6 | 12.8 | 1 | 16.7 | 5 | 83.3 | | |
| Irrigation | 6 | 12.8 | | | 2 | 33.3 | 4 | 66.7 |
| Land availability | 4 | 8.5 | | | | | 4 | 100 |
| Marketing | 2 | 4.3 | | | 1 | 50 | 1 | 50 |
| Fertilizer application | 1 | 2.1 | | | | | 1 | 100 |
| Seeds availability | 1 | 2.1 | | | 1 | 100 | | |
| Credit or loan facilities | 1 | 2.1 | | | | | 1 | 100 |
| Weather information | 1 | 2.1 | | | | | 1 | 100 |
| Bed making | 1 | 2.1 | 1 | 100 | | | | |
| Labour | 1 | 2.1 | 1 | 100 | | | | |
| Land fertility management | 1 | 2.1 | | | | | 1 | 100 |
| Land fertility restoration | 1 | 2.1 | | | 1 | 100 | | |
| Planting | 1 | 2.1 | | | 1 | 100 | | |
| Soil less farming | 1 | 2.1 | | | 1 | 100 | | |
| Soil nutrient requirements | 1 | 2.1 | | | 1 | 100 | | |

Source: Field survey, June 2019.

The second most frequently expressed need was for information on inputs and irrigation (12.8%). For information on input, a majority (83.3%) of the farmers who had the need claimed it was ‘somewhat important’ to them, while just under one-fifth (16.7%) of them stated it was

‘not important’. With regards to the need for information on irrigation, over two-thirds (66.7%) of the farmers attached ‘importance’ to their need for this kind of information. Information on land availability (8.5%) was also needed by farmers with all the farmers who needed this information according full importance to it. As shown from Table 4.6, other needs for information on marketing, seed availability, bed making, labour, credit and loan facilities, planting were not expressed by a large number of farmers

4.3 SOURCES OF INFORMATION AND FREQUENCY OF SOURCE CONTACT

4.3.1 Information sources contacted

The information sources contacted by urban vegetable farmers in the La Dade-Kotopon municipality in the last six months is shown in Table 4.7. From the results, it is evident that the most contacted source of information by the vegetable farmers is ‘other farmers’, with 75% of all the farmers interviewed reporting such information-seeking behaviour in the last six months. This finding is similar to a study on the information needs and sharing strategies of vegetable farmers (Zhong et al., 2015) in which the most contacted source of information for vegetable farming was ‘other farmers’.

Extension officers (66.7%) were the second most contacted source of information by the farmers. The results on the use of extension officers is very similar to the study done on the sources of information to farmers in Accra’s vegetable farming sector (Osei et al., 2017) which showed that over 50% of the urban farmers contacted extension officers for information. The results are also in accord with a study in Nigeria on the information needs of youths involved in urban agriculture (Edeoghon & Okoedo-Okojie, 2015) which also showed that 35% of youth

farmers contacted extension officers for information, with a further 15.7% contacting extension services together with friends and relatives for information.

The third most contacted source of information by the urban vegetable farmers in the municipal was agro dealers (38.3%). Other interpersonal information sources such as contacting family members (15%), Neighbours and friends (23.3%), agricultural workshops (18.3%), and research institutes (10%) were also identified by farmers, though they were not as prominent as the other interpersonal means of sourcing information.

The use of ICT methods of sourcing of information has been touted as the way forward in agricultural information dissemination, however, this has not been a channel exploited by most urban vegetable farmers as shown by the results in Table 4.7 which indicates that television (13.3%), radio (8.3%), social media (1.7%), and internet (3.3%) were among the least used sources of information.

Table 4. 7 Information sources contacted by farmers

| Information source | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Other farmers | 45 | 75 |
| Extension officers | 40 | 66.7 |
| Agro dealers | 23 | 38.3 |
| Neighbours and friends | 14 | 23.3 |
| Agricultural shows/ workshops | 11 | 18.3 |
| Family | 9 | 15 |
| Television | 8 | 13.3 |
| Research institutes | 6 | 10 |
| Local radio station | 5 | 8.3 |
| Newspapers/magazine | 3 | 5 |
| Groups in community | 2 | 3.3 |
| Internet | 2 | 3.3 |
| Social media | 1 | 1.7 |

Source: Field survey, June 2019

Generally these results seems to agree with the assertion that, where resources are scarce, small scale farmers are more likely to share information among themselves (Raungpaka & Savetpanuvong, 2017), and that the limitation of having scare resources is likely to lead to more farmers accessing information from informal sources rather than formal sources as shown by Lwoga, Stilwell and Ngulube (2011) who reported that farmers consulted their friends and neighbours more than they did extension agents and other formal sources of information.

4.3.2 Information obtained and sources

Table 4.8 shows the types of information on vegetable farming which was obtained in the last six months. From the results, it can be seen that 43.2% of the farmers obtained information on diseases and pest control. Almost half (47.4%) of the farmers obtained this information from the agro-dealers from whom they bought chemicals, and a little over one-third (36.8%) of the vegetable farmers also obtained this information from extension agents who were from the Ministry of Food and Agriculture (MoFA).

About one-third (32.2%) of the farmers also obtained information on soilless farming in the past six months as shown in Table 4.8, this information was obtained from extension agents (85.7%) and from research institutions (14.3%). Extension officers were the sole information source for information types such as fertilizer application, inputs, land availability, nursery, composting, and soil nutrition.

Table 4. 8: Sources from which farmers obtained information

| Information obtained | Sources of information | | | | | | | |
|--------------------------|------------------------|------|-----------|---------------|--------------|---------------------|-----|-------|
| | Total | | Extension | Other farmers | Agro dealers | Research institutes | TV | Radio |
| | Freq. | % | % | % | % | % | % | % |
| Disease and pest control | 19 | 43.2 | 36.8 | 21.1 | 47.4 | | | |
| Soilless farming | 14 | 32.2 | 85.7 | | | 14.3 | | |
| Inputs | 6 | 13.6 | 100 | | 20 | | | |
| Planting techniques | 4 | 9.2 | 40 | 40 | 20 | | | |
| Fertilizer application | 3 | 6.8 | 100 | | | | | |
| Weather information | 3 | 6.8 | 100 | | | | 100 | |
| Irrigation | 2 | 4.5 | 100 | | | 100 | | 100 |
| Seeds availability | 1 | 2.3 | | 100 | | | | |
| Improved Crop varieties | 1 | 2.3 | | 100 | | | | |
| Land availability | 1 | 2.3 | 100 | | | | | |
| Nursery | 1 | 2.3 | 100 | | | | | |
| Soil nutrition | 1 | 2.3 | 100 | | | | | |
| Composting | 1 | 2.3 | 100 | | | | | |

Source: Field survey: 2019

As shown in Table 4.8, farmers also used informal sources of information such as other farmers, to obtain information on disease and pest control (21.1%), planting techniques (40%), seeds

availability (100%), and information on improved crop varieties (100%). The use of ICT sources like radio and television however played a less prominent role in the sourcing of information. Farmers only used radio and television when sourcing information on the weather.

4.3.3 Frequency of information source contact

Table 4.9 shows the frequency with which each source was contacted within the previous six months of production (January – June). From the results shown in Table 4.9, it can be seen that the two most contacted sources, other farmers (75.0%) and extension agents (66.7%), were contacted ‘frequently’ (that is, more than five times in the past six months) by 51.1% and 45.0% of the farmers respectively. This shows how important these sources are to the urban vegetable farmers in the municipality. Agro dealers were also a source used by over one-thirds (38.3%) of the farmers. Though it was used by one-thirds of the farmers, it was a rarely used source of information.

Other sources of information which were non-interpersonal were rarely contacted or not contacted at all. The passive contacting of television for information was only reported by 13.3% of the farmers as a source of information, and out of this small percentage, 75.2% of the farmers rarely contacted the source. Another non-interpersonal source which was not a commonly used source was the passive contact of local radio stations for information; similar to the television, less than one-tenth (8.3%) of the farmers interviewed actually made contact with this source for information; out of this small percentage, a majority of them (79.8%) rarely contacted the source. This result is in sync with a study done in Kwara state on urban agriculture

by Ogunlade et al., (2008) in which they observed that radio and television were not frequently used by farmers.

Table 4. 9: Frequency of information source use

| Information source | Number of farmers who made contact | | Rarely | Sometimes | Frequently |
|----------------------------------|------------------------------------|------|--------|-----------|------------|
| | Freq. | % | % | % | % |
| Other farmers | 45 | 75 | 13.3 | 35.6 | 51.1 |
| Extension agents | 40 | 66.7 | 30 | 25 | 45 |
| Agro dealers | 23 | 38.3 | 52.2 | 34.7 | 13.1 |
| Neighbours and friends | 14 | 23.3 | 42.9 | 42.9 | 14.3 |
| Agricultural shows/ workshops | 11 | 18.3 | 54.3 | 36.4 | 9.2 |
| Family | 9 | 15 | 11.1 | 11.1 | 77.8 |
| Television | 8 | 13.3 | 75.2 | 24.8 | 0 |
| Research institutes | 6 | 10 | 66.3 | 16.8 | 16.8 |
| Local radio station | 5 | 8.3 | 79.8 | 20.2 | 0 |
| Newspapers/magazine | 3 | 5 | 66 | 0 | 34 |
| Farmer groups in community | 2 | 3.3 | 50 | 50 | 0 |
| Internet | 2 | 3.3 | 50 | 50 | 0 |
| Social media | 1 | 1.7 | 100 | 0 | 0 |

Source: Field survey, June 2019

The same trend observed in the frequency of contact of the radio and television can be seen with the active contact of social media for information pertaining to urban vegetable agriculture; this was one of the least source contacted (1.7%), it was also the most rarely used source (100.0%). Unlike the other ICT sources, the internet (3.3%) and newspapers (5.0%), though not among the major sources for seeking information, had some farmers (50.0%) expressing contact with them between three to five times in the past six months for information in the case of the internet, and more than five times (34.0%) in the case of newspapers.

4.4 FARMERS' PREFERENCE OF INFORMATION SOURCES

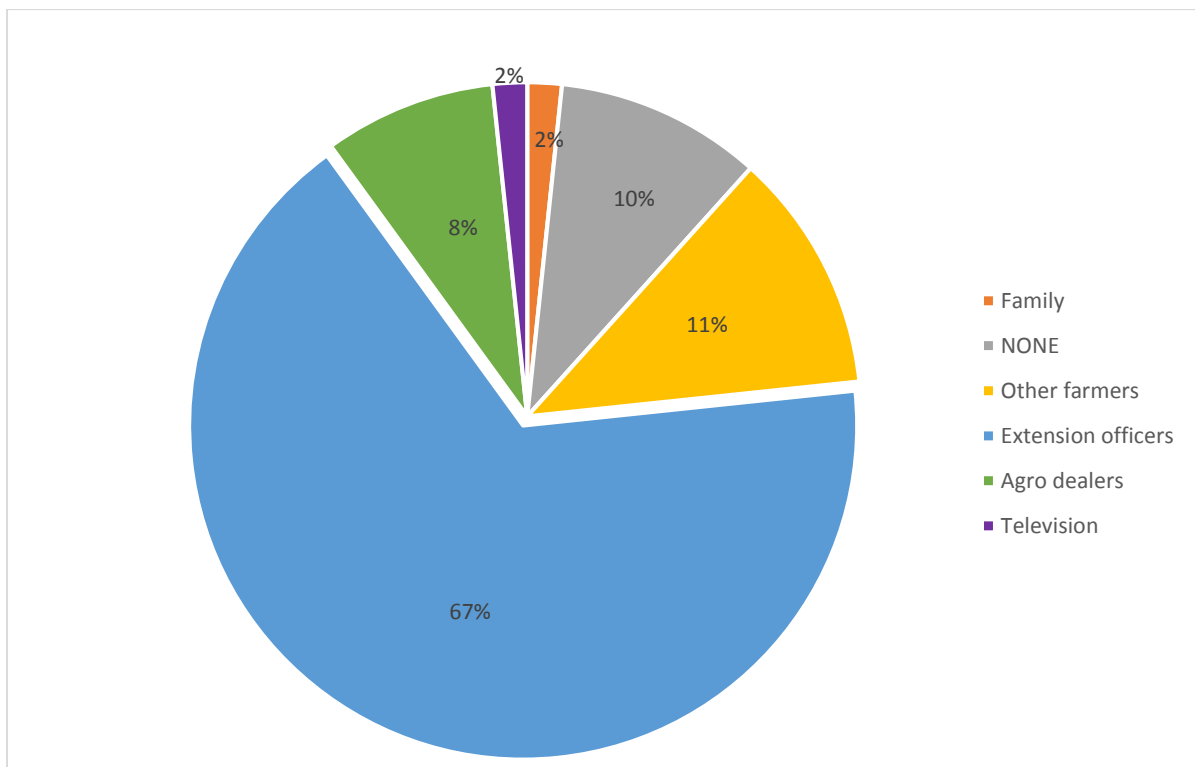


Figure 4. 5 Most preferred source of information

Source: Field survey, 2019

Figure 4.5 illustrates the respondents' preference for specific information sources. From the pie chart, it can be seen that the most preferred source of information for the farmers is extension officers (67.0%) which represents 40 farmers. The closest preferred source to extension officers is other farmers (11.0%), but this is about six times less preferred than extension officers.

Notably, one out of ten farmers claimed none of the sources of information was their preferred source. One of the non-interpersonal sources (television) was chosen as a preferred source by only one farmer. This result is similar to the result of a study on vegetable farming (Zhong et al., 2015) where a majority of the farmers had a preference for information from in-person sources, such as from extension agents.

Table 4. 10: Reason for preference of information sources

| Reason for preference | Frequency | Percentage |
|-------------------------------------|-----------|------------|
| Perceived knowledge level | 28 | 51.9 |
| Reliability | 24 | 44.4 |
| Time constraint | 11 | 20.4 |
| Availability | 8 | 14.8 |
| Past experiences with them | 4 | 7.4 |
| Perceived experience level of agent | 4 | 7.4 |
| Incentives | 1 | 1.9 |
| Total | 80* | 148.1* |

* Multiple sources

Source: Field survey, June 2019

The study went on to elicit information on the reasons for farmers' preferences of sources of information. The results, as shown in Table 4.10, indicate that more than fifty percent (51.9%) of the farmers preferred a particular information source because of the level of knowledge they perceived the source has concerning a particular information they needed or might need. This was followed by how reliable they perceive the source to be with regards to the information they might obtain; 44.0% of those who claimed they had a preferred source of information noted this as a reason for such preference.

Another reason of note is the time involved in accessing information from a source. One in every five farmers who had a preferred source claimed this was the reason why they chose that source over the others. Other reasons for choosing a preferred source include availability of source (14.8%), past experience with source (7.4%), and the perceived experience level of the source (7.4%).

With over 30% of the farmers losing farm lands as a result of real estate development, the preference exhibited by the farmers can be attributed to the threats of land insecurity and the fact that they would need to maximize returns on the land they cultivate as reported by Emmanuel et al., (2016). Also, there is a higher probability of farmers contacting available the information sources available to them with more preference for the sources they perceive as being more reliable (Emmanuel et al., 2016).

4.5 CONSTRAINTS IN INFORMATION SEEKING

Farmers' constraint to information seeking was examined using a three point Likert scale as shown in Figure 4.6. The inability to use internet is one of the constraints that was expressed by most farmers; about 85.0% of the farmers reported that it was a constraint, however, only 5.0% out of this Figure saw it as a *severe* constraint.

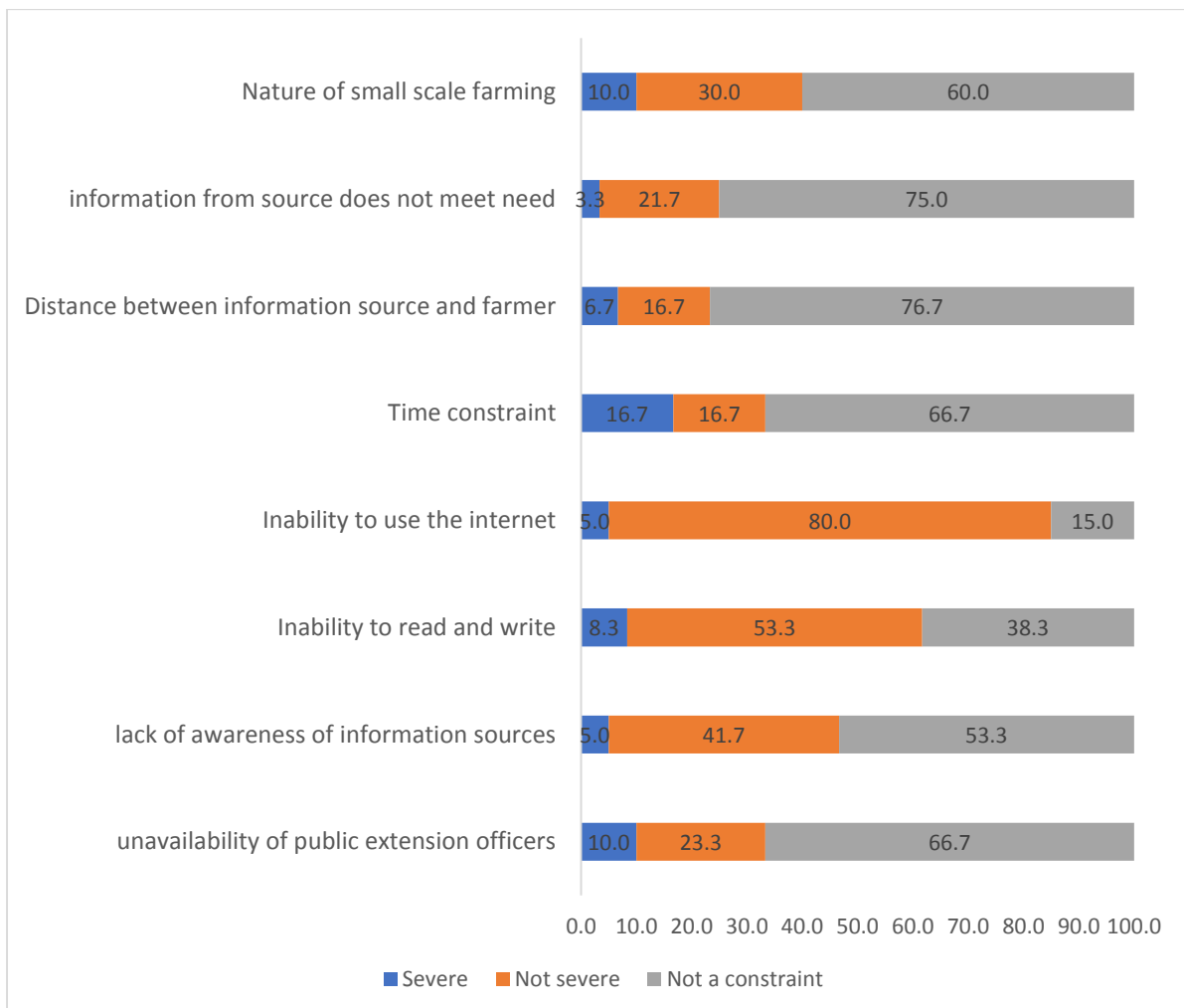


Figure 4. 6 Constraints in farmer information seeking

Source: Field survey, June 2019

The inability of farmers to read and write was also seen as a constraint but not a severe constraint to information seeking by over half of the farmers (53.3%), while only 8.3% claimed it was a severe barrier to seeking information. The inability of farmers to read and write was also observed as a challenge or barrier to the accessing of information by urban vegetable farmers in Accra (Osei et al., 2017).

A majority of farmers (over 60.0%) indicated that the following constraints: unavailability of extension officers, time involved in seeking information, distance between the information source and the farmer, information obtained not meeting the needs of farmers, and the small-scale nature of the urban vegetable farming, were not constraints to their search for information. However, among these, the time involved in seeking information was seen by a minority of farmers (16.7%) as a severe constraint, while the small-scale nature of urban vegetable farming and the unavailability of extension officers were seen as a severe constraint by (10.0%) of the farmers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents a summary of the study, conclusions reached based on its findings and recommendations.

5.2 SUMMARY AND CONCLUSIONS

The study set out to examine the information needs and understand information seeking behaviour among vegetable farmers in the La Dade-Kotopon municipality.

Primary data was collected on farmers' information needs, information sources, preference for information, and the barriers or constraints to information seeking. The main objective was to assess the information needs and information seeking among vegetable farmers.

Using quantitative methods of data collection- questionnaires, sixty (60) farmers in the La Dade-Kotopon municipal who were cultivating at least one type of vegetable in the current farming season were interviewed.

The study found that a majority (61.7%) of farmers in the municipality needed information on their vegetable farming. These needs were varied, but most farmers needed information on diseases and pest control in their vegetable farming. The study also revealed that demographic characteristics of farmers, farmers' membership in associations, number of additional

vegetables grown, and the major occupation of farmers do not have any statistically significant relationship with the need for information by the farmers.

While farmers obtained different types of information from the various information sources, information on pest and disease control was the most sought agricultural information and this was primarily obtained from agro dealers from whom farmers bought agro chemicals and other farm inputs.

The two main sources of information to the farmers - other farmers and extension officers, - were contacted more than five times in the six-month period by most farmers while sources such as local radio stations and television were rarely used. In terms of preference, farmers identified extension officers as the most preferred source of information. The reasons for preferring to contact a particular source instead of others was highly attributed to the perceived knowledge level of the source in question and the reliability of the source. An important point to note is that the most frequently contacted source of information- other farmers--had a low level of preference by the vegetable farmers. This contradiction is probably due to the perceived level of knowledge of other farmers though they are the most available source of information.

Finally, farmers identified that the major constraint affecting their information search was their inability to use the internet.

It can be concluded that vegetable farmers in the municipality, though having similarities in their farming practices, have varying information needs. These needs range from information on pest and disease control to information on the weather, and each of these information needs

are accorded different levels of importance depending on which farmer is in need of the information.

Further, farmers favour information sources for which they have a personal contact. Although there may be different sources available to farmers at one time, each individual farmer is likely to make a different choice regarding which source to contact, due to reasons such as the reliability of the source and their perceived knowledge level a particular source has acquired.

Finally, farmers' inability to read and write might prevent them from using internet sources in seeking of information which can be of help to them in their farming.

5.3 **RECOMMENDATIONS**

Based on the findings, the study recommends the following:

Information disseminated to farmers should be in line with the needs of the farmers. It is recommended that information should be tailored to fit the information needs of farmers. In line with this, it is recommended that attention be paid to providing information on pest and diseases control, which was found to be the most commonly-expressed need.

The study also recommends that since farmers rely on interpersonal contacts, particularly other farmers, farmer associations should be strengthened to allow farmers get more collective information and also increase the possibility of easy flow of information among farmers.

Since extension agents were the most preferred, yet rarely contacted, extension officers should be well equipped to serve the needs of farmers in the municipality. They should be made easily accessible to farmers, by possibly increasing the extension agents per farmer ratio. Officers should also be trained on methods which will help farmers maximize their limited urban spaces and help them adapt to shocks of possible displacement.

Adult education programmes should be sponsored to train farmers on basic reading and writing skills to help them improve. This is likely to aid in limiting or removing the barrier of the inability to read and write which was expressed as one of the major constraints farmers faced in seeking information.

The use of ICT should be encouraged among farmers and trainings should be organized to help farmers get acquainted with the use of ICT information sources to source information. This will improve their ability to access information from sources such as the internet and social media which are two of the rarely used sources by farmers, but which farmers agreed that the inability to use the internet was the most constraining factor to their search for information.

REFERENCES

- Abdul-Salam, Y., & Phimister, E. (2015). 89th Annual Conference of the Agricultural Economics Society. *Efficiency Effects of Access to Information on Small Scale Agriculture: Empirical Evidence from Uganda*, 1–19.
- Acheampong, L. D., Nsiah Frimpong, B., Adu-Appiah, A., Asante, B. O., & Asante, M. D. (2017a). Assessing the information seeking behaviour and utilization of rice farmers in the Ejisu-Juaben municipality of Ashanti Region of Ghana. *Agriculture and Food Security*, 6(38), 1–9.
<https://doi.org/10.1186/s40066-017-0114-8>
- Acheampong, L. D., Nsiah Frimpong, B., Adu-Appiah, A., Asante, B. O., & Asante, M. D. (2017b). Assessing the information seeking behaviour and utilization of rice farmers in the Ejisu-Juaben municipality of Ashanti Region of Ghana. *Agriculture and Food Security*, 6(1), 1–9.
<https://doi.org/10.1186/s40066-017-0114-8>
- Aker, J. C. (2011). Dial “A” for agriculture: A review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631–647.
<https://doi.org/10.1111/j.1574-0862.2011.00545.x>
- Akwango, D., Obaa, B. B., Turyahabwe, N., Baguma, Y., & Egeru, A. (2017a). Quality and dissemination of information from a drought early warning system in Karamoja sub-region, Uganda. *Journal of Arid Environments*, 145, 69–80.
<https://doi.org/10.1016/j.jaridenv.2017.05.010>
- Akwango, D., Obaa, B. B., Turyahabwe, N., Baguma, Y., & Egeru, A. (2017b). Quality and dissemination of information from a drought early warning system in Karamoja sub-region,

Uganda. *Journal of Arid Environments*, 145, 69–80.

<https://doi.org/10.1016/j.jaridenv.2017.05.010>

Allen, A., Apsan-Frediani, A., & Wood-Hill, M. (2014). Land and Planning for Urban Agriculture in Accra: Sustained Urban Agriculture or Sustainable Urbanization? In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana: Characteristics, Benefits and Risk Mitigation* (2nd ed., pp. 161–179). Accra: International Water Management Institute (IWMI).

Armar-Klemesu, Margaret. (2001). Urban agriculture and food security, nutrition and health. Thematic paper 4. *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda*, 99–118.

Armar-Klemesu, Margsaret, & Daniel, M. (2000). Accra: Urban agriculture as an asset strategy, supplementing income and diets. *Growing Cities, Growing Food: Urban Agriculture on the Policy Agenda. A Reader on Urban Agriculture*, 183–208.

Bachhav, N. B. (2012). Information needs of the rural farmers: a study from Maharashtra, India: a survey. *Library Philosophy and Practice, Paper 866*. Retrieved from <http://digitalcommons.unl.edu/libphilprac/866>

Byamugisha, H. M., Ikoja-Odongo, R., & Nasinyama, G. W. (2010). Information needs and use among urban farmers in Kampala City in Uganda. *Library and Information Research*, 34(108), 18–32. <https://doi.org/10.1901/jeab.1979.32-65>

Case, D. O., & Given, L. M. (2016). *Looking for information: A Survey of Research on Information Seeking, Needs, and Behavior*. California: Academic Press.

Chhachhar, A. R., Qureshi, B., Khushk, G. M., & Ahmed, S. (2014). Impact of Information and

Communication Technologies in Agriculture Development. *Journal of Basic and Applied Scientific Research*, 4(1), 281–288.

Chinnasamy, K. (2016). Information need and information seeking behaviour of engineering college students in Madurai - a case study. *Qualitative and Quantitative Methods in Libraries (QQML)*, 5, 131–140.

Cofie, O., Larbi, T., Danso, G., Abraham, E., Kufogbe, S. K., Henseler, M., ... Obiri-Opareh, N. (2005). A Narrative On Urban Agriculture in Accra Metropolis. *Accra RUAF Programme*, (November), 1–19. [https://doi.org/http://dx.doi.org/10.1016/0010-4655\(91\)90126-6](https://doi.org/http://dx.doi.org/10.1016/0010-4655(91)90126-6)

Consolata, A., Msuya, J., & Matovelo, D. (2016). Assessing the information needs and information sources of urban and peri-urban livestock keepers in Kinondoni and Morogoro Urban Districts, Tanzania. *Library Philosophy & Practice*, (1363), 1–33. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=llf&AN=114892971&site=ehost-live>

Danso, G., Drechsel, P., Obuobie, E., Forkuor, G., & Kranjac-Berisavljevic, G. (2014). Urban Vegetable Farming Sites, Crops and Cropping Practices. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana* (pp. 7–27). Accra: International Water Management Institute (IWMI).

Danso, G., Hope, L., & Drechsel, P. (2014). Financial and Economic Aspects of Urban Vegetable Farming. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana* (2nd ed., pp. 38–50). Accra: International Water Management Institute (IWMI).

Daramola, C. F., Adebo, T. I., & Adebo, G. M. (2016). Challenges and Information Needs Assessment of Dry Season Vegetable Farmers in Akure Metropolis, Ondo State. *IOSR Journal of Agriculture*

and Veterinary Science Ver. 1, 9(4), 2319–2372. <https://doi.org/10.9790/2380-0904015258>

Demiryurek, K., Erdem, H. I., Ceyhan, V., Atasever, S., & Uysal, O. (2008). Agricultural information systems and communication networks: The case of dairy farmers in the Samsun province of Turkey. *Information Research, 13(2)*, 1–11.

Department of Agriculture LaDMA. (2017). *Baseline Survey Report*.

<https://doi.org/10.1002/yd.20038>

Directorate Of Agricultural Extension Services. (2013). *Agricultural Extension Approaches Being Implemented in Ghana*.

Drechel, P., Adam-Bamford, A., & Raschid-sally, L. (2014). Irrigated Vegetable Farming in Urban Ghana: A Farming System between Challenges and Resilience. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana* (pp. 1–6). Accra: International Water Management Institute (IWMI).

Drechsel, P., Graefe, S., Sonou, M., & Cofie, O. O. (2006). Informal Irrigation in Urban West Africa: An Overview. In *Water Management*.

Drechsel, P., Keraita, B., Amoah, P., & Karg, H. (2014). Health Risk Management for Safe Vegetable Irrigation. In P. Drechsel & B. Keraita (Eds.), *Irrigated urban vegetable production in Ghana: characteristics, benefits and risk mitigation*. (2nd ed., pp. 180–198). Accra: International Water Management Institute (IWMI).

Dubbeling, M., & Merzthal, G. (2006). Sustaining Urban Agriculture Requires the Involvement of Multiple Stakeholders. In R. van Veenhuizen (Ed.), *Cities farming for the future* (pp. 19–52). Philippines: International Institute of Rural Reconstruction and ETC Urban Agriculture.

- Edeoghon, C. O., & Okoedo-Okojie, D. U. (2015). Information Needs of Youths involved in Urban Agriculture as Strategy for Checking unemployment in Epe Lga of Lagos State, Nigeria. *Applied Science and Environmental Management*, 19(1), 37–42.
- Egyir, I. ., Cofie, O. O., & Dubbeling, M. (2014). Options for Local Financing in Urban Agriculture. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana: Characteristics, Benefits and Risk Mitigation* (2nd ed., pp. 145–160). Accra: International Water Management Institute (IWMI).
- Elly, T., & Silayo, E. E. (2013). Agricultural information needs and sources of the rural farmers in Tanzania: A case of Iringa rural district. *Library Review*, 62(8), 547–566.
<https://doi.org/10.1108/LR-01-2013-0009>
- Emmanuel, D., Owusu-sekyere, E., Owusu, V., & Jordaan, H. (2016). NJAS - Wageningen Journal of Life Sciences Impact of agricultural extension service on adoption of chemical fertilizer : Implications for rice productivity and development in Ghana. *NJAS - Wageningen Journal of Life Sciences*, 79, 41–49. <https://doi.org/10.1016/j.njas.2016.10.002>
- Henseler, M., & Amoah, P. (2014). Marketing Channels for Irrigated Exotic Vegetables. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana* (2nd ed., pp. 51–61). Accra: International Water Management Institute (IWMI).
- Ingwersen, P., & Jarvelin, K. (2005). *The turn: integration of information seeking and retrieval in context*. Dordrecht: Springer.
- Jac, S., Ratta, A., & Bernstein, J. (1996). *Urban Agriculture: An opportunity for environmentally Sustainable Development in Sub-Saharan Africa*.

- Just, D., & Zilberman, D. (2002). Information Systems in Agriculture. *Giannini Foundation of Agricultural Economics*, 6(1), 4. Retrieved from http://s.giannini.ucop.edu/uploads/giannini_public/26/07/260747d2-867f-43bc-806b-9772191a6d91/v6n1_2.pdf
- Keraita, B., & Cofie, O. O. (2014). Irrigation and Soil Fertility Management Practices. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana: Characteristics, Benefits and Risk Mitigation* (2nd ed., pp. 74–88). Accra: International Water Management Institute (IWMI).
- Khataza, R. R. B., Doole, G. J., Kragt, M. E., & Hailu, A. (2018). Information acquisition, learning and the adoption of conservation agriculture in Malawi: A discrete-time duration analysis. *Technological Forecasting and Social Change*, 132(March), 299–307. <https://doi.org/10.1016/j.techfore.2018.02.015>
- Kuruppu, D. C. (1999). Information Needs and Information Seeking Behaviour of Users in Organizations,. *Information Studies*, 5(1), 53-66p.
- La dade-kotopon municipality. (2013). *The composite budget of the La Dade-kotopon municipal Assembly for the 2013 fiscal year*. 9–11. Retrieved from www.ghanadistricts.com
- Larbi, T. O., Cofie, O. O., Amoah, P., & Veenhuizen, R. van. (2014). Strengthening Urban Producer Organizations. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana: Characteristics, Benefits and Risk Mitigation* (2nd ed., pp. 136–144). Accra: International Water Management Institute (IWMI).
- Larson, K. L., & Duram, L. A. (2000). Information dissemination in alternative agriculture research: an analysis of researchers in the North Central region. *American Journal of Alternative Agriculture*,

15(4), 171–180.

Lwoga, E., Ngulube, P., & Stilwell, P. (2010). Information needs and information seeking behaviour of small-scale farmers in Tanzania. *Innovation*, 40(1).

<https://doi.org/10.4314/innovation.v40i1.60088>

Lwoga, E. T., Stilwell, C., & Ngulube, P. (2011). Access and use of agricultural information and knowledge in Tanzania. *Library Review*, 60(5), 383–395.

<https://doi.org/10.1108/00242531111135263>

Meijer, D. K. F. (2013). *Information : What Do You Mean ? On the formative element of our universe*.

MOFA. (2014). *Food and Agriculture Sector Development Policy (FASDEP II)*. (August).

Moodley, T. A. (2013). *The information needs and Information seeking Behaviour of community*

library users in Msunduzi branch libraries, Pietermaritzburg. University of KwaZulu-Natal,

Pietermaritzburg.

Murray, K. B. (1991). *A Test of Services Marketing Theory: Consumer Information Acquisition Activities*.

Niedźwiedzka, B. (2003). A proposed general model of information behaviour . *Information Research*, 9(1), 1–11.

Obosu-Mensah, K. (1998). *Food Production in Urban Areas: A Case Study of Urban Agriculture in Accra, Ghana*. (University of Toronto). <https://doi.org/10.16953/deusbed.74839>

Obosu-Mensah, K. (2002). Changes in official attitudes towards urban agriculture in Accra. *African Studies Quarterly*, 6(3). <https://doi.org/10.1007/s10896-011-9400-6>

- Obuobie, E., Drechsel, P., Danso, G., & Raschid-Sally, L. (2004). Gender in open-space irrigated urban vegetable farming in Ghana. *UA Magazine*, 13–15.
- Obuobie, E., & Hope, L. (2014). Characteristics of Urban Vegetable Farmers and Gender Issues. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana* (pp. 28–37). 3: International Water Management Institute (IWMI).
- Obuobie, E., Keraita, B., Hope, L., & Agodzo, S. K. (2014). Health Risk Perceptions of Stakeholders. In P. Drechsel & B. Keraita (Eds.), *Irrigated Urban Vegetable Production in Ghana: Characteristics, Benefits and Risk Mitigation* (2nd ed., pp. 116–135). Accra: International Water Management Institute (IWMI).
- Ogunlade, I., Oladele, O. ., & Falaki, A. . (2008). *Information needs and seeking behaviour among Urban farmers in Kwara State, Nigeria*.
- Orsini, F., Kahane, R., Nono-Womdim, R., & Gianquinto, G. (2013). Urban agriculture in the developing world: A review. *Agronomy for Sustainable Development*, 33(4), 695–720.
<https://doi.org/10.1007/s13593-013-0143-z>
- Osei, S. K., Folitse, B. Y., Dzandu, L. P., & Obeng-Koranteng, G. (2017). Sources of information for urban vegetable farmers in Accra, Ghana. *Information Development*, 33(1), 72–79.
<https://doi.org/10.1177/0266666916638712>
- Parker, S. (2011). Sampling versus census : A comparative analysis. *TNS Employee Insights*, 1–6.
Retrieved from www.tnsemployeeinsights.com
- Pay, D., & Bernard, K. (2014). *Irrigated Urban Vegetable Production in Ghana: characteristics, benefits and risk mitigation* (2nd ed.; P. Drechsel & B. Keraita, Eds.).

<https://doi.org/10.5337/2014.219>.

Raungpaka, V., & Savetpanuvong, P. (2017). Information orientation of small-scale farmers' community enterprises in Northern Thailand. *Kasetsart Journal of Social Sciences*, 38(3), 196–203. <https://doi.org/10.1016/j.kjss.2016.08.018>

Reddy, D. (2008). Holistic View of Agricultural Information Transfer Systems. *World*, 1–7. Retrieved from <http://ifla.queenslibrary.org/iv/ifla74/papers/141-EswaraReddy-en.pdf>

Riesenberg, L. E., & Obel Gor, C. (1989). Farmers' Preferences For Methods Of Receiving Information On New Or Innovative Farming Practices. *Journal of Agricultural Education*, 30, 7–13. <https://doi.org/10.5032/jae.1989.03007>

RUAF Foundation. (2006). Cities Farming for the Future: Urban Agriculture for Green and Productive Cities. In V. R. Veenhuizen (Ed.), *RUAF Foundation, IDRC and IIRR*. <https://doi.org/10.1007/s11920-996-0043-x>

Shanta Meitei, L., & Purnima Devi, T. (2009). Farmers information needs in rural Manipur: an assessment. *Annals of Library and Information Studies*, 56(March), 35–40. Retrieved from [http://14.139.47.15/bitstream/123456789/4165/1/ALIS 56%281%29 35-40.pdf](http://14.139.47.15/bitstream/123456789/4165/1/ALIS%201%29%2035-40.pdf)

The World Bank. (2018). *World Development Index*.

UN-Habitat. (2014). *the State of African Cities: Reimagining United Nations Human Settlements Program Design and Layout by Michael Jones Software (MJS), Nairobi, Kenya*. <https://doi.org/10.1163/156853010X510807>

Veenhuizen, R. van. (2006). Introduction Cities Farming for the Future. In R. Van Veenhuizen (Ed.), *Cities farming for the future* (pp. 1–18). RUAF Foundation, International Institute of Rural

Reconstruction and ETC Urban Agriculture DRC and IIRR.

Wanyama, R., Mathenge, M., & Mbaka, Z. (2015). *Agricultural Information Sources and their Effect on Farm productivity in Kenya*. 400(21), 2012–2015.

Wilson, T. (1981). On user studies and information needs. *Journal of Documentation*, 1(1), 3–15.
<https://doi.org/10.1108/eb026404>

Wilson, T. . (1999). Models in Information Behaviour research. *Journal of Documentation*, 55(3), 249–270. <https://doi.org/10.1108/eb026404>

Wilson, T. D. (1997). Information behaviour: An interdisciplinary perspective. *Information Processing & Management*, 33(4), 551–572. [https://doi.org/10.1016/s0306-4573\(97\)00028-9](https://doi.org/10.1016/s0306-4573(97)00028-9)

Wilson, T. D. (1999). Models in information behv. *Journal of Documentation*, 55(3), 266–268.
<https://doi.org/10.1108/eb026404>

Yeboah, F. K., & Jayne, T. S. (2018). Africa's Evolving Employment Trends. *Journal of Development Studies*, 54(5), 803–832. <https://doi.org/10.1080/00220388.2018.1430767>

Zeza, A., & Tasciotti, L. (2010). Urban agriculture, poverty, and food security: Empirical evidence from a sample of developing countries. *Food Policy*, 35(4), 265–273.
<https://doi.org/10.1016/j.foodpol.2010.04.007>

Zhong, B., Yang, F., & Chen, Y. L. (2015). Information empowers vegetable supply chain: A study of information needs and sharing strategies among farmers and vendors. *Computers and Electronics in Agriculture*, 117, 81–90. <https://doi.org/10.1016/j.compag.2015.07.009>

APPENDIX

VEGETABLE FARMERS' QUESTIONNAIRE

This study is being carried out by Celestine Chime, a graduate student of the University of Ghana, Legon on the topic: 'AGRICULTURAL INFORMATION NEEDS AND INFORMATION SEEKING AMONG URBAN VEGETABLE FARMERS IN THE LA DADE-KOTOPON MUNICIPALITY'. The study seeks to assess the information needs of farmers, their source and preference of information and the challenges to information search. All information gathered will be treated with confidentiality and would be used solely for academic purposes. Your contributions will be much appreciated. For further enquiries, please contact him on 0500017853 or ccchime@st.ug.edu.gh

Questionnaire code:

Name of enumerator:

Date of interview: / /

Location/ name of community:

Name of respondent:

Phone number:

SECTION A: GENERAL INFORMATION

A1. Age of respondent:years

A2. Gender of respondent 1 = Male 2 = Female

A3. Marital status of farmer

1 = Married 2= Never married 3 = widowed 4= separated 5= Divorced

- A4. What is the highest level of education you attained? 1 = no education 2 = did not complete basic education 3= completed primary school 4 = did not complete JHS/MSLC 5= completed JHS/MSLC 6= Secondary school/ O level/ A level
7= Technical or vocational 8= Tertiary education 9= Adult education or Arabic education
- A5. Are you an indigene or migrant? 1= migrant 0 = indigene [skip to A8]
- A6. How many years have you lived in Accra?
- A7. Which region are you from?
- A8. Is urban vegetable production your main occupation? 1= Yes 2= No
- A9. If no, what is your main occupation? 1 = salaried worker (private firm) 2= Salaried worker (civil service) 3= Artisan 4= Other crop farmer 5= Agro-processing
6= wage worker
- A10. How long have you been into urban vegetable farming (experience)?years
- A11. What is your main source of water for farming purposes? 1= Rain fall
2=Access to boreholes, wells 3= Wastewater 4=Access to river
5=Other (please specify): _____
- A12. Are you a member of a farmer based organization? 1=Yes 0=No
- A13. If yes, what is the name of the FBO you are a member of?
- A14. What is the main vegetables you cultivate?
1= Lettuce 2= carrot 3= cucumber 4= cabbage 5= Spinach
6= Spring onion 6= Okra 8= Tomato 7= Other (specify)
- A15. What other vegetables do you cultivate? 1= Lettuce 2= carrot
3= cucumber 4= cabbage 5= Spinach 6= Spring onion 7= Okra
8= Tomato 7= Other (specify)

A16. Have you changed your farming location in the last 10 years? 1=Yes 2= No

A17. If yes, what was the purpose of location change? 1= Real estate development

2= infertile soils

3= owner wants back land

4= water source

SECTION B: INFORMATION NEEDS

Which of the following information did you need in your last six months of production and indicate the importance the information?

| | B1a | B1b | B2 |
|---------------------------|-------------------------------------|--|--|
| Information type | Information needed (1= yes 2=No) | Importance rank of information need (code A) | Information obtained in last six months |
| Marketing information | | | |
| Fertilizer application | | | |
| Disease control | | | |
| Inputs | | | |
| Irrigation | | | |
| Seeds availability | | | |
| Credit or loan facilities | | | |
| Improved Crop varieties | | | |
| Weather information | | | |
| Land availability | | | |
| Other (kindly specify) | | | |

Code A: 1= Not important at all

2= somewhat important

3= important

SECTION C: INFORMATION SOURCES

C1. From where in general do you get agricultural information? How often do you get such information?

| Source of information | Contact in the last six months (1= yes 2=No) | rarely (1-2 times in 3 months of a season) | often (3-5 times in 3 months of a season) | very frequently (weekly or even more often, 2-3 times/week) |
|-------------------------------|--|--|---|---|
| Family | | | | |
| Neighbours and friends | | | | |
| Other farmers | | | | |
| Extension officers | | | | |
| Research institutes | | | | |
| Agro dealers | | | | |
| Groups in community | | | | |
| Local radio station | | | | |
| Television | | | | |
| Internet | | | | |
| Newspapers/magazines | | | | |
| Social media | | | | |
| Agricultural shows/ workshops | | | | |
| Other source (kindly specify) | | | | |

C2. Which of the information sources is your most preferred source?

- 1= Family 2= Neighbours and friends 3= Other farmers 4= Extension officers
 5= Research Institutes 6= Agro dealers 7= Groups in community
 8= Local Radio Station 9= TV 10= Internet 11= Newspapers/Magazines
 12= Social Media 13= Agricultural Shows 14= Other Specify

SECTION D: CONSTRAINTS THAT LIMIT FARMERS IN THEIR SEARCH FOR INFORMATION

D1. What are the constraints you face in your search for information?

| Constraint | Severe | Not severe | Not a constraint |
|--|--------|------------|------------------|
| Unavailability of public extension officers | | | |
| Lack of awareness of information sources | | | |
| Inability to read and write | | | |
| Inability to use the internet | | | |
| Time constraint | | | |
| Distance between information source and farmer | | | |
| Information from sources available does not meet needs | | | |
| Nature of small-scale farming | | | |
| Other Specify | | | |