

Urban Agriculture Survey 1999

Introduction

The Hashemite Kingdom of Jordan is a small country (89,342 sq. km) with a population of only about 4.8 million (1998). However, with an annual growth rate of 3.3 percent, Jordan's population is increasing rapidly. It doubled between 1979 and 1995. It is estimated that if the rate of growth does not decline, the population of Jordan will double again within the next 19 years. The per capita income of about 1,075 JD per annum (US\$ 2215). An overwhelming majority (87.7%) of the population lives in urban centres. Greater Amman is the largest and the most important city in the country. With an area of 8,231 Sq. Km., it has a population of 1.8 million or slightly more than 38 % of the total population in the country. Overall, Jordan has a population density of about 220 per Sq. Km.(1998).

Among the urban population of Jordan, there is a growing tendency to engage in small-scale (less than 1 dunum) household gardening to produce vegetables and fruits or to raise domesticated animals (sheep, goats, and poultry). The products are either consumed within the household (and relatives/ neighbors) or sold to the market for supplementary income. The practice is needed in poorer districts of the urban center and/ or among refugees living in refugee camps. This practice of urban agriculture (UA) has the potential to provide much needed additional food or income to families with little investment. In other words, UA may provide or enhance much needed food security to urban households. Quite often the products of UA improve the nutritional intake of children in the households. In short, this practice has the potential to contribute significantly to the food security of urban families at low cost, particularly in the context of water-scarce in Jordan. It is apparent that the practice of UA growing rapidly in Jordan. However, since UA is not covered by the national agricultural surveys, there is no reliable data on its magnitude either in terms of its contribution to the total economy or to the individual households. This lack of reliable data is also hindering the development of appropriate policies to further promote and strengthen urban agriculture in Jordan.

Urban agriculture, according to UNDP* (1996), is an industry that produces, processes and markets foods and fuel largely in response to the daily demand of consumers within a town, city or metropolis. It uses land and water dispersed throughout urban and peri-urban areas, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock. Needless to say, reliable information on this increasingly important sector is of critical significance to further the cause of improving food security and strengthen the national economy.

*Urban Agriculture Food, Jobs and Sustainable Cities, New York USA

Purpose of the Survey

The overall purpose is to facilitate appropriate policy development in support of urban agriculture at the local (city) and national levels. In the context of Jordan, as in many other developing countries, the major constraints facing urban agriculture are policies and regulations pertaining to such issues as the size of land, the kind and number of livestock, use or re-use of water, credit, storage and marketing of products. The study, therefore, critically assesses current municipal and city policy and regulations pertaining to urban agriculture and suggests changes.

Rationale of the Survey

Small area and low productivity of UA house gardens often lead to neglect of related statistics which are not considered within the agricultural sector, but are regarded as secondary activities within the household sector. In view of the growing interest in house gardens, the total production of these gardens can not be ignored. For many households, these small parcels of land provide additional income and/ or supplement their food resource. Nevertheless, urban agriculture seldom receives much formal attention. City by-laws on land use often discriminate against urban farmers. Lack of credit and access to the market often pose severe problems for the practitioners of UA. Since women tend to provide much of the labor for, and distribution of, such products, UA has an important gender dimension. Unfortunately, the gender implications of urban agriculture also largely remained unexplored. This study, in the context of Jordan and much of the Arab world, would be a pioneering one in these respects. Moreover, these small plots of land use considerable amount of water, fertilizers, and other natural resources. The benefits of such resource use in terms of output should be seriously analyzed, particularly in a country like Jordan where water and other natural resources are scarce. The products of urban agriculture are not only consumed within the household, but are also often marketed for profit. With increasing number of households being involved in UA, the total production of this sector is substantial and can no longer be ignored. In spite of its increasing contribution to the national economy, the UA sector has so far remained outside routine agricultural surveys. This study, therefore, would be very valuable in understanding the contribution of urban agriculture to the national economy and in completing the total picture of the national accounts.

Urban agriculture uses fertilizers, pesticides, wastewater and often-composted solid waste. These uses may have serious health implications. Are UA

farmers aware of the health risks of their practice? Do they use precautions against such health risks? If so, what precautions do they use? These vital questions also remained unanswered. Through interviews and focus group discussions, the study would attempt to explore these issues so as to promote greater understanding about health risks associated with various resource use practices of urban agriculture.

3.1 Objectives

The overall goal of the project is to critically assess the nature, extent and the socio-economic value of urban agriculture in Jordan with a view to inform and shape public policy. Specific objectives of the project include:

1. To critically analyze current municipal and national policies and regulations pertaining to Urban Agriculture, identify their strengths and weaknesses and suggest changes.
2. To determine the size of Urban Agriculture in terms of the total land area covered and the number of households involved.
3. To analyze the socio-economic characteristics of the households practicing Urban Agriculture and of those providing the major labor input (primarily housewives).
4. To determine the type of input used and the output produced from these small-scale operations and the end-use of the products (household consumption, market sale, etc.).
5. To critically analyze the problems (environmental, financial, regulatory and/or administrative) faced by urban farmers.
6. To examine environmental and health issues pertaining to urban agriculture.

Definitions and Terms

Dunum = 1000 Sq. M.

Without Land: There is no land specifically earmarked for cultivation in these households. Consequently, urban agriculture cultivation is practiced in rooftops or

in pots. Involvement in livestock raising is also included in this category.

Housing Unit Categories:

Category "A": Where minimum front setback must be 5 m long, side setbacks 5 m and rear setback 7m. Maximum licensed area of the housing unit is (36%) out of the total land area, which should not be less than (1000) squire meters. This category is classified as **number one**.

Category "B": Where minimum front setback must be 4 m long, side setbacks 4 m and rear setback 6 m. Maximum licensed area of the housing unit is 42% out of the total land area, which should not be less than (750) squire meters. This category is classified as **number two**.

Category "C": Where minimum front setback must be 4 m long, side setbacks 3 m and rear setback 4m. Maximum licensed area of the housing unit is 48% out of the total land area, which should not be less than (500) squire meters. This category is classified as **number three**.

Category "D": Where minimum front setback must be 3 m long, side setbacks 2.5 m and rear setback 2.5 m. Maximum licensed area of the housing unit is 52% out of the total land area, which should not be less than (300) squire meters. This category is classified as **number four**.

Dar: A conventional(or traditional) building of one room or more. Dar may be surrounded by a fence and could be of two floors served by uncovered stairs.

Stratum 1 represents the people whose income is low,

Stratum 2 represents the people of low to medium income,

Stratum 3 represents the people with high to medium income,

Stratum 4 represents high income,

Stratum 5 represents residents of Wadi Al Sier,

Stratum 6 represents people residing in Amman suburbs.

Survey Stages

5.1 Preparatory Stage

This survey is the first one of its kind implemented in Jordan. A combination of quantitative and qualitative methods has been used. The major component of the study is based on the questionnaire survey technique. The questionnaire, once designed, was thoroughly reviewed and revised by a group of specialists. The questionnaire was also pre-tested in the field before its finalization and execution.

5.1.1 Sample Design

With a view to achieve the objectives effectively, the following sampling design was used:

The population of the city of Amman was divided into six strata. 1- 4 strata were divided on the basis of the socio - economic characteristics of the households, as follows.

Stratum No.	Represents
1	Low income
2	Low- medium
3	High - medium
4	High

The fifth stratum is composed of the town of Wadi Al Seir and the sixth stratum is an Amman suburb. From each stratum, number of clusters were drawn by probability proportional to size, the allocation of clusters between strata is done by proportional allocation method, the number of clusters drawn from each stratum was as follows:

Stratum No.	No. of Clusters Drawn
1	21
2	21
3	20
4	18
5	8
6	32

In order to provide a well-defined framework for households having gardens to be used during the second stage of the sample, the initial survey has been implemented during the period from March to April 1998. This survey covered 120 clusters (each cluster

contains about 100 households). 13,000 households were covered in the initial survey. In the second stage, a complete enumeration was carried out for all gardens with a cultivated area of 20 square meters and above in addition to all gardens with livestock. The gardens with cultivated area of less than 20 square meters comprised about 25% of the sample.

5.1.2. Survey Coverage

The survey was designed to cover gardens in the Greater Capital Amman, which includes Amman, Wadi Seir and Amman suburbs.

5.1.3. Updating of the Frame

The residential districts of Amman (and the peri-urban areas) were divided into six strata, representing different socio-economic groups. A basic survey was carried out to identify the number of households (out of this sample) practicing urban agriculture and the broad categories of activities being pursued.

For this purpose, all urban agriculture activities were grouped under three broad categories:

- Agricultural crops (vegetables or other crops).
- Raising of animals (goat, sheep, poultry).
- Flowers.

5.2 The Main Documents of the Survey

5.2.1 First Round Questionnaire (Annex 1)

It contains the main items as follows:

- Identification data of the housing unit and building.
- The socio-economic characteristics of the individuals in these households.
- The plant and animal contents of the garden.
- The service and resource inputs used in the first period (1/11/1997-31/3/1998).
- The plant and livestock production of the garden in the same period.
- The methods of looking after the garden.
- Some practices in the gardens and the main problems and difficulties faced by the people who practice Urban Agriculture.

5.2.2 Second Round Questionnaire (Annex 1)

It contains mainly:

- New additions on the gardens during the period (1/4/1998-31/8/1998)
- The resource and service inputs during the same period.
- The plant and livestock production.

5.2.3 Third Round Questionnaire (Annex 1):

It contains the following items:

1. Any change on plants and livestock during the period (1/9/1998-30/10/1998).
2. The resource and service inputs during the same period.
3. The plant and livestock production and food processing inside the housing unit
4. Some practices in the garden
5. In-doorenvironment of the households practicing Urban Agriculture
6. Health risks and issues pertaining to practices of Urban Agriculture
7. The main problems and the suggested solutions by the people who practice Urban Agriculture

5.2.4 Instruction Manuals and Edit Rules

The instruction manual contained detailed explanation of all questions, concepts and definitions included in the questionnaire. It included the role and responsibilities of the survey staff (supervisors, controllers, and interviewers) and detailed explanation of field and office checking rules.

5.2.5 General and Specific Coding Booklet

A specialized coding booklet was prepared for assisting the data entry operations.

Field Work Stage

6.1 Field Workers Selection and Training

Female agronomy field workers executed the survey. They received

theoretical and practical training. At the end of the training, they were given a written examination to determine if the questionnaire instructions and concepts have been fully comprehended.

6.2 Organization of the Field Work

The trained interviewers executed the fieldwork under the supervision of a field officer with extensive field experience. The interviewers were divided into three teams; each team consisted of three interviewers, one supervisor and an editor.

6.3 Execution of the Field Work

The questionnaire was pre-tested on randomly selected 60 households from the six strata in Amman. Following appropriate revision, trained field workers administered the questionnaire among the 1,800 selected households. The survey data were collected through personal interviews in three rounds; the first round was at the beginning of spring 1998, second round was at the end of summer 1998, and third round was at the beginning of winter 1999.

6.4 Field Editing

A preliminary check of the questionnaires was made in the field.

Data Processing Stage

7.1 Office Processing

7.1.1 Editing

All completed questionnaires were given to the office editors who performed technical and formal editing according to the editing instructions and rules. Any questionnaire with doubtful data was returned to the interviewer to be re-checked and corrected.

7.1.2 Coding

After editing the questionnaires, the data were coded according to the coding rules and guides.

7.2 Electronic Processing

7.2.1 Data Entry and Edit Programs

The data entry and edit programs were prepared in coordination with a programmer from the Computer Directorate.

7.2.2 Data Entry

After the questionnaires were completely checked and coded, data were entered into the computer.

7.2.3 Data Cleaning

After the completion of electronic data entry and editing, errors were detected and corrected.

7.2.4 Data Tabulation

After obtaining error-free data, the final results were electronically tabulated using previously prepared programs for this purpose. Raising factors were used for the sample data to extract the final results at Amman Capital City level. The results were re-tabulated on WinWord Microsoft to valid publishing format.

Summary of Main Results*

Housing unit Characteristics and Land Distribution

Total number of households practicing urban agriculture is 50,097.

Total cultivated area in the housing units is 6,483,952.7 Sq. M.

The main crop types and area cultivated are as follow:

Crop Type**	Area (Sq. M)
Field crop***	85856.0
Vegetables	175235.0
Fruit Trees	3208291.6
Aromatic and Medical plants	142563.2
Trellis and Climbers	777705.8

About 50 % of the households reported consumption within the household as the main use of UA products, while for about 40% of the households UA is a means to enhance the beauty of the house.

Livestock The main livestock types and quantities during (1/11/1997-31/10/1998) were as follows:

ivestock Type	Number at the Beginning of the Period	Number at the End of the Period
Sheep	1572	1031
Goats	5955	3665
Chicken	30893	24257
Pigeons	24019	23377

Looking After the Garden

The number of males who look after the gardens is 36, 821 or about 50 % of the total households.

The number of females looking after the gardens is 35,060 or 48.8 % of the total labor force.

A total of 7,787 households or about 16 % of the total householdshired outside individuals or agencies to look after their gardens.

For 63% of the households “personal experience” is the only source of information regarding urban agriculture.

Percentage of the households with personal source of finance is above 90 %, the majority of remaining percent of households doesn't spend money on gardens.

Inputs and Outputs

The total market value of intermediate commodities is approximately JD 2,845,794.

The total market value of plant production is approximately JD 1,927,137.

The total market value of animal production is approximately JD 671,308.

Environment

An overwhelming majority of households (86% of the total) use public network as source of irrigation.

About 65 % of households use the surplus food products as animal feed.

About 22 % of households use leftover food and surplus byproducts for the preparation of organic fertilizers.

Percentage of housing units served by public sewerage network is 78.6 % and percentage of

housing units served by cesspool is 21.4 %

Percentage of households using pesticides is 65.7 %

28.5% of households prefer using natural alternatives of pesticides.

A majority of households (67.1%) disposed their garbage through the public garbage

collection system, while the rest (29.1%) disposed their garbage in public containers.

About 18 % of households would prefer an improved garbage disposal system, while about 20 %

of households would like to have a better water purification system. On the other hand, about

11% of households would like to see a reduction in exhaust gas from vehicles.

Problems and Difficulties of Urban Agriculture and Health Issues

About 63 % of households are suffering from Pests and plants diseases.

About 38 % of households complained of high water price.

About 30 % of households are suffering from scarcity of water.

*Further details of the results analysis will be included in the Analytical Report

** Annex 3

*** Field crops: wheat, maize, seeds of sunflower