Agricultural Census in the State of Qatar 2021

Executive Report

November 2021

Social and Economic Survey Research Institute

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ACKNOWLEDGEMENTS

This report presents the results of the agricultural census project for the year 2020-2021, which was conducted by the Social and Economic Survey Research Institute at Qatar University in cooperation with the Ministry of Municipality. The Social and Economic Survey Research Institute extends its sincere gratitude to all the owners and managers of farms and ranches of Qatari citizens and residents of Qatar who devoted part of their time to answering the detailed questions that we asked them during the interviews on a number of important topics. The Institute also thanks all those who conducted the interviews, and the supervisors who managed the field research.

The Social and Economic Survey Research Institute is responsible for any errors or omissions in this report. Questions may be directed to the Social and Economic Survey Research Institute at PO Box No. 2713, Qatar University, Doha, Qatar. You can also contact the institute at sesri@qu.edu.qa or via its website: http://www.qu.edu.qa/sesri/

AN ADDRESS FROM THE MINISTER OF MUNCIPALITY

The agricultural census is considered one of the most important statistical projects conducted by the Ministry of Municipality in cooperation with Qatar University, represented by the Social and Economic Survey Research Institute. It is also one of the main pillars of the process of planning and building agricultural strategies (plant and livestock), and it is the main source of agricultural information as it encompasses all agricultural holdings in the country and provides data on the characteristics of these holdings at all geographical and administrative levels. It also provides a modern and integrated framework for future agricultural surveys that are conducted via sampling.

This census, which was carried out in Qatar in the year (2020-2021), is the second of its kind, as the Ministry of Municipal Affairs and Agriculture carried out the first agricultural census in the year(2001-2000) .

The second agricultural census was implemented in several stages, including the numbering and inventorying of agricultural holdings stage, and enumeration stage was preceded by the experimental enumeration stage at the beginning of the year 2020.

The process of collecting field data for the agricultural census was carried out using tablet devices linked to the main database, which made it possible to reduce the temporal and spatial dimensions that hinder the speed of data processing, in addition to aiding in the real-time follow-up of field work and the speed of extraction and dissemination of results. The Social and Economic Survey Research Institute was keen to implement the census as accurately and comprehensively as possible, and to ensure that its stages and data collection methods have kept pace with modern international recommendations, taking into account the nature of agriculture in the State of Qatar and the priorities of agricultural statistical data and information required to be collected, which are indicated in the attached questionnaire.

It is well known that conducting an agricultural census requires investing a large amount of human and material resources, and that proceeds happen through publishing and using the results of the agricultural census in the process of developing and growing the agricultural sector, in both its plant and livestock parts, to serve the national economy.

By issuing the final results of the agricultural census, The Ministry of Municipality hopes that these results will provide basic data for planners, policy-makers and decision-makers as well as provide scientific material for researchers and those interested in agricultural studies, in addition to being a positive qualitative leap in the available agricultural data and statistics and increase accuracy estimates of future surveys and statistical programs based on the results of this census.

On this occasion, we extend our deep thanks and appreciation to all those who contributed to the success of this important national project, asking God Almighty to direct our steps for the good of our dear country Qatar, under the wise leadership of His Highness Sheikh Tamim bin Hamad Al Thani, the Emir of the country (May God protect him), His Highness Sheikh / Abdullah bin Hamad Al Thani, Deputy Emir, and His Excellency Sheikh / Khalid bin Khalifa bin Abdulaziz Al Thani, Prime Minister and Minister of Interior.

Dr. Abdullah bin Abdulaziz bin Turki Al-Subaie

Minister of Municipality

AN ADDRESS FROM QATAR UNIVERSITY'S PRESIDENT

Qatar University's implementation of the agricultural census confirms its commitment to being a pioneering national university in education and research, which positively contributes to achieving the community's needs and aspirations, by providing useful and reliable data to guide industry and policy formation, prioritization and evidence-based planning in both the economic and social sectors.

The agricultural census is a continuation of the university's coordination and cooperation with state institutions for exchanging experiences and information in a manner that enhances scientific and research cooperation, evident by the agreement between Qatar University and the Ministry of Municipality to implement the agricultural census and related surveys to contribute in spreading the culture of joint work with local expertise and institutions to serve the state and society.

The research team from Qatar University, in cooperation with the various committees of the census conducted a comprehensive and accurate research process in which scientific standards recommended by relevant organizations were followed. The information provided by the agricultural census in Qatar is considered a crucial reference for officials, researchers and decision makers, in addition to being useful in the process of planning and developing relevant strategies, especially those related to sustainable development, food security and Qatar Vision 2030.

Qatar University extends its gratitude to the owners of plant and livestock holdings, poultry farms employees for their cooperation in completing the census data. It also thanks all the workers and field researchers who collected the field data, and the joint committees that produced this work.

Dr. Hassan Al-Derham
President of Qatar University

INTRODUCTION

Qatar University's Social and Economic Survey Research Institute (SESRI) is an independent research body. Since its establishment in 2008, the institute has developed a strong infrastructure in the field of survey research with the aim of providing accurate survey data that helps planning and research in the social and economic sectors. This data is specifically prepared for planners and decision makers as well as the academic community.

The agricultural census is considered one of the most important statistical projects conducted by SESRI in cooperation with the Ministry of Municipality. It is also one of the main pillars of the process of planning and building agricultural strategies, and is the main source of agricultural information, as it includes all agricultural holdings (plant- livestock) in the country and provides data on the characteristics of agricultural holdings at all geographical and administrative levels. It also provides a modern and integrated framework for future agricultural surveys that follow the sampling method.

This census is the first one to be carried out by SESRI, as the agricultural census for the year 2020-2021 was implemented in several stages. The first of which is the stage of numbering and enumeration of agricultural holdings, followed by the experimental enumeration stage for which the SESRI used a modern method for collecting agricultural census data using tablet devices linked to a main database located at the SESRI's headquarters. This enabled the reduction of the temporal and spatial dimensions that impede the speed of data processing, it also helped in the immediate follow-up of field work and the fast extraction and dissemination of results. And finally the stage of actual enumeration of agricultural holdings. It is known that conducting an agricultural census requires investing a large amount in human and material resources, and that proceeds happen through publishing and using the results of the agricultural census in the process of developing and growing the agricultural sector, in both its plant and livestock parts, to serve the national economy.

Since independence in 1971, the state of Qatar began its efforts for an actual and institutional interest in agriculture for its development and advancement. In that year, the Ministry of Industry and Agriculture was established, of which the Department of Agricultural Affairs is mainly affiliated with, followed by the Department of Agricultural and Water Research in 1981, and then the Department of Fisheries, then the Department of Livestock, which led to an increased interest in the affairs of farmers,

fishermen and those in charge of raising livestock. In addition to inaugurating various projects, developing appropriate plans, providing production requirements and distributing them to farmers and fishermen at reduced prices, offering technical advice and guidance in all fields, open fielding markets and supervising and regulating them to ensure the marketing of local agricultural products, in addition to providing support in terms of approving the registration of new farms, preparing lands for cultivation, providing seeds and seedlings, and the necessary pesticides to combat diseases at reduced prices, as well as the provision of the necessary veterinary services such as vaccines and treatments to preserve livestock.

Despite the decline in the relative importance of these activities as a means of making a living, the state of Qatar has embarked on important and qualitative measures towards achieving food security in light of global changes, evident by the changes made by the government in all relevant sectors, including restructuring, distributing tasks, improving working conditions, increasing incomes and taking more serious steps into developing the agricultural sector in order to achieve food security. As work has begun on the “Qatar National Program for Food Security” previously and currently through the “Food Security Department”, which is mandated by the government to draft plans, projects and programs that will advance the agricultural sector, in addition to developing a food production base in a sustainable manner, and encouraging the private sector to invest in food security projects under the supervision of the Ministry of Municipality.

1 GENERAL INFORMATION AND QATAR'S ADMINISTRATIVE DIVISION:

Location

The State of Qatar is an independent sovereign state in the Middle East, since its full independence from Great Britain in 1971, it has emerged as one of the world's most important oil and natural gas producers. It is an Islamic country whose laws and customs comply with Islamic law. His Highness Sheikh Tamim bin Hamad bin Khalifa Al Thani has assumed power in the country since 2013.

Geography

The State of Qatar is a peninsula, located in the middle of the western coast of the Arabian Gulf, with an area of about 100 km wide and 200 km long in the Gulf. Qatar contains many islands, the largest of which are: Halul, Shirao and Al-Ashat. The State of Qatar borders the Kingdom of Saudi Arabia on its southern borders, as well as Bahrain, the United Arab Emirates and Iran from the sea side.

Topography

Qatar's land consist of a flat rocky surface in general, with some plateaus and limestone hills scattered in (Dukhan) area to the west, which is 40 meters above sea level. The surface of the land is also characterized by many geographical phenomena, including the large number of lagoons and bays scattered on the various shores of the country, in addition to the basins and depressions that are predominantly found in the northern and central regions. The northern and central parts of the country are among the most fertile sites in which natural vegetation abounds.

Climate

Qatar has a predominantly desert climate, summers are hot with annual average temperatures ranging between (30-50) degrees Celsius during the summer months, whereas winters are warm, with temperatures ranging between (8-22) degrees Celsius.

Population

Qatar's population has reached around 2.8 million (Qatar State Census 2020), most of the population lives in the capital, Doha, and its suburbs. The rest of the population is distributed in other municipalities.

Administrative division of the state:

The area of the State of Qatar is divided into eight municipalities, separated from the other by clear natural boundaries. Each municipality is made up of one or more zones (see the map shown in Graph 1-1 and the zones guide in Table 1-2). Each zone is divided into smaller units called blocks, and thus the block is the smallest administrative unit, each level in the division was given a serial numbers are as follows:

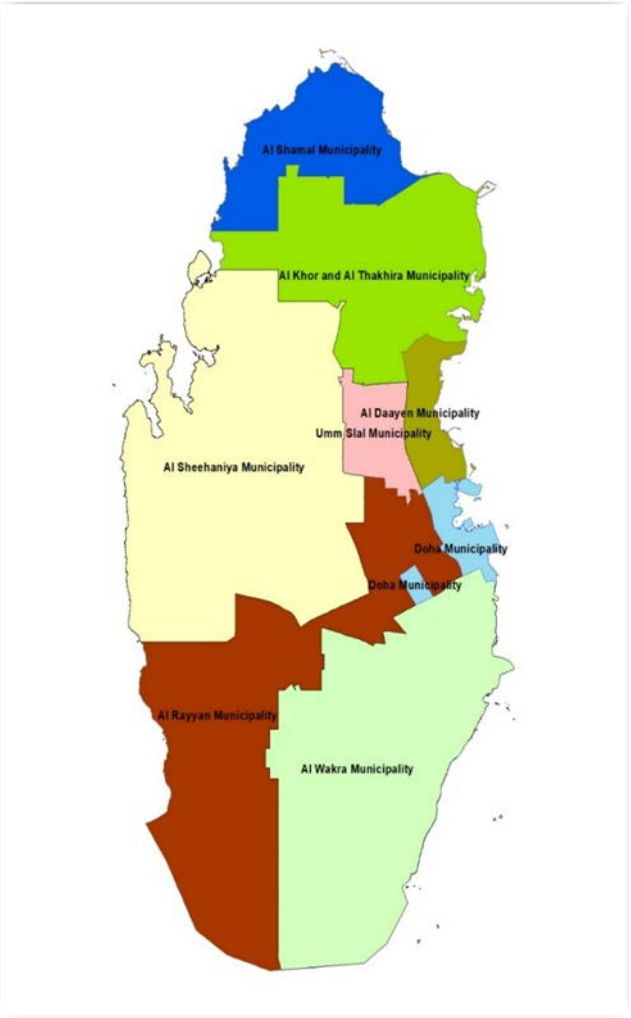


Table 1-1 Administrative division level numbers

Level one	Municipalities (1 – 8)
Level two	Zones (1 – 98)
Level three	Blocks (1 – last block in every zone)

1.1.1 Doha Municipality:

Includes the city of Doha with its new extensions, it is bordered to the north by the municipality of Al Daayen, to the west by the municipality of Al Rayyan, to the south by the municipality of Al Wakrah, and to the east by the Arabian Gulf.

Zones included in this municipality start from zone No. 1 to 50, 57 and 58, and from zone No. 60 to 68. Halul Island is included within the boundaries of the municipality. The industrial area and the central market are also included within this municipality.

1.1.2 Al Rayyan Municipality:

It includes the cities of Al-Rayyan and Al-Gharrafa and neighboring population centers and villages. It is bordered to the north by the municipalities of Umm Salal and Al Sheehaniya, to the west by the municipality of Al Sheehaniya and the Arabian Gulf, to the south by Al Wakrah Municipality and the Arabian Gulf, and to the east by the Municipality of Doha. Zones included in this municipality start from zone No. 51 to 56, in addition to zones No. 81, 83, 96 and 97.

1.1.3 Al Wakrah Municipality:

It includes the cities of Al-Wakrah, Al-Wukair, Mesaieed and its neighboring population centers. It is bordered to the north by the municipalities of Doha and Al-Rayyan, to the west by the municipality of Al-Rayyan, to the south by the borders of the Kingdom of Saudi Arabia, and to the east by the Arabian Gulf. The municipality includes areas 90, 91, 92, 93, 94, 95 and 98.

1.1.4 Umm Slal Municipality:

It includes the cities of Umm Slal Muhammad and Umm Slal Ali and the villages and population centers next to them. It is bordered to the north by the municipality of Al-Khor and Al-Thakhira, to the west by the municipality of Al sheehaniya, to the south by the municipality of Al-Rayyan, and to the east by the municipality of Al-Daayen. The municipality includes zone No. 71.

1.1.5 Al Khor and Al Dhakhira Municipality:

It includes the cities of Al-Khor, Al-Dhakhira, Ras Laffan, Al-Ghuwairiyah and its neighboring population centers. It is bordered to the north by the municipality of Al-Shamal, to the east by the Arabian Gulf, to the west by the municipality of Al-Sheehaniya and Umm Al-Maa area located on the western coast of the State of Qatar. From the south, it is bordered by the municipalities of Umm Slal and Al-Daayen. The municipality includes zones 74, 75 and 76.

1.1.6 Al Shamal Municipality:

It includes the cities of Al Shamal, Al Ruwais, Abu Dhalouf, and the neighboring villages and population centers. It is bordered to the north, east, and west by the Arabian Gulf, and to the south by the municipality of Al Khor and Al Thakhira. It includes zones 77, 78, and 79.

1.1.7 Al Daayen Municipality:

It includes the city of Lusail, Umm Qarn area, Simaisma, and its neighboring villages and population centers. It is bordered to the north by the municipality of Al-Khor and Al-Thakhira, to the east by the Arabian Gulf, to the south by the Doha municipality, and to the west by the municipality of Al-Khor and Al-Thakhira and the municipality of Umm Slal. It includes zones No. 69 and 70.

1.1.8 Al Sheehaniya Municipality:

It includes the cities of Al-Sheehaniya, Al-Jamiliya, Dukhan, Umm Bab, and the villages and population centers near it. It is bordered to the north by the municipality of Al-Khor and Al-Thakhira, to the west by the Arabian Gulf, and to the south by the municipality of Al-Rayyan. The municipality includes zones No. 72, 73, 80, 82, 85, 84, and 86.

Table 1-2 Zone numbers

Zone 1	Al Jasra	Zone 50	Al Thumama
Zone 2	Al Bidaa 2	Zone 51	Al Gharrafa/Bani Hajer/Al Zaghwa
Zone 3	Msheireb3	Zone 52	Al Luqta/Al Rayyan Al Qadeem
Zone 4	Msheireb4	Zone 53	Al Rayyan Al Jadeed/Muaither North
Zone 5	Al Najada, Fereej Al Asmakh, Barahat Al Jufairi	Zone 54	Fareeq Al Amir/Muraykh/Al Soudan North
Zone 6	Al Ghanim Al Ateek 6	Zone 55	Al Soudan South/Al Aziziya/Al Ghanim/Al Murrah
Zone 7	Al souq	Zone 56	Al Khulaifat Al Jadeeda/Al Maamoura/Abu Hamur
Zone 12	Al Bidda , Al Rumeila, Wadi Al Sail	Zone 57	Industrial Area
Zone 13	Musheireb13	Zone 58	Alsuoq Almarkazi
Zone 14	Fareeq Abdul Aziz	Zone 60	Dafna 60
Zone 15	Al Doha Al Jadeeda	Zone 61	Dafna,Qassar
Zone 16	Al Ghanim Al Qadeem	Zone 62	Lekhwair
Zone 17	Alrifaa,Al Hitmi Al Qadeem	Zone 63	Onaiza 63
Zone 18	Al Salata, Al Mmirqab	Zone 64	Lejbailat
Zone 19	Doha Port	Zone 65	Onaiza 65
Zone 20	Wadi Al Sail (West)	Zone 66	The peral/Qatiffiya
Zone 21	Al Rumeila (West)	Zone 67	Hazm Al Markhiya
Zone 22	Bin Mahmoud (North)	Zone 68	Tarfa
Zone 23	Bin Mahmoud (South)	Zone 69	Lusail
Zone 24	Rawdat Alkhail	Zone 70	Al Kheesa
Zone 25	Al Mansoura,Bin Dirhem	Zone 71	Umm Slal/Al Kharaitiyat

Table 1-2 (Continued): Zone numbers

Zone 26	Najma	Zone 72	Al Utouriya
Zone 27	Umm Ghuwailina	Zone 73	Al Jemailiya
Zone 28	Al Khulaifat	Zone 74	Al Khor
Zone 29	Ras Abu Abboud	Zone 75	Al Thakhira
Zone 30	Al Duhail	Zone 76	Al Ghuwairiya
Zone 31	um lakhban	Zone 77	Fuwairit/Al Jassasiya
Zone 32	Madinat Khalifa (North)	Zone 78	Abu Dhalouf/Al Zubara
Zone 33	Al Markhiya	Zone 79	Madinat Al Shamal/Al Ruwais
Zone 34	Madinat Khalifa (South)	Zone 80	Al Shahhniya
Zone 35	Kulaib	Zone 81	Abu Nakhla / Mukainess
Zone 36	Al Messila	Zone 82	Rawdat Rashed
Zone 37	Bin Omran/Al Hitmi Al Jadeed	Zone 83	Al Karaana
Zone 38	Al Sadd	Zone 84	Umm Bab
Zone 39	Al Mirqab Al Jadeed/Al Nasr	Zone 85	Al Nasraniya
Zone 40	Al Salata Al Jadeeda /Al Asiri	Zone 86	Dukhan
Zone 41	Al Hilal (West)	Zone 90	Al Wakra
Zone 42	Al Hilal (East)	Zone 91	Al Wukair
Zone 43	Al Nuaija (West)	Zone 92	Mesaieed (town)
Zone 44	Al Nuaija (East)	Zone 93	Mesaieed (Industrial Area)
Zone 45	Al Matar Al Qadeem	Zone 94	Shaqra
Zone 46	Musaimeer	Zone 95	Al Kharrara
Zone 47	Al Rawda	Zone 96	Abu Samra
Zone 48	Doha International Airport	Zone 97	Sawda Natheel
Zone 49	Doha International Airport (East)	Zone 98	Khor Al Adaid

CHAPTER ONE: METHODOLOGY AND QUALITY OF DATA

Goals and Objectives of the Agricultural Census

- Support agricultural planning and facilitate the development of evidence- based agricultural strategies.
- Assist in highlighting the contributions of farms and manors to food security in the country.
- Provide basic data to evaluate and monitor operational farms and manors in the country.
- Update the framework of agricultural holdings according to administrative divisions.
- Provide statistical data on agriculture and livestock in order to draw up future development plans and programs, with the aim of mapping a strategy for the advancement of the agricultural sector (plant - livestock).
- Update the databases of the Ministry of Municipality in order to improve the agricultural services provided, such as prepping the land for farming, agricultural guidance, access to support and other services.
- Support the implementation of agricultural and animal scientific research with reliable data and answers.
- Provide information to the employees of the Ministry of Municipality for direct access to the status of the agricultural and animal sector and the difficulties that holders may face.
- Identify changes occurring in the agricultural activity (plant - livestock).

Methodology:

Review of methodological considerations for the Food and Agriculture Organization of the United Nations (FAO): The World Programme for the Census of Agriculture 2020 recognizes that agricultural censuses can be conducted in different ways; it believes that a broader range of items in the structure of the agricultural sector can be covered in the census. Based on the recommendations of the Food and Agriculture Organization of the United Nations contained in the World Programme for the Census of Agriculture for following the standard approach among other methods of implementation, and given the nature of the agricultural sector in Qatar, which is dominated by integrated holdings (plant and livestock), agricultural activities are

carried out in two agricultural seasons, therefore actual measurement and counting methods were followed with the aim of obtaining accurate, reliable and comprehensive data.

This has resulted in following the method mentioned below:

1. Enumeration of all plant, animal and integrated holdings.
2. Actual measurement of the areas planted with various crops, taking into account open field Fields, greenhouses, barns and stores.
3. Actual enumeration of palm trees, fruits, animals, poultry and agricultural equipment.
4. Making an Inventory of the winter and summer agricultural crops, by carrying out a first and second visit.
5. Inventory of the age and sex composition of all livestock.
6. Actual enumeration of bee hives.
7. Enumeration of points of sale for the holdings' products.
8. Enumeration of licensed projects within holdings.
9. Enumeration of modern technologies and systems used within holdings.
10. Making an inventory of perennial crops.

The specified period for conducting the census:

This report presents the main results of the agricultural census of the State of Qatar for the agricultural seaon 2020/2021, which begins in September 2020 and ends in December 2021. Therefore, the data includes plant, livestock, labor used, agricultural machinery valid for use, equipment owned and leased to the holder at the time of the census, in addition to buildings and constructions.

The data collection period was selected in a way that respects the inclusion of both winter and summer crops, from September to August of the following year. As for agricultural machinery and equipment, livestock, perennial crops and fruit trees, they are counted at a specific time of the agricultural season. Based on these facts and the proposals of academics specialized in the field of livestock and agricultural crop surveys, the census data collection period was between December 2020 and April 2021.

Institutional Support

A higher committee was formed to supervise the implementation of the census. The committee included representatives from the Ministry of Municipality, Qatar University, and the Planning and Statistics Authority. This committee established another specialized technical committee that included specialists in the field of agriculture, surveys, statistics, livestock, information technology, geographic information systems, food security, and agricultural research. In addition to seeking the expertise of experts from the Arab Organization for Agricultural Development. Accordingly, Ministerial decrees and circulars were issued to implement the census for the year 2020/2021. The Census' Technical Committee organized meetings with owners of farms and manors in the country to illustrate the importance and objectives of the agricultural census, and motivate them to participate and cooperate with data collectors to obtain accurate and correct information.

Survey Instrument

The questionnaire was designed to collect the necessary information for the census project in several stages, the first of which includes formulating the questions in Arabic, then translating the questionnaire into English by professional translators for census-specific purposes. After translation, the translated versions were carefully proofread, after which the questionnaire was tested internally (experimental counting) at the Social and Economic Survey Research Institute. This allowed the project team to ascertain whether the respondents will be able to understand and answer the questions.

The data collection program was used in the Social and Economic Survey Research Institute (Blaise), which a group of programmers worked on to convert paper questionnaires into electronic versions. This program is considered one of the powerful and flexible software packages widely used in research for data collection, considering the software program is suitable for creating a computer-assisted survey, where questions can be described and written on the form prepared for this purpose, and applying the rules of data cleansing. This data model contains information comparable with the codebook that describes a stable structure of the survey data where you can specify question order, conditional logic, and validation.

Once the necessary changes were made to the questionnaire based on the internal pre-test, the pre-test (experimental counting) was conducted again by holding face-to-face interviews for a specified number of managers or holders of agricultural holdings

via computer-assisted personal interviews (CAPI) using the BLAISE program, where research assistants ensured the quality and correctness of the information entered into the computers. This pre-test gives valuable information to ensure the clarity of the questionnaire questions and to improve and rephrase them if necessary, in addition to verifying the validity of answer options, introductions, transitions, interviewer's instructions and the duration of the interview. Based on this information, the final version of the questionnaire was developed and programmed in the CAPI (computer-assisted personal interview) system in preparation for the start of the fieldwork (actual enumeration stage).

Based on the standard traditional methodology, there were two census enumeration forms that included the two agricultural seasons in the State of Qatar, winter and summer seasons. The agricultural census form included the following items:

1. Metadata
2. Demographic data of the holder
3. Employment
4. Irrigation sources
5. Land use
6. Crops
7. Livestock information including numbers, types, gender and age composition of herds, barn areas and breeding systems
8. Agricultural machinery and equipment
9. Non-residential buildings and constructions
10. Agriculture practices
11. Fruit trees

Characteristics of the Agricultural Census:

The most important features of the agricultural census Qatar 2020/2021 are:

1. The census is considered a large-scale statistical process that was implemented by the state, represented by the Ministry of Municipality, in cooperation with the Social and Economic Survey Research Institute at Qatar University and other supporting official entities, during the time period from September 2020 to December 2021.
2. This census is considered a comprehensive statistical survey including all agricultural crops, livestock and poultry holdings.
3. A holding is the unit of enumeration in the Qatar Agricultural Census 2020, and it will be defined later in the appendix of the census.

4. The implementation of the technical plan was appointed to the staff of the Ministry of Municipality due to their accumulated experiences through the well-execution of the previous agricultural census in the year 2000, in addition to benefiting from the expertise of the of Social and Economic Survey Research Institute at Qatar University, which is specialized in implementing various large-scale statistical operations. In addition to adopting what is suitable to the nature of the agricultural sector in Qatar from the recommendations of the Food and Agriculture Organization of the United Nations (FAO) issued in connection with the World Agricultural Census 2020, especially those related to the contents of the census form and the outputs in order to interpret comparisons at an international level.
5. The census was carried out using the latest statistical tools and programs, and by using tablet devices for data collection operations.
6. The census database is not considered an official document in intellectual property disputes.
7. Adherence to the articles of the Statistical Law and considering all census-related data strictly confidential.

Stages of Agricultural Census Implementation

1.1.9 Census Frame

A frame can be defined as a collection of resource materials (e.g. maps, lists, guides, etc.), from which a sample can be selected. It is the basis for determining all statistical units to be included in a statistical group. In the case of the agricultural census, an agricultural holding is the basic statistical unit to be enumerated. The ideal framework includes a list of all agricultural holdings, selected based on the operational definition of agricultural holding adopted by the country, which includes all units without omission or inclusion of any of them more than once, and without including any units other than agricultural holdings.

The agricultural census frame lists were prepared by the research team at the Social and Economic Survey Research Institute - Qatar University. The research team developed a geographical frame based on recent aerial photographs, in addition to the list of farms and manors registered in the Ministry of Municipality. To ensure comprehensiveness in the enumeration stage, the total area of the country was divided into geographical squares to enumerate and classify all holdings.

The frame of the agricultural census included a complete record of plant and livestock holdings, which included farms and manors of various types in the country. The frame

was prepared in cooperation with the Ministry of Municipality, while using maps to locate the addresses of holders.

1.1.10 Trial Enumeration

During this stage, the data collection system and the process of measuring cultivated areas, barns, and manors were tested to ensure the efficiency and accuracy of all sections of the questionnaire. Upon completion, the experiment was evaluated in general, and the necessary adjustments were performed based on the results of the trial enumeration. During the month of December 2020, a group of field teams conducted a trial enumeration of plant and livestock holdings. The experimental counting process aimed at the following:

1. Field testing the census form and the inventory form.
2. Estimating the time needed to complete the enumeration data and the agricultural census form.
3. Estimating the number of field workers required for the actual enumeration stage.
4. Testing the use of data collection and area measurement systems.
5. Testing data cleansing rules and geographic information systems applications.

Twenty farms and manors were selected to conduct the trial experiment with the help of ten agricultural engineers and veterinarians for data collection. This was done over a period of three days (January 7-9, 2021). The duration of completing the census questionnaire varied according to the type of holding, resources and in-house facilities.

1.1.11 Actual Enumeration Stage

The actual enumeration stage is considered one of the most important stages of the census, this stage started from the beginning of January 2021 and continued until March 2021 for the first visit. The second visit was implemented during the months of June and July 2021.

Fieldwork

1.1.12 Fieldworker's Selection and Training

Fieldworkers play an important role in obtaining high quality data during the census. Agricultural censuses usually require a large number of fieldworkers. Evidently, succeeding in providing useful results depends largely on proper selection and training of the fieldworkers, given that the agricultural census is a comprehensive process of data collection. The fieldwork team responsible for the implementation and monitoring of field operations was provided with a SESRI identification, to establish credibility with respondents during the data collection phase.

The operative frame for fieldworkers was established. Starting with data collectors, headed by team leaders, whom are in turn headed by supervisors responsible for quality control and providing technical guidance to the field work. The enumerators were carefully selected, taking into account several factors, such as basic qualifications and experience in the field of livestock and agriculture.

The fieldwork team consisted of 130 field data collectors, team leaders, supervisors and quality assurance officers highly experienced in collection and handling of agricultural and livestock data.

Training workers for the census is a major task that requires a lot of preparation due to the large number of participants on the one hand, and to obtain high quality researchers on the other. Therefore, the training plan was prepared in two phases, the first to train leadership and technical cadres, and the second to train supervisors and field data collectors. The training program emphasized on the concepts and terminology included in the agricultural census, familiarization with the objectives of the census, the data collection methodology, the method of filling out the enumeration form and the census form, introducing the participants to their responsibilities and duties within the tasks entrusted to them, measuring cultivated areas using computers, and the actual counting of livestock and trees, in addition to establishing administrative reference points in case of any problems encountered during the enumeration process.

The training program was comprehensively designed and included both theoretical and practical aspects, in order to cover the challenges of fieldwork in agricultural censuses and any issues that may arise. The researchers' training process took five days, three days for the first visit questionnaire and two days for the second visit questionnaire. The theoretical part included an introduction to survey research, the

methodology of the agricultural census, an explanation of the various sections of the census, and an explanation of terms and definitions related to agriculture and livestock. In addition to addressing agricultural census methodologies in accordance with the recommendations of the Food and Agriculture Organization of the United Nations. The program also clarified some instructions for fieldwork, quality procedures, and explained the mechanism and dates for collecting census data.

The practical part included training on data entry software using computers via Blaise program, and measuring distances and agricultural areas using geographic information systems. The training also included a two-day field visit to Qatar University farm and the global farm in Bu Thailain Zone in the municipality of Umm Salal, for the actual application of the census questionnaire, measuring areas, counting trees, inventorying crops and livestock. All training materials were gathered in a special printed and electronic booklet to serve as a guide for the fieldworkers.

Preliminary Results and Data Processing

Upon completion of the enumeration process, the data was reviewed and processed and the preliminary results were prepared. The processing phase of the agricultural census data included all the activities following the fieldwork, such as manual auditing, automated auditing and data cleansing. Research assistants undertook the task of following up on data processing and conducting various checks on the credibility, accuracy and comparing the data with preliminary results, preparing tables and determining the final results of the agricultural census.

Data Quality

Two types of errors can occur during data collection, statistical errors and non-statistical errors. Statistical errors are found in sample surveys and not in the censuses, they are easy to measure and the percentage of error can be estimated easily because it is a result of sampling errors. Non-statistical errors however are possible to occur at any stage of the implementation of censuses and surveys. Therefore, when implementing this agricultural census 2020/2021, there was a need to develop a quality-control system for the data to achieve the highest level of quality and accuracy of data. This includes field monitoring by supervisors, designing rules for data cleansing in computer systems, using geographic information systems to

verify information, as well as implementing a census post-survey to ensure the reliability and consistency of the data.

The impact of non-statistical errors on data quality was minimized thanks to the high efficiency and outstanding performance of the fieldwork team whom was carefully selected and trained through a quality control program. This comes in efforts to prevent or reduce the occurrence of errors to the greatest possible extent, and to detect errors in the event of their occurrence to allow for appropriate corrective measures.

In order to achieve the required effectiveness, a strict quality control system was placed for all stages of the census, starting from the preparatory phase, and continuing until data processing and publishing phases, in order to ensure obtaining highly accurate data.

Quality control in the planning phase is of crucial importance because of its close connection with all subsequent phases. Therefore, each phase was given adequate time and procedures to ensure obtaining high quality and reliable census data.

1.1.13 Survey Administration

The survey was administered by computer-assisted personal interviews (CAPI) within the holding, which is an approved method of computer-assisted data collection. The census administration used a monitoring system to ensure that questions were asked appropriately and that answers were accurately recorded. SESRI is fully committed to the idea that knowledge of interviewing techniques and field procedures should be completed in accordance with research ethics guidelines. This includes continuous training and strong support for data collectors. During the period of fieldwork, areas were measured by special software linked to GPS systems, a monitoring system, and tools that allow supervisors to monitor and evaluate the activities of the data collectors.

1.1.14 Data Management

After the data was collected, it was merged and saved in a single BLAISE data file. This dataset was then cleaned and saved in the social sciences analysis program STATA form. Univariate, bivariate and multivariate analyses were then performed.

Publication Plan

The publication plan included the following outcomes:

- Reports (executive preliminary results report, final results report, and technical report).
- Data products and services (classified data, providing access to regular databases and computer databases).
- Atlases and other geographic products (pamphlets, brochures, videos and diagrams).
- Scientific articles.

Publication methods and tools:

- Printed materials
- Online publishing.
- Social media platforms of the Ministry of Municipality and Qatar University.
- Methods and tools for secure access to computer data and other electronic methods.

II. CHAPTER TWO: AGRICULTURE CENSUS

The State of Qatar, represented by the Ministry of Municipality and Agriculture, carried out the first agricultural census in the year 2000. The agricultural census is a major source for providing detailed data and information because it aims to enumerate the components of all plant, livestock and integrated holdings in Qatar. The census aims to provide statistical information and data regarding holdings, total cultivated areas and demographic characteristics of holders, taking into account produce and animal products outlets, places of sale, numbers of agricultural machinery and green houses. The census is defined as a large-scale statistical process for collection of quantitative information on the composition of the agricultural sector (the structure of the agricultural sector) using the agricultural holding as the enumeration unit. The census process includes all regions of the State of Qatar during a full agricultural year. The census covers all agricultural holdings that meet the requirements of agricultural holdings, whether plant, livestock or integrated holdings.

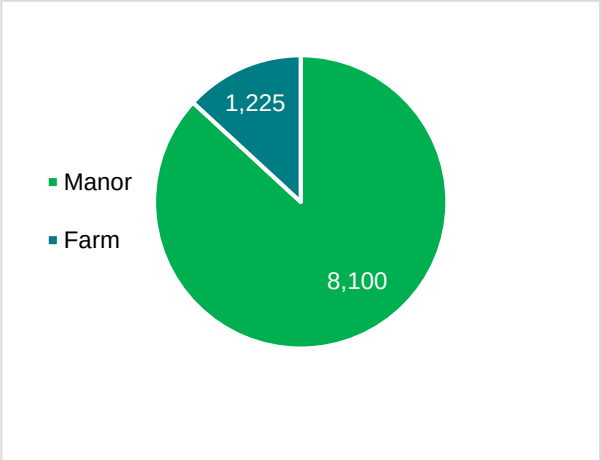
Census Importance

The importance of the agricultural census stems from the fact that it provides comprehensive data on the characteristics of the agricultural sector according to administrative divisions at all levels, which provides a modern and integrated framework for designing and drawing samples from the various agricultural surveys for the years following the census.

The agricultural census is unique for its fundamental objectives, the most important of which is supporting agricultural planning, facilitating the development of agricultural strategies based on scientific evidence. The census aims to aid in highlighting the contribution of farms and manors to the food security of the country, as well as providing basic data for the evaluation and monitoring of farms and manors operating in the country.

Plant and Animal Holdings

Figure II-1: Types of holdings by status



The total number of plant and animal holdings that were counted during the agricultural census project was 9,325 holdings, 84% of which had an active survey status, 6% inactive holdings, 4% merged holdings (part of another holding), and 3% closed holdings. The total number of farms is 1,225, of which 83% are active farms that were counted in this census, 17% are inactive farms and 0.2% are under maintenance. There were no closed or merged farms or farms which refused to participate in the census. While the total number of manors reached 8,100, of which 84% are active manors that were counted in this census, 5% are merged, 4% are inactive, and 4% are closed. (See Table II-1).

Table II-1: Numbers of agricultural holdings by status

Status	Animal Holdings		Farms		Total	
	No.	(%)	No.	(%)	No.	(%)
Active	6,815	84	1,016	83	**7,831**	**84**
Closed	295	4	0	0	**295**	**3**
Merged	403	5	0	0	**403**	**4**
Inactive	360	4	207	17	**567**	**6**
Refuse	152	2	0	0	**152**	**2**
Under Maintenance	75	1	2	0	**77**	**1**
Total	**8,100**	**100**	**1,225**	**100**	**9,325**	**100**

As for active holdings that were included during the census period, we can notice from Table II-2 that there were 7,831 holdings (6,815 animal holdings and 1,016 farms), of which (5%) plant, while livestock represents 87%, and integrated holdings represent 8%.

Table II-2 :Numbers of active agricultural holdings by activity

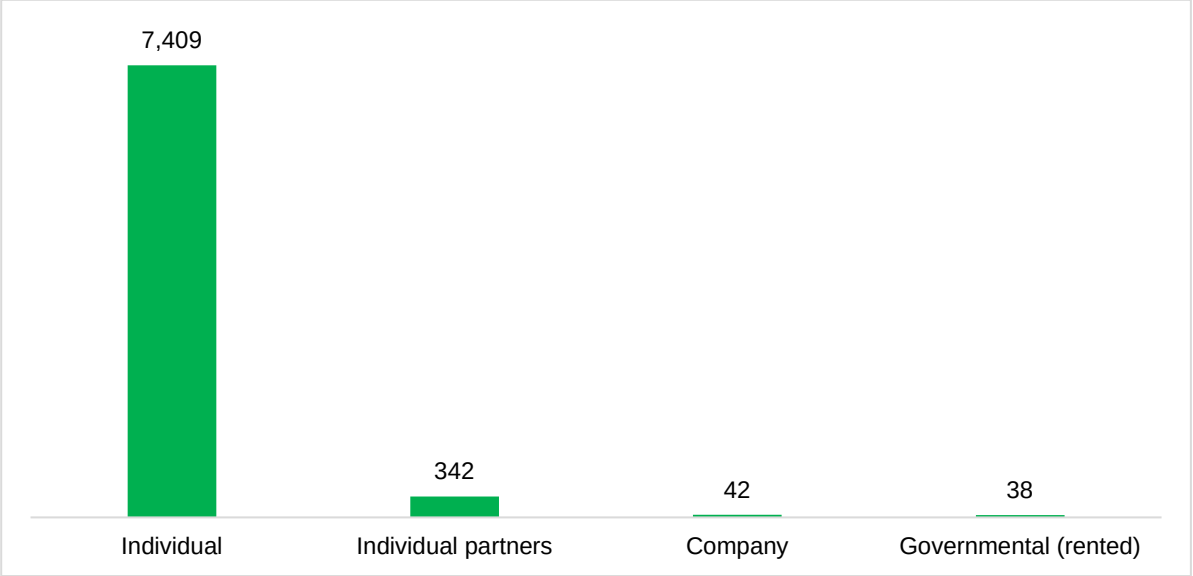
Status	Animal Holdings		Farms		Total	
	No.	(%)	No.	(%)	No.	(%)
Plant	0	0.0	369	36.3	**369**	**4.7**
Livestock	6,815	100.0	25	2.5	**6,840**	**87.3**
Poultry	0	0.0	6	0.6	**6**	**0.1**
Integrated Farm	0	0.0	616	60.6	**616**	**7.9**
Total	**6,815**	**100.0**	**1,016**	**100.0**	**7,831**	**100.0**

Legally, there are 7,409 individual holdings, most of which are distributed in the municipality of Al-Shahaniya, followed by the municipality of Al-Khor and Al-Thakhira, while the number of holdings for individual partners reached 342, most of which are distributed in the municipality of Al-Khor and Al-Thakhira, while 42 holdings are owned by companies. Approximately 69% of these holdings are located in the municipality of Al-Khor and Al-Thakhira, and 38 government-rented holdings are randomly distributed across the municipalities. (See Table II-3).

Table II-3:Numbers of agricultural holdings by legal status of holder and municipality

Municipality	Individual	Individual partners	Company	Governmental (rented)	Total
Doha	1	1	0	0	**2**
Al Rayyan	961	33	0	6	**1,000**
Al Wakrah	411	20	2	0	**433**
Umm Slal	394	41	5	4	**444**
Al Khor & Al Dhakhira	1,497	105	29	9	**1,640**
Al Shamal	383	36	1	6	**426**
Al Daayen	88	17	3	1	**109**
Al Sheehaniya	3,674	89	2	12	**3,777**
Total	**7,409**	**342**	**42**	**38**	**7,831**

Figure II-2: Proportional distribution of individual holders in active livestock holdings by type of holding



The number of holdings that are self- financed reached 7,797 holdings, while the number of holdings that are government-funded (Qatar Development Bank) reached 24, whereas the number of holdings that are funded by the private sector were 10 holdings. (See Table II-4).

Table II-4:Numbers of active agricultural holdings by main source of operation, finance, and municipality

Municipality	Personal	Governmental (QDP)	Private sector	Other	Total
Doha	2	0	0	0	**2**
Al Rayyan	998	2	0	0	**1,000**
Al Wakrah	433	0	0	0	**433**
Umm Slal	442	1	1	0	**444**
Al Khor and Al Dhakhira	1,632	6	2	0	**1,640**
Al Shamal	420	6	0	0	**426**
Al Daayen	108	0	1	0	**109**
Al Sheehaniya	3,762	9	6	0	**3,777**
Total	**7,797**	**24**	**10**	**0**	**7,831**

Table 5-II shows the distribution of farms according to the farm tenure system and the municipality. It became clear that most of the farms are under tenure by 98%, while rented farms constituted only 2% of the total number of farms in the country. 309 holdings are distributed in the municipality of Al Khor and Al Thakhira, representing about 30%.

Table II-5:Numbers of active farms by land tenure system and municipality

Municipality	Owned	Rented	Other	Total
Doha	1	0	0	**1**
Al Rayyan	72	3	0	**75**
Al Wakrah	46	0	0	**46**
Umm Slal	133	1	0	**134**
Al Khor & Al Dhakhira	303	5	1	**309**
Al Shamal	127	6	0	**133**
Al Daayen	61	0	0	**61**
Al Sheehaniya	249	8	0	**257**
Total	**992**	**23**	**1**	**1,016**
(%)	**98**	**2**	**0**	**100**

Holders

The total number of individual holders is 7,409 individuals. The results showed that most of the holders were males with a percentage of 88%. In more detail, Table 6-II shows the numbers of individual holders of working holdings by gender and municipality. It turned out that the distribution of the type of holder by municipality was similar between males and females, except for the municipality of Al-Rayyan, where 14% of the males had holdings in the municipality of Al-Rayyan, compared to 6% of the females. At the municipal level, the following table shows that both Doha and Al Shamal municipalities were relatively lower compared to the rest of the municipalities.

Table II-6:Numbers of individual holders in active agricultural holdings by gender and municipality

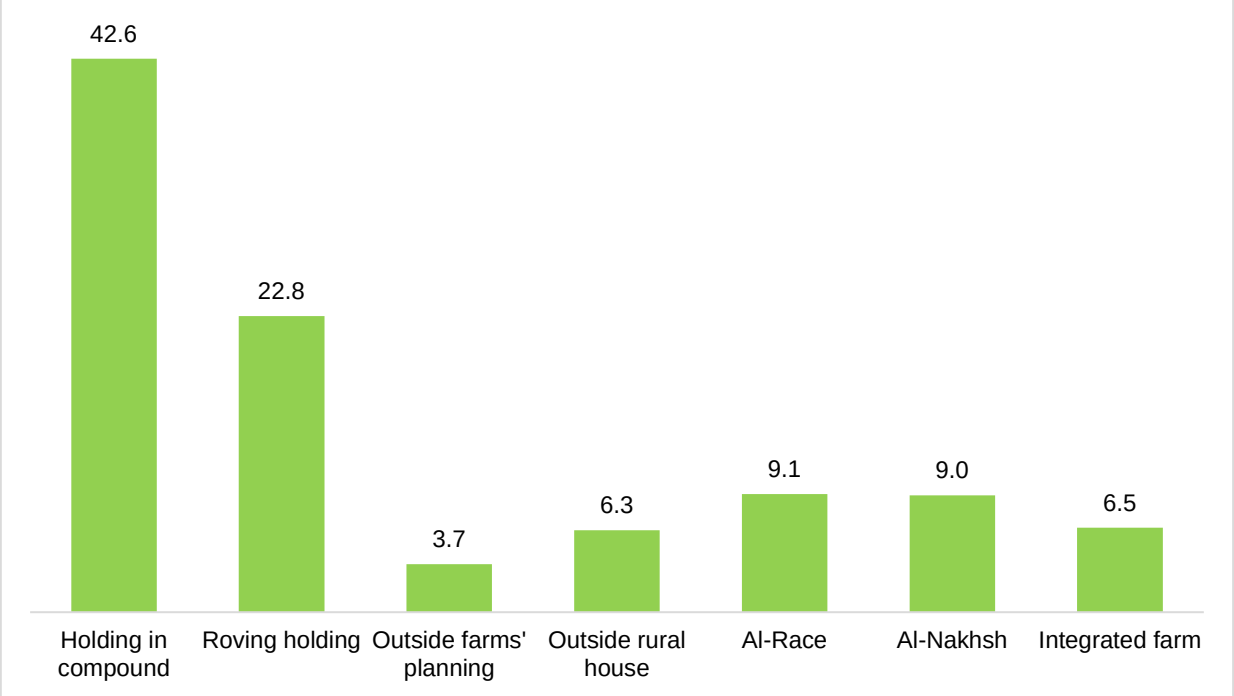
Municipality	Male		Female		Total	
	No.	(%)	No.	(%)	No.	(%)
Doha	1	0.0	0	0.0	**1**	**0.0**
Al Rayyan	911	14.0	50	5.5	**961**	**13.0**
Al Wakrah	366	5.6	45	5.0	**411**	**5.5**
Umm Slal	320	4.9	74	8.2	**394**	**5.3**
Al Khor & Al Dhakhira	1,266	19.5	231	25.6	**1,497**	**20.2**
Al Shamal	342	5.3	41	4.5	**383**	**5.2**
Al Daayen	82	1.3	6	0.7	**88**	**1.2**
Al Sheehaniya	3,217	49.5	457	50.6	**3,674**	**49.6**
Total	**6,505**	**100.0**	**904**	**100.0**	**7,409**	**100.0**

Table 7-II shows that the total active individual holdings with animals is 7,144, of which 6,278 are held by males and 866 are held by females. Among the male holders, there are 38% holdings inside a compound, 25% roving holdings, 10% in each of the holdings in Al Race and Nakhsh 7% are integrated farms, 6% are holdings outside rural houses, and 4% are outside farms' planning. While the distribution of the holdings of female holders was about 73% holdings in compounds, 10% roving holdings, and about 6% integrated farms.

Table II-7:Numbers of individual holders in active animals' holdings by gender and holdings' Type

Holdings' Type	Male		Female		Total	
	No.	(%)	No.	(%)	No.	(%)
Holding in compound	2,403	38.3	639	73.8	**3,042**	**42.6**
Roving holding	1,542	24.6	90	10.4	**1,632**	**22.8**
Outside farms' planning	250	4.0	12	1.4	**262**	**3.7**
Outside rural house	410	6.5	42	4.8	**452**	**6.3**
Al-Race	651	10.4	2	0.2	**653**	**9.1**
Al-Nakhsh	611	9.7	31	3.6	**642**	**9.0**
Integrated farm	411	6.5	50	5.8	**461**	**6.5**
Total	**6,278**	**100.0**	**866**	**100.0**	**7,144**	**100.0**

Figure II-3:Propotional distribution of individual holders in active livestock holdings by type of holding



The holder's average visit rate to the individual holdings varies according to the municipalities, where 3% of the total holders reside in the holding location, about 43% of the holders visit the holding daily, 44% weekly, and 5% of the holders visit the holding on a monthly basis. (See Table 8-II).

Table II-8:Numbers of active agricultural holdings by nature of holder's visit of and municipality

Municipality	Resident		Daily		Weekly		Monthly		Rarely	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0	0	0	0	0	0	0	1	0.2
Al Rayyan	41	18.5	490	14.8	373	11.9	27	7.8	30	7.5
Al Wakrah	12	5.4	145	4.4	177	5.6	42	12.2	35	8.7
Umm Slal	4	1.8	143	4.3	197	6.3	31	9.0	19	4.7
Al Khor and Al Dhakhira	30	13.5	473	14.3	858	27.4	70	20.3	66	16.5
Al Shamal	29	13.1	139	4.2	168	5.4	26	7.6	21	5.2
Al Daayen	5	2.3	36	1.1	36	1.1	6	1.7	5	1.2
Al Sheehaniya	101	45.5	1,880	56.9	1,327	42.3	142	41.3	224	55.9
Total	**222**	**100.0**	**3,306**	**100.0**	**3,136**	**100.0**	**344**	**100.0**	**401**	**100.0**
Percentage	**3**	**-**	**43**	**-**	**44**	**-**	**5**	**-**	**5**	**-**

The relative distribution of individual holders of active holdings by main occupation of the holder and the municipality shown in Table II-9 shows that 96% of total holders have non-agricultural occupations, a total of 7,246 people. According to the nature of the holding (livestock, plant, integrated) we find that the distribution of occupations indicates that 4% of the holders of plant holdings work in agriculture (10 individuals), and 3% of the holders of integrated holdings (plant and livestock) work in agriculture as well.

Table II-9:Numbers of active agricultural holdings of individuals by main profession of holder and municipality

Municipality	Livestock		Integrated		Plant	
	Agricultural	Non-agricultural	Agricultural	Non-agricultural	Agricultural	Non-agricultural
Doha	0	1	0	0	0	0
Al Rayyan	10	889	3	21	1	23
Al Wakrah	1	377	0	12	0	15
Umm Slal	11	286	2	60	0	22
Al Khor & Al Dhakhira	9	1,256	1	152	0	65
Al Shamal	6	283	0	61	2	29
Al Daayen	1	46	1	24	2	14
Al sheehaniya	41	3,305	4	95	5	82
Total	**79**	**6,443**	**11**	**425**	**10**	**250**

As for the educational level of the holders of active holdings shown in Table II-10, we find that the educational level of the individual holders is somewhat high, as more than a third of the holders were university and postgraduate degree holders (34% of males and females). While 22% of them successfully completed secondary school and 21% have an educational level between preparatory and primary, and can read and write.

Table II-10:Numbers of individual holders in active agricultural holdings by gender and education level of holder

Education level	Male		Female		Total	
	No.	(%)	No.	(%)	No.	(%)
Illiterate	232	3.6	145	16.0	**377**	**5.1**
Read and Write	362	5.6	95	10.5	**457**	**6.2**
Primary	360	5.5	75	8.3	**435**	**5.9**
preparatory	578	8.9	67	7.4	**645**	**8.7**
Secondary	1,520	23.4	137	15.2	**1,657**	**22.4**
Diploma	152	2.3	7	0.8	**159**	**2.1**
Graduate	2,047	31.5	179	19.8	**2,226**	**30.0**
Postgraduate	268	4.1	18	2.0	**286**	**3.9**
Don’t know	973	15.0	176	19.5	**1,149**	**15.5**
Refuse	13	0.2	5	0.6	**18**	**0.2**
Total	**6,505**	**100.0**	**904**	**100.0**	**7,409**	**100.0**

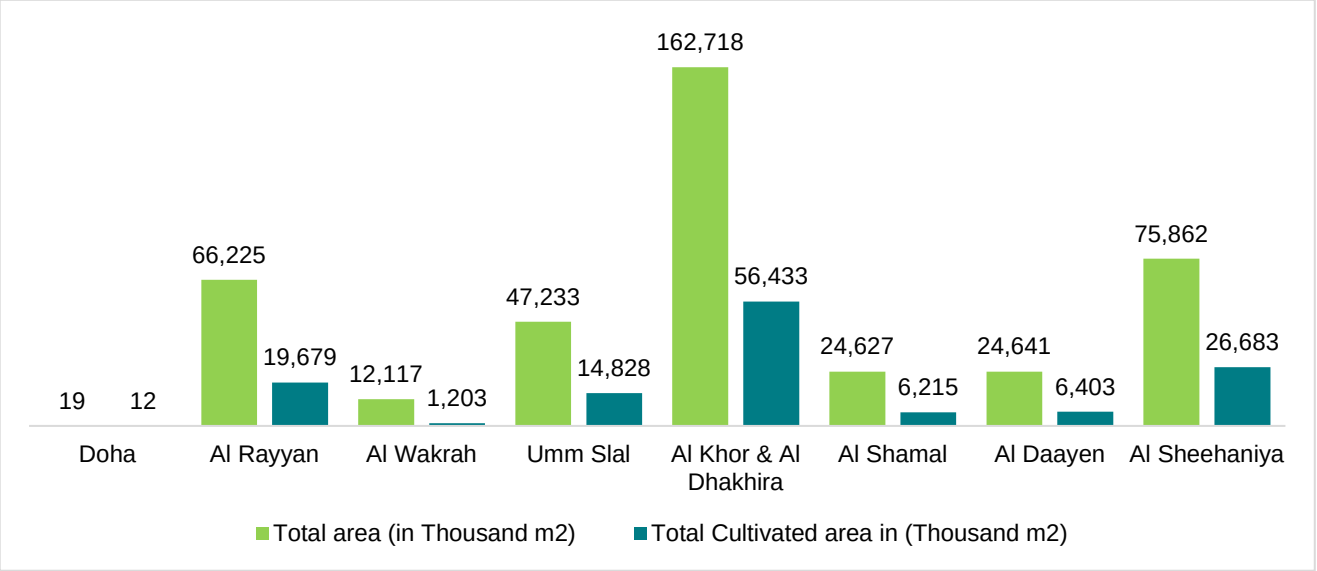
Land Use

Agricultural holding land uses are intended to determine the structural composition of the total area of the holding according to its type of use, through the agricultural year of the census. The results showed that the total used areas in agricultural holdings amounted to about 131,456,749.3 square meters, which represents 31.8% of the total area of agricultural holdings in the country. This means that there are 281,985,543 square meters of land that is untapped. Looking at the percentages of land use for agriculture according to the municipality, we find that Al Sheehaniya, Umm Salal, Al Khor, Al Thakhira and Al Rayyan municipalities have used nearly a third of the total area of land available for agriculture. (See Table II-11).

Table II-11:Numbers of active farms reporting crops, their total area and cultivated area by municipality

Municipality	No. of holdings	Total area (m^2)	Cultivated area (m^2)	% of Cropped area
Doha	1	18,795.0	12,472.3	66.4
Al Rayyan	75	66,225,457.0	19,678,949.8	29.7
Al Wakrah	46	12,117,314.0	1,203,129.1	9.9
Umm Slal	134	47,233,052.5	14,827,643.4	31.4
Al Khor & Al Dhakhira	309	162,718,067.0	56,433,450.6	34.7
Al Shamal	133	24,626,682.0	6,214,908.8	25.2
Al Daayen	61	24,640,846.0	6,402,879.2	26.0
Al Sheehaniya	257	75,862,079.0	26,683,316.2	35.2
Total	**1,016**	**413,442,292.5**	**131,456,749.3**	**31.8**

Figure II-4:Total areas of agricultural holdings by municipality in thousnds square meters



The results of the census in Table II-12 showed that the area of land used in farm holdings amounted to 141,580,513 square meters, and the area of seasonal field crops (alone and open field, and open field in association) amounted to 3,803,218 square meters, or 3% of the total area of used land. Whereas the area used for the cultivation of open field vegetables amounted to 19,467,873 square meters with a percentage of 14%. As for the perennial crops (fruits), their area amounted to 27,038,576 square meters, or 19%, and the largest percentage of the cultivated areas was for perennial fodder, 53% (75,582,944 square meters).

Table II-12:Total used area (m^2) according to the land use in active farms

Land use	**Total used area (m^2)**
Vegetable crops (alone and open field)	18,974,575.9
Vegetable crops (open field in association)	493,297.1
Vegetable crops (Greenhouses)	5,564,177.0
Annual field crops (alone)	2,563,569.6
Annual field crops (in association)	1,239,648.8
Perennial forage crops (alone)	73,559,408.5
Perennial forage crops (in association)	2,023,495.8
Perennial crops (Fruits)	27,038,576.5
Buildings	10,123,764.0
Total	**141,580,513.3**

Agriculture Crops

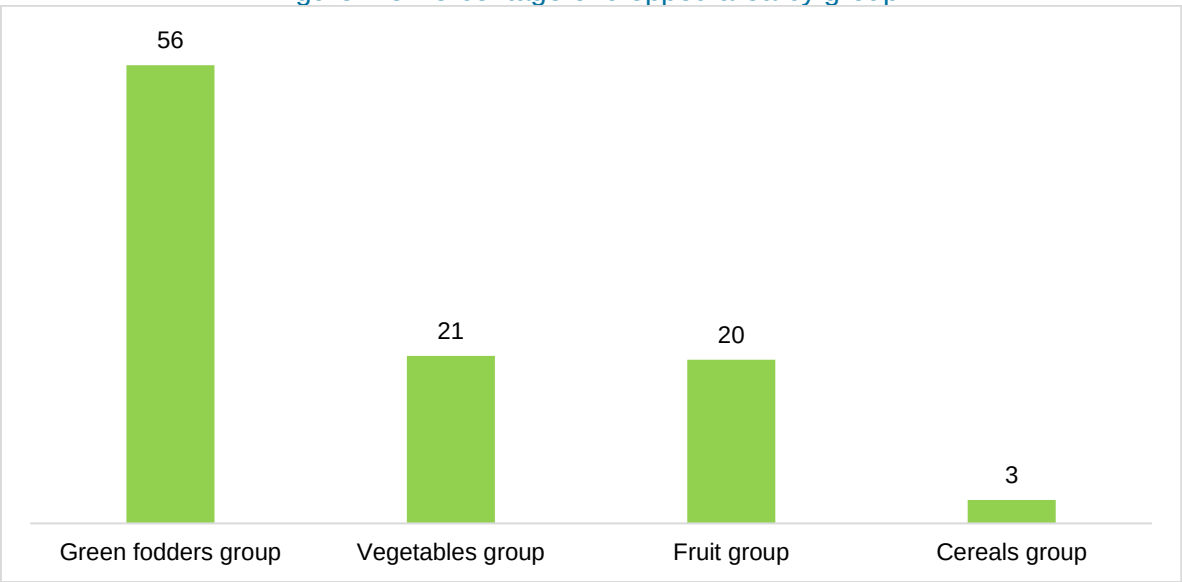
The Government of Qatar has developed a strategy for the agricultural sector to increase the rate of self-sufficiency to 70% by 2023, the strategy is called the "Food Security Strategy". In light of this, the strategy of the agricultural sector in the Ministry of Municipality, in achieving its objectives, is based on two main pillars: vertical development and horizontal development. The first is based on increasing the productivity of the cultivated land area by encouraging and disseminating the use of modern technology in the agricultural sector, while the second is based on expanding the cultivated areas in the country by increasing farm activities and raising the percentage of agricultural use in it.

The area of agricultural crops is divided into four main groups: the vegetables group, the fruit group, the cereals group, and green fodders. The results show that the green fodders group recorded the largest area, amounting to 75,656,355 square meters, or 56% of the total area of agricultural crops, followed by the vegetables group with 21%, then the fruits group with 20%, while the cereals group accounted for 3% of the total area of agricultural crops, (See Table II-13).

Table II-13:Croped areas by crops groups and percentage from total cropped area

Crops	**Area (m^2)**	**(%)**
Vegetables group	27,664,289	20.6
Cereals group	3,942,604	2.9
Fruit group	27,038,576	20.1
Green fodders group	75,656,355	56.3
Total cropped area	**134,301,825**	**100.0**

Figure II-5:Percentage of cropped area by group



1.1.15 Vegetables

Open field Vegetables crops:

Table II-14 shows the area cultivated with open field crops according to the irrigation system, and crops for the vegetables group consisting of 51 different types of vegetables and leafy greens. The largest share of the total open field area cultivated with vegetables was squash (12%), tomatoes (11%), pumpkin (9%), eggplant (8%), cabbage (7%), and 53% for other crops combined. As for the division of the open field areas planted with vegetables according to the irrigation method, it is noted that 88.8% of the area adopts modern irrigation systems (18,651,670 square meters), while traditional irrigation methods were used to irrigate 11.2% of the total open field area of open field vegetable cultivation (2,348,192 square meters).

Table II-14:Cropped area of open field field by irrigation system and crop (Vegetables group)

Crops	Area (m^2)			
	Traditional Irrigation	**Modern Irrigation**	**Total**	**%**
Tomatoes	69,097	2,246,745	**2,315,842**	**11.0**
Eggplant	43,478	1,697,363	**1,740,841**	**8.3**
Pepper	5,199	99,073	**104,272**	**0.5**
Chili	4,102	234,932	**239,034**	**1.1**
Lettuce	22,765	246,618	**269,384**	**1.3**
Carrots	10,634	24,779	**35,413**	**0.2**
Cabbage	38,874	1,496,653	**1,535,527**	**7.3**
Cauliflower	124,006	1,061,874	**1,185,880**	**5.6**
Melon	3,147	381,924	**385,071**	**1.8**
Watermelon	6,957	251,663	**258,620**	**1.2**
Squash	16,199	2,487,114	**2,503,313**	**11.9**
Cucumber	1,047	24,422	**25,468**	**0.1**
Snake cucumber	50	25,610	**25,660**	**0.1**
Ding arkabi	18,605	1,832,803	**1,851,408**	**8.8**
Pumpkin	2,630	869,127	**871,757**	**4.2**
Bitter Melon	0	202,854	**202,854**	**1.0**
Okra	25,623	1,006,518	**1,032,140**	**4.9**
Potato	5,758	469,428	**475,186**	**2.3**
Sweet potato	216	15,156	**15,371**	**0.1**
Dry onion	32,243	278,532	**310,774**	**1.5**
Green onion	133,604	439,852	**573,456**	**2.7**
Cowpea	30,257	147,907	**178,163**	**0.8**
Beans	22,569	238,944	**261,513**	**1.2**
Beas	0	650	**650**	**0.0**

Table II-14 (Continued): Cropped area of open field field by irrigation system and crop (Vegetables group)

Crops	Area (m^2)			
	Traditional Irrigation	Modern Irrigation	Total	%
Common Purslane	69,933	12,191	**82,124**	**0.4**
Bean	500	75,124	**75,624**	**0.4**
Turnips	1,441	36,269	**37,710**	**0.2**
Beetroot	13,816	50,993	**64,809**	**0.3**
Mallow	120,897	122,159	**243,056**	**1.2**
Spinach	40,870	24,118	**64,988**	**0.3**
Chard	98,577	179,177	**277,755**	**1.3**
Radish	45,342	126,544	**171,885**	**0.8**
Parsley	109,764	185,377	**295,141**	**1.4**
Leek	1,934	4,247	**6,180**	**0.0**
Rocca	198,345	108,938	**307,283**	**1.5**
Coriander	202,044	310,439	**512,483**	**2.4**
Basil	1,466	1,397	**2,863**	**0.0**
Fenugreek	13,246	2,458	**15,704**	**0.1**
Dill	42,527	67,798	**110,325**	**0.5**
Garlic	810	2,333	**3,143**	**0.0**
Mint	14,355	41,132	**55,487**	**0.3**
Malva parviflora	156	5,823	**5,979**	**0.0**
Artichoke	0	79	**79**	**0.0**
Kohlrabi	293	0	**293**	**0.0**
Lal Bangali	114,429	8,673	**123,102**	**0.6**
Dand Bangali	53,214	14,762	**67,976**	**0.3**
Luffa	252	23,598	**23,850**	**0.1**
Celery	856	11,852	**12,708**	**0.1**
Thyme	0	6,102	**6,102**	**0.0**
Broccoli	9,401	326,999	**336,400**	**1.6**
Mooly	29,250	90,084	**119,334**	**0.6**
Other	547,413	1,032,464	**1,579,877**	**7.5**
Total cropped area	**2,348,192**	**18,651,670**	**20,999,862**	**100.0**
(%)	**11.2**	**88.8**	**100.0**	**-**

Covered Field Crops:

Table II-15 shows the areas of covered field crops by crop for the vegetable group, as the total area was estimated at 6,664,427 square meters, of which 29% were planted with tomatoes, 27% with cucumbers, 8% with sweet peppers, 7% with eggplant, 6% each with beans and cowpeas and green beans, and 14% of other vegetables.

Table II-15:Cropped area of covered field crops by irrigation system and crop (Vegetables group)

Crops	Area (m^2)	
	Modern Irrigation	(%)
Tomatoes	1,915,006.7	28.7
Eggplant	473,721.0	7.1
Pepper	563,219.5	8.5
Chili	218,311.5	3.3
Lettuce	15,550.0	0.2
Carrots	1,121.0	0.0
Cabbage	40,169.0	0.6
Cauliflower	11,066.0	0.2
Melon	97,378.0	1.5
Watermelon	19,870.0	0.3
Squash	154,629.0	2.3
Cucumber	1,817,706.3	27.3
Snake cucumber	266.0	0.0
Ding arkabi	93,335.0	1.4
Pumpkin	5,434.0	0.1
Bitter Melon	68,519.0	1.0
Okra	50,132.0	0.8
Potato	3,620.0	0.1
Sweet potato	170.0	0.0
Dry onion	1,070.0	0.0
Green onion	6,275.0	0.1

Table II-15 (Continued): Cropped area of covered field crops by irrigation system and crop (Vegetables group)

Crops	Area (m^2)	
	Modern Irrigation	(%)
Cowpea	367,577.0	5.5
Green beans	403,641.0	6.1
Beas	3,231.0	0.0
Broad beans	442.0	0.0
Beetroot	2,198.0	0.0
Mallow	48,964.0	0.7
Spinach	5,252.0	0.1
Chard	6,275.0	0.1
Radish	1,000.0	0.0
Parsley	16,736.0	0.3
Rocca	28,732.0	0.4
Coriander	17,856.0	0.3
Common Purslane	934.0	0.0
Basil	180.0	0.0
Fenugreek	230.0	0.0
Dill	3,042.0	0.0
Mint	42,156.0	0.6
Sage	216.0	0.0
Artichoke	24.0	0.0
Luffa	1,800.0	0.0
Celery	1,600.0	0.0
Thyme	566.0	0.0
Broccoli	4,028.0	0.1
Strawberry	13,514.0	0.2
Others	137,664.0	2.1
Total cropped area	**6,664,427.0**	**100.0**

1.1.16 Fruits:

Table II-16 shows the area of open field crops according to the irrigation system and fruit group crops, the total area reached 27,038,576 square meters, of which 88.5% were planted with palm trees, 4.6% were planted with lemons, 2.4% were planted with oranges, and 2.0% were planted with Kanar fruits.

Table II-16:Cropped area of open field field crops by irrigation system and crop (Fruit group)

Crops	Area (m^2)			
	Traditional Irrigation	Modern Irrigation	Total	%
Palm	5,497,294.1	18,433,304.0	**23,930,598.0**	**88.5**
Grapes	62.0	9,146.2	**9,208.2**	**0.0**
Fig	674.0	30,053.8	**30,727.8**	**0.1**
Guava	218.0	23,199.2	**23,417.2**	**0.1**
Pomegranate	13,075.3	67,252.6	**80,327.8**	**0.3**
Almonds	8,730.4	84,100.8	**92,831.2**	**0.3**
Mulberry	12,142.0	78,830.2	**90,972.2**	**0.3**
Papaya	6,473.8	14,303.7	**20,777.5**	**0.1**
Orang	1,294.6	645,185.1	**646,479.7**	**2.4**
Prickly pear	562.0	5,694.0	**6,256.0**	**0.0**
Grapefruit	0.0	1,162.0	**1,162.0**	**0.0**
Olive	2,816.2	32,786.1	**35,602.2**	**0.1**
Mandarin	162.0	24,625.5	**24,787.5**	**0.1**
Chico	166.0	5,150.4	**5,316.4**	**0.0**
Graviola	88.0	3,020.0	**3,108.0**	**0.0**
Kanar	83,970.6	469,553.0	**553,523.6**	**2.0**
Lemon	12,435.6	1,237,830.0	**1,250,265.7**	**4.6**
Mango	274.0	51,557.0	**51,831.0**	**0.2**
Banana	1,751.2	10,124.0	**11,875.2**	**0.0**
Other fruit	16,361.8	153,147.4	**169,509.2**	**0.6**
Total area	**5,658,551.4**	**21,380,025.0**	**27,038,576.5**	**100.0**
(%)	**20.9**	**79.1**	**100.0**	**-**

Table II-17 indicates that the total number of regular trees (with fruits and without fruits) amounted to 533,380 trees, while the number of irregular trees (with fruits and without fruits) amounted to 366,841 trees, where we find that palm trees represent 79% of the total number of trees and fruits in active farms, followed by Kanar trees by 6%.

Table II-17:Numbers of fruit trees in active farms by cultivation method

Fruit Trees	Regular Cultivation (Compact)			Irregular Cultivation (Scattered)			Grand Total	(%)
	With fruits	Without fruits	Total	With fruits	Without fruits	Total		
Palm	341,053	109,162	**450,215**	113,386	148,265	**261,651**	**711,866**	**79.1**
Grapes	13	133	**146**	100	701	**801**	**947**	**0.1**
Fig	329	685	**1,014**	1,699	1,925	**3,624**	**4,638**	**0.5**
Guava	78	373	**451**	429	1,081	**1,510**	**1,961**	**0.2**
Pomegranate	777	416	**1,193**	2,358	1,853	**4,211**	**5,404**	**0.6**
Almonds	711	1,427	**2,138**	4,207	2,747	**6,954**	**9,092**	**1.0**
Mulberry	1,394	1,317	**2,711**	1,285	2,043	**3,328**	**6,039**	**0.7**
Papaya	973	703	**1,676**	1,814	890	**2,704**	**4,380**	**0.5**
Orang	24,292	1,599	**25,891**	345	1,173	**1,518**	**27,409**	**3.0**
Prickly pear	20	180	**200**	366	262	**628**	**828**	**0.1**
Grapefruit	0	0	**0**	561	20	**581**	**581**	**0.1**
Olive	89	694	**783**	124	1,653	**1,777**	**2,560**	**0.3**
Mandarin	450	407	**857**	97	149	**246**	**1,103**	**0.1**
Chico	28	15	**43**	289	624	**913**	**956**	**0.1**
Graviola	0	300	**300**	129	75	**204**	**504**	**0.1**
Kanar	6,239	6,778	**13,017**	15,248	24,971	**40,219**	**53,236**	**5.9**
Lemon	7,437	17,267	**24,704**	6,761	5,608	**12,369**	**37,073**	**4.1**
Mango	86	547	**633**	656	1,001	**1,657**	**2,290**	**0.3**
Banana	727	432	**1,159**	279	674	**953**	**2,112**	**0.2**
Other fruits	1,922	4,327	**6,249**	4,332	16,661	**20,993**	**27,242**	**3.0**
Total	**386,618**	**146,762**	**533,380**	**154,465**	**212,376**	**366,841**	**900,221**	**.0100**

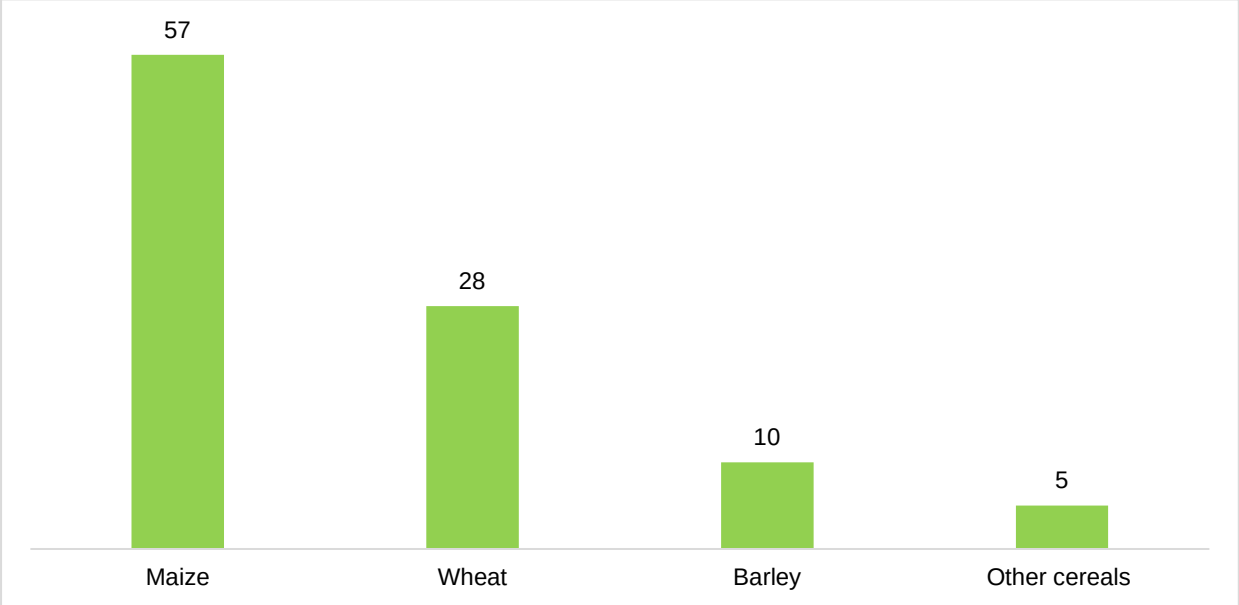
1.1.17 Cereals Group

Table II-18 shows the crop area for open field crops according to the irrigation system for the cereals group. The total area was estimated at 3,942,604 square meters, 57% of which is for maize cultivation, 28% for wheat cultivation, and 10% for barley cultivation. The cereals group are distributed according to modern irrigation systems (such as drip, mist, pivot, or sprinklers) and traditional irrigation systems (immersion). We find that nearly half of the area irrigated using the traditional method was used to grow barley, and 40% of the same area was planted with maize. Whereas areas irrigated by modern method used 60% of area for maize, and 32% for wheat.

Table II-18:Cropped area of open field field crops by irrigation system and crop (Cereals group)

Crops	Area (m^2)			% of cropped area		% of total cropped area of the group		
	Traditional Irrigation	Modern Irrigation	Total	Traditional Irrigation	Modern Irrigation	Traditional Irrigation	Modern Irrigation	Total
Wheat	38,466.6	1,057,944.4	**1,096,411.0**	6	32	1	27	**28**
Barley	299,611.6	83,677.8	**383,289.4**	50	2	8	2	**10**
Maize	239,627.5	2,007,545.4	**2,247,172.8**	40	60	6	51	**57**
Other cereals	16,132.0	199,599.2	**215,731.2**	3	6	0	5	**5**
Total	**593,837.7**	**3,348,766.7**	**3,942,604.4**	**100**	**100**	**15**	**85**	**100**

Figure II-6:Propotional distribution of open field fields cropprd area (Cereals group)



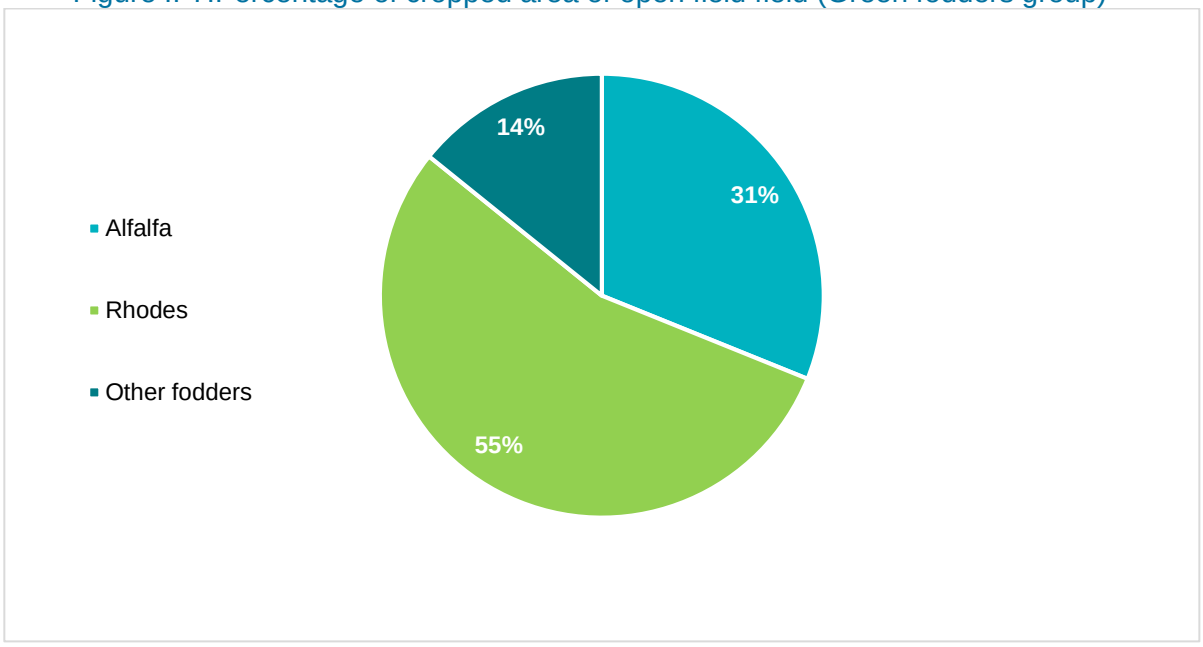
1.1.18 Green Fodders Group

The open field crop area for green fodders was estimated at 75,656,355 square meters, of which 55% was planted with Rhodes, 31% with alfalfa, and 14% of the area was planted with another type of fodder (see Table II-19). The irrigation system for green fodders varied between the traditional system (21%) and the modern system ((%79.

Table II-19:Cropped area of open field field by irrigation system and crop (Green fodders group)

Crops	Area (m^2)			
	Traditional	Modern	Total	%
Alfalfa	9,001,190.8	14,539,582.2	**23,540,773.0**	**31.1**
Rhodes	5,304,141.5	36,066,608.6	**41,370,750.1**	**54.7**
Other fodders	1,386,185.7	9,358,646.5	**10,744,832.3**	**14.2**
Total area	**15,691,518.0**	**59,964,837.3**	**75,656,355.4**	**100.0**
Percentage	**20.7**	**79.3**	**100.0**	**-**

Figure II-7:Percentage of cropped area of open field field (Green fodders group)



The area of green fodders irrigated with treated wastewater was 26,628,597 square meters, as mentioned in Table II-20. Treated wastewater was used to irrigate areas planted with Rhodes 56% and Alfalfa 43%.

Table II-20:Areas of green fodder irrigated with treated waste water

Crops	Area (m^2)	(%)
Alfalfa	11,3479,38.0	42.6
Rhodes	14,920,659.9	56.0
Other fodders	360,000.0	1.4
Total area	**26,628,597.9**	**100.0**

1.1.19 Nurseries :

Table II-21 indicates that the total number of nurseries within the active farms is 104, with a total area of 308,736 square meters distributed around the different municipalities of the country. The largest areas for nurseries are concentrated in the municipality of Umm Salal with a rate of 41%, followed by the municipality of Al Khor and Al Thakhira with a percentage of 28%, and 15% in the municipality of Al Sheehaniya. The rest of the municipalities had 16% of the percentage of the area of nurseries in the country.

Table II-21:Numbers of nurseries in active farms by municipality

Municipality	No.	(%)	Area (m^2)	(%)
Doha	0	0	0	0
Al Rayyan	6	6	16,317	5
Al Wakrah	2	2	8,140	3
Umm Slal	28	27	126,374	41
Al Khor & Al Dhakhira	34	33	86,075	28
Al Shamal	4	4	5,850	2
Al Daayen	7	7	19,047	6
Al Sheehaniya	23	22	46,933	15
Total	**104**	**100**	**308,736**	**100**

1.1.20 Beehives:

Beehives are the permanent place where the bees are housed in a fixed place (a bee house) to ensure that the bees go to collect nectar and return to it. We note from Table II-22 that there are about 211 farms that own beehives. Most of these farms are located in the municipality of Al Khor and Al Thakhira, with a number of 92 farms, the municipality of Al Sheehaniya comes in second place with 59 farms that own beehives.

Table II-22:Numbers of farms with bee hives by municipality

Municipality	No.
Doha	0
Al Rayyan	3
Al Wakrah	5
Umm Slal	34
Al Khor & Al Dhakhira	92
Al Shamal	10
Al Daayen	8
Al Sheehaniya	59
Total	**211**

Table II-23 shows that the number of beehives inside the farms that were monitored during the agricultural census project were 7,313 at a municipal level. 50% of which are located in the municipality of Al Khor and Al Thakhira, 22% in the municipality of Al Sheehaniya, and 12% in the municipality of Umm Slal. 8% in Al Daayen Municipality, 7% in Al Shamal Municipality, and 1% in Al Wakrah Municipality.

Table II-23:Numbers of bee hives in active farms by municipality

Municipality	Number of bee hives	(%)
Doha	0	0.0
Al Rayyan	17	0.2
Al Wakrah	100	1.4
Umm Slal	895	12.2
Al Khor & Al Dhakhira	3,654	50.0
Al Shamal	524	7.2
Al Daayen	553	7.6
Al Sheehaniya	1,570	21.5
Total	**7,313**	**100.0**

1.1.21 Greenhouses:

Agriculture in greenhouses is considered one of the most important technologies that are compatible with the Qatari environment, as it provides a suitable environment for the production of vegetables, in addition to saving considerable amounts of irrigation water. These features encouraged the Ministry of Municipality to develop many programs to support the establishment of greenhouses in Qatari farms, including the distribution of greenhouses to farms of all kinds. In addition, the Ministry made a cooperation agreement with Qatar Development Bank to grant farms soft loans to have greenhouses and modern irrigation networks. The Ministry also took many measures aimed at guiding farmers about the importance of greenhouses and technicalities of these houses, which in turn had a clear positive impact on increasing the area of greenhouses in Qatari farms.

Table II-24 indicates that the total number of greenhouses that were monitored through the agricultural census in active farms is 13,601 greenhouses with an area of 6,960,829 square meters. Al-Khor and Al-Thakhira municipalities contained 50% of the number of greenhouses, as there are 6,610 houses with an area of 3,461,704 square meters. On the other hand, the municipality of Al-Wakra included the least number of greenhouses with less than 1%, as there are 52 houses with an area of 30,167 square meters.

Table II-24:Numbers and areas of greenhouses in active farms by municipality

Municipality	No of Farms	No. of Greenhouse	Greenhouses Area (m^2)	(%)
Doha	0	0	0	0
Al Rayyan	22	173	60,966	1
Al Wakrah	13	52	30,167	0
Umm Slal	89	1,936	1,096,885	16
Al Khor & Al Dhakhira	226	6,610	3,461,704	50
Al Shamal	77	802	308,094	4
Al Daayen	38	795	406,172	6
Al Sheehaniya	149	3,233	1,596,841	23
Total	**614**	**13,601**	**6,960,829**	**100**

Table II-25 shows that in terms of cooling systems inside the farms according to the municipalities, there are 352 farms that use the cooling system, and 579 farms that do not have cooling systems.

Table II-25:Numbers of farms with Greenhouses by cooling systems and municipality

Municipality	Farm with Regular cooling	Farm with Non- cooling
Doha	0	0
Al Rayyan	6	21
Al Wakrah	1	13
Umm Slal	59	82
Al Khor & Al Dhakhira	145	216
Al Shamal	38	71
Al Daayen	21	36
Al Sheehaniya	82	140
Total	**352**	**579**

1.1.22 Irrigation Sources

Irrigation methods can be divided into two basic types: irrigation by traditional methods and irrigation by modern methods. As for irrigation by traditional methods (basins - lines - immersion), it means the use of streams and channels to irrigate basins and lines, and it is one of the traditional surface irrigation methods used to irrigate plants, trees and garden grass, while modern irrigation is divided into several types:

- Sprinkler Irrigation: is a rotating irrigation method used for adding water to crops or agricultural soil through small open fielding's or nozzles that operate with pressure generated by pumps.
- Drip Irrigation: is the method by which crops are irrigated by dripping water near the base of the plant with small diameter plastic tubes with drips at selected distances, which waters the crops at a slow speed.
- Pivot Irrigation: is one of the modern irrigation methods. Its principle is based on a long tube that rotates from one end like a spindle, and its other end is connected to the water source, so it creates a circle with a radius along the

length of the tube, therefore the field takes the form of a circle. This type of irrigation is used to irrigate field crops and fodder.

Table II-26 indicates that the total number of wells in the State of Qatar is 4,264 wells, of which 3,572 are active wells that are used for irrigation purposes in the holding. The largest number of wells is concentrated in the municipality of Al-Khor and Al-Dhakhira, where we find 1,395 wells, while the least number of wells was in Al-Wakra municipality, with 112 wells.

Table II-26:Total number of wells by municipality

Municipality	Active wells	In-active wells	Total
Doha	0	0	**0**
Al Rayyan	162	45	**207**
Al Wakrah	112	43	**155**
Umm Slal	520	62	**582**
Al Khor & Al Dhakhira	1,395	201	**1,596**
Al Shamal	317	112	**429**
Al Daayen	219	48	**267**
Al Sheehaniya	847	181	**1,028**
Total	**3,572**	**692**	**4,264**

Table II-27 indicates that the average depth of wells in farms is 50 meters, and the largest average depth of wells was in Al-Wakra municipality with about 66 meters. On the other hand, the lowest average depth of wells was in Al-Shamal municipality averaging about 42 meters.

Table II-28 indicates that the salinity of the working wells ranged from 3,000 to 4,999 (micro Siemens/cm), where we find that 159 wells had an average salinity of less than 1,000 (micro Siemens/cm). There is 559 wells that reached the average salinity, which is more than 5,000 (microseism/cm). The average pump water discharge was about 3 inches.

Table II-27:Average of active well depth by municipality

Municipality	Average depth of the well in Meter	No.	(%)
Doha	0	0	0
Al Rayyan	63	162	5
Al Wakrah	66	112	3
Umm Slal	54	520	15
Al Khor & Al Dhakhira	56	1,395	39
Al Shamal	42	317	9
Al Daayen	52	219	6
Al Sheehaniya	64	847	24
Total	**50**	**3,572**	**100**

Table II-28:Numbers of wells in active farms by categories of water salinity degree

Categories of Water Salinity Degree (µS/cm)	No. of Wells	(%)
Less than 1,000	159	4.5
1,000-1,999	535	15.0
2,000-2,999	643	18.0
3,000-4,999	1,176	32.9
5,000 and More	559	15.6
Don't Know	500	14.0
Total	**3,572**	**100.0**

Table II-29 indicates the main sources of water used within the holding, where we find that 968 holdings use groundwater from within the holding, 9 holdings use groundwater from outside the holding, 18 holdings use treated water, and 83 holdings depend on government desalinated water.

Table II-29:Water sources used within the active holdings by municipality

Municipality	Underground water within holding	Underground water outside holding	Treated sewage water	Governmental desalinated water
Doha	0	0	1	1
Al Rayyan	66	2	3	6
Al Wakrah	43	0	1	4
Umm Slal	132	1	0	4
Al Khor & Al Dhakhira	305	0	4	15
Al Shamal	121	0	3	30
Al Daayen	58	0	1	6
Al Sheehaniya	243	6	5	17
Total	**968**	**9**	**18**	**83**
(%)	**89.8**	**0.8**	**1.7**	**7.7**

Table II-30 shows that about 85% of the groundwater used in farms is used to irrigate open field Fields, while about 15% is used to irrigate protected areas. These percentages varied from one municipality to another, as the table indicates that the percentage of groundwater use for irrigation of open field Fields was 92% and 75% in the municipalities of Al-Rayyan and Al-Shamal, respectively.

Table II-30:Percentage of water use for open field and protected areas in active farms by municipality

Municipality	Open field Fields	Protected areas
Doha	100	0
Al Rayyan	92	8
Al Wakrah	91	9
Umm Slal	81	19
Al Khor & Al Dhakhira	80	20
Al Shamal	75	25
Al Daayen	81	19
Al Sheehaniya	80	20
Average	**85**	**15**

1.1.23 Agricultural Applications - Fertilizers and Pesticides:

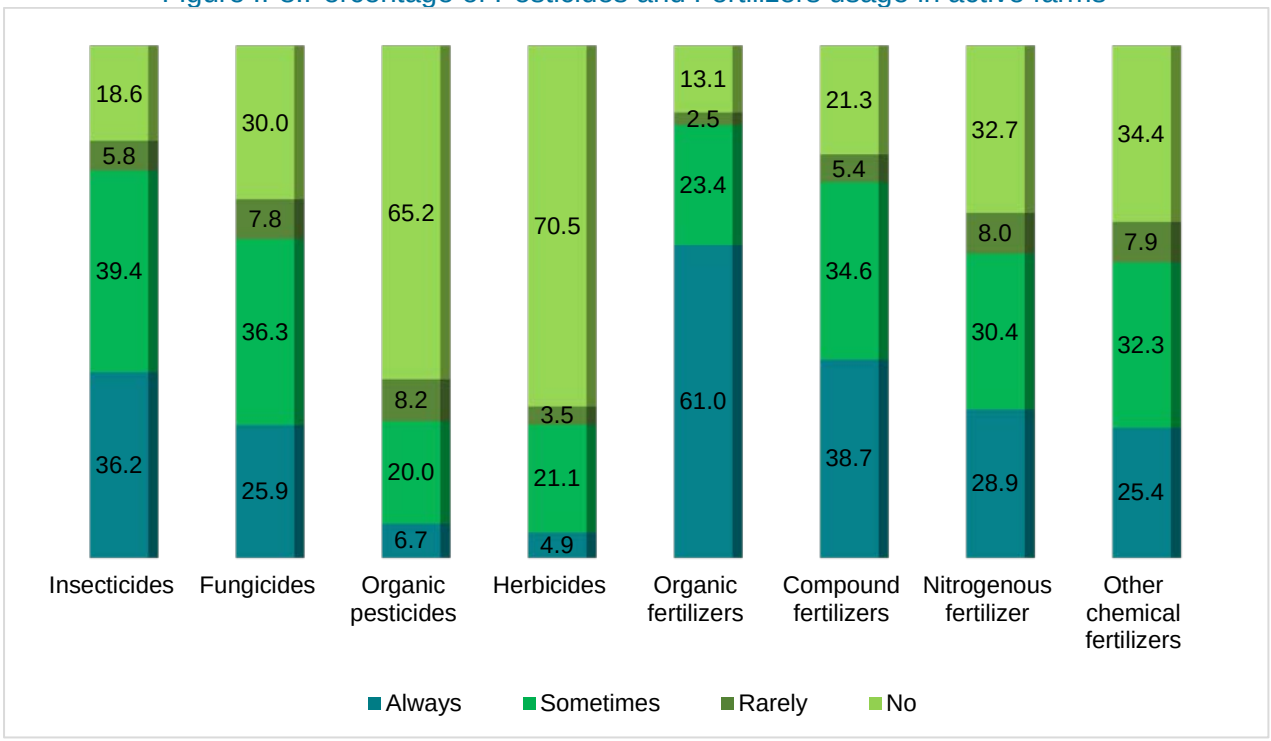
Agricultural applications mean what is used in holdings from chemical fertilizers, organic fertilizers, and non-chemical means or pesticides. Table II-31 below shows that 18% of farms use pesticides of various kinds regularly (749), especially insecticides by 49% and fungicides by 35%, while 9% of farms used organic pesticides regularly (68 farms), and 7% of the farms used herbicides (50 farms).

Figure II-8 indicates that the percentage of farms that use pesticides on a regular basis reached 386 farms, representing 36.2%, while farms that do not use pesticides represent 18.6%. As for the use of fungicides, farms that use them regularly represent 25.9%, while 30% of farms do not use fungicides. The figure also indicates that 6.7% of the farms use organic pesticides regularly, compared to 65.2% who do not use them at all. We also find that 61% of farms use organic fertilizers.

Table II-31:Numbers of active farms uses pesticides and fertilizers

Pesticides and Fertilizers	Usage rate			
	Always	Sometimes	Rarely	No
Insecticides	368	400	59	189
Fungicides	263	369	79	305
Organic pesticides	68	203	83	662
Herbicides	50	214	36	716
Organic fertilizers	620	238	25	133
Compound fertilizers	393	352	55	216
Nitrogenous fertilizer	294	309	81	332
Other chemical fertilizers	258	328	80	350

Figure II-8:Percentage of Pesticides and Fertilizers usage in active farms



Animal Resources

The State of Qatar's interest in the livestock sector has been evident through the completion of many projects, programs and plans to protect, develop, improve and increase its contribution to the country's food security. As well as conducting studies and research to select the best methods to develop and grow the livestock sector. A department for animal resources was created in 2005, which was previously managed by the animal health department of the Ministry of Municipal Affairs and Agriculture. In 2009, its affiliation was transferred to the Department of Environment, specifying its goals on the development and maintenance of animal resources using scientific means, and the application of advanced methods and modern technologies.

The Animal Resources Department has undertaken several initiatives, such as subsidizing the inputs of livestock production, subsidizing the prices of some fodder such as barley and wheat, subsidizing drinking water for animals, organizing animal holdings, and establishing complexes for holdings of livestock breeding in separate places around the country to facilitate the provision of services and follow-ups such as adherence to health conditions in animal breeding and maintaining animal health.

Table II-32 shows that the total number of working animal holdings in the country amounted to 7462 holdings, distributed as 42% holdings in compounds, 22% roving holdings, 9% holdings in Al-Race and Al-Nakhsh, 8% integrated farms, and 6% holdings outside rural houses, finally, 4% are holdings outside farm’s planning.

Table II-32:Numbers and types of active animals’ holdings

Type of Holding	**No.**	**(%)**
Holding in compound	3,098	42
Roving Holding	1,667	22
Holding outside farms' planning	274	4
Holding outside rural house	465	6
Al-Race	656	9
Al-Nakhsh	655	9
Integrated farm	647	8
Total	**7,462**	**100**

Figure II-9:Numbers and types of active animals' holdings

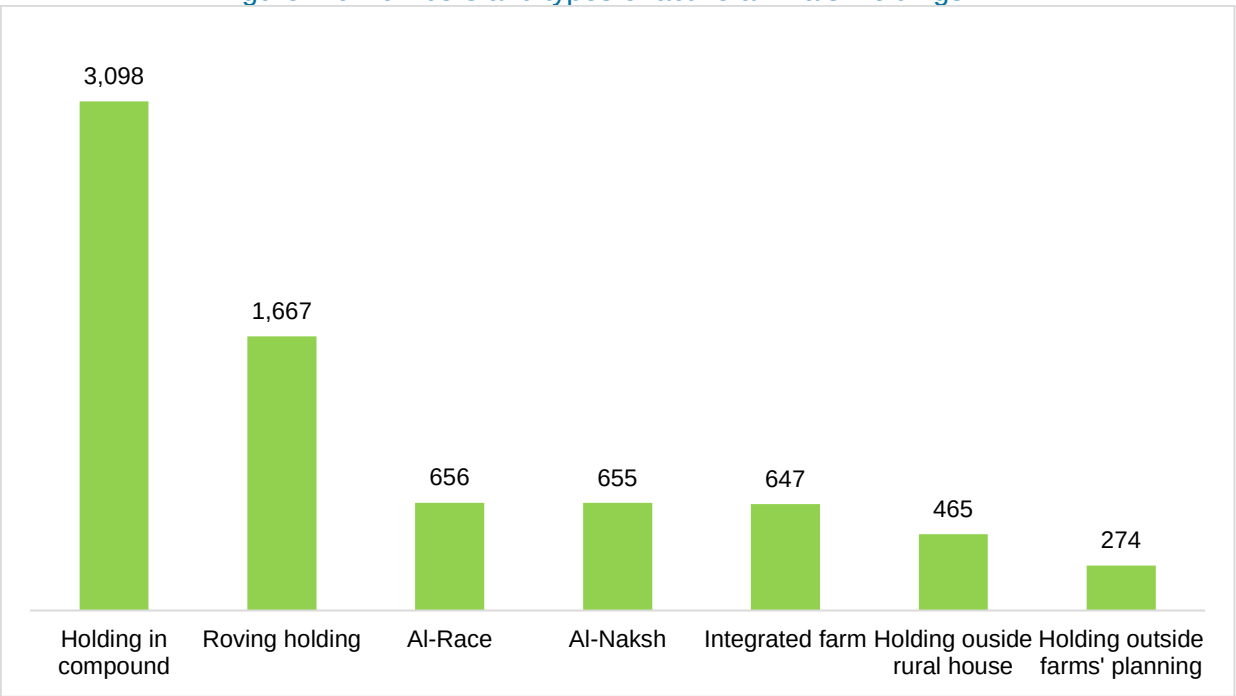


Table II-33 shows the number of active animal holdings, which amount to 7,462 holdings, 49% of which are spread in the municipality of Al Sheehaniya, 21% of which are in the municipality of Al Khor and Al Thakhira, 13% in the municipality of Al Rayyan, and 5% of which are in each of Al Wakra Municipality, Umm Salal Municipality and Al Shamal Municipality, 1% in Al Daayen municipality.

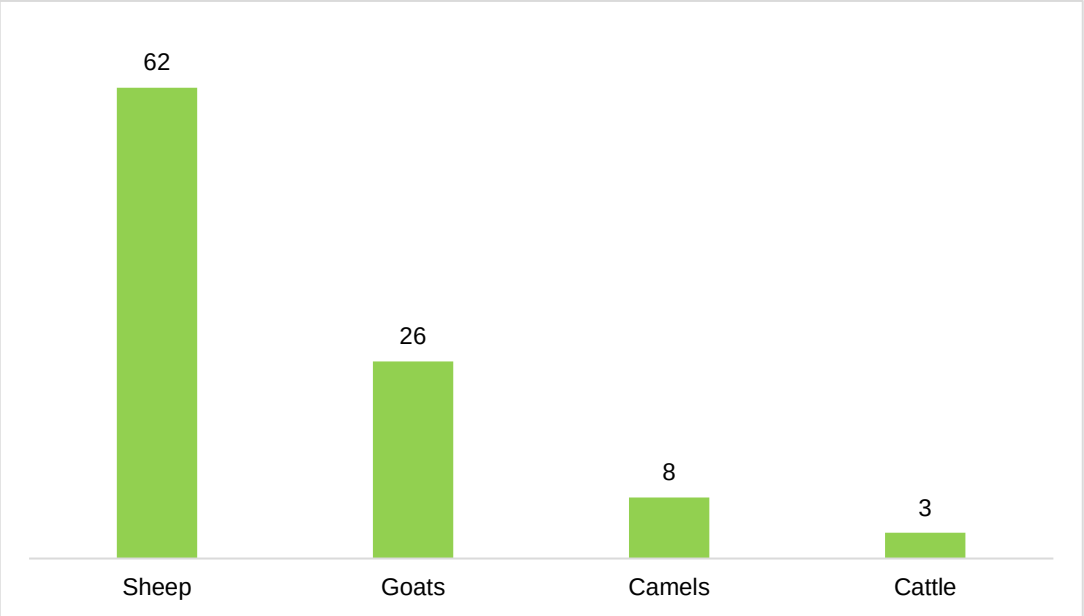
Table II-33:Numbers of active animals' holdings by type and municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0.0	0	0.0	1	0.4	0	0.0	0	0.0	0	0.0	1	0.2
Al Rayyan	0	0.0	213	12.8	41	15.0	16	3.4	0	0.0	655	100.0	41	6.3
Al Wakrah	251	8.1	89	5.3	26	9.5	21	4.5	0	0.0	0	0.0	23	3.6
Umm Slal	222	7.2	67	4.0	21	7.7	0	0.0	0	0.0	0	0.0	100	15.5
Al Khor & Al Dhakhira	977	31.5	147	8.8	42	15.3	165	35.5	0	0.0	0	0.0	221	34.2
Al Shamal	120	3.9	109	6.5	23	8.4	41	8.8	0	0.0	0	0.0	90	13.9
Al Daayen	0	0.0	13	0.8	9	3.3	26	5.6	0	0.0	0	0.0	38	5.9
Al Sheehaniya	1,528	49.3	1,029	61.7	111	40.5	196	42.2	656	100.0	0	0.0	133	20.6
Total	**3,098**	**100.0**	**1,667**	**100.0**	**274**	**100.0**	**465**	**100.0**	**656**	**100.0**	**655**	**100.0**	**647**	**100.0**

1.1.24 Livestock

The numbers of livestock are represented during the time of reference within the framework of stable breeding within the holdings. The results of the census showed that the total number of livestock in the country amounted to 1,476,363 heads, of which 62% are sheep, 26% are goats, 8% are camels and 3% are cows (see table II-34). The percentages of distribution of livestock in the different municipalities of the country were 41% in the municipality of Al Sheehaniya, 26% in Al Khor and Al Thakhira, 10% in Al Rayyan, 8% in the Al-Shamal, 6% in each of Al Wakra and Umm Salal municipalities, 3% in Al Daayen. As for the type of animal holding, 38% of the total livestock are found in roving holdings, 22% in integrated farms, 21% in holdings inside compounds, 6% are holdings outside farm's planning, 5% in Al-Nakhsh holdings, and finally 2% in Al-Race holdings.

Figure II-10:Propotional distribution of economic livestock



1.1.24.1 Sheep:

The total number of sheep in the country reached 921,379 heads, of which 39% are located in the municipality of Al Sheehaniya, followed by the municipality of Al Khor and Al Thakhira with 28%, and the municipality of Al Shamal with 10% of the total number of sheep in the country. As for their distribution according to the type of holding (see Table II-35), 39% are in roving holdings and 22% in compound holdings and integrated farms. Adult female sheep (one year or more) represent 73%, with 670,635 heads. In terms of breed, the Awassi breed was the highest among the breeds with 57% of the total number of sheep, followed by the Arab breed with 34%, then the Barbar breed with 4%, while the total of other breeds for sheep accounted for 5%. (See appendix tables).

1.1.24.2 Goat:

The number of goats in the country reached an estimate of 384,703 heads. According to distribution by municipality, 43% of the total number of goats is found in the municipality of Al Sheehaniya, followed by the municipality of Al Khor and Al Thakhira with 22%, then the municipality of Al Rayyan with 11%. As for their distribution according to the type of holding, 36% of them are found in roving holdings, 27% in holdings inside compounds, and 20% in integrated farms. Adult females (one year or more) represent 69% of the female goats, total of 266,921. In terms of breed, the percentage of the Al-Ardhi breed is the highest at 67% of the total number of goats, followed by the Omani breed by 15%, then the Shami breed by 13%, while the other breeds constituted 5%. (See appendix tables).

1.1.24.3 Camels:

The number of camels in the country reached about 119,560 heads. By municipality, 60% of the total number of camels in the country is in the municipality of Al-Sheehaniya, followed by the municipality of Al-Rayyan with 23%. As for their distribution according to the type of holding, 48% of the camels are found in roving holdings, 18% in Al-Race and 16% in Al-Nakhsh. The number of adult female camels reached 83,835, which is equivalent to 70% of the total number of female camels. With regard to the camel breed, the Omani camel breed topped other breeds by 58%, followed by the hybrid camel breed by 20%, Al- Majahim by 15%, and finally the Sudanese camel by 6%. (See appendix tables).

1.1.24.4 Cows:

The number of cows in the State of Qatar amounted to 50,721 heads. Al Khor and Al Thakhira Municipalities represented the highest percentage in terms of the number of cows, reaching 73% of the total number of cows, followed by Al Sheehaniya Municipality with 13%. Cows are often found in integrated farms (88%) and the remaining few are in holdings inside compounds (6%). The percentage of adult female cows (two years and above) was 59% of the total female cows, with 29,687 heads. In terms of breed, the Friesian breed came as the highest among the breeds in terms of numbers at 63% of the total number of cows, followed by the Baladi breed at 32%, while the other breeds accounted for 5%. (See appendix tables).

Table II-34:Numbers of economic animals in active animals' holdings by type and municipality

Municipality	Camels	Cattle	Goats	Sheep	Total	%
Doha	0	0	933	7	**940**	**0.1**
Al Rayyan	27,612	733	43,922	75,433	**147,700**	**10.0**
Al Wakrah	7,151	952	30,714	50,460	**89,277**	**6.0**
Umm Slal	2,741	2,626	22,907	58,740	**87,014**	**5.9**
Al Khor & Al Dhakhira	6,570	37,092	83,257	259,328	**386,247**	**26.2**
Al Shamal	3,400	1,559	30,979	89,396	**125,334**	**8.5**
Al Daayen	798	986	5,207	31,263	**38,254**	**2.6**
Al Sheehaniya	71,288	6,773	166,784	356,752	**601,597**	**40.7**
Total	**119,560**	**50,721**	**384,703**	**921,379**	**1,476,363**	**100.0**
(%)	**8.1**	**3.4**	**26.1**	**62.4**	**100.0**	**-**

Table II-35:Numbers of economic animals in active animals' holdings by animals and holding types

Holding type	Camels	Cattle	Goats	Sheep	Total	%
Holding in compound	4,809	3,151	103,670	200,028	**311,658**	**21.1**
Roving holding	57,931	1,219	138,400	362,666	**560,216**	**37.9**
Outside farms' planning	4,950	720	22,771	62,135	**90,576**	**6.1**
Outside rural house	3,780	1,076	23,861	58,465	**87,182**	**5.9**
Al-Race	21,149	18	1,374	768	**23,309**	**1.6**
Al-Nakhsh	18,919	69	19,008	36,472	**74,468**	**5.0**
Integrated farm	8,022	44,468	75,619	200,845	**328,954**	**22.3**
Total	**119,560**	**50,721**	**384,703**	**921,379**	**1,476,363**	**100.0**

1.1.25 Poultry:

Poultry farming is an industry that has an important impact on the national economy and plays a key role in securing animal protein from meat and eggs with high nutritional value and at reasonable prices compared to prices of meat and other animal products.

Table II-36 shows the number of enumerated poultry which amounted to 25,927,616 birds, of which 22,022,000 (85%) are specialized chickens (broiler chicken and laying hens), all found in integrated farms, and 2,289,679 pigeons, equivalent to 9% of the total number of monitored birds, and 39% Of the pigeons found in integrated farms and 35% in holdings inside compounds. The total number of local chickens is 1,156,366 birds (4%), of which 56% are found in integrated farms and 24% in holdings inside compounds. As for other types of poultry, such as turkeys, ducks, geese, quails, ostriches and rabbits, their number reached 459,571 birds, representing only 2% of the total poultry in the country, distributed by 42% in integrated farms and 38% in holdings outside rural houses.

Table II-37 shows that the percentages of distribution of the total number of poultry in the municipalities varies across municipalities 88% of poultry are in the municipality of Al-Khor and Al-Thakhira, 5% in Al-Sheehaniya, 4% in Al shamal, while 3% are distributed in the rest of the municipalities.

Table II-36:Numbers of poultry in active animals' holdings by holding type

Holding type	Specialized chickens (layers)		Baladi chickens		Turkey		Ducks		Geese		Quails		Ostrich		Pigeons		Rabbits	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	0	0	276,396	24	2,162	25	12,571	10	3,616	17	44,381	15	208	16	791,127	35	4,136	32
Roving holding	0	0	104,281	9	1,091	13	3,591	3	1,320	6	5,109	2	21	2	332,799	15	676	5
Outside farms' planning	0	0	21,464	2	42	0	3,565	3	277	1	6,880	2	57	5	32,939	1	122	1
Outside rural house	0	0	91,305	8	493	6	6,774	5	681	3	165,828	58	42	3	210,541	9	1,717	13
Al-Race	0	0	2,112	0	80	1	29	0	0	0	0	0	0	0	4,285	0	2	0
Al-Nakhsh	0	0	9,318	1	2	0	45	0	168	1	315	0	1	0	16,083	1	25	0
Integrated farm	22,022,000	100	651,490	56	4,625	54	102,831	79	14,884	71	64,083	22	934	74	901,905	39	6,187	48
Total	**22,022,000**	**100**	**1,156,366**	**100**	**8,495**	**100**	**129,406**	**100**	**20,946**	**100**	**286,596**	**100**	**1,263**	**100**	**2,289,679**	**100**	**12,865**	**100**

Table II-37:Numbers of poultry in active animals' holdings by type and municipality

Municipality	Specialized chickens (layers)		Baladi chickens		Turkey		Ducks		Geese		Quails		Ostrich		Pigeons		Rabbits	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Rayyan	0	0	55,520	5	372	4	2,727	2	891	4	1,235	0	174	14	54,265	2	643	5
Al Wakrah	0	0	60,777	5	523	6	3,263	3	643	3	5,073	2	53	4	98,191	4	878	7
Umm Slal	0	0	84,186	7	1,171	14	6,986	5	3,160	15	4,415	2	95	8	165,490	7	799	6
Al Khor & Al Dhakhira	21,082,000	96	513,641	44	2,510	30	91,685	71	12,508	60	46,733	16	436	35	1,181,547	52	7,252	56
Al Shamal	380,000	2	107,106	9	1,096	13	6,507	5	1,393	7	173,312	60	52	4	265,308	12	380	3
Al Daayen	0	0	86,252	7	126	1	2,665	2	70	0	1,162	0	45	4	68,414	3	192	1
Al Sheehaniya	560,000	3	248,864	22	2,697	32	15,573	12	2,281	11	54,666	19	408	32	456,464	20	2,721	21
Total	**22,022,000**	**100**	**1,156,366**	**100**	**8,495**	**100**	**129,406**	**100**	**20,946**	**100**	**286,596**	**100**	**1,263**	**100**	**2,289,679**	**100**	**12,865**	**100**

1.1.26 Baladi Chicken

Baladi chicken is an old, non-hybrid and genetically stable chicken breed, this breed reproduces naturally, which helps it to incubate and hatch eggs. Notably, baladi chicken can live outdoors in most standard climates, and it is raised mainly to produce eggs or meat or as pets.

Baladi chicken differs from other specialized chickens (laying hens, broilers) with its high price and high price of its products such as eggs and meat. The state of Qatar supports holdings that produce baladi chicken in several ways, such as the announcement of the Ministry of Municipality, represented by the Animal Resources Department, to implement annual vaccinations campaigns for baladi chickens against Newcastle disease. This comes in efforts to protect poultry and animal production projects in general from diseases to achieve food security in Qatar.

Table II-38 shows that the total number of holdings that produce local eggs is 1,691 holdings, of which 43% are in holdings inside compounds, 24% are roving holdings, 17% are integrated farms, and 15% are other types of holdings. The distribution percentages of these holdings in the municipalities were as follows: 46% in Al Sheehaniya, 30% in Al Khor and Al Thakhira, and 24% in other municipalities.

Table II-39 indicates that the total holdings that sell their production of local eggs amounted to 77 holdings, of which 50 holdings are in integrated farms, 14 holdings are inside compounds, 13 holdings are of other types. At the municipal level, the holdings that sell their production of municipal eggs are 44% of them in the municipality of Al-Khor and Al-Thakhira, 23% in Al-Sheehaniya, 16% in Umm Salal and 17% in other municipalities.

Table II-38:Numbers of animals' holdings produce Baladi eggs, by holding's type and municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0	0	0	1	3	0	0	0	0	0	0	0	0	**1**	**0**
Al Rayyan	0	0	38	10	4	11	4	2	0	0	49	100	15	5	**110**	**7**
Al Wakrah	64	9	7	2	2	5	0	0	0	0	0	0	4	1	**77**	**5**
Umm Slal	19	3	47	12	4	11	0	0	0	0	0	0	66	23	**136**	**8**
Al Khor & Al Dhakhira	276	38	36	9	5	14	85	44	0	0	0	0	102	36	**504**	**30**
Al Shamal	6	1	8	2	2	5	4	2	0	0	0	0	19	7	**39**	**2**
Al Daayen	0	0	1	0	2	5	25	13	0	0	0	0	18	6	**46**	**3**
Al Sheehaniya	361	50	261	66	17	46	74	39	7	100	0	0	58	21	**778**	**46**
Total	**726**	**100**	**398**	**100**	**37**	**100**	**192**	**100**	**7**	**100**	**49**	**100**	**282**	**100**	**1,691**	**100**

Table II-39:Numbers of animals' holdings seling Baladi eggs, by holding's type and municipality

Municipality	Holding in compound		Roving Holding		Holding outside rural house		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Al Rayyan	0	0	0	0	0	0	1	100	1	2	**2**	**3**
Al Wakrah	2	14	0	0	0	0	0	0	1	2	**3**	**4**
Umm Slal	3	21	2	29	0	0	0	0	7	14	**12**	**16**
Al Khor & Al Dhakhira	5	36	0	0	4	80	0	0	25	50	**34**	**44**
Al Shamal	0	0	0	0	0	0	0	0	3	6	**3**	**4**
Al Daayen	0	0	0	0	0	0	0	0	5	10	**5**	**6**
Al Sheehaniya	4	29	5	71	1	20	0	0	8	16	**18**	**23**
Total	**14**	**100**	**7**	**100**	**5**	**100**	**1**	**100**	**50**	**100**	**77**	**100**

1.1.27 Other Animals

These include animals that are raised for purposes other than food production, such as sports or hobbies or work. The total of non-livestock in animal holdings amounted to 40,799 heads, of which 62% are Deer, 23% are Horses, 11% are Oryx, and 5% include buffaloes, donkeys, mules and other animals. The relative distribution of non-livestock animals in the different municipalities was 35% in the municipality of Al-Khor and Al-Thakhira, 19% in Al-Sheehaniya, 17% in Al-Wakra, 12% in Al-Rayyan, 8% in each of Umm Salal and Al-Shamal, and 2% in Al-Daayen. (See Table II-40).

Table II-40:Numbers of non-economic livestock in active animals' holdings by type

Type	**No.**	**(%)**
Horses	9,368	23
Donkeys & Mules	266	1
Gazelles	25,173	62
Oryx	4,343	11
Buffalo	337	1
Other animals	1,312	3
Total	**40,799**	**100**

The following tables (II-41 and Table II-42) show the distribution of non-livestock animals by municipality and animal holdings. It is noted that 78% of animals are found in integrated farms, 10% of them are in holdings inside compounds, 6% are in roving holdings, and 3 % in holdings outside farm's planning, and about 3% are distributed in other types of holdings.

Table II-41:Numbers of non-economic animals in active animals' holdings by type and municipality

Municipality	Horses		Donkeys & Mules		Gazelles		Oryx		Buffalo		Other animals		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Al Rayyan	550	6	9	3	4,201	17	13	0	0	0	1	0	**4,774**	**12**
Al Wakrah	370	4	18	7	6,063	24	104	2	24	7	204	16	**6,783**	**17**
Umm Slal	1,804	19	39	15	1,014	4	111	3	70	21	263	20	**3,301**	**8**
Al Khor & Al Dhakhira	2,345	25	81	30	8,703	35	2,723	63	243	72	224	17	**14,319**	**35**
Al Shamal	690	7	28	11	2,086	8	251	6	0	0	47	4	**3,102**	**8**
Al Daayen	281	3	2	1	367	1	8	0	0	0	12	1	**670**	**2**
Al Sheehaniya	3,328	36	89	33	2,739	11	1,133	26	0	0	561	43	**7,850**	**19**
Total	**9,368**	**100**	**266**	**100**	**25,173**	**100**	**4,343**	**100**	**337**	**100**	**1,312**	**100**	**40,799**	**100**

Table II-42:Numbers and types of non-economic animals in active animals' holdings by holding type

Holding type	Horses		Donkeys &Mules		Gazelles		Oryx		Buffalo		Other animals		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	**No.**	**(%)**
In compound	2,500	27	22	8	645	3	115	3	24	7	845	64	**4,151**	**10**
Roving Holding	1,259	13	79	30	1,018	4	101	2	0	0	126	10	**2,583**	**6**
outside farms planning	246	3	13	5	746	3	40	1	0	0	38	3	**1,083**	**3**
outside rural house	484	5	4	2	215	1	52	1	0	0	9	1	**764**	**2**
Al-Race	86	1	0	0	3	0	0	0	0	0	1	0	**90**	**0**
Al-Nakhsh	141	2	2	1	16	0	0	0	0	0	1	0	**160**	**0**
Integrated farm	4,652	50	146	55	22,530	90	4,035	93	313	93	292	22	**31,968**	**78**
Total	**9,368**	**100**	**266**	**100**	**25,173**	**100**	**4,343**	**100**	**337**	**100**	**1,312**	**100**	**40,799**	**100**

Permanent Agricultural Employment

The results of the census showed that the total number of permanent employment in all holdings was 36,223 workers, this number included 35,564 males and 659 females distributed over several activities. Out of the total number 11,621 workers worked in crops activities (32%), 22,439 workers in the livestock activities (62%), And 2,163 worked in poultry activities (6%), as shown in Table II-43. The total number of workers from the family of the holder reached 341 workers, of whom 199 were of Qatari nationality, most of them from the municipality of Al Sheehaniya (148 people), while the number of non-Qatari workers from the family of the holder did not exceed 142 persons (see Table II-44).

As for the distribution of permanent employment by nationality, the table shows that there are 29 workers from the GCC, and 4,897 Arab workers, representing 14% of the total permanent employment. The vast majority was non-Arab workers, 31,297 representing 86% (see Table II-45).

The number of administrators in plant holdings reached 550, while in livestock holdings, there were 227 administrators, and finally in poultry holdings, there were 161 administrators. (See Table II-46).

Regarding the presence of a holding supervisor, about 6,404 holdings reported the absence of a paid supervisor/manager. On the other hand, we find that there are 1,427 holdings that reported the presence of a paid supervisor/manager. (See Table II-47).

Table II-48 indicates that the number of technicians, both agricultural and veterinary of permanent employment is 926. By activity, we find that there are 368 technicians working in the plant activity, 200 technicians working in the animal activity, and 358 working in the poultry activity. The total number of male technicians reached 919, and only 7 female technicians.

Table II-43:Numbers of permanent workers by activity, gender and municipality

Municipality	Plant			Animal			Poultry			Total	
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Doha	2	0	2	2	0	2	0	0	0	**4**	**0**
Al Rayyan	546	29	575	2,288	293	2,581	31	7	38	**2,865**	**329**
Al Wakrah	217	2	219	986	93	1,079	38	6	44	**1,241**	**101**
Umm Slal	1,640	1	1,641	879	13	892	97	4	101	**2,616**	**18**
Al Khor & Al Dhakhira	4,998	110	5,108	3,925	49	3,974	1,268	21	1,289	**10,191**	**180**
Al Shamal	625	2	627	1091	8	1,099	158	0	158	**1,874**	**10**
Al Daayen	733	0	733	253	0	253	36	0	36	**1,022**	**0**
Al Sheehaniya	2,716	0	2,716	12,543	16	12,559	492	5	497	**1,5751**	**21**
Total	**11,477**	**144**	**11,621**	**21,967**	**472**	**22,439**	**2,120**	**43**	**2,163**	**35,564**	**659**

Table II-44:Numbers of workers from holders household members by nationality and municipality

Municipality	Qataris	Non-Qatari	Total
Doha	0	0	**0**
Al Rayyan	25	11	**36**
Al Wakrah	0	17	**17**
Umm Slal	5	3	**8**
Al Khor and Al Dhakhira	20	12	**32**
Al Shamal	0	0	**0**
Al Daayen	1	0	**1**
Al Sheehaniya	148	99	**247**
Total	**199**	**142**	**341**

Table II-45:Numbers of permanent workers by nationality and municipality

Municipality	Number of permanent workers				Total
	Qatari	GCC citizen	Arab	Non- Arab	
Doha	0	0	0	4	**4**
Al Rayyan	0	0	627	2,567	**3,194**
Al Wakrah	0	0	225	1,117	**1,342**
Umm Slal	0	0	221	2,413	**2,634**
Al Khor and Al Dhakhira	0	0	782	9,589	**10,371**
Al Shamal	0	2	165	1,717	**1,884**
Al Daayen	0	0	57	965	**1,022**
Al Sheehaniya	0	27	2,820	12,925	**15,772**
Total	**0**	**29**	**4,897**	**31,297**	**36,223**

Table II-46:Numbers of administrators of permanent workers by activity, gender and municipality

Municipality	Plant			Animal			Poultry			Total	
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Doha	0	0	0	0	0	0	0	0	0	**0**	**0**
Al Rayyan	26	0	26	10	0	10	0	0	0	**36**	**0**
Al Wakrah	11	0	11	9	0	9	1	0	1	**21**	**0**
Umm Slal	75	0	75	21	0	21	1	0	1	**97**	**0**
Al Khor & Al Dhakhira	236	1	237	77	2	79	32	10	42	**345**	**13**
Al Shamal	22	0	22	5	1	6	17	0	17	**44**	**1**
Al Daayen	46	0	46	5	0	5	2	0	2	**53**	**0**
Al Sheehaniya	127	6	133	95	2	97	94	4	98	**316**	**12**
Total	**543**	**7**	**550**	**222**	**5**	**227**	**147**	**14**	**161**	**912**	**26**

Table II-47:Numbers of active agricultural holdings by presence of a paid supervisor and municipality

Municipality	Paid supervisor		No paid supervisor		Total	
	No.	(%)	No.	(%)	No.	(%)
Doha	2	0	0	0	**2**	**0**
Al Rayyan	66	5	934	15	**1,000**	**13**
Al Wakrah	113	8	320	5	**433**	**6**
Umm Slal	109	8	335	5	**444**	**6**
Al Khor & Al Dhakhira	510	36	1,130	18	**1,640**	**21**
Al Shamal	84	6	342	5	**426**	**5**
Al Daayen	52	4	57	1	**109**	**1**
Al Sheehaniya	491	34	3,286	51	**3,777**	**48**
Total	**1,427**	**100**	**6,404**	**100**	**7,831**	**100**

Table II-48:Numbers of technicians (agriculture veterinary) of permanent workers by activity, gender and municipality

Municipality	Plant			Animal			Poultry			Total	
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Doha	0	0	0	0	0	0	0	0	0	**0**	**0**
Al Rayyan	19	0	19	8	0	8	0	0	0	**27**	**0**
Al Wakrah	4	0	4	5	1	6	2	0	2	**11**	**1**
Umm Slal	52	0	52	22	0	22	5	0	5	**79**	**0**
Al Khor & Al Dhakhira	113	2	115	67	1	68	275	2	277	**455**	**5**
Al Shamal	8	0	8	3	0	3	3	0	3	**14**	**0**
Al Daayen	43	0	43	7	0	7	1	0	1	**51**	**0**
Al Sheehaniya	127	0	127	85	1	86	70	0	70	**282**	**1**
Total	**366**	**2**	**368**	**197**	**3**	**200**	**356**	**2**	**358**	**919**	**7**

Agriculture Machinery, Equipment, and Facilities

1.1.28 Agriculture Machinery and Equipment

All machines and equipment used in the agricultural or animal production process were counted, whether they were owned by the holder or rented from others. The results showed that the distribution of machines and equipment according to their uses shown in Table II-49 as follows:

- The total number of vehicles reached 6,394 vehicles, including 402 trucks, 212 Masquerade water, 1,220 transportation cars, 244 refrigerated transport, 4,191 dumpers and 125 lifting and drilling machines GCP.
- The total number of fertilization and pesticide spraying machines reached 2923, including 1,134 pesticide spraying machines, 1,653 fertilizers and 136 fertilizer mixing machines.
- The total land preparation machines monitored in all holdings are 3,625 machines, of which 576 are agricultural tractors, 462 hand tillers, 221 plows, 301 leveling machines, 149 harvesting machines and 1,916 mowing machines.
- Fodder and agricultural waste machines amounted to 2,507 machines, including 1,699 handlers, 414 feed dispensing machines and 394 agricultural waste shredders.
- The available agricultural and health care tools available in state holdings were 298 tools, including 147 agricultural tools and 151 health tools.
- Animal care equipment and machinery and their accessories were estimated at 32,972 equipment and machinery, including watering equipment (4,913), hatching machines (16,595), wool shearing machines (557), milk collection containers (144), milking machines (1,630) and honey sorting machines (133). .
- There were 624 machines for packing agricultural products, most of which were 605 vegetable packing machines, while 19 machines were for dates packing.
- Pumps, drinking water tanks and energy equipment that were present in the holdings constituted 41,686 pieces of equipment, including 31,119 drinking water tanks, 11 water desalination machines, 912 electricity generators, 2,560 electric well pumps, 415 diesel well pumps and 6,669 solar panels. It is worth noting that most of the mentioned machines are owned by holding's owners, at a rate of around 98%.

It is also noted from Table II-49 that most machinery and equipment were concentrated in the Municipality of Al Khor, Al Thakhira and the Municipality of Al Sheehaniya, followed by the Municipality of Umm Salal and the Municipality of Al Shamal. The Municipality of Doha came in last ranking, as it is the economic and commercial center of the state.

Table II-49:Numbers of machinery and equipment in active farms by municipality

Machinery and equipment	Doha	Al Rayyan	Al Wakrah	Umm Slal	Al Khor &Al Dhakhira	Al Shamal	Al Daayen	Al Sheehaniya	Total
Truck	0	5	10	53	181	37	10	106	**402**
Masquerade water	0	3	4	33	76	28	17	51	**212**
Transportation cars	0	56	30	200	417	140	80	297	**1,220**
Refrigerated transport	0	1	0	28	114	19	18	64	**244**
Dumper	0	12	6	709	2,297	285	275	607	**4,191**
Lifting &Digging machine GCP	0	5	1	9	46	21	8	35	**125**
Pesticide Spraying machines	0	44	12	240	397	125	68	248	**1,134**
Fertilizer mixing machine	0	9	2	16	81	6	0	22	**136**
Fertilizer	0	25	8	252	950	100	87	231	**1,653**
Insect traps	0	6	2	567	3,054	948	961	1,848	**7,386**
Tractor	0	54	2	62	264	38	31	125	**576**
Levelling Machines	1	29	25	22	84	46	17	77	**301**
Plow	0	5	0	17	85	19	14	81	**221**
Manual tiller	0	52	2	115	120	80	8	85	**462**
Harvesting Machines	0	4	0	12	87	8	5	33	**149**
Mowing machines	1	181	6	425	421	203	67	612	**1,916**
Handlers	0	44	14	238	805	60	64	474	**1,699**
Agricultural waste shredder	0	2	1	46	109	223	3	10	**394**
Feed dispensing machine	0	12	14	62	188	69	22	47	**414**
Agricultural care tools	0	1	0	13	109	3	3	18	**147**

Table II-49 (Contioued):Numbers of machinery and equipment in active farms by municipality

Machinery and equipment	Doha	Al Rayyan	Al Wakrah	Umm Slal	Al Khor &Al Dhakhira	Al Shamal	Al Daayen	Al Sheehaniya	Total
Health care tools	0	5	8	1	60	7	2	68	**151**
Watering equipment	0	212	116	564	1,895	737	257	1,132	**4,913**
Hatching machines	8	596	378	3,918	8,584	1,184	427	1,500	**16,595**
Wool shearing machine	0	27	4	71	268	45	35	107	**557**
Milk collection containers	0	77	0	6	38	15	0	8	**144**
Milking machine	0	90	40	174	952	54	97	223	**1,630**
Honey bee sorting machine	0	0	1	27	59	4	12	30	**133**
Vegetable packing machine	0	15	1	91	252	65	31	150	**605**
Dates packing machine	0	0	0	8	7	1	0	3	**19**
Drinking water tank	10	890	1,199	1,872	19,182	2,696	1,971	3,299	**31,119**
Water desalination	0	0	5	0	1	0	0	5	**11**
Generators	0	43	30	111	392	91	40	205	**912**
Electric Well Pumps	0	150	77	325	1,057	188	190	573	**2,560**
Well pumps /diesel	0	11	21	34	148	95	16	90	**415**
Solar panels	0	8	30	277	5,312	41	442	559	**6,669**

Table II-50 shows the numbers and types of barns in livestock holdings (wire - traditional - modern) 65,968 barns, with a total area estimated at 21,568,933 square meters. As for the distribution according to the type of barn, the total number of wire and wood barns was 12,303 barns on an area of 6,038,461 square meters. The total number of traditional barns was 50,291 on an area of 13,462,803 square meters, and the number of modern barns was 3,374 with a total area of 2,067,669 square meters.

According to the distribution of these areas among the municipalities, Al Sheehaniya Municipality occupied the highest percentage of areas for barns with 39% for wire and wood barns, 47% for traditional barns and 43% for modern barns of the total area of each type, followed by Al Rayyan Municipality with 32% of the areas for wire and wood barns and 14% for traditional barns, and 1% for modern barns. As for the municipality of Al-Khor and Al-Thakhira, 17% of the area of its barns was for wire and wood barns, 23% for traditional barns and 39% for modern barns.

Table II-50:Numbers and areas of barns in active animals' holdings by type and municipality

Municipality	Barn (wires - wood)		Barn (traditional)		Barn (modern)		Total	
	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)
Doha	4	1,705	0	0	0	0	**4**	**1,705**
Al Rayyan	1,984	1,947,049	4,092	1,895,921	51	2,6016	**6,127**	**3,868,986**
Al Wakrah	1,331	196,986	3,010	610,036	95	7,354	**4,436**	**814,376**
Umm Slal	849	224,551	4,218	858,764	440	209,108	**5,507**	**1,292,423**
Al Khor and Al Dhakhira	2,197	998,362	11,693	3,095,296	1,839	800,557	**15,729**	**4,894,215**
Al Shamal	1,268	295,959	2,781	467,074	175	8,0497	**4,224**	**843,530**
Al Daayen	134	22,030	530	159,801	88	51,632	**752**	**233,463**
Al Sheehaniya	4,536	2,351,819	23,967	6,375,911	686	892,505	**29,189**	**9,620,235**
Total	**12,303**	**6,038,461**	**50,291**	**13,462,803**	**3,374**	**2,067,669**	**65,968**	**21,568,933**

Table II-51:Numbers and areas of barns in active animals' holdings by barns and holding's types

Holding type	Barn (wires - wood)		Barn (traditional)		Barn (modern)		Total	
	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)
Holding in compound	2,037	115,431	21,639	1,944,287	1,719	108,830	**25,395**	**2,168,548**
Roving Holding	5,321	2,20,3747	8,951	4,290,731	308	58,027	**14,580**	**6,552,505**
Holding outside rural house	1,082	181,691	2,708	613,753	147	107,758	**3,937**	**903,202**
Holding outside farms' planning	620	378,793	1,369	1,107,838	52	27,557	**2,041**	**1,514,188**
Al-Nakhsh	788	1,259,055	3,415	1,462,327	24	6,523	**4,227**	**2,727,905**
Al-Race	93	9,360	6,941	647,883	51	,6500	**7,085**	**663,743**
Integrated farm	2,362	1,890,384	5,268	3,395,984	1,073	1,752,474	**8,703**	**7,038,842**
Total	**12,303**	**6,038,461**	**50,291**	**13,462,803**	**3,374**	**2,067,669**	**65,968**	**21,568,933**

1.1.29 Facilities and Buildings

These include any independent, self-contained building consisting of one or more rooms or other spaces, covered by a roof, and often surrounded by external walls or separating walls that extend from the foundations to the ceiling. The building may be a roof on pillars only without built-in walls, and in some cases, any building without a roof consisting of a space surrounded by walls can be considered a building.

Table II-52 shows the numbers of residences and administrative offices by type of building and municipality. We note that agricultural holdings in the country include 13,415 buildings for private housing with a total area estimated at 3,308,242 square meters, 13,274 buildings for laborer's accommodation with an area of 907,208 square meters and 414 administrative offices with a total area of 36,090 square meters. Most of the buildings were concentrated in the municipality of Al Sheehaniya, followed by Al Khor, Al Thakhira, and then Al Rayyan. Laborer's accommodation was more in the municipality of Al-Sheehaniya (6,136 laborer's accommodation) with an area of 281,242 square meters, then the municipality of Al-Khor and Al-Thakhira (3,036 laborer's accommodation) with an area of 394,089 square meters. Square, followed by the municipality of Al-Khor and Al-Thakhira (with 2,459 private housing) with an area of 938,319 square meters, and Al-Rayyan (3,051 private housing) with an area of 224,059 square meters. As for the administrative offices, they were concentrated in the municipality of Al-Sheehaniya with a number of 207 on an area of 10,511 square meters.

Table II-52:Numbers and areas of housing and administrative offices by building type and municipality

Municipality	Private Accommodation		Laborers Accommodation		Administrative Offices	
	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)
Doha	0	0	1	150	0	0
Al Rayyan	3,051	224,059	1,588	60,167	17	1,086
Al Wakrah	602	129,588	663	23,442	2	64
Umm Slal	1,171	283,794	871	100,766	66	4,265
Al Khor & Al Dhakhira	2,459	938,319	3,036	394,089	207	10,511
Al Shamal	376	82,135	766	30,648	16	3,954
Al Daayen	218	86,180	213	16,704	17	582
Al Sheehaniya	5,538	1,564,167	6,136	281,242	89	15,628
Total	**13,415**	**3,308,242**	**13,274**	**907,208**	**414**	**36,090**

The number of warehouses according to building type and municipality is shown in Table II-53. Warehouses include warehouses and products stores. They amounted to 12,190 of both types with a total area of 1,377,907 square meters. As there are 11,902 warehouses with a total area of 1,284,641 square meters, most of which are in the municipality of Al Sheehaniya (5,411 warehouses) and the municipality of Al Khor and Al Thakhira (2,824 warehouses). As for products stores, they amounted to 288 stores with a total area of 93,266 square meters, most of which are located in Al Khor and Al Thakhira municipalities (115 stores), Al Sheehaniya municipality (84 stores), and Umm Salal municipality (47 stores).

Table II-53:Numbers and areas of warehouses in active agricultural holdings by building type and municipality

Municipality	Warehouses		Products stores		Total	
	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)
Doha	1	100	0	0	**1**	**100**
Al Rayyan	1,228	158,124	16	5,602	**1,244**	**163,726**
Al Wakrah	838	55,944	3	990	**841**	**56,934**
Umm Slal	787	196,506	48	27,029	**835**	**223,535**
Al Khor & Al Dhakhira	2,824	307,761	115	29,305	**2,939**	**337,066**
Al Shamal	612	44,225	14	2,586	**626**	**46,811**
Al Daayen	201	52,183	8	4,275	**209**	**56,458**
Al Sheehaniya	5,411	469,798	84	23,479	**5,495**	**493,277**
Total	**11,902**	**1,284,641**	**288**	**93,266**	**12,190**	**1,377,907**

Regarding the numbers of water pools; There were 1,422 water storage ponds with a total volume of 711,338 cubic meters, most of which are located in the holdings of Al Sheehaniya Municipality (973 ponds) and Al Khor and Al Thakhira Municipality (194 ponds). While comparing size to numbers, the holdings in Al Shamal Municipality reported the 34 water storage ponds with a size of 208,546 cubic meters. As for ponds for animals and birds, the general total was 253 ponds with a total area of 48,352 square meters. As for distribution according to the municipalities, the largest number and area was in the municipality of Al-Khor and Al-Thakhira (149 ponds) with an area of 31,504 square meters. Finally, the swimming pools totaled 219 in all holdings with

a total volume of 44,737 cubic meters, the largest in size, and most concentration was in the municipality of Al-Khor and Al-Thakhira (101 farms) as in Table II-54.

Table II-54:Numbers and areas of water pools in active agricultural holdings by building type and municipality

Municipality	Water storage ponds		Ponds for animals & birds		Swimming pools	
	No.	Total volume(m^3)	No.	Area (m^2)	No.	Total volume(m^3)
Doha	1	50	0	0	0	0
Al Rayyan	83	149,471	3	625	15	2,107
Al Wakrah	58	3,794	14	429	18	1,675
Umm Slal	47	3,336	24	1,868	25	2,338
Al Dhakhira&Al Khor	194	169,512	149	31,504	101	27,321
Al Shamal	34	208,546	9	200	22	2,069
Al Daayen	32	1,165	6	3,260	3	77
Al Sheehaniya	973	175,464	48	10,466	35	9,150
Total	**1,422**	**711,338**	**253**	**48,352**	**219**	**44,737**

Table II-55 shows the numbers and areas of service buildings by type of building and municipality in the agricultural holdings. We note that the agricultural holdings contained 58 vegetable separation and grading stations with an area of 22,991 square meters, 16 agricultural products outlets with an area of 6,670 square meters, and 11 dates packing units with an area of 3,830 square meters. 41 agricultural waste recycling units with an area of 22,706 square meters, 68 dung-recycling units with an area of 61,051 square meters, and 21 animal feed production units with an area of 22,313 square meters.

Table II-56 shows that the number of animal holdings that have suitable stores for fodder and equipment is 6,743 holdings, 49% of which are in Al-Sheehaniya, and 21% of them are in Al-Khor and Al-Thakhira. Of these holdings, we find that 43% of them are holdings inside compounds, and 23% of them are roving holdings.

Table II-55:Numbers and areas of services buildings in active agricultural holdings by building type and municipality

Municipality	Vegetable separation & grading station		Agricultural products outlet		Dates packing unit		Agricultural Waste Recycling		Dung recycling unit		Animal feed production unit	
	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)	No.	Area (m^2)
Doha	0	0	0	0	0	0	0	0	0	0	0	0
Al Rayyan	0	0	1	200	0	0	0	0	1	600	0	0
Al Wakrah	0	0	0	0	0	0	0	0	0	0	0	0
Umm Slal	4	1,700	3	164	3	1,650	15	6,669	10	16,160	4	1,000
Al &Al Khor Dhakhira	31	14,331	7	5,274	5	1,585	20	7,187	45	37,424	12	7,485
Al Shamal	1	80	1	100	1	90	0	0	2	1,075	2	2,800
Al Daayen	2	700	2	900	0	0	0	0	5	3,310	0	0
Al Sheehaniya	20	6,180	2	32	2	505	6	8,850	5	2,482	3	11,028
Total	**58**	**22,991**	**16**	**6,670**	**11**	**3,830**	**41**	**22,706**	**68**	**61,051**	**21**	**22,313**

Table II-56:Numbers of animals' holdings with stores for equipments and feeds by municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Doha	0	0	0	0	1	1	0	0	0	0	0	0	0	0	**1**	**0**
Al Rayyan	0	0	207	13	21	11	22	5	0	0	505	100	36	6	**791**	**12**
Al Wakrah	247	9	101	7	13	7	0	0	0	0	0	0	18	3	**379**	**6**
Umm Slal	215	7	68	4	10	5	1	0	0	0	0	0	89	15	**383**	**6**
Al Khor & Al Dhakhira	899	31	135	9	37	19	156	37	0	0	0	0	206	35	**1,433**	**21**
Al Shamal	114	4	105	7	18	9	39	9	0	0	0	0	74	13	**350**	**5**
Al Daayen	0	0	5	0	7	4	36	9	0	0	0	0	35	6	**83**	**1**
Al Sheehaniya	1,391	49	922	60	84	44	167	40	631	100	0	0	128	22	**3,323**	**49**
Total	**2,866**	**100**	**1,543**	**100**	**191**	**100**	**421**	**100**	**631**	**100**	**505**	**100**	**586**	**100**	**6,743**	**100**

Marketing Activity

1.1.30 Plant Holdings

Table II-57 indicates that the total number of farms that market their products at the farm door is 121, while the farms that market their products through “Mahaseel” company amount to 193 farms, and 356 farms sell their products in the central market. 159 farms resort to the marketing programs of the Ministry Municipality (Yards – Premium Qatar Vegetables Program - Qatar Farms) and 112 farms market their produce in other ways (direct contract with complexes - tenders....etc). Notably, there is more than one marketing outlet for the farm.

Table II-57:Numbers of active farms by production sales outlets locations,percentage and municipality

Municipality	Farm door		Mahaseel Company		Central Market		Marketing programs		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%
Doha	0	0	0	0	0	0	0	0	0	0
Al Rayyan	4	3	8	4	12	3	1	1	4	4
Al Wakrah	4	3	0	0	8	2	4	3	2	2
Umm Slal	32	26	27	14	56	16	31	19	12	11
Al Khor & Al Dhakhira	34	28	89	46	128	36	61	38	41	37
Al Shamal	14	12	14	7	46	13	15	9	8	7
Al Daayen	6	5	13	7	24	7	10	6	8	7
Al Sheehaniya	27	22	42	22	82	23	37	23	37	33
Total	**121**	**100**	**193**	**100**	**356**	**100**	**159**	**100**	**112**	**100**

Table II-58 shows the distribution percentage of most of the agricultural production. It is noted that there are 500 farms that use most of their production for self-consumption, and 507 farms sell most of the production. We also find that the highest percentage of farms that use production for self-consumption was in the municipality of Al Sheehaniya (27%), while the highest percentage of farms that sell their produce was in the municipality of Al Khor and Al Thakhira (%38.5) .

Table II-58:Numbers of active farms and percentages of most agricultural production usage by municipality

Municipality	Self-consumption		Selling		Other		Total	
	No.	%	No.	%	No.	%	No.	%
Doha	1	0.2	0	0.0	0	0.0	**1**	**0.1**
Al Rayyan	54	10.8	21	4.1	0	0.0	**75**	**7.4**
Al Wakrah	36	7.2	9	1.8	0	0.0	**45**	**4.4**
Umm Slal	50	10.0	84	16.6	0	0.0	**134**	**13.2**
Al Khor & Al Dhakhira	111	22.2	195	38.5	3	33.3	**309**	**30.4**
Al Shamal	76	15.2	57	11.2	0	0.0	**133**	**13.1**
Al Daayen	36	7.2	25	4.9	0	0.0	**61**	**6.0**
Al Sheehaniya	136	27.2	116	22.9	6	66.7	**258**	**25.4**
Total	**500**	**100.0**	**507**	**100.0**	**9**	**100.0**	**1,016**	**100.0**

1.1.31 Livestock Holdings:

Table II-59 shows that the number of holdings that sell their production of livestock reached 1,652 holdings. It also shows that 51% of these holdings are located in the municipality of Al Sheehaniya, 18% in the municipality of Al Rayyan, 15% in the municipality of Al Khor, Al Thakhira and Al Rayyan, and 7% in the municipality of Umm Salal. The table shows that 37% of these are roving holdings, 28% are holdings in compounds, 12% holdings in Al-Nakhsh, 9% are integrated farms, 8% holdings are outside rural houses, while holdings outside farm's planning and Al-Race holdings are 6% of the holdings that sell their products of live animals.

Table II-60 shows that the number of holdings producing livestock milk is 2,204 holdings, of which 52% are in the municipality of Al-Sheehaniya, 23% in the municipality of Al-Rayyan, and 10% in the municipality of Al-Khor and Al-Thakhira. The table also indicates that 40% of these holdings are located in roving holdings, 18% of them are in holdings inside compounds, 16% are in Al-Nakhsh holdings, 12% are integrated farms, and 14% are in other locations.

Table II-61 shows livestock holdings that sell their milk production, which are only 40 holdings. These holdings are located in the municipalities of Al Khor and Al Thakhira (40%), Al Sheehaniya (30%), Umm Salal (20%), Al Wakra (8%) and Al Rayyan (3%). The table also indicates that there are 20 integrated farms, 8 roving holdings, 5 holdings outside rural house, 5 holdings inside compounds, one farm Al- Nakhsh holding, and one holding outside farm's planning.

Table II-62 shows that the total holdings that use specialized records for the activities of raising livestock amounted to 525 holdings, of which 200 are integrated farms, 140 roving holdings, 89 holdings inside a compound, 36 holdings outside rural house and 60 other farm areas. These holdings are distributed among the municipalities in the following proportions: 44% in Al Sheehaniya, 26% in Al Khor and Al Thakhira, 12% in Al Rayyan, 8% in Umm Salal and 10% in other municipalities.

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Table II-59:Numbers of active animals' holdings selling live livestock, by type of holding and municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Al Rayyan	0	0	81	13	3	4	5	4	0	0	205	100	4	3	**298**	**18**
Al Wakrah	22	5	21	3	2	3	0	0	0	0	0	0	2	1	**47**	**3**
Umm Slal	51	11	40	6	6	9	0	0	0	0	0	0	26	17	**123**	**7**
Al Khor & Al Dhakhira	66	14	63	10	13	19	44	35	0	0	0	0	58	39	**244**	**15**
Al Shamal	21	5	35	6	6	9	5	4	0	0	0	0	23	15	**90**	**5**
Al Daayen	0	0	0	0	1	1	3	2	0	0	0	0	7	5	**11**	**1**
Al Sheehaniya	299	65	377	61	36	54	70	55	27	100	0	0	30	20	**839**	**51**
Total	**459**	**100**	**617**	**100**	**67**	**100**	**127**	**100**	**27**	**100**	**205**	**100**	**150**	**100**	**1,652**	**100**

Table II-60:Numbers of animal holdings produce milk, by type of holding and municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Al Rayyan	0	0	103	12	13	13	12	6	0	0	355	100	18	7	**501**	**23**
Al Wakrah	41	10	56	6	13	13	0	0	0	0	0	0	13	5	**123**	**6**
Umm Slal	12	3	66	8	7	7	1	0	0	0	0	0	52	19	**138**	**6**
Al Khor & Al Dhakhira	34	8	38	4	12	12	37	21	0	0	0	0	99	36	**220**	**10**
Al Shamal	1	0	16	2	1	1	1	0	0	0	0	0	13	5	**32**	**1**
Al Daayen	0	0	2	0	2	2	11	6	0	0	0	0	20	7	**35**	**2**
Al Sheehaniya	322	79	589	68	51	51.5	126	67	10	100	0	0	57	21	**1,155**	**52**
Total	**410**	**100**	**870**	**100**	**99**	**100**	**188**	**100**	**10**	**100**	**355**	**100**	**272**	**100**	**2,204**	**100**
(%)	**18.6**	**-**	**39.5**	**-**	**4.5**	**-**	**8.5**	**-**	**0.5**	**-**	**16.1**	**-**	**12.3**	**-**	**100.0**	**-**

Table II-61:Numbers of animals' holdings selling milk, by holding's type and municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Al Rayyan	0	0	0	0	0	0	0	0	0	0	1	100	0	0	**1**	**3**
Al Wakrah	1	20	1	13	0	0	0	0	0	0	0	0	1	5	**3**	**8**
Umm Slal	1	20	1	13	0	0	0	0	0	0	0	0	6	30	**8**	**20**
Al Khor & Al Dhakhira	1	20	1	13	1	100	3	60	0	0	0	0	10	50	**16**	**40**
Al Sheehaniya	2	40	5	63	0	0	2	40	0	0	0	0	3	15	**12**	**30**
Total	**5**	**100**	**8**	**100**	**1**	**100**	**5**	**100**	**0**	**0**	**1**	**100**	**20**	**100**	**40**	**100**
(%)	**12.5**	**-**	**20**	**-**	**2.5**	**-**	**12.5**	**-**	**0**	**0**	**2.5**	**-**	**50**	**-**	**100.0**	**-**

Table II-62:Numbers of holdings using specialized records by municipality

Municipality	Holding in compound		Roving Holding		outside farms' planning		outside rural house		Al-Race		Al-Nakhsh		Integrated farm		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Al Rayyan	0	0	33	24	2	7	13	36	0	0	7	100	10	5	**65**	**12**
Al Wakrah	5	6	1	1	0	0	0	0	0	0	0	0	6	3	**12**	**2**
Umm Slal	5	6	5	4	2	7	0	0	0	0	0	0	28	14	**40**	**8**
Al Khor & Al Dhakhira	30	34	12	9	9	33	12	33	0	0	0	0	71	36	**134**	**26**
Al Shamal	6	7	4	3	0	0	2	6	0	0	0	0	13	7	**25**	**5**
Al Daayen	0	0	0	0	0	0	0	0	0	0	0	0	15	8	**15**	**3**
Al Sheehaniya	43	48	85	61	14	52	9	25	26	100	0	0	56	28	**233**	**44**
Total	**89**	**100**	**140**	**100**	**27**	**100**	**36**	**100**	**26**	**100**	**7**	**100**	**200**	**100**	**525**	**100**

Applications- holdings' livestock breeding systems

Livestock breeding systems are divided into outstanding, average, and bad. These divisions are according to the management and division of the herds. Outstanding holdings divide the herds into organized groups by breed, age, gender, functional status. While holdings with a bad status are not committed to dividing herds by type of animal, age and functional status.

In terms of evaluation of the total division for livestock according to the three types (outstanding, average, and bad), and with regard to the average level of the outstanding camel and cow breeding system, the results indicate that there are 883 holdings. 70% of these holdings in the municipality of Al-Sheehaniya, 14% of them in the municipality of Al-Rayyan, and 8% in Municipality of Al Khor and Al Thakhira and 8% in the rest of the other holdings. As for the sheep and goat breeding system, the outstanding breeding system was found in 884 holdings, 57% of which are in Al Sheehaniya, 14% in Al Khor, 12% in Al Shamal, and the rest of the holdings are distributed among municipalities by 17%. (See the appendix to the tables).

Planning and coordination refer to the distribution of productive facilities in the holding, taking into account the standard requirements of biosafety. Outstanding planning means that the facilities subject to contamination are not adjacent to clean facilities, and that the roads between them do not intersect. As for the average planning, it means that there is distribution, but it does not take into account the intersection of roads between facilities. As for the bad planning, it is the planning of facilities without taking into account the requirements of biosafety. Census data indicates according to Table II-63, that there are 1,564 outstanding holdings with a rate of 21%, while average planning was 71% and 8% are bad planned out of a total of 7,462 animal holdings.

Table II-63:Numbers of animals' holdings by level of coordination and planning in the holding

Type of Holding	Level of coordination		
	Outstanding	Average	Bad
Holding in compound	542	2,280	271
Roving Holding	327	1,272	124
Holding outside rural house	81	303	70
Holding outside farms' planning	32	169	38
Al-Nakhsh	30	608	13
Al-Race	350	289	16
Integrated farm	202	385	60
Total	**1,564**	**5,306**	**592**

III. CHAPTER THREE: CONCEPTS AND TERMINOLOGY

Definitions and Concepts

A Holding: It is an economic unit for agricultural production that is subject to a single administration and includes all existing animals and all lands used in whole or in part for agricultural production purposes, regardless of ownership or legal form. The management of the holding may attributed to one person or a family, or it may be shared by two persons or two or more families, or a tribe, or it may be assumed by a legal person such as a company, cooperative or government agency. The lands of the holding consist of one or more parts of land, if the parts of land share the means of production used by the holding such as workers, buildings or machinery. In addition, participation in the same means of production must be clear to justify considering the various parts as elements in a single economic unit.

For the purposes of the agricultural census in the State of Qatar, the census includes all lands of agricultural holdings with an area of (100 square meters) one hundred square meters or more, and agricultural holdings in which animals are raised for the purpose of stable breeding, and have:

- One or more heads of cows or camels.
- Five or more heads of sheep or goats, or both.
- Fifty poultry or different birds.

If the above-mentioned conditions are met, the holding is included in the survey. Economic units whose operation is limited to the following economic activities are not considered agricultural holdings, as these activities fall outside the scope of agriculture:

- Hunting and raising hunting animals.
- Exploitation of forests or logging.
- Fishing.
- Agricultural services (nurseries, production requirements, parks, etc.).
- Livestock trading establishments (establishments that practice buying and selling operations of livestock only).
- Fenced well fields.

Type of holding

Crops only (plant): is a holding with an activity limited to agriculture (seasonal, perennial and permanent crops). If the holding contained less than five heads of goat or lamb or both, or less than 50 poultry, it is still considered a plant holding.

Animals only (ranch): A holding is classified as an animal holding if it contains only animals (cows, camels, goats, or sheep) with one or more of the following conditions:

- One or more cows
- One or more camels (for meat or milk)
- Five heads or more of goat or lamb or both

It must be emphasized that the presence of animals belonging to several people in one ranch, means that these animals represent several animal holdings after making sure that the conditions for the number required for each holding are met, and that each of these animals belongs categorically and completely to a specific person who has the right to dispose of the animal or cover its expenditures. Therefore such animals represent several holdings, each of which is limited in number and under one administration and whose owner is unequivocally known. It should be noted that independent horse stables (outside agricultural holdings) are not considered animal holdings. Moreover, the presence of other animals such as donkeys or deer in a location outside the agricultural holding does not constitute as an animal holding regardless of their number. As for animals (horses, donkeys and deer) that are inside the holding, they are included exclusively.

Poultry only: A holding is classified as a poultry holding if it contains only poultry, whether it is chicken, ostrich, duck, geese or any combination thereof, provided that the total number of birds is (50) or more.

Mixed Holding: a holding is classified as (mixed holding) in the event that it can be classified into more than one type of the aforementioned holdings, such as if it is a plant and animal holding, or plant and poultry, or plant and animal and poultry together. Accordingly, the plant holding that includes one or more cows, one or more camels, five heads of goats or sheep, or both, or more, or (50) or more birds, is classified as a mixed holding. It should be noted that the presence of horses, donkeys and deer does not change the type of holding.

The main use of production: If the family consumed most of the holding's produce during the year of the agricultural census, the main purpose of production is

considered self-consumption. However, if most of the holding's produce was marketed during the year of the agricultural survey, the main purpose of production is considered to be selling.

Holder's legal status

Individual: is the usual form in traditional holdings in which the holder is one individual.

Individual Partners: is a method of partnership between two or more persons in managing, financing and investing the holding.

Company: which means the legal entity officially registered with a legal name in accordance with the provisions of the Commercial Companies Law, whereby the holding capital is owned by a number of individuals or entities forming among themselves a private company of any kind (joint partnership, joint stock company, simple recommendation, limited liability...etc.) .

Governmental (leased): is a holding that is owned entirely by the state, or leased to a person or entity.

Mixed: It is the sector that includes holdings in which the government shares its capital with another entity, whether this entity is national or foreign, such as the Arab Qatari Company for Dairy Production (Ghadeer), the Arab Qatari Company for Poultry Production, and the Arab Qatari Company for Agricultural Production.

Other: a holding to which the above-mentioned definitions do not apply to.

Holder: A legal person who exercises management control over the operation of the holding and makes key decisions regarding the use of available resources. The holder has technical and economic responsibilities specific to the holding. He may assume all responsibilities directly or delegate day-to-day management responsibilities to a paid official.

Owner: is the person who owns the holding according to official documents and has the right to dispose of it as owners dispose of their property.

Educational status of the holder: It refers to the educational stage completed by the holder. If the holder leaves school before they officially obtain the primary level certificate, or they learn to read and write by any other means without obtaining a certificate, their educational status is considered (reading and writing). In the event that the holder leaves school without completing the preparatory level, their educational status is considered (elementary level) and so on.

Main occupation of the holder: occupation means the type of work performed by a person during a reference period (one agricultural year). As for people who work in more than one profession, the main occupation for the purposes of the agriculture census and production is the profession in which the holder spent/spends the longest time during the agricultural year. The holder's profession is considered (agricultural) if they practices agricultural work most of the time, whether at his farm or on another farm.

Employment at the holding:

Employment: every worker, male or female, whether a member of the holder's family or not, who was associated with agricultural work for the holding activity during the year of the survey or study is considered an employee.

Seasonal paid employment: are paid persons who work at different times during the census or study year, and are not expected to work in the holding on a regular or continuous basis.

Permanent paid employment: A permanent agricultural worker is a person whose services are used regularly and continuously in agricultural work at the holding during the agricultural year. The permanent agricultural worker is not required to do agricultural work exclusively, as they may work in other jobs as well. The permanent agricultural worker may be among the family members of the holder if it is confirmed that he performs the agricultural work in the holding during the agricultural year on a regular and continuous basis without the need for devotion to this work, such as employees, students or housewives. The permanent agricultural worker may work in the holding with or without pay, and it must be emphasized that what is required here is the permanent agricultural worker.

Unpaid workers: are those who work in holdings without monetary or in-kind wages. These usually include some holders and members of their families.

Paid workers: are those who receive a monetary or in-kind wages for their work in the holding. The holder who receives a wage for managing the holding in addition to his share of the profits is considered a paid worker.

Administrators: these includes administrative employment such as the manager, the representative and the warehouse official.

Farm manager: is the person authorized to manage the farm and follow up the administrative and technical matters of the holding and all the requirements of the farm such as licenses, inputs and marketing.

Hired manager: A legal person who assumes technical and administrative responsibility for managing the holding on behalf of the holder. Their responsibilities are limited to making the day-to-day decisions necessary for the operation of the holding, including the management and control of the workers. They are generally paid to in cash or in- kind or both. In cases where the manager shares economic and financial responsibilities in addition to managing the holding, they are considered a co-owner.

Technicians: this includes technical workers such as engineers, veterinarians, marketing officers, accountants, assistant engineer, assistant veterinarian and mechanical and electrical workers.

Workers: this includes all types of workers who work inside the farm, whether in plant or animal activity.

Holding's Machinery and equipment owned by the holder:

These are the machines and equipment used in the holding for plant or animal production in whole or in part. All machinery and equipment used for non-agricultural purposes during the survey year were excluded. Data collection should be limited to machines and equipment that are in a usable condition, such as, but not limited to:

Trailer: an equipment that is towed by another mechanical unit to perform certain tasks such as plowing, sowing, or transporting produce and agricultural production requirements.

Harvesting machine: It harvests field crops such as wheat and barley and separates the seeds from the stems and leaves automatically.

Convertible transport cars: is the vehicle in which the main part acts as a container for transporting production requirements, products, and animals.

Refrigerated transport cars: It is a refrigerated vehicle intended for transporting vegetables to marketing places in order to protect them from damage, reduce waste, and maintain their quality.

Care tools: the tools that are used in animal care, directly or indirectly, such as corkscrews, trolleys, cleaning equipment, and others.

Health care tools: tools used in animal health care, such as hoof clippers, antiseptics, drug dispensing tools, vaccination tools, external parasite control tools and other tools of a similar nature.

Hatching machines: this includes everything that goes in the process of hatching chicks from eggs, such as incubators, hatchers, egg detection machines, and other tools of a similar nature.

Watering equipment: equipment used to provide water to animals and poultry.

Feeders: These are the equipment used in feeding animals and poultry.

Buildings and facilities in holdings:

Building: Any independent construction consisting of one or more rooms or any other areas covered by a roof and usually surrounded by walls extending from the foundation to the ceiling.

Housing: They are buildings or part of buildings within the land of the holding intended for the residence of the holder or residents in the holding, provided that they are not entirely used for purposes other than housing during the census year. Mobile housings, such as tents, are not considered housings, given that the housing is considered one of the permanent establishments in the holding.

Barns: allocated areas inside a holding to house animals and poultry, whether they are roofed or not. They may be simple or equipped with feeding equipment and drinkers, such as barns for poultry, cows and sheep.

Warehouses: These are the buildings specifically designated for storing agricultural machinery, equipment, and tools, and include seed or grain warehouses, silos, and warehouses for fertilizers, pesticides, fodder, and others.

Marketing units: It is the place designated for sorting, grading, packing and storing vegetables.

Water storage ponds: They are ponds or basins of different shapes and sizes used to store and distribute irrigation water. They are built with concrete or made of steel, fiberglass or any other materials.

Fences: they surround the external borders of the holding. They can be made of barbed wire, nets, or built-up walls, etc.

Animals

Livestock in the holding: is the number of animals in the holding, regardless of ownership. Animals that are temporarily absent from communal pastures or on the move during the census should also be included.

Apiaries or beehives: the apiary consists of at least ten hives (wooden - plastic - clay). A hive means each wooden hive with movable frames and carrying certain sizes and consisting of one or more floors and is called (Langstroth hive).

Poultry: is domestic animals that produce white meat such as chicken, turkey, geese, quail, rabbits and ducks.

Productive age: It is the period from the first birth to the last birth in a year.

Pre-productive stage: It is from birth to the age of milking in days.

Productive stage: is the length of the milking period in days.

Lactation milk: the milk that is used to feed newborns.

Concentrated feed: the feed that uses raw materials (such as barley, corn, etc.), that is later manufactured into fodder with different labels.

Vaccinations: the doses given to animals and poultry for the purpose of preventing diseases.

Treatments: the doses given to animals and poultry for the purpose of treatment.

Farm or ranch holding: what is recorded in the registration lists at the Ministry of Municipality and Environment.

Land holding system

A holding: a holding owned by a holder according to official documents, and they have the right to dispose of it as owners dispose of their property.

Leased: a holding or pieces of holdings that the holder rents from others for a limited period of time in various forms and arrangements of lease, whether in exchange for a monetary amount or a certain percentage of the production, or both. The tenant holder assuming all the management and operation responsibilities of the holding during the census year.

Other: All holdings to which one of the previous definitions does not apply.

Total area of the holding: It is the sum of the areas of all the plots that make up the holding. Any land owned by the holder but leased to others should not be included in the total area of the holding. The holding area includes the farmyard or the ranch and

the land occupied by the buildings inside the holding. The total area of the holding should equal the total area of land under the various classes of use.

Irrigation system at the holding

They are the methods used to irrigate an area of the land according to the type of land use and the irrigated area, and according to the irrigation method and the area that is irrigated for each type of crop, and other types of water management practices, including:

Traditional irrigation (basins - lines - immersion): It is the use of streams and channels to irrigate basins and lines.

Sprinkler irrigation: It is a rotating method for adding water to crops or agricultural soil, through small open fielding's or nozzles that operate under pressure generated by pumps, and includes the following:

A. Vertical: (fixed, mobile, semi-mobile, mobile, big and small sprinklers.

B. Axial.

Drip Irrigation: is the method by which crops are irrigated by dripping water near the base of the plant with small diameter plastic tubes with drips at selected distances, which waters the crops at a slow speed.

Fountain irrigation (bubbler): is a method similar to the drip irrigation system because it is through localized irrigation, except that its disposal is greater and is usually used to irrigate trees.

Pivot Irrigation: is one of the modern irrigation methods. Its principle is based on a long tube that rotates from one end like a spindle, and its other end is connected to the water source, so it creates a circle with a radius along the length of the tube, therefore the field takes the form of a circle. This type of irrigation is used to irrigate field crops and fodder.

Funding sources

This refers to the entities that the holder resorted to to obtain funds to finance projects related to the holding, provided that these funds are for financing agricultural projects within the holding and not outside it, or for purposes other than agriculture. The main sources of financing are government funding (Qatar Development Bank), self-financing, the private sector, or other funding sources.

Water sources at the holding

Tubular Wells: They are wells dug automatically at different depths according to the nature of each Zone.

Open field wells: They are wells dug by hand in most cases, their depth is less than the depth of tubular wells in general, and they are characterized by wide open fielding's.

Artesian wells: They are wells from which water flows under natural pressure.

Desalinated water (government): It is the water transported by tanks or pipes and is suitable for irrigation.

Treated sewage: It is treated wastewater.

Use of improved fertilizers, seeds and seedlings

Fertilizers: Mineral or organic materials, natural or synthetic, that are added to the soil or irrigation water to provide plants with the necessary nutrients, and include:

Nitrogenous fertilizers: which are often known as urea fertilizer, and contain specific levels of nitrogen, whether in bulk or packed in sacks.

Compound fertilizers: fertilizers that contain the three main mineral elements (nitrogen, phosphate, and potassium) and may contain other mineral elements.

Other chemical fertilizers: which include any type of chemical fertilizer used other than what was previously mentioned, including what is known as green fertilizers (foliar - sulfur - humic -...etc.).

Organic fertilizers: These are the fertilizers that are added to the soil of crops in their raw forms, such as animal and fish waste, and others. Organic fertilizers are considered unmanufactured if they are used without undergoing industrial processes of any kind. If they undergo industrial processes, they are called manufactured organic fertilizers, and any other organic fertilizers (phosphate-compost).

Pesticides:

They include insecticides, fungicides, weeds, rodenticides, and various other types. Most of them are industrial chemicals that are produced in concentrated form and diluted before use with different materials such as water and kerosene. They are used to eliminate pests or mitigate their harmful effects on crops or agricultural animals.

Insecticides: used to eliminate insects, field mice, reptiles, rodents, and others.

Fungicides: used to eliminate fungal agricultural pests (plant diseases) that affect plants in the different stages of germination until the fruiting stage.

Other pesticides: including pesticides for spiders, weed, nematode and other pesticides.

Seeds and seedlings: These are the cases in which the holder uses seeds and seedlings via technical methods that are expected to produce high production and good quality of the product. Examples are hybrid seeds and grafted citrus seedlings.

Greenhouses

It refers to the facilities used in cultivating plants to protect them from unsuitable environmental conditions. Greenhouses differ in their forms and in the materials from which their structure is made and the covers that are used in them, and they may or may not be equipped with cooling devices. Greenhouses may be single or multiple or galleries.

Cooled greenhouses: They are greenhouses that are equipped with a desert cooling system, which consists of cardboard panels that are installed on one side of the greenhouse, and suction fans are on the opposite side. These houses are mostly used agriculturally throughout the year.

Non-cooled greenhouses: They are greenhouses that are not equipped with a cooling system and are usually used agriculturally in the winter seasons.

Plastic houses: They are houses that are covered with treated plastic sheets to protect against ultraviolet radiation.

Fiberglass houses: houses that are covered with panels made of corrugated fiberglass and treated against ultraviolet radiation.

Glass houses: houses that are covered with sheets of transparent glass.

Aluminum houses: houses that are covered with spaced strips of aluminum sheets to give a different percentage of shading.

Hydroponics houses: They are protected houses in which alternative agricultural environments are used for soil (artificial soil or water environment). They can be refrigerated or non-refrigerated houses or halls.

Agricultural halls: they are large greenhouses with large areas without partitions. They can be cooled, non-cooled or hydroponic. They are protected, i.e. they are covered with white or green netting, plastic or polycarbonate.

Other greenhouses: These are other forms such as low tunnels and houses that may be covered with shading nets and others.

Crops

Temporary (seasonal) crops: It includes all crops whose growth cycle is less than one year, and which must be re-seeded or planted to produce another crop after harvest. Such as cereal crops, vegetables and some forage crops.

Winter crops: They are the crops of cereals, vegetables and fodder that are grown during the winter season and whose production cycle is less than a year, whether they are planted in open field fields or under permanent crops such as fruit trees.

Summer crops: They are the crops of cereals, vegetables and fodder that are grown during the summer season and whose production cycle is less than a year, whether they are planted in open field fields or under permanent crops such as fruit trees.

Perennial fodder crops: They are the crops intended for animal fodder, whose cycle lasts more than three years and may exceed five years, such as alfalfa (Jet) and Rhodes weed.

Perennial crops such as palm trees and fruits: These include palm trees, citrus fruits, grapes, stone fruits, fig trees, olive trees, almonds and other fruit trees. Most trees and sustainable crops become productive (bearing fruits) when they reach a certain age. Trees that have reached the age of production (bearing fruits) should be included in these crops even if they did not bear fruit or produce in the year of the survey due to climatic conditions or any other reason. They should also be Old trees are excluded from productive trees.

Wooden trees / windbreaks: These are trees that are planted as windbreaks or for decoration, for example Kenya, Casuarina, Gum Arabic trea, Ficus and Washingtonia.

Cultivation method

Monoculture: It is the case in which the crop is grown alone without being loaded or interfering with another crop.

Intercropping: It is the case in which a crop is cultivated in all or part of a land planted with another crop, such as onions or carrots, loaded on a main crop such as tomatoes or alfalfa among palm trees.

Successive cultivation: It is the case in which a temporary (seasonal) crop is cultivated in all or part of a land previously sown with another temporary crop in the same agricultural year, as is the case for some summer temporary crops.

Regular cultivation: the one in which trees are planted with known dimensions.

Irregular cultivation: the one in which cultivation is carried out in a random manner.
Production sale site: It is the site where the holding's products are marketed during the agricultural year. If the sale takes place within the holding itself, this is called selling at the "farm door." The production can be sold in the central market, Mahaseel Company, or the marketing programs of the Ministry of Municipality. (Premium, Qatar Farms, yards) or others such as: contracting with companies and government agencies.

Tables Appendices

Table III-1:Age and sex composition of Camels' herd in acive animals' holdings by holding's type

Holding type	Females				Males				Total	
	Adult		New born and weaned		Adult		New born and weaned			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	**No.**	**(%)**
Holding in compound	3,566	4.3	480	3.5	379	2.7	384	4.7	**4,809**	**4.0**
Roving	44,816	53.5	6,254	46.0	2,982	21.3	3,879	47.8	**57,931**	**48.5**
Outside farms' planning	3,653	4.4	601	4.4	352	2.5	344	4.2	**4,950**	**4.1**
Outside rural house	2,873	3.4	412	3.0	255	1.8	240	3.0	**3,780**	**3.2**
Al-race	9,345	11.1	2,037	15.0	8,344	59.5	1,423	17.5	**21,149**	**17.7**
Al-Nakhsh	13,602	16.2	2,884	21.2	893	6.4	1,540	19.0	**18,919**	**15.8**
Integrated farm	5,980	7.1	923	6.8	810	5.8	309	3.8	**8,022**	**6.7**
Total	**83,835**	**100.0**	**13,591**	**100.0**	**14,015**	**100.0**	**8,119**	**100.0**	**119,560**	**100.0**

Table III-2:Age and sex composition of Cattle herd in active animals' holdings by holding's type

Holding type	Females				Males				Total	
	Adult		New born and weaned		Adult		New born and weaned			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	1,958	6.6	358	2.5	502	14.9	333	9.2	**3,151**	**6.2**
Roving holding	862	2.9	117	0.8	135	4.0	105	2.9	**1,219**	**2.4**
Holding outside farms' planning	449	1.5	105	0.7	80	2.4	86	2.4	**720**	**1.4**
Outside rural house	671	2.3	139	1.0	153	4.5	113	3.1	**1,076**	**2.1**
Al-race	3	0.0	0	0.0	15	0.4	0	0.0	**18**	**0.0**
Al-Nakhsh	55	0.2	4	0.0	1	0.0	9	0.2	**69**	**0.1**
Integrated farm	25,689	86.5	13,322	94.9	2,481	73.7	2,976	82.2	**44,468**	**87.7**
Total	**29,687**	**100.0**	**14,045**	**100.0**	**3,367**	**100.0**	**3,622**	**100.0**	**50,721**	**100.0**

Table III-3:Agee and sex composition of Goats' folck in active animals' holdings by holding's type

Holding type	Females				Males				Total	
	Adult		New born and weaned		Adult		New born and weaned			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	72,690	27.2	14,171	24.2	6,819	30.0	9,990	27.4	**103,670**	**26.9**
Roving holding	96,378	36.1	23,161	39.5	5,761	25.4	13,100	35.9	**138,400**	**36.0**
Holding outside farms' planning	13,582	5.1	3,732	6.4	3,234	14.2	2,223	6.1	**22,771**	**5.9**
Holding outside rural house	16,700	6.3	3,658	6.2	1,188	5.2	2,315	6.3	**23,861**	**6.2**
Al-race	950	0.4	213	0.4	82	0.4	129	0.4	**1,374**	**0.4**
Al-Nakhsh	11,901	4.5	3,737	6.4	878	3.9	2,492	6.8	**19,008**	**4.9**
Integrated farm	54,720	20.5	9,896	16.9	4,762	21.0	6,241	17.1	**75,619**	**19.7**
Total	**266,921**	**100.0**	**58,568**	**100.0**	**22,724**	**100.0**	**36,490**	**100.0**	**384,703**	**100.0**

Table III-4:Age and sex composition of Sheep folck in active animals' holdings by holding's type

Type of Holding	Females				Males				Total	
	Adult		New born and weaned		Adult		New born and weaned			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	148,500	22.1	19,868	17.8	16,432	25.6	15,228	20.3	**200,028**	**21.7**
Roving Holding	271,066	40.4	48,002	43.0	14,838	23.1	28,760	38.4	**362,666**	**39.4**
Holding outside farms' planning	41,233	6.1	8,035	7.2	8,093	12.6	4,774	6.4	**62,135**	**6.7**
Holding outside rural house	44,832	6.7	6,650	6.0	2,498	3.9	4,485	6.0	**58,465**	**6.3**
Al-Race	522	0.1	68	0.1	93	0.1	85	0.1	**768**	**0.1**
Al-Nakhsh	25,541	3.8	5,825	5.2	1,302	2.0	3,804	5.1	**36,472**	**4.0**
Integrated farm	138,941	20.7	23,111	20.7	21,005	32.7	17,788	23.7	**200,845**	**21.8**
Total	**670,635**	**100.0**	**111,559**	**100.0**	**64,261**	**100.0**	**74,924**	**100.0**	**921,379**	**100.0**

Table III-5:Numbers of Camels in active animals' holdings by breed and holding type

Holding type	Camels breed										Total	
	Magaheem		Omani		Sudanese		Pakistani		Crosses			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	342	1.9	3,975	5.7	127	1.8	10	2.1	355	1.5	**4,809**	**4.0**
Roving Holding	7,103	39.1	40,241	57.7	4,387	62.1	314	64.7	5,886	24.4	**57,931**	**48.5**
Holding outside farms' planning	347	1.9	3,664	5.3	340	4.8	52	10.7	547	2.3	**4,950**	**4.1**
Holding outside rural house	368	2.0	2,865	4.1	264	3.7	6	1.2	277	1.1	**3,780**	**3.2**
Al-Race	139	0.8	3,898	5.6	749	10.6	6	1.2	16,357	67.7	**21,149**	**17.7**
Al-Nakhsh	9,412	51.8	8,975	12.9	246	3.5	1	0.2	285	1.2	**18,919**	**15.8**
Integrated farm	445	2.5	6,083	8.7	950	13.5	96	19.8	448	1.9	**8,022**	**6.7**
Total	**18,156**	**100.0**	**69,701**	**100.0**	**7,063**	**100.0**	**485**	**100.0**	**24,155**	**100.0**	**119,560**	**100.0**

Table III-6:Numbers of Cattle in active animals' holdings by breed and holding's type

Holding type	Cattle breed										Total	
	Baladi		Hindi		Friesian		Crosses		Others			
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)
Holding in compound	2,506	15.6	66	14.1	338	1.1	175	20.0	66	5.5	**3,151**	**6.2**
Roving Holding	885	5.5	37	7.9	243	0.8	42	4.8	12	1.0	**1,219**	**2.4**
Holding outside farms' planning	458	2.9	16	3.4	86	0.3	41	4.7	119	9.9	**720**	**1.4**
Holding outside rural house	872	5.4	12	2.6	117	0.4	59	6.8	16	1.3	**1,076**	**2.1**
Al-Race	17	0.1	0	0.0	1	0.0	0	0.0	0	0.0	**18**	**0.0**
Al-Nakhsh	2	0.0	0	0.0	67	0.2	0	0.0	0	0.0	**69**	**0.1**
Integrated farm	11,302	70.5	338	72.1	31,283	97.3	556	63.7	989	82.3	**44,468**	**87.7**
Total	**16,042**	**100.0**	**469**	**100.0**	**32,135**	**100.0**	**873**	**100.0**	**1,202**	**100.0**	**50,721**	**100.0**

Table III-7:Numbers of Goats in active animals' holdings by breed and holding's type

Type of Holding	Goats breed										Total	
	Aaridi		Shami		Omani		Crosses		Others			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	73,428	28.3	10,070	20.9	15,775	27.1	1,499	21.4	2,898	24.6	**103,670**	**26.9**
Roving Holding	100,864	38.9	15,433	32.1	17,967	30.9	2,604	37.2	1,532	13.0	**138,400**	**36.0**
Holding outside farms' planning	13,543	5.2	2,309	4.8	3,462	5.9	374	5.3	3,083	26.2	**22,771**	**5.9**
Holding outside rural house	16,086	6.2	3,071	6.4	4,196	7.2	264	3.8	244	2.1	**23,861**	**6.2**
Al-Race	1,124	0.4	115	0.2	135	0.2	0	0.0	0	0.0	**1,374**	**0.4**
Al-Nakhsh	15,913	6.1	847	1.8	446	0.8	608	8.7	1,194	10.1	**19,008**	**4.9**
Integrated farm	38,656	14.9	16,270	33.8	16,205	27.9	1,656	23.6	2,832	24.0	**75,619**	**19.7**
Total	**259,614**	**100.0**	**48,115**	**100.0**	**58,186**	**100.0**	**7,005**	**100.0**	**11,783**	**100.0**	**384,703**	**100.0**

Table III-8:Numbers of Sheep in active animals' holding by breed and holdin's type

Holding type	Sheep breed												Total	
	Awassi		Arabic		Najdi		Barbar		Crosses		Others			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	157,626	30.0	22,600	7.1	4,838	23.5	11,384	33.3	602	14.2	2,978	15.1	**200,028**	**21.7**
Roving holding	191,249	36.4	146,296	46.2	6,710	32.6	8,765	25.7	686	16.2	8,960	45.4	**362,666**	**39.4**
Outside farms' planning	30,481	5.8	27,230	8.6	946	4.6	1,654	4.8	242	5.7	1,582	8.0	**62,135**	**6.7**
Outside rural house	30,558	5.8	24,511	7.7	1,143	5.6	1,080	3.2	321	7.6	852	4.3	**58,465**	**6.3**
Al-Race	200	0.0	568	0.2	0	0.0	0	0.0	0	0.0	0	0.0	**768**	**0.1**
Al-Nakhsh	30,965	5.9	4,523	1.4	604	2.9	184	0.5	0	0.0	196	1.0	**36,472**	**4.0**
Integrated farm	84,864	16.1	91,004	28.7	6,328	30.8	11,089	32.5	2,390	56.4	5,170	26.2	**200,845**	**21.8**
Total	**525,943**	**100.0**	**316,732**	**100.0**	**20,569**	**100.0**	**34,156**	**100.0**	**4,241**	**100.0**	**19,738**	**100.0**	**921,379**	**100.0**

Table III-9:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Doha municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding outside farms' planning	0	0.0	0	0.0	1	50.0	0	0.0	**1**	**50.0**
Integrated farm	0	0.0	0	0.0	1	50.0	0	0.0	**1**	**50.0**
Total	**0**	**0.0**	**0**	**0.0**	**2**	**100.0**	**0**	**0.0**	**2**	**100.0**

Table III-10:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Al Rayyan municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Roving Holding	9	18.4	154	28.3	8	32.0	46	13.3	**217**	**22.5**
Holding outside farms' planning	3	6.1	17	3.1	4	16.0	5	1.4	**29**	**3.0**
Holding outside rural house	1	2.0	18	3.3	3	12.0	6	1.7	**28**	**2.9**
Al-Nakhsh	34	69.4	324	59.4	8	32.0	285	82.1	**651**	**67.4**
Integrated farm	2	4.1	32	5.9	2	8.0	5	1.4	**41**	**4.2**
Total	**49**	**100.0**	**545**	**100.0**	**25**	**100.0**	**347**	**100.0**	**966**	**100.0**

Table III-11:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Umm Slal municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	18	41.9	183	57.4	6	75.0	13	32.5	**220**	**53.7**
Roving Holding	5	11.6	61	19.1	2	25.0	6	15.0	**74**	**18.0**
Holding outside farms' planning	3	7.0	10	3.1	0	0.0	2	5.0	**15**	**3.7**
Holding outside rural house	0	0.0	1	0.3	0	0.0	0	0.0	**1**	**0.2**
Integrated farm	17	39.5	64	20.1	0	0.0	19	47.5	**100**	**24.4**
Total	**43**	**100.0**	**319**	**100.0**	**8**	**100.0**	**40**	**100.0**	**410**	**100.0**

Table III-12:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Al Khor and Al Dhakhira municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	12	9.4	816	69.9	36	53.7	113	59.8	**977**	**63.0**
Roving Holding	27	21.1	102	8.7	4	6.0	8	4.2	**141**	**9.1**
Holding outside farms' planning	12	9.4	31	2.7	1	1.5	3	1.6	**47**	**3.0**
Holding outside rural house	33	25.8	94	8.0	18	26.9	21	11.1	**166**	**10.7**
Integrated farm	44	34.4	125	10.7	8	11.9	44	23.3	**221**	**14.2**
Total	**128**	**100.0**	**1,168**	**100.0**	**67**	**100.0**	**189**	**100.0**	**1,552**	**100.0**

Table III-13:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Al Wakrah municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	33	86.8	180	62.7	21	87.5	15	24.6	**249**	**60.7**
Roving Holding	2	5.3	83	28.9	0	0.0	34	55.7	**119**	**29.0**
Holding outside farms' planning	1	2.6	14	4.9	1	4.2	3	4.9	**19**	**4.6**
Integrated farm	2	5.3	10	3.5	2	8.3	9	14.8	**23**	**5.6**
Total	**38**	**100.0**	**287**	**100.0**	**24**	**100.0**	**61**	**100.0**	**410**	**100.0**

Table III-14:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Al Daayen municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Roving Holding	1	5.9	4	8.2	0	0.0	0	0.0	**5**	**5.8**
Holding outside rural house	6	35.3	21	42.9	0	0.0	9	45.0	**36**	**41.9**
Holding outside farms' planning	2	11.8	4	8.2	0	0.0	1	5.0	**7**	**8.1**
Integrated farm	8	47.1	20	40.8	0	0.0	10	50.0	**38**	**44.2**
Total	**17**	**100.0**	**49**	**100.0**	**0**	**0.0**	**20**	**100.0**	**86**	**100.0**

Table III-15:Numbers of animals' holdings by level of management of Goat and Sheep flocks in Al Shamal municipality

Type of holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	56	52.8	39	18.5	9	81.8	17	30.9	**121**	**31.6**
Roving holding	26	24.5	77	36.5	0	0.0	7	12.7	**110**	**28.7**
Outside rural house	11	10.4	23	10.9	0	0.0	7	12.7	**41**	**10.7**
Outside farms' planning	2	1.9	17	8.1	0	0.0	2	3.6	**21**	**5.5**
Integrated farm	11	10.4	55	26.1	2	18.2	22	40.0	**90**	**23.5**
Total	**106**	**100.0**	**211**	**100.0**	**11**	**100.0**	**55**	**100.0**	**383**	**100.0**

Table III-16:Numbers of anumal's holdings by level of management of Goat and Sheep flocks in Al sheehaniya municipality

Type of Holding	Level of management								Total	
	Outstanding		Average		Bad		N/A			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Holding in compound	268	53.3	901	52.3	84	50.0	273	21.7	**1,526**	**41.8**
Roving Holding	195	38.8	547	31.8	52	31.0	263	20.9	**1,057**	**28.9**
Holding outside rural house	13	2.6	125	7.3	9	5.4	35	2.8	**182**	**5.0**
Holding outside farms' planning	4	0.8	61	3.5	8	4.8	27	2.1	**100**	**2.7**
Al-Race	6	1.2	28	1.6	8	4.8	613	48.7	**655**	**17.9**
Integrated farm	17	3.4	60	3.5	7	4.2	49	3.9	**133**	**3.6**
Total	**503**	**100.0**	**1,722**	**100.0**	**168**	**100.0**	**1,260**	**100.0**	**3,653**	**100.0**