Animal and Plant Wealth and its Impact on the Economy of Mesopotamia

Samar Abbas Abdul Kareem

Assistant Lecturer, Department of Archeology, College of Arts, University of Baghdad
Email:Summer.abbas@coart.uobaghdad.edu.iq

Abstract

1- The first period of human life in prehistoric times was known as the period of food gathering economy, as it depended on gathering wild plants and hunting animals, and made simple tools and machines from stones and animal bones that were used in hunting, and used tree leaves and animal skins to make clothes. As for the second period, the Neolithic era, it was known as the period of food production economy when he learned agriculture and domesticated animals. Agriculture was initially described as meeting the need and was cultivated in small areas and in one season.

2- When he learned the life of stability and lived in permanent villages, the oldest of which is the village of Jarmo, many tools were found made of flint, stone vessels, spoons and pottery. In addition, the village contained permanent houses and clay ovens for making bread, fireplaces, basins, stoves and clay dolls.

3- Domesticating animals, especially goats, sheep and pigs, benefiting from their meat, cheese, skins and fat to make oils, and domesticating dogs.

4- The most important crops that he cultivated were wheat and barley, and later in other areas he cultivated lentils, flax and legumes.

5- In the Stone Age, he learned fertilization and artificial irrigation. He cultivated large areas and had a surplus in production, which prompted him to make large-sized stores to store the surplus, noting that the stores had existed since the era of Hassouna, but they were small. He also learned trade and the barter system and the discovery of metals. Specialization in work and division of labor appeared, and other crafts and professions appeared. The pottery wheel, spinning and weaving discs, and seals were invented.

6- Wool and hair of sheep and goats and some plants such as flax were used to make clothes using spinning discs.

7- Many pottery vessels of different sizes and shapes were found, and they contained drawings, decorations, engravings, and colors of great precision, some of which were made by hand and others with a pottery wheel. Tools and machines were made of copper.

8- Moving to the south and the emergence of large cities, carrying out irrigation projects, and the emergence of the first systems of government.

9- A change and development occurred in the human mind, benefiting from the natural environment and the wealth it contains that could serve him as a result of the development of social , cultural and economic life.

10- Plant cultivation and domestication were coupled with animal husbandry and domestication, as both complement each other in terms of benefit. Because of them, other crafts and professions emerged, including the manufacture of tools and machines, pottery and weaving. Trade also flourished as a result of an increase in the surplus and the increase in labor.

11- Learning how to extract oils and methods of obtaining them from plants and animals which was of great importance because it had multiple uses, especially in cooking, and the demand for it increased in trade.

12- Plant and animal wealth played an important role in its prosperity and economic recovery, as it represented the backbone of the economy of Mesopotamia.

13- Our information about animals and plants came from cuneiform texts and seals that show scenes of hunting animals, scenes of grazing sheep, scenes of ears of wheat and plants, and from murals on the walls of palaces, scenes of barns designated for raising animals, scenes of relief and three-dimensional sculptures that show domesticated domesticated animals, and scenes of hunting predatory animals.

Keywords: Economy, animal and plant wealth.

1. Introduction

It is known that man in prehistoric times settled in caves, including Shanidar Cave, Zarzi Cave, Hazarmard, Bali Kora and in exposed settlements, including the Karim Shahr and Malfaat sites and other sites. He depended in his life on hunting animals and gathering food. Some animal bones and stone tools were found that he used for hunting, but due to a change in the climate in the Middle Stone Age, it led to his moving to live in the plains and oases near water sources in order to be able to grow grains and herd animals. These were the beginnings of the emergence of agriculture. He made stone tools and machines such as sickles, pestles and mills. Since the tenth millennium BC, specifically in the Neolithic Age, man settled in permanent villages, the oldest of which is the village of Jarmo, where man turned to growing wheat and barley and producing food due to the abundance of water, the moderate climate, the fertility of the land and the life of stability. Around the fifth and third millennia BC, he moved to settle in the alluvial plain. (1)

When man inhabited permanent agricultural villages, he learned how to depend on himself in growing different types of crops. The first of which was wheat, barley, and oats, and the domestication of animals, including sheep, goats, pigs, and deer, and the domestication of dogs. Many bones of domesticated animals and remains of wild plants were found in the first villages. This stage is very important because it represents the economy of Mesopotamia. It is necessary to manufacture agricultural tools and machines that suit the life of stability. Many sharp tools used in agriculture and picking plant fruits were found, such as knives, sickles, pestles, and bones

of domesticated animals. This development and maturity that ancient man reached was the result of important religious, cultural, and social developments that resulted in the emergence of customs and traditions that organized the lives of societies and the emergence of social relations and village gatherings and the emergence of the idea of individual ownership. An increase in the number of people was noted. It can be said that man in the Stone Age exploited the natural environment for his benefit. He established large cities and carried out an irrigation system and drained marshes and swamps. This requires organizations and families that participate in collective work, the emergence of metals and other specializations, the division of labor, and other crafts and professions (2)

There was The abundance of agricultural production made them build warehouses to store the surplus. The warehouses were either small holes in the ground inside the houses or large jars to store the grains and prevent them from spoiling and rotting. Gradually, the warehouses became organized and larger in size were in the form of buildings or warehouses inside the palace and inside the temples. Clay, bricks, stone, and adobe were used in their work. (3) The oldest warehouses were in the era of Hassuna, as grains, clay jars, and small holes under the ground were used to store the grains. (4)

2. Chapter One: The first topic

Wild and Domesticated Plants

It must be said that there are environmental conditions, human factors, and natural factors that affected the emergence and development of agriculture. The geographical location, soil fertility, diverse topography of Mesopotamia, and moderate climate had an impact on the cultivation of some crops rather than others. Plant and animal wealth constituted an important source of raw materials and food for humans. It is a reflection of the environment and climate. The more moderate the climate is and the more water and natural environmental and life conditions are available, the more plants, grasses, and trees grow.

The northern regions (mountainous and undulating) occupied 20% of the total area of Iraq and enjoyed a cold and moderate climate, which is an essential element in determining the type of agricultural production in the region. The most important crops that were cultivated were wheat, barley, and oats. The reliance was primarily on winter rains and cultivation in one season, in addition to the growth of natural plants without human intervention, including thorny plants, alpine plants, grasses, oak forest trees, and shrubs.

In the southern regions (the alluvial plain), it occupied an area of 20%, characterized by arable soil, water sources and pastures for animals, but due to high temperatures and low rainfall, irrigation was relied upon in agriculture, and they worked on digging canals, streams and waterways to grow summer crops. The region faced the problem of salinity and floods, which were a major reason for the transfer of settlement from the south to the center. (5)

The most important seasonal plants in the region are wild barley, chamomile, shannan, sharaib, khabaz, fenugreek, shuwail, samaa, geranium.

Plants that tolerate drought, heat and low water are annual plants, thorny, reeds, papyrus, were used as firewood for ovens, animal feed, building huts, mats, and boats. As for perennial plants, palm trees, thorns, sidr, arfaj, shah, ard, athl, ghada, and qaysum. (6)

Interest in agricultural activity increased, especially in historical times. Kings paid great attention to agriculture and were keen to build dams, reservoirs, irrigation projects and fields with Large spaces (7)

Wild and domesticated animals

Domestication: is raising an animal inside the home and under the care of a human until it loses its wild characteristics and shows tame characteristics. One of the oldest animals that ancient man domesticated is the dog

Wild: are predatory animals that are wild and not domesticated and are identified by their bones, which are thicker, heavier and larger in size compared to domesticated animals. (8)

In the northern regions (the plain and the undulating), it is noted that there are large numbers of animals, unlike other regions, as a result of the environmental and climatic conditions that made them suitable for raising animals and grazing livestock.

Animals are of great importance in the economy of Mesopotamia. Archaeological excavations have shown the existence of many types of them, including wild ones such as lions, tigers, leopards, wolves, foxes, bears, wild cats, hares, zebras, sheep, pigs, in addition to a large number of domesticated animals such as dogs, goats, sheep, bulls, turtles, and frogs. However, due to drought and climate change, man moved to areas close to the plains and due to the scarcity of animals that he relied on for food, he turned to taming and domesticating animals. There was interest in raising animals throughout the ages, especially during the Third Ur Dynasty. "If the texts from the time of King Shulgi mention 350 thousand sheep and goats." (9)

In the southern regions (the alluvial plain), specifically in the marshes and swamps, there are many types of ducks, fish, buffaloes, birds, greenbacks, mollusks, helige, and brizgi. (10)

Through Excavations, it was discovered a large number of remains of animal bones such as sheep, goats, pigs and cows, some of which were used to make animal oils, their skins and fats, and their wool for clothing. Evidence is the discovery of wool spinning discs and weaving, and the domestication of dogs. In historical times, pens were built for them, and people were assigned to herd them, protect them from beasts, prevent them from being stolen, and take care of them to prevent their death and the spread of diseases, and to prevent their escape. The steps of domestication were initially to raise small animals inside the house, and after taming them, they were transferred to places designated for raising them, such as a pen or making small houses for them. The original home of domesticated animals in Mesopotamia can be traced back to the history of the emergence of agriculture and herding, starting from (northern Iraq), then spreading after that to different places. (11)

Section Two

Oil Manufacturing from Plants

The inhabitants of Mesopotamia obtained oil from its plant sources, including sesame oil, castor oil, and olive oil. They are considered important and desirable foodstuffs for the inhabitants of Mesopotamia until the present time. Vegetable oil was known by the Sumerian term ì-giŠ, which corresponds to the Akkadian term Šamanu. As for olive oil, it was mentioned in the texts of the city of (Abla) around 2500 BC. Sesame seeds are known to contain a high percentage of oils and are called by the Sumerian term ŠE-GIŠ-ì, which is equivalent to ŠamŠŠamu in Akkadian. Sesame and its oil are considered one of the most important plant sources of oils. The oldest mention of sesame dates back to the Akkadian era. Sesame oil is also distinguished by its good quality, which is known by the Sumerian term ì-giŠ, which is equivalent to the Akkadian term EIIU. The sesame plant may have been imported from the regions located west of the Euphrates or from Elam and was brought during wars and domesticated in Mesopotamia. Sesame is a herbaceous plant that resists drought and high temperatures and grows in relatively poor soil. The sesame plant and its seeds were called giŠ-ì, and the field in which sesame was grown was called ki-giŠ-ì, and the workers in sesame cultivation were called by the Sumerian term engar-giŠ-ì. (12)

The cuneiform texts tell us that those responsible for the process of pressing the oils and the method of extracting and obtaining them were female slaves. A salary was mentioned for the slave girls who pressed the oil and it was called by the Sumerian term (geme2-a-Šur) and its equivalent in the Akkadian language is the term Šaḫittu. The Sumerian term ì- (ia)-Šur-(ra) and its equivalent in the Akkadian language is aḫit ŠamniŠ was also used for those working in pressing the oil. (13)

To obtain sesame oil, there are two ways: the first is to roast the seeds, then pound them in mortars or crush them using stones (millstones), and then boil the grains. Hot water is added to it, as the water separates the oil and settles it on top because the density of the oil is higher than the density of water, so the oil floats on the surface of the water.

The sesame seeding period is between May and June, and the harvest season is not known in any specific month, but it may be between August and September, because the sesame seed growth period takes between 3-4 months. It is a summer plant or crop. As for the flax plant, the Sumerian term gu is given to it, and in the Akkadian language it is called kitu. It is a winter crop that has great benefit in the textile industry, and its growth period takes between 3-4 months, as the crops are ripe for harvest later between December and the second. Those working in flax cultivation were known by the term LÚ-GU OR ENGER-GU. The areas planted with flax are very small. (14)

Animal oils

Animal oils varied, and the most important of them were fish oil, donkey oil, cow fat, sheep oil, pig fat, ram kidney fat, intestinal fat, bull fat, sheep eye fat, bird fat. And deer bone fat The Sumerian term ì-UDU, which in Akkadian is ipu, refers to animal oil. Oils are extracted from animals by placing the fat on fire at high temperatures, known as (sali), until the fat drops

begin to fall. Animal fat collects around the skin and around the tissues surrounding the internal organs, such as the lungs, heart, and the fat of the head and tail meat in sheep. (15) Animal oils are important food sources for the people of Mesopotamia, the most important of which is lard, which is called by the Sumerian term ì-saḫ.

There are lists from Tell Harmal that mention the purchase of a thousand liters of lard, which is evidence of its high consumption. (16) There are different types of oils, some of which are distributed to workers, which is the normal type, and others are distributed to soldiers, which is of good quality. Oils were also used as expenses or income to pay wages, and oils are stored in jars, leather containers, or containers to prevent them from spoiling. (17)

Section Three

Vocabulary of animal names in the Sumerian and Akkadian languages

Akkadian	**Sumerian**	**meaning**	**Source**
Ettūtu		Spider	43:1
Raqqu		Turtle	45:9
Zuqaqipu	GlR-TAR	Scorpion	47:10
BaŠmu/uŠumgallu	UŠUMPGAL	Dragon	47:11
mūnū,ākilu	UŠU(NAM-MA)	Silkworm	47:11
kamāru	KA-MAR^{KU6}	Fish	49[2]
Qadû	URU-ḫUL-A-MUŠEN	Owl	57:38
ŝaḫû	ŚAḫ	Wild Boar	59
summatu ,summu	TU-MUŠEN	Pigeon	61:58
Lalikkû	^{KUS2}LI-LI-GI	Sparrow or bird?	61:59
Gamgammu	GA_3M-GA_3M-MUSEN	Bird	63:60
parru	^{Udu}BAR-GAL	Sheep, lamb	69:74
parratu	^{UDU}BAR-MUNUS	Ewe	69:74
Ṣabitu	MAŚ-EN-KAK	Gazelle	71:74
wūṢu	MA_2S	Kid	73:76
būlu	MA_2S-UDU/ANSE	Cattle, cattle	73:76
maŝdarû	MA_2S-DA-RI-A	Cattle	73:76
lillidu	MA_2S-GUB	Adult animal	73:76
lalû	MA_2S-TUR	Young kid	73:76
kizzu	MA_2S-ZU/ZI	Goat	73:76
būl ŝaqan	MA_2S-ANSE-^{u}GiR	Flocks	73:76
būl Ṣeri	MA_2S-ANSE-EDIN	Wild animals	73:76
ḫaṢilaru	KUN-GUR_4-(MUSEN)	Bird	73:77
iṢṢūru	MUŚEN	Sparrow	73:78
iṢṢurtu	^{mi}MUŚEN	Sparrow	73:78
iṢṢūr qadî	MUŠEN-URU-ḫUL-A^{MUŠen}	Owl	73:78
iṢṢūru sāmu	MUSEN SA_5	Red Bird	73:78
iṢṢūru ralbu	MUŚEN-GAL	Duck	73:78
iṢṢūr me	MUŚEN A	Water Bird	73:78
iṢṢūr appar	MUŚEN AMBAR	Swamp Bird	73:78
zakābu	U_5	Horse	$73:78_2$
sinūnu	SIMK^{U6}	Fish	75:79
sinuntu	SIM(MU)^{muSen}	Female Swallow	75:79
simmaḫu	SIM-MAḫ ^{MUSEN}	Bird	75:79
iṢṢūru	BUR_5	Bird	$75:79_2$

Erib turb' ti	BUR_5-SAḫAR-RA	Sand Locust	$75:79_2$
ŝurāmu	SA-A	Cat	87:104
muraŝŝû	SA(A)-RI	Wild Cat	87:104
enzu	UD_5(UZ)	Goat	$93:122_b$
neŝu	PIRIG$_3$	Lion	97:130
asu	AZ	Bear	97:131
nimru	NÌB	Cheetah	$97:131_a$
ibilu	AM-SI-KUR-RA	Camel	109:170
piru	AM-SI	Elephant	109:170
muṢa'irāmu'	BIL-ZA-ZA	Frog	111:172
Imeru	ANŠE	Donkey	119:208
Sisû	ANŠE-KUR-RA	Horse	119:208
Ibilu	ANŠE-A-AB-BA	Camels	119:208
Serremu	ANŠE-EDìN-NA	Zebra	119:208
Gammalu	ANŠE-GAM-MAL	Camel	119:208
Surrudu	ANSE-(E$_3$S)-BARA$_4$-LA$_2$	Saddle Donkey	119:208
Imeru bilti	ANŠE-GÚ	Saddle Donkey	119:208
Agalu	ANŠE-Ù(DUSÚ)	Saddle Donkey	119:208
Imeru laussi	ANŠE-GU-ZA	Saddle Donkey	119:208
Imikanu Atanu uritu	ANŠE-AMA-GAN ANŠE-MÍ/HÚB ^{MI}ANŠE-KUR-RA	Mare	119:208
puḫadu	SILA4	Lamb	129:252
Lillidu	SILA$_4$-GUB	Adult Sheep	129:252
Kulbabu	KISI$_7$	Ant	133:286
ṢarṢaru	SURUN$_4$	Cockroach	133:286
puḫalu	UTUA	Adult Bull	133:287
iŠid bukanni	ŠARIN	Worm	133:290
Alpu	GUD/GU$_4$	Bull	137_2:296
Miru	GU$_4$-A$_2$B	Cow	137_2:296
Biru	GU$_4$-NINDA$_2$	Calf	139:297
Kusarikku	GU$_4$-ALIM A-LIM	Bison Bull	139:297
Uŝumgallu	UŠUMGAL	Dragon	157:343
Selibu	^{MUL}KA$_5$-A	Fox	165:356
Kurkû	KUR-GI-MUŠEN	Chicken	169:366
Paspasu	BIBE (UZ-TUR-MUŠEN)	Duck	171:371
Paspastu	UZ-TUR-MUŠEN	Duck	171:371
niraḫu Ṣerru	MUŠ-TUR MUŠ	Snake	171:374
arḫu littu	Áb Áb -ḫá	Snake	191:420
Alim	Gu$_4$	Cow	193:421
Buru	^{Gu4} AMAR	Bison Bull	197:437
ḫuzal)at(u	AMAR-MAŝ-Dà	Bison Bull	197:437
Bur ŝizbi	AMAR-GA-KU$_5$	Bison Bull	197:437
Agalu	SI$_5$	Calf	203:455
Immeriu laḫru	GANAM$_5$ GANAM$_5$-NITA UDU-US$_5$	Animal Chick or Young Animal	217:493 223:537
Immeru immertu	UDU UDU-MUNUS	Little Deer	223:537

Immeru marû	UDU-NIGA$_2$	Weaned Calf	223:537
i.diŠi	^{U}BAR$_{12}$	Saddle Donkey	223:537
immeru ,šu ‘u	UDU-NITA$_2$	Sheep	223:537
Parru	UDU-BAR-GAL	Ewe	223:537
Enzu	UDU-UD$_5$	Ewe	223:537
Dušŝû	LU-LU	Sheep	223:537
Atudu	SeG$_9$	A young wild goat	229:551
Sapparu	SEG$_9$-BAR	A type of pig	229:551
Kulbabu	KISI$_6$	Ant	229:551
Uritu	^{MI}ANŠE-KUR-RA	A horse	229:554
Kalbatu kalbu	NIG UR-GI$_7$-RA ^{MORI}	A female dog	233:563 235:575
Barbaru	UR-BAR-RA	A dog	235:575
Mindinu	UR-GUG$_4$	A wolf	235:575
Dumamu	UR-GUG$_4$-KUD-DA	A young tiger	235:575
Nunu	KU$_6$	A young leopard	241:589
pĒŝ	ḫUMṢIRU	A fish	243:596

Labat, Rene, Dictionary of Cuneiform Signs, 6th ed., (Paris: 1999), translated by: Albert Abuna, Walid Al-Jader and Khaled Salem Ismail, reviewed and supervised by: Amer Suleiman, (Baghdad: 2004)

Vocabulary of plant names in Sumerian and Akkadian

Akkadian	**Sumerian**	**meaning**	**source**
ardadillu	^{U}AŠ.TáL.TáL	A type of plant	43:1
Qû	MUG	ribbon, thread (linen)	43:3
Urnû	^{U}BURU$_2$-DA	mint	47:11
Sammi nipŝi	Ú-TAR-MUŠ	plant	47:12
anḫullû	^{U}AN-ḫÚL-LA/LÚ	plant with magical use	49:13
paŝttu	^{U}KA-MUŠ-ì-KÙ-E	plant	49^2:13
kazallu aŝarmadu ^{šam}ŝakirû	^{U}KA-ZAL ^{Ú}GUR$_5$-UŠ ^{Ú}ŠAKIR	plant	49^2:13 57:46 57:46
subppu	ZÙ-LUM(-MA)	plant	49^2:13
erī$_4$-inu$_2$	RU-IGI	plant A type of drug	57:38
abukkatu	^{U}LI-DUR/TAR	date, date	61:59
inbu	GURUN	rice	67:69
a-nu-amilianu	^{U}NA	a type of plant	69:70
ṭabat emesalli	MUN-EME-SAL-LA/LIM	fruit	83:95
^{meš}dišpu	LàL	plant	89:109
nurmû	^{Giš}LàL-DAR-RA	delicious salt	89:109
Diŝip ŝadû	LàL-KUR-RA	honey	89:109
ḫaŝḫūru	^{giš}ḫaŝḫūru	pomegranate	103:146
armannu	^{giš}ḫaŝḫūru-KUR-RA	mountain honey	103:145
tināna	^{giš}ḫaŝḫūru- ^{giš}PEŠ	apple tree	103:146
kameŝŝaru	^{giš}ḫaŝḫūru-GIŠ-DA	apricot	103:146
----------	^{giš}ḫaŝḫūru-ḫAd-A	a type of fig	103:146
ŝumu	SUM(ŠUM)	armout (quince)	107:164
ŝamaŝkillu	SUM-SIKIL-ŠAR	a type of apple	107:164
daku	GAZ	Grapes	115:192
karanu	GEŠTíN	Wine	121:210
Mu(n)ziqu	^{giš}GEŠTíN-ḫAd-A	Raisins	121:210

(karanu)Ṣahtu	^{gis} GEŠTíN-SUR-RA	Grape juice	121:210
Šikaru	KAŠ	Beer	123:214
ŝamnu	ì , Ià	Fat, oil	127:231
ŝamnu	ì - GIŠ	Vegetable oil	127:231
ŝizbu	GA	Milk	145:318
še	Še'u	Barley	169:367
qemu	ZíD,Zì-DA	Flour	221^{2}-536
mu	A	Water	237:579
akalu	NINDA	Bread	245:598

Labat, Rene,op.cit

WORKS CITED

Al-Dabbagh, Taqi, "The Agricultural Revolution and the First Villages," Civilization of Iraq, Vol. 1, (Baghdad: 1985), pp. 111-112.

Ghaith Habib Khalil, "Economic Life in Iraq in the Stage of Food Production and Agricultural Villages, Neolithic Age, Neolithic Age, Minerals," Journal of Historical and Civilizational Studies, Tikrit University, College of Arts, Department of History, pp. 57-58. See also: Amer Suleiman, Iraq in Ancient History, Part 1, (Mosul, 1992), pp. 90-93. See also: Harry Sacks, The Greatness of Babylon, translated and annotated by: Amer Suleiman, 1st ed., (Mosul: 1979), pp. 30-31.

Hussein Ahmed Salman, Storehouses in Ancient Iraq until the End of the Old Babylonian Era, Unpublished Master's Thesis, University of Baghdad, College of Arts, Department of Archaeology, (Baghdad: 1982)

Adel Faeq Rashid, Transitional Periods and Prehistoric Sites, Master's Thesis, University of Baghdad, College of Arts, Department of Archaeology, (Baghdad: 2003), p. 19.

Al-Dabbagh, Taqi, op.cit , p. 116

Al-Najm, Hussein Yousef Hazem, The Economy of Agricultural Villages during the Neolithic and Mineral Ages in Iraq, PhD Thesis, University of Mosul, College of Arts, Department of History, (Mosul: 2006), p. 25

Taha Baqir, Introduction to the History of Ancient Civilizations, Vol. 1, (Beirut: 2009)

Al-Dabbagh, Taqi, op.cit , p. 116

Al-Sufi, Shada Bashar Hussein Muhammad, Tanning and Leather Industry in Mesopotamia, Master's Thesis, University of Mosul, College of Arts, Department of Archaeology, (Mosul: 2004), p. 13: Also see: Al-Jader, The Child of the Leather Industry in Mesopotamia, Sumer Magazine, (Baghdad: 1971), Vol. 27, p. 305

Al-Najm, Hussein Yousef Hazem, The Economy of Agricultural Villages during the Neolithic and Mineral Ages In Iraq, PhD thesis, University of Mosul, College of Arts, Department of History, (Mosul: 2006), p. 27

Al-Dabbagh, Taqi, "The Agricultural Revolution and the First Villages" Civilization of Iraq, Vol. 1, (Baghdad: 1985), pp. 114-115

Al-Mutawali, Nawala, Introduction to the Study of the Economic Life of the Third Ur State in Light of Published and Unpublished Cuneiform Documents, 1st ed., (Baghdad: 2007), p. 257

Ibid,p258

Ibid,p259

Al-Issawi, Hanan Abdul Hamza Baawi Salman, Domesticated Animals and Their Role in the Economy of the Ancient Akkadian Era in Light of Published and Unpublished Cuneiform Texts, Unpublished Master's Thesis, University of Baghdad, 2014, p. 147

Basil Ayad Saeed, Animal Wealth in Ancient Iraq, Master's Thesis, University of Mosul, College of Arts, Department of Antiquities, (Mosul: 2008), p. 63

Suhaila Majeed Ahmed, Food Industry in Ancient Iraqi Times, Master's Thesis, University of Mosul, College of Arts, Department of Antiquities, (Mosul: 1991), p. 72

Labat, Rene, Dictionary of Cuneiform Signs, 6th ed., (Paris: 1999), translated by: Albert Abuna, Walid Al-Jader and Khaled Salem Ismail, review and supervision, Amer Suleiman, (Baghdad: 2004)