

# Solutions or Alternatives to Protect Livestock, Especially Buffalo from the Risk of Drought in Basra Governorate

Canadian Journal of Agriculture and Crops

Vol. 2, No. 2, 84-89, 2017

e-ISSN: 2518-6655



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## ABSTRACT

Buffaloes in Iraq represent the most productive animal since its domestication in Mesopotamia about prehistoric era. Domestic water buffaloes are common in the marshes of southern Iraq. On Sunday the UN cultural agency, UNESCO, added the marshlands and the ancient Sumerian cities that once flourished among them to its list of sites. During the period of 1991 -2003, southern Iraqi marshes were ditched and drained by the previous Iraqi regime for political reasons. The destruction and drainage of the Iraqi marshes affect the wildlife of southern Iraq. The marshes today remain one of the poorest areas. The goals of this research were to provide needed information regarding the status of buffalo following reflooding of the Mesopotamian marshlands, as well as contribute solutions or alternatives to protect buffalo from the risk of drought.

**Keywords:** *Buffaloes, Drought, Marshlands, Solutions, Alternatives.*

**DOI:** 10.20448/803.2.2.84.89

**Citation |** Mudhar A. S. Abu Tabeeh; Ali Rasheed Maktoof; Hamed Abdul Majid Abdul Mohsen (2017). Solutions or Alternatives to Protect Livestock, Especially Buffalo from the Risk of Drought in Basra Governorate. Canadian Journal of Agriculture and Crops, 2(2): 84-89.

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**Funding:** This study received no specific financial support.

**Competing Interests:** The authors declare that they have no competing interests.

**History:** Received: 28 November 2017/ Revised: 12 December 2017/ Accepted: 18 December 2017/ Published: 22 December 2017

**Publisher:** Online Science Publishing

## 1. INTRODUCTION

Water Buffalo (*Bubalus bubalis*) are known to live in different habitats in Iraq including marshes, villages, and even some urban regions [1]. The marshes of southern Iraq are crucial ecosystems, which influence, and also are influenced by many natural forces and human activities. [2]. The values of the Marshes are numerous, including rich flora and fauna, livestock grazing fields, fish and other wildlife breeding places [3]. Little published research could be found into the numbers or environmental impacts of water buffalo in Iraq. Basra as a sample, Abu, et al. [4] surveyed the water buffalo in this region including Al Dear, Al Hartha, Abu Alkhasib, Shat Alarab, Al Qurna, Al Mdaina, Imam Sadiq, Imam Qaim, Al Faw, Al Nshwa, Al Zubair and in Basra center. Draining of portions of the marshes began in the 1950s and continued through the 1970s to reclaim land for agriculture and oil exploration. During the period of 1991 -2003, wide areas of reed beds and lakes of southern Iraqi marshes were ditched and drained by the previous Iraqi regime for political reasons. The destruction and drainage of the Iraqi marshes affect the wildlife of southern Iraq [5]. According to rare or decrease of the studies related with water buffaloes in Iraqi marshes, it's important that we focus on the study of the reality of raising buffalo in order to develop and maintain this great wealth by effective management from an economical prospective.

## 2. THE EFFECTS OF DRAINING MARSHLAND

The marshlands constitutes about 17% of the area of Iraq as the water covers about 8.3 million acres of Iraqi land of which about 3.2 million acres covered by the waters of the marshes [6]. The highest population density found in Mesopotamian Marshlands between three southern governorates (Basra, Thi-qar and Missan), respectively which represented the home tract of buffalo [7].

The marshland divided into three major areas, the Central Marshes lie between the Tigris and Euphrates, while the Hammar Marshes lie south of the Euphrates and the Hawizeh Marshes are bound east of the Tigris. Before the 2003 Invasion of Iraq, about 90% of the marshes had been drained [8]. The marshland landscape of southern Iraq was totally drained and <10% of the area remained as functioning marshland by the year 2000. The only remaining marsh of any size was the northern portion of Hor Al- Hawizeh, which straddles the border between Iraq and Iran. The other two marshes, Central and Hor Al-Hammar, were virtually destroyed by 2000. The remaining Hor Al-Hawizeh was only 35% of its size of 3076 km<sup>2</sup> by 2000 [5]. The connection between marshes and buffaloes began to re-establish itself with re-flooding of the marshland areas after the second Gulf War of 2003 [9].

## 3. CLASSIFICATION OF BUFFALO

Buffalo belong to the Bovidae family and there are two main species of buffalo: the Asiatic buffalo (*Bubalus bubalis*) and the African Buffalo (*Syncerus caffer*) [10]. The Asiatic water buffalo can be divided into two subspecies: the river buffalo and the swamp buffalo. The exact phylogenetic relationship between swamp and river buffalo is still in question [11]. River buffaloes (*B. bubalis bubalis*) are generally large in size, mostly with curled horns, prefer to enter clear water, have 50 chromosomes. They are primarily used for milk production and, mainly found in India, Pakistan and some of the west Asian countries. Swamp buffaloes (*B. bubalis carabanesis*) are mostly stocky animals with marshy land habitats and have 48 chromosomes. The most updated Microsatellites markers Iraqi study showed that our buffaloes were originated in Iraq, not imported from India [7].

#### 4. CHARACTERISTICS OF RIVER BUFFALO

Buffalos are large in size reaching to 800 kg. The horns are curved and the animal's age can be determined from the size of the horn [12]. The body length is about 115.2-128 cm and the chest girth is 207.2- 223.8 cm. Furthermore, water buffalo are black or gray in color, with white irregularly shaped spots that are sometimes present on the chest, legs or tail [1]. Gestation lasts from 281-334 days, but most reports give a range between 300 and 320 days [13]. The ideal habitats for water buffalo are floodplain environments with a mixture of abundant grasses and available water bodies. Access to water is critical for thermoregulation and often limits the ability of buffalo to seek fresher pastures [14]. Buffalo have a relatively low number of sweat glands per unit area of skin and are highly susceptible to overheating [15]. The buffalo stay in the marshes approximately 10-12 hours and return home each night. Milk production varies depending on the type of nutrition. Milk yield is about 4 - 5 liters when nutrition is only reed, but reaches up to 15 liters if the nutrition is of reed and concentrated foods (Corn, wheat, bran, and other grains) [16].

#### 5. THE DISTRIBUTION OF BUFFALO

Buffaloes in Iraq has been neglected for along times and affected by many factors that lead to severe decline in population and production [17]. According to [Alsaedy \[18\]](#) the population of buffalos in Basra governorate between 1981, 2001 and 2006 is approximately 19.1%, 12% and 11.9 respectively of buffaloes in Iraq. The population, and distribution of buffalo among the districts of Basra were reported by [Abu, et al. \[4\]](#) as shown in Tables (1):

**Table-1.** The number of buffalos according to the geographical area of each veterinary clinic in Basra governorate from 2012 to 2016

The year	Basra center	Al Dear	Al Hartha	Abu Alkhasib	Shat Alarab	Al Qurna	Al Mdaina	Imam Sadiq	Imam Qaim	Al Zubair	Al Faw	Al
2012	825	6401	5754	1339	3296	4511	6009	6971	5970	1144	1805	-
2013	239	4769	5429	1000	2609	3905	8795	5480	5315	518	135	-
2014	433	5881	7989	1908	4371	6319	7079	1072	5347	988	170	-
2015	-	4960	4057	1550	2705	6663	5885	1123	4409	937	250	-
2016	1177	5854	6857	2070	4265	10219	6514	1521	6918	979	465	52

Source: [Abu, et al. \[4\]](#)

#### 6. DAIRY PRODUCTS

Water buffalo milk presents physicochemical features different from that of other ruminant species, such as a higher content of fatty acids and proteins [19]. The physical and chemical parameters of swamp and river type water buffalo milk differ [20]. Water buffalo milk contains higher levels of total solids, crude protein, fat, calcium, and phosphorus, and slightly higher content of lactose compared with those of cow milk. The high level of total solids makes water buffalo milk ideal for processing into value-added dairy products such as cheese. The conjugated linoleic acid (CLA) content in milk ranged from 4.4 mg/g fat in September to 7.6 mg/g fat in June. Seasons and genetics may play a role in variation of CLA level and changes in gross composition of the water buffalo milk [21].

#### 7. THE MAIN DISEASES

Generally *Bubalus bubalis* is a healthy animal, in spite of a natural habitat consisting of hot and humid regions that are very favorable to microorganism and parasite proliferation. The water buffalo is susceptible to most diseases and parasites that afflict cattle, although the effects of disease on the buffalo and its productivity are sometimes less evident. The most important diseases recorded in Basra governorate that affect buffalo as referred by [Abu, et al. \[4\]](#) are shown in Table (2).

**Table- 2.** The most important diseases of buffalos in Basra governorate from 2011 to 2016

The disease	2011	2012	2013	2014	2015	2016
Foot and Mouth Disease	134	52	1	0	0	0
Brucellosis	0	0	0	0	5	0
Hemorrhagic Septicemia	10	9	1	0	0	0
Theileriosis	0	33	29	22	20	86
3 day sickness	0	45	39	0	1	23

Source: Abu, et al. [4]

## 8. THE PROBLEMS

- a. Water is the most essential of all nutrients required by animals. Buffalo are generally considered to be highly resistant to the effects of heat and drought. Increased salinity in water due to drought of marsh and lack of rainfall have a significant impact on productive performance of buffalo and it causes nervous signs as well as blindness. Certain minerals like sodium chloride along with microbial contamination and many organic compounds in water are known to affect the health of both humans and animals.
- b. Although Iraq has been successful in eradicating of some diseases, buffaloes in Iraq has been neglected for along times, effected by many diseases and faced many factors that lead to sever decline in population and production as shown in Table (2).
- c. The marshes have partially recovered but drought along with upstream dam construction and operation in Turkey, Syria and Iran have hindered the process.
- d. Up to 10% of the total population of buffalo were being culled annually by humans with little appreciable impact on population increase according to Petty, et al. [14]. The slaughtered buffalo includes male buffalo and calves, buffaloes that suffer from productive or reproductive problems, aged animals, or with chronic symptoms, or because of the owner need, thus he will sell the animal for the purpose of slaughter as recorded by Abu, et al. [4] for the years from 2012 to 2016 which were (5700, 4692, 4256, 3840 and 3032 respectively).
- e. Previous conditions that prevailed in Iraq according to resulted in heavy wave of buffalo slaughter due to high cost of buffalo raising and expensive meat price in the market therefore buffalo breeders (Madan) switching partially or totally to dairy cattle husbandry and started work on easy jobs with better income.
- f. Vaccination is a vital component of both control and prevention, and the use of proper vaccines is always recommended for potential control of disease . A Part of the vaccination program implemented through preventive vaccination campaigns which faced many difficulties and problems including abstinence from vaccination.
- g. The potential for developing new economic opportunities based on water buffalo husbandry could have a great impact on marshland communities. The local population needs assistance in developing this potential in a variety of ways.

## 9. SOLUTIONS OR ALTERNATIVES

- a. The state should prepare plans to accelerate the return of the marshes to its previous time and agreement with the regional neighbors to provide Iraq with a full water quota for the purpose of preserving the environment of the marshes and thus revive the buffalo breeding and protection from drought
- b. Introduce the dry breeding system and provide the breeders with a brush fixed by umbrella roofs made of plastic pipes .They are supplied with water from a water tank through a water pump and to benefit from the breeding systems used in the Republic of Egypt as a modern systems with good economic feasibility.

- c. Conducting a thorough census of the buffaloes and controlling the sale of Postnatal and heifer buffalo for the purpose of slaughter except in cases of forced condition.
- d. Providing of subsidized feeds and linking them to the level of production for the purpose of encouragement.
- e. Facilitating the establishment of projects in which milk is adopted as a basic material (dairy products) through investment or soft loans. The state should improve livestock, especially buffalo, thus will contribute significantly to support the national economy other than oil.
- f. Activating the media and veterinary - agricultural guidance towards the development of livestock, especially buffalo.
- g. Improving housing conditions and building regular sheds and good nutrition with government-supported feedstuffs.
- h. Improve the living conditions of breeders, establish drinking water plants, supply electricity to the villages of Marshlands, establish schools, health clinics and veterinary clinics.
- i. Preparation of a comprehensive plan by the Ministry of Education to eradicate illiteracy in rural villages (marshes).

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