

# Buffalo Newsletter



Number 28 – December 2013

**BULLETIN OF THE FAO-SCORENA INTER-REGIONAL COOPERATIVE RESEARCH NETWORK ON BUFFALO AND OF THE INTERNATIONAL BUFFALO FEDERATION – INCLUDES SHORT COMMUNICATIONS, RESEARCH PAPERS, TECHNICAL NOTES, ONGOING RESEARCHES**

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### Buffalo Newsletter - Number 28

December 2013

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## **INTERNATIONAL BUFFALO FEDERATION**

### **HISTORY**

The International Buffalo Federation (IBF) was created during the First World Buffalo Congress, that took place from 27 to 31 December 1985, in Cairo, Egypt.

The initiators were the eminent scientists Professor Dr. M. R. Shalash, President of the Egyptian Veterinarian Buffalo Association and the American scientist Professor W. Cripe from the University of Florida, Gainesville.

Participants at this Congress also approved the organizational structure of the International Buffalo Federation and elected its managing body - the IBF Standing Committee.

The distinguished buffalo expert Dr. W. Ross Cockrill (England) was elected as Honorary President.

Professor Dr. M.R. Shalash was elected as President with three Vice-presidents and fourteen members of the Standing Committee, including scientists and experts from Australia, Brazil, Bulgaria, India, Italy, China, Pakistan, USA, Singapore, Thailand, Trinidad and Philippines.

The activities of the IBF to date have been undertaken in accordance with the Statutes and Rules, developed and approved by the Standing Committee.

The Second World Buffalo Congress was held from 12 to 16 December 1988, in New Delhi,

India, under the Presidency of Dr. R.M. Acharya and with Professor V.D. Mudgal as Secretary-General.

The Third World Buffalo Congress was held from 13 to 17 May 1991, in Varna, Bulgaria, under the Presidency of Professor Dr. Tzeno Hinkovski and with Professor Dr. Aleko Alexiev as Secretary-General: Ten volumes of Proceedings were published in addition to a special report on the FAO Workshop on the Biotechnology of Reproduction, which was the first link between FAO and the IBF, and which would prove to be the foundation of the FAO Inter-Regional Cooperative Research Network on Buffalo.

The Fourth World Buffalo Congress was held from 27 to 30 June 1994, in Sao Paulo, Brazil, under the Presidency of Professor Manoel Osorio Luzardo de Almeida and with Joao Gaspar de Almeida as Secretary-General. Three volumes of Proceedings were published.

During this Congress, the Italian scientist Professor Giovanni de Franciscis was elected President of the IBF. President de Franciscis went on to organize the Eighth Standing Committee Meeting of the IBF in Rome on 2 April 1996, where the transfer of the Secretariat to the Istituto Sperimentale per la Zootecnia

(Animal Production Research Institute) in Monterotondo, Rome, was decided.

The Fifth World Buffalo Congress was held from 13 to 18 October 1997, in the Royal Palace in Caserta, Italy; under the Presidency of Professor Giovanni de Franciscis and with Professor Antonio Borghese acting as Scientific Secretary. For the first time each paper to be communicated to the Congress was submitted for revision to two referee scientists from the specific field of competence. 189 papers were published in the Proceedings, a book of 990 pages, that was distributed prior to the Congress and represented the State of the Art in buffalo sciences for many years.

During this Congress, the renowned Venezuelan buffalo breeder Mr. Pablo Moser Guera was elected the new President of the IBF. It was decided that the Sixth World Buffalo Congress would take place in Venezuela in the year 2000 and the Seventh World Buffalo Congress in the Philippines, changing Continent each time (every three years) and appointing a new president to organize each Congress.

The Sixth World Buffalo Congress was held in Maracaibo (Venezuela) from 21 to 23 May 2001 and resulted in the first electronic version of the Proceedings on CD. During the business meeting of the IBF, Professor Borghese reported on the previous Congress, that had realized a profit of US\$4 300, which had

subsequently been transferred to the next Congress, and suggested establishing closer relations with the FAO Buffalo Network. The Standing Committee agreed to establish the Secretariat in Rome at the Istituto Sperimentale per la Zootecnia and Professor Antonio Borghese was appointed as General Secretary to be assisted by two Executive Officers: Aleko Alexiev and Hugh Popenoe. The next meeting was to be organized in the Philippines with Libertado Cruz as President assisted by two Vice-Presidents: S.K. Ranjhan and Jesus Reggeti.

In 1992 the Asian Buffalo Association (ABA), under the IBF umbrella, was established with the Presidency of Dr. P.N. Bhat (India). The first Asian Buffalo Congress (ABC), organized by ABA, was held in Bangkok, Thailand on 1994, January 17-21; the second ABC was held in Makati, Philippines, on 1996, October 9-12; the third ABC was held in Kandy, Sri Lanka, on 2000, March 27-31; the 4<sup>th</sup> ABC was held in New Delhi, India, on 2003, February 25-28. There is an agreement between IBF and ABA to organize the respective congresses in different years.

An IBF Council Meeting took place at the Congress Palace in Rome on 30 August 2003, organized by the General Secretary, Professor Antonio Borghese. The President Libertado Cruz, M. Zava from Argentina, W. Vale and J.G. de Almeida from Brazil, L. Zicarelli and R.

Garofalo from Italy, H. Popenoe from USA, M. Larbier from FAO, A. Barkawi from Egypt, O. Sekerden from Turkey, Ruzbehan from Iran attended the meeting. The President Libertado Cruz thanked the organizer and recalled the Scientist Aleko Alexiev who had passed away. He then distributed the programme of the next Congress, to be held in Manila, from 20 to 23 October 2004. Gaspar de Almeida underlined the difficulties for Cuba to organize the next Congress following that to be held in Manila. Professor Borghese proposed the creation of a continuous link with the FAO Buffalo Network in order to locate researchers, exchange information, organize the congresses, and publish the Buffalo Newsletter with FAO and IBF sponsors and logos, distributing 1 200 copies free of charge worldwide and to promote TCP (Technical Cooperation Projects) in developing countries. In order to arrange for the legal Registration of the IBF in Rome and to create a website for the IBF, a contribution of US\$100 was suggested from each member.

The organization of the IBF during the period 2001 to 2004 was the following.

### **International Buffalo Federation**

Libertado Cruz, President (Philippines)  
Antonio Borghese, General Secretary (Italy)  
Hugh Popenoe, Executive Officer (USA)  
Luigi Zicarelli, Executive Officer (Italy)

### **Honorary Committee**

Pablo Moser G. (Venezuela)

Steve Bennet (USA)  
Giovanni de Franciscis (Italy)

### **Vice Presidents**

Jesus Reggeti, America (Venezuela)  
S. Ranjhan, Asia (India)  
Luigi Zicarelli, Europe (Italy)  
Barry Lemcke, (Australia)  
S.G. Hassan, Africa (Egypt)

### **Standing Committee**

**Brazil:** Joao Gaspar de Almeida, William Vale.  
**Argentina:** Marco Zava, Armando Rozenblum.  
**Colombia:** Ricardo Botero, Berdugo J. A. Gutierrez, Alfonso Bernal.  
**Venezuela:** Hector Scannone.  
**Italy:** Raffaele Garofalo.  
**Trinidad:** Leela Rastogi, Floyd Necles.  
**Cuba:** Alina Mitat.  
**USA:** Tom Olson.  
**Bulgaria:** T. Hinkovski, T. Peeva.  
**India:** Siran Uddin Qureshi.  
**Thailand:** C. Chantalakana, M. Kamonpatana.  
**Sri Lanka:** Oswin Perera, Abeygunawardena.  
**Vietnam:** Julio Ly, Zao.  
**China:** Yang Bing Zhuang, Xu Dianxin.  
**Philippines:** Patricio Faylon.  
**Pakistan:** R. Usmani.  
**England:** Robert Palmer.  
**Egypt:** A.H. Barkawi.  
**Germany:** Henzi Heneton.  
**Australia:** Barry Lemcke.  
**Turkey:** O. Sekerden.  
**Iran:** Y. Ruzbehan

The Seventh World Buffalo Congress took place in Manila, the Philippines, from 20 to 23 October 2004 and produced three volumes of Proceedings.

During the Congress the IBF Assembly Meeting took place at 19:00 hours on 21 October 2004 at the Makati Shangri-la Hotel in Manila.

The President of the IBF, Dr. Libertado C. Cruz opened the meeting, and thanked the delegates from sixteen countries.

The President recalled Professor Aleko Alexiev, who had been Director of the Buffalo Research Institute in Shumen, Bulgaria, and President of the Bulgarian Buffalo Breeders Association.

The President also remembered Professor Giovanni de Franciscis, Professor at Naples University (Italy), Faculty of Veterinary Medicine, who had founded the School of Buffalo Sciences in Italy and had been the first President of the Italian Buffalo Breeders Association; he had also been involved with the IBF since its establishment and had been elected President in Sao Paulo, Brazil, (1994) and organized the Fifth World Buffalo Congress in Caserta, Italy, from 13-16 October 1997. He had passed away a few months earlier.

Following this all the delegates from the sixteen countries introduced themselves: A. Borghese, General Secretary, L. Zicarelli, A. Coletta, F. Infascelli, G.M. Terzano, V. L. Barile, from Italy; S. Ranhjan and O.P. Dhanda from India; H. Popenoe and T. Olson, from the USA; M. Zava, from Argentina, I. Soliman from Egypt;

B. Lemcke, from Australia; T. Peeva and M. Alexieva, from Bulgaria; G. de Almeida, W. Vale, M. Almeida from Brazil; M. Eslami, from Iran; N. Ahmad, from Pakistan; L.C. Cruz, the President and A. del Barrio, from the Philippines; T. Seresinhe, from Sri Lanka; M. Wanapat, from Thailand; O. Sekerden, from Turkey; J. Reggeti, from Venezuela and Mai Van Sanh, from Vietnam.

#### Point 1. IBF Constitution.

The General Secretary of the IBF, Professor Antonio Borghese, submitted, for confirmation by the Assembly, the Legal Act of the IBF Constitution, registered in Monterotondo, Rome, on 11 October 2004, by the legal notary Dr. Francesco Di Pietro together with Professor A. Borghese, avv Raffaele Garofalo, Professor Luigi Zicarelli, Dr. Giuseppina Maria Terzano and Dr. Vittoria Lucia Barile; the legal address is the same as that of the General Secretariat: Istituto Sperimentale per la Zootecnia, Via Salaria 31, 00015 Monterotondo, Rome, Italy. The Constitution and By-laws are the same as those approved in Caserta on 16 October 1997, with the formal modifications proposed by President L. Cruz, and published in the Buffalo Newsletter, Number 20, dated September 2004, printed in 1 200 copies and distributed worldwide. The organization contained in the Legal Act is the same as that approved in Maracaibo, Venezuela from 21 to 23

May 2001, and published in the same issue of the Buffalo Newsletter.

The IBF subscription is set at a minimum of US\$100, for the years 2004 to 2007, for the functionality of the IBF, there was a need for a Secretariat office, an economic foundation, but specifically a real act of adhesion to the IBF by members. Many participants agreed with the General Secretary's position.

#### Point 2. Appreciations.

Many participants expressed their appreciation for the reformatted IBF Constitution, as proposed by the President Libertado C. Cruz, and published in the Buffalo Newsletter, and congratulated the President on the excellent Congress organized in the Philippines, which had been an important success for the scientific community and for the buffalo breeders in the world.

#### Point 3. Next congress and President.

With regard to the next World Buffalo Congress in 2007, many people expressed their views (Cruz, Ranjhan, Vale and Zava) and the past willingness of Cuba and China to organize the Congress was reported. However, this proposed readiness was not confirmed by the presence of the respective representatives at the IBF Assembly, even if clearly invited. Professor Borghese proposed to change the Continent, as traditionally undertaken in the past: in 2001 the Congress had taken place in

America, this year in Asia, the next would be in Europe and therefore he proposed Professor Zicarelli as President. Professor Sekerden also proposed Turkey as host for the next Congress. All the delegates voted for Italy, appreciating the past experiences in organizing congresses and the link with FAO (Peeva, Dhanda, De Almeida, Vale, Zava, Reggeti) and the economic possibilities. Professor Zicarelli thanked the delegates for the honour and declared his satisfaction to take up the legacy of his teacher Giovanni de Franciscis, requesting the assistance of the Italian Breeders Association, of the Agricultural Ministry, of Professor Borghese's Institute and of the other Italian organizations.

#### Point 4. Actual IBF organization.

The actual organization of the IBF for the period 2004 to 2007 was voted as follows:

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The 5<sup>th</sup> Asia Buffalo Congress was organized on 18-22 April 2006 in Nanning (China) by Prof. Yang Bingzhuang, President of the Asian Buffalo Association (ABA) and Director of the Buffalo Research Institute in Nanning, Guangxi Autonomous Region.

Another Association was born from the IBF and under the umbrella of the FAO/SCORENA Buffalo Network in Monterotondo, Rome, Italy, on 2003, August 28: the Europe-America Scientific Association on Buffalo (EASBA), who organized the first Buffalo Symposium of Europe and the Americas in Capaccio-Paestum, Salerno, Italy, on 2005, October 12-15, with Prof. Luigi

Zicarelli as President. In this Symposium 5 invited lectures, 125 papers subdivided in 8 sessions were presented; 23 Italian Institutes and 16 American ones attended. The Second Buffalo Symposium on Europe-America (third Symposium on buffaloes of Americas) was held in Hotel Intercontinental in Medellin, Colombia on September 6-8, 2006, organized by the Colombia Buffalo Association (Ing. Ricardo Botero as President, Dr. Claudia Roldan de Sierra as Vice-President). 700 people took part coming from different countries (Venezuela, Brazil, Argentina, Cuba, Panama, Ecuador, Guatemala, Italy and, of course, Colombia. The Proceedings book, with different chapters (Buffalo in the world, management, nutrition, genetic, marketing, reproduction, health, pasture) in 263 pages, was given to the congress people. During the Symposium, on September 6, the IBF (International Buffalo Federation) meeting was held with the presence of many delegates of different countries. The President prof. Luigi Zicarelli showed a preliminary programme of the 8<sup>th</sup> World Buffalo Congress in Caserta, Italy and asked help and suggests to the colleagues. It was established that the 4<sup>th</sup> Symposium on buffaloes of Americas will be held in Venezuela on October 2008, as Argentina confirmed the candidature for the 9<sup>th</sup> World Buffalo Congress on 2010.

The 8<sup>th</sup> World Buffalo Congress (October 19-22, 2007) was held for the second time, after 1997, in Italy in Caserta and a complete state of art of the research in Buffalo species was produced in the 1450 pages of the Congress Proceedings, published by the fascinating Italian Journal of Animal Science, edited by Avenue Media, Milan – Bologna. During the Congress, that was very intensive and participated by more than 400 people coming from 39 Countries, the IBF meeting was held on October 21 at 5.00 p.m. by the President prof. Luigi Zicarelli. The following representative members from 19 Countries were present:

Argentina: Marco Zava, Armando Rozemblum, John Nelson

Australia: Barry Lemcke

Bangladesh: Samad Khan delegated by Omar Faruque

Brazil: Joao Ghaspar de Almeida, William G. Vale

Bulgaria: Tzonka Peeva

Colombia: Alfonso Bernal, J.A. Berdugo, Ricardo Botero

Egypt: Ibrahim Soliman

India: S. Ranjhan

Iran: Moossa Eslami, R. Pirmohammadi, Hamid Naderfard

Italy: R. Garofalo, A. Fagiolo, L. Iannuzzi, A. Coletta, G.M. Terzano; V.L. Barile, M.Mazzi, A. Casali, F. Infascelli

Pakistan: Talat Naseer Pasha, Nasir Hussain Shah

Philippines: Libertado C. Cruz

Thailand: Metha Wanapat

Turkey: Ozel Sekerden  
Trinidad: Lillawatti Rastogi, Floyd Necles  
U.K.: Bob Palmer  
USA.: Hugh Popenoe, Thomas Olson  
Venezuela: Jesus Reggeti, Hector Scannone  
Vietnam: Mai Van Sanh.

The General Secretary prof. Antonio Borghese distributed the list of the members, composed of 58 IBF representative members of 23 Countries, and informed that new members can be included in the list if proposed by a representative member, on condition that they work in buffalo field at high level, pay 100.00 \$ as fee for the period 2007-2010. The proposal then was accepted by the IBF Committee.

The following candidates were proposed, voted and included in the list:

Federico Romero for Argentina, Santosh Thomas and Aditya Misra for India, Safdan Ali Sial for Pakistan, Rangsun Parnpai for Thailand, Giuseppe Campanile for Italy.

The Secretary in Rome particularly promoted the relationships and links among the IBF members and the involved countries. The Secretary is the Editor of the Buffalo Newsletter, which is sent free of charge to 1600 addresses, people or Institutes interested to the developing of buffalo in the world. The Buffalo Newsletter shows the logos of FAO and of IBF, linking two important Institutions, but needs also financial support. People who participated to the Congress received n.22 of the Newsletter, edited in September 2007.

Finally the venue for the next World Buffalo Congress to be held in 2010 was discussed. 2010 was the turn of American continent. Argentina, that was candidate since 2004, has been presented his candidature to host the next congress by the representative member Marco Zava, who sent to the Secretary and distributed documents of interesting and engagement by following institutions: Asociacion Argentina de Criadores de Bufalos, Ministerio de la Producción de la Provincia de Formosa, Governator Provincia de Corrientes, Secreteria de Agricultura, Ganaderia, Pesca y Alimentos in Buenos Aires, Ministerio de Economia y Producción in Buenos Aires, Universidad Nacional de Nordeste and Universidad Nacional de Formosa.

Thailand also presented his candidature to host the Congress, by the representative member Rangsun Parnpai, in the name of Maneewan Kamonpatana, IBF founder member since 1985, who was enabled to participate for a cerebral haemorrhage, but wrote a letter about the will to host the congress. A booklet with the Organizing Committee and provisory programme was distributed.

The General Secretary expressed his pleasure for the two prestigious candidatures, underlining the growth of the IBF, not only for number of members and countries, but for the passion and enthusiasm devoted to the different activities.

There was a vivacious discussion on the candidatures, until Ragsun Parnpai, at the moment of vote, renounced to his candidature and decided to support the Argentina proposal, requiring support from all the countries to held the 10<sup>th</sup> World Buffalo Congress in 2013 in Thailand, to avoid the vote that could provoke a division between Asian and American people.

Therefore Argentina was elected with unanimous vote as the country organizing the 9<sup>th</sup> World Buffalo Congress in 2010.

Marco Zava proposed as IBF President Federico Romero, the President of the Argentina Buffalo Breeders Association.

Federico Romero was elected with unanimous vote as IBF President for the period 2007-2010.

Jesus Reggeti proposed Ricardo Botero as Vice-President for Americas in place of Marco Zava. Ricardo Botero was elected with unanimous vote as Vice-President for Americas.

The dates of other congresses were established to avoid the coincidence with the World Buffalo Congress: the third Buffalo Symposium of Europe and the Americas will be held in Venezuela on October 2008, the 6<sup>th</sup> Asian Buffalo Congress will be held in Lahore, Pakistan on October 27-30, 2009 by the President of Asian Buffalo Association, Talat Naseer Pasha.

### **6<sup>th</sup> Asian Buffalo Congress**

The inaugural session of the 6<sup>th</sup> Asian Buffalo Congress was opened by the honorable Chief Minister of Punjab Mian Muhammad Shahbaz Sharief on 27<sup>th</sup> October, 2009 in a prestigious gathering of over 1200 scientists, researchers, professionals, farmers and livestock industry representatives in Crystal halls of Hotel Pearl Continental Lahore. This prestigious Ceremony was organized by the University of Veterinary and Animal Sciences, Lahore in collaboration with Government of the Punjab and Asian Buffalo Association (ABA) with his President Prof. Talat Pasha.

### **9<sup>th</sup> World Buffalo Congress, Crowne Plaza Panamericano Hotel, Buenos Aires, April 25/28, 2010, by the International Buffalo Federation and the Argentine Buffaloes Breeders Association.**

An exceptional assistance was achieved: nearly 500 persons coming from 30 countries of the 5 continents (in alphabetic order): Argentina, Australia, Bangladesh, Bolivia, Brazil, Canada, China, Colombia, Costa Rica, Cuba, Egypt, France, Georgia, Germany, Guatemala, India, Iran, Iraq, Italy, Japan, Mozambique, Nepal, Pakistan, Panama, Paraguay, Philippines, Thailand, United States, Uruguay and Venezuela. 260 full papers were presented, including scientific, technical and productive presentations of excellent level. The facilities of

the Panamericano Hotel were spectacular. In 5 Plenary Sessions and in 11 Simultaneous Sessions were presented papers referred to: Situation of the Buffalo in Regions of the World, Production Systems, Buffaloes for Draught, Hide, Genetics, Social and Economic Development, Reproduction, Anatomy and Physiology, Nutrition and Feeding, Infectious and Parasitic Diseases, Meat Production, Milk Production, Economy and Markets, Managements in Dairy and Livestock Herds, Clinical and Animal Welfare. .

**International Buffalo Federation meeting  
April 26, 2010 Hotel Panamericano, Buenos  
Aires, Argentina, 6.30 p.m.**

The President Ing. Federico Romero welcomed all the IBF delegates and reported the different running activities about the 9<sup>th</sup> World Buffalo Congress (April 25-28), that was a success for number of participants, represented countries, quality of lectures and papers, that produced a Proceedings book of 1102 pages, published on Revista Veterinaria, Facultad de Ciencias Veterinaria, Universidad Nacional del Nordeste, Corrientes, Argentina, Vol.21, 2010, suppl.1, edited by Gustavo A. Crudeli, Exequiel M. Patino, José L. Konrad.

The General Secretary, prof. Antonio Borghese distributed the IBF list and the order of the meeting with the following points that were presented.

1. IBF activities The activities, as congresses and edited book in buffalo field in the period 2007-2010 were presented in an attached list.

2. Economic balance. The economic balance 2007-2010 with income and outcome were presented in an attached list.

The input is coming only from the delegates fees (100 US dollars paid every 3 years) and from FAO. The new IBF list will be composed accordingly with delegates who paid the fees. The output is coming particularly from the cost of the Buffalo Newsletter, very useful for changing information and sending news about buffaloes, but very expensive for printing and expedition cost.

Libertado Cruz proposed to ask high fees (1000 US dollars or more) to the official Buffalo Institutes and to the Companies working in buffalo, to increase the input. All the delegates approved, encouraging each other to find Institutes and Companies as IBF delegates.

3. Buffalo Newsletter. The Buffalo Newsletter edited by Antonio Borghese with FAO and IBF logos is a referent point of our activity: in 2009 was published the number 24, sent in 1600 copies, free of charge, to all the people working in buffalo field in many countries, but it is too expensive.

So the proposition to continue the Buffalo Newsletter production, but only in electronic version was voted by the delegates.

4. The Secretary Borghese showed the possibility to involve IBF in research projects: one proposition was presented to the Milano Expo 2015 named “The great farm” with the expo of draught animals (buffaloes too) in the world to produce work and food in the villages; the second project was presented by prof. Leopoldo Iannuzzi with the Italian Buffalo Breeders Association (ANASB) on the possibility to create a reference genome sequence and information on genetic variations of the buffalo species.

All the delegates were favourable to these developing activities of IBF.

5. The Secretary Borghese informed that FAO-SCORENA organization, that moved the headquarter of the FAO Regional Office for Europe and Central Asia from Rome to Budapest and that includes all the FAO Networks, as buffalo too, organized in Budapest on March 9-11, 2010 the Regional Workshop on the “Development of Thematic Knowledge Networks in the framework of “Coherence in Information for Agricultural Research for Development (CIARD), where prof. Borghese was invited as Coordinator of the Inter-Regional Cooperative Research Buffalo Network. The “agrowebcee.net” portal (Typo 3 CMS) was created as a basis for the management of knowledge.

Now in the website [www.agrowebcee.net](http://www.agrowebcee.net) in SCORENA Buffalo Network is possible to

find a lot of news about buffalo and about IBF (history, constitution and by-laws, activities), the book “Buffalo Production and Research” Edited by A. Borghese and FAO, Buffalo Newsletter and more.

6. Election of the President 2010-2013 and of the country of the next World Buffalo Congress. At this point prof. Borghese remembered as 3 years ago, during the IBF meeting in Caserta, Argentina by Marco Zava and Thailand by Rangsun Parnpai presented their candidatures to host the 9<sup>th</sup> World Buffalo Congress. At the moment of vote, Rangsun Parnpai renounced to his candidature and decided to support the Argentina proposal, requiring support from all the countries to held the 10<sup>th</sup> World Buffalo Congress in Thailand in 2013, to avoid the vote that could provoke a division between Asian and American delegates.

Therefore the Secretary proposed prof. Parnpai as the IBF President for the period 2010-2013.

The assembly elected Parnpai as President with unanimous vote.

The new President Parnpai thanked the delegates and said, as he was elected also President of the Asian Buffalo Association (ABA) during the last Asian Buffalo Congress in Lahore (October 29, 2009), that he will organize the 7<sup>th</sup> Asian Buffalo Congress together with the 10<sup>th</sup> World Buffalo Congress in Phuket, Thailand on May 2013. For the first

time in the history of IBF and ABA the two congresses will be unified.

This beautiful notice and the enthusiasm of the President Parnpai provoked a great applause and the congratulations of all the delegates

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The 5th Buffalo Symposium of Europe and Americas (6th Buffalo Symposium of Americas) was held in the National Hotel, La Habana, Cuba, on 2011, November 21-30, as reported in Buffalo Newsletter, n.27, December 2012.

The 10th World Buffalo Congress together with the 7th Asian Buffalo Congress was held in the Hilton Phuket Arcadia Resort, Phuket, Thailand, on 2013, May 6-8, as reported in the Buffalo Newsletter, n.28, December 2013.



World Buffalo Show in Suranaree University of Technology, Nakhon Ratchasima, Thailand, May 11, 2013: Thai Swamp bull.



Thai Swamp bull in the Buffalo Conservation and Development Center, Nongchak, Banbung, Chonburi, Thailand, May 9, 2013.



Thai Swamp buffaloes and crossbreeds in the Murrah Farm, Chachoengsao, Thailand, May 10, 2013.

## **ACTIVITY OF THE FAO-SCORENA INTER-REGIONAL COOPERATIVE RESEARCH NETWORK ON BUFFALO AND OF THE INTERNATIONAL BUFFALO FEDERATION DURING 2013**

The new book “BUFFALO LIVESTOCK AND PRODUCTS” was published in 2013.

The book is edited by Prof. Antonio Borghese and by the C.R.A., Council for Research in Agriculture, financed by the Ministry of Agriculture, Food and Forestry Policies. The book, in 511 pages and 270 colored figures, is the most complete work in the world about buffalo species: buffalo population, breeds and products are presented for each country in the world; other chapters regard nutrition and feeding, lactation curve and milk flow, milk quality and products, carcass, meat quality and products, welfare indicators and management, pathologies, cytogenetics, molecular genetics, reproductive technologies, artificial insemination, reproductive pathology, breeding and selection, by the best experts from C.R.A., C.N.R., and from Universities of Italy and Brazil.

Publication of a new book in IVIS (International Veterinary Information Service): Bubaline Theriogenology, edited by G.N. Purohit and Antonio Borghese.

Different chapters have been published on line and many other are going to be published.

Publication of the number 27 (December 2012) of the Buffalo Newsletter, the Bulletin of the FAO-SCORENA Inter-Regional Cooperative research Network on Buffalo and of the International Buffalo Federation. The newsletter is published too on the FAO website: [www.agrowebcee.net](http://www.agrowebcee.net)

Organization of the 10th World Buffalo Congress and the 7th Asian Buffalo Congress, May 6-8, 2013, Hilton Phuket Arcadia Resort, Phuket, Thailand.

On May 6, after the opening ceremony with the greetings and welcome by the Thailand

Authorities, Prof. Dr. Prasart Suebka, Rector of the Suranaree University of Technology, opened the congress with the title: Green Production against Global Warming. After the keynote lecture “World Buffalo Production: Challenges in meat, milk production and mitigation of methane emission” was presented by M. Wanapat (Thailand). The President of the International Buffalo Federation (IBF) and of the Asian Buffalo Association (ABA), and Chair of the Organizing Committee, Prof. Rangsun Parnpai welcomed all the people taking part to the congress (700 people from 44 countries) and introduced the lecture dedicated to Prof. Maneewan Kamompatana : by K.H. Lu (China) on “Sperm sexing in buffalo using flow cytometry”.

In the plenary session 1 (Buffalo for Food security and Economy) more lectures were presented: by Libertado C. Cruz (Philippines) on “Changing faces of Swamp Buffaloes in an industrializing Asia”, where Dr. Cruz showed as Swamp Buffaloes, as draft animals in rice field, in many Asian countries were gradually replaced by tractors and their number dramatically declined, as in Indonesia, Malaysia, Thailand, Philippines; but the strategy in Philippines and China was to create Buffalo Institutes, as the Guangxi Buffalo Research Institute in China and the Philippine Carabao Center in Philippines, where crossbreeding with River dairy purpose buffalo breeds was applied and backcrossing too for buffalo and milk development programs.

The lecture by Antonio Borghese (Italy) followed on “Buffalo Livestock and products in Europe”, where the same trend than in Asia was shown: countries with dramatic declining of buffalo population, because of mechanization replaced draught animals, and countries as Italy, where a dairy buffalo breed, the Mediterranean Italian, was selected, producing

until 5000 kg/ milk per lactation of 270 days, used to support the rich market of luxurious products, as the “mozzarella di bufala campana”, with a registered and protected mark in the European Union.

Marco Zava (Argentina) spoke about the Development of Buffalo Industry in America, while Kitti Koobkaew (Thailand) showed the Thailand Buffalo strategy Plan 2012-2016.

In the Plenary session 2 (Sustainable Buffalo Production) four lectures were presented: Prospects of nutrition and feeding for sustainable buffalo production, by Talat N. Pasha (Pakistan) , Brief introduction to the development of Chinese dairy buffalo industry, by Bing-Zhuang Yang (China), Buffalo under threat in Amazon Valley, Brazil, by William G. Vale (Brazil), Buffalo share in small farmer welfare under intensive agricultural system, by Ibrahim Soliman (Egypt).

In the Plenary session 3 (Biotechnological for Efficient Buffalo production) two lectures were presented: Biotechnological approaches for efficient buffalo production, by M.E. Babar (Pakistan), The buffalo genome and the application of genomics in animal management and improvement, by John Williams (Italy).

In the night the welcome dinner and the election of Miss World Buffalo was held.

On days May 7 and May 8, different Symposia were held: Buffalo Reproduction, Genetics and Breeding, Nutrition and Feeding, Buffalo Health, Buffalo Physiology, Production and Management, Socio-Economic and Sustainable Production, Buffalo Meat and Meat Products, Buffalo milk and Milk Products.

On May 7, at 15:30, the IBF Business meeting took place. The IBF General Secretary, Prof. Antonio Borghese presented the economic balance of the Federation, that was approved,

and the IBF activities during the period 2010-2012, as the publication of the reported books and of the Buffalo Newsletter n.25,26,27, the 9th World Buffalo Congress in Buenos Aires (Argentina, April 25-28, 2010), the 5th Buffalo Symposium for Europe and America in Havana (Cuba, November 22-23, 2011) , and last but not at least, the participation to different projects: in Hungary to create a new experimental dairy buffalo farm, in Pakistan to support the humanitarian project “Buffaloes in Punjab”, in Bangladesh with an agreement with Lal Ter Seed Limited Company. Finally the IBF President Rangsun Parnpai invited the IBF delegates to present their candidature for the new President for the period 2013-2016, who will organize the 11th World Buffalo Congress in 2016.

China, Turkey and Colombia presented their candidature. The IBF delegates voted, each one for each country, and Colombia was elected with Claudia Roldan as President. Turkey was elected for organize the Asian Buffalo Congress on 2015 with Prof. M. Ihsan Soysal as President of ABA.

From May 9 to 13 the Post-Congress tour was held visiting different farms: the Thai Buffalo Conservation and Development Center in Chonburi with beautiful Swamp bulls, the Murrah Farm in Chachoengsao for milk purposes, the Milking Buffalo Farm of the Department of Livestock Development in Buriram with Mehsana buffaloes and the World Buffalo show and competition in Suranaree University of Technology, where many champions, particularly from Thai Swamp, had been appreciated.

Prof. Antonio Borghese



Thai Murrah buffaloes in the Murrah Farm, Chachoengsao, Thailand, May 10,2013.



Mehsana buffaloes in the farm of the Department of Livestock Development, Buriram, Thailand, May 12, 2013.

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## Programa Preliminar (Versión No. 4)

### Lunes 05 de mayo 2014

08:00 AM	Registro y acreditación de participantes
09:00 AM	Inauguración oficial
10:00 AM	Coffee break
10:30 AM	Conferencia de apertura <b>Crianza de búfalo en el mundo: ¿Cómo se comporta el mercado?</b> Antonio Borghese, Italia
12:00 MD	Almuerzo
<b>BLOQUE I</b>	<b>Mercadeo y comercialización</b>
01:30 PM	Conferencia <b>Situación de la carne y leche de búfalo en América Latina</b> Otavio Bernárdez, Brasil
02:30 PM	Panel <b>Estrategias de promoción y mercadeo para la colocación de productos de búfalo</b>
03:30 PM	Coffee break
<b>BLOQUE II</b>	<b>Salud y reproducción</b>
04:00 PM	Conferencia <b>Aplicación de nuevas tecnologías y herramientas en la prevención de la brucelosis</b> José María Blasco, España
05:00 PM	Conferencia <b>Reproducción: trasplante de embriones y fertilización in-vitro</b> Huje Papenoe, Miami USA
06:00 PM	Coctel de bienvenida

### Martes 06 de mayo 2014

<b>BLOQUE III</b>	<b>Empresarialidad y sostenibilidad</b>
08:00 AM	Conferencia <b>Logrando la crianza CO2 Neutral: Experiencias de fincas ecoamigables</b> Raúl Botero, Colombia
09:00 AM	Conferencia <b>Pastoreo rotacional</b> Humberto Osorio, Brasil
10:00 AM	Coffee break
10:30 AM	Panel <b>Desafíos en el manejo de empresas familiares</b> Lucía Agüero, Costa Rica
12:00 MD	Almuerzo
01:30 PM	Conferencia <b>Tendencia mundial a compra y visita de fincas de pequeños productores</b> José Emilio Saudi, FAO
<b>BLOQUE IV</b>	<b>Legislación</b>
02:30 PM	Conferencia <b>Tratados de Libre Comercio (TLC)</b>
03:30 PM	Conferencia <b>La Trazabilidad en el búfalo y sus implicaciones internacionales</b> Sacha Téllez, IICA, Costa Rica
04:30 PM	Coffee break
05:00 PM	Conclusiones generales del VII Simposio de Búfalos de Europa y América
06:00 PM	Cena de clausura

### 07 - 09 de mayo 2014

Búfalo-Tour: Giras de campo

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## **INTERNATIONAL BUFFALO FEDERATION (IBF) TRAINING COURSE ON BUFFALO MANAGEMENT AND INDUSTRY**

### **IBF HISTORY**

The International Buffalo Federation (IBF) was founded during the First World Buffalo Congress ( WBF), Cairo, Egypt, 27 - 31 December 1985.

The Prof. M.R. Shalash, President of the Veterinary Association of Egypt for the Buffalo, was the First President of the IBF.

Afterwards every 3 years a new president was elected, who organized the World Buffalo Congress, every time changing the continent.

On 1991, during the VI World Buffalo Congress in Maracaibo (Venezuela), the General Secretariat of the IBF was established in the Istituto Sperimentale per la Zootecnia (Animal Production Research Institute), in Monterotondo, Roma, Italy, and Prof. Antonio Borghese was nominated General Secretary, considering also that he is the Coordinator of the FAO-ESCORENA Inter-Regional Cooperative Research Network.

On October 11, 2004, the International Buffalo Federation was constituted officially by legal act in Monterotondo, Roma, Italy, with the address of the Istituto Sperimentale per la Zootecnia (Animal Production Research Institute), Via Salaria 31, 00015 Monterotondo, Roma, Italy, represented by the General Secretary, Prof. Antonio Borghese.

The last World Buffalo Congress was held on 2013 in Phuket (Thailand), where 700 researchers and breeders took part, coming from 26 countries.

At now the IBF delegates belong to the 26 following countries: Argentina, Australia, Bangladesh, Brazil, Bulgaria, China, Colombia, Costa Rica, Cuba, Egypt, India, Iran, Iraq, Italy, Pakistan, Philippines, Sri Lanka, Thailand, Trinidad, Turkey, USA, Canada, Indonesia, Romania, Venezuela, Vietnam.

The IBF organizes meetings and congresses, promotes formation and information in buffalo field, publishes the “Buffalo

Newsletter”, stimulates and effects projects to develop buffalo livestock and products in the world, as happened in Turkey, Azerbaijan, Iran, Bangladesh, China, Pakistan, Indonesia.

### **PURPOSES OF THE INTERNAZIONAL TRAINING COURSE BY IBF**

Many Asian countries are rapidly changing the buffalo farming system. The buffalo, as draught animal in rise fields or as draft animal, is disappearing.

For example in China, where 23 million of buffaloes are living, the most of animals belong to the subspecies Swamp (48 chromosomes), and they are utilized in rice fields or as draft purposes. Few milk is produced, about 800 liters for lactation and sometimes meat, coming from calves or from old animals, more skin, bones and manure used as fuel.

Today in China artificial insemination (AI) is applied, utilizing semen coming from dairy purpose breeds, subspecies River (50 chromosomes), as Murrah from India, as Nili Ravi from Pakistan, as Mediterranean Italian. The crossbreds produce high quantity of milk, rich of animal proteins, extremely important for the nutrition of people, particularly children.

The management of this new reality is totally different according the number of dairy buffaloes in the farm, in comparison with the family buffalo for draught and with smallholders, regarding nutrition requirements, reproduction technologies, pathologies and sanitary control, manure treatments, milking techniques and so on, in each level of production: calf, heifer, dry buffalo, milking buffalo, young bull, bull.

The milk line and the meat line need particular attention, as the industry of processing milk and meat, as the food quality is link to the market price. Similar realities are in Bangladesh, Thailand, Indonesia, Iran, Philippines and Turkey, where the IA produced semi-intensive

farms with buffaloes at high milk production. Semi-intensive and intensive farms with dairy purpose buffaloes are too in Pakistan, India, Egypt, where is the most of buffalo population, in Iraq too, in many American countries (Brazil, Colombia, Argentina, Venezuela) where the only extensive system on pasture for meat purposes is changing to create possibilities for the semi-intensive system for milk, in many European countries (Romania, Bulgaria, Hungary, Germany), where new realities and new markets are going to be born. Therefore the IBF training course is applied to the international new realities in buffalo farming and industry.

### **TIME AND LOCATION OF THE IBF TRAINING COURSE**

The period will be from Monday 16 June 2014 to Friday 27 June 2014.

The location will be the Istituto di Istruzione Superiore “San Benedetto”, in Borgo Piave, Latina, 100 km from Rome, Italy, where the people will receive hospitality and meals.

Practical activities will be held in buffalo farms, in cheese and meat industries, in Research Institutes of C.R.A. (Council of Research in Agriculture) and of Animal Prophylaxis Research Institute. The center in Latina of that last Institute will coordinate the scientific and didactic activities with the General Secretariat of the IBF.

### **SUBJECTS OF THE IBF TRAINING COURSE**

1. Zootechnical and physiological characteristics of the buffalo.

The basis of the anatomy and of the physiology in the buffalo will be explained, focusing the many differences with bovine species.

2. Sanitary controls.

Infective pathologies, environmental diseases, the hygiene of the environment, the practical of the prophylaxis will be discussed until the identification of critical points in the productive

chain: calf, udder control, milking room, processing, quality of products.

3. Calf management.

In the intensive system the calf management has different solutions: single cage, multiple cages with milk replacers in bottles, or in pails, or distributed by computerized milking machines.

In semi-intensive systems the calves can be fed buffalo milk or milk replacers in covered cages or bovine milk directly from milking cows.

4. Heifer management.

The purpose of this stage is to reduce the non-productive period and relative cost, achieving puberty and pregnancy at early age (18-20 months) with 380-420 kg of body weight utilizing different systems: extensive on pasture, semi-intensive, intensive.

5. Nutrition and feeding.

This chapter must be divided according to the different phases: calf, heifer, bull, dry buffalo cow, milking buffalo, fattening young bull. For each phase the requirements of energy, protein, vitamins and minerals must be verified and the more convenient diets must be elaborated according to crops and forages available in different countries.

6. Reproduction technologies

All the reproduction technologies will be shown: oestrus detection, ovulation induction, artificial insemination (AI), MOET (Multiple Ovulation Embryo Transfer), IVEP (In Vitro Embryo Production), semen sexing technologies, cloning, application of ultrasonography.

7. Welfare and environment.

Farming systems (cages, cow shed, feeding lines and systems, manure treatments), welfare cure (lagoons, shower, litter) will be analyzed as evident correlation exist among animal welfare and sanity and production.

8. Milk production technologies.

Management, feeding, sanitary state, milking technologies are very linked to the quantity and quality of milk. In particular the milking room is a focal point, with large effects on the milk flow, that actually represents quality and economic aspects for milk market.

#### 9. Meat production technologies.

Meat production technologies will be developed, from weaning calves to intermediate phases, until fattening phase. The best diets will be shown, to realize mature young bulls at 400-440 kg on 15 months of age, with carcasses of good conformation (3+), moderate fattening (2+) in according with market requirements, tender and juicy meat, without bad smell.

#### 10. Milk and meat processing.

Milk line possibilities are the treatment for the production of milk for direct consumption, after

de-fattening and pasteurization or the processing for the cheese production: therefore the steps to produce mozzarella cheese and other cheeses will be shown, as for ricotta, butter, yogurt, ice cream and other products.

Meat line will be explained, as carcasses dissection and production of fresh cuts and of processed products as salami, bresaola, cacioccolato, sausages, meat boxes, etc.

### **PRACTICAL EXERCISES**

Visits and exercises in buffalo farms and in Institutes and in laboratories will be effected for practical deepening of chapters 1-7, in milking room for chapter 8, in fattening centers for chapter 9, at the Prophylaxis Institute for chapters 2 and 8, in cheese and meat industries for chapter 10.

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The group during the buffalo tour in Thailand, May 12, 2013.

## MESOPOTAMIAN BUFFALOES (THE ORIGIN)

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### Abstract

Ma"dan, local name of typical buffalo breeders all around Iraq well known by their traditional community and accent, mainly raising buffalo for famous dairy thick butter cream, widely consumed by Iraqis at breakfast, named (GAYMER). Recent karyotyping country survey revealed that our buffalo from Riverine type in most populations with large size have good potentials for milk production. There have been numerous archeological theories around world based on cylindrical seals and archeological materials in determining the origin of buffalo in Mesopotamia and Indus Valley. Developing in molecular genetics studies will appeared to throw light on these archeological evidences, there are three recent DNA basis studies, the most updated Microsatellites markers Iraqi study (1) showed that our buffaloes were originated in Iraq ,not imported from India, while the two other studies (2,3) support the theory that Mesopotamian buffaloes were brought to Iraq from the Indian subcontinent before thousands of years and their breeders (Ma"dan) from Marsh Arabs are descendant of the population Sumerians principals from the region. As we have archeological remains referring to buffalo raising in Mesopotamia before Christ confirming by recent Iraqi molecular studies, these updated data should leading us to register our buffalo as dependent breed in Riverine group under the name of Mesopotamian Buffalo, the home tract that had been raising , with achieving all tools to upgrading and protecting this old National Genetic resource all around the country. Phylogenic study should achieved for confirming when and where domestication of our buffalo was happened, still open question.

**Key words:** Origin, Mesopotamian buffaloes, Breeders (Ma"dan)

### Introduction

The marshlands in southern of Iraq historically comprised the largest wetland ecosystem of Western Eurasia. A rare aquatic landscape in the desert, they also provided habitat for important populations of wildlife, including endemic such as buffalo and endangered species (4). In historical times *Bubalus arnee*, the progenitor of Asian buffaloes ranged across South and south –East Asia, occurring from Mesopotamia to Indochina, but both Mesopotamia and Indus Valley cultures probably domesticated; this beast appear on seals and ivory materials at second millennium B.C. They have typical crescent horns of the wild swamp buffaloes (5).

Marsh Arabs (Buffalo breeders in Mesopotamian southern marshes) act as a living link between the present inhabitants of Iraq and the people of ancient Mesopotamia, ethnically the population composition has been heavily influenced by immigrations and intermarriages with Persians to the east and Arab Bedouins to the west.

The current marsh dwellers, marsh Arab society, whose livelihood has been entirely dependent on water buffalo live together in a symbiotic relationship one, should probably not think of the water buffalo in the marshes as fully domesticated (6). Buffalo breeders (Ma"dan), suppressed by many factors along five decades ago (three Gulf Wars, Systematic Marsh drainage, Economic Blockade), leading to decline in buffalo population and huge demographic changes, during that period many professionals and politicians were harboring hatred against buffaloes (7). 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, marsh refugees, who kept cattle and sheep while in Diaspora, often sell them and purchase water buffalo as soon as they resettle around the restored marshes (8).

Buffaloes mainly concentrated in the buffalo triangle between marshes, located at three southern governorates in Basra, The-Qar and Missan as well as dairy buffalo colonies around the capital and middle Euphrates region with less density in Northern part of country (map1 and table 1).

Archeological remains of cylindrical seals and ivory materials were discovered in Ur at Royal cemetery, especially the black marbled seal contains artifacts depicting Gilgamesh with water buffaloes in the rivers of the Tigris and Euphrates with typical crescent horn of Swamp buffalo(9) (Figure 1,cylinder Seal of Shar-Kali –Sharri ,King of Akkad ,Mesopotamia 2340-2100 B.C(Black Marled).(collection ,Louvre ,Paris ,France 326).

We have many theories based on these archeological remains and history as below:

1-Cockrill (10) theory, "In prehistoric times before writing, Wild buffaloes may have lived in Mesopotamia, while in the Pre-Christian centuries there may be movements of domestic animals from the Indus Valley".

2-Zeuner, (11) theory, "It is conceivable that the Indian buffalo existed wild in Mesopotamia, through there is no positive evidence to this effect, some workers such as Hilzheimer and Sliiper take this for granted and the former goes so far as to say that the buffalo was the first wild bovine to become extinct in Mesopotamia on the other hand, it is equally conceivable that domestic buffaloes had been introduced from India"

3-Sousa,(12) theory, "Mesopotamian buffaloes were brought to Iraq from Indian subcontinent in the eras of second millennium B.C, based on archeological seals (figure1)"

4- Encyclopedia of Egyptian Buffalo (13) mentioned in literature, not seen in artwork of the ancient Egyptians, Romans, or Greek to whom they were apparently unknown. It was not until about 600 A.D., that Arabs brought the animal from Mesopotamia and began moving it westward into the Near East, pilgrims and crusaders returning.

## **MOLECULAR GENETICS STUDIES**

Developing in molecular genetics studies will appear to throw light on these archeological evidences, there are three recent DNA basis studies as below:

### **IRAQI MICROSATELLITES GENETICS STUDY (1)**

Showed that, Iraqi buffalo originated in Iraq, not imported from India as Indian theory claimed, and there are three main clusters: the first one included Basra, Baghdad and Al-Qadisiyah, the second included Kirkuk and Missan while the third included Babylon and Mosul, with the highest polymorphism.

### **INDIAN MOLECULAR GENETICS STUDY (2)**

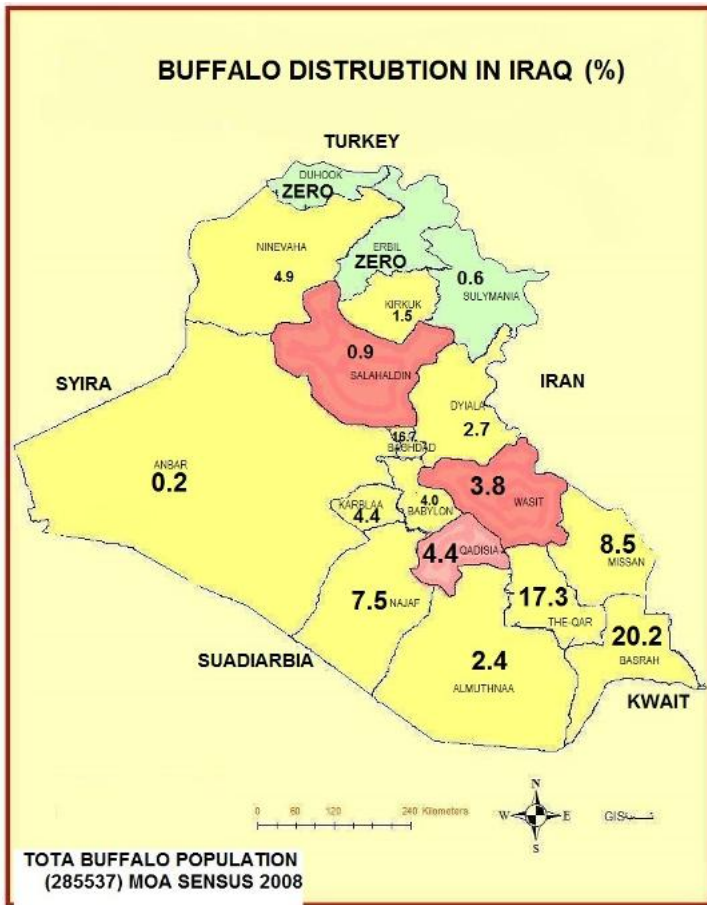
Showed that the data are consistent with the available archeological information in supporting the proposition that the river buffalo was likely to be domesticated in the western Region of the Indian subcontinent, in addition we found obtained time estimate of 6300 years for the expansion of one set of haplotypes of the Indian domestic buffalo.

### **ITALIAN MOLECULAR GENETIC STUDY, (3)**

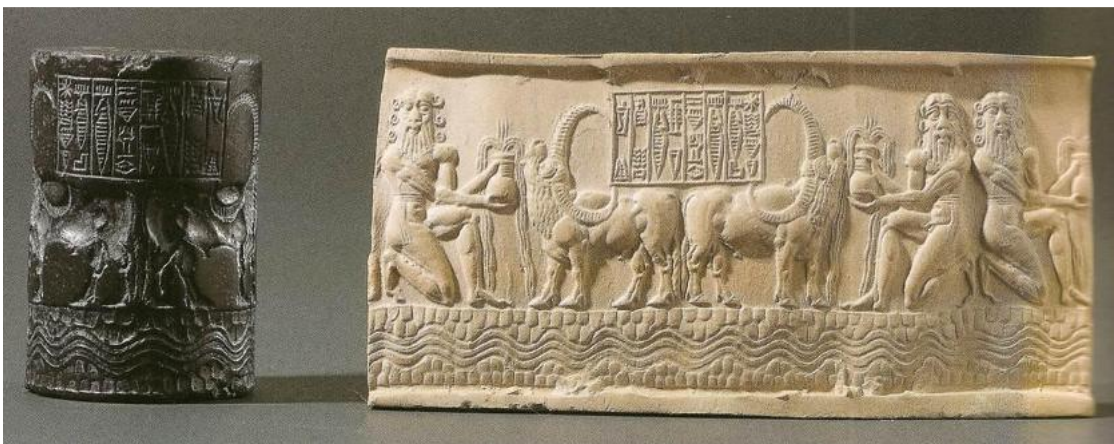
According to results indicate that the introduction of water buffalo breeding and rice farming, most likely from the Indian subcontinent, only marginally affected the gene pool of autochthonous people of the region furthermore, a prevalent middle eastern ancestry of the modern population of the marshes of southern Iraq implies that if the Marsh Arabs (Ma'dan) are descendent of ancient Sumerians, also the Sumerians were most likely autochthonous and not of Indian or south Asian ancestry.

### **Conclusions**

The Indian and Italian molecular Genetic studies (2,3) supported the archeological theory of Sousa (12) that our buffalo had Indian subcontinent origin, while recently microsatellites Iraqi Jaayd (1) theory of Iraqi buffalo originated in Iraq, not imported from India, supporting the two archeological theories of Cockrill and Zeuner (10,11) but we need phylogeographic study to estimate the duration of buffalo domestication and the exact home tract that was come from. Still an open question till we will do more researches in future.



**Map 1**(MOA, Census, 2008, Baghdad, Iraq)



**Figure 1:** Cylinder Seal of Shar-Kali –Sharri, King of Akkad, Mesopotamia, 2340-2100 B.C(Black Marled),(collection, Louvre, Paris, France,326)

**Table 1:** Water buffaloes distribution in Iraqi provinces (Ministry of Agriculture Census, 2008)

%	Total	Total of mature	Mature females	Mature males	Total of immature	Immature females	Immature males	Province	Districts
20.2	57704	37861	35271	2590	19843	11546	8297	Basrah	Southern Mesopotamian marshes
17,3	49283	31949	29270	2679	17334	10498	6836	Thi-Qar	
8,5	24345	15951	14723	1228	8394	5023	3371	Missan	
16.7	47809	3113	29320	1812	16677	10243	6434	Baghdad	Capital and central region
3,8	10749	7312	6785	527	3437	2086	1351	Wasit	
7.5	21303	12352	12049	1203	8051	5029	3022	Najaf	Middle Euphrates area
4.4	12489	9464	9049	415	3025	2136	889	Qadisia	
4.4	12663	7759	7018	741	4904	3180	1724	Karbala	
4,0	11396	7508	6973	535	3888	2345	1543	Babylon	
2,4	6963	4847	4501	346	2116	1289	828	Muthana	
2,7	7859	5225	4948	277	2634	1628	1006	Dyala	North region
4,9	13961	9101	8801	300	4860	2832	2028	Mosul	
1,5	4195	2697	2466	231	1489	1009	489	Karkuk	
0,9	2678	1807	1626	181	871	592	279	Tikrit	
0,2	542	350	321	29	192	134	58	Anbar	
0,6	1598	912	871	41	686	430	256	Sulaimania	Kurdistan
-	-	-	-	-	-	-	-	Erbil	
-	-	-	-	-	-	-	-	Dohuk	
100	285537	187127	173992	13135	98410	60000	38410	Iraq	

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Family Farm with domesticated buffalo in Iraq



## CENTRAL INSTITUTE FOR RESEARCH ON BUFFALOES

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The world buffalo population, estimated at 185.29 million, is spread in about 42 countries, of which 179.75 million (97%) are in Asia (FAO, 2008). India possesses largest domesticated bovine population- 199.1 million cattle and 105.3 million buffaloes, which makes 56.7 percent of the total world buffalo population. Buffalo, triple purpose animal producing milk, meat and draught power, has a share of about 53% in milk production and 30% in total meat production of India. Overall buffaloes contribute 13 % of total world milk production and India is the leader in milk production. India has a rich germplasm of water buffaloes with 13 registered breeds with the National Bureau of Animal Genetics and Resources (NBAGR), India. During the last 10 years, the world buffalo population increased by approximately 1.49% annually- 1.53% in India, 1.45% in Asia and 2.67% in the rest of the world. To maximise resource utilisation and establish scientific research infrastructure on buffaloes in India, the Central Institute for Research on Buffaloes (CIRB) was established on February 1, 1985 under the aegis of the Indian Council of Agricultural Research (ICAR). While the main campus at Hisar maintains Murrah buffaloes, the sub-campus located at Bir Dosanj, Nabha, Patiala caters to the Nili-Ravi breed of buffaloes. Since its inception, the Institute is undertaking active research programmes to unravel the physiological, nutritional, reproduction and genetic virtues, distinctiveness and inadequacies of buffaloes. The Institute has research projects on buffalo genetic resource improvement, feed resource utilization and improvement, optimization of

reproductive efficiency and management practices as well as towards development of technologies and their transfer to end users for augmenting milk, meat and draught performance of the species. Various national and international funding agencies have always planted faith in the capabilities of the scientists and granted funds to support its research activities. The Institute has also taken the responsibility to produce and disseminate elite male germplasm through its state-of-the-art Semen Freezing Lab. Apart from Murrah and Nili-Ravi, elite herds of Surti, Pandharpuri, Jaffarabadi, Bhadawari and Swamp buffaloes have also been established by the Institute at various centres to undertake genetic improvement through progeny testing. A total of 180 Murrah bulls have been put to progeny testing in 14 sets, of which progeny test evaluation from first 9 sets has been completed, while test mating of 14<sup>th</sup> set is going on. Over 4.20 lakh doses of frozen semen from test bulls and over 88,000 doses from progeny tested bulls of Murrah breed are now available. Additional, approximately 5.20 lakh semen doses and more than 1000 superior bulls of various buffalo breeds have been disseminated to the farmers/developmental agencies in India. CIRB maintains a strong relationship with over 45,000 buffalo farmers and entrepreneurs in about 225 villages under the field progeny testing program. So far, more than 200,000 artificial inseminations have been undertaken by the Institute on farmers' buffaloes in the field with 41% conception rate across centres and across breeds.



Currently, the institute is headed by Dr. Inderjeet Singh, a reproduction scientist who has served the institute for the last 12 years, apart from over 16 years of teaching experience in veterinary college at Haryana Agricultural University, Hisar. Widely travelled throughout the world, Dr. Singh is fellow of the National

Academy of Veterinary Sciences and the Indian Society for the Study of Animal Reproduction. He has published book on reproductive biotechnology and buffalo husbandry practices, besides practical manuals for veterinary graduate students.

# ESTIMATION OF GENETIC PARAMETERS OF MILK TRAITS IN IRANIAN BUFFALOES

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## Abstract

In order to study the productive traits and estimation of genetic parameters of milk traits and fat percentage of Iranian buffaloes, the data of 11856 buffaloes of 175 herds in six provinces of: Khuzestan, West and East Azerbaijan, Gilan, Mazandaran and Ardabil from 2000 to 2012 collected by National Animal Breeding Centre (NABC) in Karaj city were used. After edition of data by software of Excel and Foxporo, total of 23652 milk and 22178 fat records were used for estimation of genetic parameters. The data which birth dates were not coordinate with calving date and milk yield were culled. Also, the production traits which were out of range ( $\mu \pm 35$ ) were culled. These buffaloes had 7-8 sequent monthly records with 210 days of lactation, approximately. Because of lack of special milking correction coefficients for buffaloes, data were corrected based on 305 days, the correction coefficient which is used for Holstein dairy cattle by NABC (In order to avoid the errors originated from different ages of animals in the beginning of production). By using linear model, effect of fixed factors were assessed by SAS software and GLM procedure. Estimation of correction coefficient was done based on provincial groups. Estimation of genetic parameters for milk and fat production with single – trait analysis was done by SAS software. Estimation of the means of daily milk, total lactation yield and fat percentage were: 8.5 kg, 1874 kg and 6.47% respectively. Mean of lactation length and age at first calving (AFC) were: 210 days and 47 month, respectively. Heritability of : milk yield, fat yield and fat percentage were: 0.29, 0.28 and 0.29 respectively. Repeatability of: milk yield and fat percentage were: 0.258 and 0.298, . Results of this study shows that effect of lactation period on milk yield was significant ( $p < 0.01$ ).

**Key words:** Iranian buffaloes, genetic parameters, milk.

## Introduction

The most important stage of genetic improvement of superior dairy animals is accurate milk recording . Because by analysing of these records we can estimate genetic potential of each animal, particularly the males who don't produce milk but their daughters and other relations. Establishment of international committee for animal recording (ICAR) shows the importance of accurate recording for genetic improvement of animals. Identification and distribution of the genes of the best bulls can be the base of producing the high yield dairy buffaloes. In Iran milk recording is planned and managed by National Animal Breeding Centre (NARC) in Karaj City.

By producing milk, meat and different dairy products in traditional system, buffalo small herds (1-10 heads) play a significant role in occupation (mainly for women), increased income, integral part of crop production and finally the betterment of welfare in rural families. Therefore, in order to identification of the best animals and dissemination of the genes related to economic traits such as milk yield and fat percentage, this estimation was done by statistical analyses of productive and reproductive records of 11856 buffaloes in rural herds of Iran.

## Material and methods

In this study, in order to estimate the genetic parameters of milk and fat yield and fat percentage, 23652 records of lactation period (210 days) from 11856 buffaloes in 175 herd collected by N.A.B.C from 1999 to 2009 were used. The data were recorded in special chart including: ear tag, register number, parents number, herd and province code, birth and calving date, parity, date of drying, milk yield, fat percentage and date of recording. The data were stored, edited in data bank of foxpro. False, unusual and uncorrectable data were culled. Because of high variation among records of milk yield, fat and protein the data out of range ( $\mu \pm 3\delta$ ) were culled. The data more than 30 kg/d and fat percentage more than 12% were culled.

The used model was:

$$Y_{ijk} = \mu + b_1 (X_{ijk} - \bar{x}) + b_2 (Z_{ijk} - \bar{z}) + a_j + Pe_j + e_{ijk}$$

Which:

$Y_{ijk}$  = observations related to milk yield, fat yield, fat percentage

$\mu$  = total mean in population

$b_L$  = coefficient of functionality of productive traits from animal age in calving time.

$X_{ijk}$  = age of animal in calving time

$\bar{x}$  = mean of animal age

$b_2$  = coefficient of functionality of productive trait from number of milking days.

$Z_{ijk}$  = number of milking days

$\bar{z}$  = means of lactation period

$a_i$  = effect of animal (random)

$e_i$  = residues (random)

## Results and discussion

Mean of milk and fat yield increase along with increment of lactation, but fat percentage changes in different lactation. Actually in buffaloes, milk yield has increasing trend in and from third lactations.

### Productive traits in different lactations.

**A-** The fat percentage during the year 1999-2011 is reported in figure 1, as milk yield during the period 1999-2012 is reported in figure 3. Total mean milk and fat yield in different lactations were 1874 and 123.21 kg respectively. Mean of corrected 305 days milk yield in Khuzestani and Azeri breed were 2832.3 and 1927.5 kg respectively. These amount for Nili-Ravi and Murrah are announced 2100 and 1950 respectively (Khan et al., 2009). In Philippine Swamp buffaloes were 1244 kg (De Olivera Seno et al., 2007).

**B-** Mean of age at first calving (AFC) in this study was estimated about 47 months. AFC of 45 months was found in Khuzestani buffaloes. Manafiazar et al., (2009) announced 39 months in Azeri buffaloes. Mean of AFC in different herds of Indian Murrah buffaloes varies 40-55 months. This shows that management factors (mainly nutrition) have significant role in decreasing AFC in buffaloes.

### Estimation of genetic parameters

Genetic parameters of studied traits show a high genetic variance within Iranian buffaloes. Such a variance was confirmed in genetic analysis of single and multi traits analysis. This variance indicates

lack of significant selection in Iranian buffaloes population. Consequently, a presence of an intact population.

**C- Genetic parameters of milk and fat production in 210 days.**

Results of analysis show that estimated heritability of milk yield, fat yield, percentage of fat were: 0.29, 0.28, and 0.29, respectively. Which is relatively close to similar studies. Range of heritability of milk yield is reported from 0.1 in Nili Ravi (Tomanoharan et al., 2002) to 0.26 in Brazilian Murrah (Aspilcueta-Burquis et al., 2009) and 0.4 (De Araujo et al., 2007). Hassanpur (2010) estimated the  $h^2$  of milk yield from 0.37 to 0.58%. The high  $h^2$  of this study, likely, is due to use more data and particularly more complete pedigree and placement of village effect instead of herd effect in model.

**D-Estimation of breeding value and genetic trend**

In order to estimate breeding value of single trait of milk yield, the data of first to third lactations in N.A.B.C were used.

The gradient of cure for estimation of genetic trend of milk yield in the most analysis were positive which indicates the effect of selection in recent years. Unfortunately, still, there is not a significant genetic improvement on the milk production in Iranian buffaloes. The reasons are:

1- Buffalo raising is in extensive system and buffaloes are dispersed.

2- National program of buffalo development is recently established.

3- Lack of sufficient pedigree (particularly sire relations).

4- Lack of progeny testing of breeding males.

5- So far, selection of semen donor males has been based on body condition and performance of mother and sister of bulls.

Culling of low yield animals can be effective in genetic improvement of buffaloes. Moreover, by some technology ways such as superovulation and embryo transfer we can increase high yield female buffaloes instead of low yield buffaloes. Genetic trends estimated from single trait analyses of milk and fat production in first lactations are show in figures 2 and 4. It is recommended that milk recording will be taken with more accuracy to achieve the genetic improvement, that should be given as a priority.

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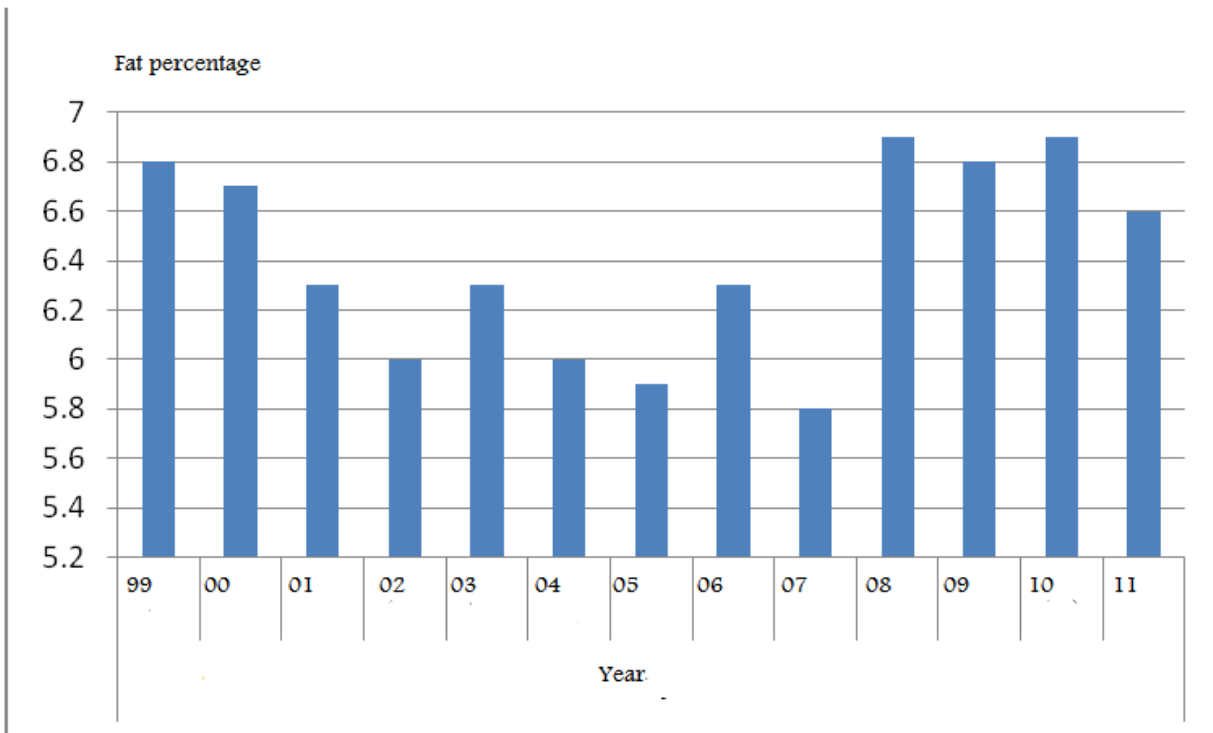


Figure ( 1): Phenotypic trend of fat percentage during 1999-2011

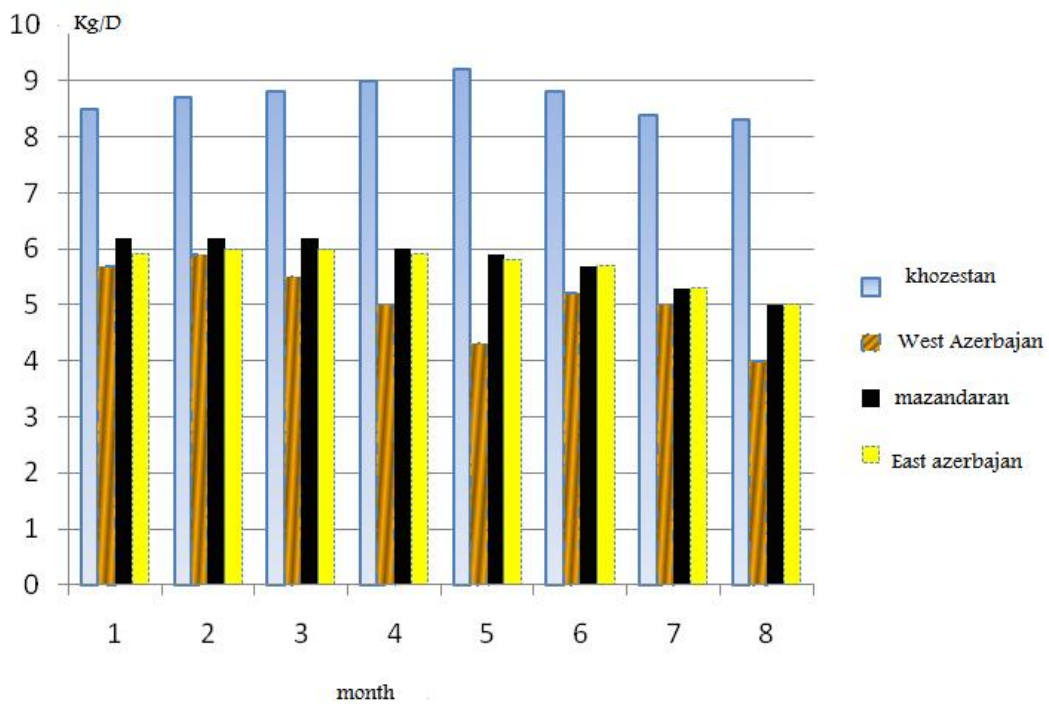
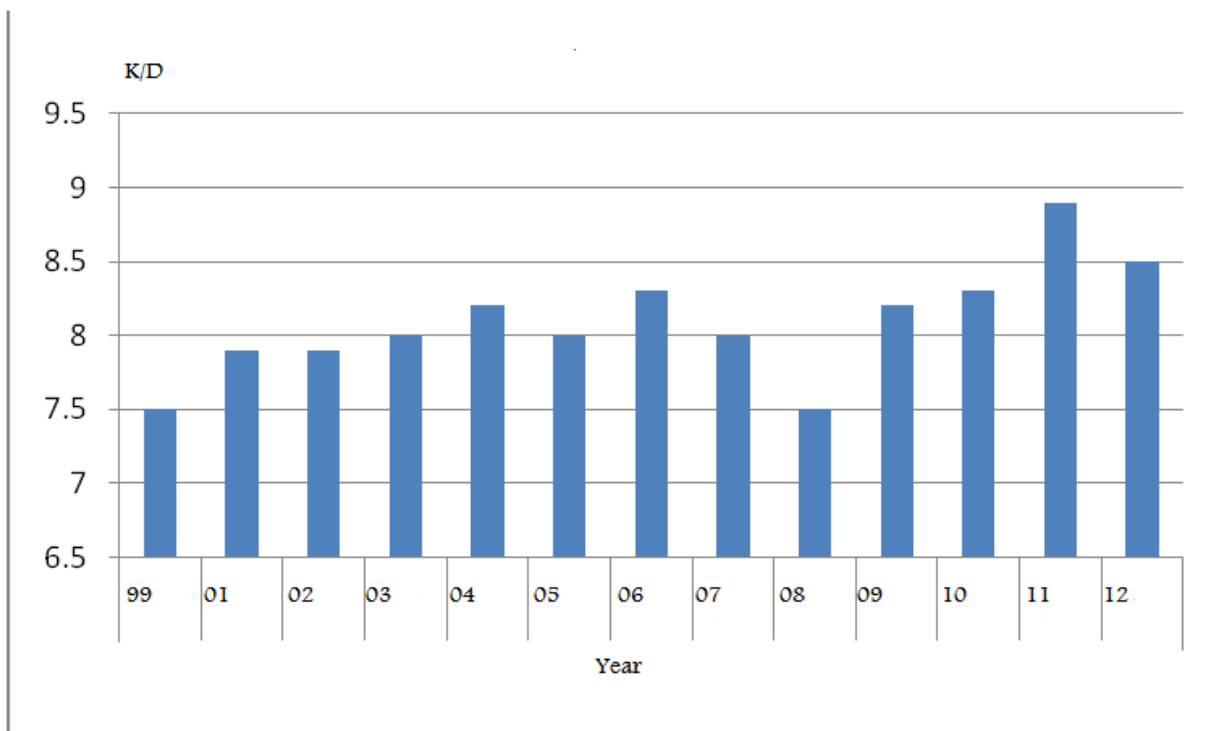
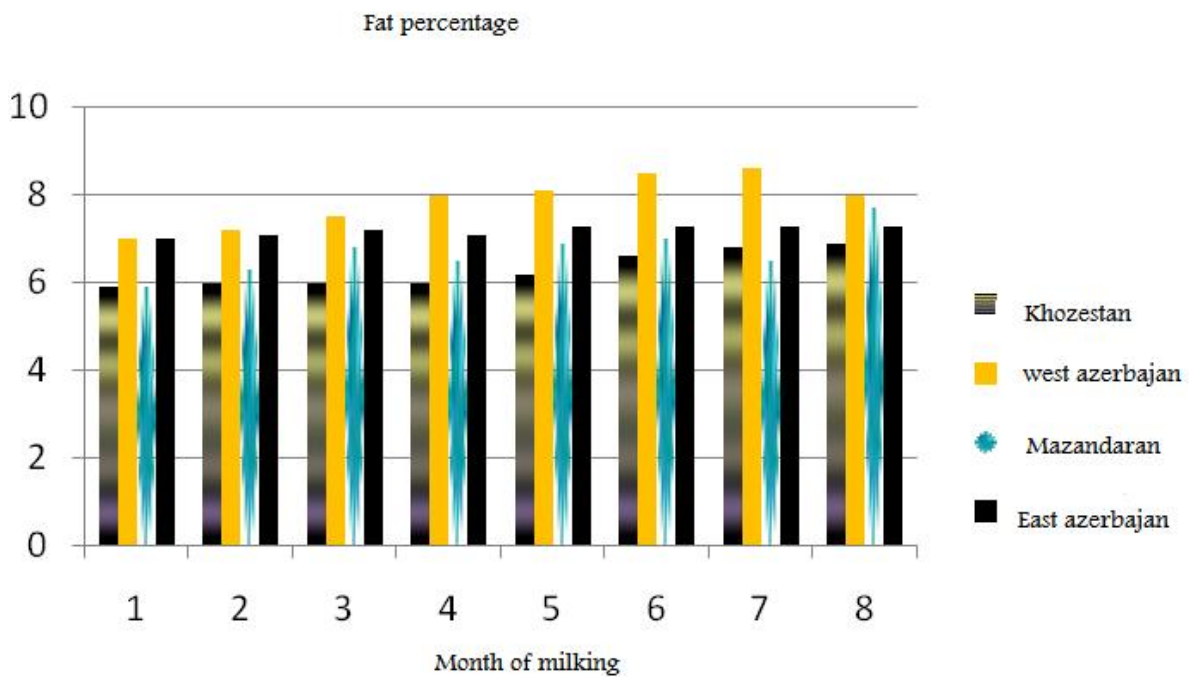


Figure (2).Amount of daily milk yield in different provinces in months of first lactation.



Figure(3): Phenotypic trend of milk yield (305days) during 1999-2012.



Figure(4): Amount of fat yield in different provinces in months of first lactation.

## STUDY REGARDING THE PARAMETERS OF BUFFALO MILK IN ROMANIA

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### Abstract

This study was conducted at the Institute of Research and Development for Buffalo Breeding Sercaia, Fagaras area, on a group of 93 milk buffalos, with lactations between 1 and 14. The aim of this work was to analyse the parameters of buffalos milk production in this farm, in the context of a sharp decline of this species in Romania. The research data resulted from the official control of production; they were recorded and statistically analysed. The average values obtained were compared with literature data in the field. Thus, the average of lactation period was 274.74 days, with variation between 137-356 days. The average value for the quantity of milk was 1669.03 kg milk, with limits ranging from 2549 to 600 kg. The dynamics milk quantity was sinuous, so that maximum of production was obtained from mature buffalos that completed the eighth lactation (1913.1 kg). The average value of fat percentage in the whole lot of animals analysed was 7.65%, with limits between 8.13 to 7.21% and 4.30% protein percentage. For Romania, buffalos represent an important genetic resource, that provide raw materials for many specific foods and traditional ones.

**Key words:** lactation, milk, fat, protein, calving-interval

### Introduction

The buffalo is a species perfectly integrated in the climatic conditions of Romania. The growth area of buffalos in Romania is characterized by specific habitat conditions that differ from the cattle. The relief is variable depending on the growth centre (relief of hill in Transylvania and relief of plain and even swamps along the Danube). The soils are poorly evolved, clay-iluvional structure (of acid reaction) and hydromorphic soils. The natural fertility of the soil is generally low. The natural vegetation has low nutritional value, it comes from low productive pastures, on the edge of rivers or on communal pastures.

The evolution of buffalo herds within 9 decades revealed the following: in 1920, in Romania they were raised 145,856 buffaloes, if we look at the size of herds in the first quarter of the twentieth century the stock is large; in the period 1920-1980 the growth had a sinuous curve that registered two peaks, in 1946, when growth was 37% and in 1980 the number of buffaloes increased by 56.3% from 1920, the higher growth rate was in the 8th decade of the last century; the largest decline has occurred in the last 25 years when the number has dropped from 228,000 to 22,400 heads today, the decrease was of 9.84 times. This decrease in the number of buffaloes in Romania was caused by the unfavourable agricultural policy for buffalo breeders, increased exports of live animals to countries in North-West Europe and slaughter youth buffalo at an uneconomic age (Figure 1).

## Material and Methods

The study was conducted on a herd of 93 milk buffalo that completed lactation between January 2012 and November 2013. The animals were aged between 1-14 lactation (figure 2). The data of production were obtained by performing the official control for milk production. The data on quality indicators of milk production resulted from analyses performed in laboratory of Research Institute for buffalo. The data were statistically analysed and were interpreted in accordance with the literature.

The Institute of Research and Development for Buffalo Breeding was founded in 1981 and located in central Romania, Fagaras area in Transylvania. At present the farm of Research Institute has 458 buffaloes, of which milk buffaloes and heifers are 35%. The buffalo husbandry is done differently according the seasons, the summer at the pasture and the winter in shelters. Milk buffaloes fed forages on own land. The land surface is 335 ha which are cultivated for grain and pasture for grass and hay. The growth system of the buffaloes is based on the use in buffalo rations of feed volume only during the summer, and in winter, when temperatures are very low, buffaloes fed concentrates forages as supplements.

## Results and discussion

Our study aimed to highlight some parameters of milk production and reproduction parameters that influence the total milk production. We determined the following parameters: duration of lactation (days), total quantity of milk per lactation (kg milk / total lactation), the fat (kg fat/ total lactation), the protein (kg protein / total lactation), % fat and protein (table 1), calving interval and age at first calving. *The duration of lactation* is a very important indicator that influences both milk production and the reproductive activity.

In buffaloes analysed during 14 lactations we have observed the following: the average of lactation period was 274.74 days, with variation between 137-356 days. The longest lactation was found from the 8<sup>th</sup> lactation, as respective 302.57 days (table 1). The duration of lactation had a fluctuating trend which was observed in averages analysis. Also, individual variability was very high. The values found by us in 2008 had a similar distribution, so the lactation average of milk buffaloes in southern Romania was 275 days, and in the North West 272 days (Georgescu and Vidu, 2008). The average value of lactation is comparable to the European average, with values of 240 days in Greece, 270 days in Italy and 278 days in Bulgaria (Borghese, 2005).

*Quantity of milk:* The average value of the quantity of milk for 93 milk buffaloes that concluded lactations in the analysed period was 1669.03 kg milk, with limits ranging from 2549 to 600 kg. And for this character is observed a large heterogeneity. The evolution was sinuous, being achieved maximum production at the 8<sup>th</sup> lactation (1913.1 kg) (figure 3 and table 1). The average quantity of milk buffaloes in Research Institute Sercaia is superior to that found by us in 2008 from Romania buffaloes, respective 1356.33 kg milk, with 1320 kg in the south, in the valley of the Danube and 1420 kg in the North-West of Romania. Pucleanu (2000) determined an average of 1109.27 kg milk per normal lactation in buffaloes in the Fagaras area with limits between 1047 kg in buffaloes at the first lactation and 1130 kg of milk for multiparous ones. Romanian buffalo breed has a level of milk production by 1.4 to 2 times lower compared to other worldwide breeds. If we compare the mean value recorded for the European breeds, we see that the values found by us ranks after Italy (2223 kg, Borghese, 2013) and Bulgaria (1870 kg).

*Milk quality parameters:* These two indicators (fat and protein) are important for economic efficiency in the production of buffalo milk, because they determine the performance of milk processing in different preparations. We have noticed that the highest percentage of fat was recorded at the 9<sup>th</sup> lactation of milk buffaloes (7.82%, table 1). The average value of the whole lot analysed was 7.65%,

ranging between 8.13 to 7.21% (table 1). Regarding the average percentage of fat distributed in populations from Romania, we noticed that in southern Romania average was 7.65%, in the North West 7.72% and in the central area 7.9%. In Bulgarian Murrah breed fat percentage is 7.04% at a quantity of 1800 kg milk, and in Italy it increased from 7.09% in the period 1977-1981 to 8.31% in 2001 and to 8.47 in 2010 (Borghese, 2005, 2013). The protein content, in the buffalos lot analysed by us, realized an average of 4.30%, varying between 4.68 and 3.83% (table 1). In 2008, in southern Romania there has been registered the highest percentage of protein, 4.96%, while 4.52% was registered in the buffalo population from North West Romania. Comparing with the specialty literature data, these values are inferior to those found by Pucleanu (2000) in dairy buffaloes from Șercaia area (4.69%).

*Reproduction indicators:* The calving interval had an average of 513.31 days, which varies between 340 and 830 days. The buffalos from 4<sup>th</sup> and 5<sup>th</sup> lactation realized values close to the European average, respective 431.6 and 450, 77 days (Figure 4). For Romania, Velea and Marginean (2006) calculated an average of 447.18 days.

Regarding the age of the first calving, the value obtained by us is on average of 43.92 months. The previous researches conducted in Romania showed values between 41.82 and 48 months. (Georgescu & Vidu, 2008). For this indicator the values are different depending by the area and breed of buffalo.

## Conclusions

The dairy buffaloes had good longevity of production, moderate precocity for reproduction and for milk production. Milk quantity recorded (1669.03 kg) is above the national average, range between 2549 and 600 kg milk, the fat content has a high value in comparison with many buffalo populations in Europe. We observed a large heterogeneity of individual values, which impose the used levers of amelioration in the analysed population.

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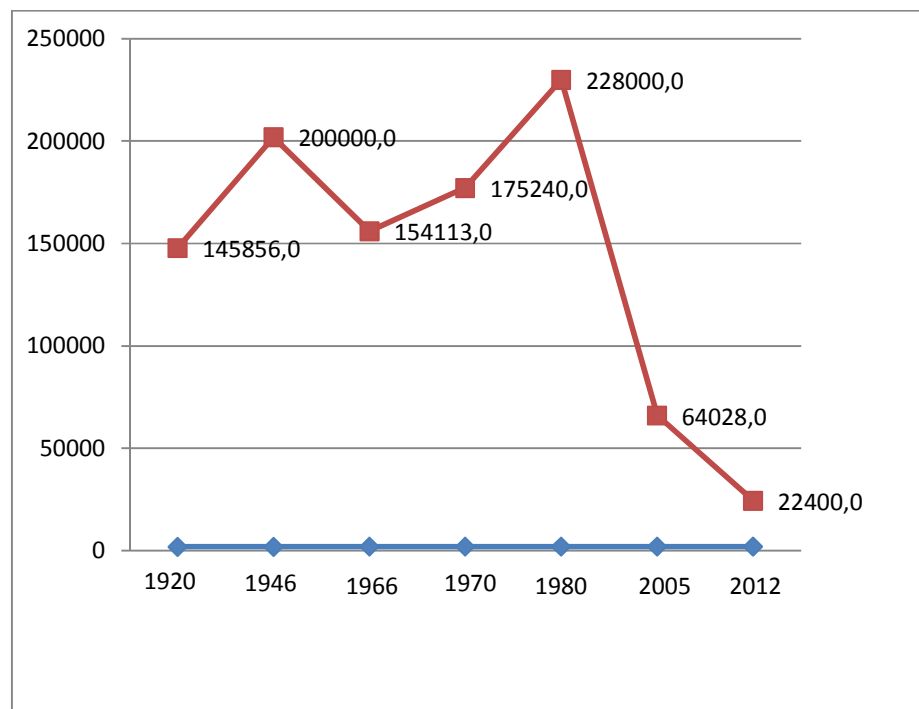


Figure 1 –The dynamics of the buffalo population in Romania



Figure 2- Images of dairy buffalo in Institute of Research and Development for Buffalo Breeding, Sercaia.

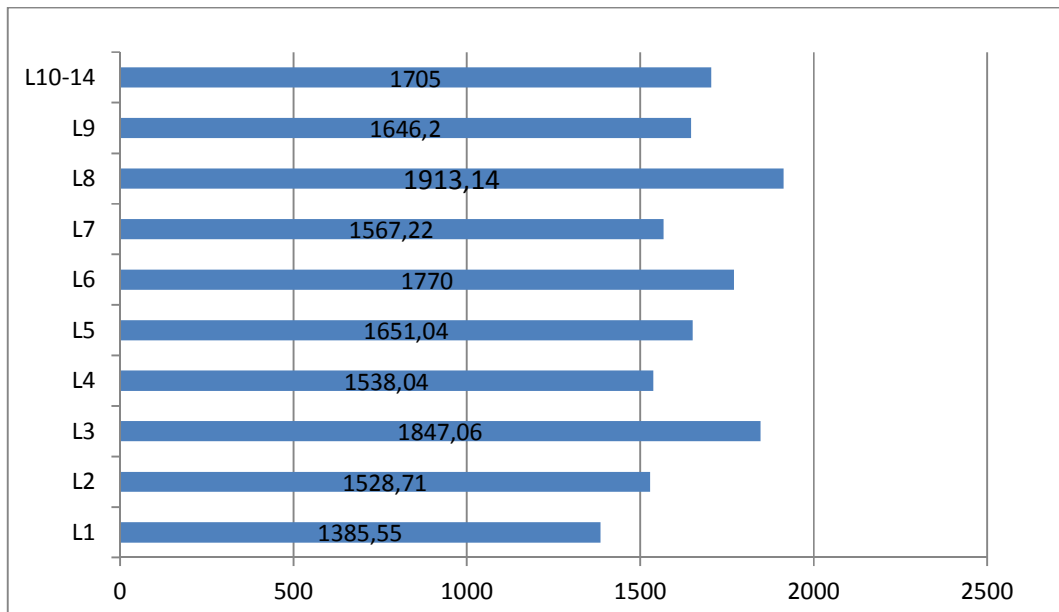


Figure 3 - The average quantity of milk at different lactation

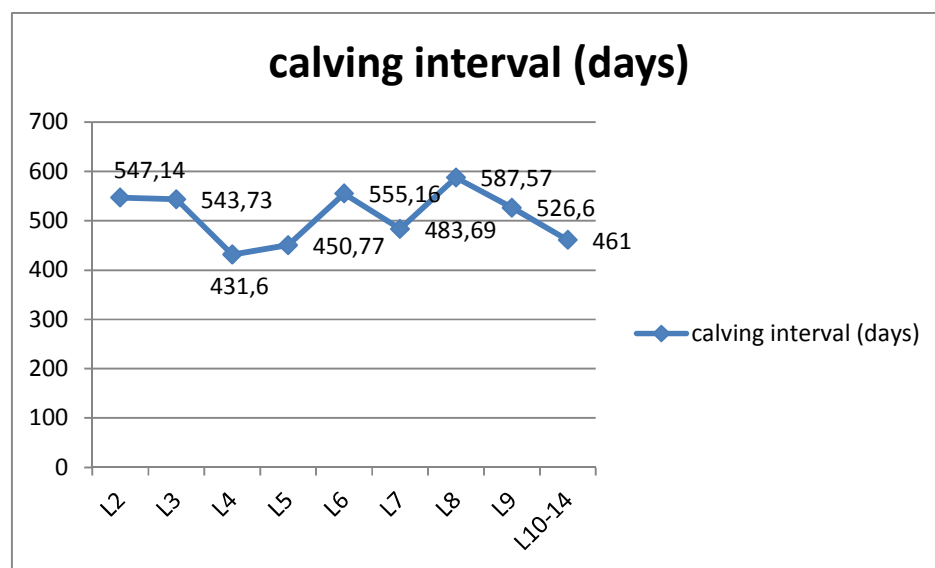


Figure 4 - Variation of the calving interval

**Table 1 - Parameters of Milk production**

Lactation	n	Milk quantity (kg)			% Fat			%Protein			Duration of lactation (days)		
		X±S <sub>x</sub>	Max	Min	X±S <sub>x</sub>	Max	Min	X±S <sub>x</sub>	Max	Min	X±S <sub>x</sub>	Max	Min
L1	14	1385,5±120,3	2137	657	7,70±0,05	8,0	7,4	4,19±0,04	4,4	3,9	234,3±15,7	307	137
L2	7	1528,7±56,7	1861	853	7,74±0,09	8,1	7,4	4,37±0,08	4,7	4,0	251±24,9	318	158
L3	15	1847,1±45,7	2549	1428	7,71±0,05	8,1	7,3	4,28±0,05	4,7	3,8	296,2±9,4	356	225
L4	5	1538,0±153,6	1891	1081	7,71±0,09	8,0	7,5	4,37±0,07	4,6	4,1	241,6±26,2	301	159
L5	9	1651,0±148,2	2378	1195	7,65±0,05	7,9	7,3	4,35±0,06	4,6	4,0	288,1±21,9	354	166
L6	6	1770,0±186,3	2245	1094	7,62±0,08	8,0	7,4	4,38±0,05	4,6	4,2	291,8±24,4	341	175
L7	11	1567,2±168,1	2293	600	7,64±0,05	8,0	7,4	4,27±0,04	4,5	3,9	272,1±24,6	344	138
L8	7	1913,1±101,9	2322	1548	7,50±0,07	7,8	7,2	4,33±0,07	4,6	4,1	302,6±6,3	330	276
L9	5	1646,2±133,5	2130	1436	7,82±0,11	8,1	7,5	4,30±0,04	4,5	4,2	274,2±22,8	331	202
L10-14	14	1691,1±114,5	2330	785	7,58±0,05	7,9	7,2	4,33±0,05	4,7	4,1	274,3±16,5	347	151
<b>Average of the herd</b>	93	1669,0±42,1	2549	600	7,65±0,02	8,1	7,2	4,30±0,01	4,7	3,8	274,7±5,8	356	137

## Buffalo International Conference 2013

### “Buffalo and human welfare”

**Faculty of Animal Science, Hasanuddin University, Makassar, Indonesia, 4-5 Nov. 2013**

Indonesia Hasanuddin University of Makassar, South Sulawesi, organized a Buffalo International Conference on November 4-5, 2013 on the theme “Buffalo and human welfare”.

Prof. Asmuddin Natsir, the President of the Buffalo International Conference, on November 4, welcomed all the delegates coming from many countries, underlining the pivotal role of buffalo in several communities of Indonesia as producer of milk, meat and draft, particularly in Tana Toraja where spotted buffalo is in high demand and in expensive cost for the link with traditional culture and ceremonies.

Prof. Syamsuddin Hasan, the Dean of Faculty of Animal Science in Makassar, showed the activity of his University and confirmed that the main goal of the Conference is to find strategic solutions to develop buffalo population in Indonesia, as buffalo is one of the main meat sources after beef, but buffalo population dramatically decreased in last years.

Dr. Rusman Heriawan, Vice Minister of Agriculture, expressed the problem of buffalo

population decreasing, as one million head disappeared in ten years (1995-2005), in 2011 there were 1.3 million buffaloes in Indonesia, today buffaloes are less than one million.

He asked why, as Indonesia is emerging country with 250 million people, asking more food including high quality beef.

The first presentation, in Plenary Session 1, was by Prof. Antonio Borghese (Italy), who gave as gift his new book “Buffalo Livestock and Products” to Prof. Asmuddin Natsir and to Prof. Suhubdy, who invited him to the Conference. Afterwards prof. Borghese replied to the Vice Minister that buffalo population in Indonesia decreased because of no national plan was effected for development of buffalo, suggesting to create a National Buffalo Research Centre, involving all the Indonesian scientist working in the field, apply the crossbreeding with dairy purpose breed to spread out the milk and meat market, as Swamp animals have no economic future with the increase of mechanization, as he proposed to Indonesia Authorities from 2004.

Prof. Borghese, in his presentation, showed the same phenomenon in Europe, where countries as Italy increased buffalo population, products and market, creating a dairy purpose breed as Mediterranean Italian, producing until 5000 litres milk in 270 days of lactation, that are quite all processed in mozzarella cheese, luxurious and well paid product in the international market. On the contrary, other countries as Romania, Hungary, Greece, Macedonia, where buffalo was a draft animal producing only 800 litres milk for lactation, looked at the drastic decreasing of population as mechanization took away the function to buffalo, until the real risk of extinction of the species in these countries. The solution is to apply the crossbreeding with Mediterranean Italian to produce again an economic buffalo with dairy purpose capacities.

Dr. Oswin Perera (Sri Lanka) underlined as buffalo is a multi-purpose animal, providing in Asia milk, meat, draught power and manure for crop agriculture, surviving in stressful environments, feeding poor quality forages. He said that anyway is possible to introduce improved technologies to smallholders farmers in breeding, reproduction and nutrition.

Prof. Yasuhiro Kawamoto (Japan) showed the reality of buffalo population in Okinawa (91 head) used to draw carts to take the visitors from one island to another one.

Prof. Suhubdy (University of Mataram, Indonesian Buffalo Information Centre) spoke about the obstacles, opportunities and challenges of buffalo production and research in Indonesia. Considerable developmental strategies were formulated in order to improve buffalo population and products.

Prof. Baharuddin Tappa (Indonesian Institute of Sciences, Bogor, Indonesia) presented the major reproductive problems affecting buffalo as late maturity, long postpartum anoestrus, poor expression of oestrus, poor conception rates, long calving intervals. He showed reproduction technologies to increase pregnancy rate and fertility. The Plenary Session 2, on November 5, was open by Dr. Liberto Cruz (Director of the Philippine Carabao Center), who spoke about the possibility and the convenience to transform Asia

Swamp buffaloes to important producers of milk and meat. He showed the long experience in the Philippine Carabao Center, where Bulgarian and Indian Murrah, Nili Ravi and Mediterranean Italian animals and semen were imported to apply wide-scale crossbreeding on Philippine Swamp buffaloes and backcrossing generation after generation. The new buffaloes produce more milk and meat and benefit millions of farming families. Dr. Hamidreza Naderfard (National Animal Breeding Center, Iran) explained the role of buffalo to develop rural areas, not only in economic terms, but also for cultural and social problems. Prof. Toban Batosamma (Hasanuddin University, Makassar) spoke about the social aspects of spotted buffalo for Torajan culture. Many buffaloes are normally slaughtered during the burial ceremony by the Torajan people for the believed purpose of keeping the spirits at peace and to ensure the spirits safety in the afterworld. The cost of spotted buffalo is very high, sustaining a rich local economy. Dr. Winugroho (Indonesian Research Institute for Animal Production, Ciawi) presented the problems of feed availability to support buffalo development in Indonesia. Afterwards oral presentations followed and a round table was organized to discuss the future strategies in Indonesia to support buffalo development and products.

A Committee was created with Prof. Borghese, Dr. Cruz, Prof. Suhubdy, Prof. Asmuddin Natsir, Prof. Baharuddin Tappa and other scientists, to formulate recommendations to the Ministry of Agriculture to resolve the declining of buffalo population as following:

- 1, to found the Indonesia Buffalo Centre in Sunbawa;
- 2, to establish a National and autonomic Regency of the Centre with a large Committee;
- 3, National buffalo projects will be presented by the Centre;
- 4, the Indonesian Buffalo Association and the Regency will be linked to the International Buffalo Federation;
- 5, the Makassar declaration will be written and pursued.

Prof. Antonio Borghese

## **International Genetic Improvement Consultation and Workshop for Dairy Buffaloes**

**Marriot Hotel, Pasas City, Manila, Philippines, 28-29 November 2013**

Dr. Libertado Cruz (Director of the Philippine Carabao Center), on November 28, introduced people coming from different countries and explained the objectives of the workshop: to have a common strategy to improve genetic and milk production in dairy buffaloes.

Dr. Brian Wickham, representing ICAR (International Committee for Animal Recording) showed the activity of ICAR in different species in the world, speaking about the dairy selection indexes and selection criteria for milk production, or for fat and protein or economic indexes and so on.

Dr. Joao Durr, representing INTERBULL, showed his activity, particularly for dairy cattle improvement, speaking about progeny testing, artificial insemination, embryo transfer and multiple trait sire models.

Dr. John Williams (Director Parco Tecnologico Padano, Italy) explained the Buffalo Genome Project, coordinated by Italy, including different breeds from Swamp and River subspecies, as Mediterranean Italian, Nili Ravi, Murrah, Jaffarabady.

Dr. Kamlesh Trivedi (National Dairy Development Board, India) presented the activity of recording and progeny testing in India.

Prof. Antonio Borghese (General Secretary International Buffalo Federation, Italy) showed the genetic improvement realized in Italy, based on buffalo recording (55,000 females recorded, 26% of total dairy population), on selection, on progeny test, on artificial insemination techniques, with the result to have many champions producing more than 5,000 liters milk in 270 days of lactation.

Dr. Claudio Varella Bruna (Buffalo Breeders Association, Brazil) showed the state of production, recording, artificial insemination and EBV calculation in Brazil, as Prof. Talat Naseer Pasha (University of Veterinary and Animal Science, Lahore, Pakistan) made the same for Pakistan, as Dr. Zhang Xiufang (Guangxi Buffalo Research Institute, China) made the same for China, as Dr. E.B. Flores (Philippines Carabao Center) made the same for Philippines.

The day November 29 was dedicated on the creation of an agreement and commitment between international collaborators for dairy buffalo genetic improvement and on a stable link between International Buffalo Federation and ICAR and INTERBULL for common strategies for genetic improvement of buffalo in the world.

Prof. Antonio Borghese

# VIII ASIAN BUFFALO CONGRESS 2015

Istanbul - Turkey 21-25 April  
Sustainable production in the global economic world

## Honorary Chair

**Osman Şimşek, Prof. Dr.**  
Rector of Namık Kemal University

## Chair

**M. İhsan Soysal, Prof. Dr.**  
Namık Kemal University

## Important Dates

Abstract Submission Deadline  
**January 10, 2015**  
Notification of Acceptance  
**February 01, 2015**  
Early Registration Deadline  
**February 20, 2015**  
Author Registration Deadline  
**March 01, 2015**

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- Milk and milk products
- Nutrition/Feeding
- Genetic/Breeding
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- Socio-economic
- Management

## Venue

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## WELCOME LETTER

Dear Colleagues and Friends,

On behalf of Asian Buffalo Association, I cordially invite you to the 8<sup>th</sup> Asian Buffalo Congress which will be held in Istanbul, Turkey during 21<sup>st</sup> - 25<sup>th</sup> April 2015. The ABC 2015 is expected to provide a bridge between East and West that addresses key issues relevant to water buffalo production, the research and science communities, national and international regulatory bodies, policymakers and consumer organizations.

The theme of ABC 2015 is "sustainable production in the global economic world". We believe that Global warming, environmental and ecological degradation, depletion of natural resources, natural and man-made hazards, and economic crises affect our modes of production and consumption, demanding for new strategies in production systems and organizations and conduct.

The location has been chosen to reflect the role of Istanbul as a meeting point for East and West as the crossroads of different continents and cultures. You will also have the opportunity to visit many historical sites in Istanbul and Turkey.

In addition to the main congress, there will be the Pre-Congress Workshop on "Reproductive Biotechnology in Buffalo" during 18<sup>th</sup> - 21<sup>st</sup> April 2015.

In the spirit of traditional Turkish hospitality, I welcome you all to Istanbul, and wish 9th Asian Buffalo Congress you a fruitful meeting and a pleasant stay.

On behalf of the organizing committee,

Best Regards,

## Local Organizing Committee

**M. İhsan Soysal, Prof. Dr., Namık Kemal University, Chair**

## Vice-Chairs

**E. Kemal Gürcan, Assoc. Prof. Dr., Namık Kemal University, Vice-chair**  
**Sazal Ural, Istanbul Water Buffalo Breeders Association, Vice-chair**

## Members

**Emel Özkan, Asst. Prof. Dr., Namık Kemal University**  
**Aylin Ağma Okur, Asst. Prof. Dr., Namık Kemal University**  
**Gizem Sönmez, Res. Asst., Namık Kemal University**

## Scientific Topics

The theme of the ABC 2015 is: *Sustainable production in the global economic world.*

The symposia include:

1. Physiology
2. Reproduction
3. Health
4. Meat and meat products
5. Milk and milk products
6. Nutrition/Feeding
7. Genetic/Breeding
8. Draft power/Sustainable production
9. Socio-economic
10. Management

In addition to the main congress, there will be the Pre-Congress Workshop on "Reproductive Biotechnology in Buffalo" during April 2015.

## International Coordinators Of Scientific Committee

**Adriana Caroprezo Morini, Brazil**  
**Alina Mitsa, Cuba**  
**Alvaro Salas Vega, Costa Rica**  
**Ancharil Na Chiangmal, Thailand**  
**Angelo Coletta, Italy**  
**Anna Chiachierini, Italy**  
**Anna Maria Phillip Hossain, Trinidad**  
**Antonio Borghese, Italy**  
**Antonio Fagiolo, Italy**  
**Antonio Humberto H. Minervino, Brazil**  
**Arnel del Barrio, Philippines**  
**Asmuddin Natsir, Indonesia**  
**Barry Lemcke, Australia**  
**Bianca Gasparini, Italy**  
**Carlo Boselli, Italy**  
**Claudia Patricia Roldan, Colombia**  
**Claudio Varella Bruna, Brazil**  
**Esterina De Carlo, Italy**  
**Gavind N. Purohit, India**  
**Giuseppe Campanile, Italy**  
**Giuseppina M. Terzano, Italy**  
**Gustavo Cruzelli, Argentina**  
**Hamid Naderifar, Iran**  
**Hector Scannone, Venezuela**  
**Ibrahim Soliman, Egypt**  
**Inderjeet Singh, India**  
**Ioana Nicolae, Romania**  
**Jabbar Alsaedy, Iraq**  
**Joao Ghaapar de Almeida, Brazil**  
**Juan G. Angel, Colombia**  
**K.R. Trivedi, India**  
**Ken Phillips, Australia**  
**Khalid Al-Farjosi, Iraq**  
**Leela Rastogi, Trinidad**  
**Leopoldo Iannuzzi, Italy**  
**Libertado C. Cruz, Philippines**

\* Alphabetical order

## Local Scientific Committee

**Serhat Aikan, Prof. Dr., Istanbul University**  
**Sezen Arat, Prof. Dr., Namık Kemal University**  
**Ulku Bakirel, Prof. Dr., Istanbul University**  
**Gürsel Delliç, Prof. Dr., Ankara University**  
**Cengiz Elmaz, Prof. Dr., Oduş University**  
**Orhan Karaca, Prof. Dr., Adnan Menderes University**  
**Ömür Koşuk, Prof. Dr., Istanbul University**  
**Serhat Pabuçcuoğlu, Prof. Dr., Istanbul University**  
**Erin Semli, Prof. Dr., Namık Kemal University**  
**Zehra Sarıoçak, Prof. Dr., Ankara University**  
**Mustafa Tekerli, Prof. Dr., Aşık Nazım University**  
**Alper Yılmaz, Prof. Dr., İstanbul University**  
**Özel Şekerciden, Prof. Dr., Mustafa Kemal University**  
**Levent Özküçük, Assoc. Prof. Dr., Namık Kemal University**  
**Levent Coşkun, Asst. Prof. Dr., Namık Kemal University**  
**Y. Tuncay Tuna, Asst. Prof. Dr., Namık Kemal University**  
**Hüseyin Erdem, Asst. Prof. Dr., Oduş University**  
**Mustafa Küçükkabapçı, Dr., Sarımsaklı Livestock Research Institute**

## Advisory Committee

**Selik Kurutay, Prof. Dr., Dean of Veterinary Faculty of Namık Kemal University**  
**Ahmet İstanbulluoğlu, Prof. Dr., Chair of Faculty of Agriculture of Namık Kemal University**  
**Muhittin Özder, Prof. Dr., Head of Department of Animal Science of Faculty of Agriculture of Namık Kemal University**  
**Mehmet Demirel, Prof. Dr., Head of Department of Food Science of Faculty of Agriculture of Namık Kemal University**  
**Bekir Ankaralı, Dr., Head of Animal Production of General Directorate of Agricultural Research of Ministry of Agriculture, Forestry and Climate**  
**Kasım Pirat, Istanbul Province Director of Ministry of Rural Affairs and Sea Fisheries**  
**Onder Sözen, Project Coordinator of Water Buffalo Improvement Program in Research Station of General Directorate of Agricultural Research of Ministry of Agriculture, Forestry and Climate**  
**Hüseyin Yılmaz, President of Water Buffalo Breeders Association of Turkey**

## Registration Fees

Registration Type	Early Registration (Before February 20, 2015)	Normal Registration (After February 20, 2015)
Regular & Industrial	400 €	500 €
Student (with proof of status)	200 €	275 €
Accompanying	150 €	150 €

## Registration Fees Include

Services	Regular & Industrial	Student	Accompanying Person
Access to all scientific sessions	✓	✓	
Poster session snacks and refreshments	✓	✓	
Congress bag and badge	✓	✓	
Book of abstracts	✓	✓	
Invite speakers full text e-book	✓	✓	
Welcome reception	✓	✓	✓
Lunches	✓	✓	✓
Coffee breaks	✓	✓	✓
Certificate of attendance	✓	✓	
Technical tour	✓	✓	✓

## Venue

Harbiye Military Museum & Culture Site, Istanbul, Turkey

## ORGANIZED BY



## SUPPORTED BY



www.abc2015.org

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