

# Buffalo Newsletter



Number 29 – December 2014

**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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## FOURTH CONGRESS FOR DEVELOPMENT OF MESOPOTAMIAN BUFFALOES, BAGDHAD, 22 DECEMBER 2013

**Jabbar Khliaf Alsaedy\*, Khalid Al-Fartosi\*\***

\* Former Manager of Buffalo Department, Ministry of Agriculture, Iraq delegate in IBF

\*\* College of Science, University of Thi-Qar, Iraq delegate in IBF

### **Introduction**

Buffaloes in Iraq (Mesopotamian buffaloes) are considerable reality with 300 thousands heads mainly concentrated since third millennium before Christ, within old home tract in Mesopotamian marshes in three southern governorates (Basrah, Thi-Qa, and Missan), but this important genetic resources have been neglected by officials and researchers till 2008 when buffalo department was established by Ministry of Agriculture to involve Iraqi buffaloes development. Many projects and ideas was achieved, annual congress for buffalo development, one of these ideas that presented by Jabbar Alsaedy (manager of buffalo department (2008-2010), and accepted by officials in Ministry of Agriculture.

### **Mesopotamian Buffaloes Congress**

Under the slogan to develop Mesopotamian buffaloes, sponsored by Ministry of Agriculture/ Director for Livestock Service, annual congress for Mesopotamian buffaloes were held in the 7th floor of MOA building in central of Baghdad from 2010 by one conference for

each year. Latest 4th congress was held on 22 December 2013 with participation of over than 150 researchers, Veterinaries, technicians, NGO, and buffalo breeders (Mada'n), key of buffalo productions in Iraq.

The main topics of congress were:-

- A. Buffalo nutrition.
- B. Buffalo diseases.
- C. Buffalo production.
- D. Buffalo Management.
- E. Buffalo uterine and ovary problems.

On behalf of the Minister of Agriculture, Deputy of Minister, Dr. Mahdi Al-Qaisi, opened the congress in speech that the Ministry should take care of scientific conferences and sponsored national buffalo missions and kept attach with global development, also highlights on importance of the buffalo breeding because of its great economic return.

Khalid Al-Fartosi, Iraqi delegate with other two delegates of IBF, read the message of Prof. Antonio Borghese (General Secretary of IBF) that underlined the importance of buffalo development in Iraq by crossbreeding with other super breed such as Mediterranean from Italy and by the achievement of all modern tools in buffalo farm management. After that two sessions were held and a

great number of researches related to the topics of Congress were discussed: Jabbar Alsaedy, also presented his paper about registration of Iraqi buffaloes as independent breed according his study entitled Mesopotamian buffaloes: the origin.

In nutrition of buffalo Prof. Tallal Abudalkarim, Iraqi delegate in IBF, presented his study about scientific buffalo rations, economic and more available, also suitable for Iraqi environment. Raddi Aljamass, the oldest researcher of buffalo in Iraq, reviewed his ideas about types of buffalo management and problems all around the country and gave some solutions to avoid obstacles.

Bagadsar Grabet Oadess from Agriculture college, University of Baghdad, showed the results of two studies on Baghdad buffalo dimensions of body and udder, resulting that Iraqi buffalo is large type with well udder size and attachments.

Osama Azawi from University of Mosul, northern part of Iraq, presented a study of uterine changes in Nineveh Buffaloes, concentrated on role of traditional management especially after delivery, and unsanitary conditions inside buffalo farms. At the end, Buffalo breeders (Mada'n), presented their problems, highlighted on feed shortage and lack of free Vet. services, as well as they need long loans, supported by government.

In the evening the congress found out several recommendations including:

A. Genetic improvements of Iraqi buffaloes herds, that suffered from inbreeding since thousands of years without cross breeding, through A.I and Embryo transfer techniques achievement, and established a Buffalo genetic bank to retain the genetic resources of Mesopotamian Buffaloes.

B. Supporting of buffalo breeders (Mada'n) through rich ration by providing them by concentrates, minerals and free Vet. Services, as well equipping with machines for breeding buffaloes such as tractors, milk processing equipment etc....

C. Rehabilitation of milk collection Centres to avoid the problem of milk marketing especially in remote marshes in summer season.

D. Advocacy to facilitate external and internal investment procedures in the field of modern buffalo farms for dairy and fattening purposes.

E. International registration of Iraqi buffalo as independent breed under Mesopotamian Buffalo name, through IBF .

F. Sponsoring and supporting national project of general Buffalo Data Base all around Iraq, through buffalo recording and registration, as well public buffalo breeders questioners in the field.

G. Encouraging and supporting post graduate students to involve them in buffalo researches, related in upgrading buffalo herd and problems of nutrition and management as well uterine changes.

H. Supporting all activities with International Buffalo Federation through their delegates in Iraq.





Gaymer, thick whitish cream at center surrounding by Maddfore buffalo cheese and eggs with jam,famous iraqi Breakfast



Khalid Al-Fartosi with other members in buffalo researches discussion



JabbarAlsaedy between buffalo breeders from Mosul ,in the north part of Iraq and Baghdad



Osama Azawi, Mosul University at the first Opening Session



Famous buffalo breeders from Mosul, Abu Sake Alsaedy and Alanbari.



Breeders and researchers at lunch time.



Tallal Abudalkarim at buffalo nutrition presentation.



Raddi Aljamass, the oldest buffalo scientist.



**THE VII SYMPOSIUM OF BUFFALO OF EUROPE AND AMERICA.**  
**San Jose, Costa Rica, 5-6 maggio 2014.**

The VII Symposium of Buffaloes of Europe and the America opened at San Jose in the Hotel Wyndham on May 5, 2014 with welcome salutations of the organizer, Alvaro Salas Vega, President of AsoBufalo (Association of Breeders of Buffalo Species) in Costa Rica. Salutations by Claudia Roldan, President of the International Buffalo Federation (IBF), who will organize the World Buffalo Congress in November 2016, followed. Afterwards the Vice Minister for the Agriculture, José Joaquin Salazar, remembered the project to achieve the independence of Costa Rica for the basic feeding of his people.

The opening lecture was presented by prof. Antonio Borghese, General Secretary of IBF on theme "Buffalo Livestock in the World. How are developing market and sanitary controls". The speaker introduced the activity of the IBF, starting from the information by the Buffalo Newsletter and by the formation (the IBF Training Course which will be held from 16 to 27 of June in Latina, Italy) until the programs of development projects and the publication of the new book, edited by himself, coeditor the Council of Research in Agriculture, "Buffalo Livestock and Products". After he showed a panorama of different products in the markets and of different economies in the countries of Asia, America and Europe, in particular Italy, of which he boasted the excellence for the genetic progress, for the sanitary control and for the quality of products, the best and the most known is the

mozzarella, for his image and for the role on the national and international market. The speaker after that gave the word to Dr. Antonio Fagiolo, who concluded with an examination of sanitary controls, in particular as a guarantee in the export of live animals, as in the last experience of export of 2200 Mediterranean Italian buffaloes of high genealogy in the Philippines.

After vivacious discussion, the session dedicated to the situation of meat production in Latin America started. The situations of respective countries were shown by: Claudio Varella Bruna, President of the Buffalo Breeders Association of Brazil, A. Mohammed of the University of Trinidad and Tobago, Eduardo Luis Maitret of the Breeders Association of Mexico, Claudia Roldan, President of the Buffalo Breeders Association of Colombia, Luis Gomez for Costa Rica.

In the afternoon the meeting of the Buffalo American Association was held, who nominated as president the Ing. Oscar Molina, who will organize the next Symposium for America and Europe on November 2015.

In the evening the IBF meeting was held, where obviously only American delegates were present, three Italian delegates (A. Borghese, A. Fagiolo, A. Chiacchierini), nobody from the other continents: delegates spoke about the organization of the next World Buffalo Congress on 2016

and about the possibilities to increase the actions of IBF.

The day after, May 6, Rafael R. Paiva of IDEXX Livestock, USA, expounded about the use of PAG in pregnancy diagnosis and in embryo mortality. Edoardo Moreno from National University of Costa Rica, spoke about prevention of Brucellosis, priority problem in the Centre and South America, where vaccination is largely applied; A. Fagiolo during the discussion underlined the necessity of distinguish the serum-positivity from vaccination in comparison with that one from infection and he suggested the vaccination before 6 months.

Jesus Berdugo, from National University of Colombia, presented the protocols of embryo transfer, produced in vitro, very expensive and with low ratio, in comparison with the expected results applying A.I., therefore A. Borghese suggested Artificial Insemination in the projects of genetic improvement.

Marco Zava (Argentina) showed a film and a conference on the buffalo production in his country: from the farm to the plate.

After that Alvaro Salas Vega concluded the Symposium.

The day after, May 7, early in the morning, the Buffalo Tour started, and we visited the University of Tropico Umido "Earth", afterwards Corsicana farm for the production of pineapple in Sarapiquí, 1300 hectare large: Costa Rica is one of the greatest producers and exporters of coffee, bananas and pineapple. After we arrived in the farm of Mendoza family, where on rich and beautiful pasture of *Brachiaria* we looked at Mediterranean Italian x Murrah x Buffalypso crossbreds,

as the last one breed is the primitive genetic basis in Costa Rica too, as in all the countries of the Centre America, called Caribe. Mendoza farm presented his products: yogurt, caso (not stretched cheese), cacioricotta.

We passed the night at La Fortuna, a thermal area under one of many active volcanos in the country, and after we went to Upala, where we visited the Italacteos industry, of Italian family Puchino, with a splendid modern cheese industry, where mozzarella, treccia, ricotta and high quality cheeses are produced and after distributed in all the sites of Costa Rica and on Panama market. We visited after the Puchino farm, where the crossbreeding with Murrah on the local Buffalypso was applied to increase the milk production and where a modern milking room is present.

We passed the night in Papagayo gulf, with a splendid panorama on Pacific sea, and after we went to Bolsòn farm, near Filadelfia and near one of the many National Parks of Costa Rica, which is one of the most famous countries for ecology in the planet.

The farm place is in the equatorial forest, more dry in comparison with the humid forest of Atlantic front, and is possible to achieve the farm only with jeep cars, passing through a blooming flora and a surprising fauna: butterflies, birds, apes, iguanas.

The owner, Luis Roberto Clachar Rivas, showed his herds of Mediterranean Italian buffaloes, obtained with substitution crossbreeding on local breed, with evident goal to create a dairy purpose breed and a milk and cheese industry. Afterwards he

carried us on a canoe on the river, where caimans, apes and palmipeds live free in the nature.

Pre - Conference Symposium : Buffalo as an alternative productive agriculture in America.

A training session was conducted with the following activities:

- Reproductive management of water buffalo . Taught by Dr. William Vale University professor Federal do Oeste do Pará - UFOPA , Brazil In this issues as reproductive physiology of female buffalo were treated .

Really an unusual and exiting conclusion in a surprising country.

**Antonio Borghese**

- Training and management of buffalo to work. Paid by the Ing . Hugo Velez , owner of Finca San Francisco Miramar , Quetzaltenango, Guatemala .

Conference on the benefits and clinical buffalo as beef producer. . MSc- Charge Rodrigo R. Rosales, School of Medicine and Surgery Veterinary, University Veritas. Member of the IBF.

Around 100 participants.



Pineapple in Corsicana Farm



Mediterranean ItalianxMurrahxBuffalypso in Mendoza Farm





Mozzarella cheese produced by Italacteos Company



Products by Italacteos offered in Puchino Farm





Murrah x Buffalypso in Puchino Farm





Mediterranean Italian x Buffalypso in Bolson Farm



# XXIV

**Congreso Panamericano de  
Ciencias Veterinarias.  
Del 6 al 9 de Octubre de 2014.**



Vittoria Lucia Barile , senior researcher at the Animal Production Research Centre (CRA-PCM) of Rome (Italy), has recently attended the XXIV Panamerican Congress of Veterinary Science (PANVET 2014) as a member of International Buffalo Federation (IBF).

La Havana, Cuba, hosted the PANVET 2014 from the 6 to the 9 October, receiving researchers, specialists, professors, businessmen, technicians, students, farming producers from all over the world. The event was held under the theme "Integration", whose main objective was to promote the progress of science and veterinary practice , and to contribute to the connection among the veterinary associations and stimulate the exchange of technology among Latin American countries .

"The social role of Veterinary Science has a decisive impact on the wealth of each nation and is crucial in maintaining public

health. The inspection of food of animal origin and the prevention of animal diseases transmissible to humans, for example, are so special aspects that everything is done in this regard will affect the benefit of the nations." Beatriz Amaro , president of the organizing committee, stressed this aspect in her welcoming speech.

Out from Cuba, delegates from 23 regional countries attended the congress. Most of them were form Latin America (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Haiti, Panama, Mexico, Perú, Republica Dominicana, Uruguay, Salvador, Venezuela) but representatives of Angola, Canada, Italy, Libya, Spain, Turkey, UK, were also there. The presence of these countries further enrich the conference , despite being regional , aimed to connect professionals from all regions of the planet, as Luis Zarco, president of the executive

committee of PANVET, said in his address during the opening ceremony.

Besides hosting the different veterinarian organization of North America, Latin America and the Caribbean, PANVET was attended by delegations belonging to the African and Asian associations of Veterinary Science. The conference also involved the president and vice president of the World Veterinary Association , Faouzi Kechrid and Johnson Chiang, respectively, among other well-recognized academics.

Similarly, international institutions such as the World Health Organization and the World Animal Protection Organization attended the congress. Melania Gamboa, representative of World Animal Protection

said in the congress that the vet is an essential link in working with threatened species, and should be the first professional to assume an ethical responsibility to keep watch over the animals.

Important keynotes were done by Sarah Khan , a representative for the Americas of the OIE (World Organization for Animal Health), which stressed the need of good governance of the animal - man interface with effective collaboration between the Ministry of Health and Ministry of Agriculture, and by Tomás Gutiérrez , expert on issues of climate change, which gave details about the climatological situation in 2014 and the adaptation measures that countries will take to reduce the negative effects.



PANVET 2014



From the left: Dr Faouzi Kechrid, president of the World Association of Veterinary Science and Dr Beatriz Amaro Villanueva, president of the Scientific Veterinary Council of the Republic of Cuba and president of the Organizing Committee of the XXIV Pan-American Congress on Veterinary Science

In total 1330 research papers were presented in 20 sessions sections (History of Veterinary Medicine; Veterinary Education; Management of Disaster; Natural Medicine and Bioenergetics; Production and Health of Aquatic Organisms; Animal Production, Feeding and Genetic; Reproduction; Vet Pathology; Animal Health; Vet Microbiology; Laboratory animals; Wild animals; Vet Public Health; Food Safety; Clinic and Surgery; Parasitology; Epidemiology; Production, Regulation and Quality of Biological Products for veterinary use; Animal Welfare; Animal-assisted Therapy). Dr Vittoria Lucia Barile participated as invited speaker with a main lecture on "Reproduction in buffalo" introduced by Dr Alina Mitat chairman of the section Animal Reproduction. An overview on the main aspects of reproductive activity that in turn influence the productivity of the species has been presented. The lecture addressed the issues related to : puberty, seasonality, post- partum anoestrus, and oestrus cycle. Current knowledge of the basic pattern of changes in hormone profile during the oestrus cycle and the basic pattern of follicle development, have been illustrated together with hormonal and management techniques for improving reproductive efficiency. Particularly, the lecture stressed the necessity to point out attention to the management of the heifers: pre-weaning and weaning systems, dietary energy level, pasture utilization; aspects that are important in promoting growth and achieving puberty. Moreover, different hormonal treatments were compared when utilized in controlled breeding techniques to: anticipate puberty

in order to reduce the age at first calving; improve fertility in the low breeding season; increase the effectiveness of AI programs by overcoming the problem of difficult oestrus detection.

Very interesting have been the "Buffalo Breeding Committee" works, that point out the importance that the breeding of this species are taking on in the recent years particularly in Southern America and Caribbean country. Presentations on the state of buffalo breeding in Americas and in Cuba were given by Dr Julio César Alonso, Dr Alina Mitat and Dr Luis Fraga. Buffalo was introduced in the American continent at the end of the 19th century to be utilized as draught animal in the palm and sugarcane plantations. Later, buffalo was also utilized for meat production utilizing the large areas of natural pasture. Most of the breeds belonging to the Swamp type and the Bufalypso (crossbred between Carabao and different River type breeds) is still the mainly breed present in the Caribbean and the continental countries of Central America. In the last years, the interest in buffalo as dairy animal has been increased and programs to improve dairy production has been undertaken. Dairy breeds, mainly Murrah and Italian Mediterranean, are now present in different countries either in the Southern or in the Northern America. In Cuba, also, there is the intention to increase the dairy industry. Buffalos showed high adaptability to the Cuban climate and its rearing contributes to achieve national balance. The Cuban economy promotes buffalo raising in several areas in the country, as an alternative to improve food supply to the domestic market. In general,



buffaloes are mainly raised in areas where conditions are not adequate for other bovines as the floated areas and the aim is to expand the buffalo breeding to all the 14 provinces.

During the event important contacts with the main organization of the agricultural sector in Cuba were made:

ICA- Instituto de Ciencia Animal

Universidad Agraria de la Habana

CENSA: Centro Nacional de Sanidad Agropecuaria

CIMAGT: Centro de Investigaciones para el Mejoramiento Animal de la Ganadería Tropical

Discussion on possible agreements to undertake research work, training , students and researches exchange between Universities or Research Centres involved in buffalo breeding, with the involvement of IBF (International Buffalo Federation) were made.

**Vittoria Lucia Barile**



Visit at the ICA (Instituto de Ciencia Animal)



Meeting at the ICA (Instituto de Ciencia Animal)



Cuban Buffaloes in the typical tropical landscape



Cuban buffaloes at the ICA dairy farm



# 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**

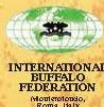
Author Registration Deadline

**March 01, 2015**

## ORGANIZED BY



## SUPPORTED BY



## SCIENTIFIC TOPICS

- Physiology
- Reproduction
- Health
- Meat and meat products
- Milk and milk products
- Nutrition/Feeding
- Genetic/Breeding
- Draft power/Sustainable production
- Socio-economic
- Management

## Venue

Harbiye Military Museum and  
Culture Site, Istanbul, Turkey



[www.abc2015.org](http://www.abc2015.org)

## Organization Office



Phn: +90 312 441 0700  
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[arber@arber.com.tr](mailto:arber@arber.com.tr)





## Welcome Letter

Dear Colleagues and Friends,

On behalf of Asian Buffalo Association, I cordially invite you to the 8th Asian Buffalo Congress, which will be held in Istanbul, Turkey during 21st - 25th April 2015. The ABC 2015 is expected to provide a bridge between East and West that addresses key issues relevant to 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 19th - 20th April 2015.

In the spirit of traditional Turkish hospitality, I welcome you all to Istanbul, and wish 8th Asian Buffalo Congress you a fruitful meeting, and a pleasant stay.

On behalf of the organizing committee,

Best Regards,

Prof. Dr. M. İhsan SOYSAL  
Organizing Committee Chair



### *Invitation to participate in the ABC 2015 Conference/Call for ABSTRACTS*

As the deadline for the **Abstract Submission (January 10, 2015)** is nearing, we cordially invite you to submit your abstracts and participate in the **8th Asian Buffalo Congress, (ABC 2015, [www.abc2015.org](http://www.abc2015.org) )**, to be held in the Harbiye Military Museum & Culture Site, Istanbul, Turkey, during 21st - 25th April 2015.

Highlights of the Meeting:

-Partial list of the eminent Confirmed Speakers and their titles:

**Prof. Dr. Antonio BORGHESE, Italy** International Buffalo Federation, General Secretary of the I.B.F. "Buffalo recording, udder physiology and milkability as factors of milk availability in the world economy"

**Prof. Dr. Talat Naseer PASHA, Pakistan** Vice Chancellor, University of Veterinary and Animal Sciences. "Nutritional interventions for economical milk and meat production in buffaloes"

**Kehuan LU, China** Professor of Faculty of Animal Science and Technology, Guangxi University. "Modern reproductive biotechnologies for enhancing buffalo production" OR "Buffalo production in China "

**Prof. Ibrahim SOLIMAN, Egypt** Professor of Agricultural Economics, Zagazig University, Team Leader of EU FP7 SUSTAINMED Project for Egypt and Jordan. "Buffalo as source of socio-economic development of farming communities".

**Dr. John Williams, Italy** Science Director, Parco Tecnologico Padano. "Recent advances in buffalo genomics".

**Prof. Dr. Rangsun Parnpai, Thailand** Associate Professor and Director of Embryo Technology and Stem Cell Research Center, Suranaree University of Technology. "Application of Assisted Reproductive Technologies in Buffalo".

**Libertado C. Cruz, Ph.D, Philippine** Professor, Executive Director, Philippine Carabao Center. "Transforming swamp buffaloes for dairy production".

We welcome you all to ABC 2015 in Istanbul, and wish a fruitful meeting and a pleasant stay in Turkey, Best Regards,

Prof. Dr. M. Ihsan SOYSAL  
Organizing Committee Chair  
[www.abc2015.org](http://www.abc2015.org)



VIII SIMPOSIO  
DE LAS AMERICAS Y EUROPA  
ANTIGUA GUATEMALA - GUATEMALA- 2015  
18, 19 y 20 DE NOVIEMBRE

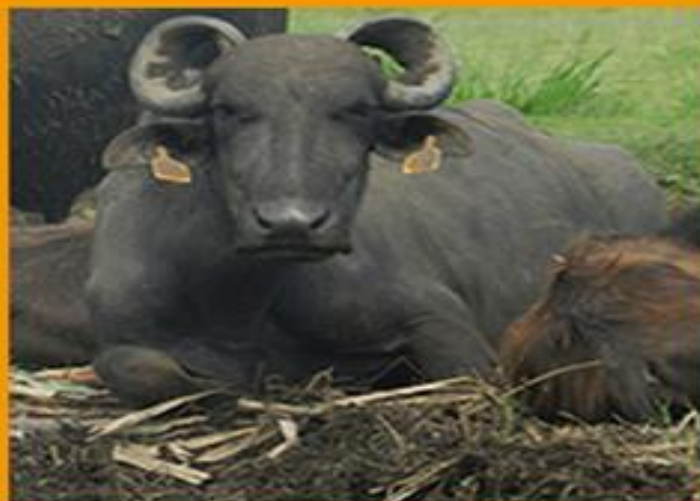
VIII SYMPOSIUM  
OF AMERICA AND EUROPE  
ANTIGUA GUATEMALA - GUATEMALA- 2015  
18, 19 and 20 OF NOVEMBER



VIII. BUFALO SYMPOSIUM  
ANTIGUA GUATEMALA-GUATEMALA-2015

## CALL FOR PAPERS

we invite you to submit your abstract  
and take advantage of this opportunity to  
present your work to an engaged audience  
of your peers. The program will feature  
invited, volunteer, and poster presentation.



preliminary abstracts due: **may 5, 2015**  
final abstracts due: **october 9, 2015**





# THE 11<sup>th</sup> WORLD BUFFALO CONGRESS

XI CONGRESO MUNDIAL DE BÚFALOS

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CARTAGENA ■ COLOMBIA ■ 2016

*From the tropics to the world*



## **REPORT OF IBF TRAINING COURSE ON BUFFALO MANAGEMENT AND INDUSTRY – Latina, Italy, 16-27 June 2014**

A comprehensive training course for buffalo breeders, technicians, dairy operators and meat producers was held near Latina, Italy on 16-27 June, 2014. The training course is organized by the International Buffalo Federation (IBF) with the contribution of researchers of the IZSLT (Animal Prophylaxis Research Institute for Lazio and Toscana, Italy) and CRA/PCM (Council of Research in Agriculture, Animal Production Research Centre, Italy).

The aim of the course was to upgrade workers employed in buffalo farm management and industry. In fact, during the course were treated key aspects of modern buffalo industry management such as nutrition requirements, reproduction technologies, sanitary controls, and milking and meat processing techniques, all aspects about each level of animal production including calves, heifers, dry buffaloes, milking buffaloes, young bulls, and breeding bulls.

The location of the course was at the provincial section of the IZSLT on Latina, a city at 100 km from Rome; training was held at laboratories and nearby locations including buffalo farms, cheese plants, and meat plants.

An intensive and detailed program has been proposed with the participation of several speakers, all Italian experts from different organizations such as Universities, Associations, Research Institutes, and private companies.

Monday, June 16, the first day was dedicated to the reception, accommodation, and presentation

of the 28 participants coming from 11 countries, with the organizers.

It was not easy!!!

We were called in the early hours of the morning to pick up all the participants at their arrive... sometimes with difficulty, but with funny situations. Afterwards, all participants were tacked to hotel.

Tuesday, June 17, the course was started with authorities welcome and presentation of the program by Prof. Antonio Borghese (General Secretary of IBF and chief organizer for the IBF Training Course), Dr. Antonio Fagiolo (Director of Latina Department, Animal Prophylaxis Research Institute for Lazio and Toscana), Dr. Renzo Scalco, Borough Council Clerk for Agriculture of Latina Province, Italy, Dr. Francesco D'Ausilio (President of Italian Buffalo Breeders Association, ANASB), and Dr. Vittoria Lucia Barile (CRA/PCM).

The first lecture was given by Prof. Antonio Borghese on "The buffalo species in the world economy". A very intensive discussion followed, with many questions on the management and on buffalo products. Afterwards, Dr. Antonella Chiariotti (CRA) and the Prof. Federico Infascelli (University of Naples Federico II, Italy) spoke on "Rumen microbiology" and "Nutrition and feeding in buffalo species". They introduced the importance of rumen physiology and feeding models according to different phases: calf, heifer, bull, dry buffalo cow, milking buffalo and fattening young bull. For each phases the

requirements of energy, protein, vitamins, minerals had been verified and more convenient diets had been elaborated according to crops and forages available in different countries.

Wednesday, June 18, was dedicated on sanitary controls and reproduction pathologies. Dr. Giorgio Saralli and Dr. Antonio Fagiolo (IZSLT) treated on “Health controls: infective pathologies and environmental diseases”, particularly on prophylaxis plants for Brucellosis, Tuberculosis, Leukosis, Infectious Bovine Rhinotracheitis (*IBR*) necessary to ensure health status, free by these pathologies. The second lecture was given by Prof. William Vale (Federal University West Parà, Brazil) introducing his personal experiences on “Reproduction pathologies in male and female buffaloes”.

Thursday, June 19, was dedicated on reproduction technologies. Dr. Vittoria Lucia Barile (CRA/PCM) spoke on “Reproduction technologies: oestrus detection, oestrus synchronization, artificial insemination and sperm sexing”; Dr. Giuseppina Maria Terzano spoke on “Application of ultrasonography” introducing also Multiple Ovulation Embryo Transfer (MOET) and In Vitro Embryo Production (IVEP) techniques; Dr. Anna Chiacchierini (owner of the Chiacchierini Bull Center, Perugia, Italy) spoke on “Semen production in a Buffalo Bull Centre” and introduced bulls of Mediterranean Italian Buffalo Breed selected in according to genetic index too; Prof. Cesare Galli spoke on “Embryo Production in the Avantea Centre (Cremona, Italy); Dr. Olimpia Barbato (University of Perugia, Italy) presented laboratory methods of pregnancy diagnosis. Many questions were advanced and a long discussion was held on reproduction technologies.

Afterwards, Dr. Antonio Perrone (Ministry of Environment,) showed a lecture on an innovative use of buffalo as a producer of energy.

Friday, June 20, was dedicated to practical activities. In the early morning the 28 participants and the 9 teachers were carried by bus to Mr. Nello Giorgi Buffalo Farm situated in Aprilia, Italy. After welcome by all the family of Mr. Nello Giorgi and with beautiful breakfast in the garden of the farm, we showed the traditional system of Italian buffalo breeding, in particularly the farming systems (cages, cow shed, feeding line and systems, manure treatments), welfare cure will be analyzed as evident correlation exist among animal welfare and sanity and/or quality production. During the morning a section was dedicated to practice activity about the ultrasonography use to evaluate the female and male reproductive performances by W. Vale and V.L. Barile. Then Nello Giorgi family prepared a rich lunch with Italian typical food as *pasta*, *mozzarella* and other cheeses, *prosciutto* (ham), meat, vegetables and dessert together with Italian good wine too. The day continued with two lectures by Dr. Antonio Fagiolo (IZSLT) about hygiene of the environment and his personal experiences, and by Dr. Tiziana Galli (IZSLT) about identification of critical point in the productive chain: calf, udder control, milking room, processing and milk hygiene requirements. Afterwards, there was a practice section in milking room by Tiziana Galli on “Correct practices of milking and milk production measurements”, and by Dr. Carlo Boselli (IZSLT) that showed the lactocorder use to measure the milk flow. The family Giorgi, the location (beautiful farm), the breakfast, lunch (table organization and food) and the pleasant

atmosphere gave a wonderful day for every one of us.

Saturday, June 21, was dedicated to sightseeing in Rome, visiting Circus Maximus, S. Maria in Cosmedin church, Janus Arch, Vesta and Fortuna Virile temples, Marcellus theatre, Capitolium, the tomb of unknown soldier, Traianus column, the forum of Traianus, Caesar, Augustus and Nerva Roman Emperor, Colosseum, Costantinus Arch. After lunch the S. Peter Basilica was completely visited until the cupola, from which a wonderful panorama on Rome was enjoyed.

Sunday, June 22, was dedicated to tour of Sabaudia beach, located in the Circeo National Park, a typical example of Italian coastline vegetal formation: *Macchia Mediterranea*. The people could enjoy on the beach and swim in the sea.

During the day we had a brunch with Italian typical *salami* and buffalo cheese presented by Giorgio Saralli at Fagiolo's house.

In the afternoon there was a visit of the Reclaimed land and Historical Museum "*Piana delle Orme*".

Monday, June 23, was dedicated on milk quality and processing.

Dr. Gilberto Giangolini and Dr. Simonetta Amatiste (IZSLT) spoke on the management, feeding, sanitary state and milking technologies like their influence on the quantity and quality of milk production. They also showed the European regulation about hygiene and safe food.

Prof. Borghese stimulated the discussion, underlining the 4 different levels of food quality: chemical composition, sanitary quality, taste (very important for the consumer), quality mark as guarantee of milk origin and of

guideline in processing in D.O.P. products (Denomination Origin Protected).

Dr. Boselli completed his practical demonstration showing graphical representations in milk ejection (milk flow) and its influence on milk quality and on economic aspects for milk market. The automatic milking system, applied in buffalo, provoked great surprise and many questions.

Tuesday, June 24, started with lively presentation about breeding and genetic selection by Emanuela Parlato (ANASB). Prof. Borghese introduced the subject on milk production technologies before afternoon practical session, held in *Caseificio Perseo* situated in Pontinia, Italy.

During this session Dr. Carmela Tripaldi (CRA/PCM) and Dr. Tiziana Zottola (IZSLT) treated with practical demonstration the milk line processing after de-fattening and pasteurization for the cheese production; therefore all the steps to produce mozzarella cheese were shown: from coagulation to manual stretching to moulding phase. Also the process of other industrial products, as ricotta, butter, yogurt, ice cream and other cheeses were shown.

Afterwards a "buffet" was held with tasting and eating of the Caseificio Perseo's products.

Wednesday, June 25, started with Dr. Giuseppina M. Terzano (CRA/PCM) speaking on "Calves and heifers management". In 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; while in the semi-intensive systems the calves can feed buffalo milk or milk replacers in covered cages or bovine milk directly from milking cows. Regarding to heifers

management, the purpose of this stage is to reduce the no-productive period and relative cost, achieving puberty and pregnancy at early ages (16-20 months) with 380-420 kg of body weight utilizing different systems: extensive on pasture, semi-intensive, intensive.

Prof. Giuseppe De Rosa (University of Naples Federico II, Italy) spoke on “Behaviour and welfare of dairy buffalo”. Farming systems (cages, cow shed, feeding lines and systems, manure treatments), welfare cure (lagoons, shower, litters) was analysed as evident correlation exist among animal welfare, sanitary condition and production.

Dr. Sebastiana Failla (CRA/PCM) and Dr. David Meo Zilio (CRA/PCM) treated “Meat production technologies and processing”. They spoke on the system in meat line from weaned calves to intermediate phases, until fattening phase. They dedicated particular attention on the specific diets to realize mature young bulls at 400–440 kg at 15 months of age, with carcasses of good conformation, moderate fattening in according to market requirements, tender and juicy meat without bad smell.

This was the last day dedicated to theoretical sessions at IZSLT of Latina. For this reason all the participants liked to show their impressions regarding all aspects of the course (location, accommodation, lectures, practical activities, tours) and their thanksgiving to the “drivers” (all the organizers of the course and the workers of the IZSLT – Department of Latina) for the transfer service from Hotels to room conference.

Many participants presented lectures or pictures on the buffalo situations in their countries as Dr. Kourosh Elyasi for Iran, Prof. Baharuddin Tappa for Indonesia, Dr. Oscar Molina (President of American Buffalo Association)

for Guatemala, Dr. Luis Pacheco for Venezuela activities in reproduction, Thomas Olson for USA, Prof. Jabbar Alsaedy for Iraq. Dr. Claudia Roldan, President of the IBF, showed a video on the next World Buffalo Congress in Colombia on 2016.

At the end, a reach and fun photo gallery realized during the course was presented and Prof. Borghese and Dr. Fagiolo gave a certificate of participation to everyone and more a lot of material, the book “Buffalo Production and Research” edited by Prof. Antonio Borghese and FAO Regional Office for Europe, all the lessons of the course in electronic format.

Thursday, June 26, was dedicated to a day of total visits: 27 participants, the teachers Antonio Borghese, Antonio Fagiolo, William Vale, 7 delegates from Indonesia represented by the Prof. Erizal Sodikin and by Yohannes Hasiholan Toruan, from the Government of South Sumatra Province, were taken by the owner of Garofalo Company, the Avv. Raffaele Garofalo.

The first step was in the big farm in Guarcino, Roccamonfina, Italy, where there are 1500 buffaloes subdivided in both lines, milk and meat purposes. There are several milking rooms for 60 dairy buffaloes each one, an enormous stable for calves in the cages and a big center for feeding-stuff: silages, hay and concentrates. Every operation is mechanized.

The second step was in S. Maria Capua Vetere, Italy, in a restaurant close to the wonderful Roman amphi-theatre, were also the *mozzarella* and *ricotta* from Garofalo farms were offered.

The third step was the visit to the big cheese industry *Casaro del Re*, where millions of mozzarella were produced with high

mechanization systems and exported in 32 countries.

The fourth step was in a big typical shop of Garofalo Company, where many products from milk and meat line were offered.

Friday, June 27, the group of participants and teachers had departure to Monterotondo, Roma, to visit the Research Centre and the *Tormancina* Farm of Animal Production Research Centre (CRA/PCM). Dr. Bianca Moiola showed the activities of the Centre. Afterward Dr. Vittoria Lucia Barile showed the buffalo Centre with buffaloes in mechanical milking and calves. Also the feedlot with typical Bovine Italian breeds, as Chianina, Maremmana and Piemontese, were shown.

During the return to Latina, there was a visit of the *Casale del Giglio* Wine Factory (Le Ferriere, Latina) with typical luxurious lunch, where 5 from the best wines of the factory were offered, one for each plate.

In the afternoon there was the visit of the *Casabianca* Buffalo Farm and cheese Factory

(Fondi, Italy). At the end of the visit Prof. Borghese did the evaluation and closing remarks on the IBF Training Course and then we had a beautiful farewell dinner presented by Dr. Francesco D'Ausilio, owner of *Casabianca* Buffalo Farm and cheese Factory.

Afterwards there were the last regards between all the participants of the course; all participants expressed appreciation with the promise to meet again soon. In fact, during these days a pleasant atmosphere gave the opportunity to establish friendship between all the participants.

There were vivacious discussions, opinions and funny things that happened.

Hopefully, as the goal of the course was achieved, to reorganize other training courses like this.

Goodbye to the next course!!!

**Giorgio Saralli and Tiziana Galli**

## **Dear IBF Official Delegates of the Countries**

Look at beautiful news: IBF will organize other training course, after the success of the previous one, and you can enter in the new web site of the IBF [www.internationalbuffalofed.org/wp-admin](http://www.internationalbuffalofed.org/wp-admin)  
Look at and collaborate sending information and publications and taking part to the community



## Photo gallery of the International Buffalo Federation Training Course



Animal Prophylaxis Research Institute, Latina, Italy – Teachers and Participants



Welcome and opening session  
Borghese, Fagiolo, Scalzo, D'Ausilio



Borghese welcome to Prof. Tappa from  
Indonesia



Conference Room



Borghese receives a gift by Prof. Jabbar  
Al-Saedy from Iraq





Mr Nello Giorgi and his buffalo farm, Aprilia, Italy



Galli and Fagiolo lesson



Vale and Barile at practical session of ultrasonography for pregnancy diagnosis



Saralli, Fagiolo, Vale and Borghese



Dinner in Giorgi Farm





**Dr. Francesco D'Ausilio, owner of the Casabianca Farm**



**Heifer group**



**Calves management**



**The bull with buffalo cows**



**Milking room**



**Good udder conformation**





Presentation of Perseo Cheese Industry



Mr. Romano Realacci, owner of Perseo, and Claudia Roldan, President of IBF



Milk curd



Stretching phase



Moulding of "treccia"



The big "treccia" of buffalo mozzarella

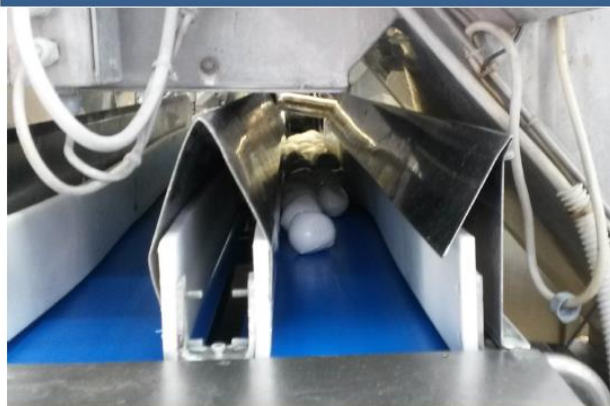


The group with the teacher Carmela Tripaldi





The group at the Roman Amphitheatre in Capua, Italy



Mechanical moulding of mozzarella in Garofalo Industry



Dinner in Casale del Giglio Wine Farm



Tiziana Zottola



Antonio Fagiolo



Giorgio Saralli



Tiziana Galli



Provincia di Latina



# **IBF TRAINING COURSE ON BUFFALO MANAGEMENT AND INDUSTRY**

**June 16 - 27, 2014**

**Istituto Zooprofilattico Sperimentale  
del Lazio e della Toscana Mariano Aleandri  
Sezione di Latina**

**Latina, Italy**



## Organized by

Antonio Borghese  
Antonio Fagiolo  
Remo Rosati  
Vittoria Lucia Barile  
Gianpaolo Bruni  
Cristina Di Russo  
Francesco D'Ausilio  
Tiziana Galli  
Nello Giorgi  
Giorgio Saralli  
Giuseppina Maria Terzano  
Tiziana Zottola

## Co-Organizers



GIORGI NELLO SRL



## PROGRAM

### MONDAY, JUNE 16

- |             |   |
|-------------|---|
| 9.00-17.00  | Arrival of participants, check-in to accommodation and registration                                       |
| 17.00-19.00 | Visit of the Animal Prophylaxis Research Institute laboratories for milk analysis and pathology diagnosis |

### TUESDAY, JUNE 17

- |             |   |
|-------------|---|
| 9.00-10.00  | Authorities welcome and Course presentation                                   |
| 10.00-13.00 | <b>The Buffalo species in the world economy</b><br><i>Prof. A. Borghese</i>   |
| 15.00-18.00 | <b>Nutrition and Feeding in buffalo species</b><br><i>Prof. F. Infascelli</i> |
| 18.00-19.00 | <b>Rumen microbiology</b><br><i>Dr. A. Chiariotti</i>                         |

### WEDNESDAY, JUNE 18

- |             |   |
|-------------|---|
| 9.00-13.00  | <b>Health controls: infective pathologies and environmental diseases</b><br><i>Dr. A. Fagiolo, Dr. G. Saralli</i>   |
| 15.00-16.00 | <b>The evolutionary, clinical and molecular cytogenetics of the buffalo and their contribution to the genetic improvement</b><br><i>Prof. L. Iannuzzi</i> |
| 16.00-19.00 | <b>Reproduction pathologies in male and female buffaloes</b><br><i>Prof. W. Vale</i>  |

### THURSDAY, JUNE 19

- |             |   |
|-------------|---|
| 9.00-11.00  | <b>Reproduction technologies: oestrus detection, oestrus synchronization, artificial insemination, sperm sexing</b><br><i>Dr. V.L. Barile</i> |
| 11.00-13.00 | <b>Application of ultrasonography</b><br><i>Dr. G.M. Terzano</i>  |
| 15.00-16.00 | <b>Semen production in a Buffalo Bull Centre</b><br><i>Dr. A. Chiacchierini</i>   |

16.00-17.00	<b>Embryo production in the Avantea Centre</b> Prof. C. Galli
17.00-18.00	<b>Pregnancy diagnosis: laboratory methods</b> Dr. O. Barbato
18.00-19.00	<b>The buffalo as a producer of energy</b> Dr. A. Perrone

### FRIDAY, JUNE 20

8.30	Departure to the <i>Nello Giorgi</i> buffalo farm, Campoverde, Aprilia.
9.00-10.30	<b>How a pathology event has to be managed from the farm to the laboratory</b> Staff: <i>A.Fagiolo, G.Saralli</i>
10.30-13.00	<b>Reproductive controls - practical demonstration: rectal palpation, ultrasonography, artificial insemination</b> Staff: <i>W. Vale, G.M. Terzano, V.L. Barile</i>
15.00-18.00	<b>Correct practices of milking and milk production measurements</b> Staff: <i>A. Borghese, T. Galli, G. Bruni, C. Boselli</i>

### SATURDAY, JUNE 21

8.00-13.00	Tour of Sabaudia beach (located in the Circeo National Park) a typical example of Italian coastline vegetal formation: <i>Macchia Mediterranea</i>
16.00-20.00	Visit of the Reclaimed land and Hystorical Museum “ <i>Piana delle Orme</i> ”

### SUNDAY, JUNE 22

Sightseeing in Rome

### MONDAY, JUNE 23

9.00-13.00	<b>Milk quality and processing</b> <i>Dr. S. Amatiste, Dr. G. Giangolini</i>
15.00-18.00	<b>The milk flow and its influence on quality and economic aspects with practical demonstrations</b> <i>Dr. C. Boselli</i>

### TUESDAY, JUNE 24

9.00-11.00	<b>Breeding and Selection</b> <i>Dr. A. Coletta, Dr. E. Parlato</i>
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11.00-13.00	<b>Milk production technologies</b> <i>Prof. A. Borghese</i>
15.00-18.00	<b>Practical demonstration of milk processing in the Perseo cheese factory</b> <i>Dr. C. Tripaldi, T. Zottola</i>

### WEDNESDAY, JUNE 25

9.00-11.00	<b>Calves and heifers management</b> <i>Dr. G. M. Terzano</i>
11.00-13.00	<b>Behaviour and Welfare of dairy buffalo</b> <i>Prof. G. De Rosa, Prof. F. Napolitano</i>
15.00-18.00	<b>Meat production technologies and processing</b> <i>Dr. S. Failla, Dr. D. Meo Zilio</i>

### THURSDAY, JUNE 26

9.00-18.00	Visit of the <i>Buffalo Beef</i> farm (Galluccio, Caserta) and the <i>Buffalo Beef</i> factory (S. Angelo in Formis, Caserta)  Visit of the <i>Fattorie Garofalo</i> farm and cheese factory (S. Maria Capua Vetere, Caserta)  Staff: <i>Prof. A. Borghese, A. Fagiolo, S. Failla, D. Meo Zilio</i>
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### FRIDAY, JUNE 27

7.00	Departure to CRA-PCM (Monterotondo, Roma)
9.00-11.30	Visit of the Research Centre and the <i>Tormancina</i> Farm
11.30-12.00	Evaluation and closing remarks on the IBF course
12.00	Transfer to Latina
14.00-16.00	Visit of the <i>Casale del Giglio</i> wine factory with typical lunch (Le Ferriere, Latina)
17.30-20.00	Visit of the <i>Azienda Agricola Casabianca</i> buffalo farm and cheese factory (Fondi, Latina)
20.00	Farewell dinner

## List of Teachers

Surname	Name	Institution
Coletta Parlato	Angelo Emanuela	ANASB – Italian Buffalo Breeders Association
Galli	Cesare	Avantea Centre
Chiacchierini	Anna	Centro Tori Chiacchierini
Iannuzzi	Leopoldo	CNR ISPAAM
Barile Chiariotti Failla Meo Zilio Terzano Tripaldi	Vittoria Lucia Antonella Sebastiana David Giuseppina Maria Carmela	CRA-PCM – Animal Production Research Centre
Vale	William	Federal University West Parà, Brasil
Borghese Perrone	Antonio Antonio	IBF – International Buffalo Federation
Amatiste Boselli Bruni Fagiolo Galli Giangolini Saralli Zottola	Simonetta Carlo Gianpaolo Antonio Tiziana Gilberto Giorgio Tiziana	IZSLT Animal Prophylaxis Research Institute
Napolitano	Fabio	University of Basilicata
Infascelli De Rosa	Federico Giuseppe	University of Naples Federico II
Barbato	Olimpia	University of Perugia

<b>PARTICIPANT</b>	<b>COUNTRY</b>	<b>MEMBERSHIP</b>
BAHARUDDIN TAPPA	INDONESIA	INDONESIAN INSTITUTE OF SCIENCES (LIPI)
EPINA CORNELY	INDONESIA	PROVINCIAL GOVERNEMENT OF SOUTH SUMATRA RESEARCH, DEVELOPMENT AND INNOVATION BOARD
HERFIANI RIZKIA	INDONESIA	PROVINCIAL GOVERNEMENT OF SOUTH SUMATRA RESEARCH, DEVELOPMENT AND INNOVATION BOARD
RUDY PURNAMA ADMAJA	INDONESIA	PROVINCIAL GOVERNEMENT OF SOUTH SUMATRA LIVESTOCK DEPARTMENT
THOMAS OLSON	USA	RANCH Turkey Creek Co. - PRESIDENT AWBA (American Water Buffalo Association)
SHANNON GAY	USA	RANCH Turkey Creek Co.
WILLIAM ORTIZ	COLOMBIA	UNITED NATIONS KOSOVO
RICARDO BOTERO	COLOMBIA	PARTICULAR BREEDER
LUIS PACHECO	VENEZUELA	VETERINARIAN ESP. REPRODUCTION BUFALO
GOVINDRA RAM	TRINIDAD	MINISTRY OF FOOD PRODUCTION
DREAMS CARNARVON	TRINIDAD	MINISTRY OF FOOD PRODUCTION
VERNON BALKARAN	TRINIDAD	LA GLORIA FORAGE DEVELOPMENT CENTRE MINISTRY OF FOOD
JEWANLAL JANKEE	TRINIDAD	MORA VALLEY FARM GOVERNMENT OF TRINIDAD TOBAGO
RAJKUMAR SINGH	TRINIDAD	Sugarcane Feeds Centre
ADAN ARANDA	MEXICO	DIRECTOR CARABEEF
ISABEL CAMPUZANO	MEXICO	DIRECTOR AGROALIMETARIUS CARABEEF
LORI SMITH	CANADA	ONTARIO WATER BUFFALO CO.
CAITLYN WEST	CANADA	ONTARIO WATER BUFFALO CO.
KATHERINE PEPE	USA	GREEN ACRES LLC
JODI LARSEN	USA	GREEN ACRES LLC
VIERMAN	INDONESIA	Directorate General Livestock Services & Animals Health, Ministry of Agriculture
OSCAR MOLINA	GUATEMALA	GARADERRA RIO SECO SA.
NERY ORREGO	GUATEMALA	Rama Blanca, S.A.
TAKASHI SHIRAI	JAPAN	WETLANDS INSTITUTE OF NORTH-EASTERN ASIA
MOHAMMAD N. DASHTMIAN	IRAN	FARMER - PRIVATE PORTION
KOUROSH ELYASI	IRAN	VETERINARIAN - PRIVATE PORTION
JABBAR ALSAEDY	IRAQ	FORMER BUFFALO MANAGER MINISTRY OF AGRICULTURE VET DIRECTORATE
CLAUDIA P. ROLDAN	COLOMBIA	PRESIDENT IBF - ACB ASOBUFALO



# BUFFALO POPULATIONS AND THEIR BREEDING IN KOSOVO

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## INTRODUCTION

Livestock production as a branch of agriculture in Kosovo is closely linked to many other fields that relates to the food safety, soil improvement, more efficient use of land that are directly dependent on food for animals, etc. In this regard, buffalo production used to be part of the livestock production chain (Bytyqi et al., 2010). Buffalo population in Kosovo belongs mainly to Mediterranean type, which is spread in many countries of the Balkan Peninsula. In the past (up to years 80th), this species played significant role in the Kosovo rural families, mainly used for its products (milk and meat) and work. In the last decade, as in other countries of the Europe, the development of this species seems to have negative trend without being able to be competitive against other species with high productivity, as cattle, sheep and goats (Borghese, 2004), the number of buffaloes

has dropped rapidly for about 20 times less. Now, it is considered that population size is > 400 heads, in total. Buffaloes in Kosovo are characterized by black colour, long and rare hair, curved horns, the average ear, shining eyes, and developed udder. The live body weight varies from 500 to 700 kg per mature animal. For the period of about 240 days of lactation, produce approximately 1.000 kg milk. Females enter in the first lactation after 30 months of age. Under rather extensive environment compared to some countries in Europe, milk production was lower in Kosovo for approximately 66.8%. The fertility traits to a large extent were poorer comparing them on indicators to achieving a 15 month calving interval, as ideal scenario in dairy buffalo breeding.

However, there is an indication that this animal was less sensitive to an extensive environment and balanced ratio and a better management may have significantly improved overall traits. Design of the

conservation program for this animal and study of the components of their products for their economic effects, and their importance in relation to genetic biodiversity require immediate attention of all stake holders in Kosovo.

Nowadays, buffaloes are very rare and generally reared in separate households and areas of Kosovo. The buffalo species is characterized by: a minimum requirement for food production is based mainly on natural pastures and voluminous foods and more traditional breeding (Bytyqi et al., 2011). Physical-chemical and microbiological components of buffalo milk are presented in Table 1. Average milk production appears to be low about 6:01 kg/day for Buffalo during lactation, with 19.7% dry matter, 9.5% butterfat, lactose 4.9 and 4.8% protein, respectively. Bacterial contamination appears to be about 66.170 (CFU/mL) and about 58.300 somatic cells (SCC/mL) milk. Raising cost for

calves/heifers (€/month) in the buffalo Kosovo farms are presented in Table 2. As expected, the most expensive appeared pre weaning period  $\leq 3$  months (€ 314.88 per month), and then during the period  $4 \leq 12$  months (€ 46.74 per month), respectively. These expenses represent 97.6% respectively 79.6% of the total expenditure during the respective time period. While calves grow in age, the concentrated and other voluminous feed poses considerable cost, although never exceeds 6.5% of total expenditures for the total period of growth. In order to increase the profit of buffalo farmers, it is very important to raise buffalo calves using cow, goat and milk replacer, during pre-weaning period. This indicates that in the future there is great potential to improve the net profit, the general situation in buffalo farms and in general the contribution of animal industry in the rural economy in Kosovo.

**Table 1. Chemical and microbiological characteristics of Buffalo milk, Kosovo type (n=40)**

Chemical and microbiological content	Average ( $\bar{X}$ )
Milk production (kg)	6.01
Protein (%)	4.8
Butterfat (%)	9.5
Lactose (%)	4.9
Dry Matter (%)	19.7
Somatic Cell Count (SCC/mL)	58.300
Bacterial content (CFU/mL)	66.170

**Table 2. Raising cost for calves/heifers (averages  $\pm$  standard deviation; €/month) in the buffalo Kosovo farms, year 2013 (n=40).**

-----Age of calf/heifer per month -----					
Cost type	$\leq 3$	$4 \leq 12$	$13 \leq 24$	$> 24$	Average ( $\bar{X}$ )
Health	$1.07 \pm 0.9$	$0.51 \pm 0.2$	$1.67 \pm 0.7$	$0.40 \pm 1.2$	$3.65 \pm 1.8$
Forage feed	$0.87 \pm 1.1$	$0.80 \pm 0.1$	$0.66 \pm 0.1$	$0.85 \pm 0.1$	$3.18 \pm 1.7$
Silage	$0.01 \pm 0.0$	$0.76 \pm 0.1$	$0.56 \pm 0.2$	$0.95 \pm 0.6$	$2.28 \pm 0.2$
Concentrate feed	$3.67 \pm 1.3$	$9.90 \pm 2.5$	$1.75 \pm 0.5$	$4.70 \pm 1.8$	$20.02 \pm 5.5$
Milk feed	$314.88 \pm 25.2$	$46.74 \pm 12.3$	--	--	$361.62 \pm 29.1$
Milk replacer	$0.00 \pm 0.0$	$0.00 \pm 0.0$	--	--	$0.00 \pm 0.0$
Other cost	$0.03 \pm 0.1$	$0.00 \pm 0.1$	$0.25 \pm 0.1$	$0.00 \pm 0.0$	$0.25 \pm 0.1$
Total	$320.52 \pm 25.6$	$58.70 \pm 13.1$	$4.89 \pm 2.3$	$6.90 \pm 3.1$	$391.00 \pm 30.9$





Figure 1. Buffalo type in Kosovo.





Figure 2. Buffalo small herd in pasture.

## References

- Borghese, A., 2004. Recent developments of buffaloes in Europe and Near East. Proc. of the Seventh World Buffalo Congress, Manila, Philippines 20 to 23 Oct.: 10 16.
- Bytyqi H, Tahiri T, Muji S, Mehmeti H, Hoxha A , 2010. Buffalo Population (*Bubalus Bubalis*) and Breeding Characteristics in Kosova. Annual Meeting 2010 of SAVE Foundation and the European SAVE Network 4th European Seminar on Agro-Biodiversity: „AgroBiodiversity – a crucial part of Biodiversity“.
- Bytyqi, H, Muji, S., Ardita, A., Aliu, S. 2011. Buffalo population (*Bubalus bubalis*) characteristics in Kosovo. International Journal of Livestock Production Vol. 2 (12), pp. 182-187, 5 November, 2011.