Buffalo Newsletter

Number 32 – December 2017

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

Inside this issue

The Editorial board is happy to present the 32th number after a long and full of events year.

The newsletter opens with the **celebration for the retirement of prof. Luigi Zicarelli**, a well renowned scientist and buffalo expert, IBF president 2004-2007, executive officer for IBF Europe, and former Dean of the Faculty of Veterinary Medicine at Federico II in Naples, and his last *letio magistralis*.

A broad space is dedicated to **reports** from Buffalo Congresses (Philippines, Germany, Nepal and Mexico), events (1st Greek Buffalo Festival) and the 3rd IBF training course, to which an extended section of the next number will be dedicated.

The **scientific activity** reports one paper from Canada on in vitro embryo production technologies, and three reviews: one from Bulgaria about the history of buffalo introduction in the country, one on strategy of scientific approach in developing the buffalo in Iraq, and the third on recovery of tropical wetlands from Costa Rica.

The **news section** gives few spots on Australian buffalo newsletter, Pakistan updating and the welcome letter from upcoming 12th World Buffalo Congress in Istanbul in 2019.

This newsletter ends as usual with the updated list of IBF members.

Wishing you a good time reading, we remind you that your contribution (scientific reports and/or events) will be greatly welcome.

We are looking forward delivering two issues in 2018.

The Editorial Committee

Buffalo Newsletter - Number 32 -December 2017

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CELEBRATIONS FOR THE LATEST ACADEMIC LECTURE HELD BY Prof LUIGI ZICARELLI

Lectio Magistralis "The impulse of king Carlo III in the renewal of the agriculture and livestock activities in the South of Italy"

December 19, 2017
University of Federico II, Naples, Italy

The University of Naples Federico II organized on the last December 19th, the celebration for the retirement of prof. Luigi Zicarelli, held in the Aula Magna of the Royal Botanic Garden.

Aula Magna of the Royal Botanic Garden (web photo)

Many students were present and many teachers too, from not only University of Naples, but also coming from other Universities of Italy and from many Research Institutes, plus farmers, breeders and friends.

Prof. Gaetano Oliva, Director of the Veterinary Medicine Department, presented a brief history of Prof. Luigi Zicarelli, underlining the activity as Dean of the Faculty of Veterinary Medicine from 2007 to 2013. The great effort he devoted to modify the old Italian Faculty in the modern research Department according the guidelines of the European Union to obtain the EU recognition and certification, was pointed out.

Dr. Antonio Limone, Director of the Animal Prophylaxis Research Institute in Naples, remembered the school created by Prof. Luigi Zicarelli, saying “the true master he was, never will retire”.

Prof. Bruno Ronchi, from University of Viterbo and President of the Scientific Association for Animal Production, remembered the carrier of Prof. Luigi Zicarelli, who created on 1985 the first academic Course on Buffalo Livestock in Italy and in the world, held by himself as full professor, in the Faculty of Veterinary Medicine in Naples, until he became the Dean of the Faculty. He promoted the research and the development in buffalo field, defending the image of the quality of buffalo products of Campania Region against the detractors. His thick eyebrows reflect his strong, hyperactive, determined temper.

Prof Luigi Zicarelli (web photo)

Finally, Prof. Luigi Zicarelli presented his lecture *Lectio Magistralis* on “The impulse of king Carlo III in the renewal of the agriculture and livestock activities in the South of Italy”. Carlo III, known as Carlo di Borbone (*Bourbon Family)* born on 1716 and died on 1788, was king of Naples, the capital of the “*Regno delle due Sicilie”*, including all the South of Italy.

He took an active role in agriculture and particularly in livestock renewal: he selected the Persano horse; he founded the Breeding Centre of Royal Governamental Persano Breed in the Carditello farmstead and the Breeding Centre of Persano horse in the Royal site of Persano.

Carlo III imported the Brown Swiss in Carditello on 1750, where he introduced also the first buffalo herd, building the cheese factory in Aldifreda, near Caserta. He realized also the silk industry in S. Leucio, near Caserta, the Real Fagianeria, where the feasants were bred, and the Cow Shed in the King House in Capodimonte.

Unfortunately, the politic of Savoia, a royal family of Northern Italy who governed the Country from 1861, was to move the best of industry and livestock from the South to the North of Italy: on 1874 the Breeding Centre of Persano was closed. In 1900, there was a period of renaissance of the Government Breed of Persano with the recovery from the Cavalry Regiments of the subjects that most recalled its morphological and functional characteristics. At last, the Persano breed was transferred definitively to the Military Center of breeding and supply quadrupeds of Grosseto (Tuscany) in 1972.

Prof Zicarelli and Dr Benedetto Neola, of the Veterinary Association of Naples, during the celebration (web photo)

Prof. Zicarelli concluded remembering other products that express the excellence of Naples and the South of Italy, as the pizza margherita, invented in Naples, and the buffalo mozzarella cheese, that is the third product in economic terms in Italy as DOP (Denomination Origin Protected), and well-known in all countries in the world.

A standing ovation from all students, colleagues and representative of professional associations attended the celebration, was the ultimate tribute for his passionate dedication to the veterinary profession and to the academic world.

"*Every disciple takes something from his teacher*" (Oscar Wilde) …and we have taken the best.

Vittoria L. Barile

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REPORTS

3rd COURSE ON BUFFALO MANAGEMENT AND INDUSTRY

May 9-19, 2017
Rome, Italy

IBF INTERNATIONAL COURSE GROUP

The 3rd IBF Course on Buffalo Management and Industry was successfully.

IBF together with the CREA-Centre for Livestock production and Aquaculture in Rome organized the course. Participants came from all over the world: Latin America (Brazil, Guatemala, Bolivia, Cuba, Costa Rica), North America (Canada), Europe (Bulgaria, Romania, Greece), Asia (Thailand, Iran).

Lectures, held by experts in buffalo field, highlighted the actual socio-economic and environmental impacts of the buffalo breeding at nowadays and the best practices to obtain meat and milk products of high quality. Participants stated that the Course was “memorable, practical, fruitful, and … with lots of fun!”

A special section dedicated to the course, with a detailed description both of the issues addressed and the farms, laboratories and industry visited, will be published soon.

ACTIONS FOR THE DEVELOPMENT OF THE BUFFALO LIVESTOCK FARMING IN GREECE

Buffalo (Bubalus bubalis) livestock farming in Greece has been demonstrating a stable increase during the last 30 years. This development occurred simultaneously with considerable developments in Greek markets with the emergence of modern enterprises increased demand for buffalo meat by Greeks nonetheless not for dairy products.

Water buffalo farming in Greece is located near lakes or rivers, especially in northern Greece. There are a total of 30 water buffalo farms in Greece and 20 of them are located near Lake Kerkini, but the total number of the buffalo in Greece steel remains low not more than 5.000 animals.

During the last years, the Greek Buffalo Breeders Association was founded in order to promote the genetic improvement of the Greek Buffalo and to inform the Greek people about the benefits of the Buffalo products (milk and meet).

The first workshop was held on 21st January in Serres (near Lake Kerkini). The workshop title was **΄Looking in to the Future and Prospects of Buffalo Breeding in Greece"** organized by the Greek Buffalo Breeders Association, the Hellenic Association of Information and Communication Technology in Agriculture, Food and Environment (the Greek Branch of European Federation for Information Technology in Agriculture - EFITA) and the Chamber of Serres. At the presence of the Minister of the Interior of the Greek Government, representatives of the Hellenic parliament and researchers and professors of the Aristotle University of Thessaloniki proposed actions for the development of the buffalo livestock farming in Greece.

The main action for the year 2017 was the 1st Greek Buffalo Festival which was hold between 24-25 June (2 days) at Kerkini Lake in Chrisochorafa. The Festival was organized by the Greek Buffalo Breeder Association, the Institute of Animal Genetic Improvement of the Greek Ministry of Agriculture, the Lake Kerkini Management Authority and the Chamber of Serres.

The Festival opened with a workshop on **"The beneficts of the Buffalo Products"** with the participation of experts from the food sector and researchers for more than 600 people on total. After the completion of the workshop music and delicacies based on buffalo meat preparation, were served to the participants. The second day was dedicated to the students of primary schools. The students had participated in a painting contest where famous chefs demonstrated new dishes of food make by buffalo meet. The event closed with the visit to local farms during the second day.

During the last months, the Greek Government in collaboration with University and the Association of the Greek Buffalo Breeders have been focusing on the increase in numbers of the buffalo in Greece.

[Photos from FB page Festival ΧρυσοΒούβαλου Υγροτόπου Κερκίνης]

Dimitrios Roustemis

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15th BUFFALO CONGRESS OF GERMANY

October 12-13, 2017
Penig, Germany

On the 12th and 13th of October in 2017 the 15th Buffalo Congress of Germany took place in the Kultur- und Schützenhaus Penig. To this meeting more than 50 scientists and practicing farmers from six countries were welcomed. From Germany, where more than 6000 buffaloes are kept in the meantime, all designated farms keeping buffaloes from Brandenburg over Saxony to Baden-Württemberg were represented. Especially many participants from the Universität Leipzig were registered.

Prof. Vale from Brazil lectured about genetic resources of buffaloes in Latin America, the sustainable development of buffalo breeding and reproduction management, artificial insemination and embryo production in vitro at the buffalo. Prof. Barbosa, from Brazil too, spoke about special topics of mineral supply and infectious diseases of buffaloes.

The Bulgarian participants Dr. Lüpcke and Prof. Peeva presented research results in the field of immunology and experiences with rearing systems for buffalo calves. Prof. Steinhöfel presented the current status of trace element supply in cattle. He particularly emphasized the complexity of the topic. Much does not help much, but deepens the lack even more by antagonisms between the trace elements. In a well-tried and refreshing way, Dr. Golze spoke about “Buffalo beef – a product for modern and healthy diet”. Prof. Klunker gave an interesting lecture about stance and perspective of suckler cow husbandry and particularly emphasized the importance of suckler cow husbandry for feeding the ever-increasing world population with grass-fed beef. He also pointed up the special importance of suckler cow husbandry for the conservation of grassland as a cultural landscape. Dr. Schafberg spoke about the beginnings of buffalo husbandry in the Tiergarten of the Martin-Luther Universität Halle-Wittenberg. Mr. Paget from Austria and Mr. Villiger from Switzerland reported on practical experience of buffalo husbandry in their countries. Mr. Thiele recalled the founding of the first German Buffalo Association in Halle an der Saale in 1917 and its founder Georg Tartler.

According to the consensus of the guests, the buffalo congress was described as very successful and it fully lived up to its objective of the knowledge transfer over the buffalo.

Manfred Thiele

German Buffalo Association

INTERNATIONAL CONFERENCE ON CARABAO-BASED ENTERPRISE DEVELOPMENT

October 26-27, 2017
Science City of Munoz, Nueva Ecija, Philippines

Mabuhay!

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), in partnership with the Department of Agriculture (DA) Philippine Carabao Center (PCC), warmly welcomed us to the International Conference on Carabao-Based Enterprise Development (CBED).

The first aim of this conference was to bring together various stakeholders to exchange scientific and technological knowledge and best practices on CBED from institutional, government and private sectors. Secondly, to discuss government policies, regulations, support facilities and logistics that are vital in the CBED. Thirdly, to explore mutually beneficial partnerships, collaboration or cooperation in relevant R&D and other initiatives in CBED.

Over 150 buffalo lovers and specialists from four countries (Philippine, India, Laos and Thailand) including small to large scale enterprises, farmer and dairy cooperatives, local

government units, civil society organizations, experts and scientists on buffalo production, national and international policy and research institutional representatives, and other regional and global networks agents joined this event. During the conference, papers were presented and presentations made by invited resource persons which were also published along with a list of possible partnerships or collaborative activities with experts or other organizations and enterprises in Asia (figure 1). At the end of these two days, much progress was made in sharpening the focus of programs and initiatives that directly benefit buffalo farmers in Philippines and ASEAN.

FIGURE 1 A. GROUP PHOTO OF PARTICIPANTS; B.THE CONFERENCE'S INVITED SPEAKERS GOT THE IASK FILES FROM THE PCC; C. OUR GROUP HAD A PRIVATE VISIT THE PURE BREED MEDITERRANEAN DAIRY BUFFALO FARM OF DR. LIBERTADO CRUZ, THE FOUNDER OF THE PCC; D. VISIT OF THE BULL SEMEN CENTER, WHICH IS ANOTHER AN IMPORTANT SERVICE OF THE PCC

This was the author's first visit to the Philippines. From my point of view, the CBED was a very impressive conference in terms of professional hospitality, organization, and teamwork on the part of the local committees. The conference center itself was also spacious, well equipped and comfortable. It is located in the main rice production area of the Philippines and has the largest buffalo population - numbering around 200,000 animals. During my tour of the area I saw a buffalo dairy farm, a buffalo dairy processing company and a buffalo dairy café (figure 2) as well as local people using buffalo for transport. The PCC is the main organization that provides scientific support and technical advice to the buffalo business in the Philippines. I learned a lot and made many buffalo network connections at this conference. The PCC, moreover, has just launched a new knowledge database for the public called "iASK" – Innovative Answer Solution

Knowledge - that provides a wide database of information on buffalo farming and related industries. .

FIGURE 2. TOP LEFT IS A PERSON RIDING ON BUFFALO ON THE MAIN ROAD; OTHERS ARE DAIRY PRODUCTS FROM BUFFALO MILK FROM THE PCC'S CAFE

For more details in International Conference on Carabao-Based Enterprise Development, please visit this link http://www.pcc.gov.ph/resources.php?page=Downloads

Merry Christmas and Happy New Year 2018

Best wishes for all buffalo friends!

Thuchadaporn Chaikhum-Marcou (Ohm)

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INTERNATIONAL BUFFALO SYMPOSIUM

November 15-18, 2017
Chitwan, Nepal

The International Buffalo Symposium 2017 (IBS2017) has been successfully concluded on November 18, 2017 in Sauraha, Chitwan. The symposium was organized by Faculty of Animal Science, Veterinary Science and Fisheries, Agriculture and Forestry University (AFU), Chitwan, Nepal. This was co-organized by MoLD, Department of Livestock Services, Nepal Agricultural Research council and Michigan State University (MSU), USA. Further support to the symposium was provided by "Feed the Future Livestock Systems Innovation Lab.", University of Florida, USA; "Heifer International", Nepal and Nepal Feed Industry Association".

IBS2017 was one of the activities accomplished within the USAID-funded multi-institutional collaborative research project on "Improving nutrition and productivity of buffalo to adapt to the impacts of climate change in Nepal (2012-2015)" in collaboration with Nepal Agricultural research Council (NARC) and Directorate of Livestock Services (DSL) under the Ministry of Livestock Development (MoLD) that was led by Michigan State University (MSU). Michigan State University is a strategic partner of AFU. A series of bilateral meetings, visits, discussions were held between the authorities of the two universities in recent years.

The symposium was the first of its kind in the history, organized in Nepal. A total of 5 special papers, 14 keynote papers, and 27 papers in the form of oral and 33 in the form of poster were presented under six different thematic areas of buffalo production and

management, nutrition, health, reproduction, policy and socio economics, genetics and biotechnology and buffalo as an animal source of food. This mega event was represented by 180 registrant participants from 10 countries; Nepal, India, Pakistan, China, Bangladesh, Thailand, Philippines, Italy, USA and Canada that included the lead authorities of AFU, MSU, Government of Nepal, NARC and International Buffalo Federation, Asian Buffalo Association, Universities and reputed research organizations nationally and internationally. All papers presented were of high quality and a thorough discussion was made. Several sideline meetings were organized and ideas were also shared openly. The symposium proved to be an excellent scientific meeting in terms of fulfilling the foreseen objectives.

Sharada Thapalia, Dean of AFU, declared the fundamental principles of AFU: food security, economy improvement for farmers, environmental sustainability.

Nanda Joshi, professor, Department of Animal Science, MSU emphasized that research results must be acquired by the farmers through extension services.

Bhuminand Devkota, AFU, complained that the increase in meat request by Nepalese market pushes the farmers to sell buffaloes at young age. Research should focus on reducing age at calving in buffalo to allow farmers to obtain earlier benefits from selling milk.

Bimal K Nirmal, Director MoLD, said that there are 5.68 MiL. buffaloes in Nepal, and only one AI insemination center providing semen of Murrah breed. The majority of local buffaloes have been crossbred with Murrah bulls through natural mating. Local breeds – Parkote, Lime, Gaddi - must be maintained through specific programs.

Shujun Zhang (Huazhong Agricultural University, China) described her researches in genetic disorders in cattle and buffalo.

Yangqing Lu (Guanxi University College of Animal Science and Technology, China) reported researches in biotechnology of reproduction and AI.

Antonio Borghese (International Buffalo Federation) depicted the evolution of buffalo production worldwide.

Bianca Moioli (CREA - Center for Livestock Production and Aquaculture, Italy) described the selection strategies for buffalo in Italy as well the recently concluded project on buffalo genome sequencing.

Janice Swanson (MSU) outlined OIE international standards on animal welfare.

Drona Rasali, Director, Population Health Surveillance & Epidemiology Population and Public Health (human), Vancouver, Canada, made evident the need for food security in Nepal.

Danilda Hufana-Duran, Philippines reviewed the research activities of the Carabao Center on MOET, in vitro embryo production, OPU, cryopreservation, cloning by SCNT, ovulation synchronization and sperm sexing.

Metha Wanapat, Khon Khaen University, Thailand, enhanced the need to base buffalo production on feed production and innovation, taking into account greenhouse gas and methane emissions.

Nasim Ahmad, Faculty Veterinary and Animal Science, Pakistan, complained about the unsuccessful of AI in buffalo: farmers prefer to keep the bull in the herd.

Daniel Grooms, Department of Animal Science, MSU, described some devices for rapid on-farm diagnostic technology.

EXPERIMENTAL FARM AFU

During the symposium, the participants had the opportunity to visit the facilities – laboratories and experimental farms – of AFU.

After the symposium, the participants unanimously put forward the following resolutions, and look forward that it will help policy authorities to move ahead in the great future endeavor of buffalo production in the region, which is the backbone of food and economy to support large mass of people:

BUFFALO IN THE VILLAGE

1. Establishing “Center of Excellence in Buffalo Research” and the satellite research hubs, nationally.

2. Developing a strong collaboration and partnership with buffalo research institutions and universities regionally and internationally.

3. Nepal as a host country to organize the Asian Buffalo Congress in the near future.

4. Establishment of Asian Mastitis Council for quality milk production

Bianca Moioli

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IX SYMPOSIUM OF BUFFALO BREEDERS OF AMERICA AND EUROPE 2017

November 20 - 25, 2017
Campeche, Mexico

On Monday, November 20 of this year, the inauguration of the pre - symposium courses was held within the framework of the Ninth Symposium of Buffalo Breeders of America and Europe 2017, with the participation of the most representative experts at international level in the theme of Buffalo Livestock, with the participation of countries such as Costa Rica, Cuba, Venezuela, Colombia, Brazil, India, Pakistan, Canada, the United States, Guatemala, Brazil, Argentina and Italy.

The Biotechnology of Reproduction course on November 20 included the outstanding coordination of Dr. Gustavo Crudeli from Argentina and the theoretical and practical course of making mozzarella cheese and derivatives of buffalo milk under the direction of Dr. Angelo Citro of Italy.

The inauguration, on behalf of the Secretary of Rural Development, Ing. Armando Toledo Jamit, on behalf of the governor of the state of Campeche, Alejandro Moreno Cárdenas who, together with the president of the Mexican Association of Buffalo Breeders, Mr. Ismael C. Sicairos, welcomed the attendees in general, Secretary Armando Toledo said that although the state does not house the majority of the buffalo population in Mexico, there is a great interest for the natural conditions required for raising the buffalo, as any livestock project there is interest on the part of the Governor of the state of Campeche, in which soon it is positioned as a first level producer of the species. We can mention that these pre-symposium courses attended about 70 people each. In addition to national and international assistants, courtesy scholarships were

awarded for both courses for outstanding students of the Autonomous University of Campeche, specifically the faculty of Chemical and Biological Sciences, who at the end of this course made clear their interest in entering into the world of the bubalin culture. Having the unconditional support of the rector of the University, Mr. Gerardo Montero Pérez, the general secretary of the institution, Fernando Medina Blum, and the director of the faculty of Chemical and Biological Sciences María Guadalupe Maldonado Velázquez, and all the teaching staff, academic and of support that made possible the realization of the pre-symposium courses, since without their valuable help, impetus and invaluable collaboration it would have been impossible to carry out the aforementioned.

The Ninth Buffalo Symposium of America and Europe began on Tuesday, November 21, 2017 in Campeche, Mexico, at the modern and large Convention Center of Campeche, located on the seafront, at 11:00 am Mr. Ismael C Sicarios, President of the Organizing Committee of the Symposium, President of the Mexican Association of Buffalo Breeders (AMEXBU) and President of the American Federation of Buffalo Breeders, opened the Welcome Session, presenting to different Authorities of the Agricultural Ministry, being present in representation of the Governor of the State of Campeche, Alejandro Moreno Cárdenas, the Secretary of Rural Development Engineer Armando Toledo Jamit, and the MVZ Francisco Gurria Treviño, General Coordinator of Livestock, on behalf of the Secretary of Agriculture, Livestock, Rural

Development, Fisheries and Food Dr. José Eduardo Calzada Rovirosa.

At 12:00 began Module 1 on international buffalo policy with the coordination of Dr. Alba Lucia Suarez of the Colombian Association of Breeders of Bufalos and the participation of Prof. Antonio Borghese (Italy), Secretary General of the International Buffalo Federation (IBF), who underlined the objectives of the IBF, such as the dissemination of knowledge, which is the basis of development, through the IBF's website www.internationalbuffalofed.org, the Buffalo Newsletter, the communications by email, Facebook IBF-International Buffalo Federation, the

organization of congresses and training courses of the IBF; finally supporting buffalo development projects in different countries. Prof. Alfredo Berdugo Gutiérrez (Colombia) spoke about the health problems in many American States and about the need for mandatory controls. Dr. Marco Zava presented the situation of the management of the buffalo in the humid tropical zone of Corrientes. Dr. Joao Ghaspar de Almeida (Brazil) praised the activity of Ismael Sicarios for the development of buffalo in Mexico, which involves government policy. Engineer Oscar Molina (Guatemala) showed his policy of importing Mediterranean Italian semen to apply crossbreeding on local breeds. Sady Quesada (Costa Rica) presented the National Project for the development of the buffalo, since it was finally recognized as a livestock species, and no longer as a wild animal. Lory Smith (Canada) spoke about buffalo products in her country, from 2,000 buffaloes subdivided into 15 farms. The Engineer Armando Toledo Jamit, Secretary of Rural Development of the State of Campeche, said that 4000 registered buffaloes are present in the State, spoke about the problems of sanitary control and the marketing link with other countries, such as Honduras and Guatemala. The MVZ. Francisco Gurria Treviño, General Coordinator of Livestock, spoke of the importance of the buffalo in Mexico and the advances in the incorporation in all agricultural sectors.

After lunch, held at the Convention Center, Module 2 was held on Reproduction Technology, coordinated by Prof. Luigi Zicarelli (Italy) and by Dr. José Luis Konrad (Argentina), with presentations by Prof. Alfredo Berdugo Gutierrez, Prof. Pietro Baruselli (Brazil), Prof. Alina Mitat Valdés (Cuba), Prof. Bianca Gasparrini (Italy). At the end of the day, a welcome cocktail was held with music and typical dances of the region, for the participants of the Symposium, thus allowing able to exchange their experiences during the first day of activities of the same.

On Wednesday, November 22, it's began with Module 3 on Nutritional Management, coordinated by Dr. Joao Ghaspar de Almeida, the Executive Officer of the IBF for America, presented Dr. Ramesh Kumar Sethi (India), who showed the reality of buffalo in India, with 108 million buffaloes, a growing population of 1% per year, an increase of products of 2% per year. As for meat products, which are very important for people, there is no taboo compared to beef and as for milk. The production systems are based on small farms with 1-5 animals, in the hands of women, with crop residues and limited yields, medium farms with 5-20 animals, intensive traditional or urban intensive businesses farms with 20-200 animals, rich business farms or corporate farms with 200-5000 animals. The average production of milk is 1550 kg, from 500 to 5500 kg. 60 million artificial insemination are carried out per year with 35-40% conception rate. The total milk production in India is 160 million tons, of which 82 are from buffaloes. The CIRB in Hisar produces proven progeny sires from 7 breeds, Murrah, Surti, Jaffarabadi, Bhadawari, Nili-Ravi, Swamp, Pandharpuri. The average production of milk in 305 days of lactation is 2275 kg in Murrah, 1979 in Nili-Ravi, 1566 in the Surti breed. After Dr. Ghaspar de Almeida presented the second speaker, Dr. Otavio Bernardes (Brazil), who spoke about milk production in buffaloes on pasture, with Murrah buffalo producing up to 6570 liters in 396 days of lactation, also using urea and showing a better index conversion than cows. He showed the nutritional requirements of the buffalo, satisfied with the technical aspects of the rotation of the pastures or through the administration of supplements in the concentrates.

Dr. Sethi showed the program of the 9th Asian Congress of Buffalo, to be held in Hisar (India) at the Hotel Imperium from February 1 to 4, 2018, by ICAR, the Central Research Institute of Buffalo, founded in 1985, and who hosted the Second World Buffalo Congress of the IBF in 1988 and the International Buffalo Congress in 2010. Prof. Rodrigo Rosales (Costa Rica) presented a film on the Bolson farm in Costa Rica, where Italian Mediterranean buffalos remain in lagoons eating aquatic plants. In this presentation, he said that the farmers demonstrated to the Ministry of the Environment of Costa Rica that the buffalo is not a wild animal, but that it can use natural environments to produce milk and meat, where other animals cannot adapt and survive.

At 1:00 pm the Assembly of the American Buffalo Association, coordinated by Ismael Coronel, Joao Ghaspar de Almeida and Otavio Bernardes, was held to elect the new President of the American Association, which will organize the next X Bufalo Symposium of America and Europe on 2020. The marriage formed by Mr. Martin Littkemann and Mrs. Lory Smith were elected, and that for the first time in the history of the symposia, will be chaired by a marriage as presidents, to organize the next X Buffalo

Symposium of America and Europe in Canada on September 2020, with Engineer Oscar Molina (Guatemala) as secretary.

In the afternoon, Module 4 on Marketing and Management was conducted with Eng. Francisco de Assis Veloso (Brazil), Prof. Gustavo Crudeli (Argentina) as lecturers. At night, an exhibition of lights and sound was offered in the central place of Campeche, in the Parque de la Independencia, in front of the Cathedral of the Immaculate Conception.

On Thursday, November 23, Module 5 on Milk and Meat was coordinated by Prof. Rodrigo Rosales. Dr. Angelo Citro (Italy) showed the technologies used in Italy to produce mozzarella and other cheeses, with the possibility of presenting at the market different types of mozzarella mixed with other foods such as cocoa, tomatoes, herbs, etc. Dr. Exequiel María Patino (Argentina) referred about food, called functional or nutraceutical, with particular positive effects in human physiology. This is the case of probiotics, or CLA, conjugated linoleic acids or unsaturated fatty acids. The omega 6 / omega 3 ratio is related to the quality of the pastures and it is important to prevent thrombus, hypercholesterol in the blood and inflammation. It is important to increase the omega 3 and decrease the omega 6, to obtain the best ratio omega 6 / omega 3 = 1, while in many fats the proportion could reach 7, that is dangerous. Functional cheeses with a high omega 3 content prevent thrombus, atherosclerosis and inflammation. Prof. Borghese said that also in the Italian buffalo now "latte nobile", milk with high omega3 is obtained using grass with different species of crops: this could be the way to protect humanity against nutritional pathologies. Dr. Gladis Rebak (Argentina) spoke about the production of meat and the quality of the meat in buffaloes of 320 kg of live weight or 420 kg, obtaining carcasses of good conformation, tender meat and with good physical and chemical characteristics. Dr. Sethi presented the situation of the meat market in India, where economic development and urbanization increased meat consumption. India has a surplus of buffalo calves: 15 million per year are slaughtered at 8-12 months, producing good meat without hormones and antibiotics, low in fat and cholesterol, without BSE, slaughtered according to the Halal method for export, since India It is the largest exporter in the world with 2 million tons, where buffalo meat is 14% .

Module 7 considered the genetic improvement of Buffalo, coordinated by Prof. Alina Mitat Valdés (Cuba). Dr. Luis Alfredo Pacheco (Venezuela) presented a conference on buffalo pathologies related to reproductive efficiency, which is also inflicted by nutrition, management, genetics and anatomy, such as non-functional teats, testicular hypoplasia, albinism, etc. . Prof. Mario Fernando Cerón Muñóz (Colombia) showed the progress in the herd book with animal registration, according to ICAR, with milk production in 270 days of lactation. Prof. Humberto Tonhati (Brazil) spoke about molecular markers in cattle and the possibilities of identifying genes related to productive characters as a percentage of fat and protein in milk. Prof. William Gomes Vale (Brazil) spoke about the genetic resources of buffaloes in Latin America, where there are 4 million buffaloes, 3 million only in Brazil. Many hereditary pathologies have been described in buffaloes due to inbreeding. Common congenital defects are albinism, scrotal abnormalities, and testicular hypoplasia. The last conference was by Rafael Rincón (Venezuela) on genetic improvement.

The Symposium ended with a round table on the current situation of buffaloes in the world, coordinated by Ismael Sicarios, where expert representatives from different countries expressed their opinions, suggestions and purposes in the buffalo field.

The days of November 24 and 25 were dedicated to the expected Buffalo Tour, consisting of buffalo raising farms visits, in which the participants could visit in two days in total: 4 ranches, El Cibalito, La Esmeralda, Santa Enriqueta, and the Refuge. In which, they could be in contact with the buffalo in a pleasant environment, besides being able to taste different types of cheeses, made of course by buffalo milk, exquisite food of the region, ending with a barbecue of buffalo meat, chistorra , chorizo, tamales and coconut candy, as well as some words from the President of the Mexican Association of Buffalo Breeders, Mr. Ismael C. Sicairos. He thanked people for their visit and their support and unconditional friendship, thus ended the activities, where this meeting was a great success, that's how the attendees finished the IX SYMPOSIUM OF BUFFALO BREEDERS OF AMERICA AND EUROPE 2017, held in the state of Campeche, San Francisco, Mexico.

Antonio Borghese

General Secretary of IBF
Rome, Italy

BUFFALO FARM VISITED DURING THE BUFFALO TOUR

SCIENTIFIC ACTIVITY

EFFICIENT SHORTENING OF GENERATION INTERVAL BY APPLYING LAPAROSCOPIC OVUM PICK-UP AND IN VITRO EMBRYO PRODUCTION TECHNOLOGIES IN MEDITERRANEAN BUFFALO OF 2-6 MONTHS OF AGE

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Accelerated genetic progress can be achieved by shortening of the generation interval, by means of producing progeny from elite females at prepubertal ages. This concept has recently gained increased attention because of the availability of genomic markers allowing to characterize the animals with the highest production potential immediately after birth. Laparoscopic ovum pick-up (LOPU) followed by in vitro embryo production (IVEP) has great potential for allowing reproduction of females at prepubertal ages. Moreover, the late maturing buffalo female, typically not reaching sexual maturity for breeding until ≥ 24 months of age, is a great candidate for application of this technology.

Eight Mediterranean buffalo calves were subjected to repeated LOPU at 2-3 week interval, for a total of 6 oocyte collections between 2 and 6 months of age. All animals received a goat CIDR 5 days prior to LOPU and were gonadotropin-stimulated with 2 alternating treatments, i.e. 140 mg FSH (Folltropin) in 6 injections at 12h interval starting 72h prior to LOPU (FSH6), or, 100 mg FSH in 4 injections and 400 IU eCG (FSH4-eCG). LOPU, IVM, IVF and IVC were conducted following bovine procedures as previously described (Theriogenology 2017; 104: 87-93). Briefly, the females were restrained on a laparoscopy table in a 45° angle and then, using a 5 mm laparoscope and an atraumatic grasping forceps to uncover the ovaries, all follicles ≥ 2 mm diameter were aspirated using a 20G needle connected to a vacuum line. IVM was performed in maturation medium under mineral oil, at 38.5°C in humidified atmosphere with 5% CO2 in air for 24 h. Fertilization was conducted in 50 µL drops of TALP medium supplemented with 10 µg/mL heparin and 3mg/mL bSA, with Percoll-enriched frozen semen from one male at ~20,000 motile sperm per drop. Embryos were cultured in mSOF for 6-7 days at 38.5°C in humidified atmosphere with 5% O2, 5% CO2 and 90% N2. Overall, 903 follicles were aspirated of which 774 oocytes were recovered, representing an average of 16.2 oocytes/calf/LOPU session and

a 84.6% recovery rate. No statistical differences were observed at the level of average follicles aspirated/donor/LOPU (18.0 vs. 20.3) and oocytes recovered/donor/LOPU (15.0 vs. 17.4), respectively for FSH6 and FSH4-eCG treatments. This high oocyte yields were contrasted with poor in vitro performance resulting from low rates of in vitro maturation (40-50%) and high rates of polyspermy (15-40%). Finally, a selected subset of day 7 embryos was transferred into 10 synchronized recipients, of which 3 (30%) became pregnant.

Our data suggests that a subpopulation of oocytes recovered from calves of 2-6 months of age is perfectly capable of normal development following IVM/F/C. Further research should be conducted to improve the competence and in vitro performance of buffalo calf oocytes recovered by LOPU from elite females of 2-6 months of age. Our data suggests great potential for future application of the technology.

A= Group of 8 Mediterranean calves used in the study; B= Laparoscopic Ovum Pick-Up; C= Gonadotropin stimulated ovary (laparoscopic image); D= Oocytes recovered from one of the donors

42 YEARS AGO BUFFALO FROM INDIA AND PAKISTAN ARRIVED IN BULGARIA DUE TO THE EFFECTIVE WORKING RELATIONSHIP BETWEEN THE VETERINARY SERVICES OF EACH SIDE

Stefan Stefanov

Then Chief Veterinarian at the Regional Veterinary Hospital
Shumen, Bulgaria

Planning to improve the future breeding structure and milk productivity within the Bulgarian buffalo industry, the government authorized an expedition in 1975 to acquire 50 buffalo from India and 50 from Pakistan.

The mission was particularly complex because of widely different epizootic conditions in the countries concerned and called for sensitivity to the centuries-old traditions of Buddhism, Hinduism and Islam. Until that time, there had been no export of breeding animals from India. Expeditions from Brazil, Venezuela and Russia had, for various reasons, failed.

An earlier Bulgarian attempt in 1972, involving Dr Stefan Stefanov, Dobri Polichronov and Aleko Alexiev had also failed when our own veterinary regulations imposed a 150km radius exclusion zone around an outbreak of foot-and-mouth disease.

Our second mission in 1975, with the same personnel, succeeded as a result of active cooperation and initiative among Indian, Pakistani and Bulgarian veterinarians. This cooperation was apparent throughout the selection of the animals and the certification process. The group was in close contact with Professor Ivan Boshkov, at that time chief of the government Veterinary Section and with Vice-Minister Jordan Cherkezov in Sofia.

In no other country is there, such genetic diversity among buffalo, as in India. About twenty breeds are clearly classified including: Murrah, Surti, Jafarabadi, Nili-Ravi, Mehsana, Kundi, Toda and others, from which the most productive is the Murrah with average milk yield 1800 – 2500 liters per lactation. Their characteristics are a light, elongated, delicate head, small, delicate, snail-like curved horns and long thin neck with many delicate folds. The udder is well formed with large straight quarters suitable for machine milking. We had to select, not on the animal's appearance, but by identifying young pregnant females with genetic potential for high milk yield. A problem for the mission was that we were buying animals from small private farmers without established organization in different and distant regions; we were under exceptional pressure in uncomfortable local conditions. We crossed the Hindustan peninsula from the northern municipality Haryana with its capital city Chandigarh to Ahmedabad in the south passing through Mumbai and Agra with the Taj Mahal. In Pakistan, we travelled from the megalopolis Karachi to the old capital Rawalpindi and the new capital Islamabad at the foot of the Himalayas. We visited homes of the very poor and of feudal landlords; we were on the banks of the river Indus and we washed our hands in the river Ganges. We attended burial pyres, we experienced the torrential monsoon rains in the north and 45 degrees heat at the Taj Mahal. We travelled on foot, by rickshaw, by car, train and airplane, we went hungry in the Thar Desert of Pakistan and we ate our fill at diplomatic receptions. We slept in the open on beds of woven vines and in super-luxury hotels. We passed through one of the most fertile and thickly-populated parts of the globe, the Indo-Ganges plains and we went to places untrodden by a foreign foot where we gave out medicine to crowds of sick and starving children.

International trade in animals, from parrots to elephants, always incurs the risk of spreading disease. That is why there was no compromise in following our own rigorous veterinary procedures. We had to test the animals for tuberculosis, and from the first selection of quarantined animals, about 3% reacted positive to this disease. We ourselves also vaccinated the animals against foot-and-mouth disease, anthrax, and pasteurellosis, diseases widespread throughout the region. We also ran blood tests for brucellosis. After 30 days quarantine period, during which

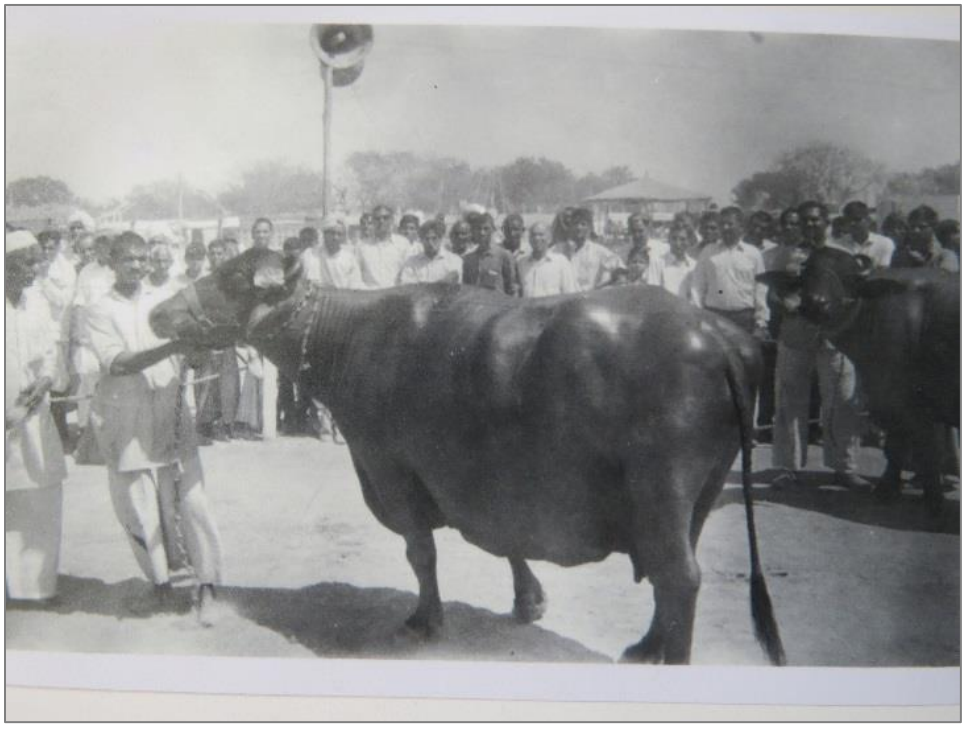
we administered every test and vaccination, it was time to load up the first consignment at Palam Airport in Delhi.

Our McDonnell Douglas aircraft, - against expectation and a pleasant surprise – was disinfected, de-odorised, with 50 individual pens assembled from 10cm metal tube and installed in 10 rows of 5 pens, bedded with 50cm sawdust and wood shavings. With its animal cargo, this flight made history as buffalo were transported by air for the first time. There was no previous scientific experience of the physical and physiological stress which might occur.

And so, 18th April 1975 Varna Airport prepared to receive the Canadian DC aircraft with its unusual cargo. Airport personnel, many agricultural managers from Varna and Shumen regions, together with staff of the frontier veterinary control waited expectantly for the aircraft after an 8-hour flight from Delhi, laden with 50 buffalo. After that, events are well known. A new quarantine period with veterinary tests and checks, during which some colleagues did not forbear from observing 'let us see now what diseases Dr Stefanov has brought from India'. Luckily, there were none.

Under the management of the scientist group, there began control of milk productivity of the imported buffalo of the breeds Murrah and Nili Ravi and their adaptation to a new environment.

After this unique importation, the breeding structure of Bulgarian buffalo production changed significantly. It included a large number of highly productive crossbreds, with over 87, 5% Indian Murrah blood, to become well known as a new breed 'Bulgarian Murrah'.



Note: The first import of Murrah breed from India was carried out in 1962 by Dobri Polichrono to cross the local Bulgarian buffaloes.

STRATEGY OF SCIENTIFIC APPROACH IN DEVELOPING THE BUFFALO IN IRAQ

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Buffalo *(Bubalus bubalis*) is an important source of animal protein in many countries of the world including Iraq. In Iraq, it contributes significantly to the food supply in the form of milk (5-8%) and meat (1.3%). The buffaloes in Iraq bred in the marshes. They feed on papyrus, reeds, common ash and other plants (like Shahaf and Cholan; low quality roughages where grow naturally in the marshland area). Buffalo in towns rarely graze on natural pasture; they fed mostly straw, wheat bran, agricultural by–products and occasionally on green roughages. Products as sugarcane waste, reeds also feed them such from marshlands and home baked waste. Those that swim in ponds and rivers also fed aquatic plants. Feed shortage and reduced fertility are the main challenges facing the buffalo development.

IRAQI RIVERINE BUFFALOES IN MUTHANNA PROVINCE; SOUTH OF IRAQ

During the last decade, the strategy of scientific research in developing the buffalo in Iraq focused on improving nutrition, increasing milk and meat production, enhancing reproduction, recruitment of cytogenetic and molecular genetic knowledge as well as revitalization of the

extension aspects through amelioration of the knowledge status of the buffalo owners with the recent techniques. The research strategy in the field of nutrition focused on the influence of pre-mating and pre-calving concentrate supplementation, whole cottonseed and different dietary protein levels on milk production, reproductive performance and blood parameters of the buffaloes. In reproduction field, the researches converged on: the early pregnancy detection using pregnancy-specific protein B (PSPB) at days 22-26 post-mating, using of hCG hormone treatment to enhance the reproductive performance of anestrus buffaloes; the effect of OvSynch protocol on inducing the estrus and to avoid the repeat breeding in Iraqi buffaloes; the clinical and therapeutic study and monthly changes in testicular, epididymal measurements and semen characteristics of the buffalo bulls. Prediction of growth and milk production using hemoglobin type, study the gene polymorphism of beta lactoglobulin using PCR-RFLP and karyotyping classification of Iraqi buffalo are the main efforts in the fields of cytogenetic and molecular genetics. Amelioration the knowledge status of the buffalo owners in the field of new feeding techniques, feedlot schemes and increasing milk production in most Iraqi governorates formed the backbone of the extension research strategy in developing the buffalo. In the nearest future, semen cryopreservation and artificial insemination will spread to improve the reproductive and productive performance of Iraqi buffalo.

IRAQI BUFFALO FARM. (PHOTO JABBAR ALSAEDY)

RECOVERY OF TROPICAL WETLANDS

Gerardo Barboza Jiménez

MSc, consultant, researcher
Costa Rica

Wetlands play an important role in conserving biodiversity in many countries. Its conservation and recovery is very important in the strategy of adaptation to climate change. Pastoralism is a very old activity in the world and refers to the use of grass directly for the animal. A wide path has been practiced in the rehabilitation of wetlands in almost all continents, with mammals such as cows, horses and buffaloes, which is a tool for the digestion of excess vegetation in protected wetlands. The water buffalo (Bubalus bubalis) has been used successfully for grazing in various types of recovery of tropical wetlands. With proper management, the water buffalo removes and keeps invasive vegetation under control, opens the pools of water and promotes the arrival and abundance of waterfowl, which help to preserve wetlands. The water buffalo bred in the humid, is very good at removing grass and herbaceous biomass, which efficiently converts into milk and organic meat, while improving habitats by species diversity.

Full text: https://internationalbuffalofed.org/abstracts/

NEWS

AUSTRALIAN BUFFALO NEWSLETTER

This newsletter is published by the **Australian Buffalo Industry Council (ABIC)** to disseminate information about the wide-ranging activities taking place across Australia in relation to buffalo harvesting, export and farming for meat, milk, cheese and other products

New buffalo manual a first for Australia Australia's foremost buffalo specialist, DPIR's Barry Lemcke, has amassed more than 40 years of field study findings to produce the comprehensive new Australian Water Buffalo Manual, which was launched in the Top End in August. Australia's first technical manual for the buffalo farming industry has been published by the Rural Industries Research and Development Corporation (RIRDC - now AgriFutures Australia).

Enquiries to: Kerry Sharp (Editor), kerrysharp.journo@gmail.com

Full text: https://internationalbuffalofed.org/newsletters/

PAKISTAN NEWS

God has blessed Pakistan with the finest and world-renowned breeds of Nili-Ravi buffalo and Sahiwal cattle. Nili-Ravi buffalo of Pakistan has been acknowledged as "**Black Gold**" by Food and Agriculture Organization (FAO). The Punjab province of Pakistan is uniquely the home tract of Nili-Ravi breed of buffalo and inhabits 65% of the total buffalo population (36.6 million) in the country. Buffalo Research Institute (BRI), Pattoki District Kasur Punjab (Pakistan) functioning since October, 2005, is exclusively mandated research based improvement in reproductive and productive traits to develop buffalo as a commercially viable milk and meat producer as well as raising unit productivity for increasing income of the poor farmers.

Despite other Research, Extension, Training & Planning activities, organization of annual milk & beauty competitions of buffalo is a regular feature of this Institute. During 2017, this Institute in collaboration with Buffalo Breeders Association (Punjab) and Sahiwal Cattle Breeders Association Punjab, Pakistan organized Buffalo & Sahiwal Cattle Milk and Buffalo Beauty Competitions-2017 on 25th to 28th March 2017 at Buffalo Research Institute, Pattoki.

With best Regards

Dr. Maqsood Akhtar
Chief Research Officer
Buffalo Research Institute, Pattoki District Kasur
Punjab (Pakistan)

WELCOME LETTER FOR 12TH WORLD BUFFALO CONGRESS

Dear Colleagues and Friends,
On behalf of International Buffalo Federation, I cordially invite you to the **12th World Buffalo Congress**, which will be held in Istanbul, Turkey during **18–20 September 2019**. The WBC 2019 is expected to provide a bridge between East and West, South and North 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 2019 is “Efficient Production for the 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 & West and South & North as the crossroads of different continents and cultures. You will also have the opportunity to visit many historical sites in İstanbul and Turkey.

In addition to the main congress, there will be the Pre-Congress Workshop on **“Reproductive Biotechnology in Buffalo”** during **16th - 17th September 2019**.

In the spirit of traditional Turkish hospitality, I welcome you all to Istanbul, and wish 12th World 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

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