

Buffal Newsletter



Number 33 – June 2018

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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The Editorial board is happy to present the 33th number of IBF newsletters.

In this number, you can find a general summary of the 9th Asian Buffalo Congress held in Haryana, India. A broad space is dedicated to country reports from India, Bangladesh, Nepal, Sri Lanka, Philippines, presented at the Congress, which illustrate the buffalo production in Asian countries.

A description of the 3th IBF training course (May 9-19, 2017) program and tour is given extensively, as well as an invitation for the 4th (provisional date May 2019).

The **news section** gives an overview of the upcoming events:

- 12th World Buffalo Congress in Istanbul, Turkey
- International Buffalo Congress IBC 2019 in Lahore, Pakistan
- Jornada de Capacitacion en Bùfalos Y Forrajes Tropicales, Athenas, Costa Rica

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

The Editorial Committee

Buffalo Newsletter - Number 33 – June 2018

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REPORTS



9th ASIAN BUFFALO CONGRESS (ABC-2018)

February 1-4, 2018

ICAR-Central Institute for Research on Buffaloes
Hisar - 125001, Haryana (India)



The IX Asian Buffalo Congress (ABC 2018)

was held in the Central Institute for Research on Buffaloes (ICAR-CIRB), in Hisar, Haryana, India, February 1-4, 2018, with the title Climate Resilient Buffalo Production for Sustainable Livelihood.

It was organized by Dr. Inderjeet Singh, President of the Asian Buffalo Association and Director of the ICAR-CIRB, supported by his valid staff.

The congress was attended by delegate from 13 countries: Sri Lanka, Bangladesh, Nepal, Philippines, Columbia, Brazil, Bulgaria, Italy, Nigeria, Guatemala, USA, UK and India.

The Inaugural session was held on February 1 in the Hotel Imperium Central Hall by Dr. Inderjeet Singh, who presented his welcome to all the participants and introduced the Authorities, as Gaiendra Singh, Trilochon Mahapatra, Harsh Bhanwala, J.K. Jena, S.S. Honnappagol.



ABC2018 OPENING CEREMONY

Dr. Ranjhan spoke about the performance of buffaloes to produce milk, meat and draft, as Honnappagol showed the different breeds living in India, as Dr. J. K. Jena underlined the importance of the theme of the congress. Prof. Antonio Borghese delivered to Dr. Jena a copy of his book Buffalo Livestock and Products.

In the afternoon, the country reports started with Dr. Arun Kumar Joshi and his presentation with the same title of the Congress, where different strategies on crops and food conservation were illustrated. Prof. Thakshala Seresinhe from Sri Lanka showed the buffalo production systems in his country, as Dr. Daniel Aquino from the Philippines Carabao Center reported the situation, strategies and milestones of the Philippines Carabao Industry, as Prof. Bhuminand Devkota from Nepal showed the buffalo production systems in his country, as Dr. Kumar Modak described the buffalo livestock in Bangladesh.

Eventually, Dr. Inderjeet Singh with his lecture on “Buffalo – the harbinger of prosperity in rural India”, showed the buffalo as black gold, contributing 68% of the world buffalo milk production, with 13 recognized breeds and 20 other distinct populations of riverine buffalo, besides swamp buffalo. Buffalo through its milk, meat, hides, bones, horns, manure contributes enormously, roughly estimated at over Rs 5,000,000 million, approximately 77 billion USD per annum.

The day after, February 2, 2018, the Congress started with Physiology Session in the CIRB with the main lecture “ Milk extraction and milk flow from mammary gland: physiological aspects and economic implications” by Prof. Antonio Borghese, who showed different milk flow curves from 1911 Mediterranean Italian buffalo cows, underlining the most productive emission patterns. Dr. A.K. Balhara with the lecture “Buffalo Physiology and climate change challenges in India” spoke about methane emission and thermoregulatory mechanisms in buffalo, who is very sensitive to hot, therefore maintenance of thermal balance during climate change scenario will affect animal functions and productions negatively.

The Reproduction Session was opened by the lecture of Dr. R.K. Sharma on “Reproduction status and outcome of nutritional and hormonal interventions in buffaloes”, who showed the monitoring of post-partum fertility and of ovarian cyclicity in 1000 farms of Haryana, with mean age at first conception of 32 months, with 63% of buffaloes conceiving within 90 days post-partum. Progesterone implants were more efficient than GnRH protocols including Ovsynch Plus. Dr. Vittoria Lucia Barile from CREA, Italy, in her lecture “Oestrus synchronization and artificial insemination in buffalo” showed models for improving reproductive efficiency, as hormonal treatments applied to obtain A.I. at fixed times. Different protocols for oestrus synchronization and A.I. was reported also by Dr. Suresh Kumar from ICAR, India and by Prof. Bhuminand Devkota from Nepal.

In the afternoon, many posters were exposed and contemporary other sessions were held on Production management, Nutrition, Biotechnology, Climate change. In the session Biotechnology, Dr. Antonella Chiariotti from Italy presented “Buffalo rumen as inoculum for bio-hydrogen production”, where the bio-hydrogen was produced by dark fermentation of buffalo by-products (sludge, low protein cheese whey) inoculated with buffalo rumen fluid.

The third day of the Congress, February 3, on the morning a tour was organized to visit Khasa Murrah Farm and the ICAR Sperm Station and Research Centre in Hisar, where high productive buffaloes of Murrah breed were exposed.

At twelve, the Genetic Session was held with the presentation of Prof. Tzonka Peeva, on Breeding and selection of buffaloes in Bulgaria, where intensive systems are applied in Bulgarian Murrah breed, and 1000 doses of semen were imported from Italy to reduce inbreeding. Followed Prof. William Vale from Brazil on Buffalo genetic resources in Latin America, where 4 millions of buffaloes are reared, and where the priority problem is inbreeding, because of the population is coming by limited number of Murrah bulls, transferring many hereditary pathologies. The solution is the import of semen by Mediterranean Italian. The third presentation was by Dr. Kunwar Pal Singh, from ICAR, on Genetic improvement of buffaloes in network mode, who presented the ICAR network project, applying progeny testing in different ICAR Institutes. Contemporary the sessions on Milk and meat processing, on Health and on Socioeconomics were held.

At 7 pm the Asian Buffalo Association meeting was held, with representative members of different countries, as India, Pakistan, Philippines, Nepal, Sri Lanka, Bangladesh, Thailand. There were two proposal for the next Asian Buffalo Congress, coming from Prof. Talat Pasha, who was absent, and from Nepalese delegation. The assembly voted for Nepal either because of it is young country in buffalo scenario, or it never organized the Asian Buffalo Congress, or it is going to create the Nepal Buffalo Research Center. These explanations will be referred to Prof. Talat Pasha. Prof. Bhuminand Devkota was elected President of the Asian Buffalo Association (see proceedings at pg.7).

The last day of the Congress, February 4, the Buffalo show was organized in the ICAR Institute, where wonderful buffaloes of Murrah and Nili Ravi breeds were exposed together with many agricultural and industrial stands. In the afternoon, a visit was held in the buffalo farm of Mr. Redhu, and in the Lakshya Foods LTD Company in Jind, producing a lot of milk processed products as yogurt, paneer, cakes and so on. Many products were offered for an agreeable degustation.

Antonio Borghese

General Secretary of IBF
Rome, Italy



CENTRAL INSTITUTE FOR RESEARCH ON BUFFALOES (ICAR-CIRB)

COUNTRY REPORT INDIA



Buffalo - the harbinger of prosperity in rural India

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A reference to “buffalo” as a livestock species across the globe reflects India as the land of world’s best and most diverse buffalo germplasm. The world’s 57% buffalo population, contributing 68% of world buffalo milk production with 13 recognized breeds and 20 other distinct populations of riverine buffalo besides swamp buffaloes in northeast describe the spectrum of buffalo portfolio the country holds. The world’s best milk breed “trophy” include Murrah, Jaffarabadi, Nili Ravi, Banni, Surti, Bhadawari and Pandharpuri. Buffalo

meat became the largest exported agricultural commodity during recent past and also top exporter country. Buffalo through its milk, meat, hides, bones, horns, manure contributes enormously, roughly estimated at over Rs. 5,000,000 million (approx. 77 billion USD) per annum. Employment generation for rural masses, especially women; nutritional security for majority vegetarian population with high quality 100% A2 type milk and resistance to many prevalent infectious diseases sanctify buffalo as the livestock species of national importance. Continued increasing population trend over the last few 5-yearly livestock census, in spite of large scale slaughter for domestic and export markets, reflect potential of the species for income generation in rural areas as well as periurban dairies; in contrast to decreasing populations of other important livestock species like cattle, sheep and goat. Large network of state-of-the-art frozen semen laboratories, with strict government monitoring for accreditation, is ushering in faster germplasm improvement across states. Over the years, government initiatives have been directed at breed improvement, quality bull production, strengthening AI services, improving feed and fodder resources, clean milk production and alike. National Program for Bovine Breeding and Dairy Development (NPBBDD) was launched by merging four existing schemes i.e. Intensive Dairy Development Program (IDDP), Strengthening Infrastructure for Quality & Clean Milk Production (SIQ&CMP), National Project for Cattle & Buffalo Breeding (NPCBB) and Assistant to Cooperatives with the budget provision of Rs.18,000 million for implementation during 2012-17. National Dairy Plan (Phase-I) was launched in February, 2012 with a total investment of about Rs.22,420 million to be implemented from 2011-12 to 2016-17. Central Herd Registration Scheme and livestock championships/shows are other initiatives aimed at identification of superior animals in field. Nevertheless, major challenges in livestock improvement in general and buffalo improvement in particular include shortage of feeds and fodder; low productivity of large nondescript population; livestock health coverage with disease prevention and control; knowledge gap in stakeholders and inadequacy of infrastructure for marketing, processing and value addition.

COUNTRY REPORT

BANGLADESH

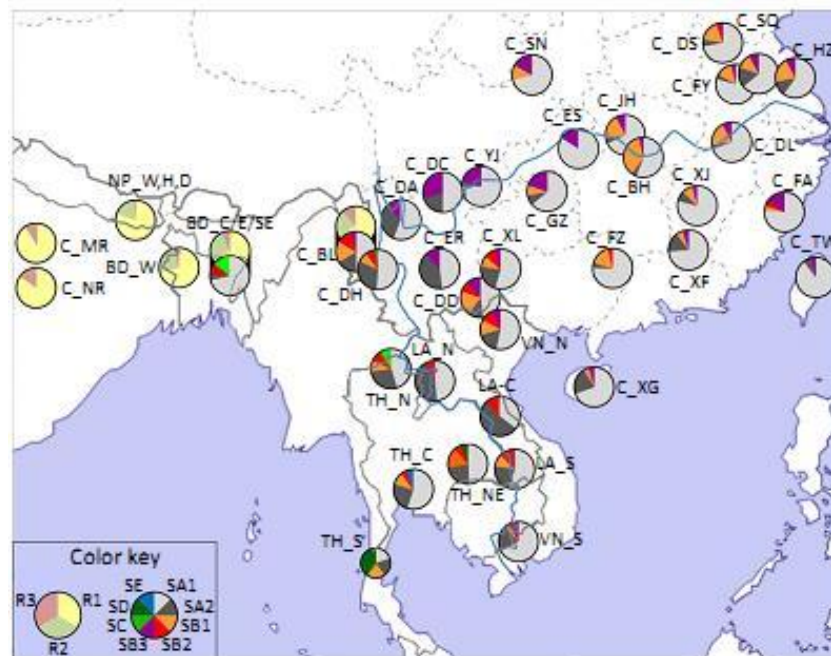


GENETIC DIVERSITY AND IMPROVEMENT OF BUFFALOES IN BANGLADESH – PRESENT STATUS AND FUTURE TREND

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The domestic water buffalo is one of the important animal genetic resources in Bangladesh. Karyotyping and phylogenetic studies were done covering all populations of buffaloes from 1984 to 2016 to find out the type/breed of buffaloes and to characterize the indigenous buffaloes of Bangladesh. Phylogenetic studies were done using blood protein polymorphisms and mtDNA. Crossbreeding between native and exotic buffaloes started in 1960 and still practiced for genetic improvement of native buffaloes. Karyotyping study revealed that all populations of native buffaloes except the buffaloes of northeastern part had 50 chromosomes and had the standard karyotypes of river buffalo. Buffaloes of northeastern part had 48 chromosomes and had the standard karyotypes of swamp buffalo. Blood protein polymorphisms (Blood groups and iso-enzymes study) and mtDNA study confirmed those finding. Cyto-genetics and genetic diversity studies revealed that indigenous buffaloes of northeastern part were swamp type and the rest of indigenous buffaloes of the country were river type. The river type buffaloes were distributed to southern, central part of the country. The buffaloes of western part were migrated or imported Indian buffaloes and were river type. For genetic improvement, farmers usually practiced mass selection and pedigree

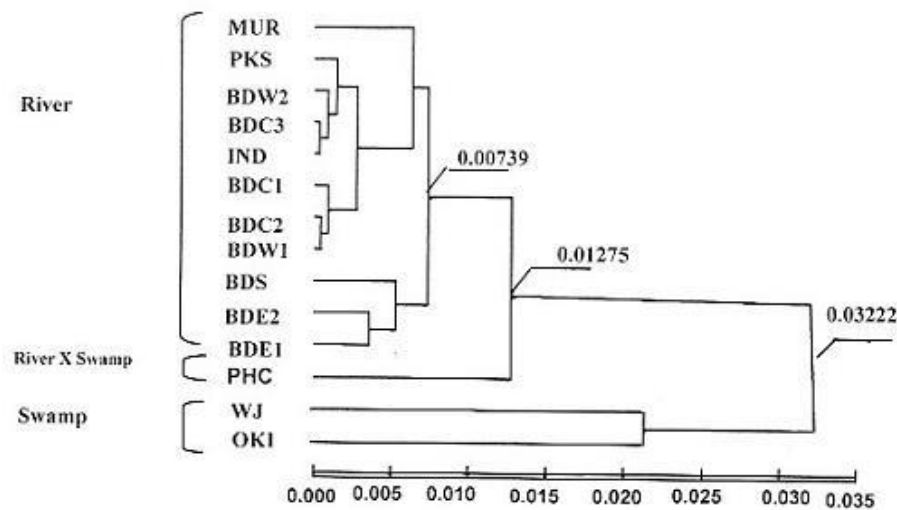


MT DNA HAPLO GROUP DISTRIBUTION OF RIVER AND SWAMP BUFFALO (TABLE S3, SUPPORTING INFORMATION). IN THE COLOR KEYS SA1 TO SE INDICATE SWAMP HAPLOGROUPS, AND R1 TO R3 INDICATE RIVER HAPLOTYPES.

selection. Cross breeding with exotic breed viz., Nili-Ravi, Murrah and Italian Mediterranean Breed was introduced in 1960 and still practiced by DLS and some private enterprises using both natural mating and artificial insemination depending upon the buffalo management system.

Natural mating was practiced widely all over the country. Artificial insemination was practiced for buffaloes reared under intensive and semi intensive system for limited number of buffaloes. However, the success rate or genetic improvement of crossbred buffaloes

reared under transhumant system was not satisfactory. It may be mentioned here that 95% of dairy buffaloes were reared under transhumant system. Animal identification and animal recording was totally absent at farmer level. Selective breeding was not yet practiced anywhere in the country. New approaches to implement animal recording and practicing Inter Se mating for future genetic improvement is underway. Reproductive biotechnologies like estrus synchronization, MOET, ET are being implemented for the institutional herds. Existing management system of dairy buffaloes is the main constrain in implementation of animal recording, selective breeding and also application of reproductive biotechnology. Limited number of breed able female and long generation interval will make the buffalo development in Bangladesh slow though farmers are more interested to rear more buffaloes for meat and milk production.



MUR :Sri Lanka Murrah BDC1:Bangladesh Central 1 BDE 1: Bangladesh East 1
 PKS: Pakistan BDC2:Bangladesh Central 2 BDE 2: Bangladesh East 2
 IND :India BDC3:Bangladesh Central 3 BDW 1: Bangladesh West 1
 WJ :West Java BDW2:Bangladesh West 2 BDS : Bangladesh South
 PHC: Philippine Crossbred OKI: Japan Okinawa

DENDROGRAMS DRAWN FROM NEI'S GENETIC DISTANCES ESTIMATED BY GENE FREQUENCIES OF BLOOD PROTEINS TYPES OF 14 WATER BUFFALO POPULATIONS



SWAMP BUFFALO FROM BANGLADESH



RIVER BUFFALO FROM BANGLADESH

COUNTRY REPORT

NEPAL



Overview of Buffalo Development in Nepal

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Nepal relies heavily on buffalo production for milk and meat supply in the country. Among livestock species, buffalo is the major contributor of animal source food that currently contributes 65.2% of the total milk and 54.3% of the meat to Nepalese people. The economic value of this animal is well reflected by its share of 6% out of 13% livestock share in national Agricultural GDP where the share of agriculture sector to National GDP is 26.8%. Development and promotion of buffaloes is important on achieving the national target of 91 kg for milk and 14 kg for meat per capita per annum, which is at present about 19 kg and 1.3 kg, respectively below the target. In Nepal, there are about 5.2 million buffaloes with Lime, Parkote, Gaddi and Terai as native and Murrah and other Indian breeds as exotic breeds. Milk production-wise native breeds are inferior, however, their adaptability is best and



**LOW SEASON CALVING IN NEPAL BY APPLYING NOVEL HORMONAL PROTOCOLS
(PHOTO BY DEVKOTA)**

selective breeding and cross breeding can improve their production potentiality. Nepal government implements its buffalo promotion programs through Central Cow Buffalo Promotion Office under the Directorate of Livestock Services (DLS) that has implemented a long-term action plan of Animal Genetic Resources in Nepal (2011-2021) aiming for conservation of native breeds. Similarly, Buffalo Genetic Improvement Program (BGIP), community buffalo bull distribution program, artificial insemination and forage missions, buffalo conservation, nutrition program of newly calved buffaloes and male buffalo fattening for meat production has been implemented. Government buffalo farm in Pokhara is maintaining a nucleus herd of Indian Murrah, which serves as a resource center of this breed for the country. Government also regulates the process of breeding bull selection. The bull centers at National Livestock Breeding Center Pokhara at the center, Lahan at eastern part and Nepalgunj at western part of the country produce and supply buffalo frozen semen. Currently, buffalo AI mission is implemented in 46 out of 77 districts and its coverage is about 2.4%.

In buffalo research, Agriculture and Forestry University (AFU) in recent years is playing a key role focusing on nutrition-reproduction interactions and developing a novel technology to enhance fertility during low breeding season. The impact of such studies would be valuable for addressing the problem of acute shortage of milk in the country during lean season; spring and early summer months. Additionally government research body, Nepal Agricultural Research Council (NARC) through National Buffalo Research Program (NBRP) and Animal Breeding Division (ABD) are working on buffalo research with ABD leading on molecular genetics and breeding aspect. However, it has been widely realized that the research and development efforts are not enough to address the issues of buffalo genomics and molecular characterization for selection and breeding, nutritional requirement and its consistent production, reproductive problems in males and females, application of modern and assisted reproduction technology, sire selection and quality semen production, public health concerns of buffalo products, socio-economics including economic production and commercialization, and so on. Additionally, a serious attention of the government as well as other stakeholders and scientific communities needs to be drawn to work on sustainable buffalo development in the country. Realizing this fact and based on its research potentiality and partnership networking nationally and internationally, AFU took a lead to organize International Buffalo Symposium 2017 (IBS2017) in November 15-18, 2017 with the objective of sharing and generating knowledge on buffalo research among national and international scientists and concerned stakeholders.

The IBS2017 concluded with a clear resolution of establishing “Center of Excellence in Buffalo Research” and the satellite research hubs in the country, developing a strong collaboration and partnership with buffalo research institutions and universities regionally and internationally and Nepal, as a host country to organize IBS2017, would bid to organize Asian Buffalo Congress in the near future. With this mandate, strong delegates from AFU and from DLS and NARC participated in 9th Asian Buffalo Congress held in Hisar, India from February 1-4. During the congress, the author was elected as President of Asian Buffalo Association (ABA) and thus, for the first time Nepal got an international leadership with a

mandate to organize 10th Asian Buffalo Congress. Recently, there are series of policy discussion among government, AFU and NARC officials that has already set a platform for establishing “Society for Buffalo Development in Nepal”. Further, AFU is gearing up its efforts of establishing Buffalo Research Center in the University with the support of the government, NARC and all other concerned stakeholders. These activities indicate that Nepal is committed for focusing on buffalo development for food security and economy growth of the country.

COUNTRY REPORT

SRI LANKA



Buffalo production systems and the role of buffalo in Sri Lanka

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There is an estimated population of approximately 100.000 buffalo cows in the country, forming an integral part of the mixed farming enterprises and rural life. More than 90% are local indigenous and their crosses, while the rest are imported exotic breeds of river buffaloes. The distribution of the buffalo population among different agro climatic zones indicate that the majority (>70%) of the animals confined to the dry and intermediate zones of the country. Mainly indigenous buffalo and their crosses (>90%) are found in small holdings (0.8 ha in extent) while limited number of Murrah, Surti and Nili-Ravi breeds of buffaloes are maintained in large farms to serve as breeding stock to improve the local animals. The average herd size of the country is approximately 20-25 animals but can be varied with different agro-ecological zones of which the resources, climate cropping patterns and production systems. In the dry and dry intermediate zone of the country, where >70% of the buffaloes are existed, majority of the farmers practice extensive system of management. Buffaloes are allowed to graze on the naturally available forage during the daytime and paddocked in the night time. Buffaloes are primarily used as a source of draught power and additionally to obtain an income from the sale of the fresh milk or processed milk as curd. In the wet intermediate zone, wet zone and some parts of the coconut triangle semi intensive system of buffalo management is practiced. In these areas, cross –breed buffaloes are reared in medium to small sized herds for dairy and draught purposes. Intensive system of management is practiced in the urban, periurban areas where the demand for milk, and dairy products are high. The farmers keep improved breeds of dairy buffalo cows in small herds. Apart from the above-mentioned system of management, a combination of intensive and semi-intensive systems is practiced by the state farms where, imported exotic animals are maintained as nucleus herds of considerable size for dairy and breeding purposes. In Sri Lanka, raising of buffaloes for meat is not practiced. Although, slaughtering of buffalo s

especially milking animals are banned officially, the contribution of buffaloes for countries meet production is approximately 30-40%. In the future buffalo, will assume a more important role as a truly multipurpose animal in rural farming system to improve food security.

COUNTRY REPORT

PHILIPPINE



The Philippine Carabao industry: situation, strategies, and milestones

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The Philippine carabao (water buffalo) industry has been flourishing in the recent years as gauged from the steady growth in population (total inventory), volume of production in terms of live weight, and its significant contribution to the dairy sector. For 25 years, the Philippine Carabao Center (PCC) has been performing its mandate as the lead agency of the Department of Agriculture in stewarding the development of the carabao industry by way of National Carabao Development Program (CDP). The CDP and its specific components namely genetic improvement, research and development and enterprise development is being carried out by the PCC national headquarters and its network of 12 regional centers strategically situated across the country in close partnership with various stakeholders and institutions. As a long-term strategy to further improve CDP implementation, the PCC has crafted an “intensified research-based enterprise build-up” directive, which puts prime efforts on a more organized and wide scale genetic improvement, a more applied and issue-driven research “for” development (R4D) program, along various thematic areas, a participatory extension and technology delivery system, and a value chain approach towards enterprise development. Recent milestones include annual publication of a sire directory, the forthcoming birth of the first Philippine dairy buffalo (a product of successive backcrossing and purebreeding), bundled or program approach in R4D, season-long farmer livestock school (FLS) modality in extension, value chain analysis for carabao’s milk and meat, business modeling dairy carabao products, and engagement with private local entrepreneurs. Future directions are devoted towards further increasing the carabao sector’s contribution towards the achievement of at least 10% sufficiency in domestic milk production by year 2022, developing markets for Halal carabao meat products, and engaging more of private entrepreneurs in mainstreaming and commercializing carabao-based products.

Proceedings of the Executive Committee Meeting. CIRB Hisar, India,
February 3^d 2018



ASIAN BUFFALO ASSOCIATION®

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Registration No. S62397 of 2002 under the Societies Registration Act XXI of 1860)

ICAR-Central Institute for Research on Buffaloes
Hisar-125001, Haryana, India

Proceedings of the Executive Committee Meeting held at CIRB Hisar, India on the Feb. 3rd 2018

Following were present:

1. Dr. Inderjeet Singh, President ABA
2. Dr. RK Sethi, Vice President, ABA
3. Dr. SK Phulia, Treasurer ABA
4. Dr. Ashok K. Balhara, General Secretary ABA
5. Dr. Daniel L. Aquino, Country Representative Philippines
6. Dr. Indunil Pathirana, Country Representative Sri Lanka
7. Prof. Takshila Seresinhe, Country Representative Sri Lanka
8. Prof. IP Dhakal, Country Representative Nepal
9. Dr. Bhuminand Devkota, Country Representative Nepal

Special Invitees

10. Prof. Antonio Borghese, General Secretary IBF
11. Dr. SS Dahiya, General Secretary, ISBD
12. Dr. PS Yadav, Asst. Editor, Asian Buffalo Magazine
13. Dr. VL Barile, IBF, Italy

Details of the deliberations

- At the outset, a formal welcome by General Secretary ABA.
- President ABA highlighted the role of ABA, brief history, coordination with the Industry and various accomplishments. Guidance and contributions of the Hon'ble Patron-in-Chief Dr. SK Ranjhan and past President was thankfully acknowledged. Dr. SK Ranjhan remained a guiding force for the executive committee on various issues and assured of continued efforts for furthering the cause of buffalo in the Asian region.
- President ABA also reflected on the organization of the IX ABC and congratulated all those involved for successful organization of the IX ABC 2018, including overwhelming participation of delegates not only from Asia, but Europe, Americas and African countries.
- The Congress was attended by delegates from thirteen countries across the globe – Sri Lanka, Bangladesh, Nepal, Philippines, Columbia, Brazil, Bulgaria, Italy, Nigeria, Guatemala, USA, UK and India. Researchers, breeders, farmers, industry experts, policy makers, academicians and students from around the world shared their experiences, research results and deliberated about different aspects of buffalo production systems. Regrettably, a large delegation of scientists, policy makers, students etc. from Pakistan missed the Congress due to delay in travel related permissions.
- On the last day of the ABC-2018, a buffalo show was organized which was well appreciated by the delegates. The milking competitions also culminated the day before and superior top-yielding Murrah owners were awarded during the function.

Then the General Secretary, ABA was requested to proceed with the agenda. Agenda items discussed and decisions taken are as listed below:

Agenda item	Deliberations and decisions taken
1. Permanent Asian Buffalo Association Secretariat	India has the majority of world buffalo population which includes the most superior buffalo germplasm. The ICAR-CIRB, Hisar has attained the required strength with the establishment of buffalo as an important food animal globally and steering buffalo development initiatives in the Asian Region. The Institute has successfully hosted two Asian Buffalo Congresses, the IV-ABC in 2003 and the IX-ABC in 2018, besides II-World Buffalo Congress in 1988 and an International Buffalo Conference in 2010. Therefore, it was decided that the Asian Buffalo Association shall have its permanent headquarters located at the ICAR-CIRB Hisar.
2. Venue for Tenth Asian Buffalo Congress (X ABC)	There were two proposals for hosting the X ABC-2021 – Nepal and Pakistan. An email received from Dr. TN Pasha, Lahore, Pakistan was placed before the executive committee and another bid was made by Nepal. Considering the first time proposal from Nepal and comparatively lower restrictions in travel permissions, it was unanimously resolved to give a chance to Nepal for the X ABC. Accordingly, Prof. IP Dhakal's proposal to host the tenth edition of ABC was accepted. The exact location and dates will be decided by organizing committee, X ABC in consultation with local authorities and the ABA Secretariat in due course of time.
3. Functionaries of ABA	<p>As per the accepted norm, it was decided to hand over the Presidentship of the Asian Buffalo Association to the next host of ABC viz. Nepal. Dr. IP Dhakal proposed the name of Dr. Bhuminand Devkota, which was agreed by all.</p> <p>Dr. RK Sethi proposed the name of Dr. Inderjeet Singh to be the next Vice-President in his place, which was accepted. AS the ABA Secretariat will be permanently housed in ICAR-CIRB Hisar, India, it was decided that the General secretary and Treasurer will be essentially from ICAR-CIRB Hisar for smooth running of the ABA Secretariat. The fresh constitution of the ABA is as follows:</p> <p>President: Dr. Bhuminand Devkota</p> <p>Vice President – Dr. Inderjeet Singh</p> <p>General Secretary – Dr. Ashok K Balhara</p> <p>Treasurer – Dr. SK Phulia</p>

The meeting ended with the General Secretary expressing gratitude to all the delegates for presenting their views on the agenda items and hoped that all decision will be implemented in letter and spirit.



(Ashok K. Balhara)
General Secretary, ABA



(Inderjeet Singh)
President

3^D IBF TRAINING COURSE ON BUFFALO MANAGEMENT AND INDUSTRY

The 3^d IBF Course on Buffalo Management and Industry successfully ended. The Course was organized by the IBF together with the CREA Research Centre for Animal Production and Aquaculture in Monterotondo, Rome (Italy).

The CREA Monterotondo Unit is involved in the research and development of buffalo breeding, becoming a reference point both at national and international levels, for those working in the sector. The different research projects carried out up to now, have led to a deeper understanding of buffalo physiology that influences breeding efficiency: in particular reproduction and nutrition which affects milk and meat production. Particularly important in this regard is the study of product traceability and shelf life of buffalo products. The Unit was also part of the consortium to sequence and identify the buffalo genome.

In the last years, the research looked for a sustainable breeding: reduction of energy production costs, reduction of water resources in the cultivation of fodder for livestock feed, reduction of nitrogen emissions, use of by-products and sewage for biogas production.

In this regard, since 1997 the Unit has hosted the International Buffalo Federation (IBF) secretariat, which aims to promote research and development of the buffalo species all over the world and organize the world congresses and training courses.

Participants came from all over the world: Canada, Costa Rica, Cuba, Guatemala, Bolivia, Brazil, Bulgaria, Romania, Greece, Iran, and Thailand. Lectures 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!”

Welcome Reception at CREA, Monterotondo (Rome)



Prof Antonio Borghese, the IBF General Secretary, gave the welcome speech and started the course underlying the importance of Buffalo in the World. The day continued with lectures by CREA buffalo specialist on: buffalo Genetic, reproductive

Management, Buffalo Meat Quality and Production, Mozzarella Cheese Production, Agricultural Waste Recycling and Green Energy.



EXPERIMENTAL FARM OF CREA, MONTEROTONDO (ROME)

Visit to the Giancarlo D'Angelo Farm and Cheese Factory (Monterotondo-Rome)

Acquired in 1937, the Giancarlo D'Angelo Farm extends over two hundred hectares located between the Tiber River Basin and the Marcigliana Nature Reserve. The farm has hosted dairy cows for over 70 years then, in 2012, it was converted to buffalo livestock. Today the



VISIT AT D'ANGELO FARM AND CHEESE FACTORY

farm is located on 200 hectares of land, on which forage, cereal and leguminous are grown, producing all the fodder and most concentrated (corn, triticale, broad bean) needed to feed the animals. The farm owns about 150 buffaloes whose milk is processed into the small

cheese factory belonging to the estate. In addition to the traditional “buffalo mozzarella”, “ricotta”, “burrata”, “stracchino” and “caciocavallo” are also produced.

The Animal prophylaxis Research Institute (IZS-LT) in Rome



LECTURE AT IZSLT OF ROME

The Istituto Zooprofilattico Sperimentale delle Regioni Lazio e Toscana (IZSLT) (Animal Prophylaxis Research Institute) is a public body operating in the frame of National Health Service with duties related to animal health and welfare and food safety. Over such areas it provides services in diagnostic of animal diseases and zoonosis, microbiological, chemical and physical controls over safety of foods, food production chains and animal feed. On the same areas, it performs research, epidemiological surveillance, continuous training and international cooperation activities. Services are provided to Competent Authority such as Local and Regional Veterinary and Public Health Services, Ministry of Health, Border Inspection Posts, Environmental Control Bodies and other public and private stakeholders. IZSLT covers the geographical area of the regions of Lazio and Toscana. The headquarter in Rome and the eight territorial sections in the main regional sites carry over its tasks in the regional territorial areas.

Assisi



Moving from Rome (Lazio Region) to Perugia (Umbria Region), we spent the night in Assisi, with a charming walk in the rain through the alleys of the small medieval town and a taste of Umbrian cuisine at the Hotel Parco dei Cavalieri Restaurant. Assisi is well known as the birthplace of St. Francis of Assisi, patron saint of Italy, founder of the

Franciscan order, and one of the most popular Catholic saints in history. Assisi's main attraction is the 13th-century Basilica di San Francesco, which contains the sacred relics of Francis and beautiful frescoes of his life.

Chiacchierini Bull Centre in Civitella d'Arna (Perugia)



GROUP IN THE CHIACCHIERINI CENTER

The Chiacchierini Bull Center is focused on the breeding cattle and buffalo bulls for the production of frozen semen of superior genetics through an Artificial Insemination Center, recognized under the terms of Italian and European regulations. Founded 50 years ago, from 1975 is managed by the Chiacchierini family. The stud is in the center of a property of 55 hectares that ensure a natural protective barrier acting as a sanitary cordon. Since 2000, the selection activity has been

developed further, through the implementation of a progeny program on the Italian Mediterranean Buffalo, aiming at enhancing the genetic specificities that characterize Italian breed.

Lectures about: Semen production and Official Veterinary Control procedure adopted in a Buffalo Bull Center; Breeding value, Genetic gain and Optimum breeding plan; New approaches for Pregnancy diagnosis in buffalo, were given.

Afterwards, the outdoor buffet lunch in pleasant surroundings with beautiful countryside all around



GROUP AT CHIACCHIERINI BULL CENTER (WEB PHOTO)

Latina section of The Animal Prophylaxis Research Institute (IZS)

Latina province in Lazio region, due to its agro-geological characteristics and its strong vocation to animal breeding, possess a remarkable livestock rich in quantity and quality. The Latina section of IZS has veterinary and technical specialized staff and is equipped with laboratories for Diagnostics, Food Microbiology, Milk and Serology. Diagnostic activities for animal's infectious and infective diseases and zoonosis are carried out.

A special laboratory is dedicated to the Buffalo Pathology with particular attention to the study of parasitosis, the causes of mastopathies and the safety of dairy products. During the visit we had the opportunity to deepen the knowledge about the activities of the Latina section of ISZ and particularly about prophylaxis for brucellosis and tuberculosis and correct practices of milking and milk production measurements.

Agricola PERSEO Farm

In the early 50s, the Agricola Perseo Farm, of the Realacci family, undertaken the breeding of Friesian dairy cows in the plain of Agro Pontino. In the 90s, Romano Realacci, the current owner of Perseo Cheese Factory, inheriting the passion and expertise in breeding, continued the traditional family activity with the same dedication but replacing cows with buffaloes up to counting over 650 heads. The milk was utilized by small local dairies to produce their dairy buffalo products. In 2013, a cheese factory was added to the Agricola Perseo Farm. The main product of the cheese factory is obviously the mozzarella but a wide range of fresh,



VISIT AT PERSEO FARM

semi-aged and aged dairy products are made utilizing the milk of buffaloes raised entirely in the annexed farm. The 47 acres of land attached to the farm and further 27 managed in sharecropping, are cultivated with corn, wheat and alfalfa; products that are entirely used to feed their buffaloes.

Casabianca Farm and Cheese Factory – Fondi (Latina)



The Casabianca Farm is a green oasis in the plain of Fondi, south of Lazio region, with an extension of about 90 hectares, destined to the buffalo breeding. The milk is processed directly in the farm, in a dairy structure equipped with all the

innovative machinery necessary for this purpose.

Despite this, the work still involves all those manual steps dictated by tradition such as stretching, shaping and salting: in addition to normal commercial sizes, *treccioni* and

treccine (large and small braid) are also produced, mozzarella from 700 and 800 grams. Casabianca also produces bocconcini, aversana, nodini, ricotta and caciocavallo (Figure 14).



CASABIANCA FARM (FOTO WEB)

A stroll through the ancient ruins of Ostia Antica



Nowadays, Ostia Antica is a large archaeological site. Located just 19 miles (30 km) west of Rome and on the River Tiber. During ancient Rome, it was one of the most thriving cities in the region thanks to its status as Rome's harbor city.

After the collapse of the Empire, the city fell into decadence, was eventually abandoned and remained untouched and magnificently preserved for centuries.

This beautiful archaeological site of the ancient city offers you a direct glimpse at the religion, commerce and social life of the ancient Roman society.

<http://www.ostia-antica.org/>

Fattoria Reale del Torcino –Ciorlano (Caserta)



FATTORIA REALE DEL TORCINO (CASERTA) (PHOTO WEB)

We moved from Lazio to Campania region to visit the Fattoria Reale Del Torcino. The farm currently extends to about 300 hectares in the north of Caserta province and has more than 2000 buffalo heads for either milking or fattening. They adopt the out of breeding season mating system to have more calving and more milk production in the spring-summer period when the market demand for mozzarella cheese is higher. In 2016, average milk production between January and September was 6,5 tons per day, reaching a peak between July and August (9,0 tons per day) and a low between January and February (4,0 tons per day). The farm produces the fodder to feed their animals: alfa alfa, corn, triticale, ryegrass. Since 2012 it has been acquired by the Fattorie Garofalo Group, Leader Company in the production of Mozzarella di Bufala Campana DOP.

Caseificio “Casaro del Re” (Capua- Caserta)



CASARO DEL RE CHEESE PRODUCTION

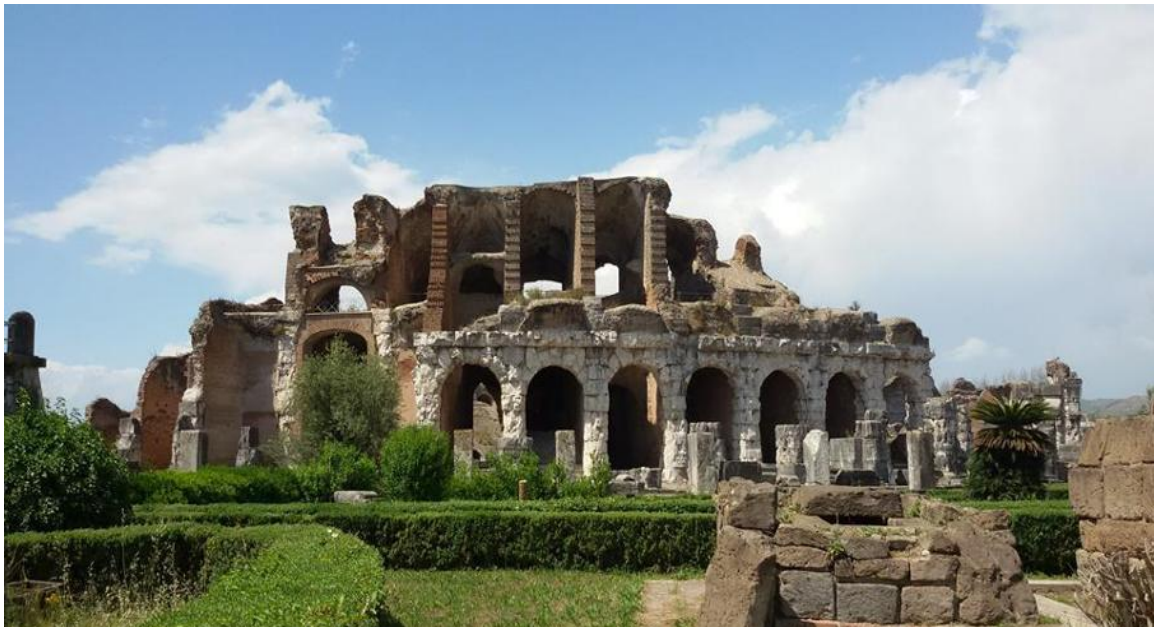
The cheese factory Casaro del Re is in Capua, an ancient town of great artistic value, in the province of Caserta. This is an area where the buffalo breeding has an established presence, in fact, are from the XII century the first historical documents that demonstrate how the monks of the monastery of San Lorenzo in Capua, used to offer, a cheese called "mozza" (truncated, cut with the hands), to pilgrims visiting the monastery. The cheese factory is part of the Fattorie Garofalo group. The milk comes from buffaloes reared in farms located in the Caserta area, properties of the same corporate group.



CASARO DEL RE CHEESE FACTORY

Once arrived at the factory, milk is processed immediately, to not lose any of its features. The recipe, temperatures, salt dosages, adjustment of the machines are entrusted to “casari” (cheesemakers) that in this way transfer their knowledge, result of centuries of competence and experience, in the special flavor of the Mozzarella di Bufala Campana DOP.

Lunch in Santa Maria Capua Vetere (Caserta) and view of Capua Amphitheater



CAPUA AMPHITHEATER

The ancient amphitheater of Capua is a magical place, full of history and charm. The amphitheater was built at the end of the first century AD and the beginning of the second. It is the second largest Roman amphitheater after the Colosseum in Rome and it was modelled on it. The Capua structure was the home of the first and most famous of all gladiator schools.

Gladiatorial training school are attested since the late second century at Capua, where elite romans drew gladiator trainers for Rome.

Buffalo Beef center - S.Angelo in Formis, Capua (Caserta)



SKIN PACKAGING

Buffalo Beef, part of the Fattorie Garofalo group, is a branch company that breeds young buffaloes for meat production, with the aim of promoting and marketing both fresh meat cuts and delicatessen.

The visit to the center gave the opportunity to observe how the meat was processed before marketing. In

particular, we saw the Skin packaging, which is the packaging system that extends the shelf life of food because it completely removes the air, especially atmospheric oxygen. This way, the overwrap film adheres completely to the tray and the food it contains, just like a second skin. The nutritional characteristics of the buffalo meat are reported on the packaging of the trays. Finally, a label that allows the traceability of the product is put on the packaging.



BUFFALO MEAT



BUFFALO PRODUCTS

The Animal Prophylaxis Research Institute (IZSM) in Portici – Naples

The “Istituto Zooprofilattico Sperimentale del Mezzogiorno” (IZSM), is one of the 10 Zooprophyllactic Institutes present in Italy which operate within the National Health Service, in the field of Hygiene and Veterinary Public Health. The headquarter in Portici (Naples) and eight territorial sections are present in the southern regions of Campania and Calabria. The IZSM is the National Reference Centre for Hygiene and Technologies of Water Buffalo Farming and Productions.

During the Training Course, lectures were focused on the activities of the Reference Centre and in particular on the development of a new approach on buffalo welfare and traceability system in the Italian buffalo production chain.



LECTURE AT ANIMAL PROPHYLAXIS RESEARCH INSTITUTE (IZSM) IN PORTICI – NAPLES

Improsta Farm – Capaccio-Paestum (Salerno)

The farm, located in Piana del Sele (the river Sele plain), in the countryside of the province of Salerno, is owned by Campania region and covers an area of about 140 hectares. The cultivation of the fields, directed at forage, horticultural, fruit and forest, is practiced both with classical and integrated method.

The farmstead consists of several buildings of considerable historical and architectural interest. In addition to the ancient guesthouse, we can admire the ancient "Bufalara", a rural

structure of the seventeenth century that served as a shelter to the staff responsible for the care of livestock.

The farm has about 300 buffalo heads for milk and meat production and an experimental cheese factory aimed to training and demonstration.



IMPROSTA FARM (FOTO WEB)

Tenuta Vannulo – Capaccio- Paestum (Salerno)

We moved in the Piana del Sele (the river Sele plain) among the Greek temples of Paestum (IV BC), part of the territory it was used to call Magna Grecia, one of the richest and most flourishing Greek colonies of southern Italy on the west coast of the Tyrrhenian Sea. In the shadow of the ancient temples is located the Tenuta Vannulo.

The Vannulo farm manages two hundred hectares of land dedicated to organic farming where they grow fodder for their buffaloes. Three-hundred milking buffaloes are present in the farm.



Showers and brushes, rubber mats and music, avant-garde techniques of milking are utilized to safeguard animal welfare and milk quality. The milking robots allow the animal self-management with a more natural and less stressful rhythm of milking.

The processing of mozzarella is made entirely by hand exclusively with the milk of their own buffaloes and they sell the products directly to the consumers in the farm where since 1988 there is their unique “zero-mile” selling point .

Other than the products of tradition, we can taste new flavors such as yogurt, pudding and ice cream, made with buffalo milk.

The factory has also a handmade workshop for buffalo leather processing.



MILKING ROBOT

University of Naples “Federico II” Department of Veterinary Medicine and Animal production



LECTURE AT UNIVERSITY OF FEDERICO II NAPLES

The Department is well known for its contribution to both the improvement and knowledge dissemination of buffalo breeding and exploitation of buffalo products under the leadership of Prof. L. Zicarelli. During the visit lectures about state of art in research on buffalo, nutrition and feeding in buffalo, advanced reproductive technologies and Reproductive management in buffalo cows were given.

CNR - Institute for the Animal Production System in the Mediterranean Environment (ISPAAM) (Napoli)

The Institute for the Animal Production System in the Mediterranean Environment takes interdisciplinary interest on Animal production research themes by using a systemic approach as well as knowledge & methods from different cultural areas (biology, physiology, molecular genetics, agronomy, cytogenetics, biochemistry, proteomics, nutrition, microbiology, forage cropping, and applied mathematics).



LECTURE AT CNR (NAPLES)

physiology of stress response in buffalo.

Research activity is realized in collaboration with both National and International research centers and includes the following investigation themes: Forage production and environmental sustainability; Animal systems, biological sustainability and product quality; Biodiversity and genetic improvement; Farming optimization models. We had the opportunity to know about the latest researches of the Institute on buffalo and particularly: proteomic approaches for the evaluation of buffalo dairy products, cytogenetics, and



The visit was concluded by testing a world famous “pizza napoletana”!

Closing ceremony and certificate of attendance consignment to the participants at CREA in Monterondo

After an emotional ceremony for certificate of attendance consignment, the course successfully ended with a farewell Italian' specialties dinner, quality wine tasting with sommelier and live music.



Next 4th IBF TRAINING COURSE ON BUFFALO MANAGEMENT AND INDUSTRY

will be organized on 7-17 May 2019 (provisional date) by IBF and CREA - Animal production and Aquaculture of Monterotondo (Rome).

A maximum of 30 places are available, and a preference will be given according to registration order.

All the information are available in the IBF web site

<https://internationalbuffalofed.org/4th-ibf-training-course-on-buffalo-management-and-industry/>

NEWS

12th World Buffalo Congress, Istanbul, Turkey



“Efficient Production | 18-20 September 2019
for the World” | İstanbul - Turkey



PROF. DR. M. İHSAN SOYSAL

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 congress 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 WBC2019 is “**Efficient Production for the World**”. We believe that global warming, environmental and ecological degradation, depletion of natural resources, natural and manufactured 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 Istanbul and Turkey. In addition to the main congress, there will be the Pre-Congress Workshop on “**Reproductive Biotechnology in Buffalo**” during 16-17 September 2019.

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

On behalf of the organizing committee,

Best Regards,

Prof. Dr. M. İhsan SOYSAL

Organizing Committee Chair

<http://www.wbc2019.org/en/>

International Buffalo Congress IBC 2019, Lahore, Pakistan



In order to showcase the milk and meat potential of buffalo, nationally and internationally, University of Veterinary and Animal Sciences, Lahore, Pakistan (UVAS) is organizing **“International Buffalo Congress (IBC 2019)” on February 18-19, 2019 in Lahore Pakistan**. The objective of the Congress is to review and update the work in the thematic areas of nutrition, reproduction, genetics, management, health, and socio-economics. The theme is “Subsistence to Commercialization”. We envisage information generated in the Congress will help in bringing economic prosperity of buffalo farmers, globally. **Lahore** has great history, cultural hub and provincial metropolis of predominantly agriculture based Punjab province. This is well connected to the rest of the world. **UVAS**, is a premier flagship veterinary education institution that has history of more than 136 years.

The IBC2019 will have following main attractions:

- ✓ Oral presentations from international and national invited and selected speakers
- ✓ Poster presentations and Pre congress workshops
- ✓ Milk and Beauty Competition & Livestock Show at Buffalo Research Institute (BRI)
- ✓ Exhibition and Post congress farm tour/ UVAS Ravi Campus
- ✓ Gala dinner with cultural show, and visit to historical places of Lahore

The Organizing Committee extends its warm invitation to scientists, students, planners, extension workers, veterinarians, farmers, entrepreneurs and buffalo enthusiast from throughout the world and Pakistan for attending the International Buffalo Conference IBC 2019, at UVAS, Lahore Pakistan. Therefore, please mark your calendars. Kindly show your interest by acknowledging this email on: info.ibc2019@uvas.edu.pk. More information will be available soon through our website www.uvas.edu.pk.

Contributed by Prof. Dr. Nasim Ahmad and Dr. Zaeem Sarwar, nasimahmad@uvas.edu.pk, zaeem.sarwar@uvas.edu.pk

Jornada de Capacitación en Búfalos Y Forrajes Tropicales Athenas, COSTA RICA



UNIVERSIDAD TÉCNICA NACIONAL (UTN),
SEDE DE ATENAS
DIRECCIÓN DE INVESTIGACIÓN Y TRANSFERENCIA

INVITAN A LA JORNADA DE CAPACITACIÓN EN BÚFALOS Y FORRAJES TROPICALES



**DEL 29 AL 31 DE
AGOSTO, 2018**

Campus UTN, Sede de Atenas

• **Miércoles 29 de agosto**
CURSO/TALLER SOBRE LECHE
(INCLUYE LECHE DE BÚFALA)

• **Jueves 30 de agosto**
SEMINARIO NACIONAL DE BÚFALOS

• **Viernes 31 de agosto**
SEMINARIO NACIONAL SOBRE FORRAJES

Mayor información con Jeniffer Arguedas B.
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