

# Buffalo Newsletter



Number 37 December 2021

**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**

## Inside this issue

<b>SCIENTIFIC FOCUS</b> .....	2
“El Bufalo de Agua” book.....	3
<b>TECHNICAL SECTION</b> .....	9
Introduction of excellent Nikookar Buffalo Farm in Gilan province.....	9
Introduction of Macroom buffalo in Cork Ireland .....	13
Introduction of Estancia Santa Florencia farm in Paraguay.....	17
Report and Resolution of the 10 <sup>th</sup> Asian Buffalo Congress (ABC2021) in Nepal.....	20
Report on South American countries activities .....	22
Buffalo in Argentina .....	22
Buffalo in Bolivia .....	24
Buffalo in Colombia .....	27
Buffalo in Mexico .....	28
Buffalo in Venezuela .....	30
10 <sup>TH</sup> AMERICAN AND EUROPEAN BUFFALO SYMPOSIUM .....	32
13 <sup>th</sup> WORLD BUFFALO CONGRESS .....	32
11 <sup>TH</sup> ASIAN BUFFALO CONGRESS 2024.....	33
IBF-CREA course 2022 .....	33
IBF Survey .....	33
<b>MEMORIES</b> .....	34
<b>IBF ORGANIZATION</b> .....	34

The year 2021 is still facing with Covid-19 pandemic. The 10<sup>th</sup> Asian Buffalo Congress was held virtually from Nepal on 25-29 October 2021, according to the program presented by Prof. Bhuminand Devkota. The World Buffalo Congress that should have taken place in October 2022 in Wuhan, China, has been postponed to 2023 according to the request of Prof Liguang Yang from China. In 2022 the 10<sup>th</sup> Symposium of America and Europe will be held in Paraguay.

In the **scientific focus** section, we are presenting “El buffalo de Agua” book by our associate Marco Zava, and the *Animal* special issue dedicated to “the water buffalo”, which published this year and included 11 scientific contributions from all over the world.

In the **technical section** are reported three interesting experiences on buffalo development: from Nikookar buffalo farm in IRAN, from Macroom buffalo farm in Ireland and from Estancia Santa Florencia farm in Paraguay. Moreover, an overview of American Buffalo Breeders Associations activities is reported in this number. The IBF Training courses in Italy are still on hold but the Secretariat is organizing for the next year a series of six webinars on buffalo management reported in the section **Upcoming events**.

Unfortunately, Guillermo Cárdenas Pelaez, an IBF member from Panama, passed away and we unknowledge his contribution to buffalo development in this number.

The IBF Secretariat worked to maintain connections and support to associates. Other requests to become members were examined, reaching 113 IBF associates, representing 39 countries. The list is enclosed, as usual, at the end of this Newsletter

## **The Editorial Committee**

### **Buffalo Newsletter - Number 37 – December 2021**

Editor: **Antonio Borghese**  
[antonio.borghese@escorena.net](mailto:antonio.borghese@escorena.net)

#### **Editorial Committee**

Luca Buttazzoni, Vittoria L. Barile, Antonella Chiariotti  
CREA, via Salaria 31, 00015 Monterotondo (Roma) – Italy

#### **IBF Secretariat**

Antonio Borghese, Vittoria L. Barile, Antonella Chiariotti,  
Carlo Boselli, Federico Infascelli, Anna Chiacchierini

Network Co-ordination Centre, to which correspondence is to be sent:

[internationalbuffalofed@gmail.com](mailto:internationalbuffalofed@gmail.com)  
IBF, via Salaria 31, 00015 Monterotondo (Roma) – Italy

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitations of its frontiers or boundaries. This publication contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the Food and Agriculture Organization of the United Nations.

## SCIENTIFIC FOCUS

### “El Bufalo de Agua” book

#### **Generalities and productive characteristics**

**Editors: Luis Alberto de la Cruz Cruz, Eduardo Luis Maitret Collado, Patricia Roldán Santiago, Marco Zava.**

These two volumes work, a great contribution to the American and world buffalo breeding, shows an excellent level in all the works, produced by 39 Authors from 13 countries.

Some are extended works, useful for specialists, scientists, and for those who intend to study deeply some topics. Also is a great help for breeders looking forward to increasing their practical and scientific knowledge about buffalo production.

Discernment demands are covered about science and research on one hand, and about production and the industry on the other hand.

All the chapters are very complete in technical, scientific and practical information. Topics as Genetics, Nutrition Physiology, Reproductive biotech, etc., are covered with a very high level. Stands out the huge number of researches and results absolutely new that are referred, in many cases, to previous works realized in our continent, based in our reality, that don't need to be extrapolated, as it happened to me in the '70, '80, '90 and in the beginning of this century.

We travelled through the entire world looking for research and information about buffaloes. To obtain and exchange the scarce information and experiences was required more presential and physical permanence in different countries than nowadays, in order to analyse their production systems in the farms, and their research in Institutes and Universities.

It makes me infinitely happy checking the high level of works, management and production systems and the wealth of knowledge reached by scientists, technicians, researchers and breeders, generally young, of the American continent.

Congratulations to the organizers of this work, that will be greatly useful for water buffalo production in all our countries. It is no longer only Asian buffalo: is American water buffalo, the second in the world for its population and the first for its growth, besides the Egyptian, European and Australian buffalo.

#### **Marco Zava**

Zootechnic Engineer, master's in business administration,  
Founder Member of the AACB, Member of the SC – IBF,  
buffalo breeder and advisor.

## #BúfalodeAgua

El interés por el búfalo de agua ya no es nuevo en América. Los últimos 35 años esta especie ha tenido un enorme crecimiento por su introducción en los países de la región como un hato alternativo, o complementario, al de vacunos u otras especies domésticas.

Esta obra consta de dos tomos en los que se presentan diferentes estudios realizados a nivel mundial por especialistas de distintas nacionalidades: Divier Antonio Agudelo Gómez, Gustavo Araya Rodríguez, Gerardo Barboza Jiménez, Jesús Alfredo Berdugo Gutiérrez, Gianni Bianchi Olascoaga, Herlinda Bonilla-Jaime, Carlos Armando Cadoppi, Angelo Citro, Adrián Alejandro Corrales Hernández, Luis Alberto de la Cruz-Cruz, Mélanis Domínguez Lima, William G. Vale, Valeria Giraldo Grisales, Natalia Guarino Souza Barbosa, Paloma Islas-Fabila, Ligia Johana Jaimes Cruz, Cristian Larrondo Cornejo, José Raúl López Álvarez, Eduardo Luis Maitret Collado, Valeria Molnar Fernández, Juan Fernando Naranjo Ramírez, Héctor Nava Trujillo, Héctor Óscar Orozco-Gregorio, Alejandro Ortiz Acevedo, Visoky Paján Jiménez, Andrés Felipe Pérez Rojo, René Ramírez García, Gladis Isabel Rébak, Laura Restrepo Jaramillo, José Manuel Reyes Cuevas, Patricia Roldán-Santiago, Marlyn Hellen Romero Peñuela, José Armando Sánchez-Salcedo, Alfredo Javier Sánchez Villalobos, Pawan Singh, Diana Carolina Solano Suárez, Ariel Marcel Tarazona Morales, Luis Edgardo Tovar Breto, Juan Manuel Vargas-Romero, Hugo Vélez Montes, Felipe Vélez Saldarriaga, Ariadna Sagrario Yáñez-Pizaña y Marco Zava.

LIDeditorial  
.com

TOMO 1

EL BÚFALO DE AGUA

Luis Alberto de la Cruz-Cruz  
Eduardo Luis Maitret Collado  
Patricia Roldán-Santiago  
Marco Zava



# EL BÚFALO DE AGUA

Generalidades y características productivas



TOMO 1



## #BúfalodeAgua

El búfalo de agua es una especie que ayuda a la producción pecuaria sustentable.

**Eduardo Maitret Guichard**  
México

El búfalo es búfalo, merece y debe ser tratado e identificado como tal, por lo tanto, no debe compararse con otras especies.

**Dr. Jorge André Mendes**  
Brasil

Cuando se muera por sequía o inundación el último vacuno, recién comenzará a morir el primer búfalo.

**Dr. Exequiel María Patiño**  
Argentina

Brinda amistad, alimento, progreso, riqueza, amigos, ¿qué más se le puede pedir al búfalo?

**Dr. Marco Zava**  
Argentina

El búfalo es la especie más noble, rústica y productiva para carne y leche saludables.

**MVZ Efraín Chacón Condori**  
Bolivia

El búfalo de agua en América es como conducir un Ferrari último modelo en camino de terracería. Debemos buscar mejores vías para sus productos y así saber lo buenos que son.

**Angelo Pluchino**  
Venezuela

LIDeditorial  
.com

TOMO 2

EL BÚFALO DE AGUA

Luis Alberto de la Cruz-Cruz  
Eduardo Luis Maitret Collado  
Patricia Roldán-Santiago  
Marco Zava



# EL BÚFALO DE AGUA

Generalidades y características productivas



TOMO 2



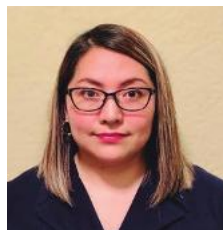
## Luis Alberto de la Cruz-Cruz



Médico veterinario zootecnista por la Universidad Autónoma Metropolitana, Unidad Xochimilco (UAM-X). Maestro en Ciencias por la Facultad de Medicina Veterinaria y Zootecnia de la Universidad Nacional Autónoma de México (FMVZ-UNAM). Doctor en Ciencias Biológicas y de la Salud

por la UAM-X. Docente en la Universidad del Valle de México (UVM-Coyoacán) y en la UAM-X en las áreas de Fisiología Veterinaria, Bienestar Animal y Calidad e Inocuidad de los Productos de Origen Animal. Ha realizado diferentes estudios en México y Colombia sobre la fisiología del estrés y su impacto en la producción bubalina.

## Patricia Roldán-Santiago



Médica veterinaria zootecnista por la Universidad Autónoma Metropolitana, Unidad Xochimilco (UAM-X). Maestra en Ciencias de la Producción y de la Salud Animal por la Facultad de Medicina Veterinaria y Zootecnia de la Universidad Nacional Autónoma de México (FMVZ-UNAM).

Doctora en Ciencias Biológicas y de la Salud por la UAM-X. Miembro del Sistema Nacional de Investigadores (SNI). Profesora-Investigadora de Reproducción, Ginecología y Neonatología Veterinaria en la FMVZ-UNAM. Ha realizado diferentes estudios en México sobre la fisiología del estrés y su impacto en la producción bubalina.

## Eduardo Luis Maitret Collado



Licenciado en Ciencias de la Comunicación por la Universidad Iberoamericana. Socio fundador de Ganadería Alta Saona, S.P.R. de R.L. de C.V., empresa pionera en la cría, engorde y mejoramiento genético de los búfalos de agua en México. Pertenece a la cuarta generación de ganaderos en el


sureste de la república mexicana. La familia Maitret introdujo la especie a México entre 1991 y 1999. Actualmente las operaciones de la familia y asociados a la empresa Ganadería Alta Saona se encuentran en la región sur del estado de Veracruz, México, en una producción de triple propósito: leche, carne y trabajo.

## Marco Zava



Ingeniero en Producción Agropecuaria y licenciado en Ciencias Agrarias con especialidad en Zootecnia por la Universidad Católica Argentina. Licenciado en Administración de Empresas por la Universidad Argentina de la Empresa. Posgrado en el Centro de Estudios para la Dirigencia

Agropecuaria. Socio fundador de la Asociación Argentina de Criadores de Búfalos (AACB) y miembro de la International Buffalo Federation (IBF). Criador de búfalos, consultor agropecuario y difusor de las cualidades del búfalo desde 1976. Autor y coautor de diversos libros sobre la especie bubalina.

eBook available on  iBooks, Google Books,



[lidconferenciantes.com](http://lidconferenciantes.com)  
[lidspeakers.com](http://lidspeakers.com)

---

 [mexico@lidbusinessmedia.com](mailto:mexico@lidbusinessmedia.com)

---

 @LIDEditorialMex

---

 @LidEditorialMexicana

---

 LID Editorial Mexicana



## Special Issue "The Water Buffalo (*Bubalus bubalis*)"



# *animals*

Dear Colleagues,

The worldwide population of domestic buffalo (*Bubalus bubalis*) exceeds 208 million heads distributed in 77 countries of five continents, with the majority of animal breeds found in Asia. This animal is farmed for its high-fat milk and good-quality meat that has superior nutritional characteristics compared to cattle.

The buffalo is known for its rusticity and higher capacity to utilize feed with poor nutritional value in addition to a high capacity for adaptation and survival at different environments with distinct climate, topography, and vegetation, and it is well adapted to floodplains in many tropical and subtropical countries. Water buffalo contributes to 14% of the global milk production and represents the major milk-producing animal in countries such as India and Pakistan.

This amazing and sub-utilized animal can be more productive with additional quality products and better resistance and should be promoted as a target species to be used in smallholder production systems. For this Special Issue, hosted by an international team of scientists whose collective expertise covers a wide variety of research themes related to buffalo, we invite all buffalo scientists to submit their manuscripts on research related to buffalos toward promoting further knowledge regarding this species.

**Dr. Antonio Humberto Hamad Minervino**

**Dr. Domenico Vecchio**

**Prof. Dr. Liguang Yang**

*Guest Editor*

Published Papers (11 papers)

- 1. Evaluation of Brix Refractometry to Estimate Immunoglobulin G Content in Buffalo Colostrum and Neonatal Calf Serum**

Melania Giammarco, Matteo Chincarini, Isa Fusaro, Anna Chiara Manetta, Alberto Contri, Alessia Gloria, Lydia Lanzoni, Ludovica Maria Eugenia Mammi, Nicola Ferri and Giorgio Vignola  
*Animals* 2021, 11(9), 2616; <https://doi.org/10.3390/ani11092616> - 06 Sep 2021

**2. Effect of Wet Aging on Colour Stability, Tenderness, and Sensory Attributes of *Longissimus lumborum* and *Gluteus medius* Muscles from Water Buffalo Bulls**

Muhammad Hayat Jaspal, Iftikhar Hussain Badar, Osama Bin Amjad, Muhammad Kashif Yar, Muawuz Ijaz, Adeel Manzoor, Jamal Nasir, Bilal Asghar, Sher Ali, Kashif Nauman, Abdur Rahman

And Um Ul Wara

*Animals* 2021, 11(8), 2248; <https://doi.org/10.3390/ani11082248> - 30 Jul 2021

**3. The Association of the Potential Risk Factors and Nutrition Elements with Abortion and Calving Rates of Egyptian Buffaloes (*Bubalus bubalis*)**

Walaa M. Essawi, Ali Ali El-Raghi, Fatma Ali, Mohamed A. Nassan, Ahmed N. F. Neamat-Allah And Mahmoud A. E. Hassan

*Animals* 2021, 11(7), 2043; <https://doi.org/10.3390/ani11072043> - 08 Jul 2021

**4. Italian Tracing System for Water Buffalo Milk and Processed Milk Products**

Giovanna Cappelli, Gabriele Di Vuolo, Oreste Gerini, Rosario Noschese, Francesca Bufano, Roberta Capacchione, Stefano Rosini, Antonio Limone and Esterina De Carlo

*Animals* 2021, 11(6), 1737; <https://doi.org/10.3390/ani11061737> - 11 Jun 2021

**5. Characterization of Foot and Mouth Disease Virus Serotype SAT-2 in Swamp Water Buffaloes (*Bubalus bubalis*) under the Egyptian Smallholder Production System**

Hend M. El Damaty, Elshaima M. Fawzi, Ahmed N. F. Neamat-Allah, Ibrahim Elsohaby, Abdelmonem Abdallah, Gamelat K. Farag, Yousry A. El-Shazly and Yasser S. Mahmmod

*Animals* 2021, 11(6), 1697; <https://doi.org/10.3390/ani11061697> - 07 Jun 2021

**6. Maternal and Neonatal Behaviour in Italian Mediterranean Buffaloes**

Lydia Lanzoni, Matteo Chincarini, Melania Giammarco, Isa Fusaro, Alessia Gloria, Alberto Contri, Nicola Ferri and Giorgio Vignola

*Animals* 2021, 11(6), 1584; <https://doi.org/10.3390/ani11061584> - 28 May 2021

**7. Droplet Digital PCR (ddPCR) Analysis for the Detection and Quantification of Cow DNA in Buffalo Mozzarella Cheese**

Anna Cutarelli, Andrea Fulgione, Pasquale Fraulo, Francesco Paolo Serpe, Pasquale Gallo, Loredana Biondi, Federica Corrado, Angelo Citro and Federico Capuano  
*Animals* 2021, 11(5), 1270; <https://doi.org/10.3390/ani11051270> - 28 Apr 2021

**8. Evaluation of Genetic Diversity and Structure of Turkish Water Buffalo Population by Using 20 Microsatellite Markers**

Emel Özkan Ünal, Raziye Işık, Ayşe Şen, Elif Geyik Kuş and Mehmet İhsan Soysal  
*Animals* 2021, 11(4), 1067; <https://doi.org/10.3390/ani11041067> - 09 Apr 2021

**9. The Cytogenetics of the Water Buffalo: A Review**

Alessandra Iannuzzi, Pietro Parma and Leopoldo Iannuzzi  
*Animals* 2021, 11(11), 3109; <https://doi.org/10.3390/ani11113109> - 30 Oct 2021

**10. Dual-Purpose Water Buffalo Production Systems in Tropical Latin America: Bases for a Sustainable Model**

Aldo Bertoni, Adolfo Álvarez-Macías, Daniel Mota-Rojas, José Luis Dávalos and Antonio Humberto Hamad Minervino  
*Animals* 2021, 11(10), 2910; <https://doi.org/10.3390/ani11102910> - 08 Oct 2021

**11. Neurophysiological Mechanisms of Cow–Calf Bonding in Buffalo and Other Farm Animals**

Agustín Orihuela, Daniel Mota-Rojas, Ana Strappini, Francesco Serrapica, Ada Braghieri, Patricia Mora-Medina and Fabio Napolitano  
*Animals* 2021, 11(7), 1968; <https://doi.org/10.3390/ani11071968> - 30 Jun 2021

## TECHNICAL SECTION

### Introduction of excellent Nikookar Buffalo Farm in Gilan province



Gilan is one of very green provinces which is located in North of Iran, South of Caspian Sea, with moderate and humid weather. Gilan province is one of the old habitats of local river buffaloes.

Based on some official estimation, there were 18000 heads of river buffaloes in Gilan province in 2005. But, unfortunately, because of different reasons such as:

A- mass villa construction in rangelands by urban people (More added value compared to buffalo husbandry). Gradual development of urbanization in rural areas.  
B- Development of tourism, thereby, change of traditional villages structure and decrease of rangelands which were being grazed by buffaloes.

At present (2021), 6000 heads of buffaloes have been identified and registered through ear tag in national buffalo identification system by Gilan cooperative of buffalo

farmers.

In general, most of the buffaloes are being raised in traditional rural farms with the herd size of 10 to 30 buffaloes. In spring and summer, simultaneous with rice cultivation, buffaloes (for their nutrition) are transferred to fenced and exclusion rangelands and summer grazing areas which are covered with

HIRCANY forests. In Autumn and Winter, they are kept in closed housing and are hand fed with roughages such as: Rice stem, rice bran and wheat bran.

In 1999, I married Mr. Eng. Mohammad Nikookar. In 2004, after graduating in the field of Psychology, we did reverse migration (from big city to village) and began to keep and breed buffaloes. During our work, we tried via new methods of biotechnology mainly artificial insemination and embryo transfer by using Italian frozen semen, to produce crossbred dairy buffaloes, gradually. In comparison to local buffaloes, they had longer lactation period, thereby, more total milk and more profitable.

At present, we have the only elite semi-industrial buffalo farm (including 55 buffaloes) which increases and distributes the superior genes all over the country. In this farm, which has gradually moved from traditional to semi-industrial farm, all lactating buffaloes are milked by milking machine, the new born calves are fed with manual nipple. Also, all buffaloes are being registered and keeping record. The registered data mainly include: Date of birth- Birth weight-Date of the first artificial insemination- The first parturition-Date of gestation and dry period-Length of lactation period-Record of milk amount ...etc.



The recorded data are transferred to national animal breeding centre in order to transfer to International Committee for Animal Recording (ICAR) by Mr Eng. Mohammad Nikookar as executer of buffalo breeding project in Gilan province. Pedigree and photo of buffaloes are registered and printed in individual pedigree of each animal to use for next data of each animal. In addition to, all required vaccines such as: anthrax, FMD, Pasteurellosis and IBR are done in order to prevent of diseases in next genetic improvement research with cooperation of Iran Veterinary Organization.

Generally, my significant extensional activities are as follow:

As a facilitator and senior extension agent (Specially among rural women) and Iranian superior *entrepreneurship* (Creation of occupation), I have done my best in the way of conservation and increment of Iranian buffalo population, specially, in Gilan province.

In 2016, with cooperation of National animal breeding centre and significant managing of Mr. Eng. Hamidreza Naderfard (Head Iranian members in IBF), I could establish and register the first and only *cooperative of buffalo breeders in Gilan province*. Which was the first in Iran, also.

In this specialized cooperative we have about 300 members of buffalo breeders. In cooperative we hold training and extension short term courses on the new methods of better buffalo farm management, distribution of animal inputs such as barley, corn, wheat bran and soybean along with collection of raw milk of rural small size buffalo farms. We try to encourage the traditional buffalo breeders to exploit the maximum potential of buffaloes in digest and absorb of roughages with high fiber with the main approach of decreasing the costs of buffalo and milk production, specially, to pass from serious crisis of drought and expensive animal outputs, in order to make buffalo breeding more profitable, followingly, to develop the buffalo as the animal of third millennium based on FAO statement.

Regarding to this fact that 35% of agricultural products in developing countries are converted to wastes before arriving to consumption market, I seriously, tried to hold training courses for stakeholders. In the field of silage these wastes are from: citrus, tomato, corn, sugar cane pulp, dates, raw pistachio, olive, etc.... along with enrichment of some of them with urea and molasses in order to provide a cheap ration for buffaloes in order to meet required energy and protein in the small size rural farm similar to Iraq and Pakistan. However, such buffaloes in south part of Iran, are grazing in the reeds of natural marshes (bounded by Persian Gulf) during spring and summer, in order to decrease nutrition costs of buffaloes.

In the way of Iran self-sufficient in producing frozen semen and oocytes for producing frozen embryos, last year, we had a joint project with bio-technology research centres of: A- Ebne sina and B-Baran farm. By this project we could produce 30 dozen of embryos from cross-bred heifers of our farm for the first time in Iran, which is an excellent and significant action in increasing the Iranian buffalo population, per se.

At present, the technical project of: *Breeding of improved buffaloes* is ongoing. It is one of the successful entrepreneurships (Creation of occupation) for educated young in rural areas of Iran, which will develop occupation in rural areas, thereby, to prevent the migration of villagers to urban areas and finally, food security through producing high quality buffalo milk and meat production via completing the valuable chain of: *From farm to Fork*.

In Addition to above-mentioned activities, at present, as an occupational consultant I cooperate with: A) Imam Khomeni Emdad committee; B) Ministry of agriculture; C) National animal breeding centre in Iran.



**Mrs Fatemeh Derisavi**

Owner and manager of excellent Nikookar buffalo farm in Gilan province (North of Iran- Southwest of Caspian Sea).

Chief executive officer (CEO) of cooperative of buffalo farmers in Gilan province.

Rural facilitator and senior extension agent mainly among women in rural areas of Gilan province

Senior instructor of entrepreneurship.

Occupational consultant of: Imam Khomeini Emdad committee (Emdad means: Sincerely helping to poor, weak, and disabled persons).

## Introduction of Macroom buffalo in Cork Ireland



My name is Johnny Lynch, and I farm Italian Mediterranean pedigree water buffalo in Ireland. Today, we farm over 580 water buffalo across four farms in co. Cork. Two dairy farms milk 170 water buffalo for the Macroom buffalo cheese plant on the home farm and two livestock farms produce buffalo meat for the Irish market.

### Introduction

Before 2009, I farmed 50 Friesian Holstein dairy cows on my 135-acre farm which has been in my family for over 3 generations. I am married to Geraldine, and we have 3 sons named Peter, Jack and Kieran.

From 2009, as we were looking ahead to 2015, when EU Milk Quotas were being abolished, we felt we could not continue dairy farming sustainably with milk prices remaining low for the foreseeable future.

This projection showed it would be unlikely that another generation could make a living by farming dairy cattle. Therefore, we had to investigate other possibilities for the farm.

## Research

In March 2009 we considered making cheese, as this region has a long history of cheesemaking and artisan food production. Some of our conversations about this went long into the nights. There were plenty of Hard and Semi-soft cheeses on the Irish market but few soft fresh cheeses. Nobody was making fresh Buffalo Mozzarella and Ricotta. We had sufficient land, a well water supply and a robust milking parlour for 24 animals.

We spent many months researching water buffalo dairy farming and Pasta Filata cheese making in Laver stoke Farm, UK, and in Italy. While there, we learned that buffalo milk is very healthy, like goat's milk, high in protein and fat, which produces the high milk solids needed to make the best Pasta Filata cheeses.

We brought in an Irish Master Cheesemaker named Sean Ferry to help with production expertise and the equipment setup needed to get the business off the ground.

## Business Plans

Before 2009, the Water Buffalo species had never been in Ireland and grass-fed buffalo milk cheeses or meat were not locally available for the ever more diverse palate of the Irish consumer. The risk we took was huge. Our business plan was to make buffalo milk cheeses for the Irish market and if that did not work, we could go down the buffalo meat route.

I had initially considered bringing in an adult milking herd. Thanks be to God, I did not because I believe you have to grow through the process of introducing this new species to Irish soil, grass and climate. We had to get to know the buffalo and they to know us. It's definitely much easier to work now with the buffalo that were born here. In October 2009, we made the decision to go ahead with sourcing the animals from Italy. We sold some of our cows and our milk quota to pay for importation of nine six-month-old calves, twenty heifers and one bull of the Domesticated Mediterranean Water Buffalo pedigree from Cremona, Northern Italy.

## Home Farm

By 2011, our first calf was born on the farm. The new-born calves are housed indoors on straw bedded single pens for the first 7 days of life where they are fed the mother's 'beestings' or colostrum milk. Next, they are fed powdered sheep's milk replacement, as it is of similar nutritional value to buffalo milk, and to this is added a natural diet of hay, straw and grains.

All my water buffalo animals graze outdoors for over 9 months of the year on rich grasslands, and they seem to enjoy and thrive in the Irish climate, where temperatures rarely go above 30c degrees or below -3c degrees and we have plenty rain.

The male buffaloes and 12+week old calves are farmed out to the 3rd farm for stock maturity and condition. Female adults return to the Home Farm herds for calving and milking life from 28 months of age. Fully grown males at 24 months go to an approved Abattoir in Ballincollig for the buffalo meat market. We have a 2<sup>nd</sup> Dairy farm near Macroom now.



We have 12 of the original herd still with us today and those females known as the Italians are still producing calves and milk. Now, we also have Irish born, Dutch and German Water buffaloes in our 4 farms. For the initial pedigree breeding programme, we imported 10-15 AI (Artificial Insemination) straws per annum from Italy and we always hope to get 3-4 breeding bulls from those inseminations. This has increased to 80-100 AI straws and 30% of the herd is from AI stock.

## Cheese

In 2012, Irish Buffalo Mozzarella and Ricotta cheese were produced. Sales were slow in Farmers Markets and life on the farm was very tough. By 2015, the Irish branch of Aldi Supermarkets came on board and with the help of financial investment and government grant aid, we were able to build a new cheese plant on the farm. Due to this partnership, it's marketing expertise, promotion and customers, life got better. I could increase milk-volume yields and in time, we were able to supply extra stores nationwide i.e., Delicatessens, Tesco, Dunnes Stores and Supervalu supermarkets and well as Farmer's Market stall holders.

My days are filled with striving to ensure the very best animal husbandry for my animals so that they can continue to produce enough milk to fulfil the cheese orders each day. Even though at certain times of the year, this can be challenging.

Today, we are milking 190 buffalo twice daily in 2 farms of 360 acres in total, here in Macroom. All of their daily milk yield i.e., 1600 litres, is delivered to the dairy, just 20 metres from the milking parlour,

where it is transformed into a variety of cheeses in the Cheese Dairy, starting at 5 am each morning. Having the Cheese Dairy on the home farm has helped the business expand organically.

### Annual World Cheese Awards

In both 2016 -2017 World Cheese Awards, our Macrooom Buffalo Mozzarella won Gold and Buffalo Ricotta Silver. In 2020-21, we won 4 Silver and Bronze medals. We have been finalists and winners as well in many UK and Irish Cheese awards.

### Conclusion

In 2021, we have 3 Cheesemakers producing beautiful cheeses. We employ Farm and a Cheese Dairy Plant managers and 15 skilled employees for the many enterprise branches of the farm. The product range of 5 items consists of Buffalo Mozzarella, Bocconcini, Ricotta, Greek style and Buffaloumi (grilling cheese)

We have been financially supported by Údarás na Gaeltachta, which is a government business support agency, and we are very grateful for their help. We hope to expand our range to hard cheeses, milk and yoghurt in the coming years and a 100% building extension has begun this year. The meat market is sufficient for sales of the male stock we produce. In addition, we provide guided educational tours of the Home Farm as a novel experience of our photogenic buffalo and their flavourful cheeses to national and international visitors to Ireland.

Looking back over the last 12 years, I can say that the risk of bringing water buffalo into Ireland was enormous at the time, but it has paid off admirably. The Dairy farms, Buffalo Meat Enterprise, Cheese Plant and Agri-Tourism branches on the farm (which are all interconnected) generate robust income for all. My family, management and staff continue to be passionate about living, working and expanding the business with water buffaloes in Ireland and this bodes well for the future.

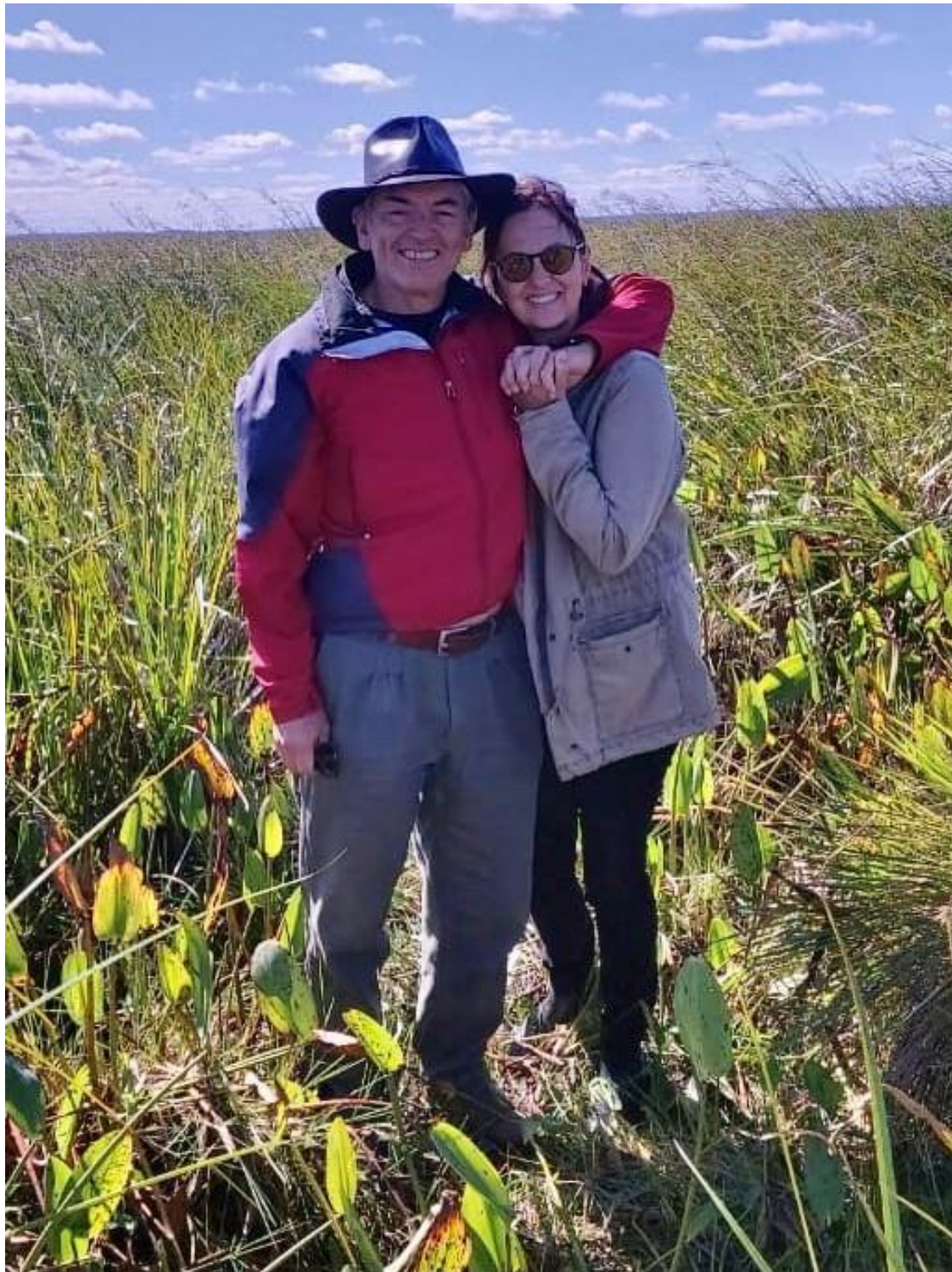
Thank you,

**Johnny Lynch,**

Macrooom Buffalo Farm,  
Clonclud, Killnamartyra, Macrooom,  
Co Cork. P12EV90, Ireland.  
[www.macroombuffalocheese.com](http://www.macroombuffalocheese.com)  
email: [toonjohn333@gmail.com](mailto:toonjohn333@gmail.com)



## Introduction of Estancia Santa Florencia farm in Paraguay



I'm living a new chapter, fully dedicated to a dream project of revitalizing a ranch that has been in the family for three generations. In the process, I've also become a believer and enthusiastic advocate of the buffalo as a species that need to be reintroduced to Paraguay as "high technology" to conserve

and regenerate wetland areas, and through these animals contribute towards ecological, economic and social development and sustainability.

My wife and I decided to move to Paraguay in 2018, live on and operate the family ranch, recovering it after a long period of rental agreements. When we arrived, the only animals in our name were 28 buffalos (descendants of small herd of buffalos my grandfather introduced to Paraguay from the Brazil in 1953.) The buffalo were kept grazing in more remote wetlands or “humedales” of the ranch, which make up more than half of the total surface and is considered unsuitable for cattle production.

The first phase of my development project was to populate the ranch with cattle to the carrying capacity of the upper, drier part of the property, adequate for typical ranching with Nelore and Brangus (beef) cattle as well as improving the quality of these pastures. This, nonetheless, allowed me to utilize less than half the property; requiring a solution to make use of other half.

The other half is “wetland” and as mentioned previously, is classified by experts in the matter as “unsuitable for (bovine) cattle grazing”. Another important factor to mention is that options for the wetland are limited by environmental issues. (“Draining the swamp” would not be permitted). Thus, one of our challenges for sustainability was to find permitted productive solutions for 2700 swampy hectares.

The small buffalo herd, I previously mentioned, caught my attention as the possible solution and I started to avidly study up on these *bubalus bubalis*.

I learned that buffalo is originally from Southeast Asia and adapted to wetlands and swamp environments. The combination of their wide splayed hoofed feet that prevent them from sinking deeply into mud, and their ability to digest fibrous and lignified grass makes them perfect for the lowlands in our property. Their ideal habitat are floodplain environments with a mixture of abundant grasses and available bodies of water. They also need dry lands fringing on wetlands to use as resting spots to give calve and nurse their juveniles. Furthermore, their grazing in otherwise unused areas is useful in reducing fuel load and fire intensity.

The more I studied, the more convinced I became that water buffalo are the ideal solution I was seeking for making the lowlands productive and that I should increase the buffalo population on the ranch for meat, milk and swamp restoration. In spite of the limited supply of buffalos for sale, in 2019 I was able to buy 45 pregnant heifers, which in early 2020 gave us calves and milk.

The milk produced was sufficient to allow a proof of concept producing local cheese sold in the vicinity and later “mozzarella di buffala” and selling it to top tier restaurants in Asuncion, the capital.

Last year I was also able to grow the herd buying, or even swapping, buffalos from several small sellers. In spite of the difficulty, I’ve been able to grow the herd from the original 28 to almost over 250 head in two years. In 2022 I hope to achieve ongoing milk production throughout the year via Fixed Term Artificial Insemination (FTAI) and will strive for our mozzarella to be present year-round in restaurants in Asuncion.

My studies continued, and I was able to participate in the wonderful online program, sponsored by Universidad del Chaco Austral (UNCAUS) under the guidance of Dr. Gustavo Crudeli and Dr. Exequiel Patiño. I am now honored to be part of the “Bufalos de las Americas” group we formed in the aftermath of the course, which is bringing together buffalo enthusiasts, practitioners and scholars, of the Americas.

With increased knowledge, a growing network, and more experience, I must confess my perspective on the buffalo project has changed. It need be much more than a good productive alternative for my property; I think the real mission is to create awareness and programs to place the species as a strategic productive initiative to make better use of over 100.000 square kilometers (10,000,000 hectares!) of wetland surfaces in Paraguay.

Paraguay has a proven competitive advantage in grass finished meat production, being one of the top ten exporters of beef to the world. But while it has a bovine population of approximately 14 million head of cattle, estimates of buffalo population range between 10-15 thousand. That would be less than 1 buffalo for every 1,000 bovine animals. These buffalos are spread in small pockets around the country, and producers have made little joint effort to create a critical mass sufficient to maintain ongoing demand for buffalo meat or milk products, very little value added, and no utilization of its regenerative capacities in wetlands. So much potential, so much to do!

A buffalo program for Paraguay should aim that by 2025:

1. the country will have a population of at least 30,000 buffalos, and with a sustained growth rate to become 1% of the national cattle herd
2. buffalo milk and meat products be recognized, valued and demanded by consumers, and
3. these products be present in restaurants, supermarkets, and seeking space in international markets near and far.
4. A regional “cluster” with constant interaction and has facilities to freely exchange animals, genetics, finished products, technology, know-how, investments.

I see it feasible to advance in this direction. It requires creating a joint vision that amalgamates resources and efforts around the idea. Funding for these joint efforts for industry creation and development is usually the restricting factor, but especially in the wake of COP26 promoting sustainable cattle production, I think there will be ample resources available for more sustainable forms of beef production.

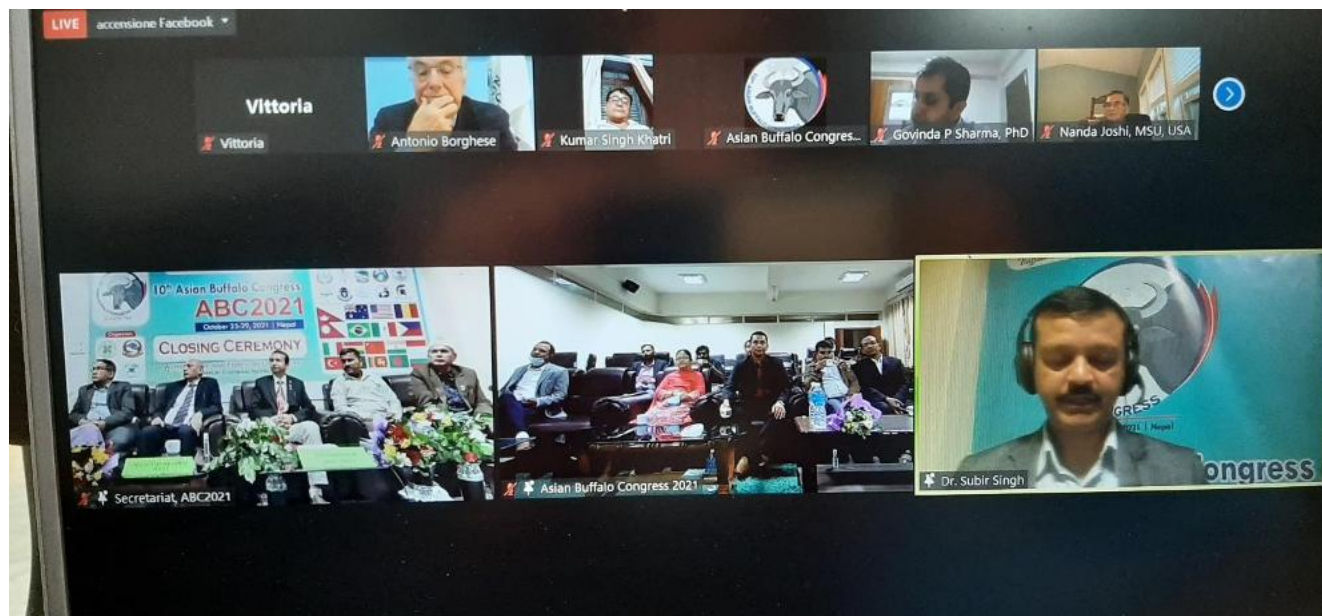
Sharing these thoughts and a strong desire to contribute to the development of the buffalo industry in Paraguay led to my recently being elected President of the Asociacion Paraguaya de Criadores de Bufalos (APACRIBU), and soon afterward to the election of Paraguay to host the tenth Buffalo Symposium in Asuncion in November 14-20, 2022.

**Richard Moss**  
President of Apacribu Paraguay



## REPORTS

### Report and Resolution of the 10<sup>th</sup> Asian Buffalo Congress (ABC2021) in Nepal



The 10<sup>th</sup> Asian Buffalo Congress (ABC) concluded on October 29, 2021, with a grand success. Due to Covid 19 pandemics, it was organized virtually from October 25 to 29, 2021. The Congress became historic because it was the first virtually organized Congress in the history of ABC, and it was organized for the first time by Nepal.

In order to foster research and development on buffaloes in the Asian region, Asian Buffalo Association (ABA) was established in 1992. The Asian Buffalo Congress is the scientific meeting of the Association organized in every 3 years in its member countries.

The journey to host the 10<sup>th</sup> ABC in Nepal started after Agriculture and Forestry University, with the support of Department of Livestock Services, Nepal Agricultural Research Council (NARC) and several other buffalo research and development stakeholders, organized International Buffalo Symposium in November 2017 that prepared the ground to host Asian Buffalo Congress in Nepal. The next year in 2018, I (Prof. Bhuminand Devkota) was elected as the President of Asian Buffalo Association by the Association general assembly during the 9<sup>th</sup> Asian Buffalo Congress organized in Hisar, India from February 1 to 4, 2018. Thus, Nepal got this historic opportunity to host the 10<sup>th</sup> edition of Asian Buffalo Congress.

The 10<sup>th</sup> ABC2021 Nepal was hosted by Agriculture and Forestry University (AFU), Chitwan. It was jointly organized by the AFU, Government of Nepal Ministry of Agriculture and Livestock Development, Asian Buffalo Association and International Buffalo Federation. All the provincial Ministries of Land Management, Agriculture and Cooperative of seven provinces of the country, NARC, Nepal Veterinary Council, Nepal Veterinary Association, Nepal Animal Science Association, Nepal Dairy Science Association and Michigan State University, USA were the co-organizers of the Congress. The ABC2021 was participated by more than 400 participant scientists, professors, policy officers, students and buffalo farmers from 17 countries. A total of 138 scientific papers, that included 1 congress theme

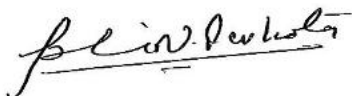
paper and 5 country papers from Nepal, India, Pakistan, China and Sri Lanka, were presented on seven different thematic areas of buffalo production and management and nutrition, health and adaptation, reproduction and breeding, policy and socio economics, genetics and biotechnology and buffalo as the animal source of food and discussed during the congress. This mega event was virtually inaugurated on October 25<sup>th</sup> by the Honourable Minister of Agriculture and Livestock Development Mahindra Ray Yadav and received the best wishes message from Right Honourable Prime Minister Sher Bahadur Deuba. The organizers are deeply indebted to the Right Honourable Prime Minister and the Honourable Minister for their gracious support.

The Congress proved to be an excellent scientific meeting in terms of fulfilling the foreseen objectives of networking and knowledge sharing among the scientists, policy authorities and all other stakeholders that helped adding more scientific value on buffalo research and development and addressing the key issues of buffalo production and its sustainable development.

Considering the huge food, economic and overall value of buffalo in Nepal, the research and development of this sector is crucial. The full house of the Congress participants unanimously put forwarded the following resolutions, and looked forward that it will help policy, and research and development authorities to move ahead in the great future endeavour of buffalo production in the country.

1. Establishing a dedicated “**Buffalo Development Board**” and “**Buffalo Research Institute**” in Nepal for the sustainable research and development of buffalo, and for the conservation of valuable indigenous buffalo germplasm.
2. Establishing a professional society, the “**Buffalo Development Society, Nepal**” in order to coordinate and foster buffalo development issues in Nepal.
3. Developing a strong **collaboration and partnership** among national and international buffalo research/development institutions and professional bodies, such as Asian Buffalo Association and International Buffalo Federation, that is important **for sharing of knowledge, skills and technology as well as the superior germplasm/seed** for enhancing buffalo production in the country.
4. Promoting **buffalo product diversification and marketing** to get benefited with the nutritionally and hygienically superior buffalo products.
5. Nepal as a host country that organized 10th ABC2021 with a grand success would bid to organize **World Buffalo Congress** in the future.

Thank you very much.



Prof. Bhuminand Devkota, PhD  
President, Asian Buffalo Association  
Chair, Organizing Committee, 10<sup>th</sup> ABC2021 | Nepal

## Report on South American countries activities

Coordinated by Dr Joao Gaspar de Almeida  
Executive Officer for America of the International Buffalo Federation

### Buffalo in Argentina

Buffaloes, introduced in the country from Brazil in 1910 (Mediterranean breed), were only managed rationally after 1976, with only 1,300 head. Today there are more than 200,000 head. Bulls first and semen later were imported from Italy and Brazil. Today the Mediterranean and Murrah pure herds have excellent genetics worldwide and constitute 40% of the total buffalo population.

70% of the buffalo are in the Humid or Northeast Subtropical Region of the country, where they are far superior to any bovine breed in productive efficiency. In meat production they have 20% more calving, 60% more weight gain, they produce fat animals 1.5 years younger and a higher quality beef, and their meat is nutraceutical (beneficial for human health).

In dairy production, the buffalo is also more efficient, but there are projects in important dairy farms near urban centres, in the temperate climate region (Example: Buenos Aires).

In the subtropics, the lower cost of production and higher productivity increase the profitability of the establishments by 60%. Today this produces a great increase in the local buffalo activity, and its future protection is enormous.



Murrah buffalo heifers for first mating. Raised in natural field. Guazú Cuá Ranch, Formosa Province, Argentina.



Mediterranean young bulls. 24 months. 600 kg. Raised in natural field. Imará Ranch, Corrientes Province, Argentina (Photo: Marco Zava)



Bull and his daughter, all recorded, 100% on pasture, no supplement other than minerals. Imará Ranch, Corrientes Province, Argentina. (Photo: Marco Zava)

**Marco Zava**

Zootechnic Engineer, master's in business administration,  
Founder Member of the AACB, Member of the SC – IBF,  
buffalo breeder and advisor.

## Buffalo in Bolivia



### 1. Founding partners of Asocriabuf

1. Walter Kuljis F
2. Miguel Majluf
3. Robert Haab
4. Jose Nogales
5. Denis Gomez
6. Rodrigo Molina
7. Luis Quiles Skorc
8. Efraín Chacón

Dr. Zava said that the first water buffalo were brought from Corumbá a border town in Brazil crossed over to Puerto Suárez, Bolivia in 1964. They were a mix of Mediterranean, Jafarabadi and Murrah breeds.

In 1978, Robert Haab Chávez started his water buffalo ranch with 40 to 50 buffaloes imported from Sao Paulo. Robert immediately began inseminating using the best quality Mediterranean from Italy. They were initially a mix of the three water buffalo breeds. In 1978, Mediterranean water buffalo were brought into area of Cochabamba called Tropic. A breeding program that involved conservation, production, research, and social interaction being the principal areas of study at the University.

Around 1986 Walter Kuljis F acquired his first 70 water buffalo imported from Rondônia – Brazil. He began his water buffalo herd in the state of Santa Cruz. In 2010 he started a dairy operation in Santa Cruz and meat production in the state of Beni, near the town of San Ramón.

In 1986 Mr. Elijo Ribera Roca bought 13 female water buffaloes and 2 males with an American partner, Steve, who had nowhere to keep his water buffaloes, Steve decided to move his herd of 32 water buffaloes to the property of Ronald Larsen. They began a partnership and Larsen later bought the water buffalo herd.

In 1989, Miguel Majluf imported water buffalo from Rondônia. He sold Mr. Arnulfo Martínez 10 females and 2 males. He was then left with a herd of 10 female water buffaloes and 1 male.

Among other great water buffalo pioneers in Bolivia are Mr. Alfredo Pinto, José Nogales etc.

**In summary water buffalo was introduced into Bolivia in 1964. Between the years of 1964 and 1989 there was an estimated number between 150 to 200 water buffaloes.**

In 2013 it was estimated that there were about 14 thousand water buffaloes throughout Bolivia, according to the SENASAG (the government animal sanitary agency). In that year the distribution of the water buffaloes was as follows: 60% in Santa Cruz, 39% in Beni and 1% in Cochabamba.

In 2021, after more than 50 years since the arrival of water buffalo, it is estimated that there are around 50,000.00 animals and that represent the Water Buffalo Association in Bolivia

### 2. The jaguar conservation project in Bolivia- using water buffalo and jaguar tourism.

San Miguelito Jaguar Conservation Ranch (SM) is a property with its history dating back from the early 1900's owned by the Elsner-Bauer Family. It was historically a rustic cattle ranch covered in natural grasslands with 80% of the property is natural forests and lowland swamp areas along a river.

In SM the cattle production has had a very low calving percentage each year (30-40%). The pastures are composed of native grasses as well as a has had a high mortality rate caused by several factors: snake bites, diseases, accidents, mud, calving problems and jaguar attacks

The ranch was sold to Ronald Larsen in 1973 because of this high mortality rate and alleged jaguar attacks. This ranch was supposedly losing more than 400 head each year.

In the 1980's several efforts were made to implement different anti-depredation strategies to prevent or detour the amount jaguar attacks. With the advice of a biologist friend, Ron Larsen prohibited the hunting of wildlife, this being the principal food source of the jaguar. Therefore, less cattle were killed. Later, when (SM) ventured into raising water buffalo to defend against jaguar attacks and protect the CEBU herd.



In SM we are working with local artisans in the neighbouring indigenous community to support tourism. They have coined the name "THE JAGUAR PATH" to connect SM with tourism their community as part of a new tourist destination in Bolivia. SM is transforming a "problem" into an "opportunity". Our mission is to show tourism can help compensate for cattle loss due to Jaguar attacks. (Anti-predation methodology of the Panthera Foundation).

San Miguelito is the first pilot ranch in Bolivia that has a trajectory, according to research carried out by WCS (Wildlife Conservation Society). San Miguelito is a unique conservation area in South America, where 6 different species of felines coexist in the same area which include jaguars, puma, ocelots, margay, jaguarundi, and Geoffrey's cat, in addition to a high diversity of fauna and flora: 72 Mammals, 289 birds (eBirds.org <https://ebird.org/hotspot/L6171900>), 826 species of plants identified, all coexisting in the same forest and / or ecosystem.

### 3. Tropic university of cochabamba. Career in tropical agriculture and management of renewable resources (catren), from valle sacta of the universidad mayor de san simon

Currently there is a herd of 115 water buffalo at the University SAN SIMON in Cochabamba. It is composed of 70% Mediterranean and 30% mixed Marrah and Mediterranean. This project began for conservation and preservation, but in 2013 they ventured into production with an agroecological approach to a grass and pasture rotation system.



At 18 months the average live weight for males is 390 kg and for females is 383 kg. The most docile water buffalo cows are selected for milking. The university is currently milking 2 liters with the calf present from each animal daily and leaving the rest for the calf. Small farms are being encouraged to implement water buffalo projects in areas because of climate change, since this species is adaptable to the rustic environment and natural grassland producing meat and milk.

### 4. Economic and productive management of a water buffalo in breeding program in marginal areas

GESTION ECONOMICA BÚFALOS SANTA LUCÍA			
Concepto	\$us	\$us/ha	\$us/cab
<b>1. Ingresos netos</b>	<b>133.220,53</b>	<b>150,53</b>	141,89
<b>2. Gastos directos</b>	<b>34.446,20</b>	<b>38,92</b>	36,69
Alimentación Animal	6.321,57	7,14	6,73
Personal	8.946,91	10,11	9,53
Sanidad animal	3.538,02	4,00	3,77
Reproducción	986,54	1,11	1,05
Mantenimientos de Pasturas	2.989,00	3,38	3,18
Maquinaria	9.955,18	11,25	10,60
Otros	1.709,00	1,93	1,82
<b>3. Margen Bruto</b>	<b>98.774,33</b>	<b>111,61</b>	105,20
<b>4. Gastos indirectos</b>	<b>7.132,20</b>	8,06	7,60
4.1 Administración	6.789,00	7,67	7,23
4.2. Estructura	343,20	0,39	0,37
<b>5. Resultado operativo</b>	<b>91.642,13</b>	<b>103,55</b>	97,60

SUMMARY. There is a net income of 97.60 \$us per animal, in an ecosystem where no productive system would be capable of producing the same income.

**Luis Quiles Skorc**

The water buffalo Association in Bolivia – ASOCRIABUF

## Buffalo in Colombia



Buffalo industry in Colombia dates to the mid-60's when the Colombian Agrarian Reform Institute (INCORA in Spanish) carried out the first import; today, after almost 57 years, the country and the agricultural industry have a stock by vaccination of 455,299 heads of cattle that grow at a rate higher than 17% per year. The buffalo stock belongs to 5,142 breeders, of whom 80% also possess bovines and the remaining 20% are focused only on buffaloes. 41% of the estates have at least 100 buffaloes, 43% between 100 and 500 and 16% more than 500. Throughout this time, important investments have been made on meat and dairy chain, with renown in the US, Central America, and Caribbean markets. Buffalo industry is the second largest exporter of dairy products in Colombia.

The national dairy industry greatly appreciates the buffalo products, remunerating it between 70% and 100% over the price of cow milk. The buffalo producers have found in buffalo calf fattening a productive market, that generates a rentability up to 30% due progress made in management practices that allow slaughtering buffalo at younger age with average standing weight of 456 kg. The buffaloes play an important role in fruit recollection at oil palm plantations, making the recollection cost only 3% in the production cost.

Since 2002, the Association of Buffalo Breeders has been doing the genealogical control of buffalo breeds and in 2012 it was awarded by The Ministry of Agriculture and Rural Development when give it the mission of keeping track of the genealogical registry of buffalo breeds present in the country. Additionally, this Association has done advance research alliances in genetic evaluation aim to improve their herds by the use of productive indices. To date, the 6th edition of the genetic evaluation

is available to calculate the PTA (predicted transmission ability) for milk production with 77,602 buffalo and 34,195 lactations.

Since 2020 the Group of Rural and Agricultural Planification (UPRA in Spanish) has been doing an important job of appraising areas apt to produce grazing buffaloes in a scale of 1-100,000, so far has found 27,976,668 hectares fit for this purpose; this represents a 71.3% of the national agricultural area. This work will allow the buffalo to be formally incorporated in the national, departmental and municipal policy of agricultural development.

**ALBA LUCIA SUAREZ**

Executive director of the Colombian Association of Buffalo Breeders

**Buffalo in Mexico**

It is estimated that the first buffaloes arrived in Mexico in 1991, brought and owned by Mr. Anthony Leonards. The first time, he took buffaloes from Guam islands to Arkansas, USA, the second time he



took them from Trinidad and Tobago to Belize and later to Mexico in 1993, in partnership with a Mexican family named Maitret, who were settled in the states of Chiapas, Campeche and Veracruz. Those buffaloes were a racial mixture of Buffalypso, Carabao, Murrah y Mediterranean. In those years, other breeders participated in that unstoppable growth of the buffalo.

Currently the buffalo have better genetics thanks to the imports of semen from the countries of Brazil and Italy for more than one decade, which have interrupted the consanguinity. It is estimated that the current population in the year of 2021 exceeds 45,000 buffalo heads in the 29 states, out of the 32 that make up the Mexican republic.

It should be pointed out that the main production is meat, milk and other products such as leather or skin. The Mexican association of buffalo breeders, founded in the year 2008, has helped many buffalo breeders, by creating different benefits, such as the fact that buffaloes are not considered an exotic animal anymore, the assignment of the SINIIGA earrings (national system of individual identification of livestock) and its transfer guides to any part of the country, whether to study, slaughter, breeding or development, among other assistance such as including them in the “fondo de aseguramiento ganadero”, which works as an insurance that covers the owner for up to 50% of its value, in the case of death due to natural disasters or predators in the area, it is expected from the secretary of rural development (SADER) the approval of the genealogical registry to ensure good genetic development.

The dairy industry is still growing since it had not detonated its commercialization. As of today, different types of cheese are being manufactured in several states of Mexico.

The current growth is 18% annually and each day the livestock farmers are getting more interested in this noble buffalo activity. Especially when they see buffaloes with their gains of weight, number of pregnancies, adaptation, rusticity and longevity. Adding the great health and economic benefits of their meat and milk.



Through the Mexican association of buffalo breeders, who continue to provide support programs for rural and indigenous women, with mutual benefits in the breeding and reproduction of buffalo, and

the support to other communities in the country, the buffalo has an insured expansion with the Mexican breeders. The American federation of buffalo breeders, which brings together countries of America, will continue helping with the assessment and study and together with the Mexican association of buffalo breeders, keep bringing value to the Mexican breeders.

### **Ismael Coronel**

President of the Mexican association of buffalo breeders

## **Buffalo in Venezuela**

The National Bubalino Herd, NBH begins in 1922 with specimens of the Buffalypso breed, from Trinidad & Tobago, through the intermediation of the corresponding official agency, at first as a zoological curiosity, while zootechnical interest begins incipiently from 1968; but it is around 1975 when private participation pays the necessary attention and boosts buffalo production in the country, forging the foundations of its formation as an organized system.

Imports continued with Murrah specimens from Bulgaria and Brazil, as well as Mediterranean specimens, mainly from Italy, extensively complemented with semen from those and other countries. The consolidation of the current structure of the NBH responds to this importation and to a broad program of genetic improvement, with diverse strategies for selection, as well as for crossbreeding and mating of the available reproducers.

The estimate of the national bovine herd is about 12 million heads, the NBH represents a minimum of 1,500,000 to 2,000,000 buffaloes, distributed in the national territory, presenting a development that is not dependent on the different climatic conditions of each region, since they do not represent extremes that limit its development. However, climatic conditions do contribute to the definition of areas that generate differences in processing and marketing.

Along with the buffalo development as a primary production activity, in the commercialization of dairy products it can currently be observed, because of various conjunctural conditions, that part of the milk is transformed on the farm into artisan cheese, called the "llanero type", another part is sold



**ROSA ELENA FARM**

as hot milk and another as cold milk, which creates an imbalance in the product's marketing chain. Of a total of 6,500,000 litres of milk per day, it is estimated that currently 15 to 20% is from buffalo, because a large proportion is directed to the production of "llanero cheese", since previously the contribution of buffalo milk to the national production, came to represent up to 70%.

Venezuela has been a leader in the continent in terms of the dairy by-products industry, with a wide variety of cheeses, yogurts and other dairy derivatives.

For its part, live animal marketing activities currently range from 150,000 to 165,000 buffalo per year, 11% of the total 1.3 million cattle slaughtered annually. However, the sale of buffalo meat has been overlapped by beef, perhaps expecting low acceptance and even rejection under denied assumptions, due to a misdirected conception of promoting the comparative advantages of buffalo. While the processing of buffalo meat in order to obtain derived by-products: such as sausages and matured meats, has been a more recently developed activity.

Currently the possibility of export is presented, for which the National Bubalino System has the potential to cover the following markets: 1) Sires and genetic material of massive use (Semen and embryos); 2) Live animals for consumption; 3) Chipped meat; 4) As well as products derived from milk. Obviously, with those countries with which Venezuela meets its health requirements.

CRIABÚFALOS: Association of Buffalo Breeders of Venezuela, began its union activities since 1986. The organization of the Association in three chapters obeys operational criteria, rather than zoning by any other criteria.

The Association has a Genealogical Registry and Control Program (PRCG): responsible for the Genealogical Herd Books of the four breeds exploited in the country: Murrah, Mediterránea, Niliravi and Jaffarabadi. There is also the project of the Comprehensive Evaluation Program (PEI): conceived to generate the analysis of statistics and the genetic evaluation of the productive and reproductive performance of the national herd.

**Luis Fabián Yáñez Cuéllar**  
Secretaría Técnica-Administrativa  
Programa de Registros y Control  
Genealógico  
CRIABÚFALOS



**DON PABLO JOSÉ GUERRA**

## UPCOMING EVENTS

### 10<sup>TH</sup> AMERICAN AND EUROPEAN BUFFALO SYMPOSIUM

Assuncion, Paraguay November 2022

A Symposium is a great stimulus for the development of buffalo production in a country. It focuses attention, effort and resources in a unique way, and like any big challenge, it marks an important milestone in the development of the species in the national livestock. The impact that it will have for buffalo and Paraguayan livestock will be transformative. Paraguay has more than 10 million hectares of wetlands that could be used for buffalo breeding and in that sense stressed that Paraguay has a livestock tradition, young labor and its proven competitiveness that it has in its main products is based on being open to new productive technologies and attractive to investments. Although it is a great challenge, from APACRIBU they see the organization of this international event as a unique opportunity to achieve the focus of attention, knowledge and sufficient resources to solve the restrictions in the productive chain and allow the buffalo to have the scalability and critical mass required for sustainable supply and demand, and with export capacity.

Richard Moss, president of the Paraguayan Association of Buffalo Breeders (APACRIBU)

### 13<sup>th</sup> WORLD BUFFALO CONGRESS

October 2022 was postponed to 2023

Wuhan-China



武汉，每天不一样！  
Wuhan, Different Every Day!

Huazhong Agricultural University (HZAU) is a national key university of “Project 211” directly under the Ministry of Education. With a history tracing back to Hubei Farming School founded in 1898 by Zhang Zhidong, governor of Hubei and Hunan province, HZAU enjoys a history over 120 years. The university was entitled National

Civilized Unit in 2008 and 2011 and was ranked 11th in the nation among the 72 MOE universities in the latest Performance Appraisal in Higher Education by China's MOE National Institute for Education Research. Besides, HZAU is ranking the second place of all universities in China in agriculture.

In addition to Huazhong Agricultural University, there are other 6 local Institution / organization will support the 13th WBC, including Chinese Association of Animal Science and Veterinary Medicine, Dairy Association of China, Dairy Association of Hubei province, China Animal Agriculture Association, Buffalo Research Institute of Chinese Academy of Agricultural Science and Guangxi Zhuang National Autonomous Region, Guangxi University, Modern Agricultural Industry Technology System (Dairy Cattle).

## 11<sup>TH</sup> ASIAN BUFFALO CONGRESS 2024

The elected President of the Asian Buffalo Association Prof Omar Md Faruque will organize the next Asian Buffalo Congress in Bangladesh in 2024.

## IBF-CREA course 2022

### “BUFFALO FARMING ON AIR: FROM FARM TO FORK”

The world is still facing with Covid-19 pandemic, for this reason the IBF Training courses in Italy are still on hold. The IBF secretariat together with CREA has decided to organize in 2022, a series of six webinars covering the main aspect of buffalo production chain: milk production process, meat production process, and sustainability. The two-hour webinars will be every one-two month from February on TEAMS platform, starting with the milk production process that will include four webinars: *Buffalo calf management: From birth to weaning; Buffalo heifer & cow management; Reproduction management; From raw milk to dairy products*

1<sup>st</sup> appointment: February 1<sup>st</sup>, 14.00 pm (Rome time)

---

**Buffalo calf management: From birth to weaning.**

*Nutrition and feeding* - PhD Maria Serrapica, Nutritionist and feed company counselor, Italy

---

*Health and Pathologies* - Prof. Rinaldo Vianna and Prof. Bruno Moura Monteiro  
Universidade Federal Rural da Amazônia UFRA Brasil

---

*Welfare*- Dr. Domenico Vecchio- IZSM - National Reference Centre for Hygiene and Technologies of Water Buffalo Farming and Productions- Italy

---

Information on the webinars will be published on [internationalbuffalofed.org](http://internationalbuffalofed.org) website

## IBF Survey

Dear Members,

many years have passed since last survey in the nineties, it is time to carry out a new one to update the **state of the art of buffalo farming in IBF member countries**. For this reason, the IBF will develop together with ARB (an innovation broker company with twenty years of work experience devoted to innovation in agriculture and to the development of rural areas) a questionnaire containing about 20-30 questions (closed and open) focused **on the main aspects of buffalo farming**.

The questionnaire could be filled online (offline compilation will be provided where necessary) and will include four sections: i) Country overview; ii) Farming systems; iii) value chain supply; iv) Impact of buffalo farming on the development of territories. The IBF secretariat together with the executive officers will coordinate the organization, the data collection, the activities as well as the support to the compilation. A final report will be published. We hope this initiative will be welcomed by all IBF members.

## MEMORIES

### Guillermo Cárdenas Peláez



Guillermo Cardenas was born on September 8<sup>th</sup> 1937, in Medellín Colombia. At early Age in Barranquilla-Colombia, he became a successful Palm Oil businessman.

In Panama, water Buffalo Breeding began in 1976 by initiative of President General Omar Torrijos Herrera.

Guillermo Cárdenas arrived at Panama in 1989 and in 1998 he started business in Water Buffalo Breeding, at the province of “Chiriquí” and “Almirante” in “Bocas del Toro”, very soon he became the largest Buffalo Breeder in all of Panama country.

He commercialized Buffalo meat through the company “Matadero Chiriquí”, in partnership with Enrique Athanasiadis.

Guillermo Cárdenas Peláez received recognition from the Ministry of Agricultural Development for becoming a great Agro-industrial and Livestock investor in the Chiriquí and Bocas del Toro Region, since he also owned the largest Oranges production plant in the north of Panama and

a Palm Oil Processing Factory.

He died at the age of 83 in the Province of Chiriquí on August 28<sup>th</sup> 2020, being an active Member of IBF (International Buffalo Federation).

### IBF ORGANIZATION

#### GOVERNING BODY

- President: Yang Liguó (China), [ylg@mail.hzau.edu.cn](mailto:ylg@mail.hzau.edu.cn)
- General Secretary: Antonio Borghese Italy), [antonio.borghese@email.it](mailto:antonio.borghese@email.it)
- Executive Officer Asia: Inderjeet Singh (India), [inderjeet.dr@gmail.com](mailto:inderjeet.dr@gmail.com)
- Executive Officer America: Joao Ghaspar de Almeida, [joaoghaspar@gmail.com](mailto:joaoghaspar@gmail.com)
- Executive Officer Europe: Luigi Zicarelli (Italy), [zicarell@unina.it](mailto:zicarell@unina.it)
- Executive Officer Africa: Gamal Hussein Zaza, [zazagamal@hotmail.com](mailto:zazagamal@hotmail.com)
- Executive Officer Australia: Joanna Miller, [jo@taratoora.com](mailto:jo@taratoora.com)

#### SECRETARIAT OFFICE

- Vittoria Lucia Barile (Italy) [vittorialucia.barile@entecra.it](mailto:vittorialucia.barile@entecra.it)
- Antonella Chiariotti (Italy) [antonella.chiariotti@crea.gov.it](mailto:antonella.chiariotti@crea.gov.it)
- Carlo Boselli (Italy) [carlo.boselli@izslt.it](mailto:carlo.boselli@izslt.it)
- Federico Infascelli (Italy) [federico.infascelli@unina.it](mailto:federico.infascelli@unina.it)
- Anna Chiacchierini (Italy) [centrotori@chiacchierini.it](mailto:centrotori@chiacchierini.it)

#### STANDING COMMITTEE

##### Argentina:

Marco Zava, [marcozava@gmail.com](mailto:marcozava@gmail.com); Gustavo Crudeli, [gacrudeli@hotmail.com](mailto:gacrudeli@hotmail.com); Felix Noguera, [aacbufalos@gmail.com](mailto:aacbufalos@gmail.com); Jose Konrad, [konradjl@hotmail.com](mailto:konradjl@hotmail.com)

##### Armenia:

Shamiryan Vahe [shtrikh@yahoo.com](mailto:shtrikh@yahoo.com)

##### Australia:

Joanna Miller: [jo@taratoora.com](mailto:jo@taratoora.com)

##### Bolivia:

Luiss Korc, [luisskorc@gmail.com](mailto:luisskorc@gmail.com)

##### Brazil:

Joao Ghaspar de Almeida, [joaoghaspar@gmail.com](mailto:joaoghaspar@gmail.com); William G. Vale,

[wm.vale@hotmail.com](mailto:wm.vale@hotmail.com); [wmvale2011@gmail.com](mailto:wmvale2011@gmail.com);  
Antonio Humberto H. Minervino,  
[ah.minervino@gmail.com](mailto:ah.minervino@gmail.com); Caio Rossato,  
[michele\\_minoru@hotmail.com](mailto:michele_minoru@hotmail.com); Otavio  
Bernardes [otavio@ingai.com.br](mailto:otavio@ingai.com.br)

**Bangladesh:**

Omar Md Faruque, [faruque\\_mdomar@yahoo.com](mailto:faruque_mdomar@yahoo.com)

**Bulgaria:**

Tzonka Peeva, [tzonkapeeva@abv.bg](mailto:tzonkapeeva@abv.bg)

**Canada:**

Martin Littkemann, [mlittkemann@explornet.com](mailto:mlittkemann@explornet.com)

**China:**

Yang Liguu (China), [ylg@mail.hzau.edu.cn](mailto:ylg@mail.hzau.edu.cn); Xiang Li,  
[xxanglli@mail.hzau.edu.cn](mailto:xxanglli@mail.hzau.edu.cn); Yang Bingzhuang,  
[gxbri@gxbri.com](mailto:gxbri@gxbri.com); Yangqing Lu,  
[luyangqing@126.com](mailto:luyangqing@126.com); Yi Zhang,  
[yizhang@cau.edu.cn](mailto:yizhang@cau.edu.cn); Jiangshua Shang,  
[jh\\_shang@163.com](mailto:jh_shang@163.com); Huang Jiaxiang,  
[huangix080@163.com](mailto:huangix080@163.com); Yang Zhou,  
[Yangzhou@mail.hzau.edu.cn](mailto:Yangzhou@mail.hzau.edu.cn); Shujun Zhang,  
[sjxiao Zhang@mail.hzau.edu.cn](mailto:sjxiao Zhang@mail.hzau.edu.cn); Xianwei Liang,  
[liangbri@126.com](mailto:liangbri@126.com)

**Colombia:**

Juan G. Angel, [juangangel@gmail.com](mailto:juangangel@gmail.com); Claudia  
Roldan [fortalezacpr@gmail.com](mailto:fortalezacpr@gmail.com)

**Costa Rica:**

Alvaro Salas Vega, [neloreriocuarto@yahoo.com](mailto:neloreriocuarto@yahoo.com);  
CANABU C.R., [info@canabucr.com](mailto:info@canabucr.com); Sady Quesada  
Sanchez, [squesada63@hotmail.com](mailto:squesada63@hotmail.com); Coen Van  
Hoegee, [cc.vanhoege@hotmail.com](mailto:cc.vanhoege@hotmail.com)

**Cuba:**

C. José Raùl Lòpez  
Alvarez, [jrlopez@ica.co.cu](mailto:jrlopez@ica.co.cu), [jrlavarez@gmail.com](mailto:jrlavarez@gmail.com)

**Egypt:**

Gamal Hussein Zaza, [zazagamal@hotmail.com](mailto:zazagamal@hotmail.com);  
Laila Nasser Eid, [lailaneid@hotmail.com](mailto:lailaneid@hotmail.com); Mostafa  
A. R. I. Khalil, [khalilmostafa22@yahoo.com](mailto:khalilmostafa22@yahoo.com); Sheriff  
Elshenawy, [sh.elshenawy@outlook.com](mailto:sh.elshenawy@outlook.com)

**Germany:**

Andreas Hoeflich, [hoeflich@fbn-dummerstorf.de](mailto:hoeflich@fbn-dummerstorf.de);  
Julia Brenmoehl, [brenmoehl@fbn-dummerstorf.de](mailto:brenmoehl@fbn-dummerstorf.de); Torsten  
Hemme, [torsten.hemme@ifcndairy.org](mailto:torsten.hemme@ifcndairy.org)

**Greece:**

Dimitrios Roustemis, [roustemis@mail.com](mailto:roustemis@mail.com)

**Guatemala:**

Oscar Molina [oscaremilio2001@gmail.com](mailto:oscaremilio2001@gmail.com)

**Hungary:**

Hungarian Buffalo Breeding  
Association, [egyesulet@magyarbivaly.hu](mailto:egyesulet@magyarbivaly.hu)

**India:**

Dahiya S.S., [ssdahiya.cirb@gmail.com](mailto:ssdahiya.cirb@gmail.com); Inderjeet  
Singh, [inderjeet.dr@gmail.com](mailto:inderjeet.dr@gmail.com); Phulia S.,  
[sphulia@gmail.com](mailto:sphulia@gmail.com); Pawan Singh,  
[pawansinghdabas@gmail.com](mailto:pawansinghdabas@gmail.com)

**Indonesia:**

Abdullah Akhyar  
Nasution, [abdullah.akhyar@animal.ac.id](mailto:abdullah.akhyar@animal.ac.id)

**Iran:**

Hamid Naderfard, [hnaderfard@yahoo.com](mailto:hnaderfard@yahoo.com);  
Mohammad Nikookar Dashtman,  
[m.nikookar10@gmail.com](mailto:m.nikookar10@gmail.com); Kourosh Elyasi,  
[kourosh.elyasi@gmail.com](mailto:kourosh.elyasi@gmail.com); Fatemeh Derisavi,  
[derisavifatemeh@gmail.com](mailto:derisavifatemeh@gmail.com)

**Iraq:**

Khalid Al-Fartosi, [khalidalfartosi@yahoo.com](mailto:khalidalfartosi@yahoo.com);  
Jabbar Alsaedy, [kingfisher\\_ja@yahoo.com](mailto:kingfisher_ja@yahoo.com);  
[alsaedyjabbarkh@gmail.com](mailto:alsaedyjabbarkh@gmail.com)

**Ireland:**

Macroom  
Buffalo, [macroombuffalomozzarella@gmail.com](mailto:macroombuffalomozzarella@gmail.com)

**Italy:**

Antonio Borghese, [antonio.borghese@email.it](mailto:antonio.borghese@email.it);  
Raffaele Garofalo, [r.garofalo@fattoriegarofalo.it](mailto:r.garofalo@fattoriegarofalo.it);  
Leopoldo Iannuzzi,  
[leopoldo.iannuzzi@ispaam.cnr.it](mailto:leopoldo.iannuzzi@ispaam.cnr.it); Angelo Coletta,  
[ctsmamabuffalowst@gmail.com](mailto:ctsmamabuffalowst@gmail.com); Vittoria L. Barile,  
[vittorialucia.barile@crea.gov.it](mailto:vittorialucia.barile@crea.gov.it); Federico Infascelli,  
[federico.infascelli@unina.it](mailto:federico.infascelli@unina.it); Giuseppe Campanile,  
[giucampa@unina.it](mailto:giucampa@unina.it); Anna Chiacchierini,  
[centerotori@chiacchierini.it](mailto:centerotori@chiacchierini.it); Carlo Boselli,  
[carlo.boselli@izslt.it](mailto:carlo.boselli@izslt.it); Esterina De Carlo,  
[esterina.decarlo@cert.izsmportici.it](mailto:esterina.decarlo@cert.izsmportici.it); Domenico  
Vecchio, [domenico.vecchio@izsmportici.it](mailto:domenico.vecchio@izsmportici.it); Nello  
Giorgi, [giorgi.nello@libero.it](mailto:giorgi.nello@libero.it); Antonella Chiariotti,  
[antonella.chiariotti@crea.gov.it](mailto:antonella.chiariotti@crea.gov.it); Emanuela Parlato,  
[manup9@gmail.com](mailto:manup9@gmail.com); Giuseppe Morese,  
[info@giuseppemorese.it](mailto:info@giuseppemorese.it); Luigi Zicarelli  
[zicarell@unina.it](mailto:zicarell@unina.it) (honorary member); Antonio  
Perrone, [aperrone@wedap.eu](mailto:aperrone@wedap.eu); Antonia Noce,  
[noce.antoniana@gmail.com](mailto:noce.antoniana@gmail.com); Massimo De Marchi,  
[massimo.demarchi@unipd.it](mailto:massimo.demarchi@unipd.it); Damiano Altieri,  
[az.agricola.altieri@gmail.com](mailto:az.agricola.altieri@gmail.com); Giovanni Binotti,  
[g.binotti58@gmail.com](mailto:g.binotti58@gmail.com); ANASB, [info@anasb.it](mailto:info@anasb.it);  
[direzione@anasb.it](mailto:direzione@anasb.it)

Maria Concetta Campagna,  
[mariaconchetta.campagna@izslt.it](mailto:mariaconchetta.campagna@izslt.it); Angelo  
Citro, [vincenzocitro@inwind.it](mailto:vincenzocitro@inwind.it)

**Mexico:**

Ismael  
Coronel, [carnedebufalo@hotmail.com](mailto:carnedebufalo@hotmail.com), [contacto@bufalosdemexico.com](mailto:contacto@bufalosdemexico.com); Diego Armando Morales  
Lagunes, [damorales@earth.ac.cr](mailto:damorales@earth.ac.cr)

**Nepal:**

Bhumi Nanda  
Devkota, [bhuminand@gmail.com](mailto:bhuminand@gmail.com), [b.devkota@afu.edu.np](mailto:b.devkota@afu.edu.np)

**Nicaragua:**

Cesar Leiva Rodriguez, [cesar.a.leiva@hotmail.com](mailto:cesar.a.leiva@hotmail.com)

**Pakistan:**

Talat Naseer Pasha, [tnpasha@uvas.edu.pk](mailto:tnpasha@uvas.edu.pk); Saeed  
Hassan Hotiana, [saeed.hotiana@gmail.com](mailto:saeed.hotiana@gmail.com);  
Muhammad Hayat Jaspal,  
[hayat.jaspal@uvas.edu.pk](mailto:hayat.jaspal@uvas.edu.pk); Muhammad Hassan  
Saleem, [dr\\_mhs@uvas.edu.pk](mailto:dr_mhs@uvas.edu.pk); Muhammad Asif  
Yaseen, [masifabg@gmail.com](mailto:masifabg@gmail.com); Usman Ayaz ;Sami  
Ullah, [miansamiullah84@gmail.com](mailto:miansamiullah84@gmail.com); Maqsood  
Akhtar, [crobripattoki@gmail.com](mailto:crobripattoki@gmail.com); Esan Ullah,  
[ehsaanrai@gmail.com](mailto:ehsaanrai@gmail.com)

**Panama:**

Guillermo Cardenas, [guillermocitricos@gmail.com](mailto:guillermocitricos@gmail.com)

**Paraguay:**

Richard Moss, [rmossf.adm@gmail.com](mailto:rmossf.adm@gmail.com)

**Philippines:**

Libertado C. Cruz, [pcc-oed@mozcom.com](mailto:pcc-oed@mozcom.com)

**Romania:**

Livia Vidu, [liviavidu@gmail.com](mailto:liviavidu@gmail.com); Ioana  
Nicolae, [ioana\\_nicolae2002@yahoo.com](mailto:ioana_nicolae2002@yahoo.com)

**Spain:**

Ivan AnsiaVazquez, [ivan.ansia@hotmail.com](mailto:ivan.ansia@hotmail.com)

**Thailand:**

Metha Wanapat, [metha@kku.ac.th](mailto:metha@kku.ac.th); Thuchadaporn  
Chaikhum-Marcou, [thuchadaporn@hotmail.com](mailto:thuchadaporn@hotmail.com)

**Trinidad:**

Leela Rastogi, [leela3053@hotmail.com](mailto:leela3053@hotmail.com); Lisa  
Benjamin, [lisabenzamin\\_epi@outlook.com](mailto:lisabenzamin_epi@outlook.com)

**Turkey:**

M. Ihsan Soysal, [misoysal@gmail.com](mailto:misoysal@gmail.com); Ercan  
Tasleden, [istanbulmanda@hotmail.com](mailto:istanbulmanda@hotmail.com)

**Venezuela:**

Juan Carlos  
Gutierrez, [juancarlosgutierrezdvm@gmail.com](mailto:juancarlosgutierrezdvm@gmail.com)  
Nicola Fabbozzo, [nicolafabbozzo@gmail.com](mailto:nicolafabbozzo@gmail.com)  
Jairo Fernandez, [jairo\\_fernandez@hotmail.com](mailto:jairo_fernandez@hotmail.com)

**Vietnam:**

Mai Van Sanh, [mvsanh2009@gmail.com](mailto:mvsanh2009@gmail.com); Su Thanh  
Long, [sulongip@yahoo.com](mailto:sulongip@yahoo.com)

**U.K.:**

GENOMED Ltd, [mb@genomed-biotech.com](mailto:mb@genomed-biotech.com);  
Robert Palmer, [buffaloUK@aol.com](mailto:buffaloUK@aol.com)

**USA:**

Thomas Olson, [tcwb@valornet.com](mailto:tcwb@valornet.com); Shannon  
Gay, [shannonsfieldservice@yahoo.com](mailto:shannonsfieldservice@yahoo.com) ;Caroline  
Sawyer, [cgsawyer2328@gmail.com](mailto:cgsawyer2328@gmail.com); Joshi  
Nanda, [joshin@msu.edu](mailto:joshin@msu.edu)

