

Buffal Newsletter



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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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FROM THE EDITORIAL COMMITTEE

This issue opens with a lively account of the **XI Symposium on Buffaloes of the Americas and Europe**, held in Santa Cruz de la Sierra, Bolivia, 20–26 September 2025 (page 4), including reports on the pre-congress workshops on artisanal dairy production and assisted reproduction (pages 8 and 10) and a summary of scientific lectures (page 13).

World Buffalo Day 2025 in Pattoki, Pakistan (page 25) was a reminder of the country's extraordinary role in global milk production — buffaloes provide around 65% of its total milk yield. The event also set the stage for the **12th Asian Buffalo Congress**, returning to Lahore in November 2027 after eighteen years (page 50).

Further reading includes a research update from the University of Tuscia-DAFNE (page 28) and a report on the IBF visit to the Guangxi dairy buffalo industry in Nanning, China (page 30).

The Scientific Focus presents **buffalo farming in Canada** (page 34) and **in the Mercosur** countries (page 41), plus a technical note on milk flow profiles across ruminant species (page 45).

Save the date: the 14th World Buffalo Congress comes to Sorrento, Naples, 28–30 October 2026, under the auspices of Federico II University — marking its 800th anniversary. Full details at www.wbc2026.org.

The IBF Secretariat continues to grow its network, now counting 181 associates from 36 countries. We thank all authors, correspondents, and colleagues who have contributed to this issue, and we look forward to welcoming you — wherever you may be — to the ever-growing family of the International Buffalo Federation.

Enjoy reading

The Editorial Committee

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XI SYMPOSIUM ON BUFFALOES OF THE AMERICAS AND EUROPE 2025

Santa Cruz de la Sierra – Bolivia



1

INTRODUCTION OF XI SYMPOSIUM

Ing. Luis Quiles Skorc
President of the American Buffalo Breeders Federation

Bolivia, the world Epicenter of the buffalo

Between September 20 and 26, 2025, Santa Cruz de la Sierra became the most prominent meeting point for the buffalo world. Within the framework of the EXPOCRUZ International Fair—one of Bolivia's most influential showcases—the XI Symposium on Buffaloes of the Americas and Europe 2025 was held, marking a turning point for the buffalo industry not only in Bolivia but throughout the hemisphere.

As president of the American Buffalo Breeders Federation, it is an honor to present these memoirs, which reflect an event that consolidated Bolivia as an excellent host and promoter of a new stage of integration, modernization, and international cooperation for the sector.



▲ Ing. Luis Quiles Skorc



A Memorable Encounter

The symposium brought together more than **210 international visitors from over 15 countries**, in addition to extensive national participation. More than a congress, it was a gathering of an international community that shared knowledge, experiences, and visions about the future of the buffalo as a strategic species for global livestock development.

The magnitude of the event strengthened ties, fostered new alliances, and positioned Bolivia as a key player in the global buffalo industry, showcasing a country that is growing, innovating, and connecting with the world.

STAGE 1 – PRE-SYMPOSIUM - Training that Builds the Future

September 20 and 21 were dedicated to technical training through two parallel courses:

1. A theoretical-practical course on artisanal cheese-making, where participants worked with buffalo milk to produce fresh cheese, yogurt, mozzarella, dulce de leche, and other dairy products. ([see pg 8](#) for detailed description)

2. Assisted reproduction course, focused on the fundamentals of artificial insemination and its application in modern reproduction systems. ([see pg 10](#) for detailed description)

Both workshops reflected the sector's commitment to professionalizing processes, raising the quality of dairy products, and refining reproductive techniques to improve the efficiency and genetic quality of the species.

STAGE 2 – SYMPOSIUM - Three days of science, technology, and innovation

From September 22 to 24, the Symposium offered a robust academic program, featuring international experts and high-impact topics for the industry. ([see pg 13](#) for detailed description)

Day 1 – Meat Industry

The Buffalo and its Social and Economic Impact

The contribution of the buffalo in different regions of the world was analyzed, culminating in an international forum where each country presented its progress, challenges, and projections.

Day 2 – Dairy Industry, Science, and Innovation

Studies, production experiences, and technological developments that are transforming the global buffalo dairy chain were shared.





One of the most unforgettable moments was the presentation of Baroque music concerts at the Jesuit Missions of Concepción and San Javier, performed by child prodigies—a cultural gift that moved all the delegations.

The “Little Buffalo Emblem”: Bolivia’s Legacy to the International Buffalo Federation

One of the most significant moments of the event was the unveiling of the Little Buffalo Emblem, a symbol created in Bolivia to become the official emblem of all future buffalo symposia and congresses worldwide.

The Little Buffalo Emblem is much more than a symbol. It is Bolivia’s legacy to the international buffalo community, a contribution that transcends the technical and organizational aspects to become a cultural, historical, and identity-related contribution to the International Buffalo Federation. Its design reflects the nobility, strength, and docility of the buffalo, but also the essence of the country where it originated: a visionary, productive Bolivia committed to global livestock progress.

This emblem was presented to:

- Colombia, host of the XII Buffalo Symposium of the Americas and Europe.
- Italy, host of the next World Buffalo Congress in Sorrento – Naples.
- The organization of the future Asian Buffalo Congress.

With this, Bolivia inscribes its name in the history of international buffalo farming, leaving a symbol of unity that will accompany all future generations of producers, researchers, and leaders in the sector.

Tangible and Intangible Achievements of the XI Symposium

The Symposium generated high-value results, both concrete and symbolic, that will remain as a legacy of this historic edition.

Tangible Achievements

- Over 210 international visitors and participation from more than 15 countries.

Day 3 – Emerging Businesses and Applied Science

New business opportunities related to the species were discussed, and internationally relevant scientific papers were presented.

In the afternoon, the judging of the Mediterranean and Murrah breeds took place, highlighting the high genetic quality achieved in Bolivia.

The day concluded with a closing dinner filled with music, recognition, and camaraderie.

STAGE 3 - BUFFALO TOURS: Productive Bolivia at its Best

September 25th and 26th were dedicated to tours of production units that showcased the country's buffalo industry. ([see pg 17](#) for detailed description)

Visitors toured buffalo breeding farms and dairy farms, where the adaptability of the buffalo to diverse ecosystems was evident, as well as its potential for meat and dairy production.

- Training workshops on assisted reproduction and artisanal dairy production.
- International academic program with top-level speakers.
- Presentation of scientific papers applied to the sector.
- Official judging of the Mediterranean and Murrah breeds.
- Buffalo Tours at Bolivian production units.
- Buffalo sector exhibition at EXPOCRUZ, enhancing its global visibility.

Intangible Achievements

- Bolivia's international positioning as an emerging leader in the buffalo industry.
- Strengthening of cooperation networks among countries in the Americas, Europe, and Asia.
- Revaluation of Bolivian productive identity, showcasing professionalism, hospitality, and organizational excellence.
- Creation of the Emblematic Buffalo, which will forever remain a symbol of unity and a cultural contribution from Bolivia to the world.
- Renewed enthusiasm and commitment from participating producers, institutions, and delegations.

Bolivia not only organized this event... it experienced it with passion.

The 11th Buffalo Symposium of the Americas and Europe 2025 demonstrated that Santa Cruz and Bolivia possess the capacity, vision, and passion necessary to lead livestock initiatives on an international scale.

Every activity, every detail, and every day reflected the country's commitment to showcasing a productive, modern, welcoming, and growing Bolivia.

Participants expressed their satisfaction and excitement, many stating they wished the event would never end.

The Symposium was not only a success: it was a legacy. A technical, cultural, institutional, and human legacy that will forever remain in the history of global buffalo farming.



2 Pre-congress course

PRE-SYMPOSIUM WORKSHOP ON THE PRODUCTION OF BUFFALO MILK-BASED PRODUCTS

Dr. Ing. Franco Emanuel Vasile

Investigador Adjunto CONICET
Instituto de Investigaciones en Procesos Tecnológicos Avanzados
(INIPTA, CONICET - UNCAUS). P. R. S. Peña, Chaco - Argentina

As part of the XI Symposium of Buffaloes of the Americas and Europe, an intensive dairy products workshop was held on 20–21 September, becoming one of the most popular activities of the international event.

The workshop took place at the Universidad para el Desarrollo y la Innovación (UDI), specifically in the kitchens used by the Gastronomy program. The modern, fully equipped facilities welcomed more than twenty participants from Bolivia, Brazil, Colombia, and Venezuela, who began the day with the accreditation process.



All the picture in this article were provided by the author

The opening session was led by Dr. Eduardo Lo Buono, a Brazilian master cheesemaker and owner of Latte Buono, a buffalo farm and dairy processing establishment. Trained in France and Italy, Lo Buono has received distinctions, including the Maravilhas Gastronômicas do Rio de Janeiro 2015 award and recognition at the Mundial do Queijo for the quality of his products.

During the first day, Lo Buono introduced participants to the art of dairy production, combining theoretical foundations with extensive hands-on practice. Under his guidance, attendees produced various types of cheese — including fresh cheese, cream cheese, Minas cheese, and mozzarella — as well as yogurt and ricotta, the latter highlighted as a traditional example of whey utilisation.

Activities with Lo Buono continued during the morning of the second day, when the production processes initiated on the previous day were completed.

Sunday afternoon marked the beginning of the second part of the workshop, led by Dr. Franco Vasile, an Argentine researcher and university professor with a developing scientific career focused on buffalo milk and the creation of innovative products derived from milk and whey.

Vasile conducted a theoretical–practical session on the preparation of dulce de leche de búfala (buffalo milk caramel), an icon of Latin American gastronomy



that has gained worldwide popularity. During the demonstration, he explained the specific characteristics of working with buffalo milk and the parameters required to obtain a product with a smooth texture, characteristic sheen, and exceptional flavour.

The workshop concluded with a general tasting of all the preparations made, followed by closing remarks delivered by the President of the Symposium, Dr. Luis Quiles Skorc.

Motivated by a shared enthusiasm for strengthening the buffalo production chain, participants expressed their appreciation for the training experience and their commitment to applying the knowledge gained in their respective countries.

HIGHLIGHTS FROM THE PRE-SYMPOSIUM WORKSHOP ON BUFFALO REPRODUCTION AT THE XI SYMPOSIUM ON BUFFALOES OF THE AMERICAS AND EUROPE

Prof. Dr. Juan Carlos Gutiérrez¹ Prof. Dr. José Luis Konrad²

¹President of the Scientific Committee

²Workshop on Buffalo Reproduction Coordinator

XI Symposium on Buffaloes of the Americas and Europe, Bolivia 2025

The XI Symposium of Buffaloes of the Americas and Europe held a two-day pre-congress workshop on buffalo reproduction in Santa Cruz de la Sierra, Bolivia, on September 20-21, 2025. About 30 participants from Bolivia, Colombia, Argentina, Paraguay, and Venezuela enrolled. The workshop provided useful knowledge and hands-on skills for buffalo producers, veterinarians, students, and technicians interested in learning more about buffalo reproduction.

Scientific program and speakers

Three invited lecturers led the workshop, bringing both academic knowledge and practical experience with buffalo herds. Dr. José Luis Konrad (Argentina), Dr. Juan Carlos Gutiérrez (Venezuela), and Dr. Carlos Hernández Correa (Colombia) shared their expertise and gave participants a wide range of insights from different backgrounds.

The lessons covered many aspects of buffalo reproduction, including the anatomy and physiology of both male and female buffalo. They pointed out similarities

and differences with cattle, as well as unique features that affect fertility, estrus behavior, and seasonality. The speakers stressed that understanding these traits is key to managing reproduction, planning breeding programs, and using reproductive technologies across the species' different production systems.

Assisted reproductive technologies in buffaloes

The course focused on assisted reproductive technologies for buffalo herds. Topics included artificial insemination (AI), timed artificial insemination (TAI), in vitro fertilization (IVF), and embryo transfer (ET).

Dr. Hernández Correa ► delivered a lecture on IVF in water buffaloes. (Photo: LOC)



These methods help accelerate genetic progress, spread top sires, and improve reproductive outcomes across different settings.

The workshop also discussed adapting protocols for buffaloes, such as estrus and ovulation synchronization, and highlighted the importance of semen quality, animal selection, and timing to achieve high conception rates.

Assisted reproductive technologies in buffaloes

The workshop also covered general management of buffalo reproduction and strategies to improve herd fertility. Topics included seasonal patterns in buffalo reproduction, how management, nutrition, and the environment may affect fertility, and why maintaining good reproductive records is vital for evaluating performance and making decisions.

Participants were interested in learning how to select bulls and females and how to use reproductive technologies rationally in daily work to increase calving rates and farm profits.

▼ Dr. Konrad is giving a lecture on reproductive management of water buffaloes. (Photo: LOC)



▲ Dr. Gutiérrez is giving a lecture on reproductive ultrasonography in buffalo bulls. (Photo: LOC)

Hands-on training and practical skills

A key benefit of the event was the hands-on training, which helped participants put their learning into practice. With guidance from the lecturers, attendees learned to identify male and female reproductive structures, perform artificial insemination, and check semen quality.

They also practiced breeding soundness exams on bulls, including physical checks, genital tract examinations, and semen analysis. The sessions included using ultrasound on both males and females to identify important structures such as follicles, corpora lutea, the uterus, testicles, and male accessory glands, and to diagnose reproductive problems encountered in the field during the course.

Regional impact and future perspectives

The pre-symposium workshop stood out for the excellent organization by the Local Organizing Committee (LOC) of the XI Symposium on Buffaloes of America and Europe, Bolivia 2025, which ensured efficient logistics, a well-balanced program between theory and practice, and an environment conducive to learning.

Academic and logistical coordination enabled the optimal development of the activities, facilitating in-



▲ Students participating in a practical session of ultrasonography. (Photo: LOC)

teraction between speakers and participants. The workshop brought together professionals and students from across Latin America, fostering the creation of regional networks. Likewise, the participants' very positive attitude was noteworthy; they actively engaged in both theoretical and practical sessions, promoted enriching discussions, and demonstrated a high level of commitment to the training. This collaborative working atmosphere contributed decisively to the workshop's success and the achievement of its educational objectives.

The importance of reproductive technologies was also highlighted as a means to help buffaloes reach their potential as a sustainable source of animal protein and as a driver of social development in the Americas.

3 Scientific lectures

SCIENTIFIC LECTURES OF THE XI SYMPOSIUM ON BUFFALOES OF THE AMERICAS AND EUROPE 2025

Prof. Antonio Borghese
IBF General Secretary

Day 1 – September 22, 2025 The Buffalo and Its Social and Economic Impact. Meat production and industry

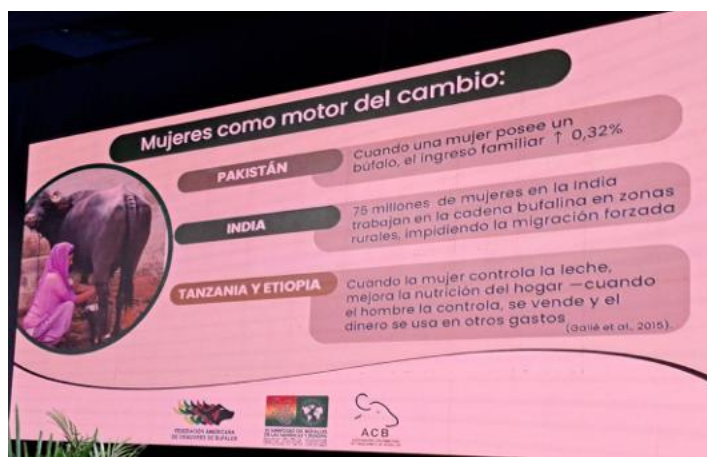
After the welcome and the wishes to all the participants, Ing. Luis Quiles Skorc, President of the American Federation of Buffalo Breeders, opened the Symposium. The first speaker, Lic. Walter R. Kuljis, ASOCRIABUF, presented the history of Buffalo livestock in Bolivia from 1936 to the present.

Dr. Andres Gonzales Serrano, Oficial de Ganaderia Sostenible, Sanidad Animal and Biodiversidad, FAO, spoke on the Buffalo role in the livestock sustainability and on the FAO eradication program of the hunger: He showed as protein production increased about 20%, meat 10%, milk 8%, eggs 6%, fish 6% and milk production will gain more particularly in India and Pakistan in the future, but the world population also will increase significantly.

He also spoke about the world's pathologies and the sustainability in many countries where many millions of people normally use wood for cooking.



Dr. Alba Lucia Suarez from Colombia presented a paper on buffalo as a field protector and on the woman as protagonist of the rural livestock. The number of women in buffalo breeding in America increased from 36% to 51%, because women are more sensitive and resilient,



and their management helps increase production. Prof. Juan Carlos Gutierrez from Venezuela, spoke on the economic impact on the buffalo health and reproduction by mineralization: the minerals are not dietary complements, but nutritional feeding elements, active on the immunology system, on the detoxification, enzymatic activity, osmotic balance, bone, hormones, acid/basic ratio. Finally, he showed the mineral requirements in the buffalo diet.

Dr. Irina Martinez from Argentina presented a lecture on the buffalo's productive indexes in the marshlands. She showed as buffalo present a typical rusticity and fibre digestibility to survive and produce in marshlands and in humid savannah with first calving at 30-36 months, 80-90 % fertility, weight at calving 34-38 kg, calf mortality 3-10%, longevity until 25 years, body weight at 8-10 months 220-240 kg and at 24-30 months 480-500 kg.

After lunch, Prof. Olimpia Barbato from Italy presented a lecture on embryonic mortality, a very common problem with important economic losses; after the pregnancy starts, embryonic mortality could be affected by oocyte quality, P4 (progesterone) level, reproduction and infectious diseases, uterine environment, heat stress, and genetic factors. The early embryonic mortality (until

17 days) is about 80%. Therefore, it is useful to have an early pregnancy diagnosis by eco and ultrasonography or by hormone level measurement: P4, PAGs, to predict embryo mortality and apply hormone treatments to reduce pregnancy losses.

Dr. Otavio Bernardes from Brazil spoke on the lactation induction, using hormones such as BST (somatotropin) and oxytocin.

Dr. Gladis Rebak from Argentina presented a lecture on the buffalo meat quality, industrial yield, and chemical and physical properties. She showed growth curves until 450 kg live weight, when the growth became linear. The dressing percentage in buffalo is about 48-54% in comparison to cattle, which is 55-62%. The buffalo carcass conformation is linear or convex. The meat percentage on the carcass is about 58,5%. She also showed measurements of colour and tenderness, and of cholesterol, less present in comparison with cattle, and of unsaturated fatty acids, more in buffalo than in cattle.

Prof. Pietro Baruselli, from Brazil, presented a conference on the application of biotechnologies in buffalo reproduction. He spoke about uterine contamination post-partum, early calving, and heifer maturity, OPU, IVF, and MOET technologies.

▼ Dr. Irina Martinez



Sr. Jorge Anibal Leguiza, from Argentina, spoke about marketing strategies for the buffalo meat market. He explained his experience in Corrientes, after the difficulties to introduce a new product in supermarkets, it is important to create loyalty to the product, normally buffalo with live weight about 330- 500- 600 kg.

Dr. Marco Zava, from Argentina, also presented a lecture on buffalo production and the market. He showed the nutraceutical properties of buffalo meat, with less cholesterol and more unsaturated fatty acids.

A round table was held with farmers, industrials, and scientists on buffalo production, nutrition, health, genetics, and marketing.

Day 2 – September 23, 2025

Dairy Industry, Science, and Innovation

Lic. Jorge Nakid, from Brazil, was the first speaker on buffalo dairy products, on industrialization, and strategies to conquer the market. He has the Levitare Industry, close to São Paulo, processing about 50,000 liters of milk per day, producing particularly mozzarella and burrata, sold to restaurants, pizzerias, and supermarkets.

Prof. Vittoria Lucia Barile, from Italy, presented a paper on the strategies to produce early calving in buffalo heifers. The first estrus can be obtained at 24-36 months with adequate nutrition, until 20 months if the body weight is around 350 kg. The priority is adequate daily gain, about 600 g/d, to be achieved in intensive systems and on rich pasture, as has been demonstrated in different trials. The estrus can also be induced by hormonal treatments as progesterone, PMSG, or PRID or Ovsynch systems. The age at the first calving was also introduced in the selection planes.

Dr. Edoardo Lo Bueno and Dr. Caio Rossato, from Brazil, presented a proposal to increase artisan processing. It is possible to increase the market, introducing the protected mark, as the ABCB is the mark of the Brasileira Association of Buffalo Breeders, or changing the products as cheese, old until 6 months, like Parmigiano.

▼ Dr. Edoardo Lo Bueno and Dr. Caio Rossato



▲ Dr. Franco Vasile

Dr. Franco Vasile, from Argentina, presented a lecture on the valorisation of the serum by buffalo milk and on the technological strategies for a sustainable industry. The serum is a good product, rich in lactose (46%) and protein (11%), albumins, globulins, and lactoferrin, but it is also dangerous for pollution; the applications are to produce ricotta for the market, or to produce drinks, or to add to the pigs' feeding.

After that was a time to look at the scientific results in the poster session.

Prof. Antonio Borghese, from Italy, presented the lecture on the past, present, and future of the International Buf-

▼ Prof. Antonio Borghese



falo Federation (IBF). The IBF was born in Cairo, Egypt, in 1985, exactly 40 years ago, at the first World Buffalo Congress (WBC), with Prof. Shalash as President. In the first years, the sole activity of the IBF was to organize the World Buffalo Congress every 3 years, electing in each WBC, during the assembly of the IBF members, the next President, who would organize the next WBC. The IBF Permanent General Secretariat was approved by the IBF Standing Committee during the WBC in Maracaibo, Venezuela, in 2001, with its headquarters in the Animal Production Research Institute (now CREA), Monterotondo, Roma, with Prof. Antonio Borghese as General Secretary. Then the activities of the Secretariat were: 1, information, creating a network, utilizing social link with the IBF Representative members; the Buffalo Newsletter reported each year the activities on buffalo research and development in the world; 2, formation, organizing the IBF Training courses on Buffalo management and industry every 2 years from 2014 until now; 3, promotion of international research projects. Finally, the IBF promoted a Congress per year, adding the Asian Buffalo Congress and the Buffalo Symposium of the Americas and Europe every 3 years. The future will be more intensive, as the IBF membership has increased to 181 people from 36 countries.

After a round table on the past, present, and future of buffalo in America and Europe was held. A rich discussion followed with the farmers and the Presidents of all the buffalo Associations, where Joao Ghaspar de Almeida, Alvaro Salas Vega, Nicola Fabbozzo, and Carmen lemma were particularly active.

Day 3 – September 24, 2025

Emerging Businesses and Applied Science

The first presentation was by Dr. Antonella Chiariotti, from Italy, on Buffalo in Europe: the Italian experience on sustainability. She explained the main steps of the Italian model for buffalo development, both in management and product processing; from the National herdbook to genetic improvement and the two selection indexes, to the new precision livestock farming systems under

research for buffalo management. Some technologies to reduce pollution impact in intensive systems were described: from biogas plant to produce green energy, to diet supplements as rumen protected methionine or soy-alternative protein source.

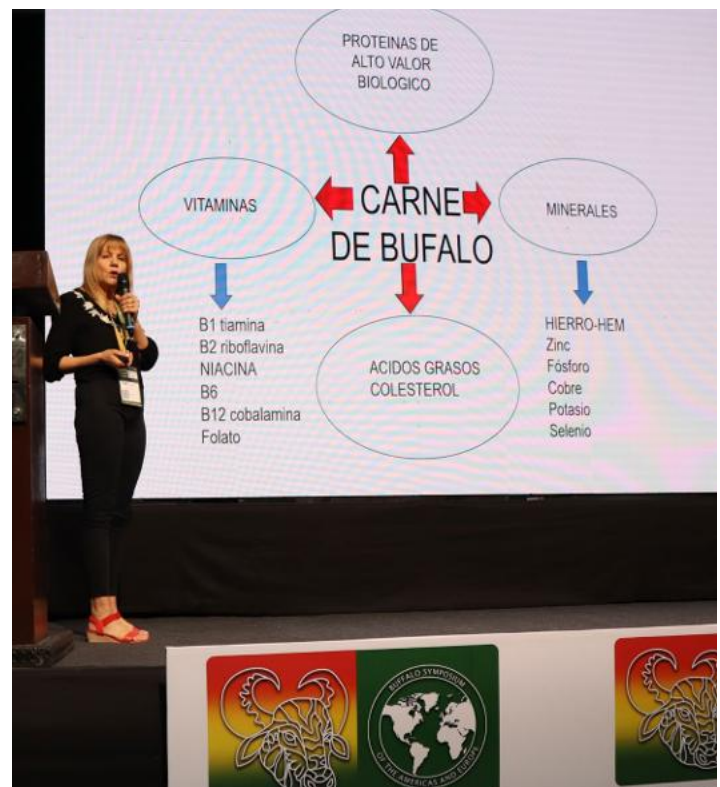
Dr. Carlos Andrés Hernández Correa from Colombia presented a lecture on Embryo Transfer in Buffaloes: From Paper to Herd, showing the results of twenty years of work in the field.

Dr. Gladis Rebak, from Argentina, spoke about the qualities of buffalo meat and milk, introducing the carcass evaluation for fatness by the measurement of dorsal fat thickness: the best at slaughtering is 0.81-0.95 cm.

After that, there were different short presentations, such as the experience of Dr. Orlando, who bred buffaloes at an altitude of 3700 m.

Finally, Colombia was elected to organize the next Symposium of America and Europe in 2028. Dr. Carmen lemma presented the program of the next World Buffalo Congress on October 28-30, 2026, in Sorrento, Napoli, Italy.

▼ Dr Gladis Rebak



4

BUFFALO TOUR

Dr. Antonella Chiariotti, Dr. Vittoria Lucia Barile

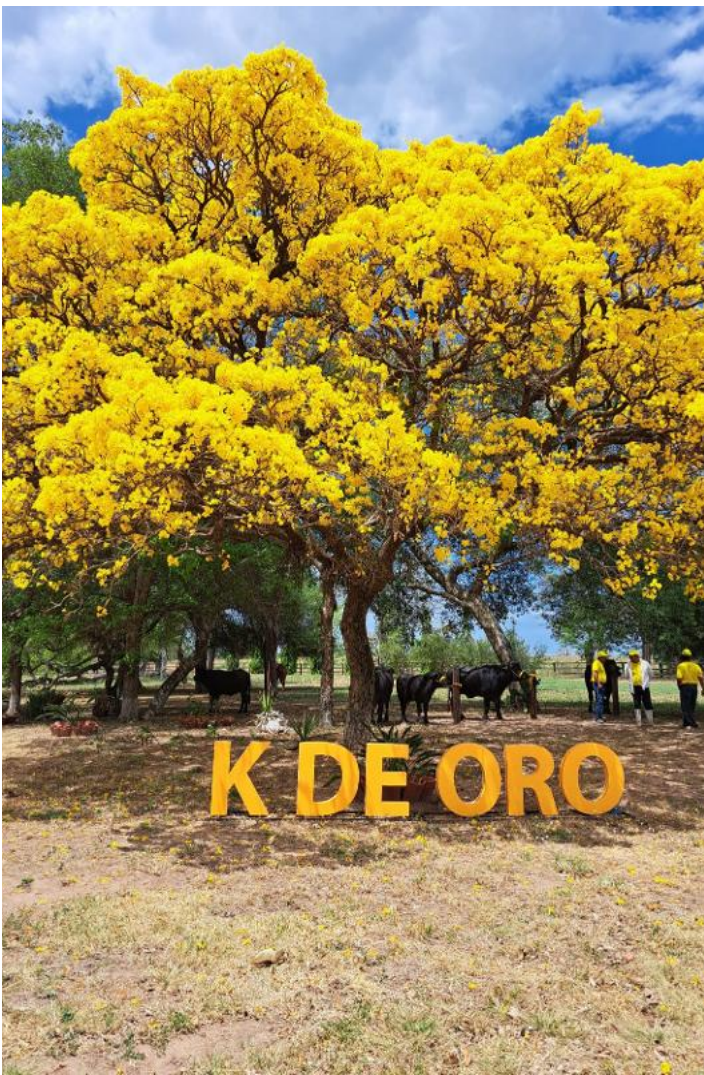
Council for Agricultural Research and Economics (CREA) Research Centre for Animal Production and Aquaculture. Monterotondo, Italy
International Buffalo Federation, General Secretariat, Monterotondo, Rome, Italy



The XI Symposium of Buffaloes of the Americas and Europe, which took place from 20 to 26 September in Santa Cruz de la Sierra, Bolivia, concluded, as usual, with the "Buffalo Tour," which offered a combination of Chiquitania's natural and cultural beauty, as well as the opportunity to visit some representative Bolivian buffalo farms. September 25th and 26th were dedicated to visiting production units that showcased the country's buffalo industry.

Guests had the opportunity to visit buffalo farms, where the adaptability of the buffalo to diverse ecosystems is evident, as well as its potential for meat and dairy production in Bolivia.







September 25th began with a visit to a small artisanal cheese processing plant where several types of cheese are produced (see photo).

The tour continued to the Santa Lucía Ranch (K de Oro), where Jaffarabadi, Murrah, and Italian Mediterranean breeds are reared on arid land characterised by water scarcity and sparse desert vegetation (cacti). Participants had the chance to taste a traditional whole buffalo barbecue (asado) (see photo).





The itinerary ended in Concepción's main square, with a visit to the Baroque wooden church, a hidden treasure of Chiquitania. The Jesuit Missions of the Chiquitos form a religious complex consisting of several settlements erected between 1700 and 1760 in the department of Santa Cruz (approximately 200 km from Santa Cruz de la Sierra).

Proclaimed a UNESCO World Heritage Site in 1990, they represent one of Bolivia's greatest cultural treasures, blending Baroque style with indigenous creativity. The layout of the ancient missions follows an almost uniform plan: a large square with a cross at the centre, flanked by four palm trees. On one side stand the church, the Fathers' residence, the cemetery, and the public buildings; on the other are the warehouses and the dwellings of the indigenous population. The interior of the church features remarkable paintings. Three centuries after their foundation, these missions remain the only places of worship that have been in continuous use.



The Father Martin Schmid Choir and Orchestra Ensemble, comprising local young musicians, performed concerts and dances for the participants. Dinner was served in a restaurant located within the aforementioned square and consisted of traditional dishes based on meat, rice, onions, and plantains.





On the second day, the group travelled to San Javier, founded in 1691, the oldest of the Jesuit missions and the first to be inscribed on the UNESCO World Heritage List. Its architecture fuses European Baroque with indigenous art to create the so-called "Mestizo Baroque," featuring decorations with floral motifs and Christian symbolism.





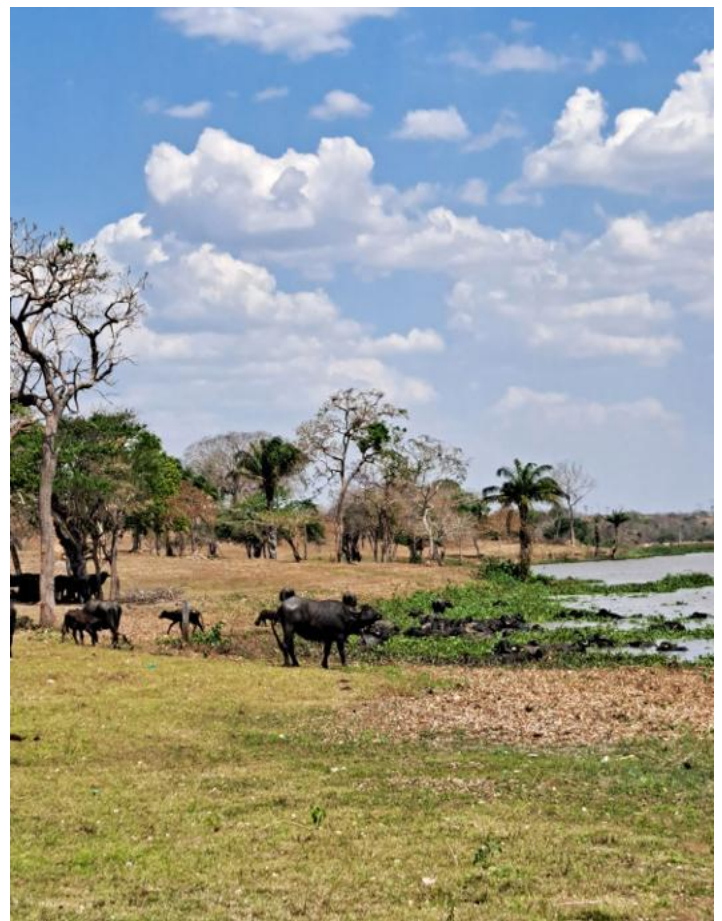
The entertainment programme included a concert by the Jesuit Mission School Choir and a traditional indigenous music performance. The group then visited the Los Tajibos dairy farm, which specialises in Jaffarabadi buffalo. The farm employs a mechanised milking system and has introduced artificial insemination using Italian Mediterranean bulls to enhance milk production.





In the afternoon, the group visited the Laguna Brava farm in San Ramón. The farm encompasses numerous lakes, ensuring a constant water supply; the buffalo appeared in better condition than those observed in drier regions. Farm management follows an extensive model.

The tour was intense, filled with surprises and breathtaking landscapes. Beyond the buffalo farms themselves, the highlights were Concepción and San Javier, the missionary heart of Chiquitania. Participants were also able to enjoy traditional cuisine and dancing in keeping with local tradition.



Subject: REPORT ON CELEBRATION OF WORLD BUFFALO DAY-2025

The World Buffalo Day was successfully celebrated on March 2, 2025 at the Buffalo Research Institute, Pattoki. The event was jointly organized by the Buffalo Breeder Association, Punjab-Pakistan (BBAPP) and Livestock & Dairy Development Department (L&DD) in collaboration with University of Veterinary and Animal Sciences (UVAS) under the umbrella of international Buffalo Federation (IBF) and Asian Buffalo Association-Pakistan (ABA), bringing together key national and international stakeholders to highlight the importance of buffaloes in our dairy industry and explore new avenues for collaboration. World Buffalo Day was celebrated to recognize the crucial role of this underutilized species highlighting the urgent need of greater research, innovation, and policy support to maximize their productivity and economic potential.

Meritorious Prof. Dr. Muhammad Younas Rana (*DLA.I, TI*), Vice Chancellor UVAS, graced the occasion as the chief guest, accompanied by Prof. Dr. Muhammad Ijaz, President Asian Buffalo Association (ABA). The event was attended by key industry leaders, including Khan Ali Imran Rath, President BBAPP; Dr. Muhammad Yousaf, Director General Production, Lⅅ Mian Saeed Hassan Hotiana, Founder Chairman BBAPP; and Mian Sami Ullah, General Secretary BBAPP, along with the entire BBAPP cabinet. Progressive buffalo breeders and industry stakeholders actively engaged in discussions, focusing on advancing buffalo farming and strengthening Pakistan's position in the global dairy and meat sectors.

During address, the Vice Chancellor-UVAS emphasized Pakistan's pivotal role in global milk production, ranking fourth worldwide, with buffaloes contributing approximately 65% of the total national milk yield. He highlighted the urgent need for improvements in buffalo genetics, breeding programs, disease control strategies, and proper record keeping. The Vice Chancellor emphasized that UVAS is always prepared to collaborate with BBAPP and the livestock industry to drive innovation and growth in the buffalo sector. Additionally, he expressed enthusiasm for hosting

Secretariat: Asian Buffalo Association, Department of Veterinary Medicine
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the Asian Buffalo Association (ABA) with full zeal, showcasing Pakistan's dedication to advancing buffalo production and industry partnerships.

Prof. Dr. Muhammad Ijaz, President ABA, highlighted the significance of the Asian Buffalo Congress 2027, which will be hosted in Lahore, Pakistan, after an 18-year hiatus. He emphasized that this prestigious event will serve as a global platform for buffalo breeders, researchers, and industry stakeholders to exchange knowledge, share advancements, and strategize for enhancing buffalo milk and meat production. He highlighted ongoing ABA initiatives, including buffalo melas, seminars, and training programs, aimed at strengthening the sector. Furthermore, he assured that, through his role as President of ABA, he will actively work to strengthen connections between the Pakistani buffalo industry and the broader Asian and global markets. In recognition of his outstanding contributions to the buffalo sector, Prof. Dr. Muhammad Ijaz was appointed as the Ambassador of the Buffalo Breeder Association (BBA) Pakistan for the year.

Dr. Muhammad Yousaf announced the initiation of three major projects aimed at buffalo breed improvement by the Livestock and Dairy Development Department. Khan Ali Imran Rath, President BBAPP, reiterated the association's commitment to advancing the genetic potential of the Nili-Ravi buffalo. He emphasized the necessity of adopting scientific breeding techniques to align with the long-term vision of the Livestock Department and ensure sustainable growth in the sector.

The event also gained international recognition with virtual addresses from global experts, including Prof. Antonio Borghese, General Secretary International Buffalo Federation (IBF); Prof. Inderjeet Singh, Vice Chancellor Bihar Animal Sciences University, India; and Prof. Yangqing Lu, Dean College of Animal Sciences, Guangxi University, China. They commended Pakistan's ongoing efforts in buffalo breed enhancement and expressed their commitment to fostering international collaborations for the sustainable development of the buffalo industry.

The celebration concluded with a cake-cutting ceremony, symbolizing unity and collective efforts toward the advancement of the buffalo sector. This event not only reinforced Pakistan's leadership in buffalo research and industry collaboration but also set the stage for stronger international partnerships in preparation for the Asian Buffalo Congress 2027. The continued dedication of UVAS and BBA Pakistan to scientific innovation and industry growth promises a sustainable and prosperous future for the buffalo industry on both national and global scales.

Some pictures of the event are attached for your information.



Cyan

Prof. Dr. Muhammad Ijaz
President,
 Asian Buffalo Association (ABA)

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BUFFALO RESEARCH ACTIVITY AT THE UNIVERSITY OF TUSCIA-DAFNE

Loredana Basiricò, Umberto Bernabucci, Chiara Evangelista, Giampiero Grossi, Francesca Petrocchi Jasinski, Nicola Lacetera, Chiara Rossi, Andrea Vitali
University of Tuscia, Department of Agriculture and Forestry Sciences, Viterbo, Italy

The researchers of the Department of Agriculture and Forestry Sciences (DAFNE) of the University of Tuscia (Italy) are involved in several projects financed by the Italian Government and private companies.

The research group addresses several aspects of dairy buffalo farming: from nutrition to the use and introduction of technologies (precision livestock farming) to improve diet utilization efficiency, lactation and reproduction management, and animal welfare. In addition, attention is also paid to assessing the environmental footprint of mozzarella production, including carbon and water footprints.

Many of these topics are addressed and financed by the European Union Next-GenerationEU within the *Agritech National Research Center (AGRITECH)* project, which also includes activities of technology transfer. This action is being carried out within a specific Living Lab named *SOLSTICE (Sustainable productivity and mitigation of environmental impact in livestock systems)*, which involves research organizations, primary producers, private companies and public bodies. The research group has contacts with several private companies operating in the animal feeding and nutrition sector, technologies such as wearable animal sensors, robotic milking, and NIR (Near Infrared) technology.

▼ Italian Mediterranean Bufalo Breed



! The picture were provided by the authors

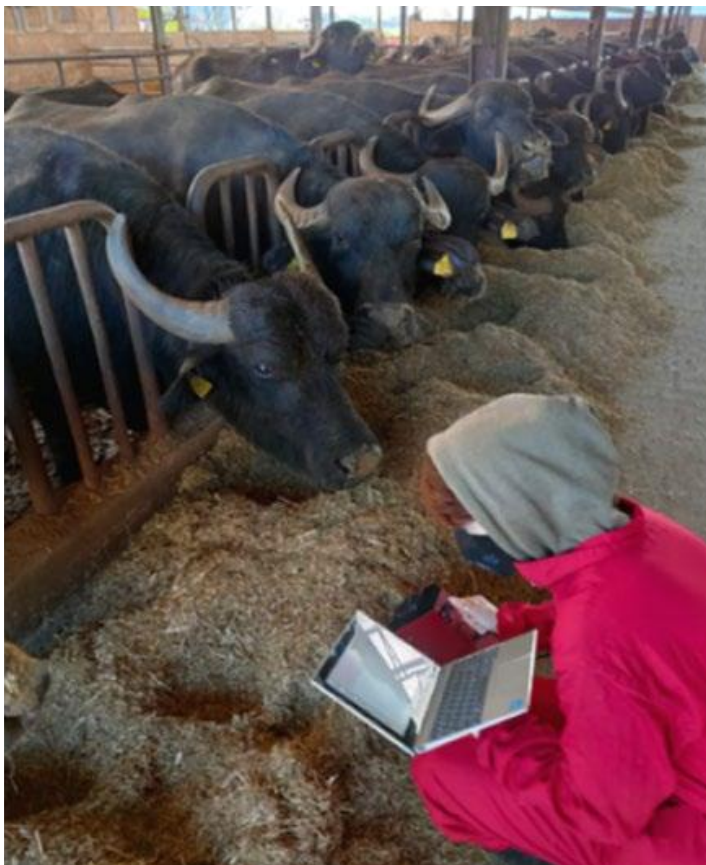


▲ Dairy buffalo farm (Pontinia, LT, Italy)

The research group has a long and internationally recognized experience on the effects of heat stress in dairy ruminants. A few years ago, attention also turned to studying the response of dairy buffalo to intense environmental hot conditions and to evaluating possible mitigation strategies, such as nutritional interventions, to reduce the stress.

▼ GreenFeed technology for measuring individual enteric methane emission (Amaseno, FR, Italy)





◀ Near infrared technology

▼ Milking robot (Amaseno, FR, Italy)



In the research group, several international and national PhD students and post-PhD are involved in research aiming at evaluating the sustainability and improving the efficiency of dairy buffalo farms. This is achieved through the optimization of buffalo feeding and nutrition, the use of technologies, and the study of greenhouse gas emissions and the evaluation and determination of enteric methane emissions, the latter measured by using different tools like GreenFeed (C-Lock, Rapid City, SD, USA) and Sniffers (MooLogger, TecnoSens, Brescia, Italy) instrumentation.

The Animal Production Science research group has begun to learn about this interesting species and is committed to contributing to the knowledge for improving the management of the Italian Mediterranean dairy buffalo.



Research Group in Animal Production Sciences ▶

IBF VISIT TO GUANGXI DAIRY BUFFALO INDUSTRY, NANNING, CHINA

Prof. Jiang-Hua Shang

Buffalo Research Institute, Chinese Academy of Agricultural Sciences. Key Laboratory of Buffalo Genetics, Breeding and Reproduction Technology. Nanning, China



The Department of Agriculture and Rural Affairs of the Guangxi Zhuang Autonomous Region of China has invited a delegation from the IBF and CREA to participate in the Smart Agriculture Expo 2025, which was held from November 6 to 8, 2025, at the Nanning International Convention and Exhibition Center, Guangxi Zhuang Autonomous Region, China.

The organizer of the trip was Prof. Jiang-Hua Shang, from the Buffalo Research Institute, Chinese Academy of Agricultural Sciences, in Nanning, who invited Prof. Antonio Borghese, General Secretary of the International Buffalo Federation (IBF), and two scientists of CREA, members of the IBF Secretariat, Dr. Vittoria Lucia Barile and Dr. Antonella Chiariotti. Dr. Antonio Vagniluca, from the Chiacchierini Bull Center, was also involved in presenting the semen and embryo production of the Center in one stand at the Expo.

On November 6, the Italian group was invited to the Expo, in the Nanning International Convention and Exhibition Center, where the Moderator was Jin Ke, Director of the Foreign Economic Cooperation Center, Ministry of Agriculture and Rural Affairs. Many representatives of Ministries of Agriculture were speakers: Jiang Wensheng for China, Kykeo Singnavong for Laos, and Petar Kirovski for Bulgaria.

Various presentations about China's Smart Agriculture were delivered by professors and representatives of Chinese governmental institutions. Topics ranged from Intelligent agricultural machinery to support the development of smart agriculture in China, to Shaping the next global narrative beyond Industry 4.0: The importance of agriculture in a new era of bio-digital-physical fusion, to Wisdom and innovation shape



Guangxi's future: Build a new hub for open collaboration in smart agriculture.

In the afternoon, a visit was held to the Royal Group farm, where Teng Cui Jin, Director and Vice President of Royal Group Co. Ltd, and Prof. Yang Bingzhuang, former Director of the Guangxi Buffalo Research Institute, guided the group to look at the Nili Ravi buffalo calves obtained by embryo transfer from buffalo blastocysts imported from Pakistan. A discussion with the executives from Royal Group and Royal Cell Company followed at the headquarters of Royal Group.

On November 7 a visit was also arranged to the Buffalo Research Institute in Nanning with Prof. Shang, where the Italian delegation was received by the Vice- Director and by the Executive for International Affairs, and after to the farm of the Institute, where dairy buffaloes coming from the crossbreeding with Nili Ravi, Murrah and Mediterranean Italian were showed, resulted by a project to create dairy buffalo in China and dairy products for the market.





The lunch in a typical Chinese restaurant was the occasion to continue the discussion with old friends, such as Prof. Zeng Qingkun, another Vice-Director of Guangxi Buffalo Research Institute.

After the visit to the Ethnological Museum, there was a meeting with Dr. Ou Yixia, Vice Director of the Department of Agriculture and Rural Affairs, different Authorities and scientists for future projects to develop dairy buffalo in China, milk processing and export,



and finally the Chinese candidature for the next World Buffalo Congress.

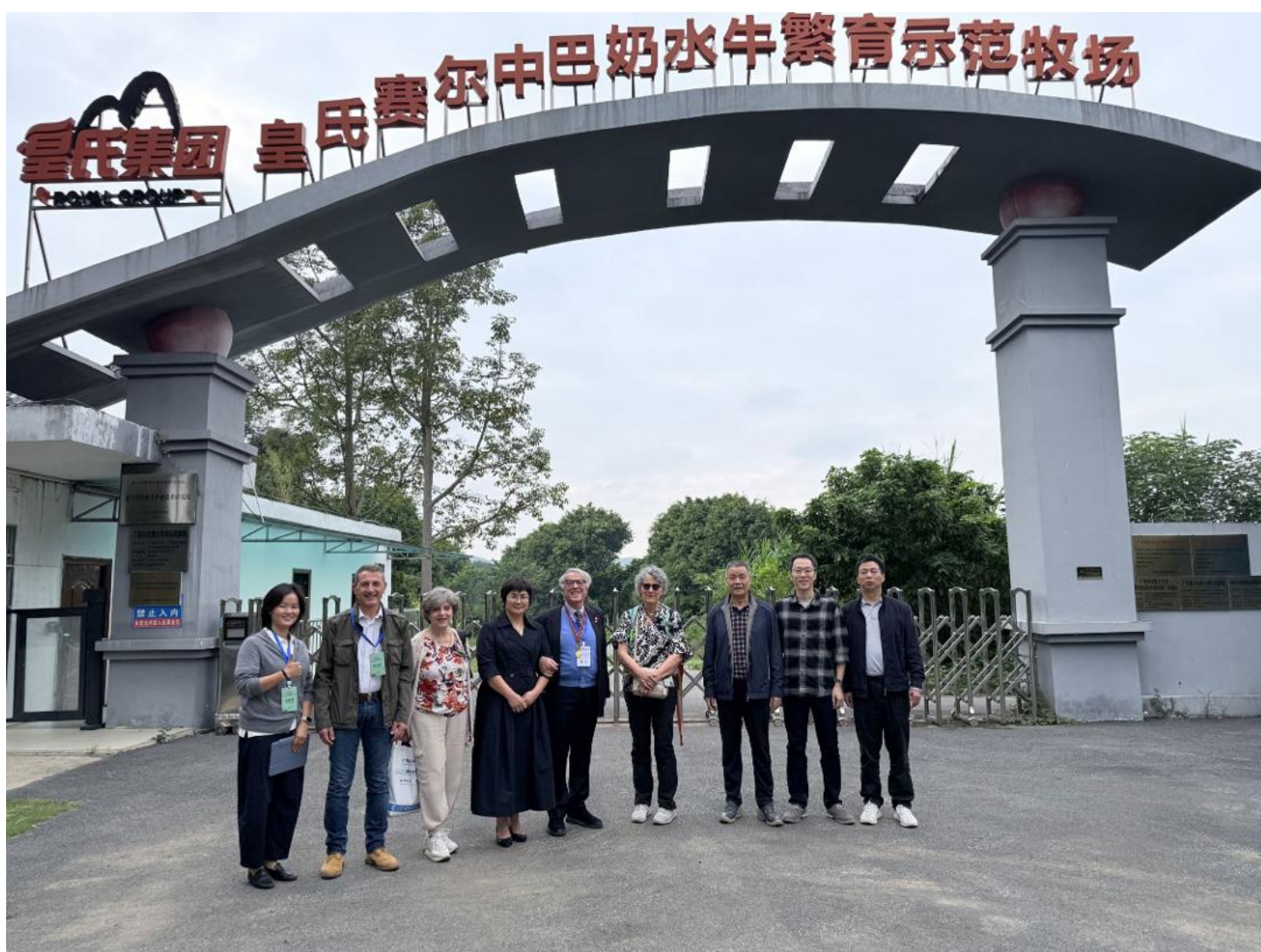
On the day after, November 8, there was a meeting with Dr Huang Zhiyu, General Director, Department of Agriculture and Rural Affairs of Guangxi Zhuang Autonomous Region, for future collaboration with the IBF and CREA.

The visit to the new Shangsi farm of the Buffalo Research Institute, under construction and fully automated, with a capacity of 2,000 buffaloes, and the new Royal Group farm, with a capacity of 10,000 buffaloes, followed.

During the visit, ideas for collaboration among Guangxi Province, Buffalo Research Institute of Nanning, and the IBF were discussed. A proposal for a technical course organized by IBF and a renewal of the memorandum

of understanding between CREA and Buffalo Research of Nanning (a previous five-year MOU was signed in 2013) were some of the shared ideas.

The day finished with a visit of typical market at the barrier with Vietnam in Dongxing, Fangchenggang City of Guangxi.



SCIENTIFIC FOCUS

BUFFALO IN CANADA

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SUMMARY

The first water buffalo (*Bubalus bubalis*) arrived by ship in Canada in 1999, imported from Europe by the Archer family to Vancouver. In subsequent years, due to the incidence of certain diseases in the Old Continent, the Canadian government decided to cull all buffalo and other animals that had arrived from Europe in previous years. Buffaloes from the United States were subsequently imported, and the development of buffalo farms began in the provinces of Quebec, Ontario, Alberta, and British Columbia. Buffaloes in Canada are used to produce milk and dairy products, as well as for meat for consumption. Currently, there are several farms dedicated to buffalo production. Growth is slow but steady; the current buffalo population in this country is estimated at 3,000 heads.

Keywords: buffalo, population, Canada.

CANADA TERRITORY

Canada, located in North America, has an area of 9,984,670 km², making it the second-largest country in the world. It has a population of 41,651,653 people and maintains a very low population density of 4 inhabitants per km². Its capital is Ottawa (1).

Canada has 10 provinces and 3 territories: Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Nunavut, Ontario, Prince Edward Island, Quebec, Saskatchewan, the Northwest Territories, and Yukon.

The largest city in Canada is Toronto, Ontario; followed by Vancouver, British Columbia; Montreal, Quebec; and

Calgary, Alberta. (2) (Figure 1)

Canada, due to its extension, enjoys varied climates (3). Northern Canada is extremely cold, with summers lasting less than two months, but almost all Canadians live near the country's southern border, where the weather is warmer.

The Vancouver area, on Canada's west coast, has a rainy and temperate climate. It rarely snows, except in the mountains. Summer temperatures peak at around 22°C, and winter temperatures peak is around 7°C.

In Vancouver, it rains almost half the days in winter, but it's much sunnier in summer.

Near Toronto, the climate is continental: winters are cold and snowy, while summers are hot and humid. Maximum temperatures hover around 26°C in summer and 0°C in winter. On average, it rains seven days a month throughout the year.

Figure 1. Map of Canada (Photo <https://es.vecteezy.com/artes-vectorial/21613541-detallado-canada-mapa-estados-y-union-territorios>).



It is important to note that climatic conditions dictate that forage resources remain covered by snow for 5 to 6 months a year, so producers cannot rely on grazing feed for almost half the year.

Canadian livestock farming currently ranks fifth among countries exporting the largest volumes of meat worldwide.

In the world beef cattle inventory, it ranks eleventh with 12,3 million heads.

According to the latest figures, there are 95,000 producers involved in livestock production, the vast majority of whom are family-run and almost permanently based on farms.

Approximately 66,5 thousand are dedicated almost exclusively to cattle breeding, with weaned male calves as the marketed products. The breeding herd consists of approximately 4,3 million breeding cows, primarily of British Angus, Hereford, Shorthorn, and Limousin breeds. (4)

BUFFALO IN CANADA

The water buffalo arrived in Canada by ship in 1999 from Europe, imported by the Archer family to Vancouver, a city on the Pacific coast of the country, located in the southwest of the province of British Columbia.

After a couple of years, and due to the incidence of certain diseases in the Old Continent, the Canadian government decided to cull all the buffalo and other animals that had arrived from Europe in previous years, with the Archer family being the most affected. Of the imported buffalo herd, health authorities only left the animals born in Canada alive.

The original imported breed was the Murrah, and later, crossbreeding was carried out with imported Mediterranean breeds. The animals were used for milk production, which was entirely marketed. After a few years, operations ceased, and the buffalo were moved to another farm located in the province of Quebec, east of Montreal. The current buffalo population in Canada is estimated at 3,000 heads.



▲ **Figure 2.** Farm Elevages Buffaloes Maciocia (Photo: Elevages Buffalo Maciocia).

Buffalo in the provinces of Quebec, Ontario, Alberta, British Columbia

Currently, in these provinces, there are high-production dairy and meat farms (5), which are described below.

Elevages Buffalo Maciocia Farm

Located in the province of Quebec, it covers an area of 17 hectares and has 500 buffaloes of Mediterranean, Murrah, Buffalypso, and crossbred breeds (Figure 2). The animals are fed hay, straw, brewery waste, corn silage, minerals, and soybean meals. They produce 1,845 liters of milk per day from 202 milking buffaloes. The farm produces dairy products such as Mozzarella cheese (Figure 3), yogurt (Figure 4), and ricotta. They also produce buffalo meat. All products are sold in local markets and in the Italian, Pakistani, Greek, and Hindu communities (6).

▼ **Figure 3.** Mozzarella Maciocia. (Photo: Elevages Buffalo Maciocia).





▲ **Figure 4.** Maciocia Yogurt. (Photo: Elevages Buffalo Maciocia).

Koskamp Family Farm

It is located in the south of the province of Ontario (7). It is a family farm founded in 1974. They raise buffaloes that are milked using a rotary milking system (Figure 5). They produce and market fresh buffalo milk (Figure 6) and Cheddar and Gouda cheeses (Figure 7). They also produce a wide variety of buffalo meat products (Figure 8).

▼ **Figure 5.** Milking buffaloes using a rotary system. (Photo: Elevages Koskamp Family Farm).



▲ **Figure 7.** Cheddar and Gouda cheeses. (Photo: Elevages Koskamp Family Farm).



▲ **Figure 8.** Buffalo meat products. (Photo: Elevages Koskamp Family Farm).

Peak & Pasture Ranch Farm

The farm, located in Alberta (8), was owned by Amanda Beijer's family for two generations before the couple took it over and converted it into a water buffalo dairy operation (Figure 9). Theo Beijer's previous experience managing A2 hybrid milk and dairy products for his family was instrumental in this new farm.

Now, Theo and Amanda Beijer have established regenerative agriculture practices that include methods such as rotational grazing to improve soil health and biodiversity, while eliminating the need for chemicals and pesticides. These practices also make the land

◀ **Figure 6.** Fresh buffalo milk. (Photo: Elevages Koskamp Family Farm)



▲ **Figure 9.** Bufaloes Farm Peak & Pasture Ranch. (Photo: Peak & Pasture Ranch Farm).

more resilient to unstable weather conditions. Food products from regenerative farms are proving to have much higher nutritional value, meaning that regenerative agriculture has the potential to become a valuable and sustainable practice. The Beijer family has converted their traditional dairy farm into a water buffalo dairy operation with offerings that include not only milk (Figure 10), but also meat and several different types of cheeses (Figures 11 and 12).

▼ **Figure 10.** Fresh buffalo milk. (Photo: Peak & Pasture Ranch Farm).



▼ **Figure 11.** Paneer cheese. (Photo: Peak & Pasture Ranch Farm).



▼ **Figure 12.** Cheddar cheese. (Photo: Peak & Pasture Ranch Farm).





▲ **Figure 13.** Fairburn Farm Buffalo. (Photo: Fairburn Farm).

Fairburn Farm

Located in British Columbia (9). In 2000, Darrel and Anthea Fairburn imported the first water buffalo to Canada. They sold this beautiful farm in December 2017 to retire in the Cowichan Valley. They pioneered the first arrival of water buffalo in Canada. (Figure 13).

Tesfa Farms

Brad Bennik and Christy Bennik are the proud owners of a small herd of water buffalo in Langley, British Columbia. The Benniks have been developing their herd to produce enough milk for market.



The farm focuses on sustainable agriculture and sells its products at farmers' markets and retail stores. Their name, "Tesfa," means "hope" in Amharic, and they chose this name because they seek to offer "honest food" and "holistic" practices.

Their products can be found at farmers' markets, such as the one in Langley, and in retail stores such as Lifestyle Markets (Figure 14).

Coleman Meadows Farm

The Dyson family (Jennifer, Melanie, and Edward) are first- and second-generation farmers and are the proud owners and operators of Coleman Meadows Farm, a seasonal, grass-fed water buffalo dairy farm in Port Alberni, Vancouver Island, British Columbia.

The family's love and passion for raising buffalo is reflected in everything they do. Their love of land and animals translates into exceptionally ethical animal care, sustainable farming practices, and a commitment to producing only the highest quality water buffalo milk and meat. The family sells water buffalo dairy products, as well as their own natural, hormone- and antibiotic-free grass-fed water buffalo meat, at their farm market (Figure 15). They produce buffalo meat and dairy products such as yogurt and cheeses.

▼ **Figure 15.** Buffaloes at Coleman Meadows Farm. (Photo: Coleman Meadows Farms).



◀ **Figure 14.** Buffaloes at Tesfa Farm. (Photo: Tesfa Farms).

McClintock Farm

Founded in 1988, water buffalo (Figure 16) became an important part of the family farm after the purchase of 15 young females from Fairburn Farm. The milking parlor was completed overnight in early March 2012, and the first buffalo calf was born the following day. Producer Sandra McClintock and her parents, Val and Gerry McClintock, embody what comes with working together. The farm is introducing new products: award-winning yogurt (processed from natural pastures) and ice cream. These products are available on the farm, at select retail locations, and at the Comox Valley Farmers Market.

McClintock Farm Buffalo is located in the city of Surrey, in the province of British Columbia, in a peaceful setting near picturesque nature trails and lush wetlands. This academy (10) has a 43-hectare water buffalo farm where its students receive job and professional training in buffalo handling. The farm has more than 350 water

buffalo (Figure 17). They have a dairy where they milk their buffalo using a robotic system. They raise their buffalo humanely and ethically to produce a delicious variety of meat, cheese, and dairy products that are sold at their Farmers Market. They produce fluid milk, yogurt, and cheeses such as Mozzarella, Gouda, Blue, Feta, and Brie.

▼ **Figure 17.** Buffaloes McClintock Farm. (Photo: McClintock Farm Buffalo).



▼ **Figure 16.** Buffaloes McClintock Farm. (Photo: McClintock Farms).



It is essential to emphasize a prevailing belief among buffalo producers in Canada: "Less sunlight equals less cheese." As October approaches, the reduction in daylight hours is noticeable, which coincides with a period during which water buffaloes exhibit increased fertility. This natural heat cycle facilitates breeding, making it an optimal time for buffalo to conceive. However, as cold weather sets in, there is a decline in cheese consumption among humans, resulting in a downturn in the cheese market. Producers anticipate warmer months when outdoor gatherings, such as family picnics and business events, are more common, thereby increasing the demand for cheese.

The reproductive preferences of water buffaloes align with shorter days characterized by reduced natural light. In contrast, during months with extended daylight—sometimes reaching 14 to 15 hours—water buffaloes do not thrive. Therefore, farmers must synchronize breeding cycles from March to August. To achieve this, they often employ Timed Artificial Insemination (TAI) techniques, aiming to achieve pregnancies before August, resulting in calving from February to June of the following year. This strategic timing enables producers to secure sufficient milk during warmer months when cheese consumption peaks.

From October to February, all buffaloes are separated from breeding bulls, and no artificial insemination protocols are implemented to prevent calving during the colder months, which typically see reduced cheese demand. Interestingly, while cheese consumption wanes, yogurt becomes more prevalent in human diets.

CONCLUSIONS

The total number of buffalo in Canada is estimated at 3,000 heads. Their unique longevity, diet, and milk and meat characteristics predict a promising future for a steady growth in the coming years in this country.

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BUFFALOES IN MERCOSUR

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Abstract

The Southern Common Market (MERCOSUR) comprises countries in South America, including Argentina, Brazil, Paraguay, Uruguay, Bolivia, and Venezuela. The latter country is suspended from all rights and obligations inherent to its status as a State Party to MERCOSUR. The total number of buffalo in MERCOSUR countries currently stands at 3,883,952. This would constitute the largest buffalo population in the Americas. However, if Venezuela is included, the figure would rise to 7,583,952.

Keywords: buffalo, population, Mercosur

Introduction

The Southern Common Market (MERCOSUR) is a regional integration process initially established by Argentina, Brazil, Paraguay, and Uruguay. Bolivia and Venezuela joined later. The Bolivarian Republic of Venezuela is suspended from all rights and obligations inherent to its status as a State Party to MERCOSUR, in accordance with the provisions of the second paragraph of Article 5 of the Ushuaia Protocol. (Mercosur, 2025). (Figure 1)

MERCOSUR is an open and dynamic process. Since its creation, its main objective has been to foster a common space to generate trade and investment opportunities through the competitive integration of national economies into the international market. As a result, it has established multiple agreements with countries or groups of countries, granting them, in some cases, the status of Associate States (as is the case with the South American countries). These countries participate in the bloc's activities and meetings and enjoy trade preferences with the State Parties. MERCOSUR has also signed trade, political, and cooperation agreements with a diverse number of nations and organizations on five continents. Its official working languages are Spanish and Portuguese. Since 2006, Guaraní has also been incorporated as one of the bloc's languages.



Argentina

The first buffalo arrived in Argentina at the beginning of the 20th century, coming from Romania to the province of Entre Ríos, where attempts were made to crossbreed them with cattle for milk production. When this experiment failed, the buffalo practically disappeared, except for a few that were released for big game hunting.

After the unsuccessful attempts to crossbreed buffaloes with cattle, due to chromosomal incompatibility (buffaloes have 50 chromosomes and cattle 60), being ignored, several years had passed before small-scale imports resumed in the early 1980s, from Italy, Brazil, and Paraguay. The imported specimens belonged to the Mediterranean, Murrah, and Jaffarabadi breeds. In 1983, the Argentine Buffalo Breeders Association (AACB) was created, and in 1985, the first purebred herds were registered, opening the first genealogical registry book.

In 2004, the Association for Buffalo Production and Development in Argentina (ABUAR) was founded in the city of Corrientes, Argentina.

The 2nd Buffalo Symposium of the Americas was held in Corrientes in 2004, and the 9th World Buffalo Congress was held in Buenos Aires and Corrientes in 2010. Argentina currently has 307,000 buffalo (Figure 2).

▼ **Figure 2.** Buffalo in Argentina. (Photo: Radio del Guaran).



▲ **Figure 3.** Buffaloes in Brazil (Photo: Gabriel Jabur)

Brasil

In Brazil, buffalo were introduced in various locations throughout the country beginning in the late 19th century, primarily in the northern region. Initially, this was more out of curiosity than for their actual zoot-echanical value.

Meanwhile, their great adaptability to a wide variety of environments, combined with their high fertility and productive longevity, led to significant development in the herds. Of the mere 200 animals introduced into the country, the herd numbered 495,000 in 1980. The average annual growth rate between 1961 and 1980 was approximately 10.86%. The cattle herd grew by 3.8% in the same period.

From a qualitative perspective, some imports of animals with proven dairy productivity from Italy stood out, generally by immigrants seeking to produce dairy products manufactured in their country of origin. Imports from India occurred in 1962 (imports were later banned for health reasons). These animals incorporated Murrah and Jaffarabadi breeds, which were of great importance to Brazilian buffalo farming. They were the first officially recognized as "pure" of these breeds and became the basis for crossbreeding by absorption. The last import of live specimens was eight animals from Italy in 1989. Towards the end of the 20th century, buffalo semen of Italian and Bulgarian origin was imported.

The Brazilian Buffalo Breeders Association (ABCB), founded in 1981, had more than 80 members throughout Brazil in its early stages. Currently, this association

reports that the Brazilian buffalo herd has reached around 3,500,000 head, representing 1.5% of the total cattle herd. Thirty% of the properties are used for dairy production (Figure 3).

Paraguay

The first buffalo arrived in Paraguay in the late 1940s. Manuel Ferreira, the pioneer and promoter of the Nelore cattle breed, was on one of his trips to the national Nelore cattle exhibition in Uberaba, Brazil, when he acquired a herd of 40 buffalo, marking the beginning of this species in Paraguay. The intention was not to pursue buffalo breeding as an economic option, but rather as a curiosity to accompany cattle breeding.

The sporadic entry of buffaloes across the dry border with Brazil by Brazilian settlers in the area adjacent to the state of Mato Grosso was also a significant factor in the contribution of buffaloes to the country. The first significant buffalo farm was established by Eitimos Loannidis, who acquired 200 buffaloes from the state of Mato Grosso in 1988 and began breeding them in Colonia Yguazu, near the city of Este in Paraguay. He subsequently increased his herd with small purchases from different parts of the country.

The 10th Symposium on Buffaloes of the Americas and Europe was held in Asunción in 2022.

Currently, Paraguay has a population of 15,952 buffaloes and 288 producers in 261 farms distributed throughout the country, according to the National Animal Quality and Health Service (SENACSA, 2024). (Figure 4)

▼ **Figure 4.** Buffaloes in Paraguay. (Photo: ABC Rural. Eng. Rubén Bruyn).



Uruguay

Buffaloes were introduced to Uruguay by Lorenzo Balerio in 1987, acquired from Fazenda Panorama in Porto Alegre, Brazil. There were 100 females, and he bred them for a silvopastoral production system on his ranch located in Rivera, in the north of the country. Buffaloes are raised in the department of Artigas. The Artigas buffalo farm specializes in the genetic improvement of the species.

There are also buffalo farms in the departments of Cerro Largo and Florida.

Currently, there are approximately 1,000 buffalo heads in Uruguay. (Figure 5)

▼ **Figure 5.** Buffaloes in Uruguay. (Photo: Artigas Noticias)



Bolivia

The first buffalo arrived in Bolivia in 1974, thanks to a European Union project to support productive development for settlers located in the community of Paraíso, Puerto Villarroel Municipality, José Carrasco Province, Cochabamba Department, through the National Institute of Colonization (INC). These 200 imported buffalo were Mediterranean breed, originating from Caserta, Italy, and bred for food security (meat and milk production) and for animal traction.

This donation, after four years of monitoring, was unsuccessful, as most farmers gave up on the buffalo because their handling was very different compared



▲ **Figure 6.** Buffaloes in Bolivia. (Photo: Engormix.com / Buffalo Management).

to cattle. Some specimens became wild. Later in 1978, the INC donated 80 female buffaloes and five males to the Faculty of Agricultural and Livestock Sciences of the Universidad Mayor de San Simón. The buffaloes were raised for conservation, preservation, and small-scale milk and meat production until 2013.

Research was also conducted on animal health and animal traction. Of the producers who originally received the buffaloes, one persevered and currently has 80 Mediterranean and Murrah buffaloes for family production of meat, milk, and cheese.

The 11th Buffalo Symposium of the Americas and Europe was held in Santa Cruz de la Sierra in 2025.

Bolivia currently has an estimated buffalo herd of 60,000 head (Figure 6).

Venezuela

The water buffalo was introduced to Venezuela 96 years ago (1920), but it wasn't until 1967 that it began to gain importance as a species of zootechnical interest in animal production.

The first domestic buffaloes brought to Venezuela arrived in 1922 from Trinidad & Tobago, during the government of General Juan Vicente Gómez Chacón (Ferrer et al. 1973; Piedrahita, M. and Hahn, M. 1994). These animals were kept on the El Limón ranch, in the Corozal sector, on the way to Ocumare de la Costa, Maracay, Aragua State. The herd consisted of 20 females and 2 males (Ferrer et al. 1973; Ferrer, 1984).

Upon the death of dictator Juan Vicente Gómez Chacón, this herd was affected by popular discontent with an unwelcome government. However, some animals were saved and became the property of the González Gorrondona family, near Cagua, Aragua State. The herd was poorly managed and eventually extinct (Ferrer et al. 1973; Ferrer, 1984; Solórzano, 1996).

Following the death of General Gómez (1935), the few buffalo that had entered the country practically disappeared.

From 1960 to 2015, hundreds of water and swamp buffalo were imported from Trinidad and Tobago, Australia, Italy, Bulgaria, and Colombia (Reggeti, 2007).

Buffalo growth has been steady, demonstrating their adaptability and potential in diverse Venezuelan ecosystems. Initially used as a "colonizer" of marginal areas, this concept has changed as improved management conditions led to improvements in productivity.

The 6th World Buffalo Congress was held in Maracaibo in 2001, and the 13th World Buffalo Congress was held in Caracas in 2023.

According to the Buffalo Breeding Association, Venezuela has 3,700,00 buffalo heads, constituting the largest herd of the entire American continent, so it is the country that has imported the largest number of animals of the highest genetic quality (Figure 7).

▼ **Figure 7.** Buffaloes in Venezuela. (Photo: The Venezuelan water buffalo (Venezuelan Annals of Nutrition)).



Conclusions

The total number of buffalo in MERCOSUR currently stands at 3,883,952. This would constitute the largest buffalo population in the Americas. However, if Ven-

ezuola is included, the figure would rise to 7,583,952. The excellent growth of the buffalo population in Mercosur is due to the extraordinary outreach work of buffalo associations and to publications by researchers from American universities that highlight the advantages of buffalo production, including their longevity, adaptability to different types of feed, and the number of offspring they produce during their productive life. This is further underscored by the advantages of their meat, milk, and labor compared to traditional cattle farming in the Americas.

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TECHNICAL NOTE

MILK FLOW PROFILES IN THE MAIN RUMINANT SPECIES

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Milk is a significant source of energy and nutrients in the human diet, owing to its high content of fat, protein, vitamins, and mineral salts. The concentration of major nutrients varies between dairy species, with fat being particularly high in buffalo and sheep (7-8%), and protein being higher in sheep and buffalo (4.5-5.5%). Milk production and milk extraction patterns during mechanical milking also vary between species. Monitoring the milkability traits, which can be seen from

milk flow curves, makes it possible to improve the efficiency of milking procedures and reduce production costs on the farm, as over 50% of the working time on a dairy farm is devoted to milking and therefore has a major impact on the farmer's profit.

Briefly, the milk flow profiles are graphically displayed on the milk meter screen in three different main phases and possibly in a fourth one (blind phase). The first phase

is the “milk release phase” or lag time (LT), represented by the elapsed time between the attachment of the milking clusters and the time until a steady flow of milk occurs. The second is called the “plateau phase” (PPT), when the milk flow is constant. The third phase is the “decreasing phase” (DPT), which represents the time from PPT until the milk flow drops below 0.20 kg/min. A possible fourth phase may sometimes be followed by a “stripping phase” (TMNG) in which a modest amount of residual milk, called “stripping milk” (MNG), is removed.

This study aims to compare the milk emission profiles of the main dairy ruminants reared in Central Italy and to provide information about the species variations.

The trial was effected on **Cattle**: Holstein Friesian (939), Red Pied (137), and Jersey (26), from 59 herds located in central Italy; **Buffaloes**: Mediterranean Italian (2,870) buffaloes of different parities (1–9) and lactation stages (days in milk 12–368) from 89 farms located in Latium (Italy); **Sheep**: Lacaune (232), Assaf (93), Comisana (238), Sopravissana (89), Laticauda (60), and Crossbreds (49) from 18 herds located in Central Italy; **Goats**: Alpine (1,069), Saanen (880), Maltese (332), Murciana (56), Ciociara grey (12), and Crossbreds (50) from 21 herds located in central Italy.

For all species, the milking routine included teat cleaning and manual ejection of the first milk jets from the teats, followed by attachment of the milking unit and manual removal of the milking unit by the milker at the end of milking. Stripping (if present) was performed by manually pulling the milking unit after the milk flow had decreased to less than 0.1 kg/min.

The portable milkmeter Lactocorder® (WMB, Balgach, Switzerland) was used for the collection of the milkability features and was installed in each farm according to Boselli et al. (2020). In all the farms, the manual detachment of the milking cluster was performed. The Lactocorder® started to record and store information as soon as the first teat cup was attached, and identification of milk flow phases was performed by the LactoPro software (WMB, Balgach, Switzerland). The recorded

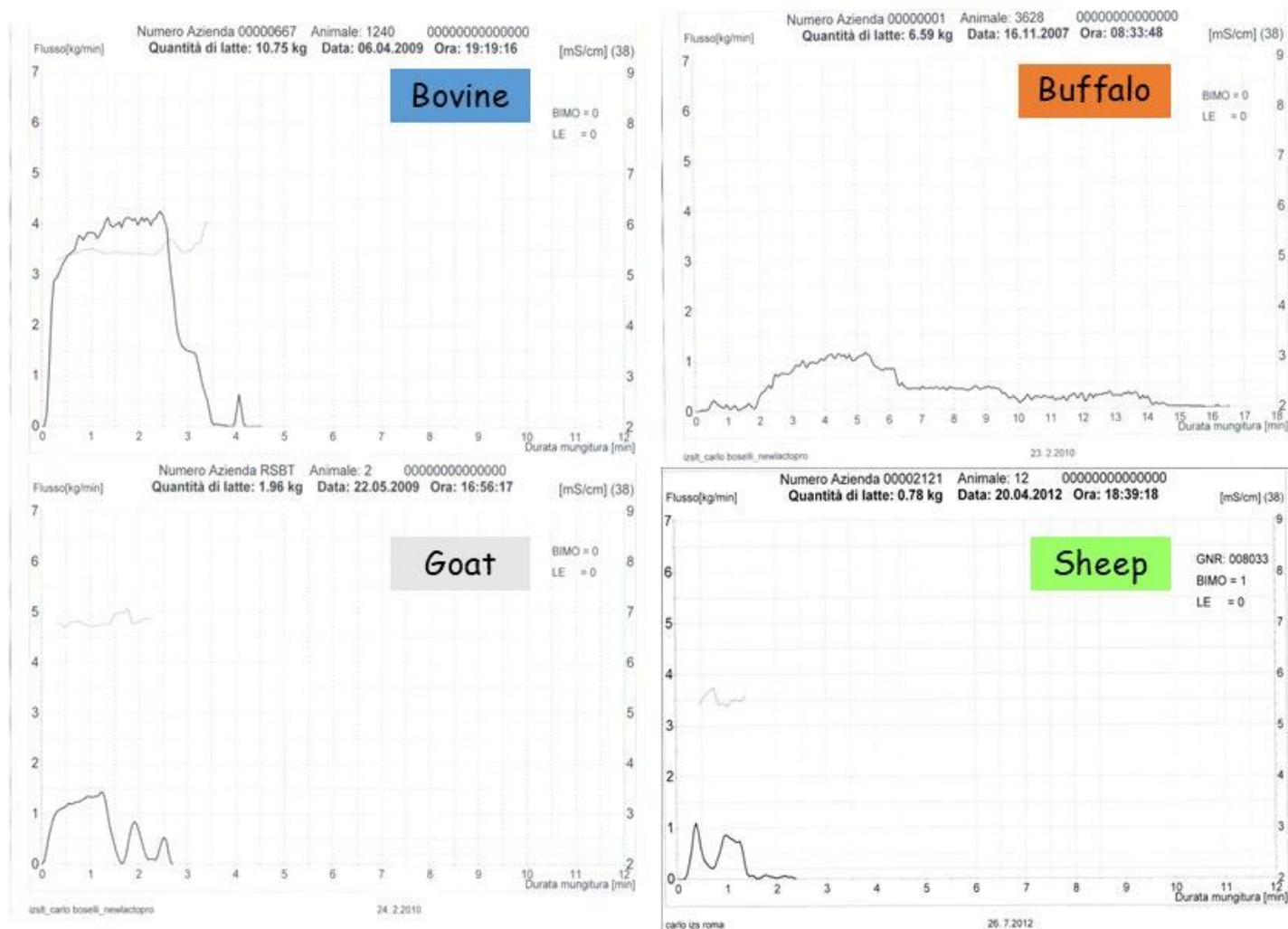
traits comprised: **MY** (kg): total milk yield during the whole mechanical milking; **PFR** (kg/min): peak flow rate in the main milking process (where most of the milk is released) within a time interval of 8 measuring points recorded within a time interval of 22.4 s; **AFR** (kg/min): average milk flow rate during the total milk emission time; **LT** (min): lag (or latency) time from the beginning of measurement until a milk flow of 0.50 kg/min. **MET** (min): milk emission time, calculated as the time between a milk flow rate over 0.50 kg/min and a milk flow rate of 0.20 kg/min; **TMT** (min): total milking time, i.e., the time elapsed beginning the attachment of the milking cluster at the mammary gland and the detachment; **BIMO** (Bimodality, %): bimodality of milk flow, which resulted from the interruption of the flow at the start of milking when cisternal milk was finished and alveolar milk was not yet available;

Typical milk flow curves for the four examined species are reported in the Figure, where milkability traits has been widely demonstrated that the pattern of milk secretion is specific to each dairy species with particularly different MY, PFR, MET and TMT, as in cattle the milk yield and the peak are much greater than in other species, while the buffaloes present a longer milk emission time than other ruminants. Bimodality is more evident in sheep and goats. Milk flow curves are influenced by several factors, in particular teat anatomy; a longer teat canal and greater teat sphincter resistance characterise buffalo compared to cows, requiring a higher level of vacuum to open the teat canal and initiate milk ejection.

The longer lag time found in buffalo than in other studied species may be due to several factors, including the high resistance of the teat sphincters, the small volume of the mammary cisterns (about 8% of the total milk volume), and the lower responsiveness of buffaloes to pre-stimulation.

Regarding the bimodality characteristic, a bimodal milk flow curve may be the result of inadequate or no stimulation prior to cluster attachment or a short time interval between stimulation and cluster attachment. Among the many factors that influence milk ejection

Milk Flow curves in different species



Milk flow curve pictures: bovine, buffalo, goat and sheep (Boselli et al. PC).

kinetics, bimodality is used to assess the quality of the pre-milking routine and to evaluate the pre-milking routine and udder stimulation.

Clear differences among breeds within species were found in milk flow curves, due to the genetic milk capacity of dairy breeds, such as Holstein Friesian for cattle, in Assaf, Sarda, and Lacaune, the specialized dairy breeds for sheep, in Saanen, Camosciata, and Murciana goats, compared with the other examined breeds.

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UPCOMING EVENTS



14TH WORLD BUFFALO CONGRESS ITALY, 2026

Dear IBF members,

receive cordial greetings from Italy on behalf of our community, all gathered around water buffalo constituted by academicians, scientists, the National Association of Buffalo Breeders (ANASB), the RIS Bufala Association and The Consortium of Safeguarding of Mozzarella di Bufala Campana Cheese.

On this occasion, we are pleased to host the 14th World Buffalo Congress in 2026. Italy has many years of experience and tradition in buffalo breeding and will organize a great and prestigious event. Moreover, this event will be within the celebration of the 800 years of our main University, the “Federico II”—eight hundred years of training, tradition, innovation, and counting. Federico II University will begin projects and events that will develop along the entire path that will accompany it to reaching the historic goal. In this context, we are delighted to host the next IBF conference during these celebrations.

Buffalo farming in Italy is still growing, has a thriving market and is one of the most technologically advanced in the world with brand new technologies such as i) automated milking systems to control milk quantity and quality, ii) electric feeders able to give the precise amount of food required, iii) wearable or environmental sensors to monitor animal health and welfare. These systems allow scientists, technicians, and breeders to control all aspects of the herd.

The Department of Veterinary Medicine and Animal Production of Federico II University of Naples is also the place where the first course of precision livestock farming (PLF) in the world was born. The course is held

in English and in a residential form, at the Regional farm “Improsta”.

We are confident that hosting this event will be a great stimulus to keep strengthening and developing buffalo production across the country and spread the Italian Mediterranean Buffalo breed around the world. Our common region is eager to receive, exchange, and promote knowledge, ideas, advances, and new technologies about water buffalo management, development, production, and industry, implying an incredible milestone for the growth, buildup, and water buffalo impact on our society.

We would be delighted to host you to visit our beautiful land, rich in history and tradition, marvellous places and delicious food to meet our people, exchange culture, and simultaneously witness buffalo farming activities in the place where the Italian Mediterranean Buffalo breed is born and raised.

Sincerely yours,

Prof. Giuseppe Campanile
President
of the International Buffalo Federation (IBF)



The 14th World Buffalo Congress will take place from October 28-30, 2026, in Sorrento (Naples). Sorrento was chosen as a representative location of the Neapolitan area, the heart of the buffalo supply chain. Specifically, the Hilton Sorrento Palace will host participants and speakers from around the world.

The congress will feature specialized technical sessions, including Advances in Genetics - Reproduction and reproductive biotechnologies - Nutrition and feeding - Health and welfare - Meat, milk, and dairy products - Precision livestock farming and innovative technologies - Circular economy, marketing, and sustainability - Traceability of productions.

(<https://wbc2026.org/index.php/home/abstract-submission>)

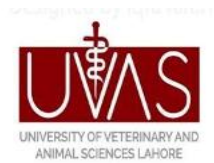
- Abstract deadline 15 April 2026
- Abstract acceptance 15 June 2026
- Early bird fee 30 June 2026

All the information can be found on the Congress website <https://www.wbc2026.org/>



ASIAN BUFFALO ASSOCIATION (ABA)

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Dear Scientists and Friends,

On behalf of the **Asian Buffalo Association (ABA)**, it is my great pleasure to invite you to participate in the **12th Asian Buffalo Congress (ABC-2027)**, tentatively scheduled for **22–25 November 2027** in **Lahore, Pakistan**.

The Asian Buffalo Congress is a premier international forum that brings together scientists, academicians, policymakers, industry professionals, key stakeholders, and livestock farmers to exchange knowledge, present cutting-edge research, and deliberate on emerging challenges and opportunities in buffalo production, health, genetics, nutrition, and sustainable development. Recognized as the “black gold”, the buffalo remains central to food security and rural livelihoods, and this Congress aims to strengthen regional and global collaboration for advancing buffalo science and industry.

The 12th Asian Buffalo Congress is being organized by the Asian Buffalo Association (ABA) in collaboration with the **University of Veterinary and Animal Sciences (UVAS), Lahore**, International Buffalo Federation (IBF), Livestock & Dairy Development Department, Punjab–Pakistan, Buffalo Breeders Association Punjab–Pakistan, and the private sector, reflecting a shared commitment to innovation

and sustainable growth of the buffalo sector.

Pakistan, with its growing contributions to livestock research and dairy development offers a dynamic environment for international scientific engagement. Lahore–Pakistan, the City of Gardens, renowned for its rich cultural and historical heritage, leading academic institutions, and warm hospitality, provides an ideal venue for hosting this prestigious event. The Congress will feature plenary lectures, keynote presentations, scientific sessions, poster presentations, and excellent opportunities for professional networking and cultural exchange.

We look forward to welcoming you to Lahore for the 12th Asian Buffalo Congress, a landmark scientific event that promises to foster meaningful collaboration, advance buffalo science, and leave a lasting impact on the regional and global buffalo community.

Further details regarding scientific themes, abstract submission, registration, and accommodation will be communicated in due course.

With warm regards,

Prof. Dr. Muhammad Ijaz
President,
Asian Buffalo Association (ABA)







INTERNATIONAL BUFFALO FEDERATION

The IBF's complete organisational chart can be viewed at the link below.

<https://internationalbuffalofed.org/about-us/>

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