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## SSafeMILK Pakistan Panel

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OZOLEA, Italian company born as a scientific evolution of the global issue of antibiotic resistance and biosafety of food chains, invited an institutional and commercial high profile delegation from Pakistan for the week of June 17-21 2019.

Invitations were made to the most ancient and reputed Pakistani University of Veterinary (UVAS), as well as the dairy sector players (Engro Foods, second dairy sector player in Pakistan), market operators and forward-looking farmers.

Pakistan is an emerging country, fifth dairy producer worldwide, with a dairy sector constant growth ratio by 20-25% in the past five years, a dairy livestock heritage of 75 millions of animals, an impellent need of food chain control, mostly for quality and biosafety.

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The delegation has been organized by Ozolea in collaboration with UNIDO ITPO Rome, Italian branch of the United Nations for the Industrial Development, which provided resources and skills to best manage the exchange, creating investments opportunities and setting the conditions to establish durable relationships. The works have been managed by Mr. Dino Fortunato, investment and technology innovation manager, and Ms. Ester Temperato, UNIDO expert in international relations and investments, especially in Pakistan.

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Ozolea's purpose was to start a first international partnership to face in a global perspective the problem of antibiotic resistance, as requested by the World Health Organization of the United Nations. In fact Ozolea offers to farmers and dairy industry players products and protocols that are safe, effective and sustainable to reduce the transmission of antibiotic resistance within milk production chains, in compliance with frontier research principles and beyond legal requirements. With SSafeMILK project ([www.ssafemilk.com](http://www.ssafemilk.com)) Ozolea means to transfer safe and sustainable models to dairy chains in developed and emerging countries, as well as less developed countries, to guarantee a better food safety and consumers protection, to achieve a more sustainable model of primary sector, which 1,4 billion people in the world depend on, and where sustainable goals like poverty and hunger eradication, decent work and family living, access to human rights and inclusivity, gender equity and many others are still to attain for a large part. SSafeMILK Worldwide project and the smaller version SSafeMILK Pakistan touch 13 out of 17 Sustainable Development Goals, first of all the health goal as for the control and reduction of spreading of antimicrobial resistance, in accordance with frontier research standards and beyond legal requirements.

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UNIDO ITPO Italy contributes to the industrial development and economic growth of developing countries, facilitates and fosters international partnerships by investment promotion, technology transfer and best practices exchange.

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The importance to create a synergy within the milk chain, in order to target the two goals, biosafety and industrial development, established the starting point for the partnership and for future evolutions: the development of a dairy industry in Pakistan, largely supported by the Pakistani Government, will generate the perfect conditions to spread new standards of control, both for quality and biosafety, especially to the 90% of milk that today is 'loose milk', being it produced and commercialized directly without biosafety screening and without any guarantees on safety or consumers protection.

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Hereafter the list of the activities.

**Monday, June 17<sup>th</sup>, 2019**

**MILANO - LODI**

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Sunday, June 16<sup>th</sup>, 2019 - The delegates from Pakistan land in Milan Malpensa in the afternoon and accomodate in a hotel in the center of Milan.

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Monday, June 17<sup>th</sup>, 2019 - 9.00 a.m. - Kick off meeting in the hotel for presentations and to illustrate the study tour agenda.

Besides institutional meetings at the University and at the Embassy of Pakistan in Rome, the tour is organized with a series of on field visits with the purpose to analyze deeply the two main focuses of the event:

- as for the **dairy industry industrial development** different visits are planned: to Serum Italia SpA, Italian company part of Netherlands Van Drie group, with a Whey Concentration Powder and Liquid plant and halal certification in Cazzago San Martino (BS), in Soresina (CR) headquarters of Latteria Soresina SCARL, dairy industry with Grana Padano and Provolone processing, at Caseificio Santa Vittoria SCARL in Carpaneto Piacentino (PC) with Grana Padano processing.

Considering the specific features of Pakistani dairy farming models, and being Pakistan the 5<sup>th</sup> milk producer in the world, where only 10% of the milk is currently transformed, some specific typical small dairy producers have been chosen for a visit: Agrimor by Morandini and LaGelateria in Berzo Inferiore (BS), Azienda agricola il Camaione di Danesi in Ospitaletto (BS) are going to show the family dairy processing model, enlightening technical and economic aspects.

- as for the zootechnical focus, specific attention has been reserved to dairy management models aimed to the biosafety control both of the herd and of the final product (milk), specifically to spread the awareness about the **responsible use of antibiotics** in livestock: the planned visits are at Sangiacomo e Franchi in Villagana (BS) (adopted Ozolea protocols and Ozolea experimental herd for antibiotic use reduction), Morandini (Berzo Inf., BS, adopted Ozolea protocols and first dairy processing/milk chain within the LatteSicuro-SSafeMILK framework), Danesi (Ospitaletto, BS) and Maccaresse in Fiumicino (RM). In addition experimental livestock within the University of Milan Zootechnical Center in Lodi and the one in CREA Government premises, also in Lodi).

A specific meeting with detailed studies and companies showcases is planned in Cremona at Cremonafiere headquarters: the aim is to set a dialogue about the countries differences and specific topics analysis on zootechnics and dairy players.

During the first meeting guest and organizers introduce themselves. Among the Pakistani delegates we have Prof.Talat Naseer Pasha, Vice Chancellor of University of Veterinary and Animal Science in Lahore, the most ancient and renowned University of Veterinary Medicine in Pakistan; Dr.Humera Iqbal, young female researcher and professor, responsible of many educational and development projects within the University, among which the Dairy-Beef project in partnership with the University of Melbourne, and Pakistan ambassador for the program SheLeadsVet; Dr.Nuzhat Qasier, brilliant veterinarian and progressive farmer, with a female training professional and workers program; Dr.Saud Pasha, Director Agribusiness and Corporate Affairs at Egro Foods Ltd, second dairy company in Pakistan; Dr.Ammar Malik, manager and owner at UM Enterprises, family business dealing with pharmaceutical products distribution both in human and veterinary sectors, with branches as feed suppliers and agricultural products; finally Dr.Umair Iqbal, Doctor and M.Philosophy in Veterinary Medicine, Country Executive for Ozolea in Pakistan and team builder of the Pakistani delegation.

Italy is represented by Ms.Ester Temperato, from United Nations Industrial Development Organization ITPO - Office in Roma, expert in international affairs and promoter of the event; Ms.Chiera Turelli, engineer and president at OZOLEA, promoter of the event with UNIDO and designer of the tour SSafeMILK Pakistan Panel; Dr.Andrea Bignotti, Doctor in Veterinary Medicine PhD and vice president at Ozolea, and Ms.Veronica Consolati, part of the Ozolea team. Lorenzo Visioli from Ozolea team goes with the delegation to take pictures and documental videos.

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**Monday, June 17<sup>th</sup>, 2019**

**MILANO - LODI**

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University of Milan Headquarters, via Festa del Perdono, 7 Milano - 11.00 a.m.

The OZOLEA-UNIDO delegation from Pakistan is welcomed by Prof. Antonella Baldi, Prorettore for internationalization of the University of Milan. A brief presentation from all the participants is enough to confirm that the gathering is rounding up historical renowned institutions from both countries. Then Prof. Baldi illustrates the structure of the University of Milan, its offer and facts, both for educational programs and post doc, international internships and lifelong learning ([www.unimi.it](http://www.unimi.it)).

Then Ms. Grazia Belfiume, head of international agreements and relationships UniMI office, investigates the opportunity to start a capacity building activity in order to bond the two universities, extend the UniMI offer and specifically build a master or specific educational program dedicated to the reduction of antimicrobial resistance in partnership with UVAS, particularly for best practices exchange but also for research and data sharing.

Afterwards a tour around the historical building, formerly Ca' Granda hospital, led by Ms. Belfiume attracts the delegates.

Then the delegates leave Milan to reach the Zootechnical Center of the University of Milan in Lodi.

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**Monday, June 17<sup>th</sup>, 2019**

**MILANO - LODI**

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University of Milan, Zootechnical Center, via dell'Università, Lodi - 02.30 p.m.

The delegation OZOLEA-UNIDO from Pakistan reaches the newest building of the University of Milan dedicated to veterinary education and here is welcomed by the director Prof.Valentino Bontempo. Guests are amazed in a highly technological and innovative building, able to give the idea of the frontier position of University of Milan in the international research and educational framework. In room 111 Prof.Bontempo presents the facility and invites the delegates to introduce themselves; then the discussion involve the specific veterinary educational programs offered by University of Milan, besides the Hospital for Big Animals, the Hospital for Small Animals, the zootechnical center and the poultry center.

Then Dr.Humera Iqbal presents the Dairy Beef project realized in partnership between UVAS and University of Melbourne since 2005, and aimed to facilitate decent work conditions among farmers, both dairy and meat producers, in order to enhance productivity and value proposition of the food chains. Livestock sector in Pakistan contributes to the 11,4% of the global GDP and to the 53,2% of the GDP related to the primary sector: family business are more than 8,5 million. Then an experimental biogas plant is presented and the focus on the great challenges of the sector, like communication gap among researchers, consultants and farmers. One of the key point of the project is aimed to create a direct link between the producers and the market, on a cooperative scheme. Also public-private partnerships play a role in the project, along with the role of women that are about 80% of Pakistani workers in livestock and agriculture: projects involving directly women have demonstrated to provide more interesting and durable results, above all prizing rural family conditions, than projects where the gender condition is not considered. Dr.Humera Iqbal exposes then her affiliation to the Australian movement Homeward Bound ([www.homewardboundprojects.com.au](http://www.homewardboundprojects.com.au)) with the project Mother Nature Needs Her Daughters, where her veterinary skills serve also a sustainability and environmental cause.

Afterwards a sustainable Italian company presents its offer to the delegation: New Wave Srl from Montagnana (PD) deals with feed supplements based on active natural ingredients able to enhance animal productivity and reduce the use of veterinary medicines. Experimental trials have been performed for New Wave by Prof.Sgoifo Rossi of University of Milan in Lodi. The speaker Dr.Riccardo Compiani, DVM PhD, underlines how plant based extracts are from plants largely cultivated in Asia, like garlic, oregano, pepper, but also how the extraction technology is highly relevant to obtain the desired effect and a better performance for the product: lever up milk production or ingestion, reduce urea parameters in the milk, optimize the acidic profile of the milk, reduce pathologies occurrence are the New Wave protocols and goals that capture the attention of the audience. An interesting debate between professionals of both countries takes place.

Then the delegates follow Prof.Bontempo for the visit to the Zootechnical Center: in the dairy farms the delegates can visit specific areas with computerized feeding systems for cows for proper nutrition control on each animal throughout a single electronic identifier. Questions from Pakistani delegates to the professor are mostly about average production in Po Valley, the most productive milk area in Italy, and about dairy cows lifespan: 2,5 lactations is the average, with about 30 liters of milk per cow per day produced; on the other side in Pakistan 10-12 lactations per 3-12 average liters of milk per cow per day produced. A different organization of the meat industry is also a key point in understanding the two different models.

Then a short visit to sheep barns and to poultry hangar, with severe safety protocols and decontamination to access.

The delegation leaves by 16.40 to reach the Government CREA Zootechnical Center at Cascina Baroncina in Lodi.

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**Monday, June 17<sup>th</sup>, 2019**

**MILANO - LODI**

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CREA Centro per la Zootecnica e l'Acquacoltura, Cascina Baroncina, Lodi - 04.45 p.m.

At the CREA Zootechnical Center in Lodi, Dr.Fabio Abeni waits for the OZOLEA-UNIDO delegation from Pakistan and introduces the structure: a national research center, under the direction of the Italian Ministry of Agriculture, with many premises dislocated all over the nation, each one of them specialized for specific studies. At the Baroncina facility we visit the experimental dairy lab, a unique plant with real scale technology able to process the milk produced in the adjacent experimental farm: researchers are commissioned to analyze specific procedure to guarantee product safety, properness, and the fulfillment of biosafety requirements. Mr.Flavio Tidona illustrates the different typology of cheese making processes with the respective resulting cheeses, from mozzarella to Grana Padano, as well as seasoning rooms when needed. Rigorous biosafety requirements at the entrance: some rooms are completely microbiologically isolated to ensure a complete autonomy to experimental trials.

Afterwards the delegates move from the dairy plant to the nearby farm: Dr.Fabio Abeni shows the unit, with a specific focus on high precision technology adopted on the herd.

The delegation leaves at 18.30 to reach the hotel in Milan.

**Tuesday, June 18<sup>th</sup>, 2019**

**BRESCIA**

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Serum Italia SpA Cazzago San Martino BS - 9.15 a.m.

The day starts with the visit to Serum Italia SpA in Cazzago San Martino (BS). The CEO Mr. Marco Piovanelli welcomes the delegates in the brand new headquarters of Cazzago San Martino and presents the company structure. The company belongs to the Dutch holding Van Drie Group, and the presentation reserves a particular attention on the Italian companies network in the group.

The delegates are fascinated both by the welcoming and by the videos of Van Drie group projected in one of the meeting rooms: the closed circle of the company known across the world for the production of veal meat, the important value chain made by milk serum, collected as waste product of cheesemaking and concentrated for the production of milk serum proteins or for animal feeding, as well as for the strict quality control and biosecurity systems are the main topic in this meeting.

After videos projections, questions and answers are about the method for pricing the purchased whey, based on % content of solid proteins: accurate lab standards and analysis are coordinated. Later the delegates move to visit the processing plant, with the plant supervisor immigrated in Italy from India: the presentation continues in Punjabi language, a courtesy appreciated by delegates. Throughout a hallway completely glazed, a fully monitored area is managed by workers that analyze and report each bulk. Each parameter of the working atmosphere is perfectly managed and controlled, to ensure biosafety and humidity supervision.

From the lab, with rigorously separated one-way access and exit, delegates reach the main entrance hall, where a courtesy pack of company gadgets and presentation material of the company and of the group is offered to the guests.

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**Tuesday, June 18<sup>th</sup>, 2019**

**BRESCIA**

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Danesi Farm and dairy plant, Ospitaletto (BS) 11.30 a.m.

The delegation leaves and reaches in a few minutes Danesi Farm and dairy plant in Ospitaletto: welcomed in the small shop by Pierangelo and Enrico Danesi, the delegates go with a brief visit of the farm and then enter the cheese plants.

In the cheesemaking facility Pierangelo and Enrico expose the milk chain and the cheesemaking process, throughout different typology of cheese produced, along with the helping support of Mr. Gianmarco Gariglio, CEO at Giada Sas di Villafranca piemontese (TO), the plant manufacturer. From HTST pasteurizing (high temperature short time), with a wide range of personalized solutions for steam heat-treatment and cycles programming, to the multi-purpose orbital cutting vat, suitable to guarantee the homogeneity of the curd and the practicality of the direct discharge of the curd into the mold-holder tables, with immediate on site demonstration. Many questions and answers, starting from the farm decision since 1980s to deal directly with the market and the consumers to obtain a better value for the product, thus a more economically sustainable settlement for the company: the story meets the delegates interest for the Pakistani sector. The delegates ask about the employment of whey, bypass product at the end of the cheesemaking process: a resource that Danesi farm uses directly to feed young animals. Mr. Gariglio answers to many questions about supply and installation of small cheese processing units to transform the milk, like micro cheesemaking plants Polimoka, patented by Giada and suitable to transform 200-500 liters per cycle.

After a visit to the many seasoning rooms, a generous tasting of Danesi products delight the guests that demonstrate appreciation particularly to fresh cheese, common in Pakistan also. They are quite hesitant with aged cheeses while they are very curious and amazed by medium aged cheese caciottella enriched with red pepper, black pepper or chives.

The delegation leaves to reach and visit the Ozolea packaging site.

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Ozolea Packaging Site, 3.00 p.m. – The meeting in a rigorous environment fully aligned with international standards on human medical device results in a vibrant and deep debate about the product Ozolea-Mast: questions are similar to the ones from Italian colleagues and are mainly focused on product effectiveness and the real possibility to reduce by 60% the use of antibiotic treatments, largely confirmed by Italian market. The innovative Ozolea-Mast concept is based on the inhibition of bacterial proliferation and on the physical filming effect without generating any further ecological pressure on bacteria, that consequently are not asked to activate that alarming surviving mechanisms that make them resistant to antiseptics and antibiotics. The reduced or null presence of proteins generated by resistant bacteria in the milk has been detected and measured by Prof. Bonizzi studies in University of Milan, available on Ozolea website. The use of Ozolea-Mast where the antibiotics are not strictly essential allows the antibiotic molecules to keep their efficacy for real-emergency situations and allows the farmer to manage freely a product that is safe and innocuous, lacking any undesired side effects.

The packaging realized in completely controlled atmosphere and a try of Ozolea Bioengineered Oil on skin complete the frame of Ozolea presentation.

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**Tuesday, June 18<sup>th</sup>, 2019**

## **BRESCIA**

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Agrimor and Morandini Farm, Berzo Inferiore (BS) 04.30 p.m.

LaGelateria, Berzo Inferiore (BS) 05.30 p.m.

Again on the van to reach Agrimor, a family dairy plant in Berzo Inferiore (BS), on Italian Alps. Agrimor is the first dairy farm/micro milk chain that complied with the standards of the project LatteSicuro-SSafeMILK ([www.lattesicuro.it](http://www.lattesicuro.it)): Agrimor team produces and transform milk from animals managed with responsible and reduced use of antibiotics, as a result of the application of Ozolea-Mast protocols. The cheesemaker Mr.Giovanni Morandini tells the different steps of the processing, the necessary tools, the economic benefits of selling a transformed and added-value product and the importance to deal successfully with the market, the importance of the milk quality to ensure both yield and biosafety of the cheese. Then a deep economical analysis, with detailed telling of the opportunity micro farming enterprises have to take on an investment that ensures decent profit for the farmer, provided that both the farmer and the cheese maker and the selling person are ready to learn to work properly. In the small dairy plant Agrimor the entire Morandini family is ready to answer to the delegates questions: the father Mr.Giovanni with his un-doubtable competence as cheesemaker, Ms.Delia, his daughter, marketing and promotion heart of the business, Mr.Manuele owner and businessman, the mother Ms.Lina which kindness reaches the customers in the shop, and their friend Ms.Cora who patiently translates into english each detailed explanation; Mr.Michele, the third son, and Delia's three sons go with the delegation to the mountain barns, where tradition and innovation melt: the feed management for the 80 Brown Alps cows is based on the presence of two computerized feeding systems in order to control accurately the ingestion; feed ratio without silages has been chosen to attain a better quality yield in the milk to be transformed; cows lifespan and productivity (9-10 lactations) is considered a good balance by delegates also considering the average production of about 23 liters of milk per cow per day. Many questions about Ozolea-Mast protocols and answers that demonstrate how the reduction of the use of un-necessary antibiotic treatments is possible and viable during lactation, also to preserve antibiotic effectiveness for real emergency situations.

In the main square of the small mountain village of Berzo Inferiore, the delegates are welcomed by Ms.Federica Cere e Mr.Nicola Londero owners at LaGelateria: they illustrate that the milk coming from Agrimor farm is suddenly pasteurized in a large machine and then it is ready to become ice-cream, adding only natural and severely controlled ingredients of high quality standards. In a few minutes Mr.Nicola prepares a special gourmet ice cream, at the flavour of raspberry and Cremoso ValliGiano Agrimor cheese, a fresh yet tasty production from Agrimor family dairy plant.

Later the City Mayor of Berzo Inferiore Mr.Ruggero Bontempi receive the delegation in the newly build City Hall: honored by the visit of the Pakistani delegation, he gives a symbol of gratitude to Vice Chancellor at University of Veterinary and Animal Sciences Prof.Talat N.Pasha a memorial and thanking plaque for visiting two small enterprises of the city as example of sustainable production chain. A touching moment of appreciation exchange, along with a tasting of Agrimor LatteSicuro-SSafeMILK cheeses and LatteSicuro-SSafeMILK raspberry and Cremoso ValliGiano Agrimor cheese flavoured ice-cream from LaGelateria.

The delegation leaves Berzo Inferiore to reach Cremona.

**Wednesday, June 19<sup>th</sup>, 2019**

**CREMONA - BRESCIA**

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Cremonafiere - 9.00 Hrs

Cremonafiere staff welcomes the delegations and presents the activities to boost business opportunities in the zootechnical sector. Brief presentation of each delegate.

Mr. Ildebarado Bonacini, director at Libera farmers association in Cremona, exposes activities, facts and challenges about the association. Then Mr. Sebastiano Porretta president at AITA Italian Association of Food Technologists underlines the key role of food technologists when managing the biosafety of milk and dairy chains: many partnerships with international institutions and a special attention to the Qualityfood project, where Cremonafiere is a partner. A vibrant debate with the audience enlightens the role of a private-no profit- technical body like AITA exerts in a delicate production chain like the dairy one. Possible future partnerships in international cooperation projects are discussed.

Afterwards Dr. Saud Pasha, manager at Engro Foods Ltd, second dairy industry player in Pakistan after Nestlé, shows the different farming models and dairy chains in Pakistan: 75 million of animals, dairies and buffalos, 48 million of people employed in the sector, 58 billion liters of milk produced annually, of which 98% is loose milk, not controlled and not pasteurized, a scarce production (3-4 liters of milk per cow per day), depending largely on management choices and fluctuant feed supply, but a pro-capite consume of milk very high, being 220 ml of milk and dairy products per day (national population of 220 million people), of which 22,5 billion liters are consumed as pure milk. As for the zootechnical side, 97% of farms is traditional: tiny herds (1-10 cows) produce about the 80% of Pakistani milk, they represent the 89% of the national herd and are characterized by low yield, low quality and huge inefficiencies. Other farms are the 3% of the national herd (farms of 11-6000 cows, among which the ones with more than 100 cows are the ones with some technology available): they represent the 11% of total national herd and contribute to 20% of total production. Many challenges for the sector: from the farmer mindset, to management, feed management, genetic improvement, health and access to financial instruments. Engro Foods history, born in 2005 and acquired by Friesland Campina (51%) in 2016, demonstrates the vibrant environment of the Pakistani dairy sector and investment attractiveness for a sector that already declared its willing to change: within next 5 years the Pakistani Government envisages to create the conditions to process/pasteurize/control microbiologically all the milk that today is loose milk and is not controlled. Significant investments in technology and capacity building are envisaged, in particular to create a cool milk collection chain.

Prof. Talat Naseer Pasha presents a video of University UVAS of Lahore, scientific avantgarde, historical institution and partner of top international scientific research centers.

After a networking coffee break, the Italian company Zoo Assets presents its offer: a consulting company with a commercial variety of products from feed to agricultural supplies. Mr. Francesco Formigoni, head at dairycows and beef cattle technical team at Zoo Assets presents the company commitment to farmers results.

Session closed by 12.30.

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Latteria Soresina Dairy Industry, via dei Mille, Soresina (CR)

Mr. Paolo Zucchelli, director at Latteria Soresina historical facility, introduces the delegates in the dairy process from the big tanks throughout the pasteurization plant, to the copper cooking, then the shaping, salt water and seasoning. In the huge ageing room there are also some provolone cheese pieces with very different weights. The seasoning room amazes the guests for the uncountable quantity of Grana Padano cheeses that are waiting for the final control and branded Grana Padano DOP. Delegates find curious the automatic system to clean and turn each cheese one by one.

Finally, from the upstairs fully windowed passage, the entire process to prepare the product for the distribution is shown: cheeses are cleaned, cut in very specific portions by automatic technology implants, some of them grated, all packed for selling.

Questions from delegates are mainly about the importance of ageing, a not usual process in Pakistan.

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**Wednesday, June 19<sup>th</sup>, 2019**

**CREMONA - BRESCIA**

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Sangiaco e Franchi Farm, Villagana di Villafranca (BS)

Ms.Laura Franchi, owner, and Mr.Florin Pantea, zootechnical executive with veterinary nurse background, welcome the delegates and start telling the story of one of the bigger farm in northern Italy: 900 lactating cows and a total herd of 1800 animals.

In the 40 cows carousel dairy parlor the Pulisistem team presents the automatic utter cleaning device used on farm: Dr.Giacomo Castellani, veterinary doctor from Cav.Giuliano Vecchia's team, illustrates the mechanism, allows the delegated to try it and answers their questions.

Subsequently Mr.Florin detects a cow with some signals of udder tissue unbalance and presence of clots in the milk. Mr.Florin immediately after the milking applies Ozolea-Mast, following the protocol: he cleans accurately the teat area and introduces the single use applicator in the teat canal, first of 8 applications, after each milking for 4 days. The cow stays in the main lactating group with no need to separate the milk because Ozolea-Mast doesn't leave any traces of chemicals in the milk. The delegates ask questions about Ozolea-Mast and Ozolea protocols, asking also for satisfaction of use: Mr.Florin explains that the farm has been a testing site for the Ozolea-Mast product and protocols since the beginning and then became a customer, because of the economic advantage to avoid milk withdrawal in a safe way and also for management benefit to avoid to separate the animal due to antibiotic procedures, that are both a cost and a risk, of course only in those cases when antibiotics are not essential.

Later the delegation visits the different dairy groups, where the speakers present the productive facts of the farm, the syncro management of the reproductive choices and the feed management during lactation. Delegates investigate the popular topic: average of 2,5 lactations per cow, average milk production of 36 liters of milk per cow per day. Moving on to the delivery room, they underline the company choice to have two separate delivery groups one for primiparous cows and one for pluriparous cows, thus to avoid animal competitiveness especially between young and old cows.

Finally Ms.Laura Franchi and Mr.Florin Pantea explain the calves management, very important to ensure future fitting dairy cows: we can see new born calves to 45/50 days calves in single boxes mostly fed with liquid feeding, then moved to bigger boxes with 5/6 animals.

The delegation leaves at 04.30 p.m. to reach Cremona city center.

**Thursday, June 20<sup>th</sup>, 2019**

**PIACENZA**

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Gandolfi Farm, Carpaneto Piacentino, (PC), Northern Italy

9.30 a.m. - Ms.Elena Gandolfi, agronomist and owner of the farm, and Dr.Paola Gandolfi, DVM and owner, conduct the visit to the barns. An Indian farm worker starts explaining the milking robot management: also in this occasion the language is Punjabi, creating immediately a nice atmosphere. Then the delegation moves to analyze the management of the different moments of breeding: the delegates can see animals in top welfare conditions, cool and ventilated rooms, extreme attention to the management.

Afterwards Mr.Luigi Monfardini, CEO at Bst Srl in Montirone (BS) shows the functioning of the Bst technology biogas plant. The digester of the Gandolfi boigas is one of the biggest in Italy: the choice of stainless steel instead of concrete is accurately investigated and supported by facts related to durability, less mechanical corrosion, strength and better seismic behavior, material versatility, that is considered a resource also after plant dismissing. After a deep visit to the idraulic part of the plant and to the main engine, questions focus on Italian legal framework and on incentives that play a role to balance the economical feasibility of agro-energy production. The use of zootechnical waste leaves delegates impressed.

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Santa Vittoria Dairy Industry, Carpaneto Piacentino, (PC)

Mr.Giuseppe Rizzi, dairy plant director, welcomes the delegation and guides the visit with Ms.Alessandra Macorig, food technician: they explains in details the different phases of the cheese making process, with a cooking showcase by the young cheese maker, third generation of professionals cheese makers. Then shaping, salt water passage and aging: many questions mostly focused on biosafety and hygienic protocols and economic facts.

In the final part of the tour a cheese tasting is offered to delegates in order to investigate the differences between a Grana Padano aged for 24 months and a cheese suitable in a few months to become Grana Padano but now with only 6 months of seasoning.

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The delegates leave to reach Milan and catch a high speed train to Rome.

**Friday, June 21<sup>st</sup>, 2019**

**ROMA - FIUMICINO**

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Embassy of Pakistan, via della Camilluccia 682, Roma - 9.45 a.m.

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First Secretary Ms. Alaa Mazher Bokhari welcomes the delegation and invite delegates to have a seat, along with many guests and attendants: among these the companies that contributed to the study tour presenting their works and facilities. Ambassador Mr. Nadeem Riyaz reaches the hall and the event begins with greetings from First Secretary and a speech by Prof. Talat Naseer Pasha about Pakistani dairy sector. A short video about University of Veterinary and Animal Sciences of Lahore shows the scientific avant-garde and top-notch international relations. Then a presentation by Dr. Nuzhat Qasier, veterinarian and entrepreneur, tells the story of her farm in Lahore, beginning from having one cow to an innovative structure of 100 dairies, along with the collaboration with Australian university and the focus on innovation technology to achieve production optimization: a special project based on the passion to become an educational center for female veterinarians, entrepreneurs, farmers and workers in the dairy field receives particular attention from the audience.

Eng. Chiara Turelli, president at Ozolea focuses on sustainability as an essential instrument to evaluate the health of an economic environment: from the responsible use of antibiotics aimed to preserve the efficacy of life-saving drugs, to the SSafeMILK project convergence with 13 out of 17 Sustainable Development Goals defined by the United Nations, where this SSafeMILK Pakistan Panel is a first expression. Specific attention to key challenges that are typical of the dairy sector: decent work, eradication of poverty and hunger, as well as good health main pillar, for which the control on antibiotic resistance spreading is fundamental and achievable only throughout a global partnership. The huge livestock Pakistani heritage makes Pakistan suitable to become soon a great dairy exporter and nourish a great part of the world: Ozolea and SSafeMILK want to provide Pakistani farmers with the cutting edge solutions to be able to put on the market dairy products that are able to comply with frontier international standards, thus reaching in a sustainable way inclusivity and balance within and among countries.

For UNIDO - United Nations Industrial Development Organization ITPO Office in Rome, Mr. Dino Fortunato in place of director Ms. Diana Battaglia thanks each company that made possible this study tour and in particular Ms. Ester Temperato project assistant at UNIDO as promoter along with Ozolea of all the activities. UNIDO ITPO Italy contributes to the industrial development and economic growth of developing countries, facilitates and fosters international partnerships by investment promotion, technology transfer and best practices exchange.

Mr. Antonio Rota, technical project head at IFAD, International Fund for Agricultural Development of the United Nations, FAO-Food and Agricultural Organization sister agency with WFP World Food Program, in Rome headquarters. The speech brings attention to the projects realized in Pakistan and focuses on the importance of the partnership with profit sector to enhance results durability after the project deadline: IFAD attention seems to be now on SSafeMILK Pakistan project, as expression of a convergence between social needs and dynamic commercial environment.

Finally the Ambassador's intervention focuses on the positive results of a healthy exchange between the two nations, within a logic of both tackle together social challenges in an international cooperation approach and create a vibrant commercial framework, along with durable and stable alliances are the desired outputs.

Network lunch with delightful Pakistani cuisine.

Among the audience a delegate at FAO, besides investors and international consultants.

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**Friday, June 21<sup>st</sup>, 2019**

**ROMA - FIUMICINO**

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Maccarese Farm SpA - Fiumicino - 02.00 p.m.

Ms.Hillary Lanzi, agronomist and head of calves section at the biggest Italian farm, and Dr.Daniele Lulla, Ozolea technician explain the setting of the large barns, with attention to light and ventilation: the specific ventilation system guarantees more wet air in the feed areas while in the rest areas air is moved slowly to achieve more comfort and avoid pulmonary problems. The separated solid waste from the anaerobic digester is employed to create a barn floor. The biogas reactor is able to generate 1,6Mw electricity power, connected to public grid according to agroenergy government Italian framework: about 10.000 euro per day is the income from biogas activity.

Questions and answers are related to the dairy lifespan and the average 2,5 lactations for each productive cow: average actual milk production in Maccarese farm is 37 liters of milk per cow per day.

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The SSafeMILK Pakistan Study Tour is completed: the Pakistani delegates enjoy monuments and life in Rome, where 30 degrees are considered pleasant in comparison to the 47 degrees in Lahore.

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Saturday in the morning the delegation leaves Italy to bring back to Pakistan the new experiences, and some new friends.