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EDITORIAL DIRECTOR

Diogo Ciasulli
diogo@ciasullieditores.com.br

EDITOR

João Paulo Monteiro (MTb 72.147)
joao@ciasullieditores.com.br

SUB EDITOR

Valeria Campos (MTb 81.105)
valeria@ciasullieditores.com.br

REPORTER

Natália Ponse (MTb 78.982)
natalia@ciasullieditores.com.br

WEB REPORTER

Wellington Torres
wellington@ciasullieditores.com.br

ART EDITOR

Daniel Guedes (MTb 33.657)
daniel@ciasullieditores.com.br

GRAPHIC PRODUCER

Rafael Leite
rafael@ciasullieditores.com.br

BUSINESS EXECUTIVE

Luiz Carlos - luiz@ciasullieditores.com.br

ADMINISTRATION

Diego Turri - diego@ciasullieditores.com.br

OPERATIONS MANAGER

Tatiane Amor - tatiane@ciasullieditores.com.br

MARKETING

Monique Leite - monique@ciasullieditores.com.br

THIS ISSUE'S CONTRIBUTORS

Ariovaldo Zani, Cepea, Fabio Pereira,
Itamar Rocha, José Luiz Tejon, Mauricio Moraes

TRANSLATION AND REVISION

Amy Herszenhorn, Gabriela Rangel, Michael Penfield,
Martha Schlemm and Tone Sguizzardi

ADMINISTRATION, NEWSROOM, AND ADVERTISING

Street: Paulo Antônio do Nascimento, 145, 13th floor
Building Planeta Master Office, Sorocaba (State of São Paulo)
CEP 18047-400 - Phone / Fax: 55 15 3500 7913
e-mail: ciasulli@ciasullieditores.com.br
news website: www.feedfood.com.br
on-line free magazine: www.revistafeedfood.com.br

feed&food is a Brazilian magazine, published regularly in Portuguese. As well as the regular issues, the magazine prints special issues in English. feed&food focuses on the entire animal protein production chain, and it includes articles provided by private and government associations, universities, and syndicates. These articles promote the production of meat, milk, and eggs in a safe and sustainable manner. The magazine is edited, produced, and commercialized by Ciasulli Editores. Signed articles and advertising materials do not necessarily express the opinion of the Editorial Board. News reporting, published interviews and articles may not be reproduced without previous written authorization by the editors.

ISSN1809-3027 Periodicity: Monthly



COMMITTED TO GLOBAL FOOD SECURITY

World leader in grain harvesting and responsible for feeding one in every five meals served to the world's population, Brazil is one of a few countries in the world able to increase capacity and produce even more food to meet the global demand in the next few decades.

The Food and Agriculture Organization (FAO) recognizes that and notes that Brazil is a food supplier, estimating that by 2050 Brazil will likely be responsible for 40% of the increased productivity around the world.

Increased productivity is not optional, and the Brazilian agriculture and livestock industry is well aware of that.

In Brazil the adoption of new technologies, processes, and management keeps increasing to enhance productivity without compromising quality, animal welfare, and sustainability. All of this increases profitability of the sector.

2022 is a good example. Although engulfed in challenges, internal and foreign, the Brazilian agribusiness performed very well.

According to data from the Confederation of Agriculture and Livestock of Brazil (CNA), the year closed with a 2.2% gross increase in production, compared to 2021, reaching R\$ 1,3 trillion.

In 2023 the figures are expected to grow even further. CNA's projections estimate that the sector will grow up to 2.5%, compared to 2022.

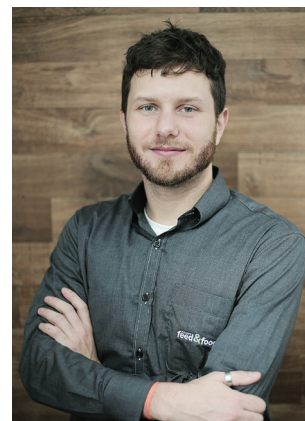
Aware of the facts and using scientific evidence, Brazilian producers understand that productivity and preservation go hand-in-hand. This is a requirement for sustainability.

The election of a new president, Luiz Inácio Lula da Silva, re-positions Brazil as leader also in the environmental agenda. During the COP27, Lula reinforced his support for a regenerative and sustainable agricultural portfolio, through investments in science, technology, and in-the-field training.

"We are going to convert the 30 million hectares of degraded land into agricultural land, so we won't have to log a single additional meter to continue to be one of the world's largest food producers," he stated.

To that end, the present government promises to strengthen the sustainability of livestock production through more affordable agricultural credit lines for rural producers who adopt green technologies. In addition, the new government is expected to invest in the recovery of degraded pastures to convert them into productive areas for either livestock or grain production.

Aware of the possibilities and responsibility entrusted, to it Brazilian agribusiness marches toward feeding the world. Check out in the following pages the stories and data that support and motivate this optimism for the future.



João Paulo Monteiro
Editor

SUMMARY

BUSINESS & OPPORTUNITIES

6 CEVA AND ITS ROLE AS A GLOBAL LEADER IN LOCALLY-SOURCED POULTRY HEALTH

8 INDUKERN DO BRASIL: FROM DISTRIBUTION TO SPECIALIZATION

10 PHIBRO PRESENTS THE BENEFITS OF MAGNI-PHI FOR A MORE SUSTAINABLE AND SAFER PRODUCTION

12 SAN VET DIAGNOSTIC SERVICES NOW IN LATIN AMERICA

14 BRAZIL WILL HOST FIRST EDITION OF VICTAM LATAM

SPECIAL

16 GROUPS BRING TOGETHER FEMALE LEADERS TO SUM UP EXPERIENCES AND MULTIPLY RESULTS

PWC SOLUTIONS

26 PERSPECTIVES FOR AGRIBUSINESS

ANALYSIS

28 RABOBANK OPTIMISTIC ABOUT BRAZILIAN PROTEIN

COMMODITIES ASSESSMENT

30 A REVIEW BY CEPEA CENTER FOR APPLIED ECONOMIC FROM ESALQ/USP

REVIEW

32 RECOVERY THROUGH 2022 OF THE FEED PRODUCTION

36 ANIMAL HEALTH: A R\$ 10 BILLION SECTOR

POULTRY & SWINE

38 BRAZIL'S HEALTH STATUS AND IMPACT ON CONSUMPTION AND EXPORTS

40 LUCIANA DALMAGRO TELLS HOW SHE APPLIES SUSTAINABILITY IN HER DAY-TO-DAY WORK AT ALTA CONQUISTA FARM

44 RESPECT FOR THE ENVIRONMENT AND ANIMALS IS WHAT GUIDES J.A. AGROPECUÁRIA

20 COVER STORY

BRAZILIAN AGRIBUSINESS ALLIES CONSERVATION WITH PRODUCTION



CATTLE

48 A GOOD YEAR FOR INVESTMENTS

50 CAMPANELLI HAS CIRCULAR ECONOMY IN ITS BUSINESS DNA

GTPS NEWS

54 BRAZILIAN ROUNDTABLE ON SUSTAINABLE LIVESTOCK

DAIRY

56 UNCERTAINTIES PERMEATE EXPECTATIONS FOR 2023

58 NOCARBON MILK AND ITS HIGH-QUALITY AND SUSTAINABLE PRODUCTION

FISH

62 BRAZILIAN EXPORTS DOUBLE IN THE FIRST HALF OF 2022

64 FROM FARM TO TABLE: MEET BRAZILIAN FISH

SHRIMP

68 BRAZILIAN MARINE SHRIMP FARMING: GROWING WITH TECHNOLOGY AND SUSTAINABILITY

70 THE POSITIVE IMPACTS OF DENDÊ SHRIMP ON COMMUNITIES AND THE ENVIRONMENT

MKT IN AGRIBUSINESS

74 SUSTAINABILITY IS "POINT OF NO RETURN"



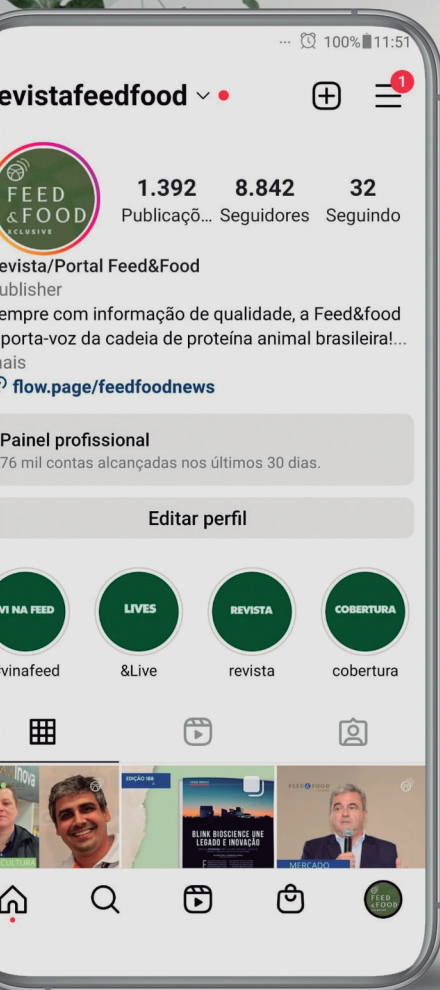
AT THE RIGHT TIME AND PLACE

AFTER a long period away from events, symposia and face-to-face meetings, Feed&Food gained new contours in 2022 and thus redefined its work lines.

Focusing on on-site actions, the team has embraced the coverage of events and trade fairs. With this initiative, different states and even other countries have been the stage of this endeavor.

From São Paulo to Germany, going through Paraguay, texts, stories and videos have marked Feed&Food's new way of positioning itself in the market, establishing an increasingly robust bond between entrepreneurs, rural producers and the digital universe. All of this was made possible thanks to the continued use of tools as Instagram and LinkedIn.

For 2023, the task remains the same: connect. Now, with a commitment to go far beyond what has already been achieved. And you, what are you waiting for to join us? ■



CEVA ANIMAL HEALTH AND ITS ROLE AS A GLOBAL LEADER IN LOCALLY-SOURCED POULTRY HEALTH

AS SEEN AROUND THE WORLD, THE **CEVA ANIMAL HEALTH** BUSINESS UNIT OPERATES IN THE AMERICAS SUPPORTED BY INNOVATION TO MEET THE SPECIFIC NEEDS OF EACH REGION BY APPLYING IN-HOUSE-DEVELOPED SOLUTIONS AND SERVICES

BY PRESS OFFICE

In yet another edition of the International Production & Processing Expo (IPPE), January 24-26, in the Georgia World Congress Center (Atlanta, United States), the Poultry Business Unit of Ceva Animal Health will emphasize all of the predicates that make it a multinational leader in solutions for poultry health, as well as emphasize to the professionals of the poultry sector its commitment to mitigating and controlling a number of diseases, such as Avian Influenza, Infectious Bursal Disease (IBD), and Infectious Bronchitis.

"Due to the growing number of outbreaks of highly pathogenic avian influenza in different parts of the world, the Ceva staff – dedicated exclusively to the veterinary sector and who for many years develops strategies to control, eradicate, and prevent diseases, with attention to the uniqueness of each region – reinforces its commitment and is available to contribute to the poultry industry," notes the Director of the Poultry Business Unit of Ceva Animal Health Brazil, Branko Alva.

Along the same basis of innovation, through the years Ceva has managed to bring to market technologies adequate to the demands of each country, as explains the Short-Cycle Poultry Marketing Manager for Ceva An-

imal Health Brazil, Tharley Carvalho.

"This statement is supported by several cases, such as that of the Mexican vaccine – an innovative technology to control a specific strain of Avian Influenza and that has been contributing to meeting the needs of the local poultry industry –, in addition to those in Asia, United States, Latin America, and by partnerships with governments of several countries in Europe, Ceva has been developing vaccine banks for emergency use," highlights Tharley Carvalho.

To Branko Alva, this provides the French multinational the opportunity to connect all of its global technical and scientific expertise to the local circumstances and to be effective when providing solu-

tions and services. "Our operations reflect our care and leadership in the world's poultry scene, supporting the industry regardless of the challenge and establishing for producers new vaccine-technologies to prevent and control Avian Influenza as well as the other diseases that impact our segment," he noted.

At this year's IPPE the company will hold the Ceva Latam Summit and bring together different specialists in poultry health to a meeting on January 23rd at the Westin Peachtree Plaza, where items such as Avian Influenza, IBD, and infectious bronchitis, among other diseases, will be discussed.

Tharley concludes by highlighting the Cevac I-Bras, the vaccine that after many years of research and development was consolidated as the main vaccine, with technology directed to the challenges of the prevailing variant in Brazilian farms, the variant BR-I. "This is another great example of how we contribute to this sector," he notes.

ABOUT CEVA ANIMAL HEALTH: Ceva Animal Health is a French multinational operating in the veterinary-pharmaceutical industry, established in 1999 and specializing in research, development, production, and sales of pharmaceutical products and vaccines for ruminants, swine, poultry, and companion animals. Ceva is in 110 countries and employs over 5,500 people around the world. Since 2007 its employees and leadership have been the majority shareholders of Ceva Animal Health, whose president and CEO is Dr. Marc Prikazsky. ■

THARLEY CARVALHO AND BRANKO ALVA





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INDUKERN DO BRASIL: FROM DISTRIBUTION TO SPECIALIZATION

COMPANY CONSOLIDATES ITS SUCCESS IN THE **RAW MATERIALS AND ADDITIVE** MARKET

ANA LOUISE DE TOLEDO

With over 25 years in Brazil, Indukern started its activities in São Paulo in 1996 and today focuses on multiple business units such as: Animal Nutrition and Health, PetFood, Premix, Ruminants, Aquaculture, Food, Pharmaceutical and Chemical Raw Materials and Flavors & Fragrances.

As part of its trajectory, in 2021 the company was incorporated by Ravago, a Belgian group dedicated to the distribution of polymers and chemical products, which operates in the CASE (coatings, adhesives, sealants and elastomers), Life Sciences and Personal Care markets. Currently, Indukern has a broad commercial and logistic coverage with headquarters in the city of Jundiaí (SP), and five distribution centers strategically located in Brazil, allowing for quick service to its customers.

More than a distributor, Indukern is practically an extension of major manufacturers throughout the world. Always attentive to the needs of its customers, Indukern values commercial ethics, trust in people, and credibility in business.

Among its business units, the Animal Nutrition and Health management has a complete portfolio of additives such as amino acids, vitamins, minerals, enzymes, and an extensive line of products that meet different species and breeding stages. Among the main commercial partnerships, we can highlight some successes such as:

1 BUTIREX-NOVATION. Chemically protected Sodium Butyrate, stable to pelleting and extrusion, with release in the proximal fractions of the small intestine, thus ensuring the main effects in maintaining the health of the enterocytes and controlling intestinal permeability;

2 CELMANAX-ARM & HAMMER. Highly bioavailable source of Refined Functional Carbohydrates (RFC™) obtained by a unique hydrolysis system, which allows significantly consistent effects with low inclusion in diets;

3 KOLIN PLUS FC-NATURAL REMEDIES. A plant-based nutritional additive, it is a natural alternative replacement for Choline Chloride in diets. It is also rich in phosphatidylcholine and polyphenols produced by NRSBP technology (Natural Remedies Standardized Botanical Powder), which ensures the concentration and standardization of its active compounds;

4 PEPPER PLUS LINE. Phytus Feed. Phytogetic based on functional oils with bioactive compounds, which act promoting the improvement of animal health, facing the challenges in the production system. With anti-inflammatory, antioxidant and immunostimulant effects, promotes the best use of the nutrients in the diet. It is a safe product approved as input by IBD.

This year the company expects to further consolidate its participa-

tion in the Animal Nutrition market, strengthening its relationship with customers and partners, and presenting to the world market its new identity, Vidara. The brand makes reference to life through a real concern that the group has with sustainability, demonstrated by commitments such as excellence in recycling, environmental responsibility, and social impact.

To learn more details about our product line, area of operation, and Vidara brand, please contact the Indukern team. ■

ANA LOUISE DE TOLEDO, ZOOTECNISTA
- MASTER S IN ANIMAL NUTRITION - USP PIRASSUNUNGA, TECHNICAL COMMERCIAL COORDINATOR
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MAXIMUM PRODUCTIVITY WITH MAGNI-PHI

WITH EFFECTIVENESS PROVEN BY STUDIES, **PHIBRO ANIMAL HEALTH CORPORATION'S SOLUTION** AIMS TO OPTIMIZE POULTRY PRODUCTION WITH FUNCTIONAL NUTRITION, BENEFITING ANIMAL WELFARE AND THE ENVIRONMENT

VALERIA CAMPOS
valeria@ciasullieditores.com.br

In constant evolution, the poultry industry is searching for tools that help the technified production with the objective of promoting a balance between the animals' high performance, well-being, and preservation of the environment.

Aware of this context, Phibro Animal Health Corporation, from robust investments in research and development, created Magni-Phi, a product based on technology, science, and sustainability, which aims to optimize the productivity of poultry with functional nutrition.

"The solution became the first natural performance enhancer registered with the Ministry of Agriculture, Livestock and Supply (MAPA)," says Bruna Boaro, Products and Technical Services manager in South America. According to her, there are more than 50 studies performed that prove the effectiveness of the product.

In practice, the solution provides integral health to the herd by combining Quillaja saponaria and Yucca schidigera extracts, which have immunomodulatory, anti-inflammatory, and antioxidant properties, while helping to reduce ammonia production, benefiting animal welfare and the environment.

And these advantages are attested by important international bodies. With a 100% natural formula, the solution is certified by Organic Materials Review Institute (OMRI). And, in addition to this, it is also certified for responsible and sustainable management of resources according to the principles of

the Forest Stewardship Council (FSC).

"The studies also prove that Magni-Phi is a safe alternative to be used in association with ionophore and chemical anticoccidials, coccidiosis vaccines and other eubiotics, showing an auxiliary effect in the response of these technologies; besides being an effective and efficient alternative to improve productivity in antibiotic-free systems, without any antibiotics and organics," Boaro points out.

When presenting the research details, the professional lists some findings. According to her, the numerous field applications show that birds fed with Magni-Phi have improved intestinal health and, consequently, there is a positive impact on performance and efficiency of nutrient absorption, because the intestine is healthier.

These contributions are in line with a recent movement in the activity. As explained by the Products and Technical Services manager, more and more herbal combinations are being studied and accepted as a via-



ble alternative for animal production - as they have phytoactive compounds with beneficial actions for animal health and performance: "Magni-Phi is a product developed exclusively for poultry (broilers, breeders, layers, and turkeys) and can be used in all stages of production, without withdrawal period and risks of residues for the health of the final consumer.

Thus, by developing yet another state-of-the-art solution, Phibro aims to continue serving the animal protein market with quality and excellence. According to Boaro, the company's expectation is to offer an effective and profitable technology to the poultry industry.

"Seeking change is always a challenge, but innovation is part of our nature, and our purpose is to optimize animal nutrition and health for a better life and a more sustainable world," concludes Boaro. ■

“OUR PURPOSE IS TO OPTIMIZE ANIMAL NUTRITION AND HEALTH FOR A BETTER LIFE AND A MORE SUSTAINABLE WORLD”

BRUNA BOARO, PRODUCTS AND TECHNICAL SERVICES MANAGER IN SOUTH AMERICA



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DIAGNOSTICS, DATA, AND DECISION MAKING

FOCUSED ON PREVENTION, **SAN VET** IS A PRODUCER-ALLY IN THE SEARCH FOR HIGHER PRODUCTIVITY AND PROFITABILITY

JOÃO PAULO MONTEIRO

joao@ciasullieditores.com.br

2023 bodes as a challenging year to the animal protein industry. In addition to production costs being high, the macroeconomic landscape signals trials ahead.

Having said that, human beings need food. Always. Therefore, the challenge is feeding the world's growing population in a safe and healthy way. "We are convinced that our infrastructure and solutions can help producers through this challenging time," states Plinio Barbarino, Chief Business Development & Marketing Officer at SAN Group.

There are currently limited options to intensive production systems. Although it allows for higher levels of production and profitability, this model also has its challenges in terms of animal health and welfare, and enabling to diseases. As a result, to reduce risks, health control measures are key.

"And, as Barbarino points out, all begins with a good diagnosis: This approach should be incorporated into the animal management routine and not only when health issues are eminent."

With this rational, SAN Vet, a business unit of SAN Group dedicated to providing solutions to animal health, plans to offer veterinary diagnostic services in different countries in Latin America, replicating the European model in Brazil by establishing partnerships with different laboratories and establishing it's own laboratory in Brazil.

According to Barbarino, one area of focus is to adopt tools such as molecular biology. The enterprise provides molecular biology services and has a portfolio of over 400 PCR tests to detect and identify possible pathogens: "We have a broad and diversified portfolio adaptable to the needs of different laboratories and clients."



“OUR MISSION IS TO SUPPORT DECISION MAKING FOR HEALTHY ANIMALS”

PLINIO BARBARINO, CHIEF BUSINESS DEVELOPMENT & MARKETING OFFICER, SAN GROUP

SAN Vet has invested also in its own laboratory in Belo Horizonte, MG, which includes serological, microbiological, hystopathological monitoring as well as veterinary services. "I've installed new equipment to better support the diagnostic work and vaccine production," says Barbarino of this project.

According to him, diagnostics should be approached as an on-going process. In addition to providing the basis for correct decision making, preven-

tion increases productivity and avoids economic losses and supports the rational use of solutions for animal production, such as biosecurity protocols and the use of therapeutic products.

The results are followed-up by technical consulting, which provides clients with management recommendations. "We analyze the data and point to what can be improved in the farm, including possible technologies to be adopted," he explains.

In Latin America, SAN Vet provides services either through its distributors or its own team. This mixed system supplies the company with factual information regarding the challenges faced by farmers, enabling the correct diagnosis associated with different issues.

"If an infirmity becomes noticeable, the problems is already established," reinforces Barbarino, who confirms: "We want to assess the situation before the issue gets established. This is the focus of monitoring."

"SAN Vet has a broad and diversified product portfolio, and we make no demands for the use of our products. Instead, we support the diagnosis, analyze data and other information, and based on our expertise we make technical recommendations. However, producers and veterinarians are completely free to make decisions when choosing what solution to apply," explains Barbarino, who completes: "Our approach is customized and specific, seeking to understand the reality and challenges of each client, examining options and presenting solutions in line with healthy, profitable, and sustainable animal production. This is our way of creating value." ■

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NATALIA PONSE
natalia@ciasullieditores.com.br

Since 1965, Victam has been assembling world leaders from the agribusiness sector through its events and meetings. Beginning in the Netherlands, the company's activities has expanded and today it organizes tradeshows and seminars around the globe, including Istanbul, Turkey, and Bangkok, Thailand.

The main purpose of the events is to contribute to the technological development of the industrial grain – and of other raw materials – grinding and processing sector for the production of animal nutrition.

Now, in partnership with Interlink Exhibitions, it will be Brazil's turn to host Victam LatAm, in October of this year. The event, to be held between October 3 and 5 in São Paulo (SP), will take place in parallel to Grapas LatAm and Geaps, meetings targeting the grain industry in general.

“Launching Victam in Brazil was a strategic decision, as the country is the largest and most important market in Latin America, the largest producer and exporter of animal protein and grain in the region, and so the volume of companies operating in this sector is huge,” says Cassiano Facchinetti, Interlink’s Managing Director. He adds, “Moreover, Brazil serves as a business hub, attracting exhibitors and visitors from neighboring countries to participate in the events. And finally, the structure for organizing large events like this is excellent and in compliance with international standards.”

As Facchinetti explains, “it is the world’s largest technology, equipment, ingredients and solutions event aimed at the animal nutrition and grain pro-

cessing industry’s production chain.”

According to him, the sector’s decision makers, technicians and formulators will be able to see, firsthand, the latest exhibitors’ news and launches, test the equipment, get to know about new ingredients and additives, with a focus on the development of new products for large animals, pets, poultry, pigs, fish, and sheep.

“Additionally, parallel to the tradeshow, the event will present high-quality content in Conferences and Seminars, which will address technical and

market-related issues, new technologies, formulations and applications, new ingredients and additives, and more, organized in partnership with the sector’s main associations,” he says.

The conferences will feature seminars, workshops and training sessions. Among the topics covered, there will be emphasis on animal nutri-

tion, new technologies, packaging, quality, handling and storage of grains and more: “We also offer exhibitors the opportunity to organize their own technical seminars.”

The meeting will be attended by major global equipment manufacturers, such as Andritz, CPM, Famsun, Wenger, Zheng Chang, among more than 40 companies that have already confirmed their presence.

Because it is a biannual event, the next opportunity for companies to participate will not take place before 2025. “What I can say is that the floor plan is 50% sold, 10 months before the event; so, soon there will be no more spaces available,” says Cassiano.

The proposal, according to the director, is to present technologies, equipment, ingredients, additives and solutions for the entire production chain, focusing on the animal nutrition and grain processing industries. “Therefore, if your company is part of this market, it cannot fail to participate in the major launch of Victam LatAm,” he concludes. ■



“IF YOUR COMPANY IS PART OF THIS MARKET, IT CANNOT FAIL TO PARTICIPATE IN THE LAUNCH OF VICTAM LATAM”

CASSIANO FACCHINETTI,
MANAGING DIRECTOR OF INTERLINK EXHIBITIONS





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IN BRAZILIAN FOOD PRODUCTION

NATALIA PONSE

natalia@ciasullieditores.com.br

Based on the data collected by 'Censo Agropecuário 2017', we were able to discover that the number of women managing rural properties in Brazil has reached almost one million (there are 947 thousand women responsible for managing rural properties).

According to the survey, jointly, they manage about 30 million hectares, which corresponds to 8.5% of the total area occupied by rural establishments in the country. Among the owners, 50% of the economic activities relate to cattle raising and the breeding of other animals; 32% to the production of temporary plowing and 11% the production of permanent crops.

And, to sum up experiences and multiply results, groups bring together the women throughout Brazil in the mission of strengthening the Brazilian sector. Below, get to know some of these groups, how they were formed, and in how it is that they contribute to the success of the Brazilian agribusiness.

“WHEN YOU BEGIN TO UNDERSTAND WHAT THE COOPERATIVE IS AND HOW IT OPERATES, THE TENDENCY IS TO WANT TO GET MORE TRAINING AND THAT ONLY BRINGS ABOUT BENEFITS”

DEBORA NOORDEGRAAF,
COORDINATOR OF THE CASTROLANDA
COOPERATIVE WOMEN'S COMMISSION



CASTROLANDA'S COOPERATIVE WOMEN'S COMMISSION

MADE UP of seven women with ages ranging between 30 and 58 years of age, the Castrolanda Cooperative Women's Commission counts upon members of all ages, from cooperative women who are very young

to women in cooperative that have been in agribusiness longer.

According to Debora Noordegraaf, a pig breeder and coordinator of the group, the Commission arose after a course that was offered by the Castrolanda Cooperative twelve years ago, called "Mulher Atual" (Current Women) and geared to knowledge, well-being and health for women.

"We were a group of six women", she begins and continues: "We were so enchanted with this course that we decided to seek out the Human Resources area, the department we used to send our demands to at the time to show our interest in holding more courses. That was the starting point for everything".

According to the swine breeder, the goal is to motivate participation of women in the agribusiness cooperatives, beginning with knowledge as a springboard. Nowadays, women represent 30% of the entire

group at Castrolanda and, according to Debora, they are also more active, seeking knowledge and getting trained.

NOWADAYS
WOMEN
REPRESENT
30% OF
ALL OF THE
MEMBERS OF
CASTROLANDA

The work unfolds in two ways: with the courses geared to the part of leadership, oratory-speaking in public, positioning; and there are also courses geared to the technical part, these are training courses, immersive courses on cooperatives and knowledge tools for women. "Some examples of the technical part are Amigas do Leite (Friends of Milk), Dia de Campo Feminino (Field Day for Women) and immersion courses in cooperatives", she summarizes.

All this work had borne fruit. In 2021 a meeting was held with the National Learning Center for Cooperatives (Sescoop) in some states and the OCB System (Organization of Cooperatives in Brazil), where the Commission presented the activities carried out and saw that this work was being replicated throughout Brazil.

"At that moment we understood the responsibility that we, as a Commission of Women in Cooperatives (Comissão Mulher Cooperativista) have towards other women. Women that mirror themselves in us to begin the project of ambassadors of cooperatives of Brazil", Debora concluded.



WOMEN OF THE AGRO BREED

THE WOMEN of the Agro Breed group started in 2003, under another name, to hold a sequence of commemorative auctions. As Bruna Drummond de Azere-do Coutinho Danella explains, the auction was called “Leilão Mulheres de Raça” (Women of the Breed Auction), which brought together 50 female Nelore PO breeders and earned one million reais, a record for few farms at that time.

Today, there are about 500 women, from academics to the most seasoned, aged between 65 and 70. The initial meetings were face-to-face, before the Covid-19 pandemic. “Currently, we talk to each other by phone, directly, messaging apps, live streams, and telegram,” she says.

“What sets us apart in any field of endeavor is knowledge. The idea is to bring knowledge, both technical, personal, and leadership, to rural women to face the market. Succession, Management, Governance,

ESG are fundamental topics in our industry,” says Bruna.

For her, it all boils down to just three topics: training; self-knowledge; and well-designed projects. “We are just a spark compared to the number of women who need this guidance; but the importance of a work like this is total, because the number of women taking over their family’s rural business is growing exponentially. It is necessary to be prepared”, Bruna points out.

“ THE IDEA IS TO BRING KNOWLEDGE, BOTH TECHNICAL AND PERSONAL, AND LEADERSHIP, FOR RURAL WOMEN TO FACE THE MARKET ”

BRUNA DRUMMOND,
LEADER OF THE WOMEN
OF THE AGRO BREED



“ THE ACHIEVEMENTS ARE BASED ON THE POSITIVE INFLUENCE THAT WOMEN CAN BE GOOD MANAGERS AND CONQUER THE PACE THEY SO DREAM ABOUT AND DESERVE IN THE AGRO MILIEU, NO LONGER BEING AN EXCLUSIVELY MALE MILIEU ”

CARLA DE FREITAS, NFA FOUNDER

AGRIBUSINESS WOMEN'S CORE

CURRENTLY composed of 30 women, with ages ranging from 35 to 70 years old, the Women’s Agribusiness Center (NFA) was founded in 2011 by Carla de Freitas and Cris Bertelli. According to Carla, the NFA’s purpose and mission is to support and empower women in agribusiness management, providing quality information, support, training, and self-confidence to face the diversities that management provides.

“We are proud to have members of the group representing many important boards in agribusiness, as well as many women in positions and associations previously held only by male managers. We additionally have several members among the most influential women in agribusiness, recognized by various media, both nation-





ally and international-ly,” Carla points out.

The goal, in the producer’s view, is to strengthen women in the management of their properties, whether they are farms or industries. “The achievements are based on the positive influence that women can be good managers and conquer their much-dreamed-of and deserved place in the agribusiness environment, no longer being an exclusively male environment,” she adds.

“During times of uncertainty and vulnerability, positive, innovative, and purposeful actions must be increasingly accepted and preserved, especially with content and knowledge, because only then will we come out of inertia and really have something concrete and well-founded that we can be proud of,” she says, and concludes: “This is really the purpose that keeps this group of women together to truly make it happen.

MONTHLY MEETINGS AND A BROAD AND ENCOMPASSING SCHEDULE OF ACTIVITIES ARE PART OF THE NFA AGENDA



EDINA'S PROPERTY IS LOCATED IN BOA VENTURA DE SÃO ROQUE, IN THE STATE OF PARANÁ

WOMEN ESSENCE OF AGRIBUSINESS

COMPOSED of opinion-forming women who have a voice, especially within their family groups, the “Mulher Essência do Agro” (Agro Essence Woman) was created on February 9, 2019, due to the founders’ desire to show society that there are invaluable women working daily in field activities, and that they deserve more respect every day.

The group was idealized by Patrícia Valcarenghi, from Cerro Grande (Rio Grande do Sul), Kauana Kachineski, from Carambeí (Paraná), Marília Taffarel, from Videira (Santa Catarina), and Danieli Zancheti, from Sulina (Paraná). On the year of the foundation, Edineia Becker became the administrator.

They are women of all ages, from 18 to 70 or more, from several regions of Brazil. On the social networks, they have more than 88,000 followers, including Facebook and Instagram, in addition to three message groups with more than 300 women.

For Edineia, the goal is to

THE GOAL OF THE GROUP IS TO OFFER THE MEANS TO FACILITATE THE ACCESS OF WOMEN TO INFORMATION AND TRAINING THROUGH FUTURE PARTNERSHIPS, SAYS **EDINEIA**

strengthen the message that the presence of women in agribusiness will become ever more transforming and make the sector much stronger. And for that, there is planning involved: “We want to offer the means to facilitate access to information and training for those women, by means of future partnerships”.

Inclusive, the national and international breadth guarantee support and empathy to women things they do not often find in the locations where they live (there are participants from Argentina, Paraguay, and Uruguay). “Union, mutual support and strengthening of ties are great characteristics of women, without mentioning that they are excellent tools to inform on events and actions that will enhance the empowerment of women”, she summarizes. ■





A BRAZIL THAT PRODUCES AND PRESERVES

BY ALYING ENTREPRENEURSHIP WITH INNOVATION AND POLITICAL AND GOVERNMENTAL EFFORTS, BRAZILIAN AGRIBUSINESS PROVES **IT'S POSSIBLE TO FEED THE WORLD IN A SUSTAINABLE MANNER**

JOÃO PAULO MONTEIRO
joao@ciasullieditores.com.br

“We got over the greenwashing phase. Today, sustainability is no longer a marketing tool, it's a core component in the Brazilian agribusiness companies' policies.” The statement is from Roberto Betancourt, director at Deagro, the Agribusiness Department at Fiesp, State of São Paulo Industry Federation. The executive confirms, “We know the future of the sector depends on preserving the environment.”

As a worldwide reference in food production, Brazilian agribusiness is presently a synonym for technological innovation, the creation of qualified jobs and respect to the environment, thus being an ally to the entire world population.

Brazil occupies a core position in international agribusiness and has lots to contribute

to the global supply of food and energy, in face of the worldwide concern with inflation, food security, the Covid-19 pandemic effects and the crisis generated by the Russia/Ukraine war.

In the Brazilian production, it is known that productivity must always come together with best production processes, animal well-being, environmental care and several other fundamental cares for the longevity of the activity and what is required by society.

These practices are already a reality across the country, which makes of Brazil one of the main characters in the noble task of feeding the world. This international acknowledgement took the United Nations, UN, to admit that Brazil will have to increase its food offerings 41% to meet the demand of the growing world population, which should reach 9 billion inhabitants by 2050.

There's no doubt that preserving the environment is good business, in a number of ►

different aspects. Brazilian agribusiness knows that; it ensures rain, international repute and puts the country in a differentiated development level, besides preserving biodiversity.

Brazilian producers supply food not only to the domestic market, but to countries around the globe as well. Thus, the consumer is in charge and determines the guidelines.

With this in mind, it's evident that the equation doesn't add up if we remove the "sustainability" variable. Therefore, in Brazil agribusiness and environmentalists have joined forces with the common objective of aligning production with preservation.

The most recent CEO Survey, from PwC, validates this concern. According to the study, 31% of Brazilian CEOs state that they are committed to neutral carbon in comparison to 26% of global respondents. The main influence factor is to mitigate the climatic-change risks.

CEO Survey's results show that Brazilian organizations are concentrating more energy to address decarbonization issues than the world average.

And knowing the impacts that climate changes may have on agribusiness, the proportion of companies of the sector with neutral-carbon commitments exceeds the Brazilian average: 47% of the agribusiness companies answered yes, in comparison to 31% of the national average and 26% worldwide.

To PwC, these results show that agribusiness leaders are concerned with the impacts of the climate change, and, at the same time, are aware of their responsibilities as they assume decarbonization commitments, adopting sustainable practices in their strategies and business models. The main Brazilian agro-industries have already publicly assumed such commitment. BRF is one of those cases. According to a press release, the goal is to have zero balance in emissions of gases that cause the greenhouse effect by 2040.

According to the company, the objective includes actions to reduce 35% of the direct emissions generated by the company's operations (Scope 1) by 2030, as well as indirect



"BRAZIL HAS EVERYTHING TO LEAD THE FIGHT AGAINST CLIMATE CHANGE." **TASSO AZEVEDO**, FROM MAPBIOMAS, BELIEVES

emissions originated by the consumption of electric or thermal power (Scope 2) and 12.3% of the indirect emissions and those that do not belong to the company (Scope 3), besides neutralizing residual emissions by 2040.

Another Brazilian multinational in this same route is JBS. "The world needs more food. That's mankind's, our civilization's challenge. We have to change the way we produce because we are reducing the planet's capacity," says Gilberto Tomazoni, Global CEO at JBS, during the event Methane Forum in Livestock held in São Paulo (SP) in the first semester of 2022.

JBS's public commitment is to eliminate its greenhouse effect emissions by 2040, following an action plan supported on science-based goals and criteria established by the Science-Based Targets initiative (SBTi).

Minerva Foods, the largest beef exporter in South America, announced investments in the range of R\$ 1.5 billion to reach the goal of eliminating net carbon emissions by 2035.

The meat packing plant will meet the objective through investments in the production environment, the change of the energy matrix and the total elimination of direct or



BRAZILIAN PRESIDENT, LUIZ INÁCIO LULA DA SILVA, DELIVERED A SPEECH AT THE COP AND MET WITH GLOBAL LEADERS, SUCH AS THE UNITED STATES SPECIAL CLIMATE ENVOY, JOHN KERRY

indirect suppliers that raise cattle in environmental-preservation and/or indigenous lands, or those deforested illegally.

These and so many other commitments assumed and made public highlight the Brazilian potential when the matter is production aligned with preservation. In 2020, the MapBiomass network, an initiative of the Greenhouse Gas Emissions Estimation System of the Climate Observatory, calculated that 47% of Brazilian pastures are well managed, a number that used to be 30% in the early 2000's.

Tasso Azevedo, General Coordinator at MapBiomass, during the Brazil Climate Action Hub at COP27, stated, "If we consider the variation of soil carbon through pasture management, we can remove another 230 million tons that are absorbed in agriculture soils. And if we add to our calculation that it's possible to reduce 200 million tons of methane, our emissions would practically be residual."

In other words, the coordinator believes it is likely that Brazil will become the first country with zero net emissions sometime between 2030 and 2040, and adds, "The country has everything to lead the fight against climate change."

“ THE UN BELIEVES IN THE BRAZILIAN POTENTIAL AND ACKNOWLEDGES THAT THE COUNTRY WILL HAVE TO INCREASE THE FOOD SUPPLY IN 41% TO MEET THE NEEDS OF THE GROWING WORLD POPULATION ”

SAYS **ROBERTO BETANCOURT**, FROM DEAGRO

The farming vocation and the edapho-climatic conditions explain the trust in the Brazilian agribusiness potential; nevertheless, there are other fundamental problems, such as the political commitment signed by the country.

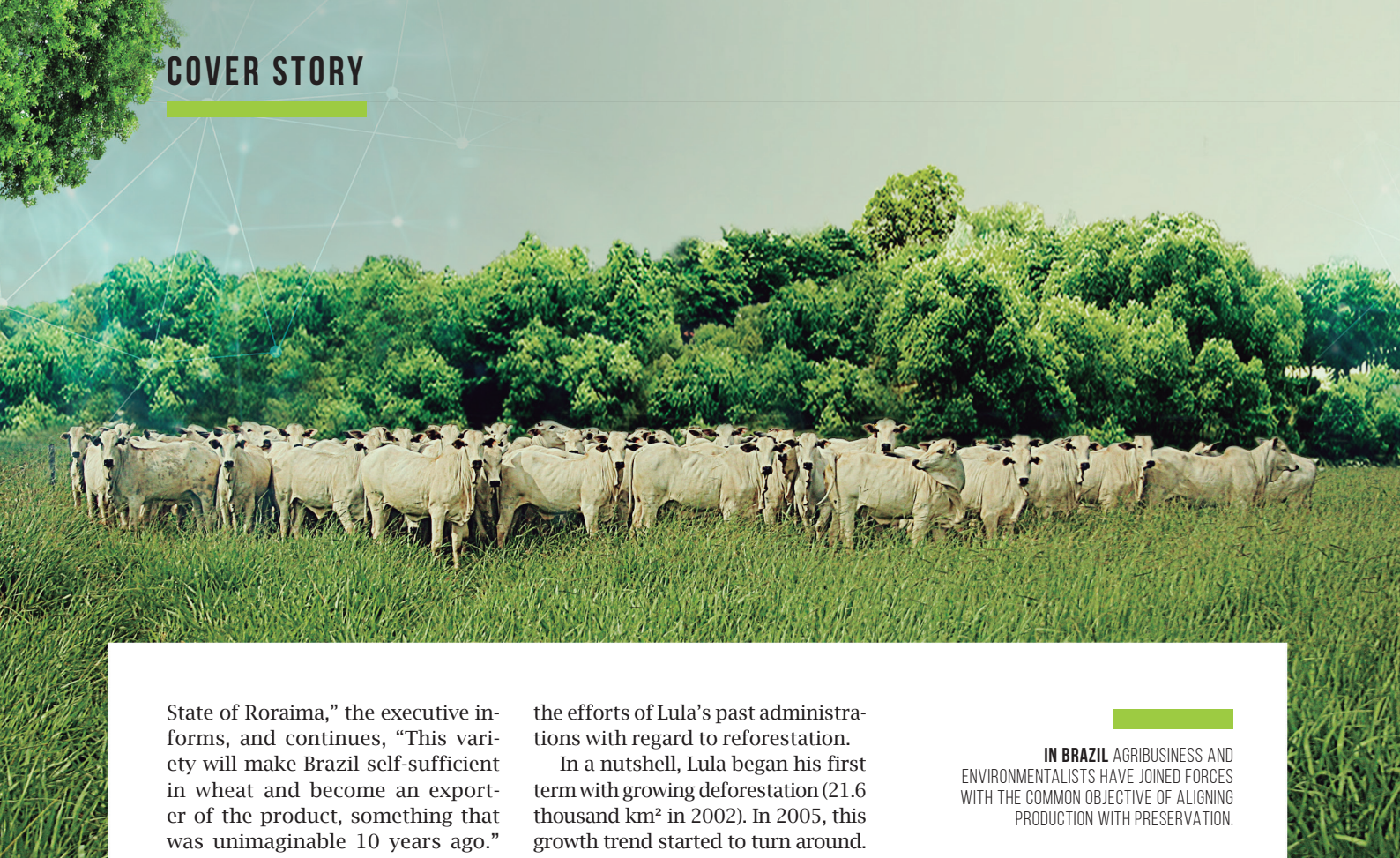
The argument is simple: to reach this productive greatness, some factors are actually determining, such as an easily-accessible potable water regime and qualified labor. Nevertheless, that would be useless if we didn't have complete production control in tropical conditions, which is chiefly responsible for having two harvests per year in the Brazilian territory, for example.

Thus, looking at Brazil's recent history, the importance of developing a science-based agricultural model for the country to reach food security and present itself as a great exporter becomes evident. And this happened through public commitment and investments in science, as well as the structuring of a modern, responsible system that enabled the country to occupy the leading position in farming innovation and production in the tropical belt of the globe in record time. This history has in Embrapa, Brazilian Agricultural Research Corporation, its most prominent name.

Therefore, Brazilian agribusiness has the potential to continue growing its productivity even in a global-warming scenario, Roberto Betancourt says, "Brazil is giving an example to the world of how to produce in the tropics, a warm region and one of the regions most affected by climate change."

Deagro's director mentions a recent study by Embrapa that exemplifies the tropical science developed by the country very well: the BRS 264, a new irrigated wheat cultivar adapted for Central Brazil's cerrado. "This novelty enables the production of wheat with high productivity even in hot regions like the ►





State of Roraima,” the executive informs, and continues, “This variety will make Brazil self-sufficient in wheat and become an exporter of the product, something that was unimaginable 10 years ago.”

“The capacity to produce wheat, a knowingly temperate-climate crop, shows the potential of the technology developed in the country,” Betancourt acknowledges, and confirms, “We must praise the investments in agricultural technology; that’s how Brazil was able to replace imports and diversify exports.”

Another theme sensitive to agribusiness and the public power is deforestation. A crucial issue, but one that is not in the producer’s control. That’s because most of it happens in vacant lands, those that don’t have an owner and belong to the State; thus, the government should be responsible for the monitoring.

It is necessary to use and develop satellite monitoring to improve the control and supervision to curb this kind of action. And as Roberto Betancourt says, the recently inaugurated and present Brazilian president, Luiz Inácio Lula da Silva, “truly wants to control deforestation and made it clear that in his government the environmental agenda will be a priority.”

The positive expectation is not only based on discourses. Data from INPE - National Institute for Space Research, an organization linked to the Brazilian Ministry of Science, Technology and Innovations, attest

the efforts of Lula’s past administrations with regard to reforestation.

In a nutshell, Lula began his first term with growing deforestation (21.6 thousand km² in 2002). In 2005, this growth trend started to turn around. In July 2006, the last measurement in the first term, Lula finished with a 34% reduction in deforested areas.

After his reelection, from 2006 to 2010 deforestation fell 51%. In the meantime, the only annual increase, of 10.8%, was registered between August 2007 and July 2008. Considering his two terms, the total reduction was of 67.6%. The deforested area went from 21,651 km² in July 2002 to 7,000 km² in July 2010 — the latter was the lowest rate in Lula’s past administrations.

Besides the positive history, the recent statements given by the Brazilian president, such as during the COP 27 in Egypt, reinforce the commitment to the environment. Lula made it crystal clear that he “will spare no effort to completely eradicate deforestation in the Amazon by 2030.”

At the time, when commenting on the challenges to conciliate economic development and environmental protection, the Brazilian president said that agribusiness will be “a strategic ally” in the coming years. According to him, the sector will be optimized in such a way that there will be no need for cutting down the forest.

“In our government, we will seek regenerative and sustainable agribusiness with investments in sci-

IN BRAZIL AGRIBUSINESS AND ENVIRONMENTALISTS HAVE JOINED FORCES WITH THE COMMON OBJECTIVE OF ALIGNING PRODUCTION WITH PRESERVATION.

ence, technology, and schooling in the field,” he explained. “We will make viable for agriculture the 30 million hectares of degraded land we have, without the need for deforestation of a single square meter of land and continue being one of the largest food producers in the world.”

The president elect also stated that his administration will prove it’s “possible to promote economic growth and social inclusion having nature as a strategic ally and no longer as an enemy to be defeated with the use of tractors or chainsaws.”

The first step to make the discourse a reality is the strengthening of the monitoring organizations and systems, which were torn apart in the last four years. “We will punish those responsible for any illegal activity to the full extent of the law, be it gold panning, mining, wood extraction or improper farming occupation,” Lula promised.

Thus, the promise made to the world is of zero tolerance with illegal deforestation in all Brazilian biomes in the next four years. “This devastation will be something from the past. Environmental crimes, which grew tremendously in the last administration, will now be combated incessantly,” the Brazilian president concluded. ■



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Fabio Pereira

PERSPECTIVES FOR AGRIBUSINESS

The year 2023 begins with a planet inhabited by more than 8 billion people, a milestone reached in November 2022, according to a report by the United Nations (UN). According to projections, the world is expected to reach nine billion inhabitants before 2040, which means more than 1 billion people in less than 20 years. Looking forward to the next 50 years, according to a UN projection, the world's population will reach approximately 10 billion inhabitants between 2080 and 2100. This growth should cause greater pressure on land use and natural resources, in addition to disproportionate social tensions in different regions of the planet.

With the increase in population, there will also be a greater demand for food, fiber and energy that, in order to be met, will need to rely on effectively sustainable production systems. Without environmental and climatic balance, agricultural activity becomes unfeasible. It will be a challenge to feed and generate energy for all, but it is possible through human development, education, use of technology and respect for nature. This is where Brazil starts to take on a protagonist role as part of the solution of producing in a sustainable way. The country has expertise in the low-carbon regenerative agriculture activity, which uses well-established agricultural practices like, for example, no-tillage and crop-livestock-forest integration, in addition to other systems with potential to be scaled.

Agriculture is defined as the practice of cultivating soil using technologies capable of transforming sunlight, water and nutrients into food; however, doing so on a large scale, in a tropical climate, was unlikely 50 years ago. Brazil was disruptive, managing over this period to increase grain production by more than five times, while the planted area only doubled. This was done in less than 10% of the territory and keeping more than 50% of the country with native vegetation areas, according to data from the Brazilian Agricultural Research Corporation (Embrapa). In the same time frame, the global population grew by 4 billion, which means that Brazil has effectively contributed to securing food to this additional contingent of people.

And agribusiness does not stop. The Brazilian 2022/23 grain crop advances, with sowing already started in all regions. A record harvest of 312.2 million tons, 15% or 40.8 million tons

higher than in 2021/22 is estimated. The planting area is estimated at 77 million hectares, an increase of 3.3% or 2.5 thousand hectares over the previous harvest. Overall productivity, considering all crops, is 4,056 kg/ha, which represents an increase of 11.3% compared to the previous harvest. The data are from the third survey monitoring the Brazilian grain harvest by the National Supply Company (Conab). These estimates still need to be confirmed, based on the advancement of crops and the effects of climate, a preponderant factor in defining productivity.

This context shows Brazil's potential within the global food chain. However, this increase in agricultural production will require better logistics efficiency, countrywide infrastructure and sustainability in order to ensure services to the growing population and consumer markets, which are increasingly more demanding, as is the case of the European Union that approved a new law aimed at preventing the purchase of products in any way related to deforestation. The new determination will require companies to file a due diligence statement showing that their supply chains are not contributing to the destruction of forests on the planet. In Brazil, the anti-deforestation law can affect the beef, soybean and coffee trade, as well as some other products and derivatives.

Global society has been organizing itself to discuss sustainability issues, pushing actions focused on ESG (Environment, Social, Governance), in which organizations - whether public or private - and countries target the sustainable development of the planet.

For this purpose, innovation and integrated technologies will be needed, given that the agriculture of the future will be digital and biological - terms that seem to clash, but indeed complement each other - be it in bioinput development, agricultural management, in addition to other practices focusing on sustainability. And most importantly, people. In order to ensure innovation, technology use, and sustainability, it will be critical to have a more inclusive and representative society, ensuring that everyone will have the opportunity to contribute to the planet's sustainable development.

May the hope of a record harvest bring prosperity and food to the table of Brazilians and other peoples, contributing to a world of sustainability and peace! ■



Fabio Pereira
Senior Manager
and Agribusiness
Specialist at
PwC Brazil

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PERSONALIZADAS PARA
A SUA NECESSIDADE

OUTSTANDING IN THE WORLD RANKING

BRAZILIAN PROTEINS ARE IN THE LIMELIGHT IN 2022 DUE TO THEIR **COMPETITIVENESS AND CONTRIBUTION TO FOOD SECURITY**. FOR 2023, MAINTAINING THIS SCENARIO RESERVES GREAT OPPORTUNITIES IN THE FOREIGN MARKET

VALERIA CAMPOS

valeria@ciasullieditores.com.br

In spite of the volatility that hit the animal-protein sector head on both in terms of supply and demand, in general 2022 went well compared to 2021. 2023 is signaling this same positive outlook, according to Wagner Yanaguizawa, economic analyst of animal protein for Rabobank Brazil.

According to him, Brazil's production of the three main types of meat (beef, chicken and pork) recovered compared to 2021 thanks to foreign markets. "After a strong drop in exports in 2021, beef was the focal meat, growing consistently in 2022 in step with China's increased imports, which represents 55% of the total exported."

In this context, it's important to highlight Brazil's position in the world's export rankings: "It is the largest beef exporter in the world," says Yanaguizawa. Equally important, chicken exports also made Brazil No. 1 in world sales, and its leadership position led the country to consolidate

its position by gaining new markets and increasing its competitiveness.

"Brazil's prices are among the lowest in the world. The global economic slowdown and increased food costs have caused Brazilian meats to gain further attention in foreign markets for presenting a low-cost alternative and improving availability in importing markets," he summarizes.

And the projections confirm this international visibility. Based on data from Brazil's National Supply Company (Conab), Rabobank Brazil published its 2022 closing projection estimates. According to Yanaguizawa, beef production is expected to grow 5.5%, reaching 8.8 million tons carcass equivalent (TCE): "When it comes to chicken, we are estimating a 0.5% increase in volume, reaching 15.3 million tons. Pork is expected to see an annual increase of 2.5%, reaching 4.8% TCE."

As far as exports, Rabobank esti-



IN 2022 A 0.5% INCREASE HAS BEEN PROJECTED FOR CHICKEN

THE BASE SCENARIO FOR 2023 WILL BE DRIVEN BY BEEF

PORK PRODUCTION INCREASED DUE TO DEMAND FOR PROCESSED MEATS

mates a 20% increase in the volume of exported beef and a 4% to 5% increase in chicken sales compared to the previous year. Pork is expected to go the opposite direction, and 2022 is expected to tally a drop in sales.

In terms of consumption, details the specialist, in general, chicken meat has remained the most consumed and exported animal protein, but the domestic market has already started to show signs of saturation in consumption.

The consumption of pork, mostly processed, also increased particularly during the cold season, as part of the population replaced one of the main meals for snacks or lighter options. Beef consumption increased in the second-half of the year, but remained slightly below expected, and is projected to end the year with another drop in per capita consumption or, best case scenario, remain unchanged compared to 2021.

MORE SUSTAINABLE AND EFFICIENT PRODUCTION. Behind all the numbers, Brazilian producers are making an effort to provide high-quality, safe protein to the internal and foreign markets. In terms of technology, investments are continuous, and some areas are noteworthy. According to Yanaguizawa, management has been receiving a lot of attention by livestock professionals in particular.

“Since it involves large areas and a greater number of animals, management software focused on productivity/efficiency have been in high demand, at least as far as our clients. A well-managed farm can optimize production at a lower cost, improving its margins,” says the specialist, and he completes by stating that “The majority of the competitive producers already understand that profit is not only the result of the best negotiation, but rather, a relationship between revenue and cost. In other words, if you do your homework well and negotiate well the sale of the animals, your cost will be competitive and you can maximize your profit.”

Along with process efficiency, the main meat packing plants in the country are positioning themselves and adopting targets to make production increasingly sustainable, Yanaguiza-

wa points out Yanaguizawa: “Be it in terms of traceability, ensuring that the beef is not produced in illegally logged areas, or production management, producing carbon-neutral beef.”

Despite the challenges to oversee production due to the country’s territorial magnitude (the 5th largest country in the world), it is evident that technology and satellite images have improved, he said: “Oversight has been evolving significantly in producing areas, and meat packers are providing better assurance. We believe we are tracking in the right direction.”

And there is no shortage of examples to confirm this advance: new certified beef farms producing carbon-neutral beef have been established, and the first lots have been exported, providing yet another option for the Brazilian beef production.



“ THE COUNTRY’S MAJOR MEAT PACKERS SET TARGETS TO MAKE THE SECTOR INCREASINGLY SUSTAINABLE, BE IT IN TERMS OF TRACEABILITY OR PRODUCTION MANAGEMENT ”

WAGNER YANAGUIZAWA, ECONOMIC ANALYST FOR ANIMAL PROTEIN, RABOBANK

WHAT’S AHEAD? According to Yanaguizawa, beef will determine the baseline for production in 2023, and inversion in livestock production trends will likely mean that a larger number of animals will be available for harvest. Consequently, Brazil will produce more of this protein.

“That is because of the higher number of steers and of incentives to harvest females (as calf prices lower.) This is expected to cause the prices of heavy steers to fall compared to 2022 – particularly in the first-half of 2023 –, and beef prices are expected to follow in the same direction.

As a result, beef will become more competitive with chicken and pork, with smaller price gaps – which is expected to drive consumption up. “It is worth keeping in mind that in 2021 per capita consumption reached 27.8 kg/person, a volume that was significantly lower than in 2006, when consumption was 42.8 kg/person, that is, consumption by part of the population saw a sharp decrease in the recent past. Keep in mind that Brazilians love their beef, and even though Brazil is not a developed country, it is one of the largest consumers of this type of protein, which is also one of the most expensive,” concludes Yanaguizawa.

As Brazil continues to move forward, it is on track to continue to be a major exporter of food to the world. Challenged by the COVID-19 pandemic of the last few years and by the higher cost of production, the country continued offering quality products and food security to the world population.

“Some peculiarities of our production give us an edge compared to other players: our soils and climate are such that we can harvest grains twice a year. In addition, we’re in a health bubble, while the world has seen an increase in the number of cases of African Swine Fever (ASF), Avian Influenza (AI) and Porcine Respiratory and Reproductive Syndrome (PRRS)”, highlighted Yanaguizawa.

This means that if Brazil continues to do its homework, it will have great opportunities to advance even more in the foreign market, and consolidate itself as an important world granary: “For this is what we know how to do best today: produce food. ■

PORK

WITH A DROP IN SHIPMENTS AND GREATER ANIMAL AVAILABILITY, PRICES HAVE DROPPED

THE international demand for Brazilian pork dropped in 2022. Although the volume exported in August reached a monthly record within the historical series, from the 114.6 thousand tons exported from January to November, shipments totaled 1 million tons, 3.1% lower than the shipments of the same period in 2021, according to Secex data compiled by Cepea. This reduction in shipment total was linked to fewer shipments to China and Hong Kong

- Brazil's main partners - which fell significantly, by 19% and 38% between January and November, compared to the same period in 2021. Thus, not even the opening of new markets, like Canada, and the increase in sales to other partners, like the Philippines (+164%) and Vietnam (+8.7%) were enough to reverse the drop in the annual comparison. In the domestic market, demand for pork in 2022 was also lower than expected by the sector, while production was record in the first three quarters of the year. In this scenario, the meat availability in the domestic market has grown considerably, pushing down the commercial prices of live animal and protein. IBGE data indicate that, between January

and September 2022, 42.2 million pigs were slaughtered in the country, 6.6% higher than in the same period in 2021, setting a record for the period, considering the IBGE historical series that began in 1997. Thus, the special pig carcass price sold in the Greater São Paulo's wholesale market, averaged R\$9.20/kg between January 3 and December 26, 2022, 5.6% lower than that of 2021, in nominal terms. The drop in meat prices, in turn, has put more pressure on the prices of live pigs in all the regions monitored by Cepea. In addition to the drop in sales prices, the high prices of the main inputs consumed in the activity (corn and soybean meal) constrained the purchasing power of the pig farmer throughout 2022.

SOYBEAN MEAL

OWING TO HIGHER INTERNATIONAL DEMAND, EXPORTS SET A NEW RECORD IN 2022

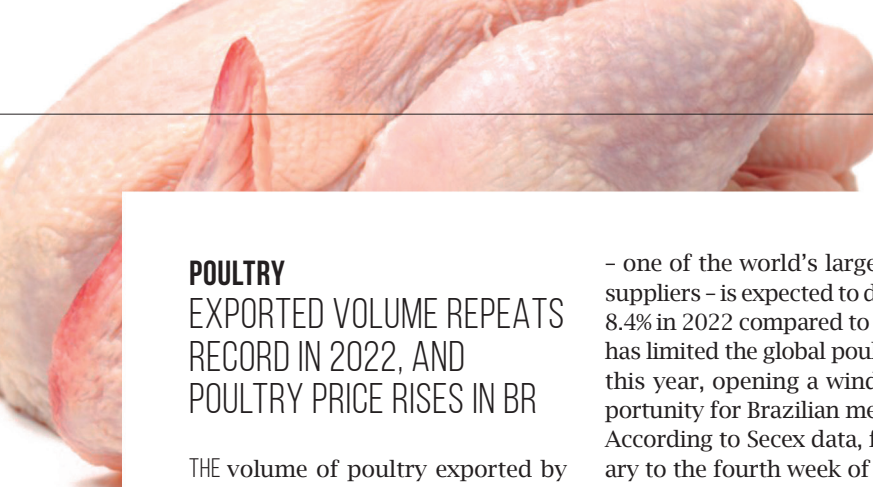
DEMAND for Brazilian soybean meal increased in 2022 compared to 2021, driven by events happening in the foreign market during the year, especially in Argentina. Soybean grain production in the neighboring country, the world's largest supplier of soybean meal, dropped due to adverse weather conditions, also reducing the byproduct production. Additionally, in March, the Argentinian government raised export tariffs on oilseed products, from 31% to 33%, in order to contain the economic crisis. The country also went through a truckers' strike, which damaged agribusiness negotiations in general. As a result, there was a significant increase in global demand for soybean meal and oil. In the second semester, however, prices were dropping, owing to the Argentinian government establishing a special system called "soy dollar", with the purpose of stimulating producers to liquidate part of the inventories. In fact, liquidity grew in that country, and external customers showed less interest in Brazilian products. Besides, the

2022/23 soybean crop in the United States also affected this scenario. Thus, from January to November 2022, Brazil has already shipped a record volume of soybean meal, 19.25 million tons, an increase of 24.4% compared to the same period in 2021. The main destinations of Brazilian soybean meal were Indonesia, Thailand, and the Netherlands, according to Secex's data. In Brazil, soybean meal production totaled 38.88 million tons from the 2021/22 harvest, according to the National Supply Company (Conab), with 18.1 million tons destined for domestic consumption (+1.1% over the previous harvest) and 19.95 million tons for export (+6.34%). As a result, the price of soybean meal went up - in average, at the regions monitored by Cepea between 2021 and 2022, soybean meal prices grew by 10%, in nominal terms. In real terms, the annual average fell 1.2% by comparison. Based on soybean grain, soybean meal, and soybean oil prices in the State of São Paulo, the "crush margin" of Brazilian industries grew by 23.25% between the averages of 2021 and 2022. It is worth mentioning, however, that in the first semester of 2022, the "crush margin" was R\$632.19/ton, dropping to R\$496.40/ton in the second semester of the year.

BEEF

EXPORT IS RECORD, BUT WEAK DOMESTIC DEMAND AND GREATER ANIMAL SUPPLY PUSH DOWN PRICES IN 2022

EVEN taking into account the strong increases in production costs in recent years, the domestic livestock sector continued to make investments in the field, which resulted in growth of the animals supply for slaughter in 2022. According to the Brazilian Institute of Geography and Statistics (IBGE), between January and September, 22.14 million heads were slaughtered in Brazil, an increase of 7.33% (or 1.5 million heads) compared to the same period in 2021. Exports, in turn, remained strong throughout the year, especially to China, with monthly volumes reaching 200 thousand tons in August and September, which guaranteed an annual ship-



POULTRY EXPORTED VOLUME REPEATS RECORD IN 2022, AND POULTRY PRICE RISES IN BR

THE volume of poultry exported by Brazil in 2022 renewed the annual record according to the Secex's historical series, which began to be recorded in 1997. Owing to the war between Russia and Ukraine and the increase in the number of cases of avian influenza in the Northern Hemisphere, the foreign demand for Brazilian protein has grown significantly. According to data from the United States Department of Agriculture (USDA), chicken production in Ukraine

- one of the world's largest protein suppliers - is expected to decrease by 8.4% in 2022 compared to 2021. This has limited the global poultry supply this year, opening a window of opportunity for Brazilian meat abroad. According to Secex data, from January to the fourth week of December 2022, 4.7 million tons of chicken meat were shipped, 2.4% higher than that exported in the same period in 2021. With the increase in volume shipped and the higher prices paid for Brazilian protein, the poultry sector's revenue also went up. The revenue was approximately R\$49.1 billion in the same period, a significant 19% growth compared to 2021, also a record, according to the Secex series. Given the high volume exported during the year

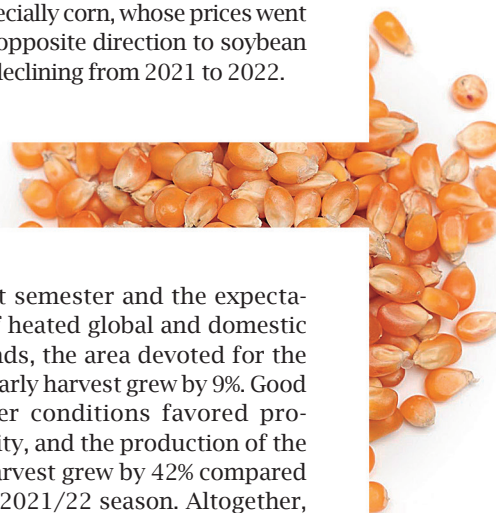
and the lower supply of animals for slaughter, the domestic poultry prices were sustained in 2022, although most employees consulted by Cepea reported difficulty in sales to the domestic market at times. According to IBGE, in the first three quarters of 2022, 4.6 billion birds were slaughtered in Brazil, down 0.7% compared to the same period in 2021. Thus, the prices of chilled and frozen whole chickens rose in the annual comparison. As for live birds, the scenario also showed increase. In this context, the poultry farmer's purchasing power increased in comparison with the main food inputs consumed by the activity, especially corn, whose prices went in the opposite direction to soybean meal, declining from 2021 to 2022.

ment record - from January to November. According to data from the Foreign Trade Secretariat (SECEX) Brazil exported 1.84 billion tons of fresh beef, a volume which, in addition to setting a record, was also 28.5% higher than the sales in the same period in 2021 (1.43 billion). Conversely, domestic demand for beef remained below the sector's expectations. The decline in demand added to the increases in animal supply and average productivity per animal - pointed out by IBGE - pressed down the prices of both cattle and meat in 2022. According to IBGE data, in the 3rd quarter, the animal weight average in Brazil was 272.02 kilos, a record for the period. In view of the January-September average, the Brazilian cattle-raising sector has never produced so much meat - in average 266.65 kilograms per animal, 0.07% higher than the previous record set in 2021. It is worth mentioning that, of all the meat produced in Brazil, 75% is destined for the domestic market.

CORN DUE TO A RECORD PRODUCTION YEAR, FOREIGN MARKET SALES PUT A CAP ON DEVALUATION IN BR

THE year 2022 began with a rise in corn prices driven by limited stocks and concerns regarding the 2021/22 summer crop, which, in fact, had its productivity impaired by adverse weather conditions. After the first quarter, agents turned their attention to the second harvest, which boasted a record production (85.61 million tons), which, in turn, put pressure on prices. However, the drops in Brazil were limited by the high foreign prices of corn, given the lean worldwide supply - the conflict between Russia and Ukraine, which began at the end of February, increased export parity and favored Brazilian corn shipments. Thus, the average for the first semester was R\$92.39/bag, 1% higher than that of the same period in 2021, in nominal terms. With the high prices of

the 1st semester and the expectation of heated global and domestic demands, the area devoted for the 2nd yearly harvest grew by 9%. Good weather conditions favored productivity, and the production of the 2nd harvest grew by 42% compared to the 2021/22 season. Altogether, Brazilian production in 21/22 (considering the three harvests) totaled 112.83 million tons, 30% higher than the previous season and set a new record. The total availability (production + initial stock + imports) of the 2021/22 harvest was 123.69 million tons. With domestic consumption at 75 million tons, the exportable surplus was 48 million tons (Conab's data). The high domestic surplus made available at competitive prices to the international market spurred foreign demand in the second half of the year. Thus, Brazilian sellers were divided between trading in ports or in the domestic market, sustaining the ESALQ/BM&FBovespa Indicator between R\$80 and R\$86/60 kg bag in the 2nd semester of the year. The ESALQ/BM&FBovespa Indicator ended 2022 (by December 23), accumulating a 5% reduction, at R\$85.80/60 kg bag on December 23.



RECOVERY THROUGH 2022

Brazil's GDP growth is expected to remain under 1% in 2023 (a 0.7% increase according to the November issue of Boletim Focus) despite the contribution of the agricultural sector (responsible for 25% of the GDP, which grew 2.8% in 2022). The indus-

try has been considered a reference in terms of management, technology innovation, and increased productivity.

Still, it is important to note the unparalleled resilience of Brazilian entrepreneurs despite the weak gains in labor productivity, limited input-supplies, and unfavorable exchange,

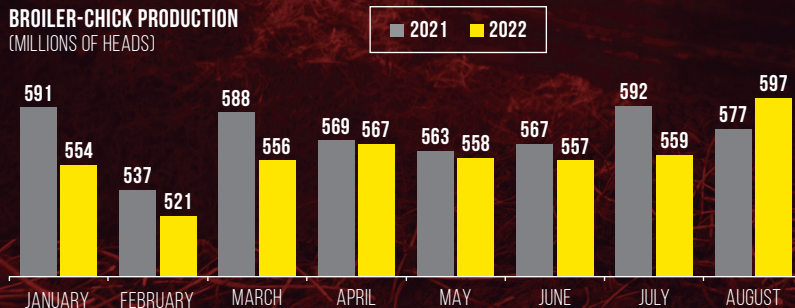
FEED PRODUCTION (MILLIONS OF TONS)

| SEGMENT | JAN TO SEP 2021 | JAN TO SEP 2022* | % | 2021 | 2022** | % |
|---------------|-----------------|------------------|------|-------|--------|------|
| POULTRY | 31.9 | 31.8 | -0.4 | 42.6 | 42.6 | 0.1 |
| BROILER | 26.5 | 26.7 | 0.5 | 35.4 | 35.8 | 1.0 |
| LAYER | 5.4 | 5.1 | -5.0 | 7.19 | 6.90 | -4.0 |
| SWINE | 14.1 | 14.6 | 3.6 | 19.7 | 20.5 | 4.0 |
| BOVINE | 9.1 | 9.0 | -1.2 | 12.2 | 12.1 | -0.2 |
| DAIRY | 4.62 | 4.47 | -3.3 | 6.4 | 6.2 | -3.0 |
| BEEF | 4.48 | 4.52 | 1.0 | 5.73 | 5.90 | 3.0 |
| CATS AND DOGS | 2.33 | 2.47 | 6.1 | 3.48 | 3.70 | 6.5 |
| EQUINE | 0.478 | 0.483 | 1.0 | 0.631 | 0.638 | 1.2 |
| AQUACULTURE | 1.050 | 1.057 | 0.7 | 1.45 | 1.49 | 3.0 |
| OTHERS | 0.728 | 0.729 | 0.1 | 0.858 | 0.855 | -0.3 |
| TOTAL | 59.7 | 60.2 | 0.7 | 80.8 | 81.8 | 1.3 |

BROILER

From January to September 2022, the demand for broiler feed was 26,7 million tons, a 0.5% increase in response to the increased number of housed-chicks. Production is expected to total 35,8 million tons in 2022 and to grow by 1%.

BROILER-CHICK PRODUCTION (MILLIONS OF HEADS)



Source: Apinco

which continue to increase the cost of production and the free-for-all pricing of products and services, which erode consumers' purchasing power.

In spite of the hostile business environment, it is estimated that in 2022 the Brazilian animal-feed industry grew 1.3%, resulting from the production of approximately 82 million tons of feed.

The economic indicators for 2023 remain unchanged from 2022. A high cost of capital and the high US dollar will keep a downward pressure on the economy. This context continues to be associated with the international economic scenario, including the blackout expected in the Eurozone, with lower economic activity in the United States, and with the Chinese economy under pressure, impacted by a strong cooling of its real estate market and international trade.

However, a more accurate understanding of Brazil's economic policy will come to light only several months after the inauguration of the recently elected administration, as these policies will depend on whether this new administration will implement the formerly used economic model, which appealed to the emotions, or if it will adopt solid and predictable policies.

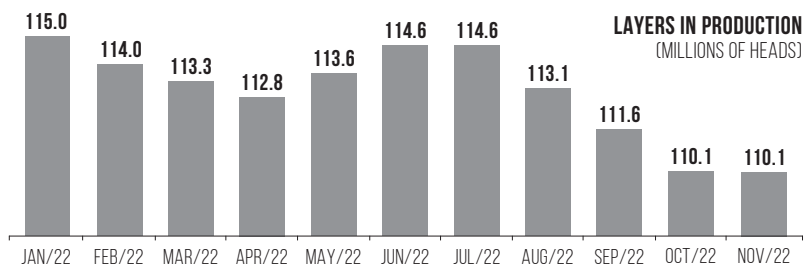
For now, stock assets are bearish, and the U.S. dollar is high despite the fact that there could be an additional inflow of dollars to take advantage of low-priced assets, which could drive the national currency (real) up, depending on the direction of the currency flow during the transition in government.

Also, the absence of a decisive re-directioning toward the necessary administrative and fiscal reforms could foster the continuation of inflation and of fiscal pressures. Low competitiveness, and deficient infrastructure, stagnant productivity and higher costs, with a backdrop of public inefficiency, an inadequate regulatory environment, judicial unpredictability in addition to the extemporaneous international-trade diplomacy will bring increased downward pressure on the economy.

Given the conjectures and in spite of the inevitable institutional conflicts, we will continue to draw the attention of government officials to the imple- ▶

LAYERS

From January to September, layer-feed tallied almost 5,1 million tons, a 5% drop compared to the same period in the previous year. Although the number of layers housed increased by mid-year, demand is expected to add up to 6,9 million tons by the end of 2022, a 4% drop compared to the previous year.

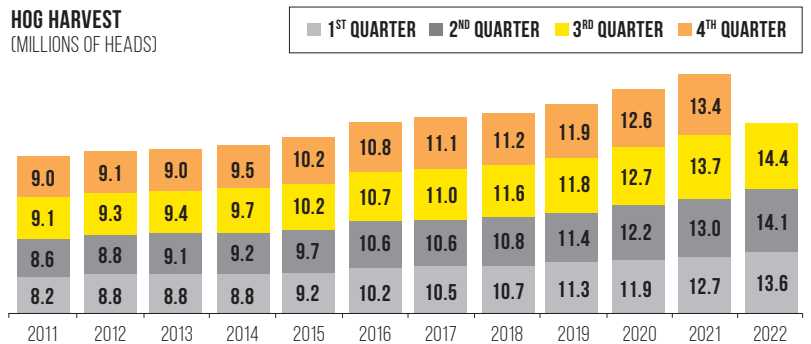


Source: ABPA, Developed by Sindirações

SWINE

According to the Brazilian Department of Statistics (IBGE), from January to September the number of hogs harvested grew by 4.5% compared to 2021. As a result, the demand for feed increased by 3.6%, reaching 14,6 million tons. Despite the misalignment between the cost of production and the price/kg paid to producers, it is possible that the production-total for 2022 will be 20,5 million tons of feed, a 4% increase compared to 2021.

HOG HARVEST (MILLIONS OF HEADS)

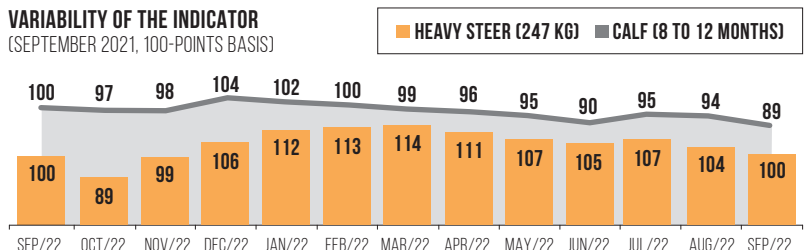


Source: ABPA, Developed by Sindirações

BEEF

Beef production will be supported by foreign demand, while the domestic market is expected to remain low due to the economic frailty of the domestic economy. From January to September beef feed totaled over 4,5 million tons, and the year may close with a total of 5,9 million tons, a 3% growth in 2022.

VARIABILITY OF THE INDICATOR (SEPTEMBER 2021, 100-POINTS BASIS)

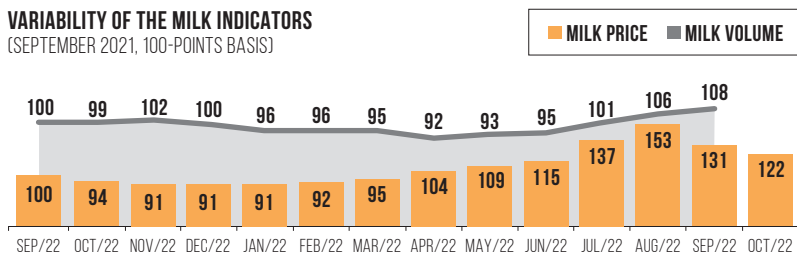


Source: CEPEA, adapted from Sindirações

DAIRY CATTLE

The prices paid to dairy producers and the weak demand for dairy products at the retail level caused the sector to backslide, particularly in the first semester. Pastures improved with the arrival of the rainy season, but the price paid to producers daily improved as of July, causing the demand for feed to drop to 4,5 million tons, almost 3.5% less than in the same period in the previous year. Despite the strong competition posed by imported milk and stagnant raw-milk prices, the improved pastures due to the rains may provide relief to the sector and drive feed production to 6.2 million tons.

VARIABILITY OF THE MILK INDICATORS
(SEPTEMBER 2021, 100-POINTS BASIS)

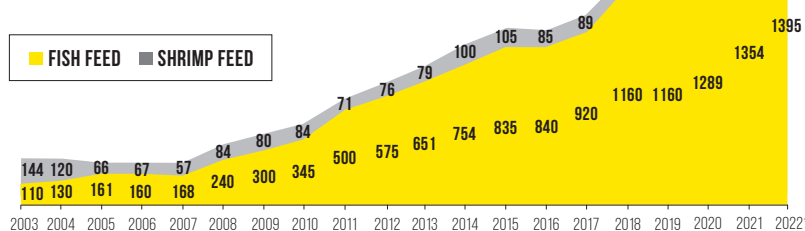


Source: CEPEA, adapted from Sindirações

AQUACULTURE

Fish and shrimp feed totaled over 1 million tons from January to September as a result of the drop in feed intake due to persisting cooler-weather in fish-producing areas. Recovery is expected in the final months of the year, and feed production is expected to reach 1,4 million tons in total, a 3% increase in 2022.

PROGRESSION OF FEED PRODUCTION FOR AQUACULTURE
(MILLIONS OF TONS)

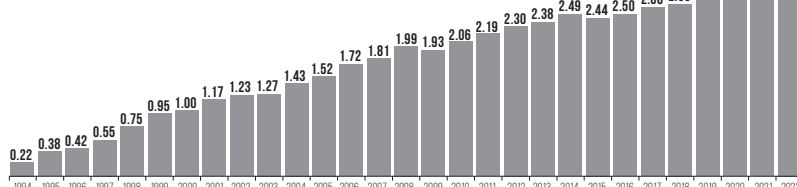


*Forecast Source: Sindirações

COMPANION ANIMAL

According to the Pet-Brazil Institute (IPB), pet-food sales could surpass 33 billion reais in 2022, an approximate 18% growth. Despite the strong increase in the cost of production (macro and micro ingredients, packaging, energy, labor costs, etc.) and the fact that some of this cost was transferred to consumers at the retail level, the demand for cat and dog food reached approximately 2,5 million tons from January to September. In 2022 demand is expected to grow 6.5%, reaching 3,7 million tons.

PRODUCTION PROGRESSION OF CAT AND DOG FOOD
(MILLIONS OF TONS)



*Forecast Source: Sindirações

mentation of the public policies needed to promote sustainability and prosperity to the production chain. Prioritizing the risk-based regulation, tax reform (equal rights, productivity, and competitiveness), trade diplomacy (general preferential agreements, strengthening the export of value-added goods), and balanced investments and agricultural planning (fairness when allocating resources and incentives).

The synergy among the leaders in the agricultural sector will be key to drive the state to develop/implementation programs, actions, and activities, directly or indirectly, preferably through planning, implementation, monitoring, and evaluation tools with input by the citizenry and stakeholders, so as to preserve the exercise of citizenship and economic rights as determined by the Federal Constitution.

In spite of the insecurity caused by today's geopolitical and socio-economic instability, it is comforting to know that the enviable performance of Brazil – a global leader in agri-food production and export – can be taken for granted. To a large extent, this is due to Brazil's innovation and robust potential to generate renewable-energy, key to keeping climate change and its undesirable effects at bay. ■



ARIOVALDO ZANI, DVM, PROFESSOR MBA/PECEGE/ESALQ/USP - ARIZANNI@UOL.COM.BR
PRESIDENT OF THE ABPA'S CHAMBER FOR SUSTAINABILITY AND ANIMAL WELFARE



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ANIMAL HEALTH ON THE RISE

SECTOR SHOULD REACH **AN INVOICING OF R\$ 10 BILLION** FOR THE FIRST TIME IN ITS HISTORY

JOÃO PAULO MONTEIRO
joao@ciasullieditores.com.br

According to the United Nations, in 2050 there will be 10 billion human beings living on planet Earth. Of this total, around 70% will live in urban areas. In the year 2000, this number was less than 47%.

In other words, proportionally, we will have a smaller number of people producing food. In this scenario, intensive breeding systems are indispensable. More productive and profitable, however, they are also more prone to the development of diseases in animals.

This is where animal health plays a central role. From disease control, productivity improvement, disease prevention and animal welfare, in addition to access to differentiated markets, animal health is essential for the growing need for ever more animal protein.

The Organization for Economic Co-operation and Development (OECD) and the Food and Agriculture Organization (FAO) estimate a growth in livestock and fish production of 14% from 2020 to 2030. To be able to attain sustainable production goals, much of this projected increase will have to be achieved through productivity improvements in existing herds. Thus, the impor-

tance of sanitary management aimed at reducing losses and improving production efficiency become very clear.

And Brazil has a huge potential to expand its protein production. "The an-

“ WE WILL FOLLOW ALL TOGETHER, AS A TRUE CHAIN, ON THIS PATH OF SUSTAINABLE DEVELOPMENT ”

EMILIO SALANI, VICE-PRESIDENT OF SINDAN

imal health business has this direct relationship with the animal protein segment,” begins Emilio Salani, Executive Vice President of Sindan, the animal health products industry union in Brazil.

“Currently, the great challenge is to increase productivity in the field. And in this context, animal health plays a decisive role in building a more productive and sustainable livestock,” he analyzes.

At this juncture, the saying “prevention is the best medicine” summarizes the Brazilian position well. “Antimicrobials are fundamental for the



treatment of some important diseases and should be used whenever necessary, in a responsible way. However, by adopting good practice techniques and making preventive treatments, the need for these products is reduced. This is a global trend, which is slowly becoming consolidated in Brazil as well,” shares Salani.

The most recent data from Sindan illustrate this well. See the tables to the side for these and other numbers of the Brazilian animal health sector. From 2013 to 2021, the growth rate of this market in Brazil was close to 10% per year.

And for 2022, even without consolidated data, the estimate is for a 10% growth in revenue, which should raise the industries’ revenues to a level above R\$ 10 billion for the first time in history.

Some macroeconomic issues imposed by the pandemic, such as the increase in input costs – considering the active ingredients, quoted in dollars – and even less visible items to consumers, such as Styrofoam, cardboard, among others, required the industries to adapt so that this increase would not be fully passed on to consumers.

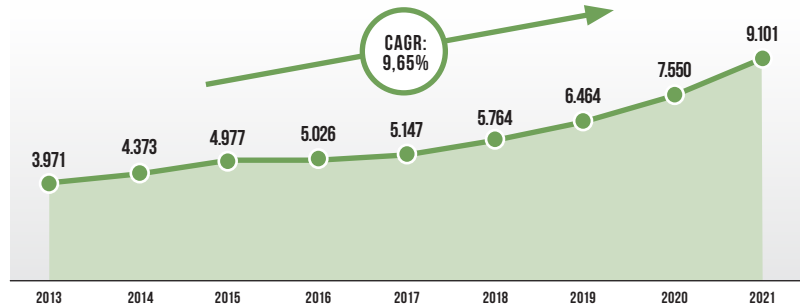
According to Salani, the segment’s growth is directly related to the issue of animal health, “important both for maintaining the welfare of our pets, now considered true members of the family, and to maintain the health of production animals and the quality of proteins produced in Brazil.

The results achieved exceeded expectations, confirms the executive: “They went far beyond what we could expect living a scenario full of uncertainties,” he celebrates and continues: “After this year, we have even more resilience to continue seeking the sustainable development of the animal health sector, the recognition of society and the improvement of business for all our members.

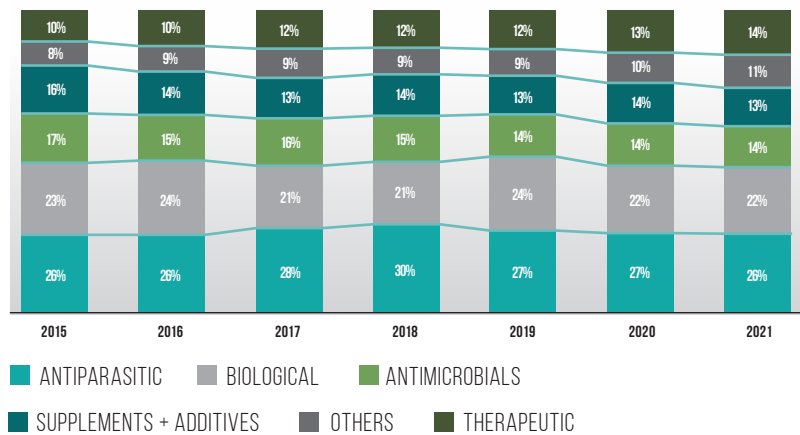
Sindan brings together 91 companies, and these are today responsible for about 90% of the Brazilian market for veterinary medicines.

In view of such representativeness, Salani is categorical when affirming: “The animal health sector has a relevant role in the challenge of feeding the world. Healthier animals are more productive, emit less

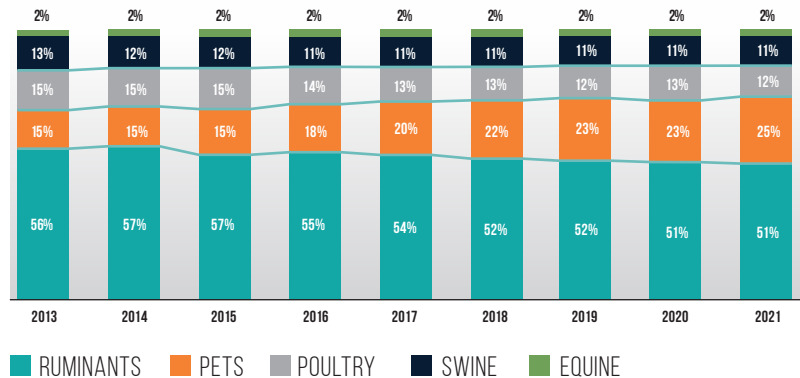
NET SALES (BILLIONS)



REPRESENTATIVENESS PER THERAPEUTIC CLASS



REPRESENTATIVENESS PER SPECIES



greenhouse gases and offer better quality food. And the industries associated to Sindan are committed to the continuous development of livestock farming, developing innovative products and services aligned to the desires of their clients and society.

The record sales projection for the sector is just one more factor that confirms the optimism for the following years. “We will all continue together, as a true chain, on this path of sustainable development for the animal protein sector in Brazil,” concludes Salani. ■

DISEASE-PROOF STATUS

ALWAYS VIGILANT, **BRAZIL REINFORCES
BIOSECURITY MEASURES AT THE FARM-LEVEL,**
AND POULTRY AND SWINE EXPORTS REMAIN
HIGH IN 2023

VALERIA CAMPOS
valeria@ciasullieditores.com.br

Renowned for its excellent health status, Brazil sustains efforts to develop measures and protocols to prevent economically impactful diseases such as Avian Influenza (AI) and African Swine Fever (ASF.) This commitment has kept Brazil free from high-impact diseases.

However, this type of accomplishment requires initiatives and coordinated efforts by the private sector and all levels of government—the most important stakeholders when it comes to implementing health barriers at the farm-level and preventing herd contamination.

By following-up closely on these activities, the Brazilian Animal Protein Association (ABPA) developed strong ties with the animal-protein production chains and other sector players, moving communication initiatives to a higher level. As highlighted by Ricardo Santin, president of ABPA, the goal is to protect Brazil's most important asset: its health status.

"In this context, it's best to prevent, and Brazil has been performing its role. There are several countries actively focused on preventing or dealing with AI, and that has alerted our farmers to the risks of these diseases to their operations. We are free of AI and prepared to face this challenge should it find its way into the country," notes Santin.

Brazil has implemented daily training, close interface between the state and municipal authorities, as well as a high-level communication strategy. That's why, according to Santin, Brazil will be increasingly called upon to supply food around the world: "Our greatest concern is protecting our herds and flocks while maintaining the welfare of animals and humans. There is no doubt: When it comes to the 'World Cup of food', Brazil is the champion."

As a consequence of the efforts implemented, both poultry and hog productions are at full force, and sales are expected to remain high in 2023, as suggested by data. In other words, production, internal consumption,

OUTLOOK FOR PORK PRODUCTION

| | 2021 | 2022* | 2023* | 22/21 VARIABILITY (%) | 23/22 VARIABILITY (%) |
|---|-------|-------------|-------------|-----------------------|-----------------------|
| PRODUCTION (MILLIONS OF TONS) | 4,701 | 4,950-5,000 | 5,100-5,150 | UP TO +6.5% | UP TO +4.0% |
| EXPORTS (MILLIONS OF TONS) | 1,137 | UP TO 1,120 | 1,200-1,250 | UP TO -1.5% | UP TO +12.0% |
| AVAILABILITY (MILLIONS OF TONS) | 3,564 | 3,830-3,900 | 3,850-3,950 | UP TO +9.5% | UP TO +3.0% |
| PER CAPITA (KG) | 16,7 | UP TO 18,0 | UP TO 18,5 | UP TO +8.0% | UP TO +3.0% |

OUTLOOK FOR CHICKEN PRODUCTION

| | 2021 | 2022* | 2023* | 22/21 VARIABILITY (%) | 23/22 VARIABILITY (%) |
|---|--------|---------------|---------------|-----------------------|-----------------------|
| PRODUCTION (MILLIONS OF TONS) | 14,329 | 14,450-14,500 | 14,600-14,750 | UP TO +1.5% | UP TO +2.0% |
| EXPORTS (MILLIONS OF TONS) | 4,610 | 4,800-4850 | 5,000-5,200 | UP TO +5.0% | UP TO +8.5% |
| AVAILABILITY (MILLIONS OF TONS) | 9,719 | UP TO 9,700 | UP TO 9,750 | UP TO -0.2% | UP TO +5.0% |
| PER CAPITA (KG) | 45,5 | UP TO 45,1 | UP TO 45,5 | UP TO -0.8% | UP TO +0.8% |

OUTLOOK FOR EGG PRODUCTION

| | 2021 | 2022* | 2023* | 22/21 VARIABILITY (%) | 23/22 VARIABILITY (%) |
|--|--------|-------------|--------------|-----------------------|-----------------------|
| PRODUCTION (BILLIONS OF UNITS) | 54,973 | 52,070 | UP TO 51,025 | +5.0% | UP TO -2.0% |
| EXPORTS (TONS) | 257 | 241 | UP TO 235 | -6.0% | UP TO -2.5% |
| INTAKE PER CAPITA (UNITS/PERSON) | 3,564 | 3,830-3,900 | 3,850-3,950 | UP TO -12% | UP TO +10.0% |

and exports of chicken and pork will remain hot this year. Egg production is expected to reach 51 billion units.

Also, important events such as the opening of the Mexican and Canadian markets to Brazilian pork and the strong demand by China are expected to create opportunities to Brazilian producers. Check out the projections. ■

“IN THE 'WORLD CUP OF FOOD', BRAZIL IS THE CHAMPION**”**

RICARDO SANTIN,
PRESIDENT OF THE ABPA



SUSTAINABILITY IN PRACTICE

FOR FAZENDA ALTA CONQUISTA, THE POULTRY INDUSTRY OF THE FUTURE MUST BE THOUGHT OF NOW. SCIENCE GUIDES INVESTMENTS IN THE SEARCH FOR SOLUTIONS THAT MINIMIZE EMISSIONS AND CONTRIBUTE TO SAVINGS IN PRODUCTION COSTS

NATALIA PONSE
natalia@ciasullieditores.com.br

For Frank Mitloehner, an academic from the University of California (USA), when we talk about sustainability in the poultry business, it involves animal welfare, quality and impacts on the environment, and also economic viability. “This encompasses a whole universe: how is this protein reaching the consumer? Is it in affordable? How is the industry doing in this process? And those behind the industry, the producer and the operators, are they being well paid, working happily?” adds Luciana Dalmagro, based on the concept of the American professor.

The producer is going through

the family succession process at Alta Conquista Farm, located in the region of Sales Oliveira (SP), more than 300 km from the state capital. I have worked there for 13 years and I am the fifth generation of producers on the farm, which has been run by my family since 1850,” she says. Integrated with Seara, the farm has 14 poultry houses, housing 500 thousand birds per cycle, delivering three million animals to the industry per year.

Pharmacist, Master in Pharmaceutical Sciences, Business Manager, winner of the 2020 Women of Agro award, elected in 2021 by Bloomberg Linea as one of the 500 most influential people in Lat-

in America and member of several projects focused on sustainability and social development, Luciana keeps a close eye on the trends and needs of the industry as a whole.

The main issue on the current agenda, she explains, is the climate issue: “I would love to say that this is a lie, a conspiracy theory, but no; the world is getting warmer, we need to do something to reverse this, and fast.” In her view, the example of companies of the sector that are publicly committed with targets for emission reductions, such as JBS, BRF and Minerva, should be followed.

“Assumed goals need to be met,” she says, and proceeds: “And we, as



producers in an integrated chain, need to think about which road we can take to achieve greater sustainability on a daily basis and at which stage of this road our farm is on.”

And it was with this in mind that Luciana sought the help of a consulting company with expertise in sustainability. The first point to be analyzed was the emissions by broiler production, from the day-old chick to finishing.

Three blocks were highlighted: inputs and waste; efficiency of the structure (equipment and buildings); and management and processes. The starting point was energy generation: “Poultry farming is a large consumer of electricity. By the way, it corresponds to 18% of the producer’s operational cost”, she defines.

“That is why, in 2017, Alta Conquista Farm was the second in the state of São Paulo to install a solar energy farm”, says Luciana. Despite the high investment (2 million reais), the payback was accomplished in five years, being evaluated as a great deal. “With our own energy generation, today the emission originated is only 0.3% of the total broiler chicken cycle in the farm,” she says.

Another concern was the emissions from the waste area. The solution was to invest in a 24 m³ reactor, bio-composting six tons of mortality per week. “With this, we were able to put the circular economy into practice. The birds’ cycle, both litter and mortality, becomes fertilizer after correct fermentation. This fertilizer is later used in corn production, becoming silage, and, at the end of this process, is reused in the farm itself. Thus waste became 0.5% of the emissions”, she points out.

And the investments to make the business more sustainable go beyond what is directly related to emissions. Insulating the warehouses with glass wool was another wise decision, in Luciana’s view. “With this technology, we are talking about a three-point savings in feed conversion, with an investment at the time of R\$35,000 per house,” she says,

INVESTMENT IN
CISTERN WAS
A RESPONSE
TO DROUGHT IN
THE REGION



and adds: “These three points may not seem like much, but at the end of the year, with 3 million finished broilers, it represents a savings of 300,000 kilos of feed, with the same performance. If this is not sustainability, I don’t know what is”.

The demand for water in poultry production is also a theme reinforced by Luciana. The region of Sales Oliveira goes through droughts of up to

THE
BIOCOMPOSTER
ENABLES THE
CIRCULAR
ECONOMY TO
BE PUT INTO
PRACTICE

INVESTMENT
IN SOLAR
ENERGY
REDUCED GHG
EMISSIONS
ON THE
PROPERTY

four months, she says, and the flow rate of the well on the property was no longer as good as it used to be. “We thought it was enough

to meet the needs of a flock twice as large, but it wasn’t true,” she recalls.

With gutters installed around the sheds to capture water and direct it to a cistern, the farm can store and reuse 3 million liters of water at a time, an amount that is used for cleaning. ▶

“AS RURAL PRODUCERS, WE NEED TO THINK ABOUT WHICH ROAD WE CAN TAKE TO ACHIEVE GREATER SUSTAINABILITY ON A DAY-TO-DAY BASIS AND AT WHICH STAGE OUR FARM IS ON THIS ROAD”

LUCIANA DALMAGRO,
MANAGER OF ALTA CONQUISTA FARM



POULTRY & SWINE

All these actions demand high investments, it is true. But, Luciana reinforces, not everything that “talks” to sustainability needs to be expensive. “When we talk about remote management, for example, we already think of a ‘NASA technology’; but, by buying 15 cameras on Mercado Livre, we were able to see all the poultry houses from inside the office,” she says, and adds: “What would have required 80 thousand reais, in the end cost 20 thousand”.

Even with all these improvements, Luciana points out opportunities within the Brazilian poultry industry as a whole. “The heating system, for example, is still a major bottleneck. Most of the heating in Brazil is done by firewood, and now it is getting scarce. We already have other options in the market, but there is still a lot of technological progress and cost adjustment to be done in all of them”, she adds

In poultry production, there are two other issues that involve technology. “The controllers used to be very simple machines, today they are complex, they depend on a team that understands technology to operate this great orchestra,” begins Luciana, and she proceeds: “I also find it unacceptable that we still weigh chickens manually nowadays. Fortunately there are now cameras that understand an animal’s weigh by using algorithms, new and available technology, that will be our next step in this coming year.

Besides data analysis and financial management, another factor pointed out by Luciana is about the third tripod of sustainability: people. The producer explains the applied inclusion and diversity project at Alta Conquista Farm: “Today, women account for 60% of the team; we have also put into practice a ‘young apprentice’ program, in which we grant our employees’ children their job with a work contract. It’s good for us, as we guarantee the continuity of the work force, and it also benefits the professionalization of rural areas”.

The farm is seen as a real com-

THE FARM'S
MANAGEMENT TEAM
(FROM LEFT TO RIGHT):
EDSON MARÇAL,
PAOLA BUZZOLLO,
LUCIANA DALMAGRO,
AND **EDIVANE SILVA**



pany: all employees are fitted into schedules, have electronic time-tables, and benefit from overtime. “Here there is no longer that figure of the producer who is available 24h/day”, she points out.

Luciana is keen to share all this experience she has gathered over the years. Through the Instagram @vidadegranja, the team shares simple day-to-day guidelines, from the use of tarpaulin in the poultry house to changing the bedding. “We were able to identify that simple tips have a great effect on the producer’s life,” she concludes.

For the property manager, the poultry farming of the future will involve even greater use of construction and management technologies (especially remote), trained labor, diversification of activities on the farms, and, of course, the reduction of carbon emissions. “This is the future, but, in fact, the future is now. We are talking about themes that are already present in the reality of agribusiness. These are solutions in energy and technology, food security and food safety, water, animal

and people’s well-being,” she says.

In Luciana’s view, the great reflection is: “We need to think about where we are in this journey, where we want to go, and what we are going to do so that, together - industry, producers, government, and everyone involved - we can make this poultry industry of the future a reality now. ■

FAMILY
SUCCESSION:
**LUCIANA
DALMAGRO**
WITH HER
FATHER, **PAULO
PORTUGAL**





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A THREE-GENERATION CALLING

PRODUCING PORK WITH SUSTAINABILITY AND RESPECT FOR THE ENVIRONMENT
AND ANIMALS IS WHAT GUIDES **J.A. AGROPECUÁRIA**

NATALIA PONSE

natalia@ciasullieditores.com.br





J.A. AGROPECUÁRIA
WORKS WITH
A HERD OF 2
THOUSAND SOWS

With 2 thousand sows, for generations J.A. Agropecuária, located in Santo Antônio de Posse (SP), has had the mission of producing quality pork without giving up the commitment to sustainability and animal welfare.

“The business began in the 1980’s with my grandparents, right after they arrived from Holland,” says Rafael Van den Broek, the founders’ grandson. After investing in dairy cattle and broilers, the family concentrated on swine production. “It was my grandfather’s strong suit,” he says, and adds, “It began with two sows when they immigrated, and in 1984, when they retired, they passed the property on to my father and uncle, Alberto and João Gilberto Van Den Broek, with 300 sows.”

And the same process has been put into practice nowadays. Rafael and his cousin, Kollien Van Den Broek, prepared themselves to take over the family business. “We were practically born in the farm. In 2012, we started working with them and began the succession process in 2019,” he states.

The objective is to pass on all the knowledge acquired throughout these four decades, and that involves the importance of investing

in the farm’s sustainability. “They have been concerned with this factor from day one,” Rafael says.

And these teachings perpetuate actions. In the last three years, J.A. Agropecuária has received robust investments in animal welfare and their social commitment to the environment.

Besides their own feed plant, they focused on water capture. All the rainwater is collected, stored and treated at the property to be used in the farm. “We don’t use groundwater anymore, only rainwater. We have reservoirs that support the demand during seven months of drought.”

According to Rafael, the family’s great trump was being able to close a circular-economy cycle, from the drinking water to the generation of power for the property.

The gas generated from the animal-waste treatment makes the farm completely self-sustainable in energy. “The entire capture process is water proof, and after maturation, the solids go directly to our cereal farm in the State of Minas Gerais, to be used as organic fertilizer. The liquid undergoes a process in four biodigestors to separate the organ- ▶

ONGOING
SUCCESSION
(FROM LEFT TO
RIGHT): **JOÃO
GILBERTO,
KOLLIEN,
RAFAEL AND
ALBERTO VAN
DEN BROEK**





ic matter from the gas. The manure is sent to a final decantation reservoir where partners who work with sugarcane and hay also use it for organic fertilization,” he explains.

The Van den Broek’s investments also extend to environmental control. From the pregnancy to the maternity, nurseries and finish, 100% of the structure counts on temperature control. Additionally, with an area larger than that suggested by official organizations, J.A. Agropecuária obtains a greater weight gain.

“We achieved this by providing space for the animals to walk, play and eat,” he says, and continues, “We also implemented an elevator so they can go up to the two floors of the trucks without stress.”

All these investments reflect

on another part: animal health: “Since the animals’ health is controlled daily by our vet Érica Chrispim, any intervention is performed quickly. This, together with all the tools and technologies available at the farm, contributes to the fact that medications are almost zero.”

The aim, Rafael explains, is to produce pork with the best quality possible, and, consequently, achieve a better production. “We prefer to invest in the selection instead of increasing our herd. The result was a 10% increase in meat per animal. In other words, after two years of work, we produce from 10 to 12 tons more pork per week,” he says.

All these components form a robust strength in the sector. Nevertheless, as in other farms, Rafael says that deal-

ing with market variations is one of the challenges. “In the last few years, we have seen many producers leaving the business. One way of avoiding this destiny is the investments, such as in environmental control, that resulted in cost reductions,” he states. ■

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IT'S TIME TO INVEST

EVEN WITH SETBACKS, **BRAZILIAN LIVESTOCK CLOSES 2022 WITH RECORD EXPORTS.** CHALLENGES FACED REQUIRE PRECISE MARKET STRATEGY FOR THIS YEAR

NATALIA PONSE

natalia@ciasullieditores.com.br

The price drop of the fat cattle in the off-season, when prices normally rise, was the great highlight of Brazilian beef cattle in 2022. In the view of consultant Alcides Scot, CEO of Scot Consultoria, this decline may have been, among other factors, caused by the larger number of contracts for future delivery of cattle, causing prices in the over-the-counter market to not be sustained.

“The drop in consumption per person, the worst level in the last 26 years, due to the drop in purchasing power of the Brazilian consumer, was another relevant factor. This is because 70% of the Brazilian beef is consumed internally”, he adds.

As a globalized activity, cattle raising has not failed to suffer the consequences of the war in Europe. “It caused a generalized increase in costs,” Scot explains. However, even so, beef exports were record-breaking and 2022 closed with an unprecedented performance.

According to Abrafrigo, the Brazilian Association of Packing Plants, the total year-to-date beef exports have already reached the sum of US\$ 12.2 billion in revenue, a growth of 44% in relation to US\$ 8.5 billion in the same period of 2021. In relation

to volume, the movement until November reached 2,158,786 tons, compared with 1,716,000 tons last year, a growth of 25.8% over 2021 (see graph).

In this scenario, the data show that China occupied a place of relevance: until November, they imported a revenue of US\$ 7.48 billion, a growth of 93% over 2021, with US\$ 3.88 billion. In volume, the growth was a little lower. Until November,



1,149,242 tons were destined for the Asian country, against 722,451 tons in the same period of 2021 (+ 59%).

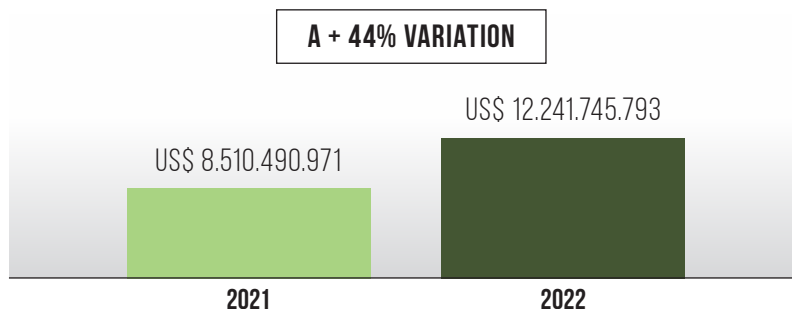
Also according to Abrafrigo, the United States became the second largest importer of the Brazilian product last year. In 2021, its purchases provided a revenue of US\$ 801.7 million and, in 2022, it reached US\$ 904.1 million (+ 12.8%) until November. In volume, imports were 117,805 tons in 2021 and 173,141 tons in 2022 (+47%).

Chile ranked third, even with a reduction in purchases, with revenues of US\$ 360.1 million (-29.2%) and an import volume of 71,858 tons (-27.5%). Fourth place went to Egypt, with revenues of US\$ 356.4 million (+ 62.1%) and handling of 93,994 tons (+ 69.7%). Hong Kong provided a revenue of US\$ 308.9 million (-61.1%) and a movement of 88,535 tons (-57.1%) and, therefore, ranked fifth among the largest importers. In total, 110 countries increased their purchases, while 57 reduced purchases.

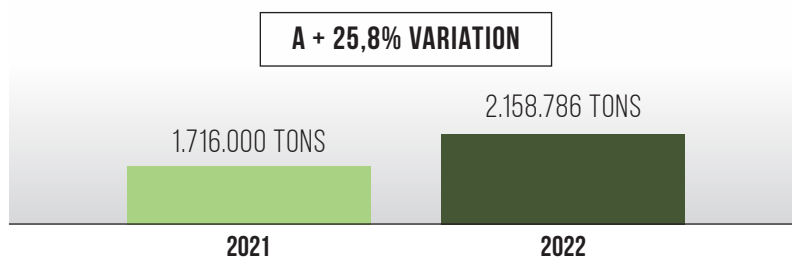
In Scot's view, the concentration of sales to a single market (China) is worrying. Besides this, as negative factors for 2022, he also mentions, in the domestic market, the increase in the cost of production (narrowing the producer's margin) and the apparent change in the behavior of cattle prices cycle, whose quotations indicate that they are entering a downward cycle.

Because of that, the consultant highlights the closing of small and medium-sized cattle feedlots,

VALUE EXPORTED BY BRAZIL IN 2021 AND 2022 (JANUARY - NOVEMBER)



EXPORTED VOLUME OF MEAT AND MEAT PRODUCTS (JANUARY - NOVEMBER)



Source: Abrafrigo

whose cattle were transferred to large feedlots: "This phenomenon happened as a result of the increase in costs and the loss of scale. The larger feedlots, to a certain extent, provide a better economic result".

The adoption of contracts in a larger scale for future delivery of cattle was a positive aspect. "In this way, the cattle producer that used this risk tool did well, guaranteeing price and the slaughterhouse guaranteeing delivery", he says and adds: "And, although the productive sector's satisfaction is not unanimous,

the drop in mandatory vaccination against foot-and-mouth disease in important producing regions may open markets for Brazilian beef".

In this sense, as the specialist explains, the projections for 2023 are for an increase in the cattle herd, caused by the high participation of females in the slaughter of cattle, determining the confirmation of maintenance or drop in prices of the livestock cycle. "Regarding the global economy, the scenario is not optimistic, with people believing in a worldwide retraction. We will have to deal with this to maintain a good export performance", he says.

Finally, Scot defends that this scenario is very good for investments. "It will be the moment to get rid of expensive animals and acquire animals at lower prices, anticipating the recovery of prices and future margins," he explains and concludes: "The price of cattle for herd replacement should fall, favoring finishers and feedlots. The cow-calf operation's turn is over". ■



“ TO MAINTAIN GOOD EXPORT PERFORMANCE, WE WILL HAVE TO DEAL WITH A POSSIBLE DOWNTURN IN THE GLOBAL ECONOMY ”

ALCIDES SCOT,
CEO OF SCOT CONSULTORIA

HIGH EXCELLENCE LEVEL

AS A STOCKBREEDING POWER IN THE STATE OF SÃO PAULO, **CAMPANELLI** HAS CIRCULAR ECONOMY IN ITS BUSINESS DNA

NATALIA PONSE, FROM ALTAIR (SP)
natalia@ciasullieditores.com.br

For several years, researchers and specialists joined forces to find measures that transmit all the concern and respect of the activity with the environment, animals and people, without giving up productivity, which is so necessary to continue feeding the thousands of people around the world.

And its in this sense that the so-called “circular economy” comes in, in which the traditional resource production, consumption and disposal model is substituted for another one in which everything returns to

the productive chain and is reused.

One of the great cases of this strategy is a property in Altair (SP), about 400 km from the capital. Fazenda Santa Rosa Campanelli, which belongs to Campanelli, includes a verticalization culture in its routine. “I’ve always been an enthusiast for this side of the circular economy. Presently, with the ESG concept, this social-environmental part became very latent in the business, but it has been in our DNA for some time now,” summarizes the company’s CEO, Victor Campanelli.

We have 15 thousand hectares of

crops distributed into sugarcane and corn, for which there is no fertilizer cost. The manure from the confinement of approximately 100 thousand heads throughout the year (the static number is of 30 thousand heads) is reused, and we produce a good part of the grains and forage consumed.

“In the beginning, we practically only planted sugarcane. With time, we were able to introduce corn without it ‘competing’ with the sugarcane, occupying the vacant space of this crop in certain times of the year,” he says, and adds, “Recently, we have



taken a step beyond and introduced sorghum too. In October 2021, we removed the sugarcane, planted corn, harvested the silage in January and planted the sorghum, harvesting it in June to then plant sugarcane again.”

With the growth of the stock-breeding activity, we had the need for quality, origin and customization of the products destined to nutrition. That’s when, in 2017, Tecno beef was created; a factory initially destined to meet this demand. After noticing that many confinement producers experienced the same situation, the project gained a new direction, breaking away from farming and becoming an industry.

With that, the company had to develop its marketing. And it’s within this context that Tãmila Bossolane Souza, head of the area in the group, arrived. In the end of 2021, the rebranding was launched reinforcing the quality, innovation and penetration in the industrial market.

“The first market differential involves precision. We don’t have shelf products, all products are produced ac-

ording to each client’s specific needs complying with the warranty levels agreed to,” he explains.

The second highlight, Tãmila adds, is the partnership with the Campanelli Innovation Center (CIC), one of the largest in the world and where experiments are done to validate nutritional technologies. Today, the space works with approximately 3,700 animals. “It’s what further reinforces our quality value, the origin of our products and the best beef-cattle nutrition technologies,” says the head of Marketing.

This triad involving confinement, the CIC and the nutrition industry is yet another reinforcement to the circular-economy concept. “The technology is already in the company’s DNA and my role is to continue the good work that has been done by discovering new areas to foster and innovate,” defines the executive director of Tecno beef and Campanelli, Pedro Terêncio.

His arrival in 2022 reflected the desire to broaden the company’s market share in the domestic market. “As a rule of thumb, the company’s partner clients already have a high level of technology adoption. In this sense, our role is also to assist the customer as to the impact of their business in sustainability, applying nutritional strategies



“ WE CONTINUE IN AN ORGANIC-GROWTH PROCESS IN ALL THE COMPANY’S ACTIVITIES ”

VICTOR CAMPANELLI, GROUP DIRECTOR

not only to reduce methane emissions, but also to determine the data involving this scenario,” Pedro explains.

The analysis of the information referring to the confinement aspects is something taken very seriously by ▶



the farm's team. Every head of cattle that arrives for finishing has its steps monitored. Basically, the average feed consumption, weight gain and health status are assessed using software and tools such as cameras and sensors. The information is accessed in real time through computers, tablets and smartphones.

In every confinement picket, between the feed and water troughs, there is a sensor equipped with a radio-frequency transmission microchip that helps with information on each stall. Additionally, there are specific pickets that monitor the animals individually, allowing us to follow the animals' average weight, feed and water consumption, frequency and time spent feeding every day.

Animal-husbandry major and PhD Daniele Torgan is responsible for the database at Fazenda Santa Rosa, as well as other units of the group. Through reports issued by the BI (Business Intelligence) "Power BI" tool, she manages all the information involved in the business.

"In commercial confinement, I draw up a report of the entire operation involving the entrance and processing of animals, average food intake, manufacturing, supply, in-stock input control, among others; besides the analysis of the outgoing lots, including a survey of all costs throughout the production of a specific animal to compose the final cost," Daniele explains.

And this job doesn't end with the animals leaving the property. The professional also receives information from the meatpacking company referring to both the carcass (such as fat content and individual weight, for example) and possible setbacks at the time of the slaughter. "I gather information from the meatpacking company and the confinement data to close the outgoing lot and draft a ranking of the suppliers," she says. After the slaughter, there is also a performance and profit summary.

In experimental confinement, on the other hand, Daniele produces reports for Jéssica, responsible for the

THE DAILY DATA MANAGEMENT IS IMPORTANT FOR DECISION MAKING, DANIELE TORGAN SAYS



“MY ROLE IS TO CONTINUE THE GOOD JOB ALREADY DONE, DISCOVERING NEW AREAS TO FOSTER AND INNOVATE”

PEDRO TERÊNCIO,
DIRECTOR AT TECNOBEEF

CIC, and the companies involved in the researches; besides the reports referring to TecnoBeeF, "I give support drawing up a report on almost everything that goes through the Power BI."

This data management, she states, is important for the management and decision making because the reports are daily. "In the event there is a problem in some step of the process, the system points it out and we are able to identify the points for improvement; and we also point out what we got right, identifying the right and wrong paths," Daniele explains.

The greatest responsibility in-

"THE FARM HAS A TECHNOLOGICAL PROFILE AND WE ARE OPEN TO TEST DIFFERENT TECHNOLOGIES AT THE EXPERIMENTAL CENTER," JÉSSICA GUSMÃO EXPLAINS

volves the amount of information, especially concerning the data supplied to the producers. "Sometimes they are shocked with the number of elements," she says, and continues, "Therefore, in the beginning we work with punctual analyses, such as daily consumption, to avoid that shock."

And the advantage of having a system with this magnitude of data, together with a dedicated experimental center, is the faithful portrayal of Brazilian farming. "Usually, Brazilians use data from other countries, but we have different animals than the US, for example. So, by performing tests within our reality we achieve greater assertiveness of the data and research results," Jéssica defines.

As the head of the CIC explains, such confidence in the information gathered grants credibility to the tests of products that will be launched in the market. "And that's where Tec-

nobeef comes in. The researches performed are tested and based on scientific criteria to truly know if a certain solution works,” offering the best there is, Tãmila concludes.

“It’s a direct partnership,” Jéssica summarizes, and adds, “Everything is highly customized, producing the nutritional nucleus as specifically requested by the partner, granting credibility to the results collected.”

That is reinforced, Pedro adds, because one of the largest users of these technologies is the group itself.

“Everything that is being done is applied in the farm,” he says, and summarizes, “The beauty of stockbreeding is that the scenarios are different depending on the region of Brazil, and that way it’s possible to work with a scenario flexibility, testing all variables.”

This context is reflected on the uncertain times stockbreeding is going through. “It’s a year of resilience, but especially consistency. That’s why our role as input suppliers and business partners is to help remind them of the value and the results of a job well done without shortcuts and without giving up quality, despite the challenges,” he points out.

And this amount of information is not limited to the group. “Whatever we gradually discover and innovate we share with TecnoBeeF customers,” the nutrition-industry director explains. “We want to help reinforce this collaboration mindset, sharing the knowledge gathered throughout the years and reinforcing the concepts of sustainability and animal well-being,” Tãmila complements.

These concepts are experienced daily and inherent to Victor Campanelli’s management, “The environmental and animal-well-being positioning are nothing but the consequence of what is correct. When we began composting, for example, over 15 years ago, we started using organic fertilization not because it’s ‘cool’, but because it makes economic and environmental sense.”

All initiatives, Victor explains, are planned with this alignment in mind.

WASTE IS COLLECTED IN THE CONFINEMENT AND SENT TO COMPOSTING

THE SYSTEM ALLOWS US TO MONITOR THE FACTORY AND THE CONFINEMENT IN REAL TIME



“And the circular economy is a consequence of the unceasing search for these synergies,” he says, and continues, “We continue in an organic-growth process in all the company’s activities. We practically doubled the sugarcane business, and this year confinement should come close to 100 thousand heads. Plus, we are increasing the sugarcane area and evolving TecnoBeeF at the same time. ■

“WE DON'T HAVE SHELF PRODUCTS, ALL PRODUCTS ARE MANUFACTURED ACCORDING TO EACH CLIENT'S SPECIFIC NEEDS”

TÂMILA BOSSOLANE, HEAD OF MARKETING



FIGURES, ANALYSES, AND DATA FROM THE LEATHER SECTOR IN BRAZIL

BY ROGÉRIO CUNHA

Since 2012, we have been carrying out a periodic survey of the sector's figures at the Brazilian Tannery Industries Center (CICB), an entity that represents the country's leather-producing companies. The data obtained include industry revenues, exports, main purchasing segments, investments, installed capacity and others. The most recent study was completed in December 2022 - with 2020 or 2021 data collected, depending on the indicator - and it presents us with a very interesting content, upon which we can make an extensive analysis.

The survey showed that there are 214 leather production units currently installed in Brazil. A few decades ago, a projection indicated that there could be more than 700 companies of this type in the country. Ever since the CICB survey's inception, the records have been showing, with precision, that the number of companies is declining: in 2019 there were 223 plants and, in 2018, 240. At the same time, there has been no reduction in leather production in Brazil, which, quite the opposite, advances as one of the sector's leading players in the world. This phenomenon has to do with the high investment a tannery company incurs these days in order to meet legislation, customer, tech-

nology, and sustainability requirements. Smaller or less-structured organizations ended up by being merged or dissipated within the overwhelming reality imposed by the market, succumbing to unattainable financial and management needs.

Environmental and sustainability concerns are decisive in the configuration of the sector's figures and thus they are featured in an exclusive chapter in the study carried out by the CICB. The country - which boasts the world's largest amount of environmental certifications specific to the leather industry - displays increasing development and investment in this indicator. According to the survey, in 2021, 77.8% of companies dealt with environmental issues in their in-house departments and specialized external consultancy support; 16.6% counted entirely on external consultancy, and 5.6% simply on their own personnel. In the previous CICB survey, these percentages were, respectively, 72% (that is, a lower percentage for complete internal personnel and consultancy monitoring), 12% and 16%. It is worth mentioning that Brazil has the Brazilian Leather Sustainability Certification (CSCB), a seal that attests to the best practices in the

sector and has the support of Brazilian Leather, a project carried out by the CICB and the Brazilian Agency for the Promotion of Exports and Investments (ApexBrasil).

Regarding the waste agenda, the survey pointed out that the daily control of liquid effluents that are treated at the tanneries reaches 94.4%, and that 100% of them have a selective solid waste collection program. Brazilian tanneries have a well-recognized dedication to this subject: some companies have 0% waste going into landfills by selling or reusing by-products like leather shavings, tallow, and others. In Brazil, there is an organization that is entirely dedicated to transforming leather shavings - at all stages (including already tanned leathers) - into fertilizers that are used in domestic crops and are exported to the international market.

We are dedicated to intelligence efforts on raw-material source information. Focus on continuous improvement is part of all our actions and this is clearly reflected in the study's data. ■

ROGÉRIO CUNHA, CICB's Commercial Intelligence, an organization associated with GTPS



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SECOND ROUND: 2023

UNCERTAIN ASPECTS, SUCH AS DEMAND, COUPLED WITH INFLATION, TRANSFORM THE YEAR IN **YET ANOTHER PERIOD OF RESILIENCE** FOR BRAZILIAN DAIRY CATTLE

NATALIA PONSE

natalia@ciasullieditores.com.br

The significant reduction in the volumes produced during the first semester of 2022 (in comparison to the same period of 2021) was one of the obstacles faced by the dairy market in Brazil; besides the low prices for the product and high costs.

This scenario, explains the managing partner at Milkpoint Mercado, Valter Galan, was the result of a smaller base of dairy cows, whose slaughter increased markedly in 2021 due to the more favorable beef prices.

“In this equation, I also include milk producers who have left the market. Many have abandoned this market due to the poor results throughout all of 2021 and a good part of the first semester of 2022,” he says.

The cutback in production led to the milk price increase in the end of the first semester. Specialized producers, the analyst adds, with little leeway for cost reduction in their pro-



duction systems found themselves exposed to the market uncertainties.

“This, together with the price reduction for grains (such as corn and soybeans, for example, the main cost items in the dairy activity), helped producers recover part of their profitability in the second half of the year,” Galan states.

In the graph made available by Milkpoint Mercado, it is possible to see the evolution of the IOFC (Income Over Feed Costs) indicator and, thus, the milk producer’s profitability.

“With this relative result recovery of the professionals that work in production, we can notice the beginning of the production recovery in the Q3, as well as in the last three months,” Galan says, and continues, “In a nutshell, in the yearly average, it was a year with partial recovery of the producers’ margins, after a disastrous 2021 in this aspect.”

This recovery, nonetheless, came at the cost of a high volatility. Galan reinforces that there was a production reduction in a first moment, and an adjustment of the supply and demand for prices to present some recovery in a second moment.

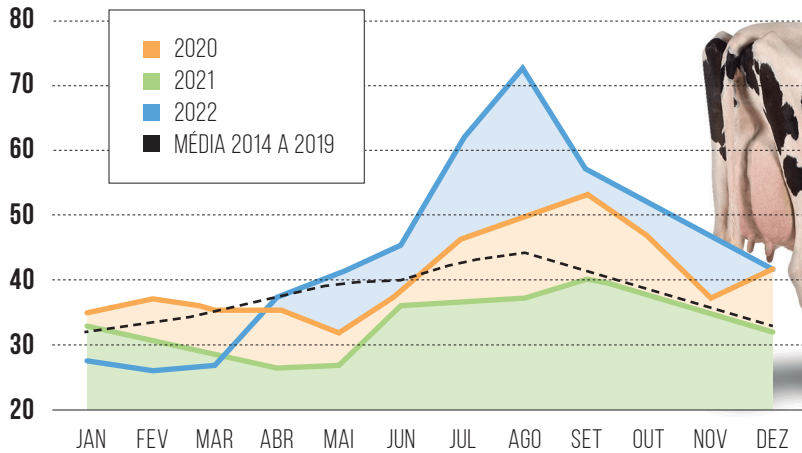
“Due to an apparent retraction of the demand in this second moment of higher prices, we started having significant price reductions for a new adjustment in the supply,” he states, adding that in the second semester there was an increase in dairy imports due to these high prices practiced in the domestic market, enabling volumes of the product to come from the Mercosur.

As to 2023, the word that permeates the specialists’ analyses in the production of milk is “uncertainty,” especially involving the demand for dairy products. The projections of the financial market, Galan continues, point to a smaller growth of the economy in comparison to 2022, which can have a direct impact on the demand.

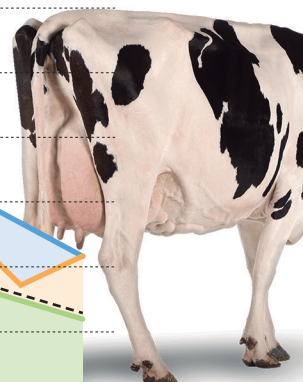
“Simultaneously, dairy products carry a significant inertial, two-digit inflation from 2022, posing a greater challenge for the year, and hindering the good sales flow for dairy products,” MilkPoint Mercado managing-partner reports.

On the other hand, the new government-aid proposal for the population, besides possible new tools to activate the economy and the demand that may come to be used, rep-

IOFC (INCOME OVER FEED COSTS - R\$/COW/DAY) INDICATOR EVOLUTION



Source: MilkPoint Mercado



AN X-RAY OF THE BRAZILIAN MILK MARKET IN 2022

- 1 RECOVERY OF PRODUCERS' MARGINS IN THE 2ND SEMESTER OF THE YEAR, WITH INCREASED PRICES PAID FOR MILK;
- 2 PRODUCTION COST REDUCTION (PARTICULARLY FOR CORN AND SOYBEANS)
- 3 PRICE VOLATILITY AND RESULTS;
- 4 THE PRICE HIKE PASSED ON A SIGNIFICANT INERTIAL INFLATION TO 2023

Source: Valter Galan

resent a light in the end of the tunnel.

“These are initiatives that can render important support for the consumption of dairy products, particularly among the lower-income tiers, which are the focus of these aids, and a large milk and dairy consumer market,” he concludes. ■



“DAIRY PRODUCTS CARRY A SIGNIFICANT, TWO-DIGIT INERTIAL INFLATION FROM 2022, POSING A BIGGER CHALLENGE FOR THE YEAR FOR MAKING THE GOOD FLOW OF SALES MORE DIFFICULT”

VALTER GALAN, MILKPOINT MERCADOS MANAGING-PARTNER

A DIFFERENT WAY TO PRODUCE FOOD

NEUTRAL IN CARBON, ORGANIC AND WITH ANIMAL WELL-BEING CERTIFICATION, **NOCARBON MILK** PROVES IT'S POSSIBLE TO ACHIEVE PRODUCTIVITY, QUALITY AND SUSTAINABILITY

JOÃO PAULO MONTEIRO
joao@ciasullieditores.com.br

To us, we will succeed when we help convince many producers to convert to neutral-carbon cattle raising. That is our objective.”

The statement comes from veterinarian Luís Laranja da Fonseca, founding partner at Guaraci Agropastoril responsible for the NoCarbon milk and dairy brand.

“The same way I benefited from exchanging experiences with organic-food producers, to whom the doors have always been open, we also expect to leave a lit trail with regard to neutral carbon,” he says, and confirms “That’s our spirit. Our success indicator is not to beat the others, but to add value.”

It’s with this intent that NoCarbon Milk was born. “We want to grow the debate around climatic issues. We don’t want to create a milk brand, but a movement signaling a different way of producing food,” Fonseca assures. He concludes, “This way, we aim at spark-

ing curiosity and showing our concern with zero-carbon production.”

SUSTAINABILITY IN THE ESSENCE. With headquarters in Itirapina, in the State of São Paulo, Guaraci Agropastoril is responsible for the first neutral-carbon milk produced in Brazil. And one of the first in the world.

Besides the neutrality in the carbon balance, ensured by the NGO Iniciativa Verde and its Carbon Free seal, NoCarbon Milk also counts on animal well-being certification from the Certified Humane Brasil Institute, as well as organic production certification attested by the IBD, the largest organic and sustainable-product certifier in Latin America.

This story started being written many years ago, since the project carries Luís Fonseca experience and expertise. After graduating from Vet school, he got his masters and doctorate degrees, besides having taught. His ac-





ademic curriculum also includes a post-doc course in the United States.

“My research area was milk quality. I have always worked in the interface between the farm gate and the dairy door. And besides my teaching activity, I advised large companies, dairies and farms,” he says. After decades of work, the professional decided to become a milk producer himself.

Fonseca has always been involved in the environmental agenda - including participation in COOPs and composing NGO boards, such as WWF -, and this involvement paved the way to his milk production. “I don’t have the typical farmer profile. I have an academic and research background, and had an environmental-activism journey,” the vet summarizes.

This way, when he decided to get into the milk chain as a producer, Fonseca performed an analysis on the main challenges to produce animal protein in general. He listed three critical points.

The first refers to animal well-being. “It’s an absolutely irresistible agenda. The way we relate with animals should be different,” he believes.

The second point is the carbon-footprint issue. “The climate agenda continues to gain significant importance to consumers, companies and investors. We must produce low-carbon protein,” he argues.

And, finally, the third point pertains to the reduction in the use of chemical inputs, aiming at a cleaner productive chain. “It’s possible to produce animal protein with a small ecologic footprint,” he assures.

And since mankind is heading towards a climatic catastrophe - see the IPCC reports -, we must act immediately. “We are in a hurry, so there’s only one solution: restructure the animal-protein production system from the inside,” he says.

“Projections point to a growing animal-protein consumption. Thus, at NoCarbon, our challenge is to develop a model that can be replicated and transform the way we produce,” he explains.

Nevertheless, as a producer, Fonseca began his activities in the usual format. The migration to organic production was “complicated,” as he explains, “We had a drop in productivity and problems with the animals’ health. We had to learn how to produce the food, and only after the second to third year were we able to fully understand the system and go on to neutral carbon.”

Indicators presented by Fonseca help to understand the company’s evolution: in conventional milk production, the yield was around 23 liters per cow/day. With the transition to the organic model, this decreased to 12 liters/cow/day.

“We were gradually learning how to work to produce large better-quality volumes and find the ideal inputs. We built up experience and today we have resumed the productivity we had in conventional production,” he reports. Innovation is the key word in this process. “I am the opposite of conservative,” he explains. The search for a new way to produce includes new ideas and models, “The solution is in innovation.”

An already mentioned, a practical example is the biologic control of ticks. Guaraci Agropastoril uses a fungus to fight the parasite, a solution developed by a startup.

MITIGATION POSSIBILITIES. According to his own inventory, 65% of the company’s emissions result from the animals’ enteric digestion. Therefore, there are several proposals to improve this efficiency; additives, for example, such as algae, activated coal or yeasts, among others.

In nutrition, innovative ingredients don’t only support the reduction of carbon emissions, but superior production results as well, as in the case of tannins. “They are natural ingredients that can significantly reduce methane emissions,” Fonseca points out, and continues, “And that’s not all; there is a positive effect both for the environment and the animal from ▶

the productivity point of view. It's the typical win-win situation."

At the property there are also experiments with alternative forages, such as the Mexican Sunflower (*Tithonia diversifolia*) and Moringa. "These are tree species that may have had an interesting effect in the animals' supplementation," he concludes.

Still in the innovation sphere, there are assessments for the use of activated coal in the cows' diet. The ingredient is already offered to the calves to reduce diarrhea.

In this search for production with an increasingly smaller environmental impact, it's important to point out how sustainability and productivity can go hand in hand.

The compost barn is an example of this concept, the vet explains. "It's a great housing system in terms of animal comfort and emission reduction, and at the end of the day it ensures an extraordinary fertilizer, which is very important in our case. It's a win-win-win situation."

Another opportunity seized at the property aiming at producing pasture and roughage was the migration from planting annual species to perennial ones. He explains, "In the organic system, where we don't use herbicides, we have to prepare the soil, which means turning the soil. If I plant corn and sorghum every year, I have to turn the soil every year as well. As we do this, part of the carbon stocked through the regenerative production practices returns to the atmosphere. Therefore, ideally, we shouldn't turn the soil very much. For such, planting perennial crops makes a significant difference."

This practice is coupled with the inclusion of a feed additive and even the installation of solar panels in the property. There are several actions to be taken when the objective is to mitigate carbon emissions. Nonetheless, milk production emits carbon, so to compensate the inevitable emissions, Guaraci Agropastoril does forest restorations.

In 2020, we saw an approximate total carbon emission equal to 1 kg per liter of milk produced, resulting in a total emission of 1,207 tons of CO₂. With this data, we used drones to identify degraded pasture areas,



"WE DON'T WANT TO CREATE A MILK BRAND, BUT A MOVEMENT SIGNALING A DIFFERENT WAY OF PRODUCING FOOD," SAYS **LUÍS LARANJA DA FONSECA**, FOUNDING PARTNER AT GUARACI AGROPASTORIL

which were prepared with green-fertilization planting, an organic management technology to replace the pasture for another crop, thus interrupting the grass cycle. And in sequence, trees were planted and were converted into a new forest.

In all, five hectares were planted. In Itirapina, a transition area between the Cerrado and the Atlantic Forest, one hectare of restored forest sequesters 250 tons of CO₂ throughout its growth,

which is enough to absorb an equivalent to 250 thousand liters of milk.

THE ONLY ALTERNATIVE. An activity in line with sustainability and animal well-being principles will have superior productivity and quality. "Beyond a shadow of a doubt, we always seek this synergy," Fonseca confirms.

Therefore, the goal is to maintain high, good-quality productivity and be sustainable. "We make a point of having both." But there is a transition cost. "But we quickly recovered this lost ground and are 100% convinced that there are still more opportunities," he believes.

No doubt, every effort has its positive reflexes and the market has been understanding and recognizing this attitude. "Since we are pioneers, we have the benefit of the surcharge," Fonseca explains. "The more aware consumer is willing to pay a premium for our model and products."

Thus, as Guaraci Agropastoril's partner sees it, the private sector is responsible for taking the lead toward sustainability. "Consumers are already applying pressure and we have to respond. Whoever takes the lead may benefit from a movement that, as I see it, is growing and irreversible."

With the eminence of climate catastrophes, there is no way out other than the animal protein production sector undergo an intense internal reform, Fonseca states, and concludes, "We must always keep these three pillars in mind: animal well-being, low carbon emissions and a reduction of the chemicals used in the production." ■



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IN FISH WE TRUST

BRAZILIAN FISH FARMING REACHES NEW LEVELS OF PRODUCTIVITY AS IT ATTRACTS NEW PLAYERS AND MAINTAINS STEADY GROWTH

JOÃO PAULO MONTEIRO
joao@ciasullieditores.com.br

The numbers are clear: the fish farming production chain in Brazil keeps on growing and things are looking up.

PeixeBR, the Brazilian Fish Farming Association, data shows an average rising curve of 5.6% year on year since its consolidation in 2014. “It is the fastest growing field in animal production”, points out Francisco Medeiros, chairman.

“This is an extremely professional sector that follows best practices and uses state-of-the-art technology in genetics, health, nutrition and equipment”, he stresses.

In other words, many reasons explain this upward movement. “Thanks to technology, small areas can be highly productive with little use of human resources. Plus, there has been a reduction in the red tape involved in obtaining Federal authorization for the use of public waters, which has enabled investments in the production of cages,” explains Medeiros, adding “the experience of companies that sell animal protein and the inclusion of tilapia in meals served every day in the food service industry also explain the increase”.

PeixeBR’s recent data leaves no doubt: “Plans to expand fish

farming in Brazil are being driven by the belief that there will be an increase in consumption”.

Currently at 5kg/per capita, domestic consumption in Brazil still falls short, but year on year growth is a fact. “This low indicator means there are opportunities for domestic expansion. Moneywise, the same amount of fish and seafood produced locally is currently imported to meet local demand; in other words, the unmet demand amounts to the same as our annual production”, assesses Medeiros.

In 2021, Brazil produced 841 thousand tons of farmed fish (including tilapia, native fish and other species). That is a 4.7% increase compared to production in 2020 (802.930 t).

It should be pointed out that this progress took place despite a challenging scenario. According to Medeiros, fish farming was directly affected by the increase in prices of raw material and input used in animal feed. In addition to macro-ingredients, such as corn and soybean meal, imported micro-ingredients also suffered a price increase in dollars, leading to disruptions in regular supply at different times of the year.

Tilapia is the driving force behind the success of the fish farming

sector. Rounding it up, tilapia aquaculture accounts for roughly 60% of the domestic production and has grown by approximately 10% from 2020 to 2021, thereby proving it is a viable product in Brazil.

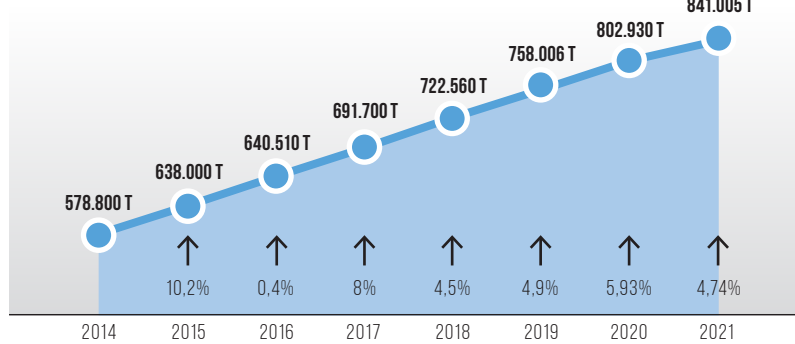
Tilapia is also the main Brazilian fish farming export, individually accounting for 98% of the revenue and 99% of the fish shipped from Brazil in the first half of 2022.

Taking a closer look specifically at figures for the species, we see significant increases from January to June 2022: 133% in financial terms and 32% in volume terms.

“IN RECENT YEARS, FISH FARMING HAS BEEN THE FASTEST GROWING FIELD IN ANIMAL PRODUCTION”, FRANCISCO MEDEIROS, CHAIRMAN OF PEIXEBR

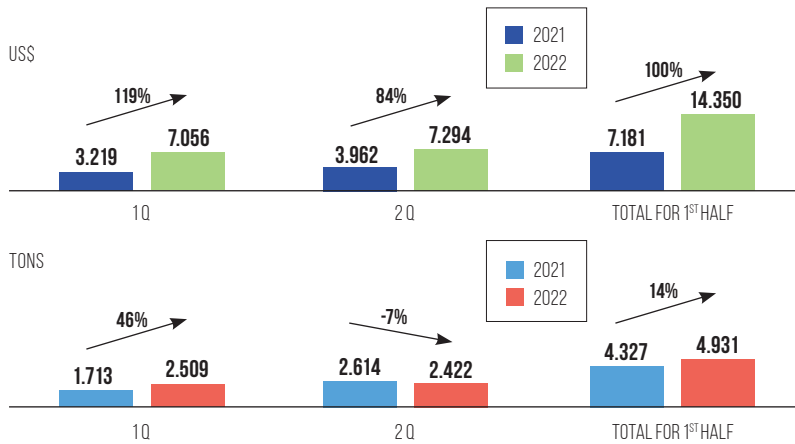


PRODUCTION GROWS BY 4.74% IN 2021.
ADDING UP TO A 45% INCREASE SINCE 2014



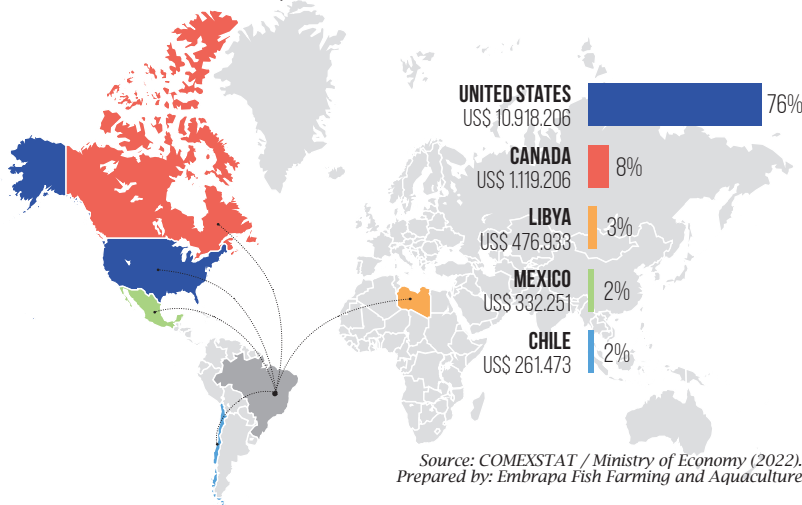
Source: PeixeBR

BRAZILIAN FISH FARMING EXPORTS, 1ST AND 2ND QUARTERS
2021 AND 2022 (US\$ FOB* IN TONS)



*FOB: Free On Board, international trade agreement on goods with prices free of shipping, insurance and other fees.
Source: COMEXSTAT / Ministry of Economy (2022). Prepared by: Embrapa Fish Farming and Aquaculture

TOP BRAZILIAN FISH FARMING EXPORT DESTINATIONS,
1ST HALF 2022 (IN US\$ AND % OVERALL SHARE)



Source: COMEXSTAT / Ministry of Economy (2022). Prepared by: Embrapa Fish Farming and Aquaculture

This data is taken from the 10th Edition of the Fish Farming Foreign Trade Newsletter, which is jointly edited by Embrapa Fish Farming and Aquaculture and PeixeBR. According to the publication, Brazilian fish farming exports have doubled in financial terms and seen a 14% increase in tons in the first half of 2022.

These figures are the result of a consolidation in the production chain, which allows Brazilian companies to operate more actively and widely internationally.

US\$14.35 million were invested from January to June 2022, compared to US\$7.18 million in the previous year. In volume terms, 4,931 tons were exported in the first six months of 2022, versus 4,327 tons in the same period in 2021.

According to the Chairman of PeixeBR, exports are a result of the work that started in 2018 with the implementation of the tilapia drawback and attendance in international events and trade shows to promote Brazilian products.

“Businesses that have historically worked with other types of animal protein, such as pork and poultry, joining the tilapia aquaculture market also contributed to the increase in production, as they had prior expertise”, he adds, “Other reasons behind the success of the Brazilian tilapia are its sensory qualities and a well-structured chain that deploys the best production technologies available”.

There is no question that challenges lie ahead, however, there is also a sense of optimism, one of the reasons being that a new President is taking office in Brazil in 2023. “We hope the new administration will maintain the policies that have been driving these results by decreasing red tape and especially by acting to enable exports to the European Union and reducing the tax burden (of taxes such as PIS and COFINS) on fish farming feed”, concludes Medeiros. ■

FROM FISH-FARM TO TABLE

USING A VERTICAL PRODUCTION SYSTEM, QUALITY IS PART OF TRADITION AT BRAZILIAN FISH, THE BRAND NAME OF THE **AMBAR AMARAL GROUP**

JOÃO PAULO MONTEIRO
joao@ciasullieditores.com.br

Sustainability means to make the most of what the universe offers without harming people or the environment, ensuring the future for coming generations.

This is the vision of Ramon Amaral, D.V.M. and director at Brazilian Fish. Located in Santa Fé do Sul (SP), the business production is significant and without compromising the care of the environment.

As part of the Ambar Amaral Group, today Brazilian Fish has two packing plants that together produce approximately 50 tons of fish per day. “Our goal is to end 2023 producing 80 tons/day,” says the executive.

To understand the success of the business, one needs to look to its past. The tradition of the Ambar Amaral family in livestock production start-

ed with cattle. Fish farming came later as a diversification strategy due to the region’s aptitude for this activity.

“In Brazil, and perhaps anywhere in the world, there’s no place with the physical-chemical qualities as Santa Fé do Sul. The regional water has exceptional characteristics such as temperature and pH, says Amaral, and he completes by saying: “In addition, it is a strategic location within the largest consumer market in Brazil, the state of São Paulo.”

As a result, in 2007 the project began with fish farming. In the following year, the fish packing facility was built, and in 2009 came the feed mill. In addition to Ramon, his brothers Felipe and Guilherme are also in the Group. The latter, an animal scientist, oversees the feed mill, while the former, a veterinarian, oversees the group’s livestock

THE FARM IS
LOCATED IN
SANTA FÉ DO SUL,
MUNICIPALITY
WITH VERY
FAVORABLE
CONDITIONS TO
TILAPIA FARMING



activities in the state of Mato Grosso.

His mother also plays a key role in the family business. A dentist by training, **Sônia Ambar Amaral** is the Group's CEO and oversees the Rotisserie (packaged food division), including ready-to-serve dishes, breaded and marinated foods, and appetizers. "The basis of our tilapia portfolio includes 36 products," says Ramon Amaral.

Such variety is the perfect example of value-adding. "The marketing of these products plays a key role in the business," says the director of Brazilian Fish. "Our brand is strong because of the variety of products, which delight and make all the difference to consumers," he states.



Found throughout the country, the business also seeks to meet client demand, be it through food services or retail, or selling under third-party brands.

Part of the production is sold to governments to be served as school meals. "We supply distributors, restaurants, supermarkets, governments," says Amaral.

And, finally, 5% of the volume produced is exported to countries such as the United States, Japan, and Taiwan. "We plan to expand to China, Canada, and the United Arab Emirates," says Natasha Seravali, Administrative Director at Brazilian Fish.

It recently joined the international markets, and it all happened because of a unique opportunity, she recalls. "The dollar was trading high com-



pared to the real in 2021, and the political standoff between China and the US opened the doors of the US to Brazilian fish."

PLANS TO EXPAND BRAZILIAN FISH INCLUDE LARGER PARTICIPATION IN INTERNATIONAL MARKETS, SAYS NATASHA SERAVALI

The positive results reached in this short time encouraged the company to seek other opportunities in the global markets. "We have plans to expand in 2024, and they include a new packing plant with three times the current capacity," says Seravali, projecting that: "In this context, we will increase exports to 20% of our production."

To play in the international markets, businesses have to meet a number of requirements. As a result, Brazilian Fish enrolled in certification programs such as the Aquaculture Stewardship Council (ASC), Best Aquaculture Practices (BAP), and Halal Certification.

Consequently, the verticalization of the entire production chain at Brazilian Fish ensures not only a high level of productivity and quality, but also more safety for the consumer. "The entire process is developed in house, the fish delivered to retailers or point of sale or to the client is produced entirely by us, from fingerling to rearing to fattening," says Amaral. "Also, the logistics are also performed by our own staff." ▶



“ WE ARE AMONG THE THREE LARGEST BUSINESSES IN BRAZIL -AND WE AIM TO BE THE LARGEST ”

RAMON AMARAL,
DIRECTOR OF BRAZILIAN FISH



(ABOVE) **BRAZILIAN FISH** PRODUCES AND PROCESSES APPROXIMATELY 50 TONS OF FISH PER DAY. (BELOW) **AFTER REMOVAL** FROM THE TANKS, THE TILAPIA ARE PLACED IN TEMPERATURE AND PH CONTROLLED TRUCK-TANKS WHERE TEMPERATURE AND OXIGENATION ARE MONITORED

All of this effort is approved by and can be verified by consumers. “From the data of birth of the animal, its approximate 11 months of life are monitored,” explains Amaral. “We have data on approximately 90 indicators, such as feed intake, temperature, water pH on the date of harvest, and microbiological data collected by the industry, among others. For tilapia production, this traceability power is unparalleled anywhere in the world.”

The feed is manufactured in house, reinforces Amaral. The Ragufe brand, which is also part of the Amaral Group, produces for Brazilian Fish’s internal and external markets. “I can safely say that it is the best tilapia feed in Brazil,” notes Amaral.

“We’ve developed an ideal formulation to ensure not only better performance on the farm but also improvements in terms of shelf life, texture and flavor,” says the director of Brazilian Fish. He states that the business itself utilizes all of the feed produced, and that the nutrition offered is tested daily.”

Brazilian Fish also has an experimental unit where nutrition is tested using strict parameters overseen by the technical team. “The whole technical and financial performance is verified, as nutrition represents around 70% to 80% of the cost of production,” says Amaral.

The experimental unit is also

where management and vaccination tests are performed. “New diseases and challenges come up constantly, therefore 100% of our animals are vaccinated,” explains Amaral.

In addition to the vaccine against streptococcosis, Brazilian Fish applies autogenous vaccines, which prevent more than one disease. “The results of several tests were positive, so vaccination moves forward. As a result, we don’t need to use antibiotics,” explained the veterinarian.

That means that there is no risk that the feed might contain antibiotic residues that could develop some form of resistance in humans. This concern with people also occurs in relation to the environment.

As Ramon Amaral states: “Nothing goes to waste.” The director of Brazilian Fish exemplifies with the use given to the dead animals on the property: “They are composted, converting into organic fertilizer, our liquid biofertilizer. This leaf-based fertilizer, which improves productivity in legumes and grains, is sold and also donated to businesses in our region.”

Thus, combining productivity with quality and concern for people and the environment, optimism is latent at Brazilian Fish. Ramon Amaral confirms and concludes: “We are among the three largest businesses in Brazil – and we aim to be the largest.” ■

VERTICAL INTEGRATION



ANIMAL REPRODUCTION

All vertical processes start with the mothers, who produce the eggs that are taken to the laboratory to produce the fingerlings;



FISH FARMING (GROWING TILAPIAS)

During this stage, the fingerlings are placed in dug-up tanks and grow to the juvenile stage or 90 g. During the growing stage, fish are placed in cages in the Paraná River until they reach 900 g before they are transported in tank trucks to slaughter.



FEED MILL

The starter feed for the fingerlings, the intermediate and finishing feeds are all manufactured in-house and fed in net tanks in the river. As a result, feed inputs (corn, soybeans, and feed meals) traceability is preserved right through to the end product.



STORAGE AND DISTRIBUTION

After production, Brazilian Fish focuses on conservation and transportation.

All segments of the group have their own logistical fleet, fish farming, feed plant, packing plant and distribution.

Thanks to this logistics, the company is able to serve clients according to each one’s demands and needs.



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BRAZILIAN MARINE SHRIMP FARMING EVOLVES IN HARMONY WITH THE ENVIRONMENT

EVEN WITH SETBACKS, BRAZILIAN LIVESTOCK CLOSES 2022 WITH RECORD EXPORTS. CHALLENGES FACED REQUIRE PRECISE MARKET STRATEGY FOR THIS YEAR

NATALIA PONSE
natalia@ciasullieditores.com.br

The Brazilian marine shrimp farming has been resuming, in an expressive and continuous manner, a healthy growth - in five years (2016-2021) it reached 100%, including, at the peak of Covid-19 (2020/112 thousand ton to 2021/120 thousand ton), it grew 33.3% over 2019/90 thousand ton) (see chart). This was the result of producing, editing and spreading Good Management Practices (BPM) and Biosafety Measures Manuals, followed by training courses (micro, small and medium producers) run by the Brazilian Shrimp Farm Association (ABCC), allied to the competitive prices paid by the domestic market.

With the continued growth of the Brazilian production of farmed shrimp, projections point to 150 thousand tons in 2022 and 180 thousand tons in 2023, it is quite evident that it will be necessary, already from 2023 on, to make an urgent change in the presentation and sale of its products, both in terms of the expansion of its processing and in adding value to shrimp marketed domestically; both to regulate prices and to increase the shelf life and also to enable sales

and consumption internalization.

This is because at least 60% of the Brazilian population does not have access to shrimp from national producers, notably because 60% of this production is offered as a fresh product, with a shelf life of 4-7 days, precluding its internalization in the vast majority of Brazilian cities (5,300) that have 100 million inhabitants.

On the other hand, to ensure the sustainability of the activity, shrimp exports need to be prioritized, notably in the small-medium classifications, headless (51-60, 61-70, and 71-90) for the USA, or with head (70-80, 80-100, and 100-120) to the European Union. The Brazilian product has always been competitive, due to the fact that the demand for these shrimps to meet the bottom of the world's consumer pyramid, on one hand will be continuously growing and, on the other, none of the current leading exporters (Ecuador, India, Vietnam, and Thailand) are interested in participating or competing with Brazil.

An accelerated growth is observed when the evolution of the marine shrimp farming in the state of Ceará is analyzed, based on data from the cen-

sus carried out by ABCC (veja na tabela). This has turned on "warning lights", on one hand, for the vigorous growth of the activity, and, on the other hand, for the structural deficiencies, which requires specific support, both in processing and outflow of production.

This is due to the fact that, in a five-year period - 2016 2021 - there was an increase of 155% of active farms, mostly composed of 1,351 micro (75.64%), 224 small (12.54%), 172 medium (9.63%), and 39 large (2.18%) producers. Compared to the 2016 production (34,000 ton), the 2021 production (55,600 ton) was increased by 63.53%, even though 86% of micro and small producers did not have environmental licenses and therefore did not have access to any type of financing.

On the other hand, besides the number of producers, the most prominent aspect in the expressive marine shrimp farming growth in Ceará was undoubtedly the number of municipalities (62) that began to explore this activity, an increase of 121.4% compared to 2016 (28). The highlight was the internalization of *L. vannamei* cultivation in oligohaline waters



which until a few years ago was unthinkable. But it has already established a new economic order in 40 (22%) of the 184 Ceará municipalities.

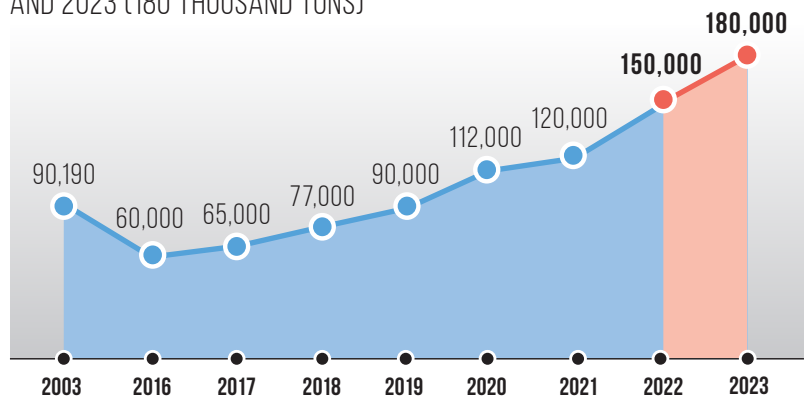
In relation to the census of shrimp farming in the state of Rio Grande do Norte, the second largest Brazilian producer, carried out by ABCC in 2021, we identified 452 shrimp farms located in 36 municipalities and their 26,000 ton production represented a 33.3% increase in the number of municipalities, 25.2% in the number of shrimp farms, and 45.87% in the 2021 production volume (26,000 ton) compared to 2016 (17,824 ton). Opposite to Ceará and Paraíba, the differential of the shrimp farming in Rio Grande do Norte is the use of estuarine and ocean waters, whose potential for exploration is superior to 60 thousand hectares. This, associated to the outstanding basic infrastructure (energy, roads, etc.) and the wide granting of environmental licenses, whose expressive percentage of 79% are licensed, is a differential to attract large investors.

In fact, in recent decades, shrimp farming has gained worldwide prominence, expanding rapidly, mainly in tropical and subtropical regions of Asia and the Americas, driven by the high international demand and attractive prices. It is quite different from its beginnings, when it was implemented in deactivated salt flats and in mangrove areas, using wild post-larvae, utilizing only the natural food present in both tidal waters and soil (polychaetes). In recent years, with the extraordinary technological evolution, marine shrimp farming has become a highly professional activity, even greener, sustainable and environmentally responsible.

That is why, given the increasing emission of greenhouse gases (GHG) – carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) – responsible for global warming, the role of shrimp farming as an ally in actions to control this phenomenon has come to deserve special attention, since part of this carbon can be sequestered by marine shrimp farming, carried out in estuarine, marine and oligohaline nurseries. The growing and sustainable intensification process induces the flourishing of microalgae in the water columns which, in turn, thanks to the photosynthesis

RECOVERY OF THE BRAZILIAN PRODUCTION OF MARINE SHRIMP FARMING

FROM 2016 (60 THOUSAND TONS) TO 2021 (120 THOUSAND TONS), WITH PROJECTIONS FOR 2022 (150 THOUSAND TONS) AND 2023 (180 THOUSAND TONS)



Source: ABCC

GROWTH OF MARINE SHRIMP FARMING IN CEARÁ

| | | | |
|------|--------------------|-------------|-------------------|
| 2003 | 25,915 TONS | 191 FARMS | 13 MUNICIPALITIES |
| 2011 | 31,982 TONS | 325 FARMS | 21 MUNICIPALITIES |
| 2016 | 34,000 TONS | 700 FARMS | 28 MUNICIPALITIES |
| 2021 | 55.6 THOUSAND TONS | 1,865 FARMS | 62 MUNICIPALITIES |

Source: ABCC

process, contributes to the fixation of carbon dioxide from the atmosphere.

In this context, the current management practices adopted in Brazil by shrimp farming have contributed to raise the Brazilian sector to a condition of low carbon emissions. Some of them are:

- 1 Integral preservation of mangroves;
- 2 Prioritization of microalgae flourishing, as a food base for farmed shrimps;
- 3 Use of solar and wind energy;
- 4 Reduction of fish by products in shrimp feed;
- 5 Use of additives to improve nutrient utilization, reducing residues;
- 6 Genetic improvement to increase growth and resistance to viral disease, reducing FCR;

7 Use of sedimentation basins and reuse of wastewater;

8 Use of multitrophic systems.

It should also be noted that the carbon sequestration capacity of shrimp farms has an average rate of 1.5 ton/ha/year, which, according to Boyd (2010), is higher than that of natural lakes (0.136 ton/ha/year). Likewise, the absorption of CO₂ both by phytoplankton and by the sedimentation process results in large amounts of carbon from outside the aquatic environment, mainly from the atmosphere, whose recycling causes these ecosystems to act as sinks; even the deposit of organic carbon in the sediment of continental waters can be greater than in the oceans. ■

ITAMAR ROCHA

President of ABCC, director of Deagro/adviser on COSAG (FIESP) and President of MCR Aquacultura

AT DENDÊ SHRIMP
PRODUCTION AND
COMMUNITY
GROW TOGETHER

EIGHT YEARS IN
OPERATION, THE
COMPANY ADOPTS
100% SUSTAINABLE
PROCESSES AND
LEVERAGES
STRUCTURE TO
DIVERSIFY SALES

VALERIA CAMPOS
valeria@ciasullieditores.
com.br

In Camamu, 170 km from the capital Salvador (BA), the Dendê Shrimp Farm is a business pillar in the region not only because of its high level of production but also because of the positive impact it has in the local community. The farm has been operational for eight years non-stop, notes the owner, Tiago Andrade Zironi, running a business that is sustainable and profitable.

This project started small, when Zironi was only eight-years old, after a school field day, and became a reality 17 years later: “I was in elementary school when we went to a mariculture close to Valença, in Bahia as well. I’ve always liked to eat shrimp, and what I saw got stuck in my head,” he says: “So, a seed remained dormant inside of me through these years, and it began to grow when an uncle visited.”

As the fish farming pioneer in Rondônia (RO), when Zironi’s uncle landed in Guaibim, in the municipality of Valença, he was blown away by the shrimp farming in the region, and encouraged the nephew to follow this path: “After that, the dormant dream started to gain shape, and I started a macroeconomic study to map the opportunities in the region. I started to look for an area and found myself in Camamu.”

Once the location was determined, Zironi registered the business and got a license from the municipality of Camamu. Concerned with the possibility that the operation would affect the surrounding areas, Zironi was keen on presenting a study on the environmental impact that could be driven by the operation.

And, at the end of 2014 the equipment was turned on: “I started the operation by building the four first tanks, each with volume capacity of 200m³, since the White Spot Syndrome Virus (WSSV) was already

endemic when the project got started.”

To support Zironi, his parents invested in the business, giving it a family business profile. And the rest is history – eight years of non-stop sustainable production.

MARKET DIFFERENTIAL. The Dendê Shrimp Farm supplies the wholesale and retail markets, and 70% of production is sold at the retail level. The farm supplies costumers in Bahia, Rio de Janeiro, Minas Gerais and Espírito Santo, shares Zironi. “At the retail level, we have our own stores in three cities in our region: Itabuna, Camamu (head office), and Valença, focused on marketing fresh shrimp, 100% in natura.”

And this is exactly what distinguishes our products, he noted: “We deliver products as fresh as they come in three different versions (whole, without heads, and peeled) with weights varying from 30 to 45 grams.

To offer food that is both safe and secure, Dendê Shrimp Farm uses technology and operational management that is environmentally friendly. In total, says the owner, the business uses nursery and growth tanks – where the latter undergoes management adjustments due to diseases endemic to farmed shrimp.

“Production is currently 25% of what it used to be. In December 2020 we unexpectedly had to deal with Viral Infectious Myonecrosis (IMNV.) This disease, whose etiology is unknown, occurred first in shrimp farms in Piauí in 2022. As a result, shrimp farming became unviable throughout the country, including in the state of Bahia,” says Zironi.

Before this event, the operations’ figures were significant. Between 2017 and 2020 – until the disease was diagnosed at Dendê Shrimp Farm –, production was ▶



SHRIMP

up to 250 tons per year: “For five consecutive years we managed to produce almost one thousand tons of shrimp in 2.6 ha of surface water. In other words, a very small area with an extremely high productivity.”

In this context, nutrition plays a key role in the farm. To ensure diets are efficient, every tank on the farm includes a remote-controlled automatic feeder. “That increased production efficiency, decreasing the number of growth days and improving feed conversion,” he notes.

Right now, we are producing with maximum efficiency with 30% of the business capacity, as we wait for new lineages to arrive in Brazil through official pathways: “We are waiting for the SPR lineage, resistant to specific pathogens, and for the SPF, which is pathogen free. Today we are working with post-larvae grown in small regional laboratories that use parents recruited from the state of Bahia itself.”

Based on this project, some laboratories are taking the initiative of moving in this direction with the support of the Brazilian Shrimp Farm Association (ABCC). “They are introducing animals with specialized genetics so the sector can prosper again,” notes Zironi.

To achieve successful results, the combination of people and sustainable actions are part of the business daily routine. In total, he highlighted, Dendé Shrimp Farm has 12 employees who are trained on an on-going basis, and 62 production units: “30% are clean water, effluent, and solid residue tanks.”

The real-time monitoring is key in all stages of the process and a great ally of the farm. According to Zironi, it promoted gains in terms of efficiency, and the results were so positive that the group invested in its first enterprise: “A software for on-line business management. We are close to launching into the market the Agro no Controle (Agriculture in Control) system, geared to aquaculture and agriculture. It allows producers to have full control of their operations in real time and decentralized.”

QUALITY AND SUSTAINABILITY. To preserve the superior quality of the prod-

OPERATIONAL
SINCE 2014, THE
DENDÉ SHRIMP
FARM CREATES
JOBS AND
EDUCATIONAL
OPPORTUNITIES
FOR THE
COMMUNITY



“WE ALWAYS PROVIDE GUIDANCE IN A POSITIVE, RESPECTFUL WAY. AFTER ALL, MOST OF THE COMMUNITY IS MADE UP OF FISHERMEN. SO, WE BROUGHT THEIR KNOWLEDGE TO THE FARM AND DEVELOPED AN ENVIRONMENTAL EDUCATION COMPONENT”

TIAGO ANDRADE ZIRONI,
OWNER OF DENDÉ SHRIMP FARM

ucts, investments in people and technology have been present since inception. According to Zironi, the farm relies on a team of highly skilled biologists and on a laboratory equipped to manage the quality of the water, soil, and health of the shrimps.

“One needs to keep a close eye on the indicators. In fact, more than growing shrimp, we care for water. Water is our most important asset. So, that is where our tech focus is,” says Zironi. As part of this process, the water is treated and filtered, and after it undergoes a process to recover its physical-chemical, and biological qualities, it moves on to being re-

used or returned to the environment.

And this focus on sustainability starts inside the tanks, where organic matter is biologically recycled, in other words, the use of biofloculation technology helps to maintain the quality and stability of the water during the entire production cycle: “The difference is in the recycling of all organic matter within the tank itself,” he affirmed.

In addition to keeping the production indicators stable, biofloculation improves shrimp immunity as it is an incredibly nutritious food option to farmed shrimp. Also, keeping track of the system on a daily basis and the adoption of the right protocols drive the



Dendê Shrimp Farm to achieve excellency in results due to the outstanding water quality. “Shrimp like a clean and balanced environment,” added Zironi.

In terms of sustainability, another component of the business operations is converting the excess solid waste resulting from the production into organic fertilizer. “The solid waste undergoes a drying process, and once dried it is transferred to a composter. That process led to the establishment of a second business within the Dendê Shrimp Farm. As a result, 100% of the organic residue is recycled and sold under the brand Shrimp Húmos,” he explains.

It is important to note also that part of these products is donated to family agriculture operations in the region to help small producers.

As a result of this division of the business, a third branch of activity came about at Dendê Shrimp Farm: Cacau Selvagem (Wild Cocoa.) This third branch is dedicated to producing chocolate, and it also uses a sustainable model. It involves 8 thousand cocoa plants to which the organic material can be re-applied.

The outcomes of these business divisions are countless, particularly in the social sphere. The Dendê Shrimp Farm has a positive impact in

the community, and since its establishment it promotes growth and opportunities to all in the surrounding areas: “This area has communities with their own cultural identity established through a historic process stated when Brazil was marked by slavery.) Once our business was established, we created more than 50 direct and 20 indirect jobs over the years.”

As indicated by Zironi, the 12 employees that continue working for the business have been trained and included in the Environmental Risk Prevention Program (PPRA) as shrimp growers, according with their professional level: “We always provide guidance in a positive, respectful way. After all, most of the community is made up of fishermen. So, we brought their knowledge to the farm and developed an environmental education component.”

Notwithstanding the positive impact on the environment, the business extends this approach to water springs and to the region’s biodiversity: “We have over 200 species of birds and other wild animals around the property. Therefore, all we do has to be environmentally friendly.”

For the future, our targets envision an even greater scope project. According to the owner, the goal is to continue within the line

THE BUSINESS
SELLS AT THE
RETAIL LEVEL
THROUGH ITS OWN
STORES IN THREE
CITIES IN THE
REGION, FOCUSED
ON FRESH, IN
NATURA SHRIMP

of technology development. This includes greater diversity of species fed on farm to include fish such as arapaima, flounder, and grouper: “We are assessing the economic viability of each one of these, and these species will be reared in our tanks in the near future.”

To Zironi, all the work within the Dendê Shrimp Farm can be summarized by one word – perseverance. “Slow daily doses of perseverance. We will never give up, never, no matter how hard it is to keep the business operational.”

The farms contribute to creating jobs for Brazilians. And Brazil has all it takes to widen its participation in international markets, concludes Zironi: “Brazil can potentially become a major exporter of shrimp. This will demand from us Brazilians much research, attention, and dedication.” ■



SUSTAINABILITY IS “POINT OF NO RETURN”

In 2033, the agro that will prevail is the one revealed in 2023.

What is this reveal? This is the question the students of the international master's degree of Audencia Business School (FECAP Brazil/France) asked me. It is a very simple one from an obvious perspective, and if we manage to rid ourselves from the hypnosis of distractions and generalizations we can touch, feel, and see proven evidence from agents of the agribusiness system that already act in 2023 as if we were in 2033.

At the celebration of the 40th anniversary of Embrapa Meio Ambiente, in Jaguariúna (SP), in December 2022, Marcelo Morandi, former head, and Paula Packer, current head of this unit, addressed this powerful “anticipatory competence” perspective. It means demonstrating that in human history on Earth some people were always able to see first and anticipate what many others would follow much later.

In the agricultural universe's field of science and technology, the knowledge available exists within the state-of-the-art foreseen by these pioneer agents, inside and outside the farm's gate, dominating the “anticipatory” competence. Researchers studying the relationship of plants and animals with microbiomes will undoubtedly anticipate what the forward-looking will do while managing this “deep ESG”.

7 are the sacred points of this future that already lives in the present:

1 Production chain management, with the purpose of integrating industry, trade, services and agriculture into a symphony where goals, means, obstacles and critical success factors are understood;

2 Business organizations conscious capitalism, as defined by Thomas Eckschmidt, Raj Sisodia, and Timothy Henry in the book “Conscious Capitalism - Practical Guide”, already present in ESG organizations;

3 Increasing and abundant cooperativism. Cooperatives are the only realistic formula for the prosperity of 100% of their agents. Therefore, this governance will require cooperatives as a state plan;

4 Intensive applied and educated science reducing waste in every possible way translates into sustainability and profitability. Embrapa Poultry and Swine, Cattle and Milk, for example, reveal that they have knowledge on tropical sustainable development in Brazil and are open and available for partnerships;

5 Climate awareness and restoration of the natural paradise. At FGV Agro, at the Bioeconomy Observatory, Daniel Vargas told me that the potential of environmental assets worldwide would add up to about 50% of today's world's total GDP. Blairo Maggi, Brazil's 3rd largest producer, says: “Our business is to serve our customers.” To do this, we need the next 2 points below.

6 Rural producers in a new health agents dimension. Talking to Prof. Dr. Ray Goldberg, he told me: “Tejon, food is now synonymous with health, soil health, plant health, animal, water, environment, people's health; humanity's health is born from originating food, we enter into a ‘one health’ system.” Food Citizenship would mean “agrocitizenship”. Agroconsciousness.

7 “There are no underdeveloped countries, there are under-administered countries” (Peter Drucker). The one-million-dollar question on the previous 6 aspects lies precisely in the competence of leadership and management to put in place “eco-governance” rather than “ego-governance”.

Brazil's GDP can double in size by the end of 2023. For this, the Brazilian agribusiness's GDP will also double in size. The future of the country will rest on the size of its sustainability; this is the “point of no return”. ■

IN THE AGRICULTURAL UNIVERSE'S FIELD OF SCIENCE AND TECHNOLOGY, THE KNOWLEDGE AVAILABLE ALREADY EXISTS IN THE STATE-OF-THE-ART FORESEEN BY THESE PIONEER AGENTS, INSIDE AND OUTSIDE THE FARM GATE, DOMINATING THE “ANTICIPATORY” COMPETENCE



José Luiz Tejon Megido

is journalist and advertising professional, graduated from Casper Libero College, with a Master's Degree in Arts and Culture from Mackenzie Presbyterian University, PhD in Pedagogy from Universidad de la Empresa (UDE), Uruguay. Graduate Course Professor at Getúlio Vargas Foundation (FGV) In Company and of the Universal Institute of Marketing in Agribusiness (I-UMA). Guest Professor at Audencia Business School- France (Master of Science in Food Management); commentator at Rádio Jovem Pan; Member of the Brazilian Marketing Academy Hall of Fame; Counselor of CCAS Sustainable Agro-Scientific Council; one of the 100 most influential personalities in agribusiness (Isto É Dinheiro Rural magazine); former director of Estadão Group, of Agroceres and of Jacto S/A; author and co-author of 33 books; HR Top of Mind award as International Speaker; Great Keynote Speaker Olmix/France

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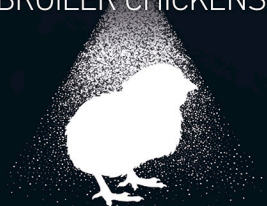
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