

Kerala Chapter of IDA Organizes Events



Dr. R. Rajendra Kumar delivering his talk

A Talk on “Career Advances in Dairy and Food Processing”

A talk on “Career Advances in Dairy and Food Processing” was organized by the Indian Dairy Association, Kerala Chapter on November 5, 2022 at Verghese Kurien Institute of Dairy and Food Technology (VKIDFT), Kerala Veterinary Animal Sciences University (KVASU), Mannuthy.

The programme commenced with an introductory speech by Dr. S.N. Rajkumar, Dean, VKIDFT, Mannuthy. Dr. R. Rajendra Kumar, Former Dean, CDST, Mannuthy provided the students a glimpse of the World of Food and Dairy Science and the plethora of career opportunities as well as higher study options offered by the sector. In addition to that, he also gave insights into secrets of achieving academic excellence.

World Food Day under the banner Foodzone'22

IDA Kerala Chapter and Verghese Kurien Institute of Dairy and Food Technology, KVASU, Mannuthy in association with Kerala Food Safety Department, Thrissur district organized

programs on account of World Food Day under the banner Foodzone'22.

Main highlight of Foodzone 22 was the 'Eat Right Foodzone Expo 2022'. It was conducted on October 15, 2022 at Corporation Ground near Shakthan Stand. The event was inaugurated by Shri P.K. Shajan, Standing Committee Chairman Health Department, Thrissur Corporation. Dr. S.N. Rajakumar, Chairman, IDA Kerala Chapter and Dean (VKIDFT) along with Dr. R.P. Sudheer Babu, SEC member, IDA Kerala Chapter and Registrar of KVASU graced the occasion with their presence. Flash mobs were also performed by the students. Shri T.N. Prathapan, Hon'ble Member of Parliament; Lyricist Shri B.K. Harinarayanan and composer, singer, musician Shri Ratheesh Vegha also graced the expo with their esteemed presence. On October 17, the 2nd day of Foodzone'22 a National level seminar was organized wherein Dr. Anilakumar K.R., Scientist (Retd.) DFRL, Mysore and Professor, Amala Research Cancer Centre gave a presentation on 'Recent Trends in Food Processing Technology'. A total of 185 participants attended the seminar. A Debate competition 'Food-ologue'; Sensory evaluation competition - SENSAGE; Quiz competition- Food Buzz were also conducted for students from various colleges.

Foodzone'22 was concluded by a valedictory function held in the seminar hall of VKIDFT in the presence of VC, Registrar, DE and DSW of the university, Dean of the college, Food Safety Asst. Commissioner, FSO and teachers, students and participants of the seminar. A cooking competition and photography contest for the students of VKIDFT were also organized.



Glimpses of the Expo, Seminar, etc.

IDA Rajasthan Chapter Organizes Dr. NR Bhasin Memorial Lecture



Dr. NR Bhasin Memorial Lecture and Award for Excellence in Studies was organized by Rajasthan State Chapter of Indian Dairy Association at a private hotel on Jawahar Lal Nehru Marg, Jaipur. Smt. Sushma Arora, Managing Director, Rajasthan Cooperative Dairy Federation was the Chief Guest of the ceremony. Smt. Arora said that a lot remains to be done in the dairy sector. "Since 6 months, I got a chance to work in this field, the opportunities here are good, so the competition is also high. Livestock in India is high, but milk production per animal is low," she said.

Dr. Raktima Anand, wife of Dr. N.R. Bhasin was present on this occasion. Meritorious students of dairy and animal husbandry sector were felicitated in the programme.

Speaking as the Keynote speaker, Prof. Rakesh Mohan Joshi, Director, Indian Institute of Plantation Management, Bangalore elaborated on the present status of dairy sector in Rajasthan state and India as well as the whole world. He said that the future of India is very bright in the field of dairy sector and the cost of milk production in India is also the lowest in the world. There is a lot of potential for dairies in the cooperative sector as well as in the private sector.

Shri Rahul Saxena, Chairman, Rajasthan Chapter of IDA welcomed the guests and Dr. Karun Chandalia, Secretary, Rajasthan Chapter-IDA proposed Vote of

IDA (EZ) ZEC Meeting at Kolkata



thanks. Dr. A.K. Jain, Vice Chairman of IDA (North Zone) threw light on the biography of Dr. N.R. Bhasin and shared his memories.

Chairman, Ajmer Dairy Shri Ram Chandra Chowdhary; Managing Director of Jaipur Dairy Shri Kulraj Meena, head of Payas Dairy Shri R.K. Singh, former Managing Director of Jaipur Dairy Dr. Himmat Singh and Shri L.K. Kaushik were also present in the function.

IDA (West Zone)

Elects its New Zonal Executive Committee Members

IDA (West Zone) election process completed under the nominated Returning Officer Shri B.R. Karad. The other election committee members were Shri S.R. Nagle and Shri M.R. Padhye. Election was held through on-line voting system. Members elected its zonal committee members unanimously. The newly elected members are: **Chairman:** Dr. J.B. Prajapati; **Vice Chairmen:** Shri K.Shyju Sidharthan and Dr. J.V. Parekh; **Secretary:** Shri Madhav Vasudeo Patgaonkar; **Treasurer:** Shri Anil Shriram Hatekar; **Member (RE):** Prof. Prashant G Wasnik and BAIFF Development Research; **Member (PP):** Ms. Richie Agarwal and Shri J.R. Daruwala; **Member (DI):** Shri Rajkumar Malik and Kaira District Coop. Milk Producer Union Ltd.; **Member (MP):** Shri Girish Dattatray Chitale and Shri Ramraje Bhagyeshrao Desai Kupekar.

Newly Elected IDA (East Zone) ZEC Organises its First Meeting at Kolkata

Newly elected IDA (East Zone) Executive Committee meeting took place at Kolkata, recently. It was a formal hand over and take over ceremony.

Indian Dairy Industry to Grow @ 12-14% in FY23: ICRA

The strong revival of the hotels, restaurants and catering (HoReCa) segment and the increase in retail prices are likely to help the dairy industry achieve 12-14 per cent revenue growth this fiscal, according to a report of ICRA. Indian dairy companies are estimated to achieve revenue growth of 12-14 per cent in FY23 on a year-on-year basis, backed by a strong revival in demand, especially the HoReCa segment and an increase in retail prices.

However, the operating profit margins are expected to contract by 120-160 bps on a year-on-year basis as the retail price hikes are expected to provide only partial support to the input cost pressures, it added.

ICRA expects the industry to maintain a stable credit profile, supported by a favourable demand outlook and moderate debt levels. Milk production yields in the first half (H1) of FY23 were hampered by the prevalence of Lumpy Skin Disease (LSD), notably among cows in the northern states. Although a successful immunisation programme helped contain the disease, a slight moderation in milk production growth to 4-5 per cent in the current fiscal is expected.

According to ICRA Sector Head and Vice President Ms. Sheetal Sharad, raw milk procurement prices increased in FY22, led by healthy demand and constricted milk availability as a result of disruption in cattle insemination programmes earlier during the pandemic. The prices have continued to rise in the current fiscal too, owing to rising cattle feed and fodder prices for dairy farmers.

While erratic monsoons in various parts of the country impacted fodder availability, rising prices of grains like maize, wheat and soybean led to soaring cattle feed concentrate prices. Furthermore, companies faced rising logistics, processing and packaging expenses.

"Given the healthy demand expectations over the festive and wedding seasons, we anticipate raw milk prices to stay firm in H2 FY23 as opposed to a typical correction in the flush season. Retail prices for dairy products have thus gone up in the current fiscal to make up for higher costs," she added.

The report further stated that revenues from value-added products (VADPs) witnessed a healthy year-on-year growth of 18-20 per cent in FY22. The early



commencement of summer demand, relatively higher temperatures and the waning impact of the pandemic boosted growth, it said.

"We anticipate the VADP segment to continue to grow at a similar 18-20 per cent in FY23 as well. The industry has been able to liquidate skimmed milk powder (SMP) inventory in FY22 in line with expectations, aided by good demand recovery in the institutional and the HoReCa segment and recovery in domestic SMP prices," Ms. Sheetal Sharad said.

Revenues in the liquid milk segment are predicted to expand at a faster rate of 7-9 per cent in FY23, owing to growing per capita consumption and rising realisations. However, on the flip side, increased input costs for dairy companies continue to be a worry. Thus, more retail price hikes could follow in the backdrop of the current inflationary scenario.

Ms. Sheetal Sharad said although credit metrics for dairy companies are projected to moderate in FY23 due to margin pressures, regular raw milk supply with LSD under control and feed cost stabilisation for farmers and a healthy demand outlook should help dairy companies' credit profiles in the medium term.

ICRA anticipates moderate capex with most private companies focusing on VADP capacity expansion and moderate SMP inventory levels, resulting in a stable credit profile for the industry, she added.

Two-Fold Rise in Dairy Exports Melts Butter Stocks at Home

The native market is dealing with an acute scarcity of butter and ghee, after a virtually two-fold enhance in dairy product exports final fiscal 12 months and better

consumption throughout Diwali drained the provision pipeline and stocks. According to statistics compiled by the Agricultural and Processed Foods Export Development Authority (APEDA), India exported 19,954 tonnes of butter in 2021-22, about four-and-a-half instances greater than the earlier 12 months' amount of 4,449 tonnes.

Exports of skimmed milk powder elevated to 46,285 tonnes in the 12 months ended March 31, 2022, a virtually three-and-a-half time enhance, whereas shipments of ghee rose near 10% to 10,689 tonnes. Overall, the worth of dairy product exports elevated to \$392 million from \$201 million.

Bangladesh, the UAE and Bahrain had been the highest three locations to obtain Indian dairy merchandise in fiscal 2022. Local consumption, particularly of ghee, butter and cheese, too was robust throughout the festivals, which Indians celebrated in a grand approach after two painful years of Covid.

"There was not enough supply in the pipeline as export of skimmed milk powder and butter was good in the previous year (FY22)," stated Shri Devendra Shah, Chairman of Pune-based Parag Milk foods.

Amul is the biggest exporter of dairy merchandise from India. Amul butter, which has greater than 90% share of the butter market, has disappeared from the market throughout the nation. Amul diverted about 10-11% extra milk for liquid milk consumption over the last 2-3 months, including to scarcity of butter and ghee. According to commerce sources, the revenue margins in liquid milk are increased than different milk products. Dr. R.S. Sodhi, MD, GCMMF said, "Selling milk is our first priority and there was a substantial increase in demand for full-fat liquid milk during the Diwali season. Normally, about 60% of our milk collection is sold as liquid milk. However, during the last 2-3 months, we had to divert 11% more milk towards the liquid milk segment."

Need to Develop Advanced Breed of Cows: Yogi Adityanath



INDIAN DAIRYMAN

On the last day of his two-day visit to Mathura recently, he arrived at the Bhakti Vedanta Gurukul and International School campus run by ISKCON wherein he dedicated the Shri Krishna Balarama temple to the Public and offered prayers. He also inaugurated the dairy plant run by Bhakti Vedanta Gurukul. He insisted that women self-help groups should be included in dairy committees and added that a processing facility for cow-based products should be established in each tehsil. The CM said that abandoned cows roaming on streets occasionally end up becoming the reason for riots. The government has launched several programmes to protect cows. More than nine lakh cows are being cared by the government in the state. The government is making constant efforts to protect Indian cows.

"We won't be able to fulfil the goals of Gram Swarajya without this. The state government supports all positive initiatives in this direction. To boost the income of agricultural and livestock farmers, the production of milk-based products like curd, butter, and ghee need to be pushed," he added.

He recommended setting up dairy committees in rural areas of the state to help the rural population become self-sufficient.

In order to protect Indian breeds of cows, an improved breed must be developed first. The Chief Minister thanked the Pandit Deen Dayal Upadhyaya Veterinary Science University for initiative taken in this field while talking about his experience of seeing an advance breed of cows developed by the University.

Stating that 'Braj' is the 'land of the incarnation of God', the CM said, "It is our responsibility that this earth becomes the land of 'gau seva' (cow service)." Talking about how cow-based products are being used for industrial purposes, he said, "Not only milk products but also CNG is being made from Indian bovine breeds, while in Badaun cow dung and cow urine are being used to make paint."

Govt Moves to Set up Fodder-centric FPOs

In order to address the fodder deficit, the government has designated the National Dairy Development Board (NDDB) as the implementing agency, setting a target of 100 such FPOs in 2022-23.

In its order on November 4, the Union Ministry of Agriculture and Farmers Welfare said: "The competent authority in the Department of Agriculture & Farmers Welfare has approved to designate NDDB as implementing agency under the scheme of formation and promotion of 10,000 Farmer Producer Organisations



(FPOs) to form and promote FPOs, primarily fodder centric, and animal husbandry activities as a secondary activity (fodder plus model)... NDDDB has been assigned to form 100 FPOs during 2022-23 within the contours of the scheme guidelines.”

On October 6, Animal Husbandry Secretary Shri Rajesh Kumar Singh chaired a meeting to take stock of the fodder situation in the country, in which the states informed the Centre that the prices of dry fodder were significantly higher as compared to last year. The meeting was attended by senior central government officials, including those from the Ministry of Agriculture and Farmers Welfare, and representatives of at least 14 states – Uttar Pradesh, Rajasthan, Gujarat, Punjab, Haryana, Madhya Pradesh, West Bengal, Jharkhand, Bihar, Tamil Nadu, Andhra Pradesh, Karnataka, Uttarakhand and Himachal Pradesh.

The idea of setting up fodder-centric FPOs was first mooted by the Ministry of Fisheries, Animal Husbandry and Dairying in 2020, with the aim to address the fodder deficit situation in the country. The high fodder inflation has a direct impact on rural livelihoods. According to the National Statistical Office report, ‘Situation Assessment of Agricultural Households and Land and Livestock Holdings of Households in Rural India, 2019’, 48.5 per cent of the total 17.24 crore rural households (or an estimated 8.37 crore) reported owning cattle ‘in milk’, young cattle and cattle in ‘others’ category during July-December 2018. Further, 43.8 per cent of the total 9.3 crore agricultural households used green fodder, 52.4 per cent dry fodder, 30.4 per cent concentrates, and 12.5 per cent other animal feed during the period.

After ODOP Scheme, Rajouri District Witnesses Surge in Milk Production

India is home to several agricultural and non-agricultural (including manufacturing) products that are region-specific and every district has products that are unique

and provide livelihoods and generate income. To realize the true potential of a district, fuel economic growth and generate employment with an aim of impetus to rural entrepreneurship, the Government has launched a transformational scheme One District One Product (ODOP) under Atma Nirbhar Bharat.

As per the official statement, Rajouri, a border district of J&K UT has been selected as a dairy district under the scheme as it has huge potential in the dairy sector. The dairy sector is one of the crucial sectors in the Indian economy that not only provides employment to rural households but also contributes to the economy. There are pastoral societies that keep a large number of cows and other people who just keep cows as a means of earning second income. The major occupation of the rural people of Jammu and Kashmir is agriculture and livestock rearing making it a major source of income and employment here.

The dairy sector not only generates income and employment among the farmers but also supplements the varied nutritional requirements of the individuals. District Administration under the overall supervision of the District Development Commissioner Rajouri, Vikas Kundal has been taking several measures to strengthen the dairy sector and efforts are being made to enhance milk production in the district. The district has witnessed fairly reasonable growth in terms of milk production from 3.67 lacs litres per day to 3.85 lacs litres per day since the launch of the ODOP scheme in the district and has become milk surplus.

The Department of Animal Husbandry (DAH) is also working on all the modalities to help dairy farmers enhance milk production in the district to make the district an export hub for the identified products. DAH is also organizing a number of awareness camps, house visits and other distribution activities in the far-flung areas of the district. The major support has been provided by the Panchayat Raj institutions as they are the backbone of the government.

Another factor contributing to the expansion of the dairy sector is that the DAH is in complete contact with the beneficiaries and facilitate them during the Pashudhan mela at Lakhanpur. After an increase in production, the major concern for the dairy unit holders is the market linkage facilities; and the department is also working on the lines to establish dairy cooperative societies to provide market linkages to the societies in the district. The district administrations are also fully backed by the dairy farmers of the district who are also extending full support for the successful implementation of the ODOP initiative. The farmers have also expressed their gratitude to the Government for launching these ambitious schemes for their welfare and appealed for continuing such initiatives in the near future.

Global Dairy Price Crash Bringing Focus Back to Indian Dairy Market

According to Shri Kuldeep Sharma, Chief Editor of a dairy news website, next five months will play a crucial role in the Indian dairy sector. This year saw a phenomenal increase in the price of milk and milk products. The farmers also received the best milk prices for the longest duration. India has already exported more dairy products in the first six months of FY 23 than FY 20 and FY 21.

The input costs also saw newer heights with feed and fodder prices zooming up by up to 60%. Similarly, the cost of other inputs like fuel, logistics etc. have also increased sharply. This has led to an increase in milk and milk product's prices, four times this fiscal by the processors. Lumpy skin disease has hit badly and impacted the milk production in some of the states. Excessive rains and storms have also impacted milk production in southern states.

There was an acute milk shortage throughout the year in the country. Except for the largest cooperative, no one else had enough of stocks of SMP and butter in the country. Amul played his role as a big brother and met the local requirements of SMP at reasonable prices.

The dairy processors have moderated milk prices by Rs. 2-4 in UP and by Rs. 1 per Litre in Maharashtra from 1st of November. The milk availability is improving in the buffalo area. But cow belts in most of the states are still distressed due to LSD.

What do we see from here?

- Global dairy prices crashing which may moderate Indian commodities prices also to a large extent
- Buffalo milk production increasing and thus more conversion to SMP and Butter
- Poor milk availability in Cow belts and thus firm prices hike
- Institutional buying to gain momentum from end of November onwards
- In the wake of very low stocks of butter and milk fat by all the cooperatives, NDDB may import duty free Butter and butter oil for them.

Key learnings from this Diwali

- Large cooperatives with huge stocks can serve the market on pan India basis and thus control price movements.
- Private sector dairies with good quality products can also charge high prices for their products.
- The adulterers may not be able to control the large part of the market in years to come particularly for ghee

segment.

- Private sector dairies have also performed well in exports of value added products like butter fat and Casein.
- Diwali preparation must not begin from August rather it must start from January onwards. This year most of the SMP sold during diwali Diwali was more than one year old.
- Companies making Khoa could not meet the Diwali demand of the sweet makers.

How will the summer of 23 look like?

Shri Kuldeep Sharma anticipates a much better summer than that of 22. Whenever farmers gets good prices for their produce, they buy more animals and increase milk production in subsequent years. He further said, "I can only suggest to all the dairy manufacturers that you must focus on your captive requirements of SMP and butter first. USDA has forecasted a total SMP production of 740000 MT in the next year. That will be the highest level ever achieved by India. We need to achieve that number as India will also begin with very low stocks of SMP and butter next year. Next year I also foresee some government policy on building SMP and butter stocks under its Food security responsibility."

No one can underestimate the power of the dairy industry now.

A National Dialogue on "Sustainable Growth and development of Indian Dairy Sector" at DUVASU, Mathura

A National Dialogue on "Sustainable growth and development of Indian Dairy Sector" is being organized at Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU), Mathura during December 16-17, 2022. The event is being organized by Trust for Advance of Agricultural Sciences (TAAS).

Dr. R.S. Sodhi, President-IDA and MD, GCMMF has been invited as Guest of Honour in the Inaugural Session of the event. Shri Meenesh Shah, Chairman, NDDB will grace the occasion as its Chief Guest. Two technical sessions will be organized during the 2-days event.

Technical Session -I will be held on "Processing, Value Addition, Marketing and Policies" whereas "Production and Management" will be the subject for the Technical Session - II. A Panel discussion on "Sustainable Growth of Dairy Sector" will be held on the 2nd day. For further information, interested member/reader may visit www.tass.in

Department of Animal Husbandry and Dairying- Dairy Going Hi-Tech

In a bid to deploy the latest technologies and devices like biometrics, Internet of Things (IoT), and drones in animal husbandry and dairy, the central government will soon engage such entities specializing in this sector. These entities will include leading IT companies, livestock and dairying organizations, start-ups, and research and educational institutes. The Department of Animal Husbandry & Dairying (DAHD) has begun the process of engaging IT organizations for the use of biometrics for animal identification, use of IoT devices for livestock animals, traceability solutions for dairy and livestock products using block chain or any other technology, and use of drone technology in the livestock and dairying sector.

A year ago, the government launched the National Digital Livestock Mission (NDLM) to uniquely identify every livestock. As of now, cattle identification in India is done mostly through ear tags. However, a need has been felt for a biometric method for animal identification which will make the unique ID a fool-proof mechanism for all purposes. Hence, the emphasis is on biometric identification through digital means.

Use of IoT devices in the livestock sector will help farmers measure various relevant vitals of the animals, such as their movement, body temperature, humidity, heat detection, other medical parameters, and intake of food. This can be achieved by using IoT devices for real-time tracking of activity, rumination, and other cattle vitals. The data so collected can be helpful in some of the activities using artificial intelligence (AI) and machine learning algorithms. The data will help identify, among other things, identify abnormal behaviour for timely medical help, monitor before and after parameters for treatment medication response, and give alerts for artificial insemination, pregnancy confirmation, and stress.

At FAO Forum, NDDDB Showcases India's Digital Adoption in Dairying

India transformed its dairy sector from milk deficiency to becoming the world's largest producer with the help of technological innovations and bringing people together under a governance structure, Shri Meenesh Shah, Chairman, National Dairy Development Board (NDDDB), said at the Science & Innovation Forum 2022 organised by the Food and Agriculture Organization of the United

INDIAN DAIRYMAN



Nations in Rome, Italy. He informed that India contributes 23 per cent of global milk production with an annual growth rate of about 6 per cent, which could be possible through innovations - technological, scientific processes and more importantly bringing people together and building a governance structure.

On the sidelines of the World Food Forum, the NDDDB Chairman met Beth Bechdol and Maria Helena Semedo, FAO's Deputy Director-Generals and Thanawat Tiensin, Director, Animal Production and Health Division, to discuss the Indian farming system, sustainable livestock production systems and innovations. He said India's manure management initiatives successfully address the cooking gas needs of households.

Dairy Sector Needs to Focus on Innovation: Suggested by Industry Experts at CII Agrotech 2022



Various stakeholders from the Indian Veterinary Association and private companies participated in the discussion on sustainable dairy and livestock management practices as part of a special conference on Day 2 of the CII AgroTech 2022, recently.

Speaking at the 15th edition of the premier agri and food technology fair, Ajooni Biotech Limited Chairperson Shri Gurmeet Singh Bhatia said, "Livestock contributes to 40% of global agriculture output. Over 70 million farmers are directly involved in dairy farming. We are here to exchange ideas on achieving sustainable dairy management."

Highlighting India's abundant genetic resources for dairy animals, both in terms of population and diversity, he added that knowledgeable farmers will set an example for those not ready to accept changes.

Mr. Rick Nobel, Agriculture Attache, Embassy of the

Kingdom of the Netherlands, in his address, said, "Dutch companies are working on QR codes in India to bring more awareness among consumers of the milk's place of origin." Shri Prana Tharthiharan Natarajan of Thyssenkrupp Limited focussed on alternatives to pasteurisation of milk, He said that high pressure processing lacks implementation in India. It does not kill the nutrients and does not change the taste. This will also help India's efforts at export as this technology takes the shelf life of liquid milk to 45 days.

Daintech Dairy Development Centre Chairperson Shri Jaswinder Singh Bhatti said that integrating technology in dairy farming is the need of the hour. Farmers face difficulties in tracking their livestock data. We have built a software in which we place sensors through radio-frequency identification (RFID) tags that are placed on livestock's neck to track them.

Speaking at the CII Agro Tech 2022, Haryana Agriculture Minister Shri Jai Parkash Dalal said that Haryana was a major stakeholder in the exhibition, which is a great platform for the exhibitors to showcase the best quality seeds, pesticides, technologies, produce, machinery and other agriculture related products. This platform offers instant benefits to farmers as they can see the output of the seeds, discuss use of pesticides with the exhibitors and get their hands on other farm related things without following the process in the farms to yield profits. The minister also interacted with the stakeholders at the special session on the role of FPOs in horticulture.

Vergheese Kurien Centre of Excellence Celebrates the 119th Birth Anniversary of Shri Tribhuvandas Patel

Vergheese Kurien Centre of Excellence (VKCoE), Institute of Rural Management Anand celebrated the 119th birth anniversary of Shri Tribhuvandas Kishibhai Patel, the founder Chairman of Amul and the father of milk

cooperative movement in India on 22 October 2022. Born on 22nd October 1903, he was an ideal leader of farmers and an ardent follower of Shri Sardar Vallabhbhai Patel. He dedicated his life for the wellbeing of dairy farmers. He was largely concerned about the nutrition and health of the pregnant mothers and children which is evident from the functioning of Tribhuvandas Foundation in the rural areas of Anand, Kheda and Mahisagar districts. Considering the value of milk for health and well-being in the present times, a seminar-cum-workshop was organized on "Role of Dairy Proteins in Human Nutrition".

Dr. Umakant Dash, Director, IRMA welcomed all the guests. Remembering the Karmayogi, floral tributes were given to Shri Tribhuvandas Patel and his son late Shri Surendra Tribhuvandas Patel (who passed away in Houston, Texas on October 9, 2022) by the dignitaries present in the event. Dr. Dash, while paying homage to Shri Tribhuvandas said that we are enjoying the fruits of the tree planted by this dedicated farmer leader.

Fondly called Tribhuvan Kaka, the reminiscences of Shri Patel were delivered by Shri Meenesh Shah, Chairman, National Dairy Development Board; Dr. R.S. Sodhi, President, IDA and Managing Director, Amul; Shri Amit Vyas, the Managing Director, Amul Dairy; Dr. Nirali Patel, the grand daughter-in-law and Shri Emil Patel, the grandson of Shri Tribhuvandas Patel.

Shri Meenesh Shah requested all to pledge to imbibe Shri Patel's ideals to further strengthen dairy cooperative movement which he spearheaded for farmers from rural India. Dr. R.S. Sodhi talked about the working DNA of Shri Patel which has been inherited by the staffs of Amul and other sister concern organizations. Shri Amit Vyas reminisced about Shri Patel who had worked with his father. Dr. Nirali Patel remembered his grandfather-in-law through the words of the former NDDDB Chairman Dr. Amrita Patel. Shri Emil Patel joined online from the US appreciating VKCoE for remembering his grandfather in a grand way.

An invited lecture on "Role of milk and dairy products in nutrition of mother and child" was delivered by Dr. Nikhil



Kharod, CEO, Tribhuvandas Foundation, wherein he stressed upon the use of dairy products for proper development of child. Shri Jayen Mehta, Chief Operating Officer, GCMMF took everyone through the 'Protein-rich products from Amul'. A lecture on "Quality of proteins and their significance in nutrition" was delivered by Dr. J.B. Prajapati, Chairperson, VKCoE, IRMA. He busted a lot of myths against milk and dairy products and suggested the dignitaries to brand dairy in India as a social service. He also emphasized the quality of protein matters more than the quantity and milk proteins top the tally in all quality parameters. Milk proteins are not only fully utilizable by the body, but also leaves some surplus amino acids, which can help to absorb the proteins consumed via other sources. This was followed by a panel discussion and a Q&A session on role of dairy proteins in human nutrition and health by the invited panellists and others.

The event was attended by the staffs and Village Health Workers of Tribhuvandas Foundation, officers Amul family, Vidya Dairy, NDDDB, AAU, President of Lions club, relatives of Tribhuvankaka and other citizens of Anand, who are concerned with nutrition and health of the society. The event concluded with the vote of thanks proposed by Dr. J.B. Prajapati. The event was anchored by Dr. Smruti Smita Mohapatra and well-coordinated by the research fellows - Inayathaidar Momin and Darshan Patel. The event was live streamed on IRMA Official YouTube channel and covered by DD News Gujarati.

Amul has Ties up with the Portuguese Football Federation

Amul has tied up with the Portuguese Football Federation (FPF) to display the players' images on its products, allowing Indian soccer fans to strike a connect with the likes of the Portuguese captain and forward Cristiano Ronaldo, or popular defender Ruben Dias, while relishing their favourite *lassi*.

Under Regional Sponsorship Agreement inked with FPF, Amul will be a regional sponsor for India of the Portugal National team until the end of 2023. This makes Amul the first Indian regional sponsor in the history of FPF.

Last month, Amul had signed a pact with the Argentina Football Association (AFA) for the first-ever regional sponsorship in

India for the Argentinian team.

Commenting on the above, Shri Jayen Mehta, Chief Operating Officer, Gujarat Cooperative Milk Marketing Federation, which owns the Amul brand, said, "Amul is proud to announce its association with FPF. Football is a global sport and has a huge fan following in India too. Sports and nutrition go hand-in-hand and through this association, we encourage football fans in India to take up physical fitness and nutrition for a healthy lifestyle."

Speaking on tie-up with Amul, Mr. Nuno Moura, Chief Marketing Officer, FPF, said, "We are delighted to announce our first-ever brand partnership in India with a leading and reputable brand Amul. Portugal and India have a historical and powerful connection dating back centuries, which allowed for the mutual exchange of knowledge in a diversity of areas, as well as artistic and cultural influences. We are devoted to pursuing this pathway, now through football too, in a country that is very special to us, and which boasts millions of team Portugal fans. Portugal is India's favourite team, immediately after the home team." "We had signed a pact with Argentina earlier, and now we have Portugal. So, Amul has both the top football players Lionel Messi and Cristiano Ronaldo on our consumer packs,"

Amul's marketing strategy looks to ensure its presence at such marquee events, thereby, trying to connect with the target audience in an effective way. Earlier, Amul had associated with the Netherlands cricket team in the ICC World Cup 2011, the Sauber Formula1 team at the inaugural Indian Grand Prix, and the Indian contingent at the London Olympics in 2012.

"Milk is the world's original energy drink and it's great to associate with an energetic and world-class team like Portugal, who have some of the best footballers in the world, including Ronaldo, Bruno and Bernardo, and play a passionate game of football thus enthraling the fans. We are looking forward to a great association over the next one year," said Shri Mehta.



Mother Dairy Planning Rs 800 crore Capex in 3-4 years, Foresees Positive Demand Momentum



To cater to the exponential demand, milk and milk products, Mother Dairy has planned a mega capex fund worth around Rs 800 crore for the next couple of years.

In a conversation with Moneycontrol, Managing Director Shri Manish Bandlish, Mother Dairy said that a proposal for capacity expansion by setting up new plants has been planned. Some of the proposed plants will produce processed food items for Safal brand (fruits and vegetables arm of Mother Dairy) while others will focus on milk and milk products. The current demand has over-stripped supply for many categories, such as ice creams, cheese and packaged curd. Mother Dairy has reported a growth of over 30-40 percent in many categories, including fresh dairy categories, such as *chaach*, *lassi*, curd, among others, from the pre-pandemic year of FY2019-20.

"During the last two years of the pandemic, in-house consumption rose tremendously. Our ability to keep the booths open during this period aided growth," Shri Bandlish said.

Consequently, the company is expected to close this fiscal with a turnover growth of 20 percent over last fiscal, at Rs 15,000 crore, largely aided by volume and value growth. In FY2020, the company had clocked a turnover of around Rs 10,500 crore.

Despite Flush Season Dairy Farmers in Maharashtra Fetch Good Prices

Dairy farmers in the state are enjoying a rare spell of good price, which has seen dairies increase their procurement price even as the sector enters its flush season when production increases. There is a 10-15 per cent dip in output in many milk-producing states, which has led them to increase the procurement price for their farmers.

States like Gujarat, Maharashtra and Karnataka have reported incidents of lumpy skin disease in their cattle population, which has affected milk production, said Shri Dasarath Mane, Chairman cum Managing Director (CMD) of the Pune-headquartered Indapur Dairy and Milk Products Ltd. (popular as Sonai Dairy). The

procurement price for milk with 3.5 per cent fat and 8.5 per cent SNF (solid-not-fat) at present is Rs 36/litre. The tight supply-demand situation led us to increase our prices last month," he said.

The present rise in procurement prices is expected to continue till next October. Internationally, skimmed milk powder (SMP) has recorded a 17 per cent dip in prices from April. This, trade analysts say, is mostly due to the frequent lockdowns in China, which is the biggest importer of SMP. Also, countries like New Zealand and Australia have reported a dip in output.

At present, domestic SMP prices are in the Rs 320-330/kg range while international prices are hovering around Rs 230/kg. Shri Dasarath Mane said India had exported around 80,000 tonnes of SMP last year with the lion's share of exports by GCMF. With the flush season starting, SMP production by dairies would improve. Meanwhile, the price increase has brought a smile on the faces of dairy farmers.

Haryana Dairy Cooperative Earns All-time High Profit



Haryana Dairy Development Cooperative Federation Ltd. Chairman Shri Randhir Singh Golan said that the federation has earned a profit of Rs. 49.57 crore in the last two and a half years owing to improving the quality of products.

The total combined turnover of the federation rose from Rs. 1,159 crore in 2019-20 to Rs 1,505 crore tentatively in 2021-22. Accordingly, the total combined profit witnessed a steep growth of three times from Rs 11.50 crore in 2019-20 to Rs 49.57 crore in 2021-22, which is an all-time high. The sale of milk has witnessed a seven per cent increase during April-June 2022 quarter as compared to the same period last year. The sale of ghee during this period has witnessed an increase of 29.95 per cent, curd 54.5 per cent and 'lassi' 48.70 per cent.

Dodla Dairy Sep22 Net Sales at Rs 695.32 Crore, Up 22.77% Y-o-Y

The Dodla Dairy Net Sales was Rs 695.32 crore in Sept. 2022 up 22.77% from Rs. 566.37 crore in Sept. 2021. Similarly, Quarterly Net Profit was at Rs. 39.45 crore in Sept. 2022 up 34.2% from Rs. 29.40 crore in Sept. 2021. EBITDA stood at Rs. 64.62 crore in Sept. 2022 down 0.57% from Rs. 64.99 crore in Sept. 2021. Dodla Dairy EPS has increased to Rs. 6.63 in Sept. 2022 from Rs. 4.94 in Sept. 2021.

Our Cities Thrive at the Expense of Our Villages Dr. V Kurien



This has been a roller coaster year for the dairy industry across the world. Indian dairy industry in particular is experiencing *“a scream of excitement, exhilaration, fear and pure heaven”*. The year started with fairly good farmers prices and comparatively lower availability of milk. Russia-Ukraine war in February along with early onslaught of summer fuelled the high-inflationary-pressures on cost-of-milk-production as well as processing. In September 2022 India organised World Dairy Summit and proved its legitimacy to be the world’s leader in milk production.

The situation further got aggravated due to Lumpy Skin Disease and heavy shortage of fodder. On the other hand the global prices created an unprecedented opportunity for Indian dairy exports. The exporters added value with volumes doubling up against the last year same period. The decision of GST-council to cover fresh-dairy-products and farm-technologies also under the GST regime loaded the prices further.

Most of the dairy companies corrected their consumer prices of milk and milk products around 4 times in this year. States like Rajasthan Haryana, Kerala, Telangana, Punjab, etc. came out openly to protect their farmers linked with the state federations. They offered huge milk subsidies to their registered farmers only.

Is the responsibility of government limited to cooperative societies of a state dairy federation only?

Most of the states started to protect their registered farmers only while ignoring other cooperatives and FPOs. Actually, it is a big blow to the principles of inclusion of the government. I hope that the newly formed ministry of cooperation may take cognisance of this issue. The problem doesn’t end up here.

For the first time the consumers in the non election states are feeling the brunt of higher milk prices. Media reports that the largest dairy in the country didn’t increase milk-

price of some variants in Gujarat due to elections.

Tamil Nadu government also showed reluctance in getting the milk procurement as well as consumer prices increase in the state. Karnataka federation have been announcing an increase in consumer milk prices but the state government is not accepting it. Even the legislators in the assembly from the ruling party are opposing it. Rajasthan has created history by giving highest milk prices to the selective farmers linked to the state federation. This thus created a great imbalance in level playing field for other cooperatives, FPOs and private dairies in the state.

Our actions in past build our present

The current chaotic situation in dairy industry has nothing to do with what we have been doing now. It is rather an outcome of poor milk pricing policies for both farmers and consumers. We always tried to make the urban population enjoy lower dairy-and-food prices at the cost of the poor farmers. This ongoing correction is inevitable. Over involvement of any government as well as politicians is not good for dairy sector. The very foundation of cooperative is to let it run by the farmers alone. India is looking at 10000 FPOs in next few years. Such interventions by the federal system in dairy sector may not be a healthy practice.

That reminds me of Dr. Kurien who once said that; *“I am one of those who firmly believe that our cities thrive at the expenses of our villages; that our industries exploit agriculture.”* In today’s scenario it is the state level politics which is impacting the profitability of dairy sector.

Government may not run the dairy sector

At the end I would like to share what Dr. Kurien’s perspective of government running businesses in India. He said that *“I began to see then that when the government enters business, the citizens of India get cheated. The greatest repercussion of the government entering into business is that instead of safeguarding people from vested interests, they themselves become the vested interest.”*

I feel that this is high time for the dairy sector to make corrections in terms of farmers as well as consumers prices. No one ever talked about the fluctuating prices of other food commodities, communication, steel, fuel, power, logistics, and so on. Let the industry sets the right paradigm based on national and international demand supply situation. India with 23% share of global milk production can play a more serious role in global dairy sector and that too when most of the regions in the world are in bad shape in terms of milk production except USA in particular.

Sangam Dairy and KCMMF to Mutually Cooperate Each Other



A team of Kerala Cooperative Milk Marketing Federation (KCMMF) officials led by Chairman Shri K.S. Money along with Minister for Animal Husbandry and Dairying, Govt. of Kerala, Smt. J. Chinchu Rani visited Sangam Dairy, Andhra Pradesh in October. Sangam Dairy Chairman Shri Dhulipalla Narendra Kumar and the officials explained to them about the production process of milk products. The minister said that Sangam Dairy and KCMMF have decided to go ahead with mutual cooperation. The minister disclosed that an agreement has been made to supply Ayurvedic cattle medicines to Sangam Dairy. She also stated that they have studied the best 'Paddatis' adopted in Sangam dairy and would like to introduce them in Kerala. Shri Dhulipalla Narendra Kumar said that they have decided to collaborate with KCMMF. He assured that quality seeds and fodder will be provided to KCMMF.

Hatsun Agro has Set Up its Largest Ice Cream Plant in Telangana

Telangana State now has the country's largest ice cream manufacturing unit. The mega ice cream plant became a reality with the commissioning of a seven tonne per day chocolate processing plant and a 100 tonne per day ice-cream manufacturing plant by Hatsun Agro



Products Ltd. (HAP), popular as Arun Ice Creams and Ibaco, in Zaheerabad.

Announcing the above, IT and Industries Minister of Telangana Shri K.T. Rama Rao said with this investment of Rs. 400 crore, Hatsun's total investment in Telangana has reached Rs. 600 crore. Calling this a testimony to the 'white revolution' underway in Telangana, the minister said the unit would procure 10 lakh litres of milk per day benefiting 5,000 local dairy farmers. It would also provide employment to 1,500 persons, he said. The company deals with more than 4,00,000 farmers on a daily basis, spread over more than 10,000 villages in Tamil Nadu, Andhra Pradesh, Telangana, Karnataka and Maharashtra. HAP markets its milk and curd through its brands 'Arokyia' and 'Hatsun' in these States through its own distribution network and 'HAP Daily' outlets. It has plans to open more outlets in newer markets such as Maharashtra, Kerala, Orissa, Chhattisgarh, Madhya Pradesh, West Bengal and Jharkhand while deepening its presence in its strong markets of Tamil Nadu, Karnataka, Andhra Pradesh and Telangana.

HAP is leveraging mega cold storages situated in multiple States including one at Shadnagar in Telangana. The company turnover as of March this year was about Rs. 6,396 crore and profit after tax of Rs. 218 crore. HAP has employed about 5,500 employees and more than 7,000 contract and casual labour.

Amul Dairy Celebrated 77th Foundation Day along with 147th Sardar Patel Jayanti

Amul Dairy celebrated its 77th Foundation Day and 147th Birth Anniversary of Pujya Sardar Vallabhbhai Patel in august presence of Chief Guest, Shri Meenesh Shah, Chairman, NDDB, members of the Board of Directors and Shri Amit Vyas, MD, Amul Dairy. Some 3000 plus milk producers across milk shed area took part in the function with zeal and enthusiasm.

On the occasion, Shri Ramsinh Parmar, Chairman recollected principles of Shri Sardar Vallabhbhai Patel as well as the founders of Amul, Shri Tribhuvandas Patel and Dr. Verghese Kurien. Dignitaries appreciated the efforts at the DCS level, and awarded 152 village level DCS for various initiatives taken like clean milk production, no. of field AI carried out, improvement in milk production and procurement, blood donation, cost optimization, etc.

In continuation to the Organic mission, Amul, by technical collaboration with Anand Agricultural University,



launched 9 new products of Liquid Bio Fertilizers namely Amul Rich Plus Azotobacter, Rhizobium, Phosphorous Solubilizing Bacteria, etc.

Shri Meenesh Shah said that currently the world is producing milk at 2% CAGR, while in India its 6% CAGR, which is three times more than the world. In future, India will maintain its top position in milk production by contributing 33% of the world milk production. We presently pay more than Rs 200 crore per day to our milk producers, said the Chairman Amul dairy. We have teamed up with NDDDB to produce TMR (Total Mix Ration) for cows-buffaloes to increase milk production, increase FAT and SNF percentage, thereby reducing milk production costs and increasing income of milk producers.

Punjab to Supply Paddy Straw to Fodder Shortage-Hit Kerala

Punjab has agreed to supply paddy straw to Kerala for use as fodder for livestock as the dairy sector in the southern State faces an acute shortage of green fodder and hay.

The two States have agreed to transport paddy straw to Kerala using the Centre's Kisan Rail scheme, Minister for Animal Husbandry Shri J. Chinchurani said recently after meeting Punjab Chief Minister and Animal Husbandry Minister.

The initiative is seen as a win-win situation for both States. While Kerala gets the much-needed fodder, it will help Punjab deal with excess paddy straw which contributes to stubble burning and air pollution.

The dairy sector of Kerala is a means of livelihood to

lakhs of farmers. However, acute shortage of quality cattle feed and the relatively high prices are a major hurdle.

Though the ideal ratio of roughage and concentrated feed is 60:40, most dairy farmers tend to bank on compounded feed, mainly because of decline in the supply of fodder. This has affected the fat content of milk produced in the State.

According to the Economic Review 2021, domestic production of fodder meets only 46% of the demand in the State. It is estimated that fodder cultivation would be required in at least 13,000 hectares if Kerala is to meet the roughage production target.

Event CALENDAR

Dairy Industry Conference

March 16-18, 2023

Gandhinagar, Ahmedabad (Gujarat)

Indian Dairy Association has scheduled to organize 49th Dairy Industry Conference during March 16-18, 2023 at Gandhinagar, Ahmedabad (Gujarat).

Members and readers are requested to reserve your dates in advance for the Conference. Other details will be shared in the next issue of the journal.

National Dialogue

Dec. 16-17, 2022

DUVASU, Mathura

Theme: Sustainable growth and development of Indian Dairy Sector. For more info., visit: www.taas.in

INTERNATIONAL News

Morinaga Milk Eyes Expansion in Vietnam with New Yogurt Brand

Japanese dairy company Morinaga Milk Industry is aiming to expand in Vietnam with the launch of new yogurts and supplements in a country that has become more health conscious as its growing economy has altered its diet. Morinaga Milk began the sale of two yogurts and three nutritional supplements recently through Elovi Vietnam Joint Stock Company, which Morinaga fully acquired in June 2021. "We were able to raise the value of the products by integrating Morinaga's know-how and ingredients," said Mr. Takashi Chihaya, President of Elovi Vietnam.

Vietnam, considered an emerging country, is expected to maintain a high level of economic growth. Mr. Yoshinobu Matsumoto, Marketing-Head, Elovi, said rates of childhood obesity and high blood pressure in adults are increasing as the economy grows, partially due to people eating high-calorie foods and incorporating more sugar, fats and processed foods in their diet.

Now people are looking to eat healthier, with yogurt gaining in popularity. According to Mizuho Bank, the yogurt market in Vietnam is expected to grow to \$1.22 billion, nearly 40% more than that of 2021, which was at \$886 million. Morinaga hopes to take advantage of its Japanese brand in Vietnam, where, according to a Morinaga survey, 93% of people in Vietnam have either "good" or "very good" impressions of food made by Japanese companies.

Morinaga's Zero-Fat Yogurt aims to price it in the premium range to show it has high added value. The packaging emphasizes Japanese culture, incorporating flag colors red and white as well as kanji, Chinese characters used in written Japanese. The product is targeted at people over 20 with families as well as health-conscious consumers.

In Vietnam, there is a high hope for probiotics to boost immunity levels, said Mr. Matsumoto said, referring to a combination of live beneficial bacteria and yeasts that naturally occur in the body. The supplements, Morinaga Climeal, include protein, dietary fiber and vitamins. The product is targeted at people over 40 who seek to boost the nutritional value of meals with supplements.

Morinaga has been selling milk formulas through Elovi since 2010. Elovi, founded in 2002, had sales of 3 billion yen in fiscal 2021.

Cows Fed with Industrial Hemp Produce Milk with THC, Study Finds

German researchers have fed ten dairy cows with industrial hemp for 28 days with interesting results in terms of animal health and risk for milk consumers.

A peer-reviewed study published in the journal *Nature Food* found that dairy cows fed with industrial hemp could produce milk containing tetrahydrocannabinol (THC) best-known active ingredient in marijuana - levels about to pose a risk for the consumers.

Researchers from the German Federal Institute for Risk Assessment and the Chemical and Veterinary Analytical Institute Münsterland-Emscher-Lippe have studied how feeding dairy cows with industrial hemp affects animal health and whether milk produced may have negative consequences on consumers.

The findings show that the dairy cows that have eaten industrial hemp change their behaviour, and their milk may have potentially high levels of THC.

Unlike marijuana, hemp for industrial purposes with a limited THC content is legal both in Europe and the United States. The Europe Union allows cultivating industrial hemp with a THC limit set at 0.2%, although it was recently increased to 0.3% in 2021.

The 2018 U.S. Farm Bill has legalized hemp cultivation at the federal level for industrial purposes. But while some of the EU countries have set THC limits in food, edibles containing traces of THC are still federally illegal in the US.

The animals were divided into two groups: one received hemp silage with low THC levels using the low-THC variety Ivory and another fed with high-THC hemp from the Finola variety, although both hemp varieties don't exceed a THC over 0.2%.

The experiment was divided into four periods: control, adaptation, exposure, and depuration. The authors of this study conducted an experiment replacing acorn-based diet with two kinds of hemp silage. During the adaptation period, researchers fed cows hemp hay made of the whole hemp plant.

Successively, they fed the livestock with hemp silage made from leaves, flowers, and seeds, which contain higher levels of THC, during the exposure period.

But when the cows ate rich-THC silage, researchers

observed a change in animal behaviour, such as "pronounced tongue play, increased yawning, salivation, nasal secretion formation, prolapse and reddening of the nictitating membrane, and somnolent appearance."

Some cows displayed careful, occasionally unsteady gait, unusually long-standing, and abnormal posture. Also, the animals ate less and produced less milk during exposure.

Such health effects can be explained by the fact that the study reported that cows ingested up to 86 times the amount of THC required to get humans to experience psychotropic effects. The unusual behaviours stopped a few days after the cows stopped eating hemp silage, although cannabinoids persisted in the cows' milk, containing high concentrations of THC, CBD, and other cannabinoids.

However, researchers cannot assess what hemp cannabinoids or a combination of cannabinoids played a major role in producing such effects, although THC is believed to be the cannabinoid responsible for the cows' behaviour change.

"Although it is clear that the observed effects of industrial hemp silage feeding on animal health were mainly caused by the cannabinoids, it cannot be clearly defined which cannabinoid was responsible. Due to its high concentration in the cannabinoid-rich silage, THC is the most likely cause, but combination effects may also play a role," the study reads.

During the exposure period to a higher level of THC, cows produced milk containing concentrations of up to 316 micrograms of THC and 1,174 micrograms of CBD per kg milk, while concentrations of other cannabinoids were not sufficiently high to be detected.

In comparison, the EU has set the maximum THC in food at 3 mg per kg for dry products and 7.5 mg per kg for hemp seed oil.

"The exposure scenario based on the data obtained from the transfer study showed that exposure to Δ^9 -THC via milk and dairy products could lead to the ARfD (acute reference dose) being exceeded in some consumer groups," the study reads.

The work may lead regulators to stop farmers from feeding livestock with hemp.

But if further research proves it as a safe feed, farmers would use hemp as a secondary feedstock because it is a cheap, fast-growing crop.

The study also raises concerns about whether THC can enter the human food supply through cows' milk. In fact, it remains to be seen whether such milk would get human consumers high.

Plant-Based Drinks 'Not Real Alternatives' to Dairy Milk: Study

In a study, carried out by Swiss scholars and nutrition experts, the nutrient profile of 27 samples of plant-based beverages and two of cow's milk were compared. Out of total samples, 13 were fortified, collected from two major supermarkets in Bern and included soy, almond, cashew, coconut, hemp, oat, rice and spelt.

To compare nutrient and energy intakes, the researchers used the dietary reference values for Germany, Austria and Switzerland and also estimated the quality of proteins through calculating the digestible indispensable amino acid score (DIAAS). Nutrients such as vitamins C, A, E, D2, K1 and K2 were analysed as well as phosphorus, sodium, manganese, magnesium, potassium, iron, copper, calcium, zinc, iodine, biotin, niacin, pantothenic acid, and others.

Unlike similar research conducted in the past which relied on labelling information to determine nutrient content levels and only evaluated a handful of nutrients, the Swiss study investigated each product sample in a laboratory to determine its nutrient composition and quality.

According to the laboratory analysis, vitamin C, A and K2 could not be detected in the measured plant-based drinks, with B2, B12 and D2 almost absent in non-fortified varieties. It was worth noting that some of the vitamins were not found, such as the heat-sensitive C, B1 and A, could be down to food processing conditions. Meanwhile, plant-based alternatives offered high vitamin E content, particularly almond and soy, whilst K1 concentrations were 'significant' in cashew and soy drinks.

On minerals, soy drinks were richest in copper, magnesium, manganese, potassium, zinc and iron, and also came closest to dairy milk in terms of protein content. The second-highest mean protein contents were found in cashew and almond drinks, while protein levels were 'very low' in oat, coconut and rice-based beverages.

In terms of protein quality, milk came ahead of all plant-based samples with a higher DIAAS.

The researchers also noted that phytic acid, which is naturally contained in plant-based milk and is a key source of phosphorus, is a 'known anti-nutrient able to bind micronutrients such as calcium, zinc, magnesium and iron.' The study also highlighted the use of red algae in some plant-based alternatives, which, while useful for boosting iodine levels, 'should also be monitored because of possible arsenic accumulations,' the study reads.

On sugar, the research noted that sucrose - a simple

sugar which had been linked with increased risk of obesity, cardiovascular disease and type-2 diabetes - was 'the main sugar in the plant-based drinks with a glycaemic index of 61'. In a previous study, plant-based alternatives had been found to have a higher GI of 47.52 to 99.96 compared to dairy milk's 46.93. "Despite the generally lower total carbohydrate content in plant-based drinks (except some rice and oat drinks), milk consumption appears therefore more favourable in terms of GI," the Swiss study claims.

The researchers concluded that plant-based drinks were 'limited' in providing a 'significant' amount of micronutrients, unlike cow's milk. "In future, nutritional quality of plant-based drinks with science-proven nutrient and micronutrient bioavailability should be equally considered and communicated than sustainability goals," the authors wrote. Practical solutions to mitigate nutritional gaps of specific plant-based drinks could be to opt, whenever possible, for a combination of plant-based alternatives as part of a balanced diet to ensure adequate fulfilment of nutrient and micronutrient needs.

Real innovation opportunities exist on evolving conventional and ultra-processing food manufacturing techniques, generally required in the manufacturing of plant-based products, toward simplified and/or natural processes such as microbial fermentation that can reduce anti-nutritional characteristics of foods/ingredients, improve protein digestibility and produce additional micro -or phytonutrients.

Commenting on this research Sarah Coe, a nutrition scientist at the British Nutrition Foundation said, "Plant-based drinks can provide many of the nutrients found in cow's milk and contribute positively to overall nutrient intakes. We know that the nutrient content of plant-based drinks can vary between brands and varieties, depending on what nut, legume or cereal they are made from. Apart from Soya, plant-based drinks are typically lower in protein than cow's milk, however, this is not an issue for most people as average protein intakes in adults tend to be more than requirements.

On fortification, she said, "As plant-based drinks do not naturally contain the same mix of vitamins and minerals as cow's milk, it's important to consider plant-based drinks that have been fortified. In the UK, most non-organic, plant-based drinks are fortified with calcium and vitamins B12 and B2 to levels similar to cow's milk. Fortification with other micronutrients such as iodine and vitamin D is becoming more common but still varies between products. Organic plant-based drinks cannot be fortified due to EU regulations, so are not likely to be a suitable alternative to cow's milk.

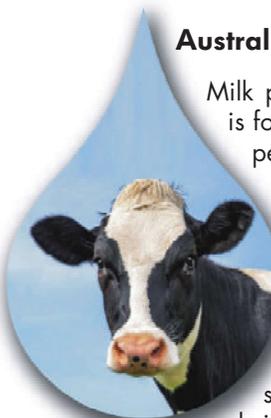
On sustainability, she added that more independent research is needed to establish how dairy compares to plant-based alternatives. "We need more information

on how plant-based drinks compare to dairy products in terms of their environmental impact. Plant-based drinks appear to have a lower environmental impact per unit weight than dairy foods for greenhouse gas emissions, water and land use, however, there are currently few studies directly comparing the impacts of dairy and alternative products, except for soya-based drinks. Data suggest that some plant-based drinks, such as rice and almond drinks, may be particularly water-intensive to produce."

When consumers seek to replace dairy milk with plant-based drinks, they should aim for unsweetened varieties that are fortified with calcium and other micronutrients, she added, "as well as consider the rest of the diet to make sure it is balanced and contains a variety of sources of protein and the micronutrients that dairy milk can provide."

Dairy Outlook in Different Parts of the World

Australia



Milk production in 2023 in Australia is forecast to decline by another two percent to 8.4 million metric tons (MMT), after an estimated six percent fall in 2022 to 8.55 MMT. This decline is expected despite a big increase in farm gate milk prices for 2022/23 to far exceed the previous record, and overall good seasonal production conditions for dairy farmers leading into the

forecast year. The shortage of labour has precluded dairy farmers from taking advantage of these factors and will impact 2023 production. Factory use consumption of milk is forecast to decline to 5.535 MMT, from an estimated 5.685 MMT in 2022, pressured by lower milk production and also forecast growth in milk fluid exports in 2023. Australia is continuing to focus its processed milk products towards cheese production, which is set to remain fairly steady in 2023. However, the volume of butter, skim milk powder and whole milk powder production and exports are all forecast to decline moderately in 2023.

Canada

After an increase in fluid milk consumption during the first COVID-19 pandemic year (2020), consumers reverted to pre-pandemic purchasing patterns, and brought fluid milk back to its pre-pandemic downward trend, expected to continue into 2023. FAS/Canada forecasts a modest 1 percent growth for overall milk

production (fluid and industrial markets combined) in 2023, followed by an estimated similar production increase in 2022.

Cheese imports are expected to expand further in 2023, as import tariff rate quotas (TRQs) under the Comprehensive Economic and Trade Agreement (CETA) with the European Union (EU), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the United States-Mexico-Canada Agreement (USMCA) grow to a combined volume of just over 40,000 metric tons (MT). In addition, Canada will continue to import over 20,400 MT of cheese - predominantly from EU origins - under a TRQ established at the World Trade Organization (WTO) in 1995.

FAS/Canada expects butter stocks to remain below the industry targeted volume of 35,000 MT through 2023. By August 2022, stocks of butter had declined to nearly 24,000 MT, reflecting a sustained demand from both commercial manufacturers of baked goods (especially pastry) and processed foods, as well from individuals preparing food at home. Butter production is expected to increase moderately through 2023, to meet a steady demand and to rebuild stocks.

USMCA provisions impose export surcharges on Canadian exports of skim milk powder (SMP) and milk protein concentrates (MPC) in excess of 35,845 MT. FAS/Canada forecasts SMP exports at 20,000 MT in 2023, following an estimated level of 25,000 MT in 2022. SMP production continues to decline, with the 2023 level forecast at 80,000 MT, down from an estimated 82,000 MT in 2022. While the overall milk protein structural surplus is expected to remain relatively constant into 2023, the dairy industry is expected to shift its production and export focus away from SMP and MPC into higher-protein powders, like milk protein isolates (this last category of protein powders being excluded from USMCA export surcharges). Additionally, increased volumes of SMP are expected to reach the animal feed market in Canada.

New Zealand

FAS/Wellington forecasts New Zealand milk production in 2023 to fall slightly as a result of slowly declining national herd numbers and other factors. The average NZX milk price forecast (as of 10/4/2022) for processors in New Zealand for the 2022/2023 domestic milk year (ending June 2023) was between NZ\$9.25 and NZ\$9.50 per kilogram milk solids (KgMS) (US\$5.11 and US\$5.32 per KgMS). Despite this high milk price, a number of issues are limiting the production response. On-farm inflation is expected to remain high as a result of the weak New Zealand dollar impacting imported input prices, as well as strong global fuel prices. In particular, the price of nitrogen fertilizer, supplement feed, and diesel are expected to remain high. Also, a

threepeat of the La Niña weather pattern is anticipated by the National Institute of Water and Atmospheric Research (NIWA). The impacts of the last two seasons with similar patterns have resulted in prolonged dry conditions in areas that represent over 60 percent of the national dairy farming regions, and this is expected to impact pasture growth next year.

Dairy cattle numbers are expected to continue their slowly decreasing trajectory as a result of implemented and impending Government environmental regulations impacting the sector. During the first half of 2022, the NZ Government concluded negotiations for free trade agreements (FTA) with the United Kingdom (UK) and European Union (EU). These FTAs are forecasted to see future improved quota access for mainly cheese and butter, with some smaller access for other powders and products.

Forecasts for 2023 dairy products and exports are not anticipated to be much different to previous years. FAS/Wellington is forecasting that milk supply for processing will be back slightly, in line with the current decrease in national herd numbers. With recent pricing in the Global Dairy Trade (GDT) and an expected recovery in Chinese whole milk powder (WMP) import demand, WMP production is forecast to be up, with skim milk powder (SMP) and butter production down. Other products are expected to remain consistent with recent years and the national manufacturing capabilities.

In 2022, exports to China experienced substantial disruptions. This was due to the re-instatement of COVID-19 restrictions in major cities, as well as more domestic Chinese milk going into powders. However, New Zealand has experienced growth in exports to Indonesia and Japan in 2022.

Argentina

2022 Argentine dairy production is projected at the same level with respect to 2021 or with a drop of less than one percent year-on-year to 11.495,000 MT, due to abnormally dry and warm weather during the first half of the year which is expected to continue until the end of the year. Post forecasts Whole Milk Powder (WMP) production to rise to 245,000 MT in a recessionary domestic market with stable production compared to 2021, which would result in a higher export balance. As Argentine consumers struggle to maintain already decreased household dairy consumption in face of very high inflation, the entire increase in processed product will be exported, which would bring exports of WMP to 155,000 MT. The Russia-Ukraine war created a challenge for cheese and butter exporters to Russia. Since the beginning of the war, sales to that destination fell sharply, although operations are still being carried out and it is expected that the trend will continue during the rest of 2022.

Ukraine

From January to mid-February of 2022, the Ukrainian dairy cow populations remained on a typical historic slight downward slope. Private households remained responsible for the largest share of milk production, while industrial farms struggled to increase their efficiency. After Russia's invasion started on February 24th, 2022, Ukraine's dairy industry incurred significant losses. Pockets of Ukrainian dairy production in the northern and densely populated eastern parts of the country were occupied by Russians in February-March. Operations of the large dairy processors in southern and eastern Ukraine were interrupted. Raw milk procurement in war-affected areas stopped. Throughout the country, livestock farms came under direct fire; losing animals, facilities, feed, and machinery. A limited number of farms resumed operations as Russian forces left the northern and north-eastern areas, and more recently in the eastern parts of Ukraine.

The war's indirect impact on the dairy industry was also enormous. Dairy products trade routes through the Ukrainian border with EU countries and Moldova became problematic due to traffic congestion caused by the closure of Ukraine's territorial waters in the Black Seas. Curfews were introduced in most regions, limiting the operation hours of livestock farms and imposing restrictions on milk truck movement. Ukraine started a military conscription campaign, stripping dairy farms of a qualified labour force.

The National Bank of Ukraine established the fixed currency exchange rate at 1 USD = 29.25 UAH (increased to 1 USD = 36.6 UAH in August 2022, where it remains at the time of this report) to prevent abrupt domestic currency devaluation, which completely stopped the securities market and introduced several limitations aimed at foreign currency outflow prevention. The fixed exchange rate created trade imbalances for both domestic and foreign trade.

On February 24th, 2022, the Cabinet of Ministers of Ukraine (CMU) established a positive Harmonized Trade System (HS) list of critical war imports, which originally did not include any dairy products. However, dairy products listed under HS 0401, 0402, 0405, and 0406 were added to the list on February 28th. This four-day-long import ban did not impact trade flows much. However, on March 21st, 2022, CMU excluded fermented dairy products listed under HS 0402 from the list. Ukrainian domestic processors publicly lobbied for this exclusion. Overall the list of critical war imports was amended 21 times before its complete cancellation in late July 2022. The list was very restrictive leaving dairy producers without many inputs. All these measures, combined with the Russian armed forces' advance on three fronts, population relocation, and a refugee crisis created an extremely hostile and unpredictable market

environment. As of October of 2022, Ukraine has not imposed any official restrictions on the export of dairy products.

Broken logistics chains in the early days of war made farmers unable to deliver their products or get needed inputs. Industrial dairy farms were very vulnerable, as many farms relied on uninterrupted cash flow from raw milk sales. Some producers reacted by opening old on-farm processing facilities, and some had to donate milk to the population or disposed it. In areas directly impacted by war, some farmers were unable to take care of the animals due to shelling and just opened the farm gates and released the cows. Households were much more resilient, as they predominately rely on locally procured 3 inputs and local sales: household milk got consumed by families, offered to neighbours, or sold in nearby towns and cities.

The dairy market started to stabilize in the early summer of 2022 when major Russian armed forces advances stalled. Some farms in liberated areas were able to resume milk production, while others sustained significant damages and were unable to return to business. Trade recovered significantly as Great Britain (from April 26th, 2022) and the EU (from June 4th, 2022) abolished their import duties for all Ukrainian products (including dairy) to support Ukraine's economy and simplified trans-shipment procedures. According to industry producer groups, cow loss due to the war probably exceeded 50,000 animals and will grow further as the war continues.

The reduction in milk production for 2022 is expected to exceed 15 percent and be followed by a corresponding loss in dairy product output. Despite decreased production, the export of Ukrainian dairy products in 2022 may be unexpectedly significant. The Ukrainian dairy industry was able to overcome initial war shocks, and domestic demand remains all-time low due to significant population outflow and lower disposable incomes of the remaining Ukrainians. These factors resulted in a raw milk price decrease, which made Ukrainian dairy commodities more attractive on the world market. Drastic demand drop led to raw milk excess supply situation despite some production contraction. The 2022 summer and fall dairy exports significantly exceeded those of 2020 and 2021.

The 2023 forecast is extremely fragile and is based on the existing military *status quo*. In absence of Russian advances, domestic demand is expected to recover slightly. The number of cows will remain low, and a further decrease is possible due to increased production costs and unfavourable raw milk prices. Ukraine's 2023 exports are expected to decline compared to 2022. More imports are expected to cover domestic needs in cheese and butter as the domestic processing industry will be facing a raw milk shortage.