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An MM ACTIV Sci-Tech Communications Publication

NUFFOODS Spectrum

perspectives on food technologies & business

PUNE | Volume 10 | Issue 11 | July 2023 | ₹150

52 pages including cover

Ensuring Food Security by ELIMINATING WASTAGE

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nuFFOODS Spectrum

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Volume 10 | Issue 11 | July 2023 www.nuffoodsspectrum.in

'nuFFOODS Spectrum' monthly publication is owned by MM Activ Sci-Tech Communications Pvt. Ltd., **Published and Printed by** Ravindra Boratkar, **Printed at** Spectrum Offset, D2/4, Satyam Industrial Estate, Behind CDSS, Erandawana, Pune - 411 038. and **Published at** 'Ashirwad', 36/A/s, S. No. 270, Pallod Farms, Baner Road, Near Bank of Baroda, Pune - 411 045. **Editor:** Narayan Kulkarni

Reprinted for private circulation.

Letter from Publisher

Ravindra Boratkar
Publisher &
Managing Editor,
MD, MM Activ Sci-Tech
Communications Pvt. Ltd.

Storage of food items, particularly grains and other agro products like fruits, vegetables and dairy items is an important issue. Some foods require special temperature-controlled storage facilities. Food grains require huge storage capacity considering our growing production of food grains. We are taking a giant leap in increasing the food storage capacity with the approval of the world's largest grain storage plan in the cooperative sector with an outlay of around Rs 1 lakh crore.

What's noteworthy about this ambitious plan is its implementation within the cooperative sector enabling cooperatives to establish decentralised storage facilities across the country. By leveraging the power of cooperatives, the burden on the Food Corporation of India (FCI) will be reduced, ensuring smooth operations and improved efficiency in the storage and distribution of food grains.

The plan entails setting up godowns at the level of Primary Agricultural Credit Societies (PACS) to alleviate the shortage of agricultural storage infrastructure in the country. Under the chairmanship of the Minister of Cooperation, an Inter-Ministerial Committee (IMC) will be constituted with the participation of the Ministers of Agriculture and Farmers Welfare, Consumer Affairs, Food and Public Distribution, and Food Processing Industries, along with the concerned secretaries. Our current capacity is 1450 lakh tonnes and the Centre has sanctioned a plan to add 700 lakh tonnes more.

Looking to the future of the nation's self-reliance in production and scientific storage options, this month's cover story looks into many crucial aspects of storage including the overarching concern of Food Security. It not only examines capacity enhancement but also the alarming food loss worldwide and technological innovations to prevent food wastage.

Our content team digs deep to unearth aspects of the shelf life factor, new technologies that are needed for storage without any adverse impact on stored food grains. If there are any negatives, how can they be avoided? How can we keep food grains safe? In short, numerous challenges and solutions pertaining to storing food grains are analysed, including food safety, health and nutrition perspectives.

Food labelling is another issue that has been in continuous discussion for some time now. We have covered the use of AI in labelling and an interesting piece on the key trends in the Indian organic food industry. With its focus on organic farming practices, environmental stewardship, and transparency, the industry aims to provide consumers with food that is free from harmful chemicals and supports overall well-being. By addressing these challenges and leveraging the opportunities, companies can establish a strong presence in the organic food industry.

I am sure you will find this edition informative and enriching.

Thanks & Regards,

Yours Sincerely,

Ravindra Boratkar
Publisher & Managing Editor

COVER STORY 19

Ensuring Food Security by ELIMINATING Wastage

The post-pandemic world is poised for a great reset that could trigger a global upheaval in food production, supply and end-consumer access. While some organisations have been claiming that climate change is responsible for these developing scenarios, scientists in the field of meteorology, geoengineering research and agriculture reveal otherwise. The latter maintain that a real-world and scientific approach to increasing food production, and tech-enabled storage while reducing food wastage is the key factor in preventing food scarcity. Food processing companies have called for collective action in tackling food security and food safety, many of whom are actively investing in their R&D, launching innovative solutions and making significant efforts in cutting down food loss. However, it's important to mention that the global efforts in this space are markedly high as compared to the Indian market, primarily in terms of launching new technologies and solutions. Although the attempts can be seen at the academic level in India, it's high time for Indian companies to look into R&D investments in this matter. Let's explore this further.

Grain Storage

Speaking with

Food Labelling

Organic Foods

Herbal Products

Biotech

REGULARS

Acknowledgements/ Feedback

Thanks a lot for the coverage on Royal Bee Natural Products in the June edition of nuFFOODS Spectrum magazine.

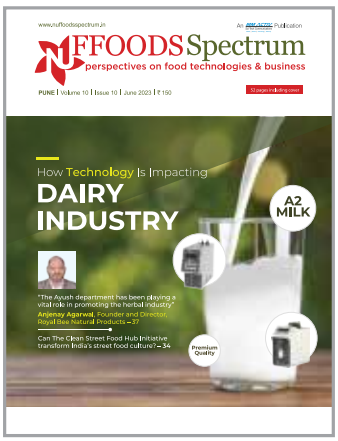
Bhawana Joshi, Delhi

Thank you so much for featuring Superfoods Valley. Looking forward to a long and wonderful association with nuFFOODS Spectrum. We loved the story.

Shreya Gupta, Bengaluru

The article on Clean Street Food Hub Initiative in the June edition of nuFFOODS Spectrum is wonderfully curated and well-drafted. I was happy to contribute to it and thank you for engaging with us on our views.

Rashida Vapiwala, Mumbai



Thanks for your feedback. We have taken note of your suggestions and will surely try to incorporate the content accordingly in coming issues. Please keep sending us your feedback and updating us on your views about the issue and keep giving your opinions on the content.

– Editor

Please send your feedback to communications@nuffoodsspectrum.in

In Murky Waters

Dr Milind Kokje
Chief Editor

Like spurious drugs, spurious foods too are a problem, particularly health food supplements. Manufacturers of such spurious health supplements appeared to have found a gap of lack of coordination on the issue of jurisdiction between the two regulatory authorities and have continued their activity.

It is significant that the National Human Rights Commission (NHRC) has taken cognizance of the issue and served notices to the Union Ministry of Health and Family Welfare, Drugs Controller General of India (DCGI) and Food Safety and Standards Authority of India (FSSAI). It is also important that NHRC has taken suo motu note of media reports on the topic and sent notices. NHRC's intervention is also an indication of the gravity of the issue.

The media reports pointed out that the Baddi industrial area of Solan district in Himachal Pradesh is a production hub for manufacturing spurious vitamins, syrups and drugs. In the recent meeting of the FSSAI's scientific committee, nutraceuticals were described as challenging areas as its consumption is increasing and hence need closer monitoring.

Approximately 100 nutraceutical companies are operating in Baddi. They have a license to produce only food products under the Food Safety and Standards Act 2006 (FSSA 2006). Hence, they are outside the jurisdiction of DCGI. Citing these details, a media report in May stated that five companies in Baddi have been sealed, of which three had licenses to produce food items and were not allowed to produce allopathic medicines.

The NHRC intervened as it felt that if the media report is right, it raises a serious issue. Thus, it has recognised the need to address the issue to safeguard public health and safety. It has sought reports from the ministry, DCGI and FSSAI within four weeks about, among other things, the present status of the implementation of the relevant laws to check the production and sale of spurious drugs in the name of vitamins and supplements. In its notice, the NHRC has also mentioned the point of lack of coordination between two government departments and pointed out that the companies are taking undue advantage.

Lack of coordination and the issue of exact jurisdiction is observed in several cases when it comes to initiating action from different government departments. The mischief mongers try to take disadvantage of the same for their illicit activities. However, in this case, there should not be any ambiguity as to who should initiate action or there seemed not to be any reason for lack of coordination. Nutraceutical companies come under the regulatory purview of FSSAI.

Till a comprehensive food law was enacted in 2006 nutraceutical companies came under the Prevention of Food Adulteration Act and four other different Acts related to various aspects of food safety. It gave authority to food safety departments in states to deal with food adulteration and safety issues. But FSSA 2006 was enacted by combining all the five Acts and FSSAI was made the sole regulatory authority for food regulation. Since nutraceuticals are considered as health foods, nutraceutical companies came under the purview of the central agency FSSAI, which issues licenses and regulates them.

This is, probably, making it difficult to keep an eye on the activities of the companies located in far-flung places. When there is a cluster of nutraceutical companies in large numbers, the FSSAI needs to have its establishment there for effective control. Or else, the state agencies should be roped in by amending the law, if necessary, for the specific purpose of effective monitoring, as earlier. Just four months back, the FSSAI asked all states to carry out special enforcement drives to check for product compliance and initiate action in case of violations. This indicates that the FSSAI can ask state agencies to act.

Such steps could only be a solution. Effective steps are needed to nip such a problem in the bud now itself as the market is growing fast. As per FSSAI's estimation the nutritional supplement market is expected to grow by a CAGR of 50 per cent to reach $18 billion by 2025. NS

Kerala secures top ranking in 5th State Food Safety Index, for 2022-23

The Food Safety and Standards Authority of India (FSSAI) reaffirmed its dedication to food safety and innovation by organising an interactive session on June 7, 2023 at New Delhi, on World Food Safety Day. The event witnessed the participation of Dr Mansukh Mandaviya, the Union Minister for Health and Family Welfare. At the event, Dr Mansukh Mandaviya unveiled the 5th State Food Safety Index (SFSI), which evaluates the performance of states and union territories across six different aspects of food safety. Recognising the achievements of various states and union territories, Dr Mandaviya felicitated the winners based on their rankings for the year 2022-23. Among the larger states, Kerala secured the top ranking, followed by Punjab and Tamil Nadu. Among the smaller states, Goa emerged as the leader, followed by Manipur and Sikkim. Additionally, Jammu and Kashmir, Delhi and Chandigarh secured the first, second, and third ranks respectively among the union territories.

FSSAI unveils Rapid Food Testing Kit (RAFT) portal

Dr Mansukh Mandaviya, Union Health Minister, Government of India, recently unveiled an innovative initiative by the Food Safety and Standards Authority of India (FSSAI)- the Rapid Food Testing Kit (RAFT) portal. This portal aims to streamline the operations of the RAFT Scheme, ensuring transparency and accountability. Applicants can now conveniently apply for approval online, and all steps, from application processing to certificate issuance and renewal, can be carried out electronically. This digitalisation promotes a paperless operation of the RAFT scheme, which was launched in 2019 to encourage the adoption of advanced technologies for food testing, screening, and surveillance purposes. FSSAI has constituted a committee for scrutinisation of applications received by FSSAI under this scheme. The recommendations of the RAFT committee are ratified by the Scientific Panel on Methods of Sampling and Analysis (SPSMA) and approved by the Competent Authority before adoption/implementation. Thereafter, the status of all the rapid kit/equipment is placed before the Food Authority for ratification.

FSSAI issues warning to nutraceutical companies in Himachal Pradesh

The Food Safety and Standards Authority of India (FSSAI) has launched a surveillance drive to curb the menace of spurious drugs manufactured by nutraceutical companies operating across the country. As part of this initiative, the regulatory authority has initiated its first set of drives in Himachal Pradesh, directing its Regional Office, North, to take immediate action against the defaulting Food Business Operators (FBOs) involved in the production of spurious drugs. As part of this drive, 21 facilities operating in Baddi, Himachal Pradesh were inspected and 111 samples were lifted during the first week of June. Further, 25-30 per cent of the nutraceuticals manufacturing facilities in Himachal Pradesh were inspected by the end of June 2023. To address this issue, the CEO, FSSAI convened a meeting with major manufacturers of health supplements and nutraceuticals of Baddi, Himachal Pradesh recently. Non-compliance was highlighted as having severe consequences, including the possibility of licence suspension or cancellation, as well as the initiation of criminal cases. Recognising the significance of a coordinated effort, the FSSAI has directed the Commissioner of Food Safety, Himachal Pradesh, to provide full support in carrying out the surveillance drive effectively. FBOs found to be in violation may be prosecuted under Section 59 of FSS Act 2006 where punishment like lifetime imprisonment or a fine of not less than Rs 10 lakh will be imposed.

Dr Mandaviya opens National Training Centre for FSSAI in Ghaziabad

Union Minister for Health and Family Welfare, Dr Mansukh Mandaviya recently inaugurated the state-of-the-art National Training Centre for Food Safety and Standards Authority of India (FSSAI) at Ghaziabad, Uttar Pradesh. Recognising the importance of continuous skill upgrading for officials, food business operators, and other stakeholders, FSSAI has established the National Training Centre to offer various training programmes. This dedicated centre fills the void that previously existed, ensuring the development of a future-ready workforce committed to ensuring safe and wholesome food for the citizens of India. On this occasion, an e- learning app- Food Safety and Certification (FoSTaC) developed by FSSAI that contains learning and training modules about food safety guidelines, such as proper food handling, storage, and hygiene practices etc., for street vendors was also launched.

FSSAI takes first step towards scaling up training and capacity building

The Food Safety and Standards Authority of India (FSSAI) is conducting a three-week induction training programme, 'Nurturing Individual Potential and Unleashing Networking' (NIPUN), for its newly recruited officials. Following the programme, they will receive two weeks of on-the-job training at the Southern Regional Office in Chennai and the Northern Regional Office in Ghaziabad. FSSAI has trained more than 11 lakh food handlers and FBOs as Food Safety Supervisors since 2017, with an average rate of two lakh trainees per year. With more than 72 lakh FBOs in the country, FSSAI is gearing up to train 25 lakh food handlers and FBOs in the next three years, beginning with the current financial year. NIPUN is a flagship Induction Training Programme for Direct Recruits of FSSAI. The programme design comprising three weeks of classroom training followed by on-the-job exposure to the functioning of FSSAI at Regional Offices is envisaged to sensitise the direct recruits to the paramount mandate of the apex food regulator.

Govt holds 2nd Inter-Ministerial Committee Meeting on World Food India-2023

The Ministry of Food Processing Industries (MoFPI) recently held the 2nd Inter-Ministerial Committee Meeting on World Food India-2023 at Vigyan Bhawan Annexe, New Delhi. Additional Secretary, Ministry of Food Processing Industries, Minhaj Alam, chaired the meeting with senior representatives from Ministries/Departments/ Commodity Boards. The meeting witnessed participation from the senior officials of key central government ministries and departments. All the participants were apprised of developments in preparations for World Food India-2023, being organised between November 3 and 5, 2023 in New Delhi. The meeting was held in continuation to the interaction held with the Committee members in May 2023. Additional Secretary, MoFPI emphasised on the important role of respective ministries and departments in development of a conducive ecosystem to channelise infrastructure development, trade, and investment promotion in the food processing realm. All the central ministries and departments confirmed their participation in the event through exhibition space/stalls, participation in technical sessions as well as engagements in the Reverse Buyer Seller Meet of the event. The Ministries and Departments were requested to share specifics of the plan of action of their participation/partnership in the World Food India event.

Good Flippin' Burgers raises $4M in Series A Round

Good Flippin' Burgers, a Mumbai-based startup, has successfully raised $4 million in its latest Series A round of funding via Tanglin Venture Partners. This cash infusion not only bolsters the company's financial resources for growth but also solidifies its ambitions as it continues its journey of becoming the most loved burger brand in India. Good Flippin' Burgers raised $1 million in April 2022 and have grown 3X this past year. Looking towards the future, Good Flippin' Burgers has set ambitious plans for the next 12 months post this round of funding. The company will primarily concentrate on geographical expansion, reinforcing its supply chain, and further refining its dining and quick service models. These strategic initiatives will position Good Flippin' Burgers as a dominant player in the market, poised to meet the growing demand for delicious burgers across diverse regions. Ashika Capital was a financial advisor to this round. The brand currently has a total of 23 outlets and rising across Mumbai and Delhi with a headcount of more than 295+ employees. With 16 stores across Mumbai, the brand has also made inroads in Delhi with seven outlets.

Evolved Foods bags Rs 7.3 Cr funding in Seed Round

Evolved Foods, a Bengaluru-based plant protein startup, has announced the successful closure of its seed round of Rs 7.3 crore. The round was led by marquee investors like Zerodha backed Rainmatter Health and Kamala Capital. The round also saw participation from Anvitha Prashanth (Anyaa Ventures), and Aprameya Radhakrishna (Founder of KOO App); and a group of angel investors – such as Rachel Goenka & Karan Khetarpal (Goenka Ventures Family Office), B G Mahesh (Founder/ex-MD of OneIndia.com), Sushant Arora (Cofounder of CleanMax Solar), Swapnil Shah (ex-Brand head, Procter & Gamble), and Vananam Ventures Trust. Since its launch in Q1 2022, Evolved Foods has expanded its presence to six cities and established partnerships with prominent hospitality brands in the food service sector. This investment will support the startup in accelerating its growth plans, and help to capitalise on the strong order pipeline from the domestic and export markets. Currently over 50 dish creations, curated by some of the top chefs of the country, are available through the company's food service partners across six cities in India. The company is also in the process of launching its products in the Middle East and Europe.

India's seafood exports touch all-time high in FY 2022-23 at $8.09B

India achieved an all-time high exports of seafood both in terms of volume and value by shipping 17,35,286 metric tonnes (MT) of seafood worth Rs 63,969.14 crore ($8.09 billion) during FY 2022-23 despite the several challenges in its major export markets like the USA. Frozen shrimp remained the major export item in terms of both quantity and value while USA and China turned out to be the major importers of India's seafood. Frozen shrimp, which earned Rs 43,135.58 crore ($5481.63 million), retained its position as the most significant item in the basket of seafood exports. The overall export of frozen shrimps during 2022-23 was pegged at 7,11,099 MT. USA, the largest market, imported (2,75,662 MT) of frozen shrimp, followed by China (1,45,743 MT), European Union (95,377 MT), South East Asia (65,466 MT), Japan (40,975 MT), and the Middle East (31,647 MT).

Barbrew Beverages raises $0.5M from ah! Ventures Angel Platform

Barbrew Beverages, the company behind Barneys Hard Seltzer, has raised $0.5 million from ah! Ventures Angel Platform and ah! Ventures Fund. Ruchi Gupta and Gaurav Sharma – Co-founders of Barbrew Beverages see hard seltzers as the future of beverage Industry in India. The RTD (Ready to Drink) culture is growing across the world. Barneys is not aiming to compete with beer, breezer or cocktails but rather offers drinkers an alternative. Barneys Hard Seltzers is perhaps a drink for connoisseurs, a premium sparkling cocktail experience without the hard work of measuring and mixing different ingredients. Unlike categories targeted to a particular gender or age, Barneys is being promoted as a gender neutral beverage and aims to unite the generations by being an easy bet for every individual. Within one year of its launch, Barneys has expanded its presence in more than five states – Goa, Pondicherry, Delhi, Chandigarh, Telangana, and an international market. This year, Barneys aims to penetrate deeper into the markets.

Bikano aims to achieve turnover of Rs 1800 crore by FY23-24

With an aim to achieve a turnover of Rs 1800 crore by FY23-24, New Delhi-based brand Bikano has introduced a new flavour of bhujia called "Magic Bhujia" to expand the range of its products and cater to the growing demand of its customers. The new Magic Bhujia flavour will feature a distinctive blend of spices and will be available in 18g, 38g, and 200g pack sizes, priced at Rs 5, Rs 10, and Rs 59 respectively. The snack industry in India is experiencing rapid expansion, with the salty snacks market valued at Rs 47,000 crore, according to agency reports. It is anticipated that the market will exhibit a growth rate (CAGR) of 10 per cent from 2023-28. Taking advantage of this growing trend, Bikano aims to achieve a 20 per cent growth in the Bhujia category after the launch of its new Magic Bhujia flavour. Bikano is primarily focusing on the North Indian market with the introduction of its new product, specifically targeting individuals between the ages of 15 and 35 years.

HealthifyMe secures $30M funding to accelerate AI capabilities & global expansion

Bengaluru-based startup HealthifyMe has successfully raised $30 million in a Pre Series-D funding round led by prominent investors LeapFrog Investments and Khosla Ventures along with FinnFund – a Finnish development financier and Van Lanschot Kempen – a Dutch investment firm. Existing investors Unilever Ventures, Chiratae Ventures, Blume Ventures and HealthQuad also participated in the round which also included some Venture Debt. The investment will be channelled towards advancing the company's artificial intelligence (AI) capabilities, acquiring top-tier talent, and propelling global expansion. HealthifyMe is set to augment the capabilities of "Ria", its AI-powered virtual nutritionist, by infusing it with generative AI. It is also retrofitting its coach facing system with Generative AI to create a strong Nutritionist & Trainer "Copilot". This will enable context-rich, personalised nutrition advice, propelling the productivity of their nutritionists and trainers several fold and enhancing the quality of client interactions.

LabelBlind launches AI-powered solution for food label validations

Established in 2018 in Mumbai, LabelBlind, a Digital Food Labelling company, has announced the launch of FoLSol-AI, a cutting-edge artificial intelligence (AI)-powered solution for food label validations and regulatory compliance in the food and beverage sector. Leveraging state-of-the-art AI technologies, FoLSol-AI aims to streamline and enhance the accuracy of food label validations while enabling food companies to meet and exceed regulatory requirements. FoLSol-AI's advanced AI algorithms have been meticulously trained on vast amounts of data to recognise and interpret complex food labels, ensuring that all information is accurately represented. This technology provides an efficient and cost-effective solution for food and beverage companies, saving them valuable time and resources in the compliance process. FoLSol-AI leverages neural networks and AI technologies to perform optical character recognition, object detection, and extract data from the food labels. By utilising AI-based Optical Character Recognition (OCR), the application achieves higher accuracy and efficiency in extracting information from the labels compared to traditional OCR techniques. To nuance the model further and meet industry requirements, LabelBlind is working closely with identified food companies.

DC Doctor's Choice unveils India's First Ever 3 Whey Fusion Whey Protein

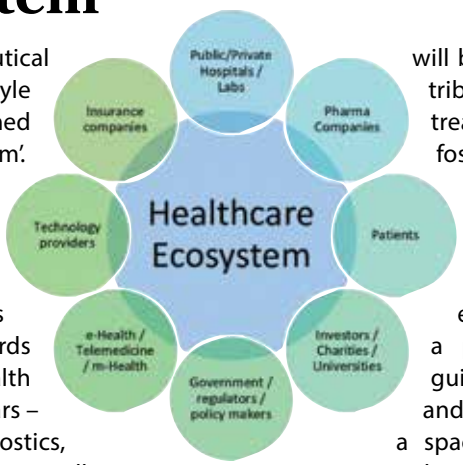
Gurugram-based startup DC Doctor's Choice, a bodybuilding supplement brand, has launched the country's first ever 3 Whey Fusion Protein. The product, which combines three different types of proteins, ensures that consumers get just the right sources of fast, medium, and slow digesting proteins. A perfect anytime meal replacement, it helps in steady state amino acid absorption over a longer time period than single source proteins and has adequate essential amino acids to provide maximum protein synthesis for rapid development and recovery, which ultimately affects overall gains. The 3 Whey Fusion is based on ET or Enzyme Technology to break down protein chains into smaller molecules that are easier to absorb which reduces protein losses through excretion. The three types of protein used in the product are Hydrolysate, Isolate and Concentrate, each with their own distinct characteristics that make it unique. In addition to its performance benefits, 3 Whey Fusion Whey Protein comes in four flavour profiles- Choco Brownie Fudge, Strawberry Banana Milkshake, Alphonso Mango, and the highly acclaimed best-selling flavour, Malai Kulfi Falooda.

BUILD. PROWL achieves 'Informed Sport' Certification

Launched in April 2023, Tiger Shroff backed BUILD. PROWL has achieved 'Informed Sport' Certification for two of their sports nutrition products: Hydro Active ISO 8 (Whey Isolate) and Lean Muscle Enhancer (Premium Protein). The products are now among the few products in the Indian market to successfully pass the rigorous testing for more than 250 substances that are prohibited in sports. This certification further assures the quality of the products for consumption by professional athletes. Informed Sport is a global quality assurance and supplement certification programme for sports supplements. It is the only worldwide programme for third-party testing and certification that examines each batch of a product before it is put on the market. The tests are conducted by LGC (the internationally known testing laboratory behind Informed Sport) a famous sports doping control and research supplement testing facility with more than 55 years of experience in regulatory analysis. LGC collaborates closely with international sports authorities, national anti-doping organisations, and national governing bodies as a doping control and supplement testing lab.

Nutrabooti launches integrated 'Health Ecosystem'

Nutrabooti, India's first D2C nutraceutical startup brand targeting lifestyle based health concerns, has launched a one-of-its-kind 'Health Ecosystem'. Reinforcing its image as a brand that is trustworthy and accessible, Nutrabooti is attempting to create a vibrant 'Booti Tribe' through this ecosystem, that will unite individuals on a transformative journey towards holistic well-being. The proactive 'Health Ecosystem' will be based on 3 key pillars – an integration of cutting-edge diagnostics, innovative product development as well as a comprehensive approach to proactive wellness which will be available to the members of the tribe. This approach goes beyond mere treatment and focuses on prevention, fostering a sustainable lifestyle that promotes long-term health. As part of its comprehensive approach to healthcare, the 'Booti Tribe' will provide a supportive and inclusive environment as well as serve as a platform for individuals to seek guidance, exchange success stories and provide mutual support. It will be a space where like-minded individuals come together to share experiences, insights, and knowledge related to personal health journeys.



Wakao Foods exports India's biggest plant-based meat consignment to US

Wakao Foods has recently announced its largest-ever shipment of renowned jackfruit products, weighing 13 tonnes. This is the first of two containers being sent to the US. The shipment includes an array of products with the authentic flavours of Raw Jack, BBQ Jack, Indian Gravy, Continental Jack burger patties, Jack Supreme burger patties, American Herbs sausages, Hot & Spicy sausages, and Teriyaki Jack. Wakao Foods' expansion into the United States (US) market aligns with the growing demand for plant-based and flavourful food options. With its expertise in creating delectable plant-based products, the brand is poised to cater to the discerning palates of food enthusiasts in New York and beyond. A Goa-based startup, Wakao Foods offers sustainable plant-based products, including ready-to-cook and ready-to-eat options. Their flagship product is jackfruit meat, catering to the growing vegan trend. Despite launching in 2020, just before the pandemic, Wakao Foods has achieved 25 per cent monthly growth.

Activist Health Care unveils Revolutionary Malt HB Spread

Aurangabad-based startup Activist Health Care has announced the launch of a ground breaking product, Malt HB spread. This one-of-a-kind complete family nourishment is designed to enhance health and stamina by delivering essential calcium, iron, and vitamin supplements in a convenient and delicious spreadable form. One of the key benefits of Malt HB spread is its suitability for pregnant women and lactating mothers without the need for prior consultation. The USP of the product which makes Activist Malt HB Spread better than others is that it does not contain any preservatives, is gluten-free, corn-free and soy-free. In addition to these, it is with no dairy or yeast presence. The product effectively increases calcium levels in the body, promoting stronger bones and improving bone strength. Additionally, it enhances the formation of haemoglobin (HB) by boosting iron levels, thereby supporting healthy blood cells and overall vitality. To experience the full advantages of Malt HB spread, it is recommended to consume 15 ml (3 teaspoons) per day, or as a healthcare professional advice.

Marico expands oats portfolio with Saffola Oats Gold

Mumbai-based FMCG firm Marico has expanded its Oats portfolio with the launch of Saffola Oats Gold. This addition to the Saffola Oats portfolio promises to delight the consumers as it brings the goodness of Oats with the inclusion of Millets. There is an increased inclination for nutrient-dense ready-to-cook food products that enriches taste experience, especially during the most important meal of the day – breakfast. Recognising this need, Marico through its latest Saffola Oats Gold, aims to provide a tasty and healthy breakfast option to its consumers to support their healthier lifestyle. Saffola Oats Gold helps in weight management and reduces the risk of hypertension. With this new launch, the company is expanding its range of millet-based products, which already includes popular offerings like Munchiez and Saffola Masala Oats Karara Crunch. The all new Saffola Oats Gold comes in 1.5 kg pack sizes for Rs 400. It is available across the country in modern trade and e-commerce platforms. Marico has been innovating and reinforcing its leadership position in the healthy and ready-to-cook foods category over the past few years, with its unique premise of providing healthier options to consumers without compromising on the taste.

Kellogg's & Hershey's launch chocolate cereal variant in India

Kellogg's and Hershey's, two globally renowned iconic companies based in the US, have teamed up to launch the new Kellogg's Hershey's Chocos. Through a strategic licensing partnership with Hershey's, Kellogg India is introducing a co-branded Chocos cereal variant to provide consumers with a new chocolatey experience. Kellogg's Hershey's Chocos is a heart-shaped chocolate-dipped cereal made with wheat. The launch is being supported by a Pan-India campaign that will span over two months. The new variant is available in a 325gm pack and priced at Rs 235. It is available for consumers to pick from the shelf from stores. As a launch offer, more than a million-trial size pack of Kellogg's Hershey's Chocos will be given free along with Kellogg's Chocos boxes packs and all its other variants. Kellogg's cereals, made in India in two manufacturing units (Maharashtra and Andhra Pradesh), are consumed in the country and exported to Sri Lanka, Nepal, Bangladesh and Maldives. The brand has also established a Research and Development Centre in India that caters to the demand of the South Asian markets for Kellogg's. On the other hand, Hershey's has more than 100 brand names in approximately 80 countries worldwide that drive more than $10.4 billion in annual revenues, including Hershey's, Reese's, Kit Kat, Jolly Rancher and Ice Breakers, and fast-growing salty snacks including SkinnyPop, Pirate's Booty and Dot's Homestyle Pretzels.

Panacea Biotec forays into food & nutrition sector

New Delhi-based Panacea Biotec, one of India's leading biotechnology companies, has announced the launch of its new range of high-quality paediatric food and nutritional products in India by its wholly owned subsidiary, Panacea Biotec Pharma. The products ChilRun, ChilRun Full, ChilRun No Sucrose, ChilRun 7+ in different flavours and sizes will be catering to the domestic market. The company has further plans to add more products in this newly explored space of food and nutrition, focusing on women's health and geriatric population. According to the Indian Academy of Paediatrics, good nutrition in the growing age builds up bones and muscles and provides fuel for every body cell to survive and function. Good nutrition is just not enough caloric intake but it relies on a solid nutritional foundation, which includes the correct amount of each required nutrient, from healthy sources and at proper time.

Edible oil player BN Group to expand retail distribution network

BN Group currently has a robust presence in Uttar Pradesh, Uttarakhand, Gujarat, and other regions of Northern India. However, the company is now looking to expand its retail distribution network in Rajasthan, Maharashtra, Punjab, Haryana, Himachal Pradesh, and the National Capital Region. The company has a corporate presence in Mumbai and Noida, with its Promoter Office located in New Delhi. BN Group, an established manufacturer of edible oils in India, has been operating for more than a decade, mainly serving the B2B market through retail brands such as Simply Fresh and Healthy Value. The company is now looking to shake up the market by introducing new products. In 2022, the Indian edible oil market grew by 24.3 million tonnes. Projections indicate continued growth with a 5.1 per cent volume growth in 2024. The average volume per person in the edible oils segment is expected to reach 4.47 kg in 2023. The surge in demand for premium and value-added oils can be attributed to a growing awareness of health concerns. This trend is further bolstered by factors such as population growth, economic expansion, bulk exports, and improved agricultural yields.

Barista introduces refreshing summer coolers

Barista Coffee Company, which started in 2000, has recently launched its new range of refreshing beverages that are perfect for summers. These beverages are a perfect blend of flavours curated to suit all palate types, sure to meet consumers' demand for cold beverages during summers. The aim is to create one more mood point for the consumers so that they can indulge more with the brand with the new flavours including pineapple, honey, ginger and mojito. These newly launched beverages will be available for consumption across all outlets in India. The brand discovered the brilliance of Italian coffee and introduced it to the Indian subcontinent at a time when coffee was considered a luxury. It is headquartered in New Delhi, and maintains outlets across India, and in other regional countries such as Sri Lanka, and Maldives.

Bagrry's introduces new vegan-friendly drinks

Bagrry's is celebrating its growth with the launch of its highly anticipated plant-based vegan friendly drinks, catering to the preferences of health-conscious individuals seeking ethical, vegan and sustainable options. These products are a ground-breaking expansion to the ever-growing market of vegan-friendly beverages. These plant-based drinks are expertly crafted with the highest-quality plant-based ingredients, guaranteeing a healthy and nourishing experience. These vegan -friendly drinks are perfected by Baristas with the greatest supervision and precision. Bagrry's is one of the leading breakfast cereals and health food brands in the Indian subcontinent. Over the years, they've aimed at setting new standards in innovation, responsible nutrition and quality manufacturing. They have been a pioneer in India for products such as Muesli, Oats, Bran and Corn Flakes with added fibre and much more.

iD Fresh Food launches iD Squeeze & Fry Vada Batter 2.0

Bengaluru-based iD Fresh Food has announced the launch of iD Squeeze & Fry Vada Batter 2.0. Based on the consumer feedback, iD Fresh Food has introduced a unique product packaging that is set to create a new benchmark in the food industry. The new packaging will include a resealable section that allows consumers to add their preferred masalas/condiments into the vada batter. Besides, the upgraded spout not only ensures that finer particles can pass through it, but also that the batter doesn't stick around the area. This time the pack has been revamped with a transparent window to see if the masala is mixed. Back in 2018, when the company launched its patented, squeeze-and-fry packaging design for vada batter – a Harvard Business School Case Study – the rationale was to identify customer problems and solve them, using common sense. Now with the 2.0 version, the idea is to enhance the customer experience and usability. iD Squeeze & Fry Vada Batter 2.0 will be available in Bengaluru and will soon be launched in other key markets across India. iD Squeeze & Fry Vada Batter 2.0 (375g) is priced at Rs 80.

Avesthagen launches Teestar Bioactive Gummies

Teestar Bioactive Gummies, a product for sugar and calorie management, have been launched by Avesta Good Earth Foods, a part of Bengaluru-based company Avesthagen. It has shown a reduction in blood glucose levels of up to 10 MG/DL postprandial. This all-natural ingredient manages blood sugar spikes post-meal and further helps in managing a better insulin response. Teestar is developed from an Indian medicinal plant commonly used as a part of the food matrix. It has been used in traditional medicine as a potent sugar and calorie modulator and also to manage healthy body mass. It is recommended to have two gummies before breakfast and dinner daily for best results. The Teestar forms a colloidal-type suspension in the stomach and the intestine upon hydration, and the mucilage thus formed slows down the gastrointestinal transit of food as well as its digestion. Thus, yielding less calories from digested food for a long time and, in turn, giving the feeling of satiety. Teestar is manufactured at a state-of-the-art production and R&D facility by an eco-friendly and safe process of extraction using only ethanol and water, not needing any harsh chemicals or evaporation of the extract. The product maintains a very stringent quality consistency using Avesthagen's proprietary fingerprinting technique, MetaGrid.

Modicare strengthens the Well portfolio with new Sci-Vedic launches

New Delhi-based Modicare, one of India's leading direct-selling companies, has announced the launch of three new Sci-Vedic products under its 'Well' brand- Well Vision Health, Well Gluco Health, and Well Prostate Health. Dedicated to providing comprehensive nutrition, health, and wellness offerings, Modicare continues to expand its product portfolio to cater to the diverse needs of individuals pursuing a healthy lifestyle. Well Vision Health is a potent plant-based formula containing ingredients such as Lutein & Zeaxanthin, vitamin A, flaxseed oil, that help support eye function and normal vision health. Priced at Rs 999, it helps protect eyes from damaging blue light, glare sensitivity and promotes visual acuity. Well Gluco Health is a potent formula containing ingredients such as cinnamon, fenugreek, that promote healthy blood sugar levels in adults. It aids in the efficient breakdown of carbohydrates, fats, and proteins, to support overall wellness. On the other hand, Well Prostate Health is a combination of natural antioxidants and herbs such as green tea, gokhru, flax seed extracts, that support normal prostate function, and urinary flow in adults.

Ensuring Food Security by ELIMINATING Wastage

The post-pandemic world is poised for a great reset that could trigger a global upheaval in food production, supply and end-consumer access. While some organisations have been claiming that climate change is responsible for these developing scenarios, scientists in the field of meteorology, geoengineering research and agriculture reveal otherwise. The latter maintain that a real-world and scientific approach to increasing food production, and tech-enabled storage while reducing food wastage is the key factor in preventing food scarcity. Food processing companies have called for collective action in tackling food security and food safety, many of whom are actively investing in their R&D, launching innovative solutions and making significant efforts in cutting down food loss. However, it's important to mention that the global efforts in this space are markedly high as compared to the Indian market, primarily in terms of launching new technologies and solutions. Although the attempts can be seen at the academic level in India, it's high time for Indian companies to look into R&D investments in this matter. Let's explore this further.

Consumer consciousness around food waste has more than doubled in the past two years as rising food prices, supply chain challenges, the pandemic, and sustainability concerns impact consumer behaviour.

According to the Capgemini Research Institute's 2022 report, "Reflect. Rethink. Reconsider. Why food waste is everybody's problem", 72 per cent of consumers are aware of their food wastage as compared to only 33 per cent of consumers before 2020. Over 90 per cent of consumers prefer brands that are reducing food waste. The report further says that consumers are already looking into ways to reduce their food waste. There has been an 80 per cent year-on-year growth in social media searches for methods to increase the life of food items. Cost savings (56 per cent), concerns around world hunger (52 per cent), and climate change (51 per cent) are the primary reasons contributing to this.

In line with consumer's evolving mindsets, industry players as well as the government are also making significant efforts in the space. From Hyderabad's Bowenpally Vegetable Market generating electricity from vegetable waste to Amazon launching organic fruits and vegetables sourcing from farmers' collection centres in the country, there is a lot more happening to support the food security agenda of the nation.

To reduce food grain wastage, the Government of India in May 2023 launched "World's Largest Grain Storage Plan in the Cooperative Sector", a groundbreaking step taken by the government. This new scheme is aimed at addressing the agricultural storage infrastructure shortage by setting up various types of agri-infrastructure, including warehouses, custom hiring centres, processing units, etc. Addressing the challenges related to food loss, food safety, nutritional aspects of food, and food security is at the core of this newly launched plan. Along with this, a range of innovations is constantly in the making in the Indian food processing industry that is directed toward all these aspects.

Significant efforts on the cold storage front

The refrigeration and cold chain industry of India is growing at a fast rate due to the shift in focus from increasing production to better storage to reduce wastage of agricultural produce and other perishable products. India is home to the largest cold storage capacity in the world, with 8200 cold storage and 36 million tonnes capacity. The Indian cold chain market is expected to more than double from Rs 1.28 lakh crore in 2022 to Rs 2.86 lakh crore in 2027, a CAGR of 14.3 per cent.

During the "India Cold Chain Conclave" organised

by Ministry of Agriculture and Farmers Welfare, along with PHD Chamber of Commerce & Industry held in New Delhi on January 19 this year, Manoj Ahuja, Secretary, Department of Agriculture and Farmers Welfare said, "Technological innovation is crucial for the growth and development of the Indian cold chain industry. With the advent of advanced refrigeration and cooling systems, the industry is now able to store and transport goods at much lower temperatures, which helps to extend the shelf life of perishable products. This has led to an increase in the export of perishable goods from India, as the products can now reach international markets in better condition."

Cold chain solutions address the problem of food loss directly by increasing the shelf life of food, and indirectly by increasing the reach of food to markets and processing facilities. Several initiatives for cold storage development have been taken in the past in India, but the focus has now shifted to creating an integrated cold chain across the supply chain. The industry players are also significantly noticeable in this space.

In April 2023, Mumbai-based Allana Cold Chain Solutions, one of the leading providers of end-to-end cold chain storage and transportation services announced its expansion in operations with the construction of storage facilities in Kolkata, Andhra Pradesh (in Kakinada) and Punjab (in Dera Bassi). This expansion is a testament to Allana Cold Chain Solutions' commitment to providing end-to-end solutions by integrating the experience and expertise in blast freezing, packing, inspection, freight forwarding and custom made offerings to varied sectors and reputed clients such as McCain Foods, Britannia Industries, Morde Foods, Abbott India, Sapphire Foods (KFC supplier), Varun Beverages, Mars International and others, ensuring the integrity of cold chain logistics requirements throughout the process.

Commenting on the foray, Manish Muley, Chief Executive Officer, AllanaSons, said, "Our effective management module has enabled us to be operational 24x7 resulting in a 20 per cent increase in revenue over the previous three years. With the new additions, the growth rate is poised to be between 30 and 35 per cent per year. The expansion of operations with the addition of these new facilities bears witness to our efficient management. The demand for cold chain logistics services has been continually expanding, and these new facilities will assist us in meeting those demands from our existing and newer clientele. We are convinced that we can cater to our customers with the finest quality of service thanks to our cutting-edge technology and considerable industry expertise."

Another Mumbai-based cold-chain marketplace startup, Celcius Logistics announced the launch of its smart last-mile delivery platform that addresses and fixes the most pertinent pain points in India's fragile cold supply chains. The company has already secured contracts for storage and distribution from clients like Zepto, Maersk, Jubilant Foodworks and others, and also handles distribution for Zomato, Rebel Foods and a host of other Cloud kitchens and local businesses that get instant access to all the asset inventory via Celcius's last mile delivery platform. The tech enablement not only optimises the last mile but also helps address issues of timely delivery and loss due to wastage, maximising profitability for all parties and enhancing food security in the country.

The cold storage sector encounters challenges that other dry warehouses do not face. The higher cost of operations in cold storage makes it critically important that the space must be utilised optimally. In India, the dairy or cold chain industry has not evolved in terms of intralogistics automation as companies ignore the benefits of modern cold storage design which also includes a high-density storage system apart from advanced refrigeration technology.

To address these issues, Godrej Körber, a joint venture company between Godrej & Boyce and Körber Supply Chain, a German company, is driving warehouse

automation transformation for the Indian cold chain sector through differentiated automation solutions. Godrej Körber is aiming for a 20 per cent contribution in revenue from India's cold chain sector by introducing a highly advanced high-density automated storage and retrieval system (AS/RS) in the financial year 2023.

Suunil Dabral, Senior Vice President & Business Head, Godrej Körber stated, "An automated cold storage facility's purpose is to expedite procedures and increase safety for both staff and commodities. Godrej Körber aims to bring this transformation to India's cold storage facilities by providing special high-density storage automation solutions, including stacker cranes and shuttle-based AS/RS solutions that let you fully control the storage of all palletised commodities without the need for manual handling. By integrating advanced technology and innovation, we aspire to tackle supply chain complexity across sectors and automate a large number of the cold chain warehouses in India."

The tech enablement not only optimises the last mile but also helps address issues of timely delivery and loss due to wastage, maximising profitability for all parties and enhancing food security in the country.

Addressing shelf life

As the food processing companies call for collective action in tackling food security and food safety, many of them are actively investing in their R&D, launching innovative solutions in the market, and making significant efforts in cutting down the food loss. However, it's important to mention that the global efforts in this space are markedly high as compared to the Indian market. Mainly in terms of launching new technologies and solutions. Although the attempts can be seen at the academic level in India, it's high time for Indian companies to look into R&D investments in this matter.

Looking at the global front, food processing companies are mainly focusing on the shelf life aspects to combat the challenges related to food waste. Many are launching shelf-life extension technology across

"With the advent of advanced refrigeration and cooling systems, the industry is now able to store and transport goods at much lower temperatures, which helps to extend the shelf life of perishable products.

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"The demand for cold chain logistics services has been continually expanding, and these new facilities will assist us in meeting those demands.

Manish Muley, CEOchief executive officer, AllanaSons

"By integrating advanced technology and innovation, we aspire to tackle supply chain complexity across sectors and automate a large number of the cold chain warehouses in India.

Suunil Dabral, Senior Vice President & Business Head, Godrej Körber

"Our technology extends the marketable shelf-life of produce by up to three times – ultimately giving consumers a longer window to enjoy produce at home while reducing waste.

Grant Stafford, Co-CEO, SAVRpak

their portfolios. Research has shown that approximately 50 per cent of consumer waste could be prevented via shelf-life extension technologies – a saving which would meaningfully reduce world hunger.

SAVRpak, a US-based food technology innovation company, launched SAVRpak Drop-In, the world's first-ever moisture control technology that extends the shelf-life and freshness of produce up to three times. It creates the perfect atmosphere inside the package for a longer period by eradicating a number of causes of premature moulding, wilting and spoilage of peel-less and packaged produce including berries, leafy greens, grapes, mini cucumbers and others. Successful trials have been completed with Divine Flavor, Ocati, RCG Fruits, and Agrovision.

Commenting on the launch, Grant Stafford, Co-CEO, SAVRpak said, "We're excited to be able to address an area of food preservation that has been unachievable to date, and that's the ability to extend the life of peel-less produce like berries and leafy greens. We have successfully transformed the basic technology to address a category that lacked a solution to keep food fresh for longer while reducing food waste – a top culprit of greenhouse gas emissions. Our technology extends the marketable shelf-life of produce by up to three times – ultimately giving consumers a longer window to enjoy produce at home while reducing waste."

In September 2022, Ireland-based leading taste and nutrition company Kerry launched a unique tool to raise awareness of food loss and waste. Although the tool does not directly enhance the shelf life of the product but enables food manufacturers to determine the impact they can have in reducing global food waste by using shelf-life extension technology across their portfolios.

> "Our new tool provides simple but actionable insights for both consumers and the food industry and shows the real impact that shelf-life extension technology can have on food products.

Bert de Vegt, Global VP, Food Protection & Preservation, Kerry

> "Small variations in temperature during transit or storage can lead to waste of perfectly good food on one end of the spectrum, or problems with food safety on the other end.

Yoav Levy, Founder & CEO, Evigence

> "Research grants and fiscal incentives such as tax exemptions can encourage participation by academia, industry and startups in FLW reduction or food waste valorisation.

Dr Satyanarayana Kandukuri, Food Processing practice lead, Sathguru Management Consultants

Kerry's Food Waste Estimator allows consumers and manufacturers to quantify and understand the financial and environmental impact of reducing food waste either in the food chain or in the home.

Bert de Vegt, Global VP for Food Protection & Preservation at Kerry said, "Today is a reminder of the precarious global situation of food security. We all need to act and as an industry, we must take immediate action to eradicate food waste within the food system through new technology and innovation together. While Kerry partners with manufacturers to extend the shelf-life of products, it is important to remember that individual actions at home can also have a big impact. If the world reversed the current trend of food loss and waste, we could protect enough resources to feed three times the amount of undernourished people on the planet today. Our new tool provides simple but actionable insights for both consumers and the food industry and shows the

real impact that shelf-life extension technology can have on food products."

In January 2023, Evigence, an Israel-headquartered food technology company secured $18 million in a Series B round. The company produces sensors and couples them with data analytics to monitor perishable food freshness in real time. The funds are directed toward expanding commercialisation of the freshness management system of the company that extends the shelf life of the food produce, reduces food waste, ensures food quality and safety, and improves operational efficiency. The company has demonstrated meaningful bottom-line impacts, including 20 per cent shelf life extension, a 5 per cent increase in sell-through and a 33 per cent reduction in waste.

"We aim to redefine the way the world manages fresh food", said Yoav Levy, Founder & CEO, Evigence. "Today there is no objective way to measure freshness. Small variations in temperature during transit or storage can lead to waste of perfectly good food on one end of the spectrum, or problems with food safety on the other end. Date codes don't account for these fluctuations. We want to change the paradigm," he added.

On the domestic front, the innovations and initiatives look a bit different in terms of addressing food waste and food security in India. For instance, a team of researchers at the Indian Institute of Technology (IIT) Jodhpur created and demonstrated a cost-effective and highly sensitive tactile pressure sensor for detecting fruit ripeness. By measuring the elastic modulus and capacitance, the researchers were able to demonstrate ripeness assessment for different types of tomatoes.

The sensor is capable of sorting fruits as per their ripeness and by integrating it with a robotic arm, a high-throughput system can then, effectively sort fruits based on their ripeness and quality during the plucking or transportation stages. This cost-effective system will be particularly useful for exporting high-value fruits over long distances allowing producers to reduce associated food waste.

Need to amplify R&D and tech efforts

Although the recently launched Grain Storage Plan looks promising for the Indian agricultural and food processing segment, effective implementation and empowerment of the scheme in the long term will require significant planning and management. After the implementation of this plan, there are a lot more aspects the government and industry need to look into. For instance, shelf life-related issues, investing and building on the necessary technologies like cold storage, maintaining and monitoring the nutritional value of the stored food produce, constant checking on food safety attributes, looking into supply chain management, transportation planning, etc.

Domestic efforts in areas such as R&D and technologies are quite inadequate. Government and industry players both need to address this shortcoming. Unlike South Korea, which has adopted regulations and policy guidelines to reduce Food Loss and Waste (FLW), India does not have laws and regulations that prohibit or restrict the generation of food waste. Serious work is crucial in this matter too.

Dr Satyanarayana Kandukuri, Food Processing Practice Lead, Sathguru Management Consultants said, "India needs to develop a policy that encourages the active participation of the private sector in FLW reduction. Research grants and fiscal incentives such as tax exemptions can encourage participation by academia, industry and startups in FLW reduction or food waste valorisation. Reducing FLW is crucial for addressing food security and building resilient food systems. This needs to be recognised as a priority action agenda that requires collaboration and coordination among all stakeholders."

Our nation has been actively working on the ground to build a better future in terms of food security and sustainability. Milestones in terms of our cold storage infrastructure are prominent and we are constantly progressing in this direction. However, like global brands, for long-term outcomes, better R&D efforts and higher investments in technologies is the need of the hour. The World's Largest Grain Storage Plan in the Cooperative Sector would be a massive success if these aspects are taken into consideration. NS

Mansi Jamsudkar
mansi.jamsudkar@mmactiv.com

India unveils World's Largest Grain Storage Plan

The government of India has recently given its approval to the World's Largest Grain Storage plan, aimed at addressing the shortage of food grain, particularly at the local level, and enhancing the country's food security. However, implementing the plan presents its own set of challenges. The government must consider the possibility of creating these warehouses for public usage, which requires careful planning. It is crucial for the government to also consider reintroducing The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act. By integrating these warehouses with the eNAM (National Agriculture Market) platform, depositors would have the freedom to sell their produce at their preferred time and location, providing them with greater flexibility and market access.

Under the supervision of Prime Minister Narendra Modi, the Union Cabinet has approved the establishment of an Inter-Ministerial Committee (IMC) for the Largest Grain Storage Plan in the Cooperative Sector. This programme aims to develop various agricultural infrastructure, including warehouses, custom hiring centres, and processing units at the level of Primary Agricultural Credit Societies (PACS), transforming them into multipurpose entities.

The implementation of this plan will involve the convergence of different schemes from the Ministry of Agriculture and Farmers Welfare, Ministry of Consumer Affairs, Food and Public Distribution and Ministry of Food Processing Industries.

To ensure the timely and consistent execution of the plan in a professional manner, the Ministry of Cooperation will initiate a pilot project in at least 10 selected districts across different states and union territories. This pilot project will provide valuable insights into the regional requirements of the initiative, and the lessons learnt will be incorporated into the nationwide implementation of the plan.

An Inter-Ministerial Committee (IMC) will be formed, with the Minister of Cooperation as the Chairman, and the Minister of Agriculture and Farmers Welfare, Minister of Consumer Affairs, Food and Public Distribution, Minister of Food Processing Industries, and concerned Secretaries as members. This committee will be responsible for modifying guidelines and implementation methodologies of the respective ministries' schemes as needed, within the approved outlays and prescribed goals. The aim is to facilitate the realisation of the 'World's Largest Grain Storage Plan in the Cooperative Sector' by creating infrastructure such as godowns, for agriculture and allied purposes, at selected 'viable' PACS.

The implementation of the plan will utilise the available outlays provided under the identified schemes of the respective ministries.

The following schemes have been identified for convergence under the plan:

Ministry of Agriculture and Farmers Welfare:

- Agriculture Infrastructure Fund (AIF),
- Agricultural Marketing Infrastructure Scheme (AMI),
- The mission for Integrated Development of Horticulture (MIDH),
- Sub Mission on Agricultural Mechanisation (SMAM)

Ministry of Food Processing Industries:

- Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme (PMFME),
- Pradhan Mantri Kisan Sampada Yojana (PMKSY)

Ministry of Consumer Affairs, Food and Public Distribution:

- Allocation of food grains under the National Food Security Act,
- Procurement operations at Minimum Support Price

Benefits of the plan

The plan is multi-pronged, aiming to address not only the shortage of agricultural storage infrastructure in the country by facilitating the establishment of godowns at the level of PACS, but also enabling PACS to undertake various other activities, such as:

- Functioning as Procurement Centres for State Agencies/ Food Corporation of India (FCI)
- Serving as Fair Price Shops (FPS)
- Setting up custom hiring centres
- Setting up common processing units, including assaying, sorting, grading units for agricultural produce, etc.

Through a 'whole-of-Government' approach, the plan would strengthen PACS by enabling them to diversify their business activities, thereby enhancing the incomes of the farmer members as well.

The need

Currently, India has a storage capacity of 1450 lakh tonnes, and the new storage plan aims to add 700 lakh tonnes of storage over the next five years, increasing the total grain storage capacity to 2150 tonnes. The primary objective of this new plan is to overcome the challenges associated with storage facilities and reduce the damage to food grains caused by inadequate storage infrastructure. To tackle this issue, the government plans to construct godowns with a storage capacity of 2000 tonnes across the country.

The government of India recognises the need to leverage the strength of cooperatives and transform them into successful and vibrant business enterprises to achieve the vision of 'Sahakar-se-Samriddhi'(prosperity through cooperatives). In line with this vision, the Ministry of Cooperation has introduced the 'World's Largest Grain Storage Plan in the Cooperative Sector'. This plan involves the establishment of various types of agri-infrastructure, including warehouses, custom hiring centres, processing units, etc. at the level of PACS, thereby transforming them into multipurpose societies. The creation and modernisation of infrastructure at the PACS level will reduce food grain wastage by providing sufficient storage capacity, strengthen the food security of the country, and enable farmers to obtain better prices for their crops.

There are over 1,00,000 PACS in the country, with a significant member base of over 13 crore farmers. Recognising the crucial role played by PACS at the grassroots level in transforming the agricultural and rural landscape of the Indian economy and leveraging their extensive reach up to the last mile, this initiative aims to establish decentralised storage capacity at the PACS level along with other agri-infrastructure. This will not only strengthen the food security of the country but also empower PACS to become vibrant economic entities.

According to Prasanna Rao, Co-founder & CEO of Arya.ag, the new infrastructure will lead to a reduction in transit costs for commodities. Previously, commodities were primarily available at consumption centres or storage centres, resulting in higher transportation expenses. With storage facilities located closer to the source, the cost of transporting goods will be significantly reduced.

Rao also emphasised that this initiative will empower farmers by providing them access to scientific storage structures, allowing them to prevent post-harvest losses and ensure the quality and safety of their produce. Additionally, it will enable farmers to access formal sources of warehouse receipt finance, providing them with financial stability and flexibility.

Rao believes the expanded storage capacity will benefit the Food Corporation of India (FCI) by allowing them to procure commodities from a wider range of centres. This increased procurement flexibility will in turn, enable FCI to optimise its distribution strategy and reduce overall distribution costs, particularly under the Public Distribution System (PDS) scheme.

"The addition of more storage space will play a crucial role in reducing post-harvest losses of food grains, which are currently estimated to range between 5 and 6 per cent. By preserving the surplus production during periods of low prices, farmers will have the opportunity to sell their produce at a later time when prices appreciate, resulting in better returns and improved income stability," Prasanna Rao added.

Sandeep Sabarwal, Group CEO of Sohanlal Commodity Management (SLCM), highlighted the benefits of establishing grain storage facilities at PACS. He said "These facilities are intended to accomplish a number of objectives, including reducing crop losses, preventing farmer distress sales, and enhancing the nation's food security. As a result, food grain transportation expenses to procurement hubs and fair trade stores will be greatly reduced. Farmers and cooperatives can reduce transportation costs with localised storage, improving the effectiveness and efficiency of the supply chain."

Challenges

While implementing the plan, the government may encounter certain challenges. One significant challenge is the execution of the scheme through Primary Agricultural Credit Societies (PACS), which requires careful planning.

Prasanna Rao from Arya.ag emphasised that relying solely on the FCI to ensure the utilisation of these warehouses by procuring commodities and utilising the space is not a viable option, as it puts a strain on the government's finances. Ideally, these infrastructures should be created to encourage utilisation by farmers and Farmer Producer Organisations (FPOs).

"To overcome these challenges, the government should consider reintroducing The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act. By connecting these warehouses to the eNAM (National Agriculture Market) platform, depositors would have the freedom to sell their produce when and where they want, providing greater flexibility and market access," suggested Prasanna Rao. Sandeep Sabarwal, from SLCM highlighted the importance of not only creating storage capacity but also addressing the management capability and capacity of the agricultural supply chain. He said, "We as a country have made enormous strides to create capacity in the last decade but it is pertinent to note that the agri–losses still remain staggeringly high and this needs to be introspected. These losses cannot only be attributed to infrastructure, but are largely due to the mismanagement of the supply chain and therefore, the plan should incorporate strategies to address this challenge as well."

Vijay Kumar Singh, Managing Director of SAJ Food Products expects the implementation of the scheme to yield significant benefits, including increased storage capacity and the reduction of losses from farm to store. This, in turn, can stabilise price inflation and ensure favourable pricing for consumers. Moreover, the enhanced storage conditions will effectively prevent damages and losses at storage points while enabling proximity to markets.

Conclusion

In order to ensure effective implementation of the plan, the government has decided to initiate a pilot project in 10 districts across the country. This strategic approach aims to gain valuable insights into the unique requirements and challenges faced by different states, enabling the optimisation of the impact of the storage capacity scheme on a nationwide scale.

By introducing the scheme, the government aims to bring storage facilities closer to farmers, thereby transforming the supply chain. This will result in reduced costs and enhanced financial convenience, while also improving the distribution infrastructure facility and mitigating grain losses. The government's commitment to improving the agricultural sector and fostering a stronger and more resilient supply chain for essential commodities is evident through this initiative. NS

"The implementation of the scheme to yield significant benefits, including increased storage capacity and the reduction of losses from farm to store. This, in turn, can stabilise price inflation and ensure favourable pricing for consumers. Moreover, the enhanced storage conditions will effectively prevent damages and losses at storage points while enabling proximity to markets."

Vijay Kumar Singh,
Managing Director, SAJ Food Products

"We as a country have made enormous strides to create capacity in the last decade but it is pertinent to note that the agri–losses still remain staggeringly high and this needs to be introspected. These losses cannot only be attributed to infrastructure, but are largely due to the mismanagement of the supply chain and therefore, the plan should incorporate strategies to address this challenge as well."

Sandeep Sabarwal, Group CEO, Sohanlal Commodity Management (SLCM)

"The addition of more storage space will play a crucial role in reducing post-harvest losses of food grains, which are currently estimated to range between 5 and 6 per cent. By preserving the surplus production during periods of low prices, farmers will have the opportunity to sell their produce at a later time when prices appreciate, resulting in better returns and improved income stability,"

Prasanna Rao, Co-founder & CEO, Arya.ag

Shraddha Warde
shraddha.warde@mmactiv.com

Dr Veena P Panicker,
Head, Bio Monitoring, Merck Life Science India

"There is a need for harmonisation of the methods to evaluate the microbiological parameters"

Today's average Indian consumer is more aware of the importance of food safety, which they consider a crucial aspect of their health. Therefore, all members of the food supply chain, whether it's a food supplier, a food business owner, a manufacturer, or a customer, play an important role in maintaining food safety. In such a scenario, Mumbai-headquartered Merck Life Science Private Ltd., one of the leading life science companies has unveiled its Food and Beverage (F&B) segment, unleashing the latest technologies and advancements with regard to food safety. In conversation with nuFFOODS Spectrum, Dr Veena P Panicker, Head, Bio Monitoring, Merck Life Science India sheds light on recent developments in the company's F&B vertical and the company's efforts in food safety skill development. Edited excerpts:

What have been the new developments in the company's food and beverage testing vertical?

At Merck Life Science, we are constantly striving to stay at the forefront of food safety and hygiene monitoring in the industry. We have expanded our product portfolio to offer a comprehensive range of solutions tailored exclusively for the food and beverage industries. This includes a wide selection of innovative technologies as food safety tools like GDS-IMS, Transia Platforms, and MVP-ICON, which will help food safety scientists overcome difficulties in managing HACCP (Hazard Analysis and Critical Control Point) audits and pathogen testing.

Through our advanced testing technologies, industry collaborations, and regulatory compliance we are committed to delivering the finest quality of final products to our customers. These new advancements demonstrate our commitment to improving food safety and hygiene monitoring practices.

Merck has strong roots in technology and innovation producing the best products in the biotech space. We also have established our Center for Microbiological Analysis Training (C-MAT Lab), which is a state-of-the-art laboratory space dedicated to microbial food technology. The lab houses the latest equipment to help food scientists learn and gain experience on the latest advancement in microbial food testing techniques including rapid detection technologies. Regular advance training programmes are conducted by industry experts and international speakers to help the scientists gain the latest regulatory and technological advancements in the area of food safety.

What are the company's innovations in food safety solutions for reliable food testing?

We are dedicated to delivering innovative solutions that enhance food safety and ensure reliable food testing. We understand the need of precise and

efficient testing procedures to maintain the highest standards in the food industry. Our solutions include classical reagents and solvents, high purity solvents, chromatography products, photometric kits and instruments for chemical analyses. In addition, we have solutions for pathogen and spoilage testing. This includes selective media for differentiation and growth, rapid microbiological solutions, pathogen screening kits, instruments and disposables.

What are the challenges in F&B microbiological testing?

One of the key challenges of food testing is the lack of trained microbiologists. We have advanced fairly in the detection of chemical contaminants through advanced techniques like HPLC and LCMS. Microbiological enumeration is still not very popular, as isolation and identification of spoilage microorganisms is a tedious process. There is also a need to move towards rapid detection to ensure swift results. The second challenge is that we are dealing with a varied number of matrices, and the need for harmonisation of the methods to evaluate the microbiological parameters are critical.

How does the company take care of its food regulatory compliance?

Merck Life Science India places great emphasis on food regulatory compliance to ensure the safety and quality of food products. Several procedures have been put in place to ensure that regulatory standards are met.

Following food regulatory standards allows industries to meet customer expectations, broaden their customer reach, and ensure the provision of safe food in both domestic and international markets. We closely follow and comply with regulations set by regulatory bodies in India, such as the Food Safety and Standards Authority of India (FSSAI). We provide our customers with regulatory expertise and support. Our team of experts stays updated with the latest regulations and guidelines, offering guidance and assistance in navigating complex compliance requirements. We work closely with our customers to ensure they have the necessary information and resources to achieve regulatory compliance.

How is the F&B segment adding value to the overall business?

Our Food and Beverage (F&B) segment plays a significant role in adding value to the overall business of Merck Life Science India. This segment expands our product portfolio by providing a variety of solutions developed exclusively for the food and beverage industry. This diversification allows us to cater to the unique needs of customers in this sector by offering them with specialised products and services enabling us to meet the never-ending demands of the food and beverage industry. Our solutions are tailored to the industry's emphasis on food safety, quality control, and regulatory compliance. By addressing industry demands, we strengthen our position as a trusted partner for food and beverage manufacturers.

It also serves as a catalyst for Merck Life Science India's expansion. We contribute to overall business growth and profitability by growing our client base, penetrating new markets, and acquiring a larger part of the food and beverage industry. Through these efforts, we continue to strengthen our position as a trusted partner and enhance the overall business performance.

What are your plans in terms of skill development in food safety and hygiene?

We recognise the importance of skill development in food safety and hygiene and are committed to contributing to this area. We have collaborated with regulatory bodies to align our skill development initiatives with their guidelines and regulations. By working together, we ensure that our training programmes and resources are in line with the latest regulations and industry standards.

In addition, we intend to train and educate on technique development for the Water, Food, and Beverage industries using our C-MAT Lab. We have always been at the forefront of knowledge building and sharing. These training sessions are a positive step towards equipping the workforce with the most up-to-date skills required for the food sector.

What are your key upcoming initiatives?

We have strategic plans to expand our Food and Beverage (F&B) business and establish a strong base in India. With a considerable tenure in this industry, we are committed to advancing our position. Our key focus now is on the skill development of Quality Control (QC) personnel in the F&B segment. We achieve this by introducing advanced and rapid technologies for microbial testing and identification.

In collaboration with the Food Safety and Standards Authority of India (FSSAI), we are implementing these initiatives at the C-MAT Lab in Delhi. Furthermore, we intend to expand these training programmes to include food inspectors and food scientists in the F&B industry in the future. Bringing in an international perspective through global expertise will help foster knowledge sharing, which will help bolster our country's presence in the area of food exports. NS

Mansi Jamsudkar
(mansi.jamsudkar@mmactiv.com)

Stephane Dessart,
Global Product Marketing Leader, International Flavors & Fragrances (IFF)

"Consumers are increasingly seeking ice cream that aligns with their desire for health, indulgent taste, and affordability"

The American firm International Flavors & Fragrances (IFF) had recently announced the India launch of its new CREMODAN GREENPRO 101 Modulator Enhanced System, an innovation designed for ice cream manufacturers who seek to maintain the indulgent quality of their products in a cost-effective manner. nuFFOODS Spectrum interacted with Stephane Dessart, Global Product Marketing Leader, IFF, to find out more about the technology behind this product and the company's future plans for this novel product. Edited excerpts:

How is this new ice-cream stabiliser system unique from others that are being used in the market?

For the first time, IFF research and development team has combined an ice cream stabiliser system with an innovative flavour-modulating technology, creating a synergistic blend. This revolutionary blend delivers optimal creaminess, mouthfeel, and melting properties, all the while ensuring there is no negative impact on our customers or their consumers' wallets. In fact, it offers a remarkable 25 per cent reduction in recipe costs, achieved through significant reductions in milk and fat requirements. Moreover, this innovative solution also tackles the global challenge of sustainability by reducing the carbon footprint of raw material ingredients used in ice cream production by up to 30 per cent, as indicated by Life Cycle Analysis (LCA) studies.

In summary, CREMODAN GREENPRO 101 represents more than just a stabiliser system. It is a carefully crafted blend of stabiliser and flavour modulator, empowering ice cream manufacturers to create high-quality ice cream with the same taste and texture, but at a more affordable price point.

What challenges did you face while developing this product?

Understanding the consumer product experience is a constant and crucial challenge. It involves deciphering consumer preferences, which can vary depending on the region, individual experiences, and, most importantly, their motivation to make a purchase. This motivation may be driven by factors such as taste, health considerations, a desire for a safer environment (with a focus on sustainability), or affordability.

Addressing the cost of recipes while maintaining the desired taste also presents a particular challenge. Finding ways to reduce the milk and fat content without compromising the optimal taste, texture, and mouthfeel of traditional ice creams requires a significant effort. We leverage internal capabilities, along with conducting external consumer pilot tests to determine the market

needs. We carefully evaluate the finest raw materials and determine the optimal composition to ensure the delivery of a premium-quality product at affordable prices.

How much time was invested in developing this product?

We took approximately a year and half to develop this revolutionary blend, combining the solutions of our legacy organisations. It is actually the first synergistic blend of our heritage technologies. Usually, at IFF, the R&D process takes three to five years, which is replete with rounds of consumer trials and constant innovation and upgradation of solutions. However, in this case, understanding the urgent need of our customers, the development of CREMODAN GREENPRO was prioritised and the combined knowledge and expertise of all functions enabled IFF to commercialise this new modulator-enhanced system in the shortest possible time. This clearly illustrates the innovative capability and extensive portfolio of IFF.

Since the product is being launched in Europe, Middle East, Africa, Turkey and India, where do you expect to be the most successful?

The regions you mentioned are all significant ice cream markets, and it is noteworthy that consumers in these regions share a common set of preferences. They are increasingly seeking products that align with their desire for health, sustainability, indulgent taste, and affordability.

These consumer demands serve as the driving force behind the development of new technologies, such as our innovative solution, CREMODAN GREENPRO 101. This product is designed to provide a swift response to market needs while ensuring ease of use. Importantly, it achieves these objectives without compromising the sensory qualities expected from high-quality, premium ice cream.

Given the alignment between consumer demands and our product offering, we expect favourable performance in all of these countries. Market forecasts support this optimistic outlook as well. For instance: The ice cream market in Europe is projected to exhibit a compound annual growth rate (CAGR) of 4.87 per cent by 2028. Consumers in this region are increasingly seeking ice creams that are low in fats, made with natural ingredients, and offer an uncompromising taste and indulgence.

The ice cream market in the Middle East & Africa is expected to grow at a CAGR of 10.7 per cent. There is a surge in demand for premium ice creams as health-conscious consumers prioritise high-quality ingredients in their ice cream choices.

India stands out with its thriving dairy industry. The market in India is experiencing a growth rate (CAGR) of 17.5 per cent during the period 2023-2028. Rising health consciousness and lactose intolerance among the population have prompted manufacturers to seek innovative solutions. They are now looking for a preservative-free, genetically modified organism (GMO)-free, dairy-free, fat-free, and organic product variant to cater to evolving consumer preferences.

Overall, the combination of consumer demands and the forecasted market growth indicates promising opportunities for our product in these regions. With our focus on addressing these preferences, we are well-positioned to meet the needs of consumers and contribute to the growth of the ice cream market.

How would this product contribute to the growth of the global ice-cream stabiliser market?

We are confident that ice cream stabiliser systems such as IFF's CREMODAN GREENPRO will see a spike in near future as the manufacturers are looking for solutions which provide ice creams with premium sensory capabilities of taste and mouthfeel at affordable price. Today, they face the dilemma of losing customers either by compromising on the indulgent quality of their products to maintain affordable prices or by increasing prices to uphold the desired indulgence. However, a solution has now been created that allows them to satisfy consumers on both fronts. With this, ice cream consumers can continue to enjoy their favourite treat, contributing to the growth of the segment without spending much; and ultimately leading to a growth in overall demand of ice cream stabiliser systems as well.

When will you be launching this product in other countries such as the US, Australia, New Zealand, or other Asian markets?

The upcoming months will see the introduction of the product in the Asia Pacific market. It is worth noting that countries such as Australia, New Zealand, and various countries in Southeast Asia possess unique and diverse cultural identities. These regions, being physically isolated from many other countries, value the cultural connection that food products can provide. The appeal of local flavours extends not only to products originating from one's own region but also to those that bring the flavours of other locales. With the market sentiment of preserving heritage and catering to local tastes in mind, the system blend will be customised to perfectly suit the flavour preferences of each specific region. NS

Dr Manbeena Chawla
(manbeena.chawla@mmactiv.com)

Kusum Bhandari,
Director & CRO, Bhookha Haathi Hospitality

"We plan to launch 40 new SKUs utilising chickpeas as a key ingredient within the next year"

Right from plant-based proteins to sustainable alternatives for existing food products, the trend of alternative foods has gained significant popularity among Indians. Currently, the market in India is witnessing the active presence of over 65 alternative protein startups, collectively known as smart protein, operating in the domains of plant-based, fermentation-derived, and cultivated protein technologies. Bhookha Haathi is one such startup making waves in this space. Recently, the company introduced Caffeine-free Chickpea Coffee under its Alt Health brand. nuFFOODS Spectrum had the opportunity to speak with Kusum Bhandari, Director & CRO of Bhookha Haathi Hospitality Private Limited, to discuss the latest developments and innovations by the startup. Edited excerpts:

Bhookha Haathi recently introduced a noteworthy addition to its product lineup with the launch of Caffeine-free Chickpea Coffee under the Alt Health brand. Please update us on this development.

Coffee is known and enjoyed worldwide as a beloved, go-to beverage. Many people rely on this renowned pick-me-up to start their day. While moderate amounts of caffeine can be safe for everyday consumption, excessive intake can cause serious problems. It can cause a person to become anxious and jittery, elevate their heart rate, worsen their high blood pressure, and even disrupt sleep patterns. Worst of all, drinking too much coffee can leave individuals feeling lethargic and sluggish, contrary to their desired effects.

Recognising this need to break away from over-dependency on coffee and its caffeinating effect led us to establish Alt Health. Our aim was to develop a range of coffee alternatives powered by chickpeas. Alt Health is India's first caffeine-free coffee alternative that uses a proprietary method to replace coffee beans with fibrous and nutrient-dense chickpeas. Although devoid of caffeine, this superfood contains all the essential nutrients necessary to deliver a substantial and sustainable dose of energy, surpassing the fleeting effects of caffeine.

The outcome of this substitution is an energy-rich, caffeine-free beverage delectably close to traditional caffeinated coffee in taste, without any of the adverse side effects or jitters. It also provides a range of naturally occurring health benefits associated with chickpeas, such as improved digestion, enhanced nervous system function, blood pressure management, and diabetes control. It is also a vegan and healthy option, free from additives or preservatives. Packed with antioxidants, it helps in reducing the risk of various ailments and is safe for consumption during pregnancy and lactation.

Alt Health's Chickpea coffee is available in a variety of flavours, including original, cinnamon, turmeric and the popular Date Seed & Chicory. Currently, our chickpea coffee is offered in a filter coffee format, but we are actively working towards introducing it in various other formats, such as decoction, ready-to-drink mixes, instant coffee, and more in the near future.

What are your insights on the alternative health food market in India?

The alternative food market in India is experiencing rapid growth, driven by increasing awareness of the

health benefits associated with plant-based diets, concerns regarding the environmental impact of animal agriculture, rising disposable income, and the increasing availability of alternative food products. It is projected to grow at a CAGR of 10.9 per cent from 2022 to 2028. The North Indian region currently holds the largest market share while the South Indian region is witnessing significant growth due to increasing awareness of the health benefits of plant-based diets. This dynamic market is expected to continue expanding in the coming years as the demand for healthy and sustainable food options increases.

In our case, we have observed that approximately 14 per cent of coffee and tea consumers in India are actively seeking reliable and healthy alternatives to their current beverage choices. This trend is projected to grow to 19 per cent by the end of the current financial year.

How well-prepared is your R&D department to explore the alternative health food market in India?

Our R&D process incorporates regular in-house developments and consultations with food scientists and experts. Backed by our proprietary food technology, we have achieved a milestone where new product launches can be accomplished within a short turnaround time of 20 to 30 days. Additionally, we are able to introduce new flavours to our existing products in just 10 days.

What challenges does Bhookha Haathi face in the Indian nutraceutical health food market?

As the Indian nutraceutical health food market is still in its nascent stage, there is limited awareness among end-consumers, due to the scarcity of players in the market. Bhookha Haathi, being a part of this sector, regularly encounters this challenge. To address this, we have brought on board renowned actor Shree Mukesh Rishi as our brand ambassador, aiming to promote our products and raise awareness among consumers.

How do you overcome supply chain-related issues?

Despite being an early-stage startup, we have successfully established multiple alliances with super stockists, distributors, and satellite warehouses across the country. To guarantee a seamless supply chain experience for both ourselves and our partners, we collaborate with various e-commerce logistics service providers, transporters, and quick commerce partners who act as our clearing and forwarding agents. These efforts are geared towards ensuring timely delivery of our products to end consumers.

What, in your opinion, is the government's role in addressing regulatory issues related to dietary supplements?

The role of the government in regulating dietary supplements is crucial for safeguarding public health. The Food Safety and Standards Authority of India (FSSAI) is responsible for overseeing the regulation of dietary supplements in India. The FSSAI has implemented a number of regulations to ensure the safety and quality of these products. These regulations include aspects such as ingredient safety, product purity and accurate labelling. Additionally, dietary supplement manufacturers are required to register their products with the FSSAI before they can be sold in India.

The FSSAI's regulatory framework plays a vital role in promoting the safety and efficacy of dietary supplements, discouraging the sale of unsafe or ineffective products.

Could you provide an update on the funding raised by Bhookha Haathi and how it is being utilised?

To date we have successfully raised Rs 1 crore in funding, which has been utilised to grow our capital expenditure, strengthen our market position/dominance and achieve sales excellence. We have plans to raise another Rs 16 crore in funding over the next few months, which will be utilised to support our growth initiatives.

What was your revenue in FY22 and what are your expectations for FY23?

We have crossed Rs 5 crore in FY22 and are looking to grow at least by 9 times in FY23 with the support of our Indian and international sales efforts. Currently, our international business accounts for around 35 per cent of our overall revenue, and we anticipate that this contribution will increase to 50 per cent in the near future.

Apart from the coffee alternative, do you have any other alternative food products in the pipeline? What are your future plans for new product development and business expansion?

By leveraging our existing patents, we are dedicating ourselves to launching 40 new SKUs within the next year, utilising chickpeas as a key ingredient. Once this has been completed, we will continue to develop and introduce new products featuring various health-promoting ingredients. While beverages will remain our primary focus, we are open to exploring different categories and products to better cater to the needs of our customers. NS

Mansi Jamsudkar
(mansi.jamsudkar@mmactiv.com)

Dr Rashida Vapiwala,
Founder, LabelBlind, Digitising Food Labelling and Nutrition Quality, Food Label Specialist

How AI is Revolutionising Food Labelling Validation

A food label is a product's identity and its truest representation to consumers. It is an assurance of safety, consistency in quality and consumer wellbeing. The integration of Artificial Intelligence (AI) into the food industry is revolutionising the way businesses operate and ensuring regulatory compliance.

Imagine a world where food manufacturers can bring their products to market with absolute confidence and at a fraction of the time spent in validating the mandatory details on a food label. Knowing that every food label adheres to regulatory standards and communicates accurate information to consumers. A world where compliance becomes a seamless process, eliminating the risk of costly mistakes or recalls. Thanks to the incredible power of Artificial Intelligence (AI), this world is no longer a distant dream but an exciting reality for food businesses.

Imagine you, as a food manufacturer, launching a new line of gluten-free cookies. In the past, verifying that every label met the mandatory Food Safety and Standards Authority of India (FSSAI) labelling regulations and standards would have been a time-consuming, manual and error-prone, repetitive process. But now, armed with AI-powered food label validation, the food manufacturer confidently uploads the recipe and packaging design into the system. The AI model swiftly combs through the ingredients, cross-referencing them against established regulations and guidelines, and within seconds, provides a thorough analysis, highlighting any potential compliance issues and observations.

With AI as their vigilant partner, food manufacturers can rest assured that the final product will be free from any hidden allergens or mislabelled errors. The potential consequences of non-compliance, such as brand reputation damage, legal penalties or packaging material wastage, can be mitigated before they happen.

This revolutionary approach to FSSAI food label validation will transform the industry, allowing manufacturers to streamline their processes and focus on what they do best: creating delicious and innovative products that safeguard consumer interest. With AI as a powerful ally, they can navigate the complex web of regulations with ease, ensuring that every label is accurate, informative, and legally compliant.

AI-powered food label validation empowers manufacturers to embrace compliance confidently and bring safe, accurate, and compliant products to the market, revolutionising the way we perceive food labels.

Why is Food Label Validation Critical?

Food label validation or verification is crucial for companies for several reasons;

1. **Regulatory Compliance:** Food labels are subject to stringent regulations imposed by food safety authorities in various jurisdictions. Validating food labels ensures that companies comply with these regulations, avoiding legal consequences, fines, or product recalls.
2. **Supply Chain Operations:** If labels are found to be inaccurate or non-compliant after printing, it can lead to costly rework or reprinting of packaging materials. This can cause supply chain disruptions, delays in product launches, and financial losses.
3. **Brand Reputation:** A company's reputation is closely tied to the quality and safety of its products. Incorrect or misleading labels can tarnish a brand's reputation and erode consumer confidence. Validation ensures that labels reflect the true nature of the product,

aligning with the company's commitment to quality and safety.

4. **International Trade:** In the case of companies involved in international trade, non-validated food labels can create barriers to entry in foreign markets. Different countries have varying regulatory requirements and standards for food labelling. Failure to validate labels to meet these requirements can prevent companies from accessing lucrative international markets or face rejection of their products at customs.
5. **Recall and Product Wastage:** If food labelling errors or non-compliance are identified after products have been distributed or sold, it may require recalls to rectify the situation. This can be a costly process involving the retrieval and disposal of affected products, reimbursement to retailers, and potential damage to the brand's reputation.

In summary, food label validation is crucial for companies to ensure regulatory compliance, build consumer trust, protect brand reputation, gain market access, and prevent legal and financial consequences. Failing to validate labels ahead of printing can result in compliance issues, consumer confusion, reputation damage, legal consequences, and disruptions in the supply chain.

How can AI simplify Food Label Validations?

The integration of Artificial Intelligence (AI) into the food industry is revolutionising the way businesses operate and ensuring regulatory compliance. With its advanced capabilities, AI simplifies and streamlines the process of food label validation, making it effortless for companies to adhere to regulations and meet consumer expectations.

1. **Real-Time Food Label Audits:** With AI-powered systems, businesses can monitor their compliance status on a continuous basis. This means that food labels can be assessed and validated in real-time, allowing for prompt identification and rectification of any potential compliance issues. This frequent and widespread application across different categories ensures that businesses maintain compliance across their entire product range.
2. **Detailed Assessment of Food Labelling Compliance Regulations:** AI's granularity of checks and surveillance is another game-changer in the food industry. AI algorithms meticulously analyse food labels, comparing them to regulatory requirements at all levels. This level of scrutiny ensures that businesses adhere to even the smallest details of labelling regulations, including ingredient lists, nutritional information, allergen declarations, and claims. By leaving no stone unturned, AI ensures that every aspect of the label complies with the regulatory standards.
3. **Instant Food Label Compliance Reports:** AI-powered systems generate compliance reports instantly, providing businesses with valuable insights into any potential gaps that require immediate attention. This real-time monitoring and reporting empower businesses to proactively address compliance issues before they escalate. By taking swift action, businesses reduce the risk of penalties, recalls, and reputational damage, thereby safeguarding both consumer trust and brand reputation.
4. **Business Process Excellence:** Beyond regulatory compliance, AI has a profound impact on overall business performance. By automating the analysis of food labels and comparing them to regulatory requirements, AI streamlines processes, leading to increased efficiency and cost savings. Companies can quickly identify and resolve potential regulatory issues related to labelling, expediting the product development cycle and ensuring that products meet all regulatory standards before their launch.

One of the key benefits of AI-driven food labelling is the enhancement of consumer trust and loyalty. Accurate and detailed information about products, such as nutritional content, allergens, and sourcing, instills transparency and strengthens consumer perception. With reliable and transparent labels, businesses can build strong relationships with consumers, who appreciate the thoroughness and accuracy of the information provided.

Moreover, AI enables businesses to derive valuable data-driven insights. By analysing vast amounts of data, including food labels, consumer preferences, and market trends, AI algorithms uncover patterns, trends, and correlations that humans may not be able to identify. This empowers businesses to make informed decisions to optimise their product portfolios, identify new market opportunities, and enhance revenue generation. With AI as their ally, businesses gain a competitive edge in a rapidly evolving industry, staying ahead of the curve and meeting consumer demands more effectively.

In conclusion, the integration of AI into food label validation simplifies the process for businesses, ensuring compliance with regulatory requirements while enhancing overall performance. Real-time audits, granular checks, and instant reporting enable businesses to monitor and address compliance issues promptly. AI's efficiency and automation lead to cost savings and faster time to market. Additionally, accurate labelling and data-driven insights foster consumer trust and enable businesses to make informed decisions for long-term success.

The future of food label validation is undoubtedly AI-driven, revolutionising the industry and creating a safer, more transparent, and efficient food landscape. NS

Shashi Kumar,
CEO & Co-Founder,
Akshayakalpa Organic

Why Health & Sustainability is a Reasonable Expectation

The organic food market in India is experiencing a robust growth with the rising awareness about organic food products. The growing level of health consciousness in the country is a key factor driving the demand for organic food. The rising awareness about the nutritional content and quality of the food consumed by Indian consumers is leading to the growing demand for organic food. Let's explore further.

The organic food industry is a rapidly growing sector driven by increasing consumer demand for healthier and more sustainable food options. Organic food refers to products that are grown and processed without the use of synthetic chemicals, pesticides, genetically modified organisms (GMOs), or irradiation. Instead, organic farming practices focus on promoting soil health, biodiversity, and ecological balance.

The organic food industry emphasises the principles of sustainability, environmental stewardship, and transparency throughout the supply chain. It aims to provide consumers with food that is free from harmful chemical residues, promotes animal welfare, and supports the overall well-being of individuals and the planet.

In India, the organic food industry has gained significant momentum in recent years. Factors such as rising health consciousness, concerns about food safety, and a growing preference for natural and chemical-free products have fueled the demand for organic food. The Indian government has also taken initiatives to promote organic farming, providing subsidies, training, and certification programmes to farmers and businesses in the sector.

Drivers of growth

- **Market growth potential:** The organic food industry in India offers significant market growth potential for companies. The increasing consumer demand for organic products presents opportunities to capture a larger market share and expand the customer base.
- **Export opportunities:** India's organic food sector has export potential. With the rising global demand for organic products, companies can explore opportunities to export Indian organic food to international markets, thereby expanding their reach and revenue streams.
- **Value addition and processing:** There is scope for organic food companies to focus on value-added products and processing. By diversifying product offerings and developing innovative organic snacks, beverages, condiments, and processed foods, companies can tap into consumer preferences and increase their market presence.
- **Private label and contract manufacturing:** Companies can explore opportunities to provide private-label organic products or engage in contract manufacturing for retailers or other organic food brands. This enables them to leverage their expertise, production capabilities, and certifications while expanding their business through strategic partnerships.

Challenges

- **Supply chain management:** Building and managing a robust organic supply chain can be a challenge. Ensuring a consistent and reliable supply of organic raw materials, especially in large volumes, requires close coordination with farmers, efficient logistics, and quality control throughout the supply chain.

Organic food market in India

The India organic food market stood at a value of $1238 million in 2022 and is expected to grow at a CAGR of about 22 per cent in the forecast period of 2022 and 2028 to reach a value of about $4082 million by 2028.

The India organic food market is experiencing a robust growth with the rising awareness about organic food products. The growing level of health consciousness in the country is a key factor driving the demand for organic food. The rising awareness about the nutritional content and quality of the food consumed by Indian consumers is leading to the growing demand for organic food. In addition, consumer spending on health and wellness products has increased dramatically due to factors including strong economic growth, urbanisation, and rising income levels.

Source: Expert Market Research

- **Cost management and pricing:** Organic production often entails higher costs due to organic farming practices, certifications, and quality control measures. Maintaining cost competitiveness while offering competitive prices in the market can be a challenge for companies.
- **Certification and compliance:** Obtaining and maintaining organic certifications is crucial for organic food companies. However, the certification process can be complex, time-consuming, and expensive. Companies need to navigate the certification requirements and comply with organic standards to establish credibility and gain consumer trust.
- **Limited infrastructure:** Adequate infrastructure, such as storage facilities, processing units, and distribution networks, is essential for the organic food industry. However, the availability of such infrastructure may be limited, particularly in certain regions. Companies need to invest in developing or accessing suitable infrastructure to support their operations.
- **Marketing and consumer education:** Educating consumers about the benefits of organic food and differentiating organic products from conventional alternatives is essential. Companies need to invest in marketing efforts and consumer education initiatives to create awareness, build brand loyalty, and drive demand for their organic products.
- **Cold storage and logistics:** Cold chain management in the dairy sector refers to the process of maintaining a controlled temperature environment for the handling, storage, and transportation of dairy products, from the point of production to the final consumer. It involves the use of specialised equipment, proper handling procedures, and effective logistics to ensure that dairy products remain fresh, safe, and of high quality throughout the supply chain. Some key aspects like temperature control, quality assurance, hygiene and sanitisation, traceability and monitoring, training and documentation can ensure that consumers receive dairy products that are safe, fresh, and of high quality. This helps to extend shelf life, reduce waste, and maintain customer satisfaction, ultimately benefiting both the industry and consumers.
- **Supply chain complexity: T**he dairy supply chain can involve multiple stakeholders, including farmers, processors, distributors, and retailers. Coordinating and aligning the activities of these different entities can be complex. Timely communication, collaboration, and information sharing are crucial to ensure smooth logistics operations.
- **Shelf life and product expiry:** Dairy products generally have a limited shelf life, especially products like fresh milk and yoghurt. Ensuring efficient logistics to minimise transit times and prevent products from nearing their expiry dates requires careful planning and coordination. Effective inventory management and rotation practices are necessary to avoid product wastage.

By addressing these challenges and capitalising on the available opportunities, companies in the organic food industry in India can establish a strong foothold in the market, expand their operations, and meet the growing demand for organic products.

The organic food industry has emerged as a significant and rapidly growing sector in response to the increasing demand for healthier, more sustainable food options. With its focus on organic farming practices, environmental stewardship, and transparency, the industry aims to provide consumers with food that is free from harmful chemicals and supports overall well-being. By addressing these challenges and leveraging the opportunities, companies can establish a strong presence in the organic food industry. As consumers continue to prioritise healthier and sustainable food choices, the industry is poised for further growth and innovation. With its emphasis on health, sustainability, and ethical practices, the industry is set to continue its upward trajectory, providing companies with avenues for growth, innovation, and positive change in the food landscape. NS

Dr Amit Chandra,
Distinguished Scientist - Botanical Innovation, Amway Global I&S (R&D)

Why Botanical Integrity in Herbal Products is Crucial

In the dynamic world of ayurvedic and herbal preparations in India, maintaining botanical integrity is paramount. Purity, Safety and Potency (PSP) are crucial considerations, necessitating stricter guidelines to combat issues like adulteration and mislabelling. The post-COVID era has exacerbated these concerns due to high demand and limited supply. Let's explore some stringent practices that can not only safeguard the integrity of botanicals, but also ensure customer satisfaction.

Scientific practices play a vital role in the seed-to-shelf transformation of herbal ingredients. It is crucial to emphasise the importance of fit-for-purpose specifications and corresponding test methods at each stage (fit-for-purpose tests). Trained experts, known as fit-for-purpose people, execute these practices to preserve botanical integrity. Following these recommendations assures consumers of consistently high-quality and safe products.

To combat economically motivated adulteration and contamination, is it essential to stress upon the significance of prioritising quality over quantity. It encourages a harmonious interplay between specifications and methods, ensuring that the final product meets stringent standards. By embracing these principles, one can uphold the integrity of botanicals and promote the well-being of consumers.

Preserving Herbal Integrity: Prioritising Purity, Safety and Potency (PSP) Principles

Stage 1 – Seed: It is crucial to verify the authenticity of botanicals, ensuring they are the correct genus and species (authenticity), and free from Genetically Modified Organisms (GMOs). To meet these requirements, fit-for-purpose methods such as DNA fingerprinting, PCR tests, and micro/macroscopic studies (imaging) are recommended, using existing reference materials as positive controls. Additionally, it is essential to guarantee the viability of seeds for germination and ensure they are free from pesticides and heavy metals within the permissible limits set by regulations, employing analytical chemistry. While the verification of the correct plant part in a seed is not within the scope of this discussion, these measures collectively contribute to upholding the integrity and quality of botanicals.

Stage 2 – Sapling: It is important to check the viability of the growth of baby plants to adults when transferred from a nursery to a larger farm for scale-up.

Stage 3 – Fresh / Dehydrated Plant Part: During commercial scale-up on the farm, a crucial stage occurs as the plant transitions from growth to adulthood. Verification of plant species and specific plant part development is essential, along with the qualitative and quantitative assessment of targeted phytonutrients.

Fit-for-purpose methods are employed for these purposes. DNA and microscopic analyses verify the authenticity and confirm GMO absence through DNA-PCR tests. Analytical chemistry screens for trace contaminants from the soil or environment.

This stage involves the development and application of methods serving two key purposes. Firstly, qualitative testing using techniques like HPTLC identifies the specific plant part of interest and verifies the presence of unique phytonutrients in it. Secondly, specific markers are selected from the chromatographic fingerprint, and accurate quantification is achieved through HPLC and/or GC for absolute quantification of the plant part.

Reference material aids qualitative testing, while commercially available standards ensure precise quantification of marker phytonutrients. This method establishes a solid foundation by serving as an identification (ID) process and quantification of the specific plant part, ensuring success in subsequent stages.

Stage 4 – Harvest optimisation: At this stage, the plant's authenticity and its freedom from GMOs and trace contaminants need to be rigorously checked. Accurately identifying the specific plant part of interest and ensuring its active production of desired phytonutrients. The toolkit includes precise qualitative and quantitative methods for the identification and measurement of phytonutrient markers. Through meticulous monitoring, the beneficial phytonutrient levels during the plant's growth can be optimised. Upon reaching the desired level, the plant part is harvested and transformed into a powdered and dehydrated form for extraction.

To ensure the quality of the dehydrated ingredient, comprehensive data based on legitimate test methods is imperative. These specifications validate its purity, authenticity, and safety by confirming the absence of GMOs and trace contaminants. Furthermore, the data quantifies the phytonutrient marker levels, establishing the ingredient's potency. The rigorous testing methods uphold the highest standards of purity, safety, and potency (PSP) for the dehydrated plant ingredient.

Stage 5 – Extraction: This stage is crucial for maintaining the integrity of a botanical ingredient intended for human consumption. It involves the transition from the farm to the factory (stage 4 to stage 5), where there is a change of location and custody. It is vital to ensure full transparency and monitoring during this transition to prevent economically motivated botanical adulteration, such as spiking or fortifying the material with synthetic or other botanicals and/or phytonutrients to pass tests.

The dehydrated plant part is then extracted using certified safe solvents for food, such as ethanol, hydro-ethanol, water, SFCO2, steam distillation, or cold press, depending on the physical properties of the phytonutrients. The resulting extract can be in liquid, oil, viscous, or solid form. It is crucial to test the extract against specifications for the quality and quantity of phytonutrients it contains, using appropriate test methods. Maintaining active communication between the scale-up facility/supplier, manufacturer, and testing lab is essential to preserve botanical integrity. Additionally, ensuring traceability from stage 5 to stage 1 is mandatory at this point.

Stage 6 – Commercial grade raw material: The crude extract undergoes conversion into a commercially viable raw material ingredient suitable for manufacturing. It is blended with carriers to enhance flowability and tailored for specific delivery formats like tablets, powders, soft gels, or capsules. At this stage, the botanical raw material is accompanied by a specification, also known as a claim, which includes crucial information on its purity (authenticity and identification), safety (non-GMO and absence of trace contaminants), and potency (phytonutrient marker levels). This information is presented in the form of a "Certificate of Analysis" (CoA). The raw material must be readily available for audits and retests, employing fit-for-purpose test methods to verify compliance with the specified criteria for purity, safety, and potency (PSP). The development and testing of raw materials can be carried out by commercial suppliers (third parties), laboratories, or consumer goods manufacturing companies themselves, depending on available technologies and the expertise of scientists, engineers, farmers, and formulators.

Stage 7 – Final product: The formulated product can consist of one or more botanical raw materials blended together to create various delivery forms such as tablets, capsules, soft gels, gels, and powders. These products are then packaged and made available for sale, complete with label claims and expiration dates. The label claim provides qualitative and quantitative information about the contents of the product, while the expiration date indicates its stability and sell-by date. Additionally, the product is assigned a lot number, adhering to the regulations of the country where it is being sold. Both the label claim and expiration date are considered fit-for-purpose specifications, ensuring that the product meets the necessary standards. It is essential to employ fit-for-purpose methods to verify these specifications before the product is released for sale.

Key to success: PSP meets herbal integrity

Achieving full control over purity, safety, and potency (PSP) from the seed to the shelf is the cornerstone of the commitment to excellence. By meticulously ensuring the authenticity of ingredients and utilising the correct plant parts, unwavering purity is maintained. Rigorous measures guarantee that the products are free from GMOs and trace contaminants, instilling confidence in their safety. Open communication along the supply chain, between manufacturers and testing labs, ensures transparency. The expert team in phytochemistry, horticulture, soil science, and biology drives success. Routine audits, meticulous documentation, and fit-for-purpose methods align with the specifications and claims. This approach, also known as 'quality by design' (QbD), emphasises proactive product development based on sound science and risk management.

Above all, the unwavering focus is on consumer safety. It is understood that those who rely on these products place their trust in us, seeking the health benefits they expect and deserve. It is therefore our responsibility to deliver nothing short of the best. NS

Ankit Alok Bagaria,
Co-founder, Loopworm

How biotechnology can transform poultry farming

Global meat consumption is growing exponentially because of rapid urbanisation and population growth. This surge is driven not only by increasing numbers but also by changing lifestyles, particularly in developing countries. Poultry birds known for their white meat, contribute significantly to the overall meat supply. To meet the escalating demand for meat and its products, the advent of the biotechnology revolution presents a multitude of opportunities in the poultry industry. Biotechnology is no longer limited to merely enhancing farming practices; it now encompasses a broad range of transformative impacts on poultry production and the food systems that support it.

Agri-biotechnology, a branch of science that encompasses the application of various biotechnological tools and techniques to the agricultural sector, has emerged as a powerful force in revolutionising farming practices. This field encompasses a wide range of approaches and technologies, including alternative farming techniques, precision agriculture, genetic engineering, molecular markers, system biology, and other biotechnologies.

At its core, agri-biotechnology aims to harness the potential of these tools and techniques to develop crops and animals with improved traits and characteristics. These advancements are designed to address critical challenges faced by farmers and the agricultural industry. Examples of such challenges include combating pests and diseases, increasing crop yields, and enhancing the nutritional value of agricultural products.

Agri-biotechnology has the potential to address many of the challenges faced by modern agriculture, including food security, environmental sustainability, and economic development. It has the potential to revolutionise poultry in numerous ways. It can be used to develop genetically modified crops that can be used as feed for poultry. These crops can be designed to contain high levels of specific nutrients, such as protein, that are important for poultry growth and health. Researchers all across the globe are now working on alternative ingredients and nutrients for poultry too, which is indirectly supported via agri-biotechnology in other organisms. Overall, these alternative protein sources provide an opportunity for poultry producers to diversify their feed sources and reduce their reliance on traditional protein sources.

Alternative protein sources for poultry include

1. **Insects:** Insects such as silkworm pupae, black soldier fly larvae, mealworms, and crickets are becoming popular alternative protein sources for poultry feed. They are a sustainable protein source and can be easily raised on organic waste.
2. **Algae:** Algae is a rich source of protein and can be used as a feed supplement for poultry. It can be grown in large quantities and is a sustainable alternative to traditional protein sources.
3. **Single-cell protein:** Single-cell protein is produced from microbial fermentation and is a great alternative to traditional protein sources. It is rich in essential amino acids and can be produced quickly and in large quantities.
4. **Plant-based protein:** Plant-based proteins can be used as an alternative protein source in poultry feed. They are

Biotechnological Applications in Poultry

The biotechnological tools based on modern techniques offer enormous prospects for the production of biologics and vaccines, medicinal products and disease diagnostic assays, playing a vital role in disease control and prevention. While the advancement and application of these technologies have predominantly been observed in developed countries, their use is gradually gaining momentum in various segments of poultry science in developing nations. Both conventional and modern biotechnologies in poultry have made significant contributions to enhancing productivity, optimising income generation, reducing poverty, mitigating disease burdens and ensuring environmentally sustainable livestock production in these countries. Biotechnology is playing a crucial role in elevating veterinary science, particularly in poultry production and the processing of poultry-origin food that is entwined with food safety issues. It is imperative to raise awareness about these novel approaches and provide comprehensive training to laboratorians from both private and government sectors to ensure accurate disease diagnosis. Such training should be focussed on maximising the benefits in disease diagnostic areas. Moreover, it is crucial to establish an inclusive and effective regulatory framework that takes into account the country's perspectives and ensures the safe application of technologies concerning biosafety and biosecurity. This will help dispel confusion among the general population regarding this rapidly evolving discipline. Governments, in collaboration with food system partners and the biotechnology industry, should fully harness this science-based tool to strengthen food safety measures and support public health decisions.

Source: Springer Nature

a vegan alternative to animal protein sources.

Agri-biotechnology is an amazing tool that can be used to develop vaccines, diagnostics, and treatments for poultry diseases. One way biotechnology can help solve poultry diseases is by using genetic engineering techniques to produce recombinant vaccines. These vaccines are made by inserting genes from a pathogen into a harmless virus or bacterium, which then produces the antigen that will stimulate the bird's immune system and protect it from the disease. It can help by developing rapid diagnostic tests for poultry diseases. These tests can be based on nucleic acid amplification techniques, which can detect the presence of specific DNA or RNA sequences from the pathogen in the bird's tissues or fluids. It can also be used to develop new drugs and other treatments for poultry diseases. For example, researchers can use genetic engineering techniques to produce therapeutic proteins that can be used to treat viral or bacterial infections in poultry.

Designer eggs can be produced using genetic engineering techniques to introduce or modify specific genes in the chickens that lay them. For example, genes can be introduced to enhance the nutritional value of the eggs or to make them more resistant to disease. It is worth noting that the production of genetically modified organisms, including genetically modified chickens, is a highly regulated process, and strict guidelines must be followed to ensure the safety of biodiversity and the environment.

Systems biology is an interdisciplinary field of study that combines biology, mathematics, and computer science to understand how a biological system's components work together. In poultry farming, systems biology can be used to gain insights into the complex interactions between different biological processes, such as metabolism, growth, and reproduction. For example, systems biology can be used to study the molecular mechanisms underlying the immune response of chickens to various pathogens, such as the avian influenza virus. By analysing the gene expression patterns of immune cells in response to infection, researchers can identify key regulatory pathways that could be targeted for developing new vaccines or treatments.

Similarly, systems biology can be used to study the factors that influence egg production in commercial laying hens. By analysing the genetic and environmental factors that contribute to egg quality and quantity, researchers can identify strategies for improving the efficiency and sustainability of poultry production. Overall, the application of systems biology in poultry farming has great potential to improve our understanding of the complex biological processes that underlie poultry production and to develop new tools and strategies for addressing the challenges facing the industry.

In general, poultry is a rich source of high-quality protein, vitamins, and minerals. It is also low in fat and cholesterol, making it an excellent choice for healthy diets. By incorporating poultry into their diets, people can meet their nutritional needs more easily, which can improve overall health and well-being. Systems biology can unlock the true potential to maximise productivity, nutrition and yield in poultry farming. NS

Nepal reaches new milestone to transform agrifood systems

The Government of Nepal has launched a series of programmatic frameworks in the food and agriculture sectors that will help the country transform its agrifood systems, making them more resilient and sustainable for the benefit of all people in Nepal. The Country Programming Framework of CPF (2023 - 2027), developed with Nepal's Ministry of Agriculture and Livestock Development and other stakeholders, was recently presented during a launch in the capital, Kathmandu. The launch of the CPF attracted various dignitaries from government, the private sector, including agripreneurs, and development partners. The launch of the CPF in Nepal marks a significant milestone in the partnership between United Nations' Food and Agriculture Organisation (FAO) and the Nepalese government. The CPF is a strategic framework that aims to strengthen the country's food and agriculture sector by identifying priority areas of investment and intervention. The framework also provides a platform for partnership between FAO and Nepal to ensure effective implementation of the country's agricultural development goals.

French contribution enables WFP to respond to nutrition crisis in Pakistan

The United Nations World Food Programme (WFP) welcomes a contribution of EUR 3.5 million from the Government of France in support of the ongoing flood response in Pakistan, specifically targeting women and children facing life-threatening malnutrition. The funding will play a vital role in enabling WFP to provide life-saving assistance to thousands of children under-five as well as pregnant and breastfeeding women and girls suffering from acute malnutrition with lifesaving support in Sindh and Balochistan. Against the backdrop of high inflation, especially soaring food prices, millions of people are struggling to afford and access nutritious food. This dire situation has led to an increase in cases of severe acute malnutrition among women and children in the districts worst affected by the floods. According to a rapid survey conducted across 15 flood-affected districts in Sindh, Khyber Pakhtunkhwa and Balochistan, nearly one-third of children between 6 and 23 months of age are suffering from moderate acute malnutrition, while 14 per cent are affected by severe acute malnutrition.

Sri Lanka launches 'National Nutrition Policy 2021-2030'

The Nutrition Division of the Ministry of Health in Sri Lanka has revised and developed the 'National Nutrition Policy 2021-2030' in view of ending all forms of malnutrition by 2030. This is the revised version of the National Nutrition Policy issued in 2010, which is aligned with the proposed policies and procedures for the decade 2020-2030. This revised policy has been developed through all multi-sectoral collaboration and partnership. This policy consists of strategic plans and policies which are essential to maintain the optimal nutritional status of all Sri Lankans, safeguard food security, strengthen the legal framework to protect the right to safe food, prevent unethical marketing, and ensure safe and healthy food consumption at all times, including nutrition promotion in emergencies.

Global Congress opens to counter harmful marketing of formula milk

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) hosted the first Global Congress on the implementation of the International Code of Marketing of Breast-milk Substitutes on June 20-22, 2023 in Geneva, Switzerland. During the event, delegates from around 130 countries discussed and shared knowledge and strategies to end the unethical marketing of breast-milk substitutes. The World Health Assembly (WHA) in 1981 adopted the International Code of Marketing of Breast-milk Substitutes. Forty-two years later, formula milk manufacturing companies continue to violate these established principles and place commercial interests before children's and families' health. Subsequent WHA resolutions have repeatedly called upon national governments to enact, monitor and enforce the provisions of the Code. The response to calls to action launched by WHO and UNICEF has been inadequate and further underscore the need for stronger government regulations. During the three-day Congress, countries shared their experiences on the challenges they face in fully implementing the Code to develop national work plans to strengthen legislation, monitoring and enforcement relating to its provisions.

New reports highlight importance of microbiome for food safety and nutrition

All evidence suggests that the microbiome, an emerging concept referring to the complex ecosystems made up of and by bacteria and other microorganisms, has powerful explanatory value for matters related to human, plant and planetary health. To contribute to the scientific debate, and to stimulate and guide more of it, experts at the Food and Agriculture Organization of the United Nations (FAO) have produced four new publications, and one focusing on soil health, and three scientific reviews of how microplastics, pesticide residues and veterinary medicines may impact the safety of our food supply. The reviews that were done on pesticides and veterinary drugs, as well as on microplastics reveal that from a methodology perspective, a lot still needs to be done to strengthen and systematise the way research is structured so that this promising field can indeed be integrated in the way we shape food standards. The reviews recommend organising a series of meetings with risk assessors and multidisciplinary microbiome experts to reach consensus on definitions and establish research standards and knowledge gaps.

WHO recommends stronger policies to protect children from the harmful impact of food marketing

The World Health Organisation (WHO) has released a new guideline on policies to protect children from the harmful impact of food marketing. The guideline recommends countries implement comprehensive mandatory policies to protect children of all ages from the marketing of foods and non-alcoholic beverages that are high in saturated fatty acids, trans-fatty acids, free sugars and/or salt (HFSS). More than 10 years after Member States endorsed WHO's recommendations on the marketing of foods and non-alcoholic beverages to children in 2010, children continue to be exposed to powerful marketing of HFSS foods and non-alcoholic beverages, consumption of which is associated with negative health effects. The updated recommendation is based on the findings of reviews of recent evidence, including how exposure to and the power of food marketing affects children's health, eating behaviours, and food-related attitudes and beliefs. In short, food marketing remains a threat to public health and continues to negatively affect children's food choices, intended choices and their dietary intake. It also negatively influences the development of children's norms about food consumption.

IIHS opens largest training centre in Siliguri to enhance career prospects in F&B industry

IIHM Institute of Hospitality Skills (IIHS), India's largest training centre affiliated with the Tourism and Hospitality Skill Council (THSC), has announced the grand opening of its state-of-the-art facility in Siliguri. The centre aims to provide comprehensive courses on hospitality skills, catering to professionals seeking to upskill and enhance their career prospects. With a prime focus on vocational training, IIHS aims to bridge the skill gap and empower individuals in the thriving hospitality industry. In addition to the core courses, International Institute of Hotel Management (IIHM) also offers short-term skill-based programmes focusing on various aspects of hotel operations. These programmes cover areas such as service staff ethics, the art of cooking, baking, concierge services, front-office operations, housekeeping, food and beverage services, bar and beverage management, kitchen assistance, bell desk services, and more. Furthermore, the courses also incorporate knowledge on essential topics like Food Safety and Standards Authority of India (FSSAI) regulations, safety training, and overall management skills. IIHS promotes the Accreditation of Prior Learning (APL) to recognise and build upon existing knowledge and experience. IIHS aims to open 100 centres across the country within the next two years, with a mission to educate 100,000 young unemployed professionals and help them join the hospitality industry.

Bisleri Intl and educational institutions forge alliance to combat plastic waste

Leading water brand Bisleri International has announced a strategic partnership with prominent educational institutions to launch its sustainability initiative, 'Bottles For Change'. The collaboration aims to raise awareness about the immense potential of recycling used plastic and educate students on the critical importance of effective waste management. In the current fiscal year, Bisleri plans to forge alliances with over 200 institutions, empowering students to become catalysts for change in the quest for a sustainable future. Presently operating in seven cities, the 'Bottles For Change' programme is set to expand its footprint to Bengaluru, Hyderabad, and Gandhinagar in Gujarat throughout the year. The educational institutions participating in the 'Bottles For Change' include Amity University, SRM Institute of Science and Technology, Tata Institute of Social Sciences, TERI School of Advanced Studies, Institute of Hotel Management, MGR Educational and Research Institution, Bombay Cambridge School, Podar International School, and Vidya Mandir Senior Secondary School.

GVR Foods joins hands with Manipal's Hotel Management School

In a strategic move aimed at mutual growth and development, GVR Foods, which runs Geetham Veg, a leading vegetarian chain in Chennai, has entered into a partnership with Welcomgroup Graduate School of Hotel Administration (WGSHA). The school is promoted by Manipal Academy of Higher Education, a deemed university, in association with Welcomgroup, a division of ITC Hotels. The alliance seeks to enhance the training and employment prospects of WGSHA's students. The association not only promises to introduce new and innovative items to Geetham Veg's evolving menu, but also provides academic exposure to its team of 150 culinary professionals. Through training programmes, joint research, and paper publications, the partnership will facilitate their professional advancement. The agreement follows the industry-institute partnership model, designed to bridge the gap between theoretical knowledge and industry practices in the hospitality sector. It paves the way for the experienced chefs, kitchen staff and service personnel from GVR Foods to share their expertise as subject matter experts through guest lectures, counselling sessions, and career talks at WGSHA.

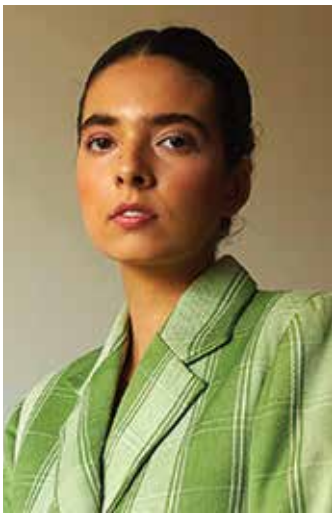
Cassio Simoes steps in as Managing Director of Tetra Pak South Asia

Tetra Pak, a Swedish-Swiss food processing and packaging solutions company, has announced the appointment of Cassio Simoes as Managing Director (MD) of its South Asia Markets. Simoes has taken over the role of MD effective from June 1, 2023, succeeding Ashutosh Manohar who will retire, following an illustrious corporate career of over four decades, including a 20-year stint at Tetra Pak. Cassio brings with him a wealth of experience having held various roles across different businesses at Tetra Pak over the past 20 years. Most recently, he was Managing Director of Tetra Pak Andina. With a strong track record of helping customers innovate for growth, his expertise will be instrumental in driving the company's growth and expansion in the South Asia region, which includes India, Sri Lanka, Bangladesh, Nepal, and Bhutan. South Asia holds a strategic focus for Tetra Pak, and the appointment of Simoes further underscores the company's commitment to the region. With a dedicated local manufacturing presence in Chakan, Pune, and a history of over 35e years in India, Tetra Pak delivers end-to-end solutions for its customers in the food & beverage industry. In his new role, Cassio will also be based in Chakan, Pune.

ITC elevates Aishwarya Pratap Singh as Chief Business Officer at Yoga Bar

ITC has promoted Aishwarya Pratap Singh, who has been working as Vice President & head of marketing, to Chief Business Officer at Yoga Bar. Prior to this, Singh was handling marketing for the snacks, noodles and pasta business of ITC. With an overall experience of 17 years in the FMCG industry, Singh has worked with ITC for more than 15 years. Under ITC, he was marketing for brands like Bingo! and YiPPee. In the past, he has worked with Dabur India as sales and operations manager, Andhra Pradesh for two years. ITC has acquired 100 per cent of the share capital (on a fully diluted basis) of Sproutlife Foods, a Bengaluru-based startup primarily engaged in the business of manufacture and sale of food products under the trademark 'Yoga Bar'.

Nourish You names Divya Gursahani as Chief Marketing Officer



Nourish You, Hyderabad-based superfood brand, has announced the appointment of Divya Gursahani as the company's first chief marketing and communications officer. Divya's appointment further strengthens Nourish You's leadership team as it inches towards becoming India's most loved superfood brand. Following the appointment, Nourish You will amp-up its marketing and communication initiatives, staying focussed on deepening awareness about superfoods and their benefits while positioning itself as the first startup to introduce the concept of superfoods to Indian consumers. Prior to Nourish You, Divya served at the content studio, By the Gram, and media houses, including ELLE, and DNA. She was instrumental in developing campaigns for Netflix, Amazon, Apollo, Bumble, Tata CLiQ, and Nykaa in various capacities. As chief marketing and communications officer, Divya will spearhead the development and implementation of integrated marketing strategies, encompassing all of Nourish You's product categories and consumer communication channels.

Roquette invests 4.5 M euros in food innovation centre in France

Roquette, a global leader in plant-based ingredients, recently held the grand opening of its new Food Innovation Centre, located in its historic Lestrem site, right in the heart of Europe. As part of its strategy, Roquette's Food Innovation Centre will provide formulators with a large range of capabilities, including technical and R&D support, cutting-edge equipment, labs and scale-up testing. The ultimate goal is to foster innovation and accelerate the go-to-market of new products. This Food Innovation Centre has been designed to support food players by offering a huge range of capabilities, where Roquette experts will provide advice and solutions to their process and formulation challenges. It includes a demonstration kitchen, a sensory analysis laboratory, various collaborative spaces and labs allowing pilot scale testing for different food applications. All food sectors including dairy, savoury, confectionery, bakery, beverage, or specialised nutrition, will benefit from these new capabilities. The Centre also offers new state-of-the-art equipment such as a high-moisture extrusion (HME), an ultra-high temperature (UHT) line with direct steam injection for dairy and beverage applications, as well as a tableting press simulator.

Univar Solutions expands food ingredients portfolio

Univar Solutions Inc. has been selected as a distributor of ICL's Rovitaris textured plant proteins in North America. The companies currently have a distribution agreement for other ICL specialty food solutions, including phosphate and food ingredients. In addition to their health and sustainability-related benefits, plant-based food innovations have helped satisfy new diets, food market trends, and concerns changing taste preferences. From specialty ingredient innovation to recipe testing, food brands of all sizes turn to Foodology by Univar Solutions for help tackling product development challenges. The organisation's knowledgeable in-house scientists refresh and develop formulas to enhance the efficacy of products through its food solution centres and test kitchens while working toward the company's mission of keeping people healthy, fed, clean, and safe. Foodology by Univar Solutions' food ingredients expertise and expansive portfolio provides customers with access to innovative ingredients for next generation products, formulation know-how, supply chain network, sustainable solutions, and technical expertise in the dairy, beverages, bakery, meat and poultry, and snacks space. ICL's Rovitaris portfolio consists of plant-based protein ingredients, which provide texture, stability, and flavour profiles for a variety of vegan food applications and consumer products, such as plant-based burgers and milks.

Kerry unveils sustainable, cost-effective enzyme baking solution

Kerry, a global leader in taste and nutrition, has introduced Biobake EgR, an innovative enzyme solution that decreases the number of eggs needed in a wide variety of baking applications, enabling European manufacturers to make the switch from caged to free-range or organic eggs without facing increased costs. Ireland-headquartered firm Kerry's new enzyme system, developed for baked goods manufacturers to address the rising raw material costs of eggs, allows for a reduction in the quantity of egg used in recipes. The innovative enzyme system also provides a solution to regulatory and ethical concerns, with the European Commission aiming to phase out the use of cages in animal agriculture by 2027. Meanwhile, according to statistics published in January 2023 by EuroStat, the price of eggs in the European Union was 30 per cent higher on average in January 2023 than in 2022, amid a steady rise in prices since January 2021. Supply-chain disruptions are the main reason for these cost increases, exacerbated by geopolitical instability, global widespread avian flu, drought and increasingly unpredictable/extreme weather conditions, plus general inflationary pressures. These factors have negatively impacted crop yields and applied financial pressure across the supply chain, creating challenging times for farmers and adding costs for the final consumer.

Voodoo Scientific & Ginkgo Enzyme Services to eliminate harsh "Bite" from distilled alcoholic beverages

Voodoo Scientific, an American company creating capabilities to help distillers deliver meaningful innovation, and Ginkgo Bioworks, which is building the leading platform for cell programming and biosecurity, have announced Voodoo's plans to leverage Ginkgo Enzyme Services to optimise an enzymatic solution to enable distillers to produce ultra-premium spirit products that are truly smooth. To support the development of the enzyme critical to Voodoo's product, Ginkgo will leverage its extensive protein discovery and design capabilities to design and optimise the enzyme for a wide range of conditions in spirits manufacturing, from craft to global-scale production environments. Most distilled alcoholic beverages produce some degree of harsh sensation, or "bite," when consumed, which is a major deterrent for many potential customers. No mellowing technique used by distillers to date has been able to fully eliminate this unpleasant attribute. Voodoo Scientific identified the scientific cause for this harshness and created their enzymatic solution to give distillers the ability to manage it. Distillers can use this novel enzymatic solution to produce more premium products by creating smooth spirits.

Celanese & Mitsui sign agreement to form food ingredients joint venture

US-based Celanese Corporation, a global chemical and specialty materials company, and Mitsui & Co. have announced the signing of a definitive agreement to form a food ingredients joint venture under the name Nutrinova. Celanese will contribute the assets, technology and employees of its food ingredients business while retaining a 30 per cent stake in the joint venture. Mitsui will acquire the remaining 70 per cent stake at a purchase price of $472.5 million, representing an enterprise valuation of approximately 15 times 2022 EBITDA. The parties expect to close the transaction in the second half of 2023, pending regulatory approvals. The Nutrinova joint venture builds upon the existing long-term strategic partnership between the two companies. The agreement combines the technology, product portfolio and backward integration of the Celanese food ingredients business with Mitsui's long-standing positions across the food value chain in Asia and other regions. Additionally, Celanese will continue to meet the full acetyls raw material needs of the Nutrinova JV under a long-term supply agreement.

Ardent Mills launches Egg Replace and Ancient Grains Plus

Ardent Mills, US-based flour-milling and ingredient company, has launched two new products, Ardent Mills Egg Replace and Ancient Grains Plus Baking Flour Blend. The company designed these innovative, cost-effective solutions to enable its customers to capitalise on new market growth, meet evolving consumer preferences for quality ingredients and great taste, and help alleviate supply chain challenges. The demand for cost effective egg alternatives continues to rise due to recurring avian flu, inflation and growing interest in cage-free initiatives. To help solve this market need, Ardent Mills developed Ardent Mills Egg Replace, a 1:1 replacement for dried and liquid whole eggs that can provide long-term cost efficiency and supply stability. This innovative solution is composed of just four ingredients, including chickpea flour, and is designed for optimal taste, function, and ease of use in bakery applications. Additionally, it is gluten-free, vegan and contains no major US food allergen or soy ingredients. Further, crafted with a mild flavour, Ancient Grains Plus Baking Flour Blend can be easily incorporated into a variety of bakery applications.

GEA opens technology centre in Germany for alternative protein industry

GEA has inaugurated the New Food Application and Technology Centre of Excellence (ATC) in Hildesheim, Germany, as a central hub for piloting processes and products for the alternative protein industry. The shift to plant-based foods, cultivated meat and products such as microbially produced dairy proteins promises to feed future generations in a climate-friendly way. At the new technology centre, German firm GEA's new food experts will be using a cell cultivation and fermentation pilot line to fast-track innovations from the lab to commercial-scale manufacturing. The ATC complements other GEA new food centres of excellence, including for bioreactors (Hildesheim, Germany, and Skanderborg, Denmark) and cell separation (Oelde, Germany). With cell-based meat alternatives now making their way onto restaurant tables, the research focus is turning to precision fermentation for milk proteins. One of GEA's first customers in this field is Imagindairy, a scale-up from Israel. Alternatively sourced proteins can help reduce the environmental impact of our food system and help feed the world's growing population. The shift to new food is going hand in hand with the development of regenerative agriculture.

Packaging equipment maker Romaco strengthens presence in India

The 30-strong team from Romaco India recently celebrated the move into new offices in Thane in the Mumbai Metropolitan Region. The Sales & Service Centre oversees both original equipment business and customer service in the Indian market on behalf of the international Romaco Group. The modern premises totalling 250 square metres create ample space for all of the Sales & Service Centre's 30 employees. Romaco India's workforce has almost tripled since the official opening in 2019. In addition to eight sales staff, 17 service technicians take care of local customers' needs. Over 350 Romaco machines and lines are currently in operation in the Indian pharmaceutical, nutraceuticals, food, cosmetics and chemical industries. In order to respond quickly and flexibly to all support requests, Romaco India has its own spare parts warehouse. Romaco is synonymous with European engineering on the highest level. With its seven brands, the company is widely recognised around the world.

Eviosys launches Ecopeel, a food can for packaging industry

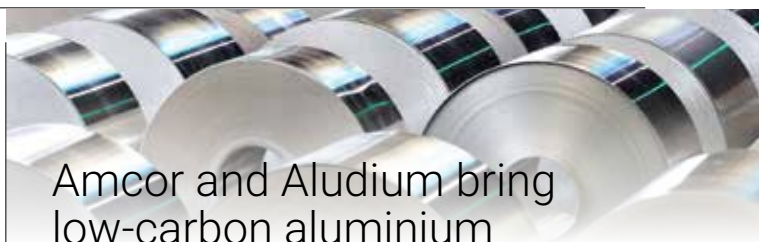
Swiss brand Eviosys has launched an industry-first, a food can with a sleek peelable foil directly sealed on the body of the can. Set to revolutionise the packaging industry and drive further adoption of metal packaging, Ecopeel will reduce the carbon footprint of canned food items by up to 20 per cent. Ecopeel will help businesses achieve their sustainability objectives, driving the move away from plastic, and enhancing inclusivity, convenience, and branding opportunities for customers and end users. Ecopeel's unique 45 sealing surface reduces the force necessary for opening, and the smooth body and 100 per cent aperture capability reduces food waste. This supports Eviosys' mission to make switching to metal accessible to all, building on the success of their other industry-leading products such as Orbit. Ecopeel reduces complexity for customers as cans are delivered with the foil already sealed, simply requiring brands to fill and sew the can. This makes the filling process 5x faster, as well as cleaner and safer, reducing spoilage and energy usage. It also offers greater customisation options with printing onto the can, so products stand out on the shelf.

Stora Enso, Tetra Pak back Europe's main recycling hubs for beverage cartons

With a joint investment of approximately EUR 29 million by Stora Enso and Tetra Pak, a new recycling line for post-consumer beverage cartons is starting operations in Poland. Stora Enso has invested approximately EUR 17 million into a new repulping line that will recover the carton fibres, and Tetra Pak along with Plastigram have invested a total of approximately EUR 12 million to build the new line. The line has the potential to triple the annual recycling capacity of beverage cartons in the country - from 25,000 to 75,000 tonnes – and provides scope to absorb the entire volume of beverage cartons sold in Poland, as well as additional volumes from neighbouring countries, including the Czech Republic, Hungary, Slovakia, Latvia, Estonia and Lithuania. Featuring an annual capacity of 50,000 tonnes, the state-of-the-art line at Stora Enso's production unit in Ostrołęka (Poland) handles solely beverage carton material separation, detaching fibres from polymers and aluminium. The fibres are then recycled into carton board materials, effectively contributing to material circularity by turning used paper-based packaging into new paper-based packaging materials. This new paper recycling facility is complemented by Czech company Plastigram Industries, which, together with Tetra Pak, is industrialising a solution to recycle polyAl1 into new products.

Sidel launches one-stop shop to seamlessly switch to recycled PET

Sidel, headquartered in France, is demonstrating its expertise in recycled PET (rPET) by launching its 'RePETable offer.' This unique portfolio of services is designed to help the packaging industry make an efficient transition to rPET bottle production while offering support to improve the circularity of primary packaging. Sidel aims to facilitate a smooth and efficient market switch to recycled PET by establishing a 'no fear' one-stop shop for rPET- the RePETable offer. These service solutions will enable customers to adopt up to 100 per cent rPET without impacting bottle production. Sidel can also offer support to the industry to develop innovative and more sustainable primary packaging materials that are designed for recycling. The RePETable offer is a range of services dedicated to rPET, designed to extend virgin PET benefits to rPET and achieve consistent production performance and bottle quality. Sidel packaging innovation experts are continuing to develop advanced knowledge about recycled PET resin and solutions for efficient bottle production by leveraging its unique small-scale recycling pilot line in France.



Amcor and Aludium bring low-carbon aluminium product to market

Amcor Capsules, a global leader in developing and producing responsible closures for wine & spirits, in collaboration with Aludium, one of Europe's leading aluminium suppliers, have collaborated to bring an aluminium product to market with more than 50 per cent reduction in carbon footprint compared to the average carbon footprint for primary aluminium sold in Europe. When compared to primary aluminium produced in China, it represents an average carbon footprint reduction of more than 80 per cent. Together, Amcor Capsules and Aludium have produced a leading, certified and independently verified low-carbon aluminium product for use in screw caps. The new technology produces less than 4 tonnes of CO_2 equivalent per tonne of aluminium, from raw material extraction right up until delivery. This saving is made possible thanks to the combined use of recycled content and the careful selection of low-carbon primary aluminium. Amcor Capsules' collaboration with Aludium supports its promise to reduce its carbon footprint by 18 per cent from 2019 to 2025 and will contribute towards achieving science-based targets, which commits the company to reach net zero emissions by 2050.

Promoting Breast Milk over Formula

India's baby food and infant formula market size reached $5.4 billion in 2022. The IMARC Group expects the market to reach $8.1 billion by 2028, exhibiting a CAGR of 5.7 per cent during 2023-2028.

The growth can be attributed to the increasing consciousness among the masses regarding child nutrition and optimal development. Consumers are widely adopting baby food products to provide additional supplements to increase the immunity and health of infants and young children. Moreover, various product innovations, such as the development of ready-to-feed baby food products, that are convenient to use, portable and nutrient-rich, are providing a thrust to the market growth. Additionally, the increasing adoption of premium-quality organic baby food products manufactured using natural ingredients is also boosting market growth. Other factors, including the increasing spending capacity of consumers, along with the rising female working population, are anticipated to drive the market toward growth across the country.

However, experts who have conducted research on formula milk termed the formula milk industry's marketing tactics exploitative and called for urgent clampdowns to tackle misleading claims and political interference. In a new three-paper series published in The Lancet on February 8, they said that industry influence – which includes lobbying against vital breastfeeding support measures - seriously jeopardises the health and rights of women and children.

Breastfeeding provides immense and irreplaceable nutrients and a robust immunity to babies and young children. Yet, globally, only around 1 in 2 newborns are put to the breast within the first hour of life while fewer than half of infants under six months are exclusively breastfed, as per World Health Organisation (WHO) recommendations.

Given the significant contributions of breastfeeding to people's health, the Lancet series recommends much greater support for breastfeeding within healthcare and social protection systems - including guaranteeing sufficient paid maternity leave. Currently, around 650 million women lack adequate maternity protections. Misleading marketing claims and strategic lobbying from the dairy and formula milk industries further add to the challenges parents face, by increasing anxiety around breastfeeding and infant care.

One of the expert authors of the series, Prof. Linda Richter from the University of the Witwatersrand, South Africa noted, "The formula milk industry uses poor science to suggest, with little supporting evidence, that their products are solutions to common infant health and developmental challenges. This marketing technique clearly violates the 1981 Code, which says labels should not idealise the use of formula to sell more product."

It may be noted that in 1981 the World Health Assembly (WHA) adopted the International Code of Marketing of Breast-milk Substitutes. Forty-two years later, formula milk manufacturing companies continue to violate these established principles and place commercial interests before children's and families' health. Subsequent WHA resolutions have repeatedly called upon national governments to enact, monitor and enforce the provisions of the Code. The response to calls to action launched by WHO and United Nations Children's Fund (UNICEF) has been inadequate and further underscore the need for stronger government regulations.

To discuss and share knowledge and strategies to end the unethical marketing of breast-milk substitutes, the WHO and UNICEF hosted the first Global Congress on the implementation of the International Code of Marketing of Breast-milk Substitutes on June 20-22, 2023 in Geneva, Switzerland.

The WHO, UNICEF and civil society partner organisations have developed a variety of tools to advocate for the Code implementation, document the extent of formula milk marketing, evaluate current laws, develop monitoring systems, and strengthen enforcement of the Code, while also working to increase parents' access to unbiased information – free from commercial influence – on infant feeding and nutrition.

In addition to ending exploitative marketing tactics and industry influence, broader actions across workplaces, healthcare, governments and communities are needed to effectively support women who want to breastfeed so that it becomes a collective societal responsibility, rather than placing the onus on women. Women must have adequate maternity protections assured by law, including paid maternity leave that aligns, at minimum, with the WHO-recommended duration of six months for exclusive breastfeeding. NS

Narayan Kulkarni
Editor
narayan.kulkarni@mmactiv.com

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For More Information and Collaboration,
Email: ankit.kankar@mmactiv.com

RNI TC No.: MAHENG14627
Date of Publication: 30.6.2023

RNI NO.: KARENG/2013/54271
Date of Posting: 1.7.2023

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Conference Secretariat for Technical Queries

Mr. Jitender Prateek
Assistant, SPBB, Division of Biochemistry
ICAR-IARI, New Delhi-110012
Mob : 91-9868664533
E-mail : icbbaci@gmail.com

MM ACTIV
Sci-Tech Communications
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Mr. Sankalp Singh
103-104, Rohit House, 3 Tolstoy Marg
Connaught Place, New Delhi 110001
Mob : 91-7905995187
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