

What next for fresh produce?

Key trends for the fruit and vegetable business in 2023



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Author
Mike Knowles, Fruitnet

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About Fruitnet
Fruitnet Media International is the world's leading publisher and congress organiser for the global fresh fruit and vegetable business. Delivering informed industry coverage, it helps the fresh produce business grow worldwide by providing useful information, insight and ideas.



Plenty to consider

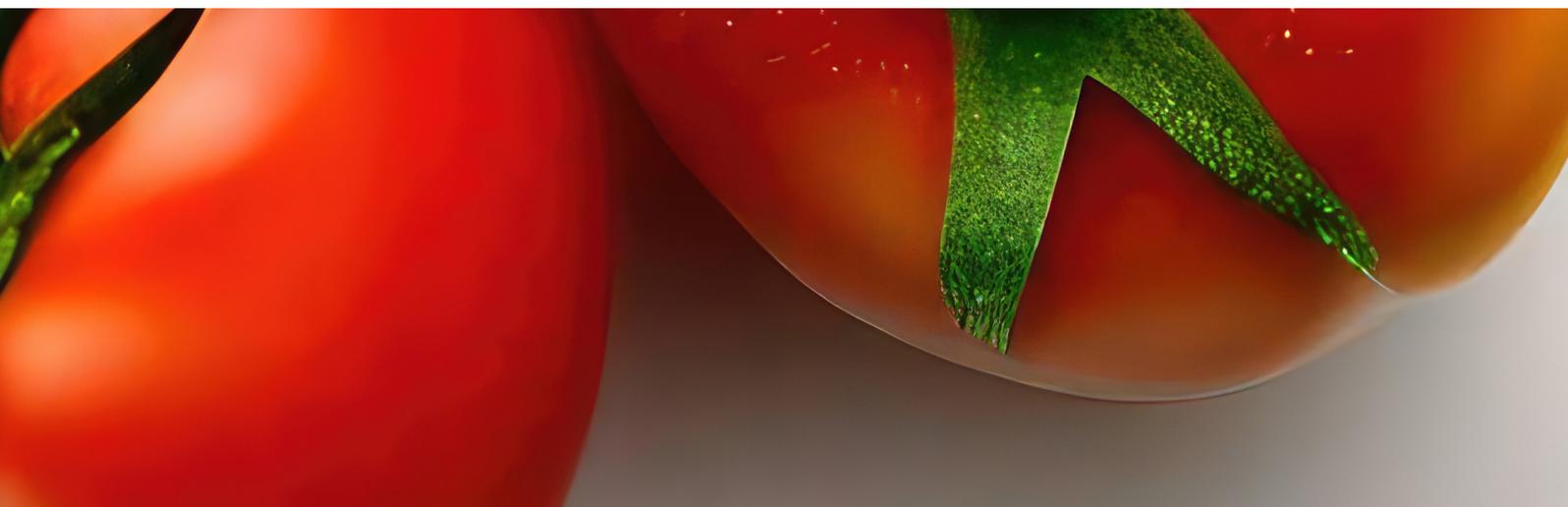
Fruit Logistica's latest trend report offers everyone in the fruit and vegetable trade some valuable information about its future direction.

The report consists of eight exclusive, in-depth interviews with experts who understand the most significant trends in fresh produce, as well as the challenges they present and how to make the most of them. In publishing the report, Fruit Logistica wants you to discover what factors like cost inflation, ethical trade, food waste, climate change and new technology mean for your business, and the entire fresh produce industry.

We hope you enjoy reading this special report, and we look forward to seeing you at Fruit Logistica in Berlin on 8-10 February 2023.

Mike Knowles

Managing Director · Fruitnet Europe





1

ETHICAL TRADE

**Franka Rodriguez,
Aldi South Group**



Worker welfare is a hot topic for the fresh produce industry. The question of what constitutes a fair price for the fruit and veg we buy, and a fair wage for those who produce it, has been keenly debated. In this first interview, we speak to Franka Rodriguez, director of global sourcing at retail chain Aldi South. We wanted to find out why the retailer has introduced a more responsible and transparent purchasing system for its banana supply chain, and learn more about what it means for the wider business.

For years, European retailers have pursued an aggressive low-cost pricing strategy when it comes to bananas. Now Aldi has pledged to pay a more sustainable price and implement more responsible and transparent supply chains. What's changed?

Franka Rodriguez: In the past, Aldi's banana pricing followed general market mechanisms, which means that it was determined by market supply and demand. Since then, we've been advancing our corporate responsibility objectives, with the aim of being a sustainable retailer with a strong focus on human rights. We have already rolled out 100 per cent certified bananas, as well as a corporate responsibility supplier evaluation which allows us to make decisions based on the CR performance of our supply base. However, we understood that this would not be enough to guarantee a sustainable and competitive supply base in the long term and that we needed to do more. Now we have come up with an open-book costing approach, which allows us to have more transparency in the supply chain and build long-term relationships with our key partners that will ultimately lead to a more sustainable banana supply.

To what extent was your decision affected by the March 2022 publication of the European Commission's Corporate Sustainability Due Diligence Directive, which sets out mandatory human rights and environmental due diligence obligations for EU corporations?

FR: We consider the work the European Commission has done to be vital to ensure human rights along supply chains, this being a key objective also shared by Aldi. In 2020, we published an international position paper on mandatory human rights due diligence legislation, which emphasises that this was already one of our key priorities. Now with the new legislation, we believe there is a level playing field for all stakeholders to work towards the same goals.

What is your price calculation based on, and what methodology are you using to determine it?

FR: I think everybody understands that costs along the supply chain can frequently change because bananas are such a complex product. It was key for us to find objective measures and, ideally, external references that would allow us to build a transparent cost factor into our pricing. When it comes to fruit costs, we've found the Fairtrade minimum price to be a good reference as it is established by a transparent and trusted third party. We use the changes that Fairtrade verifies on an annual basis as a reference to adjust our pricing. This means that if Fairtrade says that cost factors have increased by US\$1 per box, for example, we will apply that same delta to all our banana lines which are not Fairtrade – and the Fairtrade minimum price itself is always applied in our costing when we purchase Fairtrade fruit. In addition to the fruit price itself, we also consider other elements that are important along the supply chain, especially transportation.

When you talk about long-term agreements with key suppliers, does it mean several years?

FR: Yes. We have now signed off our first multi-year agreements, and our aim is to extend these in the future. Recently, there have been encouraging signs in the banana sector of efforts to ensure workers are paid a living wage.

Can you tell us about the pilot programme you and other German retailers are involved with and what commitments Aldi has made in this respect?

FR: As a member of the German Retailer Working Group on Living Income and Living Wages, which is led by GIZ (German Society for International Cooperation) and works in cooperation with the World Banana Forum and other stakeholders in the German banana sector, Aldi has committed to pay a living wage to workers for at least 50 per cent of the bananas we sell by 2025. This is an objective for the German market, but we equally are involved in similar conversations for other markets. That's because human rights and a living income and living wages are a priority for Aldi. We understand that whilst we have rolled out a new sustainable sourcing approach for bananas, this does not guarantee that a living wage is being paid to workers. Both approaches are important and need to be combined. Nevertheless, our new sourcing strategy goes beyond living wages because it takes into account all cost factors along the supply chain and therefore allows us to consider the whole chain and achieve a sustainable result for everyone involved.



"Connecting buying and corporate responsibility is a priority for us as a business. Our mission is to make sustainability affordable to customers"

One of the most ground-breaking aspects of your new banana strategy is the way it seeks to bring together corporate responsibility and buying efforts into a seamless whole. Are you planning to introduce a similar approach in other fresh produce categories? If so, which ones?

FR: Connecting buying and corporate responsibility is a priority for us as a business. Our mission is to make sustainability affordable to customers so we understand that these two departments need to work hand in hand. It is something we have proved we can do with our new banana sourcing approach. We have worked on a similar concept with pineapples which we are confident will be ready during the course of 2023. We are also working on other categories and products within fresh produce, and we plan to convert further products in due course.

As the single largest banana buyer in Europe, Aldi sets the temperature when it comes to banana pricing. Do you think your new approach will fire the starting gun on a 'race to the top'?

FR: Aldi supports a sectoral approach when it comes to banana sourcing. We believe that all stakeholders in the industry need to work together to achieve a more sustainable result. We may be the biggest banana buyer in Europe, but we cannot do everything alone. We need everyone to join forces and work on making the banana supply chain more sustainable together. Aldi has invested a lot of time in order to build trust with our partners, to achieve transparency and to get a better understanding of the supply chain, and in our opinion, this is what's required from all participants in this conversation. The feedback we have received on our new sourcing approach has been overwhelmingly positive, which we greatly appreciate. We hope this sends a signal to the industry. But we are also aware that this is a first step. We want to keep working to make the banana supply chain more sustainable and will review the approach we've taken now and continue to engage more with suppliers and growers and other stakeholders to gather more information and keep improving the work we're doing. Ultimately, we don't consider this to be a race. We believe that everyone in the supply chain – be it retailers, growers or NGOs – needs to work together to achieve a fair common goal.

Everyone feels the pinch in the cost-of-living crisis. How do you tackle the challenge of building produce supply chains that are fair for everyone while still maintaining low consumer prices?

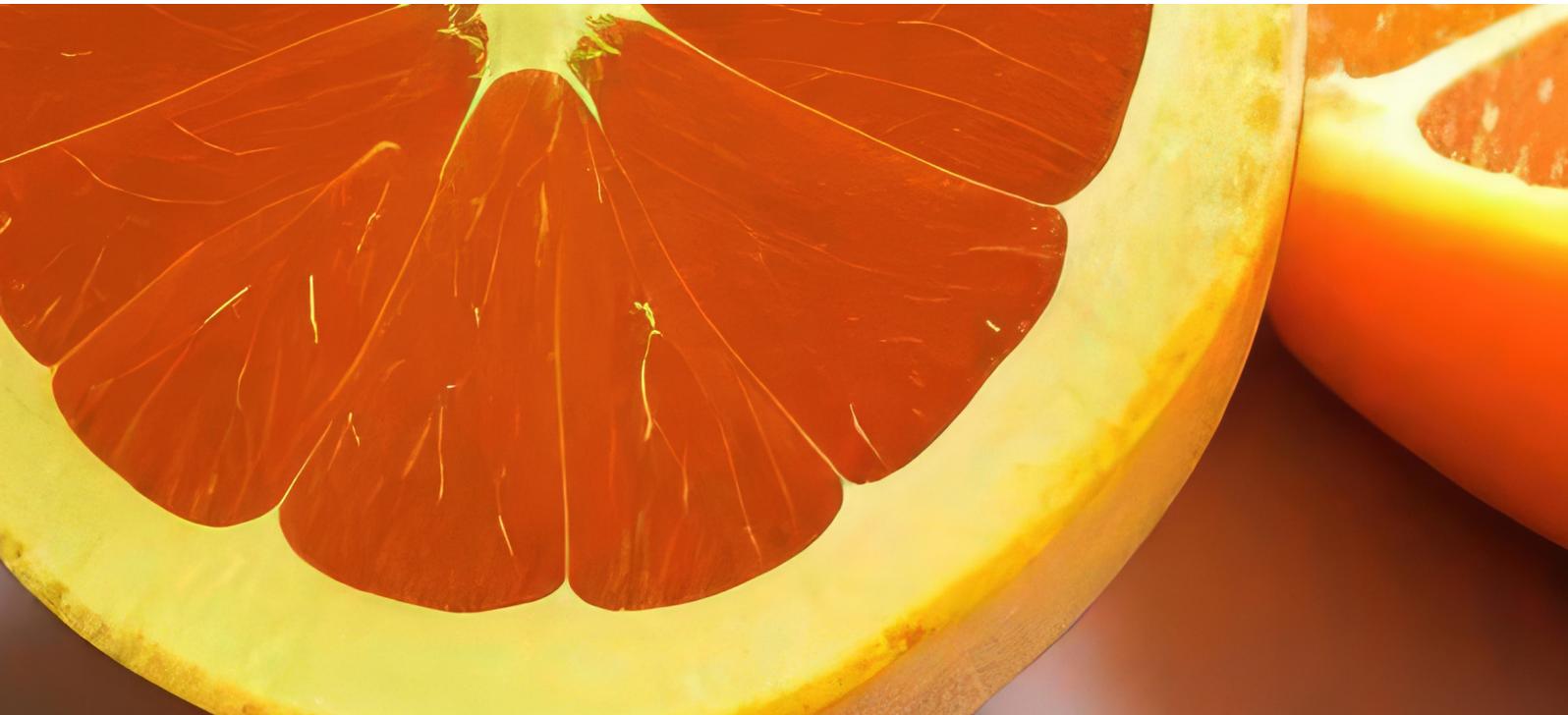
FR: We understand this is a challenge across the whole retail market. Since I am the director of our international fruit buying team, I can only speak for our global fresh fruit supply chains. We have very strong interaction between our buying and corporate responsibility teams, which we consider crucial in building more sustainable purchasing practices. We have already spoken about our focus on human rights and the emphasis on implementing living wages in fruit supply chains. When it comes to the retail side of things, we still want – and need – to offer our consumers attractive prices. Our aim is to achieve this through business efficiencies. Our internal structures are slim, we focus on the essentials, and therefore offer a smaller range of products, and we also internationalise the buying process in our fresh produce categories, which creates bundling effects and economies of scale that we can ultimately pass on to our consumers. ●



2

BRANDS

**Adéle Ackermann,
ClemenGold**



Fruit Logistica gives fresh produce brands a chance to raise their profile and promote themselves to buyers from all over the world. One such example is ClemenGold, the citrus brand from South Africa, which has been making a name for itself in Europe and in Asia. Here, we speak to ClemenGold marketing manager Adèle Ackerman about potential new opportunities for fresh produce brands, and the strategies they need to succeed.

Adèle, you were awarded the Asia Fruit Award at Asia Fruit Logistica 2022 for Marketing Campaign of the Year. This was for your efforts as a brand in China. Tell us, what have you been doing in China?

Adèle Ackermann: Over the past five years, we have carefully aligned ourselves and our efforts with very well positioned importers in China. Right from the word go, as a business we made a strategic decision to do brand building in China. So it was a conscious decision. We work very closely with our customers and we develop marketing messages and campaigns that really resonate with the Chinese culture. It was a process and a journey for the ClemenGold brand and it took some time. We developed a very good way of working with our customers. We really develop marketing campaigns and messaging that really works for the individual customers in their different channels. The Asia Fruit Award gave recognition really to a team effort. We feel very privileged to have won the award. We've managed to finish the season off with a very successful campaign for ClemenGold in China.



"The pressure to differentiate in terms of quality and price leaves an opportunity in the European market for strong brands with a strong strategy"

Why do brands work so well in Asia? Is the market really so different to the rest of the world?

AA: It's about how Asian shoppers behave, which varies from market to market. It's about what fruit resembles in each culture. Our philosophy focuses on markets where there are opportunities to build brands, and to help the consumer become familiar with the product and trust it. China is still one of the world's biggest commodity providers and a manufacturer of mostly non-branded goods for resale to other companies. In other words, it's volume without personalities. But you can really say new Asia has emerged in terms of branding fresh fruit. That's where ClemenGold really sees an opportunity. When we started in China, nobody else was really doing it out of South Africa. It was a hard journey. We continued with our brand building even when Chinese market prices didn't really reflect that. We could have sent that fruit to other markets, but we put the product in the market and supported it with a strong campaign. China is such a lovely and unique market where there is really an opportunity for that type of brand building.

Why is it more difficult to get visibility for your brand on supermarket shelves in Europe?

AA: That's the million-dollar question. I think the short answer is economic conditions. I think with the European price wars not only amongst the discounters but even amongst high-end retail, consumers also have the power to get products on the shelf. And that behaviour is very much driven by the end consumer. Ultimately, they are the ones that both the suppliers and the retailers have to service. Within that process, the pressure to really put something on the shelf that drives value is huge. In terms of our brand philosophy, we've really tried for exactly that reason to develop a brand that resonates with the end consumer. The economic pressures within the European retail market drive the pricing down to a certain extent, and put the product in a position where it's very much commoditised.

Do you think the approach on the part of supermarkets is changing in Europe?

AA: Yes, I think the pressure to differentiate in terms of quality and price leaves an opportunity in the European market for strong brands with a strong strategy. In our experience, retailers want partners that they can work closely together with, servicing ultimately the needs of the end consumers. And that's a collaborative approach. It's about them and their suppliers really understanding the target audience, their needs, the shopping behaviour, and what are the emotional drivers. What do shoppers really want? We have worked very hard in the space for our Gold brands – not only ClemenGold, but also LemonGold and NavelGold, which form part of our house of brands – in terms of the quality promise and the brand messaging. The buy-in from leading global retail and import partners has been integral in that success for our brands in certain European markets. So yes, I think everybody is under pressure to differentiate, to create a point of difference, and I think there's a real opportunity for brands to enter into that space.

You are also building year-round supply for your brand in places like Spain. Will that make a big change to your fortunes in future?

AA: Yes, serving our customers 12 months of the year is a big focus for [parent company] Fruitalyst. Not only servicing them well and offering them security of supply, but also creating brand equity. I think that's the key for building a really strong brand. I think to put marketing efforts into brand-building activities, you know, for a seasonal product that drops off the shelf after four or five months is not ideal. As a business we are very well positioned and aligned with like-minded suppliers globally to put that length of season supply for our customers on the table when it comes to Northern and Southern Hemisphere supply. And in combination with our product supplied locally in South Africa – not only our own production, but also the number of products that we get from third-party suppliers in South Africa that forms part of the Fruitalyst ecosystem – we align ourselves with these like-minded individuals and growers to supply a product that meets the quality standards of the brands, 12 months of the year, creating that top-of-mind awareness and building brand equity through global supply. ●



3

SUPPLIERS UNDER PRESSURE

**Philippe Binard,
Freshfel Europe**



As the fruit and veg business recovers from the pandemic, other challenges have emerged. Cost inflation, energy shortages, the war in Ukraine, and climate change – all of these pose a serious threat to its future success. Fruit Logistica's content programme of talks and discussions offers helpful advice on how to tackle these and other major challenges. Among the many industry experts who will attend this year's event is Philippe Binard. He is general delegate of European fresh produce association Freshfel Europe, and he is well placed to comment on these challenges and how they will affect the fresh produce sector in 2023.

Philippe, the past year has been unlike any other for the fresh produce business. We've had a couple of years in which the pandemic created major short-term difficulties for the industry. And now as we emerge from the pandemic, it is faced with some other big challenges: the economic crisis, a decrease in consumer spending power, an energy crisis fueled by Russia's invasion of Ukraine, and significant, widespread pressure to become more sustainable in the face of climate change. Do you think the fruit and veg business has what it takes to overcome all of these various challenges?

Philippe Binard: Well, Covid was not the only crisis in the past few years. There was the Ehec [E Coli crisis], then the Russian embargo and a number of other things. Brexit as well, which posed many questions. And then we had an accumulation of crises which proliferated: Covid, post-Covid, the climatic crisis, the energy crisis, concerns about consumer [spending]. In each case, the sector showed a great level of resilience and there was no shortage in the supermarkets. What is happening now is unprecedented, because things have combined. For each crisis, you need to adapt, to make new investments to respond to the changing market. Combined with the rising cost of energy, packaging, logistics, and so on, the question is whether this essential sector can still deliver what it has to deliver.

When Russia closed as a market in 2014, one of the solutions for Europe's fresh produce business was to expand into Asia. But now the development of overseas exports seems a much more challenging prospect. So how can EU produce exporters continue to grow their share of those markets, which are further away? Is that still possible?

PB: Everything is possible, but today we have to understand that we are in the process of deglobalisation. That is something that maybe is relatively new. With Farm to Fork and Covid, we have got more used to consuming local product. But we have to look as a sector at all the different opportunities on the fresh and processed market, on domestic markets, the intra-EU market, and the market outside as a buffer. We should not forget that 95 per cent of consumers are outside the European Union. What we have to learn from the Russian embargo is we cannot depend so much on one market, which represented two million tonnes. After the embargo, there has been a crisis in Nigeria, a crisis in Belarus, another issue with Ukraine and what it means in terms of logistics to reach Kazakhstan or Mongolia. Of course, when looking at Asia or Latin America, these require good control of logistics and the right product for the market. It's also important that we address all aspects of SPS [sanitary and phytosanitary] rules. There are a lot of countries that are very keen to export to Europe, but sometimes when they want to import product from Europe they forget to stick to the SPS legislation, to the Trade Facilitation Agreement, which requires speedy negotiation,

non-costly procedures and transparency. Sometimes it is not respected. The process will go on, and there are still a lot of efforts made to be present worldwide. We have a lot to offer from the EU and I'm sure that there will still be significant volume [exported].

You mentioned Ukraine. It's more or less one year since Russia invaded Ukraine. What do you see happening in the next year or two? How can the trade overcome this period of difficulty?

PB: In terms of export to Ukraine, I think the volumes were relatively limited. But we have to look at the bigger picture. Ukraine and all the region there represented imports of 7m tonnes of products, including what went to Russia and to Kazakhstan. I think there is a lot of repositioning needed and this is a process which impacts not only on the EU but also maybe on Southern Hemisphere countries, or other countries in the EU neighbourhood like Moldova and Serbia, which also deliver there. The cards have been redealt differently, of course, and it will be important to observe the effective impact of this. In Europe, we were also concerned about possible re-routing, which has not really happened so far. I think everyone is taking their own responsibility to find the solution to this very awkward and unimaginable situation.



"We have to understand that we are in the process of deglobalisation. With Farm to Fork and Covid, we have got more used to consuming local product"

You mentioned sustainability as well. One of the big headaches for fruit and vegetable companies seems to be a need to become environmentally sustainable in the longer term without sacrificing their short-term economic viability. What can they do to achieve both of those goals, if possible?

PB: When you talk about sustainability, there are three pillars: the economic, the environmental, and the social. We need to find the right balance. In terms of environmental sustainability, fresh produce has been one of the pioneer sectors. Twenty years ago, GlobalGAP certification pushed the sector into additional requirements based on already relatively strict EU legislation. So we are already on the way to environmental sustainability. What we still have to do is improve our accountability. At Freshfel, we have started an environmental footprint process, because it's important to be accountable and transparent. We are good in all areas like water footprint and pesticide footprint, but it is important we continue the journey and this probably still requires some investment. We have to be concerned that today we see a lot of pressure from rising cost and maybe some unrealistic targets set in the Farm to Fork agenda. How can we reach the Green Deal's objective, if the companies' accounts are in the red? It's a difficult balance, but the sector will definitely look for solutions and I'm sure we'll achieve it. We have the right product, we have an essential product, and we are part of the solution.

Packaging is an area where economic and environmental sustainability seem to contradict each other. France is doing away with single-use packaging, but some argue this creates more food waste and does not solve the problem. How do you view the situation?

PB: What is happening in packaging is a major danger for the functioning of the single market. If each country sets its own rules, targets and labels to demonstrate that you are compliant with its recycling requirements, that's a big issue. The question, of course, is one of cost. If you have to manage stock for different markets, without always knowing its final destination, it creates a lot of pressure. The new French legislation has been challenged. Again, our sector has probably been chosen as a test product to move faster than others. We are supposed to phase out plastic by 2026, when other sectors can continue up to 2040. Why are fruit and vegetables always targeted so much? As you say, packaging is a way to transport the product, but it's also a means to avoid food waste, secure food safety, avoid contamination, and maintain quality. In terms of consumer convenience, what is the impact if everything has to be sold loose? It will change purchasing habits completely and be very detrimental for the sector. We need one legislation for one Europe. Packaging creates value and differentiates our products from others in the food sector. I think the policy has to be coherent.

The cost of living crisis has already had a big impact in Europe's consumer markets. And some would argue that the perceived value of fresh produce is under more threat than ever before. Why do you think that's happening? And how do you think this devaluation can be reversed?

PB: We have a lot of pressure in the sector. But we have to understand that consumer's purchasing power is being affected, and maybe we have a question of image that we need to address. Fruit and vegetables are unfairly perceived as being expensive. They are not expensive. We are much cheaper than any other food product. On top of that, we have fantastic health benefits. Don't forget the cost of our eating habits. For every euro you spend on food in Europe, you need two euros to rectify the costs of unhealthy eating habits. The food market in Europe is about €3 trillion. So that means we spend probably €6 trillion in social security to address the consequences of unhealthy eating habits. We need to position our products, convince the consumer that in a time of crisis it's good to maintain a healthy diet, and to make sure that they understand that eating a healthy diet is something which does not cost that much. You can get five servings a day with less than two euros.

That's an incredible imbalance between the amount spent on food and on healthcare to rectify problems caused by poor diet. How can companies in our industry do more to convince consumers that they should be eating healthier foods including fruit and vegetables?

PB: We need to convince our politicians that, whenever they have a strategy – like Farm to Fork's move to a healthy diet, or the EU beating cancer plan – that this is accompanied by the right policy environment. In the sector, I think we must continue to adapt the offer to the evolving tastes of different categories of consumer. Young, old, millennials, vegans, flexitarians – there is not one category of consumer. There are differences across the EU as well. We have to adapt to that, and we have to continue to run promotions, which we do less than our competitors in other food sectors. We can be assured that we have a product which is really convenient, tasty and healthy. We just need to make consumers aware of this and convert that awareness into concrete action. ●



4

CLIMATE CHANGE

**Katelyn Jones,
BayWa Global Produce**



One major challenge for fresh produce companies right now is to grow fruit in hotter climates. T&G Global, part of BayWa, is one Fruit Logistica exhibitor that has risen to that challenge. It recently set up the Hot Climate Programme, a project which aims to develop climate resistant varieties, working with scientists in New Zealand and Spain. Following a recent successful trial in Catalonia, it can now grow apples in extreme Mediterranean heat. Here, Katelyn Jones, business development officer and managing director at BayWa Global Produce, explains how the project creates new opportunities to grow.

Let's start with this question of sustainable development. Given so many challenges over the past year from supply chain disruptions, in particular soaring cost inflation, what priority do sustainability and innovation have at BayWa Global Produce?

Katelyn Jones: You know, regardless of the market conditions, we are committed to continue investing in our sustainability targets. So in fact, we've just committed to the Science Based Targets initiative, which means we will set a robust emissions reduction target to align with the 1.5°C campaign. Additionally, we continue to look for sustainable innovations, which is one of our key investment pillars, along with varietal development growing and investing in global markets.

So what does that mean? What kind of sustainable innovations?

KJ: We do this in multiple ways. For example, we work with startups to help find solutions for the whole BayWa Global Produce group in areas like crop forecasting, smart orcharding and shelf-life extension. We also are lucky to be part of the wider BayWa group. So we work with our sister company BayWa RE on sustainable growing technologies like Agri-PV. And finally, of course, we are proud to showcase what's happening within our wider BGP family. For example, Worldwide Fruit in the UK has been engaged in a water stewardship project in South Africa, which they won an award for this year. BayWa Obst in Germany has been working on a project to measure the total carbon footprint in one kilo of apples. And finally, one of the most exciting developments is from VentureFruit, who are bringing innovations in new varieties out of the Hot Climate Programme.

Now, some people will have heard of the Hot Climate Programme. But for those that have not, what is it and what has it achieved so far?

KJ: The Hot Climate Programme was initiated back in 2002. It's a global collaboration between Plant & Food Research in New Zealand, the Institute for Agri Food Research and Technology in Catalonia, Fruit Futur, and VentureFruit, our subsidiary. Its aim is to breed cultivars that are more tolerant and robust in the face of a changing climate. Currently, we have over 30 partners globally on board, both in the Northern and Southern Hemispheres, which is testament to the trust in the programme and the increasing need for climate-adapted varieties. If the past few years have shown us anything, it's that growers increasingly face real challenges. And some of those challenges we hope we can solve through these varieties.

One challenge is to cope with higher temperatures, and VentureFruit recently unveiled some very positive results from Catalonia in Spain. What breakthroughs have happened there?

KJ: Absolutely. I actually had the pleasure of attending the recent field days in Catalonia. We had representatives from around 13 countries and 30 different fresh produce companies, and it was fascinating to try all of the varieties. Not only are they robust, but actually they have improved packout rates and more attractive harvest dates. So, for example, being a little bit earlier or a little bit later depending on the region, and of course outstanding taste. A number of varieties are really close to market. If you think about the challenges posed by adverse weather conditions for traditional varieties like Gala and Fuji, a significant portion of the apple crop is likely to be under threat in the future. Advanced varieties from the Hot Climate Programme are going to be really key in securing future production.

How do you think these products will be sold and branded? They're grown in 45 degree heat. Do you think that changes the way they might be marketed?

KJ: The thing that surprised me is how massive the potential is for these varieties. You might think they're only suitable for super hot climates, but the test results we've had from all of our test partners and many different regions – including climates that aren't super hot – have been really fantastic. That speaks to the wide range that we have. It remains to be seen, but I think the potential is massive.



"If you think about the challenges posed by adverse weather for traditional varieties, a significant portion of the apple crop is likely to be under threat in the future"

Is it just apples? BayWa has a huge portfolio of products across its different companies. Could this be a potential source of new innovation for other fruits as well?

KJ: The focus of the programme right now is apples and pears. There are some really exciting pear varieties coming through. In general, there is potential for other climate-resilient varieties, specifically in tree crops, because it's such a long investment and testing cycle, and so it's really important to get those varieties right. For now, we focus on apples and pears, but in the future we should definitely look at other crops as well.

When can we expect this programme's fruit to be sold in the market for the first time?

KJ: We have one commercial variety, HOT84A1, which has been released and plantings are underway. So hopefully, we won't have to wait too long before the apples will be on the market. HOT84A1 has performed really well both at grower and consumer evaluation level, and there will be a special announcement at Fruit Logistica in Berlin. ●



5

ARTIFICIAL INTELLIGENCE

**Elad Mardix, Clarifruit
& Amir Weitmann,
Champel Capital**



Every part of the fresh produce value chain is represented in Berlin at Fruit Logistica, and this includes quality control, a vital link in that chain. Take Israeli company Clarifruit, for example, which has developed what it claims is the world's first AI-powered, real-time quality control software for the fresh produce business. The platform uses advanced computer vision technology to automate inspections and measure things like colour, size and defects. In doing so, it promises to cut food waste and boost sales. Investors are excited too – Clarifruit recently attracted a US\$12m investment to continue its development. For more on this exciting venture, we spoke to Elad Mardix, CEO and co-founder of Clarifruit, and Amir Weitmann of Champel Capital.

Elad, can you tell us how the Clarifruit system works? What problem does it seek to address?

Elad Mardix: Clarifruit is the first platform in the world to use quality control software designed exclusively for the fresh produce supply chain. Our software leverages computer vision technology to automate the way quality is evaluated across that chain. If you think about the manual QC process that takes place today, people still use size rings and callipers and colour palettes to evaluate all kinds of attributes as part of the QC process. Then they put it on a piece of paper or in a spreadsheet. We bring the 21st century into this industry. By using AI technology, we're automating it and making the QC process objective and consistent wherever you are in the field, in the packing hub, or the distribution centre.

Now, a lot has been said about artificial intelligence and its application in the fresh produce business over the last few years. What makes the use of this software in Clarifruit's quality control platform so unique?

EM: Great question. I think much of the secret sauce that we've been able to build in our platform relates to the ease of use of our application – which by the way, operates on any smartphone device released in the last four and a half years. This makes it accessible and usable by the inspector. We already power the QC for some of the leading brands in the world: Dole Sunshine in Asia, Sunkist in the US, SanLucar in Europe. They're using our application in the field and in the packhouse. I think the fact that we've been able to build an AI machine that can operate in different environments enables our customers to have a great user experience.

Amir, your company Champel Capital clearly sees something it likes in Clarifruit. In November 2022, it contributed to a US\$12m capital investment in the company to take it forward. What is it that you have identified in Clarifruit that you particularly see as having excellent potential?

Amir Weitmann: We think that it is utterly unacceptable to carry on with the level of waste that we see in this completely inefficient supply chain for fruit and vegetables. As everybody knows, around 45 per cent of fruits and vegetables are wasted between the grower and the retailer. This is not something we can carry on. We have to make our supply chains more efficient and more robust. To carry on with this level of inefficiency means we are all poorer and puts needless strain on the planet's environment and the climate, because of course it means that we have to grow an unnecessarily large amount of fruits and vegetables just to reach the desired amount. By simply cutting down on waste, we can make everybody wealthier, with a disproportionate impact on the

poorer strata of society. And of course, we would have to use fewer resources to grow all these fruits and vegetables, which means less land, less water, less energy, etc. The result for the planet is quite clear to all of us.

Clearly investors are looking to invest in things which are more sustainable. Elad, given the size and scale of that global food waste challenge, how much of that problem can be solved by your software alone?

EM: Amir mentioned the 45 per cent waste that exists in the supply chain, and there is one common denominator, which is what the industry actually defines as quality mismatch. The seller doesn't get the price that they want, the buyer doesn't get the quality they expect. We believe there should not be a quality mismatch, because for every quality of supply there should be a buyer. It may not be a high-end retailer, it may be at the lower end, it may be a juice processing company. But if everyone speaks the same language and the inspection process is objective and consistent, with real-time information, we can mitigate significantly the amount of quality mismatch. That's really the problem we are going after. We and Dole Sunshine announced publicly that they are targeting a 10 per cent reduction in waste. We believe somewhere between 10 per cent and 24 per cent of waste in the supply chain could be eliminated by automating the way companies evaluate the quality.



"The only way significantly to reduce the amount of quality mismatch that takes place in the supply chain is to standardise the way quality is evaluated"

Convincing different stakeholders across different parts of the industry to buy into the same technology is not always easy, and we've seen similar projects go by the wayside. What kind of strategy are you going to adopt to make sure that your software does achieve that goal and that it does become as close to a universal tool as it can?

EM: Firstly, I think we have to convey a clear ROI proposition for every customer on a standalone basis. When Dole Diversified adopted our solution, they wanted to make sure that the ROI on their business was going to be clear within a six month period. And our AI technology and the standardisation in our big data platform enabled that on a standalone basis. Secondly, we believe that the only way significantly to reduce the amount of quality mismatch that is taking place across the entire supply chain is by standardising the way quality is evaluated. It can start with Bayer in seed development, continue at the marketing company level, and end with the big retailers. All of them are doing fresh produce QC today on a sample basis. They just do it the same way as they've done it in 1950. We're going to standardise it by bringing AI technology to the market, so everyone speaks the same language.

Amir, that must be very encouraging for you to know that your investment is going into a technology which has so much potential to have an impact in lots of different parts of the fresh produce supply chain. The investment that you've put in, what does that capital injection enable Clarifruit to do now?

AW: We are an impact fund. But to have impact, you need to have scale. If you do something very nice but with a very low impact, then what's the point? So we are investing money because we have identified Clarifruit as the leading technology in the world in this critical field. We believe it is developing the tools that will allow it, certainly in the next couple of years, to scale up its activity and become a leading global player in this industry, with very significant revenues.

Elad, we will see you in Berlin for Fruit Logistica. What do you hope to achieve there?

EM: Fruit Logistica is the largest industry exhibition in our supply chain and we will have our own stand. I expect to have a very intimate networking opportunity – not just with all of my customers, but more importantly with a lot of new prospects. I think the unique thing about Fruit Logistica is that it brings a lot of C-level attendees. The advantage from my perspective is that I can meet all of the decisionmakers in one place in a few days, which significantly shortens my sales cycle. That's honestly the biggest benefit from my perspective. We're going to take advantage of this year's Fruit Logistica by launching what we believe is going to be the breakthrough technology for the industry. With our computer vision technology, so far we have automated the identification of external fresh produce attributes, like size and colour. We're going to show the world for the first time how AI can actually analyse defects automatically as well. We're going to start with citrus. And I think a lot of players will find it extremely interesting. Because if we can automate the defects on top of the external attributes, that means that the entire inspection process can now be objective and consistent. That's going to be actually the first global launch of this demonstration in February. ●



6

AUTOMATION

**Mario Schäfer,
Organifarms**



Vertical farming and robotics have created plenty of new opportunities for fresh produce companies across the world. And as labour supply becomes more difficult to find, those technologies are going to become even more crucial. To find out more, we spoke to Mario Schäfer, chief sales officer at indoor farming specialist Organifarms.

Mario, Organifarms is one of 20 startup companies that will take part in Fruit Logistica's Start-up Day on 10 of February. Can you tell us what the company will present to the world of fresh produce there in Berlin?

Mario Schäfer: We will present our harvesting robot Berry, which automates labour-intensive tasks, especially in strawberry production in greenhouses. This is a product designed to pick strawberries. It has image recognition software, it does quality control, it checks if the berries are ripe to be picked. It compares that to the market's current needs and to growers' preferences, and then picks the strawberries at the stem and puts them into the pallet. No bruises occur during the process, and it's ready for the customer. Currently, this is our only product, but we plan to diversify our product range in future into other crops as well.

Where in the world is this Berry robot being used already?

MS: We have done quite a lot of trials and intensive testing in Germany and in the Netherlands. And we will deliver the first units to customers in the Netherlands, Germany and the UK during the next year.

And when you run those trials, are we talking about one robot trialled on its own? Or do you install a series of robots?

MS: So far, we did trials with one machine so that we make sure that development speed is high, and we can improve quite quickly. In the next year, the first customers will have one machine at the beginning, and then that will increase to become a fleet of robots per customer.

How much demand do you see for robot farming systems in the fruit business? What do you think is driving that demand?

MS: We see quite big demand, rising every year. In 2018, 90 per cent of German strawberry growers claimed they had a lack of labour. So there is quite an intensive problem that we are trying to solve. We plan to fill the gap in strawberry harvesting labour. There is quite a good opportunity for us to get into the market, and also in other crops beside the fruit business, there is the same problem. So we can easily grow.

A lot has been said about a lack of human workers. Do you think that's going to continue? Is that something that you see as a push towards robotic systems in future?

MS: Absolutely. People prefer to work in jobs that don't require them to be outside and low on the ground all the time. So it will not get easier to find fruit pickers.

Do you see any big changes to the commercial model for fruit, if we head towards more automation? What impact does this have on growers?

MS: We always try to keep the impact on the grower as low as possible. So Berry is intended to be used in the greenhouse to pick strawberries in the same way that a person would do. The grower can tell the robot what to do, it will fulfil the job and stick to the task. So we don't see any change in that field. But what we recognise is that the seasonality of strawberries decreases every year. There are more and more varieties on the market that can be cultivated over a long period of time, which makes sure that also there are fewer peaks that usually lead to extreme labour demand. And there is demand in the market for a longer period of the year. This is always good for robotics, because this makes it more attractive.



"We plan to fill the gap in strawberry harvesting labour. There is quite a good opportunity for us to get into the market, and also in other crops"

I see, because they can be used throughout the year and not just in a particular period, of course. Vertical farming and automated production centres have attracted a lot of investment in the last few years. How far do you think this kind of technology can take the fruit and veg business?

MS: Currently we see some consolidation in the vertical farming business. Some systems will win, some will fail. We see this as an opportunity to use robots because they have some more advantages compared with their use in a greenhouse, especially if you're looking at hygienic security. We are not sure which system is the best to integrate with, but we are open to opportunities in the future.

What is next for Organifarms itself? You mentioned berries as the first product you're involved with, but will there be new products around the corner? And will there be new types of robot arm around the corner? What new avenues will you explore next?

MS: Well, so as I mentioned, we start with strawberries. This also has its origins in vertical farming because we actually started the company with the focus on that area, and then evolved for greenhouses to get into the market in the first place. We are also looking at the vegetable industry and we see a great opportunity in tomatoes and also some other crops that have pretty similar infrastructural requirements in terms of the hardware involved. As we have quite modular software, it's not that big a problem for us to adapt the system. ●



7

BIG DATA

**Johannes Röhrenbach,
Mavuno Technologies**



Every year, Fruit Logistica puts the spotlight on new and innovative technologies that have the power to make the fresh produce business grow. Agritech startup Mavuno Technologies is one of several innovative companies that will take part in the Fruit Logistica Start-up Day on 10 February 2023. Mavuno uses satellite imagery and machine learning to boost yields and income for African smallholder farmers. Here, CEO and co-founder Johannes Röhrenbach talks about the power and potential of this new technology.

Johannes, let's start by finding out a bit about Mavuno Technologies. When did the company begin and what does it do?

Johannes Röhrenbach: Mavuno has been working since March 2021, so almost two years. We started as a team of three brothers with complementary backgrounds. The story started with our technical co-founder Jakob exploring Earth-observation technologies for use in agriculture. We saw its enormous potential and we believe it's a technology that will revolutionise agriculture across the entire world in the coming decade. At the same time, our other brother Lukas was based in Tanzania in the heart of east Africa's cashew nut production. Like millions of other African smallholder farmers, the thousands of farmers around him all have the same problem – very low yields. That's because they have no access to financing or farm inputs, so diseases destroy their crops. We saw this enormous problem and saw a technological solution. So we started Mavuno.

What does that technology do and how does this help?

JR: We take open-source satellite images from the European Space Agency's Copernicus programme. Then we run them through our machine learning technology. We have several models in place that can detect specific crop types. We can see individual cashew nut trees, then calculate the biomass of these trees and other parameters. And from there, we can predict the harvest yields, and also the farm input demands of every farmer. That's because we have the geofence of the farm. With this data, we basically know how much a farm can produce, and also how much you need in terms of inputs. So we make these farmers investable. That's the core point. The farmers get financing from us in the form of farm inputs that we bring to the fields. In return, the system doubles their harvest yields.

What benefit does the technology bring them? What does it enable them to do that they could not do previously?

JR: Without Mavuno, the farmers are very poor and cannot afford any farm inputs to fight diseases, which destroy their yield. Our service offering to the farmers is a subscription. As part of the subscription they get these farm inputs, but the advantage is they can pay later. They can consume the services first, double their yield, and then at the end of the year when they have doubled their income, they pay the fee.

So you give them tools and expertise in advance and then you also help them with the payment and the credit that they need by providing a credit system for bulk purchase of crop protection inputs. Is that correct? How have you managed to create that system and put it into practice?

JR: Yes, we provide the farmers with the financing, and in order to do that we need to score their creditworthiness by using the technology. So we digitise the farms – we know where the farms are, and we know what they produce thanks to our machine learning models. When we know how creditworthy a farmer is, we store this data as a self-sovereign credit record on a decentralised lending protocol. Via this platform, external investors can then invest in these farmers. This is how we make them investable and how we channel funding to the farmers that they then consume as part of our subscription.

One of the big challenges for producers and other stakeholders in lots of food businesses is cost and especially cost inflation. Are you concerned that startups like your own will find it more and more difficult to introduce these technologies, when the appetite for new investment generally is under such huge pressure?

JR: It's a fair point. But in our case, we see that rather as an opportunity, because we are not selling to customers who are buying technology from us. We are selling a service to customers who would not have the money to afford the service anyway. We create value for our customers so they can afford our service. The farmers have no money anyway, regardless of the global market situation, so they don't have increased costs – they have no cost, because they don't have any money. So we need to create this additional value in order to sell the service.



"With this data, we basically know how much a farm can produce, and also how much you need in terms of inputs. So we make these farmers investable"

Mavuno will exhibit at Fruit Logistica 2023 in Berlin and obviously, that opens up some potential opportunities for you to connect with people in the fresh produce business. When you think about the big world of fruit and vegetables, what do you see as the next potential steps for Mavuno Technologies?

JR: We use events like Fruit Logistica to meet people and, like every startup, we look for investors who can accelerate our growth. From a strategic side, one important category of stakeholders we want to meet is farm input producers and vendors. That's because what we do is we build a new market in Africa, we create a new customer segment for all these farmers. So this kind of supplier can sell into this market via our platform. We would like to use Fruit Logistica to meet stakeholders in this area and start to discuss potential strategic opportunities. ●



8

SUPPLY & DEMAND

**Rory Byrne,
Dole**



When it comes to fresh produce companies, there is no bigger company present at Fruit Logistica in Berlin than Dole, the world's largest fruit and veg business. In this, our final interview, the group's CEO Rory Byrne talks about the future for fresh produce suppliers in what is a very challenging marketplace, as well as its own plan to boost demand for a growing range of branded products.

Rory, the recent merger of Total Produce and Dole Food Company to form Dole plc was a major milestone for your business, which now stands as the world's largest fresh produce company. Can you tell us about the progress that has been made in taking that merger from an initial transaction to a commercial reality?

Rory Byrne: In terms of the world fresh produce industry, this was obviously a hugely significant milestone to create what has now become the world's largest fresh produce provider. We also hope it will become the best and the most efficient fresh fruit provider, because certainly the legacy companies have hugely complementary assets. Dole, while it has a strong market presence, also has some fantastic production assets. And Total Produce, while it has a strong focus on sourcing and production, has some great service and marketing capability in both Europe and North America. One of the more pleasing aspects is the reaction from all our people across the group. Everybody has been phenomenally enthusiastic and understanding. That gives you a great platform to build on when you have the full commitment of the great group of people in the organisation.

You mentioned the various different organisations worldwide that belonged to Dole Food and Total Produce. Can you tell us more about how these different pieces can fit together?

RB: One of the key steps we have taken is to rebrand the Total group under the Dole logo, trademark and label. The Dole brand is one of the leading, if not the leading, brand in the fresh produce industry. So that is the first thing we have done. We brought together four divisions: our fresh fruit division, which is the platform for bananas and pineapples, with two diversified divisions encompassing our non-banana and pineapple businesses in both Europe and North America; and then we have a vegetable business primarily in North America. [Dole Fresh Vegetables was subsequently sold to FreshExpress in late January 2023.] Obviously, we have two businesses that separately function very well. So it's not our objective to fix something that's not broken, but to bring together and maximise the opportunity that existed with both companies. We have made a lot of steady, gradual progress. Over the course of 2022, with the complicated world backdrop on the day-to-day activities, we had to make sure that everything worked as well as it could do in the context of those world challenges. So, good progress, a lot done, and definitely more to do. And more opportunities to take advantage of in the future.

You've alluded there to a particularly challenging 12 months for the fresh produce industry. What important changes have you seen in the past year? And what do they mean for the group?

RB: The last year has been characterised by a lot of complexity around supply chain costs and availability. Inflation had a huge impact on the cost of fresh fruit, along with the cost of many other things across pretty much every single economy. While it is a very complex backdrop, our scale

gives us a particular advantage in terms of managing our way through that. The fresh produce industry in general has been – for want of a better description – a tough industry to operate in. You have to be very focused on cost. You have to have skilled operational people. You have to have a huge attention to detail. Across our organisation, we have all of those characteristics, and by sticking to those basic principles and focusing on cost, efficiency, maximising the benefits of scale, it positions us well. Last year, we managed our way through all of the challenges thrown at us in a very positive and good way. We hope as 2023 evolves that we can continue to manage and grow and develop, despite the complications that are out there at the moment.

Ahead of the merger, there were a couple of major opportunities that you spoke about as a group. The first of these was to diversify your portfolio in what you described as mature categories, like bananas and pineapples, and indeed vegetables. What kind of diversification were you talking about there? And when do you expect to achieve that goal?

RB: Well, we have already started to build on our core categories: bananas and pineapples are obviously very, very strong categories for the entire group, and we have some of the world's leading positions in both bananas and pineapples. Our objective here is to maximise the utilisation of our entire group – for example in Europe through our strong position in Iberia, Scandinavia, UK, Ireland and northern Europe – and make sure, whether it's service capability, ripening, distribution, or market access through customers, that we maximise our opportunities on a combined basis, utilising the fantastic production base that we've got in both bananas and pineapples. Obviously, we are not just focused on bananas and pineapples; we are also focused on a whole wide range of categories. We continue to work on those and we have made very good progress. We have achieved a lot and there is a lot more that we can achieve over the coming years.



"Last year was characterised by a lot of complexity around supply chain costs and availability. Inflation had a huge impact on the cost of fresh fruit"

You also identified new growth areas in products like berries, avocados and organics. And just recently, Dole established a new venture in South Africa for avocados, lychees and mangoes. In general, how will you capitalise on these new category opportunities and meet new demand? Do you need to invest in certain areas or simply develop the capability that you have already?

RB: We see good growth in berries and avocados and organics. They are three categories in which we already have a strong but probably somewhat fragmented position. So our big challenge is to coordinate the activities and positions that we have in those different segments. Certainly the new development in South Africa, to give us the service handling capability to export more

avocados, is part of that process. If you look at avocados for example, the consumption in Europe is significantly, materially behind the consumption per capita in North America. So we still see plenty of road for growth there. We have a strong position, whether it's legacy Dole in Chile, our El Parque joint venture in Chile and Peru, or Oppy sourcing out of Mexico and Eco farms in California. In Europe, we've been developing for a long time in the Canary Islands, and then latterly in mainland Spain and worldwide sourcing into our northern European. Plus we have enhanced our service capability for ready-to-eat ripening in our exotics business in Holland. We've done a lot of work in our different market segments. We work very closely with some of our big banana growers who have invested significantly in the avocado sector and we will provide our logistics and marketing capability to make sure that those investments provide the right returns for those growers as well. So, our objective is really taking this very strong platform we have for avocados and maximising the synergies that we've got within it. Berries are similar: we think there's a lot of growth opportunities there. Again, we've got a strong position in North America and the Dole Diversified business out of South America and Mexico; through Oppy particularly in the US, we have a strong position in blueberries and strawberries; and again, in the UK, and in Northern Europe, we have a strong very business. So again, it's a process of bringing together the strengths and it may mean in some cases that we will invest further – particularly in strengthening our production and sourcing capability and perhaps in the evolution of berry varieties.



"We have always worked with tight margins. We will continue to get our products into the marketplace as efficiently and cost-effectively as possible"

The merger means you now have this very international business. In some markets like Europe, as you mentioned, there are categories like avocados that have the potential to reach the same level of consumer demand as in North America. During the pandemic, a lot of people in the produce industry spoke about a new era of healthy eating and a chance for fresh fruit and vegetable marketers to connect with consumers on areas like health and nutrition. Do you agree that there is new demand which did not exist in the past?

RB: There is no doubt the pandemic focused everybody on the need to be healthy, and in particular eat healthier. Fresh produce hits the spot in terms of nutritional and other positive advantages. The challenge is to maintain that momentum post-pandemic. Younger people are very focused on healthier eating and that, for the long term, is a very positive sign. We are going to continue to work very closely with the industry on a generic basis to bring up the consumption of fresh fruit and vegetables. And we will build on some of the very strong work that Dole as a standalone company did to inspire and educate consumers, and to explain the nutritional values of fruit and veg. We think there is room for growth in maintaining the momentum of healthier eating post pandemic.

As you mentioned, Dole's global footprint means it can better cope with the current cost inflation. But it's certainly true that inflation in consumer markets is going to be a big challenge this year. How can you navigate a way through this crisis? It's going to be difficult, isn't it?

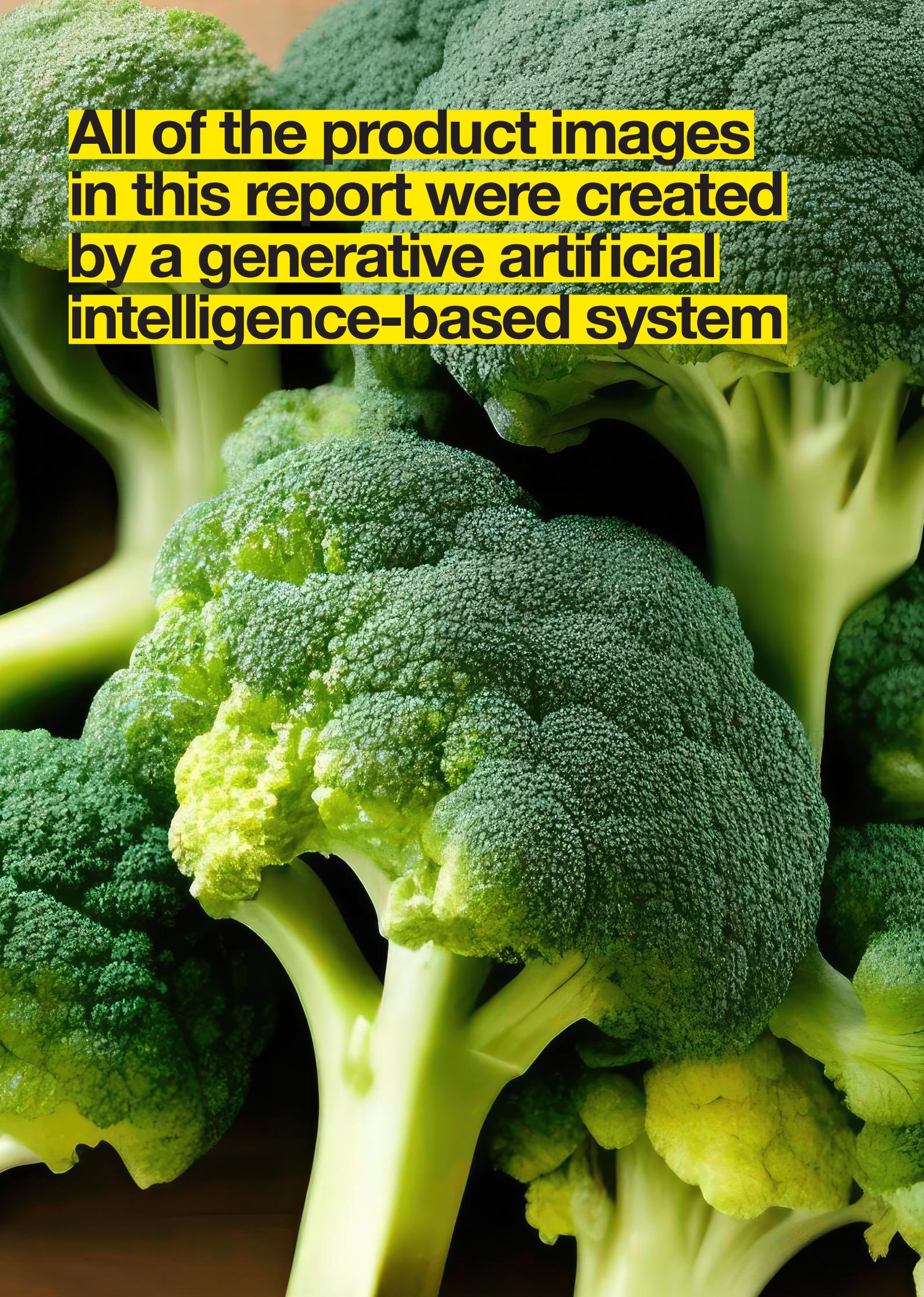
RB: There is no doubt that the backdrop is very, very difficult. Inflation is complex for consumers in particular and for everybody who participates in the supply chain. As I said earlier, our scale and size gives us the ability to be more efficient than a lot of the smaller players. We must make sure that we fully maximise the efficiencies that are possible from our scale. We have always worked with tight margins, we have always had a strong cost focus, and we will continue to do that and hopefully get our products into the marketplace as efficiently and cost-effectively as possible. Hopefully, in terms of discretionary spend, the consumer will appreciate the importance of healthier eating and not move away from consuming the historical levels of fruit and veg. The evidence today suggests that, even though prices in some categories have inevitably gone up because of those cost pressures, people still want to consume fruit and veg.

You mention efficiency and cost effectiveness. That's all bundled up with efforts to make the fresh produce supply that comes into different markets more environmentally friendly and sustainable in terms of ethics. Those green goals. Are they still achievable?

RB: Absolutely. We have a very strong internal focus on sustainability. In world terms, the mindset across all the major economies has moved on very significantly over the last few years. There is a really clear realisation that for the next generations of humanity, we need to have a very strong focus across every sector in terms of sustainability. In a practical way, you can see that with the evolution of electric cars and the number of those cars you see on the roads across the world, or the evolution in renewable energy technology – be it solar, wind, or waves. We ourselves have embraced renewable energy: we're using electric vehicles where we can for deliveries, in warehouses, and so on. That's a process that we are really strongly focused on to make sure we operate all aspects of our business in as sustainable way as possible. I think the momentum is there. The opportunity is for companies like us to embrace it, which we have done fully. And over time we will get there and hopefully meet the goals that have been set in terms of achieving a more sustainable world.

Dole will be present at Fruit Logistica 2023 in Berlin. What does the event mean to your business?

RB: First of all, it's a one-off opportunity every year to bring together the global Dole family. So it's a great chance to have an important group of our senior management in one place, in one location; an opportunity to understand firsthand what everybody is doing and spark some new opportunities. Also, it's a great opportunity to exchange views with our production partners and global customers, to interact with other industry players in areas of common interest, such as sustainability. Plus, we will showcase some of our new developments around Be Exotic and our new value-added range. ●



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**FRUIT
LOGISTICA**

Fruit Logistica is the world's leading trade fair for the fresh fruit and vegetable business. The event covers every single sector of that business and provides a complete picture of the latest innovations, products and services at every link in the international supply chain; it also offers superb networking and contact opportunities to the key decision-makers in every area of the industry.

www.fruitlogistica.com

FRUITNET

Fruitnet is the world's leading publisher and congress organiser for the global fresh fruit and vegetable business. As the only media provider that can deliver informed coverage of the entire industry, its aim is to help the fresh produce business to grow worldwide by providing useful information and insight via a range of media channels. Fruitnet is the official cooperation partner of Fruit Logistica and Asia Fruit Logistica.

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