



Six hot food and beverage topics that our clients are talking to us about right now.

Our take on what's making waves and why...



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Alex loves food, in all senses of the phrase. As well as being obsessed with cooking and eating food, he has worked with Innovia's food sector clients since he joined in 2011. His background in chemistry allows him to engage directly in food science problems, and his experience innovating in other industries like apparel and lubricants means he can spot when the challenges and solutions are applicable.

As Innovia's food sector lead, Alex thinks about the challenges facing the whole sector and about how Innovia is going to help its clients approach those challenges. It feels like the industry is facing a series of big challenges at the same time: a cost of living crisis, disruptions to supply chains, and changing attitudes about processed foods, to name but a few.

We believe Innovia is uniquely placed to help our clients tackle these important, uncertain, and fuzzy problems. Our technical fundamentals mean that our ideas are always scientifically plausible, and the nature of our work means we are comfortable working with uncertainty. In some cases, we have seen how other industries have faced a similar problem in the past.

If any of the topics resonate with you, get in touch!

A top-down view of six golden-brown sesame seed buns arranged on a dark, slightly worn baking tray. The buns are scattered across the frame, with some showing more sesame seeds than others. The background is dark and textured.

Six hot food and beverage topics that our clients are talking to us about right now.

WE KNOW WHAT YOU'RE THINKING: "NOT ANOTHER LISTICLE!" THIS ONE'S INTERESTING, WE PROMISE.

We work on innovation problems across the food and beverage industry, as well as many other industries, and we see patterns in the types of problem that our clients are facing. We've worked on all of the problems in this list. Maybe you recognise them, or maybe you hadn't thought about them before. Maybe you're surprised that we've left something out?

People ask us about these topics all the time, so we've just made a series of videos to share our knowledge and thinking. You can find them over on our Food Hub. Over time, we'll also flesh out the list below with full articles for each topic, so keep checking back. And if anything catches your eye, get in touch by emailing [Alex Massey \(apdm_foodsector@innoviatech.com\)](mailto:apdm_foodsector@innoviatech.com).

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Modelling and digital twins



Digitalisation and data science are revolutionising every industry that makes physical products. They can clearly provide huge value to food and beverage companies: Can you automatically adjust your process so you always produce products that are bang on spec? Can you shorten your R&D cycles by predicting how new recipes will work? Can you simulate your whole factory?

It would be an expensive mistake if your first step was to jump straight in and immediately start building a digital twin.

As with any model, the key is to understand what you want from the model and therefore the data you need to put into it...

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- To auto-adjust your process parameters, you need a good empirical model to correlate data from ingredients and early processing with data about the outputs. It helps to understand the underlying science enough to have an idea about what you need to measure.
 - To shorten your R&D cycles, you need all your data in one place so you can learn from your past experiments, and you need to have a solid basis of understanding – a conceptual model – so you can pick out which past experiments are most applicable.
 - And to simulate the whole factory, you need to understand the rates of every chemical reaction going on in your process. With food, this is simply not tractable... at least not yet.

Watch this space for a breakdown of the different types of model you could use (a model of models, as it were) and advice on when to deploy each one.



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Sustainable packaging



Everyone wants sustainable packaging. Consumers demand it, and brands want to provide it. But it's easier said than done for food and beverage products.

You first need to work out what "sustainable" actually means for your packaging. Does it mean reducing the carbon footprint of the packaging? Does it mean minimising food waste? Does it mean using less plastic? Does it mean making it recyclable, potentially using more plastic?

Then, you have to decide what performance you need from the packaging, in terms of barrier properties, weight, printability, and so on. Not what you want, not what you have today: what you genuinely need.

Only then can you think about material choice and pack design.

If you're interested in this, why not visit our Sustainability Hub and watch the video with Richard Andrews, where he starts to unpick these challenges.

Examples within the interview include:

- Designing materials for packaging by understanding the barrier properties required to ensure product quality.
- Engineering highly functional recyclable packaging for a food application.
- Communicating the benefits of a bio-sourced, biodegradable packaging material in a compelling way.



3

Formulation flexibility



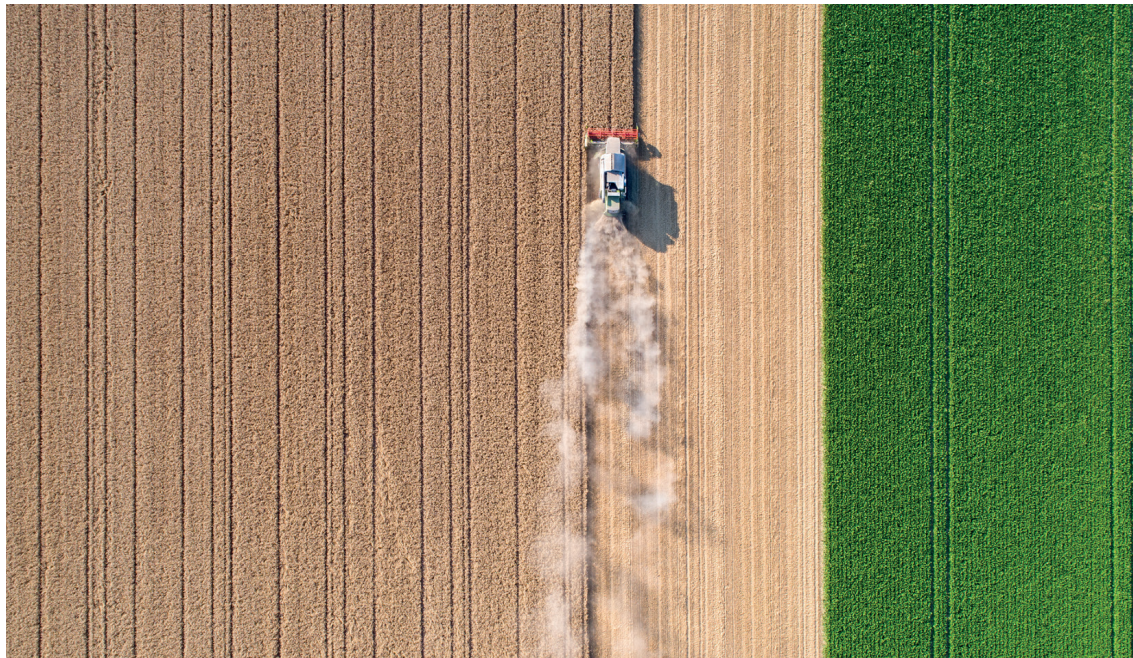
When we ask our clients about what keeps them awake at night, no matter what industry they are in, we hear one thing consistently; security of supply. It's getting harder and harder to get hold of raw materials, and the food industry is feeling the pinch more than most.

One way of becoming more resilient to supply issues is to develop flexible formulations, so you can change suppliers or even change ingredients without affecting the final product. But to do this, you need to understand exactly how the current ingredients behave in the processing for each of your products, and understand how that behaviour will change if you change the properties of the ingredients.

This isn't easy: in a lot of cases it has never been business-critical to understand this before. And you may hope to never have to use your flexible formulation. But if you view it as an insurance policy against having to slow your production line, it might be the right thing to do.

The key question to ask yourself is:

Can we afford not to do this?



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Precision fermentation



Fermentation in food has been around for millennia. So why is it a trending topic right now, and does your organisation need to care?

Precision fermentation is improving all the time, and can do things like:

- Creating flavours and textures using non-traditional ingredients – think vegan cheese.
- Improving the consistency of naturally derived ingredients, so processing is reliable and repeatable every time.
- Removing off-flavours from wholegrain healthier alternatives to your traditional ingredients.

It may well be that none of these specific examples are relevant to you right now. **But ask yourself – if one of your competitors does this first:**

- Do you risk losing market share to vegan or free-from alternatives?
- Do you risk being undercut by people who can use cheaper ingredients and bring them on spec using fermentation?
- Do you risk your label looking less clean by comparison if you still need additives to create flavour and texture?

If the answer to one of those questions worries you, you might want to start looking into fermentation.



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Nutrition and processing



Reducing fat, sugar, and salt isn't the only game in town any more. As nutrition science advances, food processing itself is in the crosshairs. So-called "ultra-processed food" (UPF) is generating a lot of column inches in scientific journals and increasingly in popular press. The NOVA classification system aims to classify foods based on their degree of industrial processing. Despite its faults, it's starting to cut through into popular consciousness.

But on the other hand, industrial processing isn't inherently bad. It's responsible for lowering the real-terms cost of food, and for ensuring that people don't die from food-borne disease. So there's a balance to strike somewhere.

If you are a food or beverage company that wants to do the right thing for your consumers, it's not obvious how to react. You have to understand the nutrition science, but that's not enough on its own. You also have to understand where consumer and regulatory opinion might go, and what that means for you as a business. Only then can you understand what it means for your products.

We suggest you start with two main questions:

1. Are any of our products at risk from changing attitudes or regulations around processing?
2. Is there a shared institutional understanding of what the consequences look like?



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Vegan or plant-based alternatives



More and more consumers are choosing to avoid foods made from animal products, for a host of reasons – ethical, environmental, religious, and more. Companies who can meet these needs while offering an enjoyable product can capture market share, develop unique IP, and contribute significantly to global sustainability targets. So why isn't everyone doing it?

It turns out that traditional animal-based products are both complicated and beloved. They have been developed over thousands of years, and they often exploit the unique and complicated properties of biomolecules – which are far more complicated than what's available synthetically.

And the stakes are high – these long-established foods have ties to culture, identity, and emotion, as well as subtle experiential tells that make mimicking them hard. People might know a creamy drink when they taste it, but describing the exact way the fluid behaves in their mouths and what's wrong with the alternatives is tricky.

This all makes developing plant-based alternatives a multifaceted problem, involving finding the important properties consumers value, understanding where they come from, and finding viable routes to reproduce them using non-animal materials. Ingredient suppliers are working hard to develop a palette of options, but combining these into genuinely satisfying alternatives is a step further: and few companies have a winning formulation for their knock-out product yet. It's still all to play for.

To make progress in this area, we suggest you:

- Start simple: cream cheese is easier than cheddar, and burgers are easier than steaks. You can use your learnings from simpler products to help you on more complex ones.
- Work closely with your consumers to find out what really matters to them. You may find that the hardest properties to mimic aren't the ones that your consumers care about.





Where do we go from here?

None of the topics above are mutually exclusive. You can tackle all of them at once, at different levels in your organisation. Some are much more controversial than others!

The topic that's most relevant to you will depend on the company you work for and your role within that company. We suggest you tell us about whatever is keeping you awake at night. It might be one of these topics, or it might be something else. We'd love to know!

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