

Press Release

Lübeck, 2 September 2019

Innovative Concepts to Feed a Growing Global Population

The BAADER Innovation Day ID#1 featured scientists and visionaries with ground-breaking ideas on the future of the food value chain.

As of July, there were more than 7.7 billion people in the world. By 2050, the global population is expected to grow to around 9.7 billion, according to the [UN World Population Prospects 2019](#). Each year, the number of people on the planet rises by 82 million. That is equivalent to the population of Germany. At the same time, sea levels are rising dramatically. How is it possible to guarantee food for this growing population, even though there is ever less space in which to live and an ever-decreasing amount of natural resources?

The BAADER Innovation Day ID#1, which was held on 29 August 2019 at the BAADER Technology Center in Lübeck, was dedicated to answering this question. And the event got under way with a brilliant keynote speech by Prof. David Hughes, widely known as Dr Food. He listed three problems for the global meat industry: the environment, health and animal welfare. This is one of the main reasons why even the latest UN climate report is demanding a change to human diets by calling on people to eat less meat. That said, the most consumed source of protein worldwide is not even meat, but fish and seafood (35%).

The biggest trend in the current diet certainly lies in plant-based fish alternatives, with "beyond meat" burgers currently receiving the most attention. Even the large fast-food chains are now serving meatless meals or meat substitutes, according to Dr Food. Insects are one of the most extraordinary alternative sources of protein and there are already major trials under way with mealworms and *Hermetia illucens*, the black soldier fly. Other trends presented by Dr Food included fake fish, Quorn, slaughter-free foods, Phuture Foods and laboratory-grown meat. Yet one trend unites all consumers: keeping in mind the well-being of the family and the planet and making more conscious decisions when buying food. Since there are a growing number of young people buying food in Europe who are well-off, technically minded, highly interested in future trends and active on social media, fast change is required. Everything has to be available quickly and immediately. Accordingly, production and distribution must evolve rapidly in order to be able to keep pace with this demand.

Speaker Jeffrey Davis from iSeaPartners asked the question 'What if?' What if it were possible to optimise all production processes by connecting all end devices and machines to the cloud? Then we could cut working costs as well as make better use of energy and raw materials and we would have a shorter link to the consumer while improving traceability and sustainability.

Then Davis presented technology that makes it possible to analyse the entire supply chain, re-evaluate existing studies, calculate all variables relating to production output and quality, provide microbial diagnostic results, produce future models using machine learning, draw up cost-benefit analyses and make efficiency forecasts for specific operational changes.

Concrete examples of how this is already working today include 'Farmcloud', a cloud-based platform that permits the analysis of data from a farm's individual production facilities in order to be able to make slight improvements. Another very interesting example is the 'Sea Smart Aqua Drone', which measures hourly data such as oxygen content, temperature and fish distribution within the cage and transfers it via a satellite/GSM connection. Equally fascinating are the remote-controlled trawl doors for individually controlling each wing of the door, making it possible to place the fish catching devices in the optimal position. In short, the entire food chain can be planned and organised more efficiently by digitalising the whole production and processing operation as well as the market and marketing activities, resulting in significant savings in terms of energy, money, waste and resources.

Wim de Laat from the Dutch company BioscienZ, which specialises in the development of new business models based on scientific insights, was the next speaker. He explained that fermentation processes have been used for a very long time in the production of food – we are all familiar with them from beer, wine, cheese and bread. De Laat talked about how researchers at the BioscienZ fermentation laboratory working on a state-funded programme have developed a new fermentation process that permits the production of high-quality meat substitute using local raw materials such as potatoes and sugar beet. The result is a product with outstanding nutritional properties, an extremely high protein content and very high production capacity per hectare, allowing the project to be scaled up to produce tonnes of the product starting from next year. Other innovative ideas for obtaining alternative protein sources – such as a plant-based chicken protein substitute – are needed at a time when the global population is exploding. Yet for all the criteria used for producing cheaper, better, healthier and more sustainable food, the number one nutritional criterion remains good taste.

Dr Matthias Moser is the managing director of Hydrosol from Ahrensburg, a company that improves the market success of food with innovative stabilising and texturizing systems. In a speech entitled 'From the Known to the Unknown', he critically reflected on how accustomed humans have become to eating (so much) meat. He subsequently talked about attractive alternatives to eating meat and fish as a bridge towards a plant-based future, also saying that it would remain important to work on the look, texture and taste of the food, because humans are creatures of habit who are both slow and reluctant to break with established behaviour patterns and habits. That is why the company in Ahrensburg continues to work hard to come up with creative, customer-focused and future-oriented systems for appetising, nutritional and healthy existing and future food.

The German Institute of Food Technologies (DIL) in Quakenbrück is dedicated to the transfer of findings from research into practice; it is the link between science and practice, so to speak. Representing the institute at the BAADER Innovation Day was Prof. Stefan Töpfl, who began by identifying the big trends in current food production – processing the food as little as possible, optimising processes and automating food production, which together save a great deal of time and energy, and developing new methods for obtaining protein. New techniques that cater to these trends include high-pressure processes and pulsed electric fields.

Prof. Töpfl explained the pulsed electric fields in greater detail – he was presented with the renowned Georg Carl Hahn Award for his research work in this area in 2009. This PEF technology can be used to permeabilise cell membranes. This process makes it possible, for instance to deactivate microorganisms at low temperatures, thereby extending the shelf life of food. The advantage it has over conventional pasteurisation is that the nutritional and functional properties as well as the freshness of the food remain largely intact. Furthermore, PEF can be used profitably with juice presses and extraction, drying and curing processes.

Thor Sigfusson, founder and chairman of Iceland Ocean Cluster – who has been closely associated with BAADER for decades, emphasising the importance of BAADER to fish processing in his native country – made the case for reducing the silos and establishing a better link between science and business. He posed the key question of how we can use innovation and collaboration to embolden industry to create less waste and more value from the available materials, citing a striking example: the global fish industry has thrown ten million tonnes of good fish back into the sea or onto waste disposal sites to date. He then revealed a completely new value pyramid for the fish, because remains previously considered to be of no use are actually ideal for producing cosmetics, animal feed, pharmaceutical goods, health products, etc. Even the

fish skin can be made into fish leather or used in the area of wound healing. In the past, each fish would generate approximately 14 to 16 euros, but that figure is now as high as 80 euros per fish thanks to the comprehensive use of its constituent parts. It is precisely this attitude of getting more out of the available resources – regardless of what kind of protein or product group is involved – that he would like to see increasingly rooted in everybody's minds when sourcing and processing food.

The final speech of this interesting innovation day was given by Feras Alsamawi, senior manager of digital innovation EMEA at Amazon Web Services. In good old Amazon style, he is putting the cart before the horse, because Amazon always starts radically from the customer and the customer experience (in keeping with its guiding principle 'customer obsession') and then works its way back to the separate components and disciplines that contribute to this customer success. In addition, Feras provided numerous insights into the successful US company with a convincing culture of innovation as its backbone.

BAADER concluded the day by extending its sincere thanks to all of the speakers. It became clear that it is by no means just about producing innovative machinery at the company. It is about food and feeding people. *'At BAADER, we are driven by our vision "Innovating Food Value Chains". Let us all work together to find solutions for feeding this growing world on a sustainable basis,'* summarises Dennis Lohmann, head of product management at BAADER.

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About BAADER

BAADER is the global partner on food processing solutions with 100 years' experience. We design and engineer innovative and holistic solutions that ensure intelligent, safe, efficient and sustainable food processing in all phases, from the handling of live and raw protein materials to the finished food products. Through our data capabilities, we use data to interpret and forecast along the entire food value chain. In close collaboration and partnership with our customers and partners we are taking further major steps toward greater efficiency, traceability, transparency, profitability, and sustainability. By sharing knowledge and data, together we can succeed in optimizing the food value chain in the long term.

To find out more about BAADER, please visit our website at www.baader.com.