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Meat Industry Association

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Changing proteins

The world of protein is changing … and fast. There is still hope for the red meat sector, and a window of between three and seven years to get organised, but no room for complacency. That's according to various speakers at the Ministry for Primary Industries' Food & Fibre Conference in Wellington last November.

The conference brought together speakers from the US and New Zealand to focus on the conference theme 'Innovation – from Vision to Action'.

Biotechnology venture capitalist Ryan Bethencourt, programme director and venture partner at three-year old IndieBio spoke to conference via Skype. He explained his reasons for investing in Memphis Meats, one of the growing number of alternative 'clean meat' protein companies.

He talked of the "Darwinian forces of entrepreneurship and capitalism that have been unleashed in Silicon Valley."

"This is the moment where molecular manufacturing starts to really happen at scale," the entrepreneur and scientist (not futurist) said.

It's old technology applied in a very innovative way and not only to plant material, but also bacteria, yeast and animal cells, enabling new products from brewed meat to cultured spider silk, he said.

"Two years ago, we had the idea where we could accelerate deep technology and science … now we know we can turn scientists into entrepreneurs."

"We are already here with brewed meat," he said, pointing to IndieBio's investment in Memphis Meats. The company has already manufactured synthetic pork, beef, chicken and duck and is now facing, really, just a scaling problem."

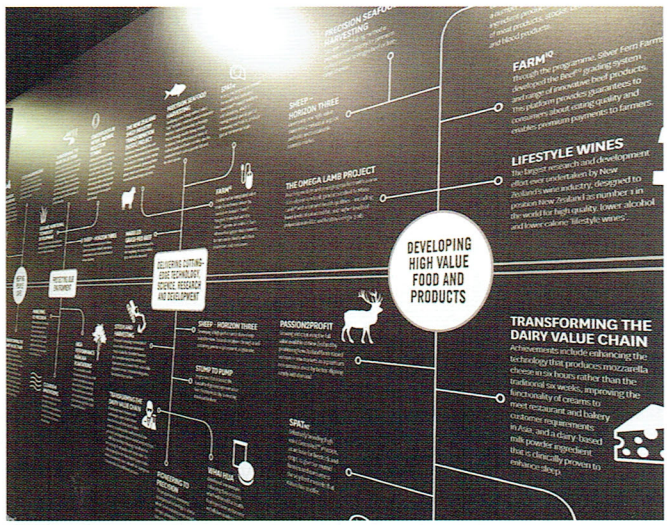
What is needed are bigger bioreactors, cost reduction and the removal of some of the foetal bovine growth serum, which he believes is "an easily solvable technological matter."

Silicon Valley venture capitalists are now racing against others in other markets in the world, like China, Korea and India.

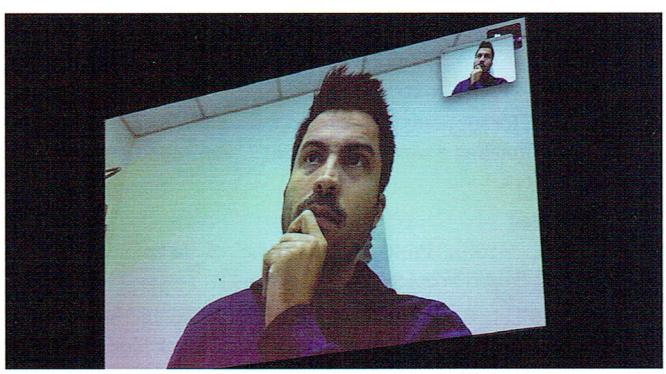
"You are about to see massive competition and a race to market," he said, pointing to what he says are conservative estimates predicting that in three to five years, cultured meat will be widely available in market.

He believes New Zealand, like Israel, has the potential to become a start-up nation for biotech and food and fibre, creating IP that can be scaled globally. His advice is for New Zealand is to "get really aggressive" and start working with and funding New Zealand companies and thinking globally.

Dr Mark Post and his team at Wageningen University produced the first meat grown in a petri-dish from animal cells over five years ago. Post's first cultured meat burger cost $470,000 (US$325,000). The first Memphis Meats meatball was produced in February 2016 and costs have dropped to around $4,340 (US$3,000) each meatball.



The red meat sector's five PGP programmes – the Omega Lamb Project, Food Plus, the Red Meat Profit Partnership, Marbled Beef, Farm IQ and the deer industry's Passion2 Profit – were all represented in the Primary Growth Partnership's Expo that ran alongside the Food & Fibre conference



New-technology-enabled venture capitalist Ryan Bethencourt who addressed the conference via Skype expects the first cultured meat to hit retail shelves in three to five years

"We're chasing the cost-curve down," Bethencourt said. Costs will drop further as production is scaled up.

Other start-ups supported by IndieBio include Geltor, which is producing collagen, a high-value animal-free alternative for use in things like cosmetics. Another is Vitrolabs, which has already grown small pieces of cow, alligator and ostrich leather in the lab.

Bethencourt says the other biggest roadblocks for the disruptive newcomers are scale and capital expenditure, which can run into the hundreds of millions. This is why big investors such as himself and Microsoft founder Bill Gates are involved.

Aside from world-changing motives, making attractive returns for investors adds a further imperative for the companies to succeed.

The main pushback to genetically modified organisms (GMOs) is in European countries, but the technology is more favourably viewed in some of the larger emerging markets in Latin America, Asia and Africa, especially when there are applications to improve yields and to counter new diseases and infections that are wiping out crops, he says.

"Everyone else wants high quality nutritious food at a price they can afford."

Understandably, many in New Zealand's red meat sector are monitoring the growth of the alternative protein producers, most of which are not yet even three years old. B+LNZ is currently undertaking a study to understand the impact they already are having, and might have, on New Zealand's red meat sector – sorting "the hype" from fact, as B+LNZ chief executive Sam McIvor has said.

Researching the niche

MPI director of sector policy Jarred Mair reported to the conference on recent consumer research, commissioned by MPI as part of a broader partnership with Plant and Food. MPI has been developing a new Interest Index tool to predict future consumption, using consumers' online activities, which has been proven accurate in tests over a 10-year period.

Ironically, plant-based protein alternatives, such as the Impossible Burger and Beyond Meat, have helped show New Zealand the way to market niches, he says.

The start-ups are targeting under 35-year-olds: "the consumer of tomorrow". Mair said the research has shown 72% of consumers aged between 15-20 years are prepared to take on these products and try them. In the broader age-groups, such as those in the workforce and starting families, 75% are willing to pay for sustainable products. So the companies have positioned their products as sustainable and started to sell, he explains.

The technology also solves the problem of feeding the world's predicted nine billion population by 2050. In theory, they could feed all of the US out of just four states, he says.

The value of meat distributed in the US in 2016 was around $43.5 billion (US$30 billion) a year. In comparison, the alternative meat market was around $1 billion (US$700 million). However, while the over-arching beef and veal market was growing at 1%, the alternative meat market was growing at 6-7%.

"While we can see interest and change is small, it is growing and growing quickly," said Mair. The research found that the start-ups are very good at getting their message across and they have also picked the retail chains that would support their story. "They were looking for the consumers that were looking for an environmental edge," said Mair.

Currently, Impossible Burger sells at between $13-26 (US$9-18)/burger – not cheap, but a novelty. That price point will drop, however, and they will take market share off the burger market.

Digging deeper into who had bought it and why and whether they liked it, Mair pointed to a survey of 10,000 Californians undertaken for MPI on their experiences with alternative protein. That showed only 1.5% had tried the Impossible Burger. Of those, 20% liked it, 40% did not expect to buy it regularly, 20% "were not fussed" and the last 20% did not like it at all. However, it also found 34% liked its environmental credentials.

Mair says turning the "big data-collecting algorithms" onto the restaurants, showed that the reason why many of them didn't like alternative protein products came down to where they ate, who the chef was and how they were cooking the products.

Those problems for alternative proteins create openings – a window of between five to seven years, he believes – of opportunity for New Zealand to start thinking and doing things differently.

There is a place for natural protein

"Within that, there will always be, at least for the medium-term, an opportunity for natural healthy products," Mair says. Some of those opportunities will be within the niches, but there is also a cultural balance and the premium market, which is still growing. Even through the Global Financial Crisis the premium food sector alone was growing at 6% a year. The latest figures have showed this has slowed down to 4%, "predominantly because food is getting cheaper."

The tipping point will be when the new companies get to manufacturing scale, but in the meantime, New Zealand has opportunity and time.

"It means we can stay at price points above and focus work with consumers who align with our values."

Future Food Tech conference

Greenlea Premier Meats is one of the meat companies seriously weighing up the challenges and opportunities faced by New Zealand's protein business as a result of the emerging disruption.

Egan spoke on behalf of the food and fibre working group that has been looking at a combined approach for New Zealand's primary products

Chief Executive Tony Egan – who is also a member of the Meat Industry Association council and chairman of Agmardt – was another of the conference speakers reporting on progress in the food and fibre working group. He attended Future Food Tech in San Francisco in March last year. For him, it was "eye opening" to see the level of serious global corporate interest in alternative protein.

"These were not the sandal wearing hippies I expected to see. They were large food companies doing some serious analysis of future food trends in the context of intergenerational preferences and changing views to things like sustainability, animal welfare and health," he says.

Egan says participants noted the curiosity and convenience that was tempting people away from the traditional models like 'meat and three veg'.

"They were defining future horizons with science and technology playing an ever-increasing role and they warned that the three to five-year window would herald significant change … much sooner that many of us expect."

"But they accepted that natural protein would remain important and probably dominant and that distinctions such as grass fed, free-range and natural would have their place in this future consumers' world,"

Egan's view is the world has already transitioned from meat to protein in the way we describe food.

"Where it goes from here will depend on our ability to differentiate our production systems and the products they produce. We have much to offer a world where factory farming is rife, so long as we tell our story well and listen to our consumers."

Greenlea remains committed and optimistic and wants to work in a pan-sector way to build the best New Zealand can offer, says Egan.

"To do this we must strive to maintain and enhance our point of difference both as individual organisations and collectively as food and fibre producers on a global stage."

Future Food Tech 2018 will take place in New York next July.