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## Will insects fuel the future of fish farming?

**Hexafly is an Irish firm that makes fish food from insect protein. The problem they are trying to solve is huge but so is the business potential.**

Hexafly, a biotech startup based in Ashbourne, Co. Meath has taken advantage of recent amendments to EU legislation, which permits the use of insect meal as a feed for aquaculture. Buoyed by this change, Hexafly has developed advanced insect-farming technology as an alternative to fishmeal and soy-derived protein, which from an EU view is neither sustainable nor environmentally responsible, in the long term.

Our oceans are tapped out, the global population is exploding, and aquaculture production has now surpassed the output from the world's natural fisheries. Fishmeal is also a limited natural resource with global demand far exceeding supply. CEO, Alvan Hunt outlines Hexafly's innovative blue economy thinking – and their plans to expand the business beyond these shores.

### Inspiration

My co-founder John Lynam and I had been friends in college and in our final year began researching different business ideas. John has a background in chemistry, and my experience is in business and finance. I would consider myself and my co-founder as futurists - that's just the way we think. Huge problems require you to think differently, basically requiring paradigm shifts in modes of thinking.

### Fishmeal and soya limitations - a problem to solve

Sourcing fishmeal means going to the ocean; catching and processing fish, selling the fish by-

product to a feed company who manufacture it back into a pellet, for fish in the fish farm. Significantly from a sustainability perspective, it takes twice as much wild-caught fish, to produce the same quantity of farmed fish. On the other hand, using insect feed means you can reduce the dependency on fishmeal and in turn reduce over-fishing in our oceans. As a consequence, it can aid the recovery of our wild fish stock and critically provide more price stability in the market. It's also more in line with a lot of the natural diets that carnivorous fish consume. Fish naturally eat insects as opposed to eating themselves or eating plant type protein such as soya.

### How urgent is the problem?

It's urgent as the global population is growing and our ability to produce food is not moving at the same pace. Global agtech needs to have comprehensive solutions to these pressing problems. There are significant structural issues with civilisation in general and with food security in particular. If you delve a little deeper into it, the whole system is a lot more fragile than it looks.

If the foundations are fundamentally weak, then it's a no-brainer that fixing it is going to be a viable option. We became aware that some fish farms in Ireland had gone bust and as part of our research, one of the things we did was to travel around and interview the people in the industry. A significant conclusion of this research was the need to provide price stability without fluctuation which was a crucial finding in helping us develop our business proposition.

### Why insects?

At the time we began looking at different solutions and options to produce alternative sources of protein from algae to GMO crops. We studied a large swathe of research papers and reckoned that the prospect of producing insect protein was definitely worthy of further investigation. So that's where we decided to start.

We have since developed into an insect feed company, manufacturing and producing insect feed.

What we have in essence is a bio-conversion plant where the insects bio-convert an organic feed substrate (e.g. waste grains from the distilling industry) into fertiliser, and we then process the insects (i.e. the larvae) into oil and protein. In essence, what we offer is a new raw material source along with a sustainable solution for the aqua-feed, chitin and plant nutrition industries.

## Awards and accelerators

We were incorporated in 2015 and in May 2016 selected for a place on the INDIE BIO Accelerator, the world's first biotech accelerator programme, located in Cork City. This was followed by our selection for the Yield Lab Accelerator in Galway. Both were full packages, and we learned so much regarding training, networking and the steps of putting a team together from the startup stage to forming a company. Thankfully we had no shortage of partners, investors or collaborators. Along the way, we won multiple awards, for example in 2016, we won the 'Best New Business Award' (Meath), IBYE and in 2017 the National Enterprise Awards along with the EU Seal of Excellence Award.

## Ability to pitch

The ability to pitch was one of the essential skills I learned along the way. I believe it to be a critical skill to develop. We were assigned mentors, and on one of the courses, Bill Liao became my pitch mentor.

## What is your biggest market?

Regarding sales, aquaculture is our primary target market. It's proliferating and has already overtaken the beef industry. It's a vast market but driven by pressures concerning price, raw material shortage, declining wild fish stocks along with fishmeal prices being volatile – ultimately leading to fish-farms going bust. Ours is a sustainable ingredient and removes the need to have to pillage the world's resources, to be able to make a feed product. Our customers are the global fish-feed companies who manufacture it, selling to their fish-farm customers.

## Milestones

After completing the accelerator, we used the investment we received to build a small pilot plant, perfecting the technology, metrics at that stage of the process. We hit many milestones and achieved good trial results with the product, and this leads us to raise additional capital, to build our new 15,000 sq. ft. factory. We accomplished that, and in December 2017 we raised €1.1m. Once we were funded, we were then able to fit-out our new factory in Co. Meath.

## What was the biggest struggle you had?

Whether you are raising finance or you are involved in the creation of something new, the fact is that starting a business consists of a struggle. Anything that has complex processes also means you are going to have complex problems, without any previous blueprint or signposts to follow. We found that raising money in Ireland for something that is entirely new can be especially tricky. Also taking something from idea to reality was a real challenge - but it's something we have managed to do quite successfully and all within a relatively short period of time.

## The vision

We are a company that uses smart, sustainable ways to feed the planet. Our business is a textbook example of a circular or blue economy company. Our process provides a 90% reduction in (CO<sub>2</sub>) emissions, compared to what we are replacing, to produce the same amount of protein. There is literally zero waste, and everything is utilised in our factory, apart from consumables. Going into next year we hope to further scale the business and build a second plant in Ireland - and after that our vision is to basically take our technology and solution around the world.

*Written by Brendan Byrne.*