Meet LyteGro, turning waste bananas into high impact products for the green economy

As part of a series with Innovate UK KTN, Maddyness spoke to Andrew Lee, founder and CEO, LyteGro. We will introduce several of the 13 'startups of the future' chosen by Innovate UK KTN to take part in its three-month sustainability accelerator programme. Working with Innovate UK KTN, Growth Studio and their ecosystems, these startups will prepare to raise external capital. The program aims to back the bright ideas that put biodiversity, the climate, and sustainability first.

Temps de lecture : minute

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LyteGro was founded in 2015 when Mark Lyte, the inventor of our core technology BacLyte contacted me to show what his extract of bananas could do to bacteria and yeast growth. I had been working with Mark, who was based at Texas Tech University on another project at the time and he had appreciated my understanding of industrial biotechnology and technology commercialisation.

When Mark showed me the effects of his water-based banana smoothie (made from waste bananas) I was absolutely blown away as this stuff was like steroids for microbes – accelerating growth as I had never seen before. I could immediately see that this technology could have huge applications in industries which rely on microbes for production (e.g. food production, biofuels, brewing and distilling) or in diagnostics where it could speed up and improve the sensitivity of tests for pathogens.

Throwing caution to the wind and with utter belief in the technology I formed LyteGro with Mark and the rest is as they say history.

Tell me about your business – what it does, what it aims to achieve, who you are aiming to reach etc.

We have a huge global vision for our business – seeking to maximise the economic, environmental and social aspects of our technology.

After tomatoes, bananas are the most widely eaten fruit in the world (120mT per annum) and the 5th most traded global commodity. Unfortunately, bananas are also the most discarded foodstuff with the UK throwing away 160m bananas each year, Japan 300m and the USA discarding 5b annually. To add to this waste banana growers are forced to discard around 30% of their crop which is deemed unfit for sale by the major banana exporters. The farmers do not get paid for this waste and consequently, many small banana growers are struggling to make a profit and are shifting to other (sometimes illegal) crops.

Not only does this waste cause economic and social problems for farming communities but it creates a massive environmental problem too. Globally, there are around 30 million tons thrown away each year into landfill and these rot to give off greenhouse gas (GHG) emissions equivalent to 400 million tons of CO2; and a sizable contribution to total overall agricultural emissions in banana growing countries.

Not only do we plan to use some of this currently untapped waste stream in producing our products but our products also enable industrially important processes to be performed quicker and more efficiently - resulting in higher product yields and increased throughout. Consequently, users can get more product from the same resource whilst

also using less water and energy. These effects can have a huge impact in reducing carbon emissions across many massive industrial sectors.

There is no other company out there which is using waste bananas to make products of such high impact to the green economy and we have ambitious plans to grow rapidly and globally via joint ventures with governments, farming cooperatives and waste management companies worldwide - aiming for 50+ plants within 5 years which could generate hundreds of millions of pounds in revenue whilst effectively reducing greenhouse gas emissions by up to 500,000 tons per annum.

Altruism is at the heart of what we do too. Setting up plants globally will also provide jobs and see banana farmers paid for the 30% of waste they normally throw away into landfill. Further opportunities exist in engaging with local entrepreneurs to help find sales for each plant's output – with commissions being paid on new business and further enriching the local communities around our plants.

Explain your engagement with the InnovateUK KTN SIIP accelerator and why you applied for it.

We were lucky enough to receive a Sustainable Innovation Fund grant from Innovate UK back at the start of 2021. This money funded further scale up of our production and to set up trials of our distilling product Propagreater with 5 UK distilleries. The project went really well and it gave us great results which then led to a further patent filing and a couple of prospective customers.

We applied for the SIIP scheme because we realised that we needed expert help in refining our messaging to potential investors – gaining insight into how we were currently perceived and how better to promote

our global vision for our business.

Read also
Innovate UK KTN’s Sustainable Impact Investment Programme chooses 13 UK startups

Describe the working culture at your company.

We run LyteGro super lean, being that there are only two of us on the payroll (myself and Amin our COO) and that we are not paying ourselves full salary. We take the fact that we have been supported so far by small investors with utmost seriousness in the way that we utilise money – having got to the point where we are (on the cusp of success I hope) with just £650K of spend.

Amin and I regularly Zoom with Mark our CSO (and inventor of the

technology) to decide how best to marshal our resources to carry out new R&D, cover our patent costs and to move the business along as swiftly as possible. We don’t take ourselves too seriously and have a good blend of skills. Amin keeps me in check on finances whilst I am free to indulge my scientific interests with Mark, but I get the chance to apply my 20+ years of licensing, patent and startup experience everyday.

What has been your biggest challenge so far with your company, and how did you overcome it?

Our biggest challenge to date has been getting as far as we have on a very tight budget. Money has not been the easiest to find so we have had to be resourceful. We have used grants, favours and industry connections to get us to the point where we have granted patents, customer validation for our products, we have Merck KGaA the world’s largest supplier of research reagents as a licensee for the R&D sector and we scaled up production to the point where we are ready to go. We now need investment to build our first factory (for which we have fully costed plans) which will then act as a blueprint for global rollout.

How does your company answer an unmet need?

We have been pretty ingenious in addressing our unmet needs; focussing upon how best to solve a problem or gain resources in the most cost and time efficient manner. We have become pretty good at getting grant funding and we shamelessly utilise our networks to get advice or R&D projects underway as efficiently as possible.

What is in store for the future?

Lytegro has a global vision which aims to have maximum impact in an accelerated timeline. To do this we are intending to follow a non-venture or revenue funded growth model which will rely upon forming global production partnerships via joint ventures and/or franchising.

We are seeking to raise £5M in 2023 to build and operate our first production plant which will enable us to service the non-whisky distilling market in the UK and Europe. We have full plans for a facility capable of processing 700 tons per annum which can implement our fully scaled up production and QC protocols to produce around 280,000 L of product annually. Each plant will be fully circular; using our own waste for anaerobic digestion to create energy then to utilise the AD waste to create soil regenerative fertiliser via the CCm Technologies (Swindon, UK) solution.

Once operating we shall use this plant as a blueprint for a global rollout for joint venture and/or franchisee builds in countries with lots of banana waste and/or large distilling or anaerobic digestion industries.

We intend to form joint ventures with governments, bioenergy and waste management companies, as well as banana exporters and growing cooperatives. Partnering not only accelerates our growth but it also avoids LyteGro having to deal with local political, commercial, employment and supply chain issues.

We aim to have our first plant to be operational by Q1 2024, 10 (via partnership) by end of 2025 and 50+ by end 2027. We are currently discussing partnering opportunities with the Indonesian government and Fyffes and will be seeking to find other potential partners in the near future.

What one piece of advice would you give other founders or future founders?

If you believe in what you are doing then commit wholly to it. If money is your goal then don’t be a founder be a stockbroker. Prepare for a rollercoaster ride as there are just as many downs as ups and never be frivolous with other people’s money as they have given you their trust as well as their investment.

Andrew Lee is the founder and CEO, *LyteGro*.

The *Sustainable Impact Investment Programmme* (SIIP) is a three-month accelerator, specially designed for selected startups who have previously received funding from Innovate UK’s Sustainable Innovation Fund (SIF). The objective of the SIIP accelerator is to prepare both the business and founders of the winning startups with the knowledge, tools and investor connections to raise their next round of investment up to £5M through a confident proposition, materials, and communications.

SIIP is an initiative led and funded by *Innovate UK KTN* to support high growth impact-driven startups from the UK who were awarded grants from the Sustainable Innovation Fund to aid economic recovery after Covid. This programme is a collaborative effort by Innovate UK KTN and *Growth Studio*.

Article by Andrew Lee