

Monaghan Biosciences

Brussels, April 2019

Agenda

- Origin
- Vision
- Alpha customer
- Product & Market
- Enabling Infrastructure
- Monaghan Mushroom Network
- Collaboration & Support



Who we are

- Founded in Monaghan, Ireland by CEO Ronnie Wilson in 1981
- #1 Mushroom producer in Europe
- #2 in the World
- Most international mushroom producer



3500+
employees
worldwide



42
nationalities
represented



36
languages
speaking



29
locations
worldwide



1800 tonnes
of mushrooms
sold every week

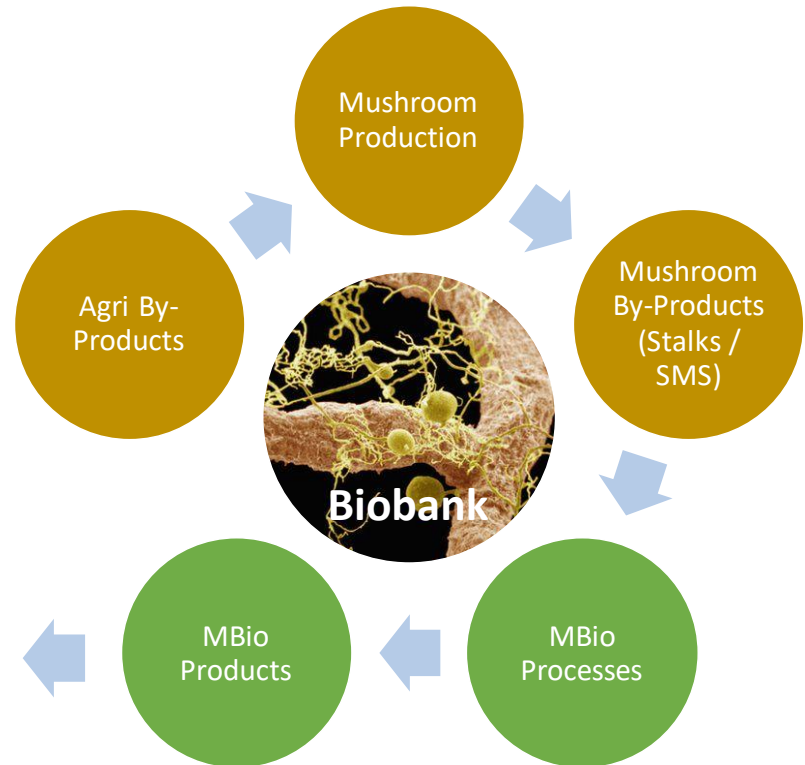


75
truckloads
every day



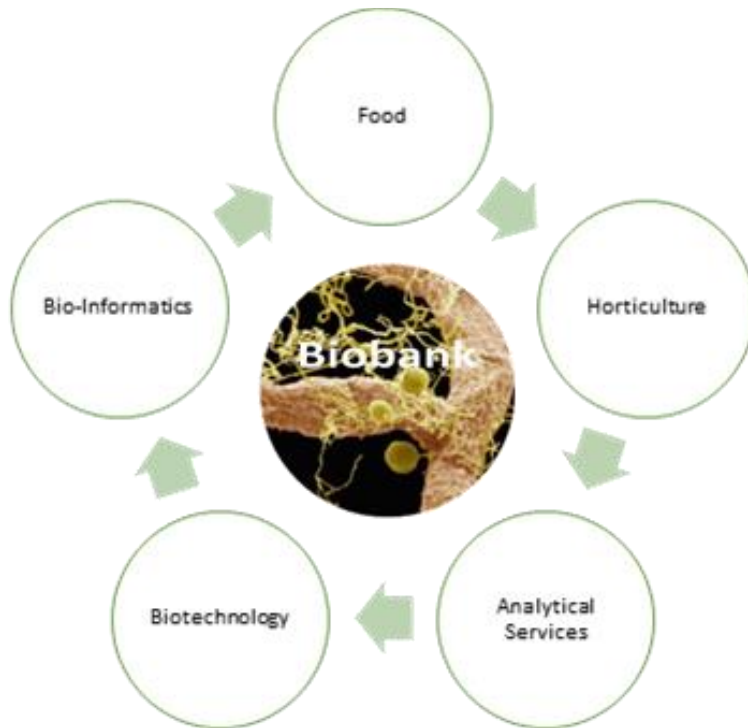
Vision

- Monaghan Bioscience's vision is to become a biotechnology leader by valorising the waste stream from mushroom production.
- Central to the achievement of this vision is access to its proprietary bacteria, fungi and enzymatic resource called the Biobank which provides MBIO with resources to:
 - Develop nutritionally enhanced compost & mushrooms;
 - Crack the mushroom and release its vegan nutrient stream;
 - Build an enzyme supply business.



Alpha customer

- Monaghan Mushrooms is MBIO's Alpha Customer;



- MBIO have developed the Vitamin D and Forestiere mushrooms, and secured 'High in Protein' claim for Monaghan's mushroom.
- MBIO have identified precise stages of the mushroom growing cycle where the application of bacteria and fungi from the BIOBANK materially impact yield and nutrition.
- Pipeline of future nutritionally enhanced products eg. Selenium enriched.
- Bio-control agents with wider agriculture application.
- Production of bacteria requires industrial scale fermentation infrastructure which will be a core component of the industrial biotechnology hub.

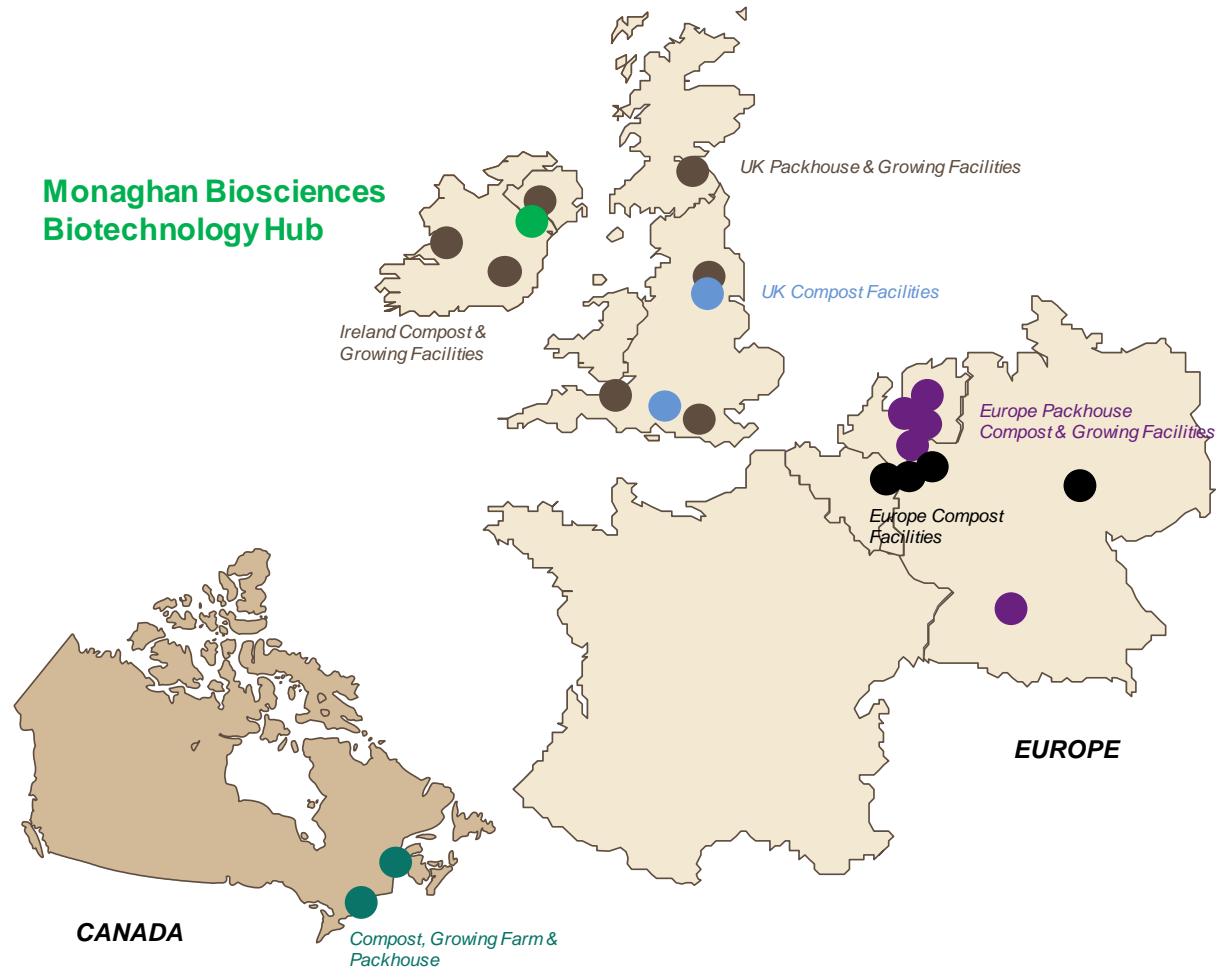
Product and Market

- Macro drivers:
 - By 2050 global population is forecast to increase to 9.8bn from 7.6bn;
 - Calorific demands are forecast to increase by 70%;
 - Consumers are increasingly focussed on healthier diets and the provenance of food.
- MBIO has performed market analysis on over 25 lines of research and has selected 4 priority areas to scale.



Monaghan Mushroom's Network

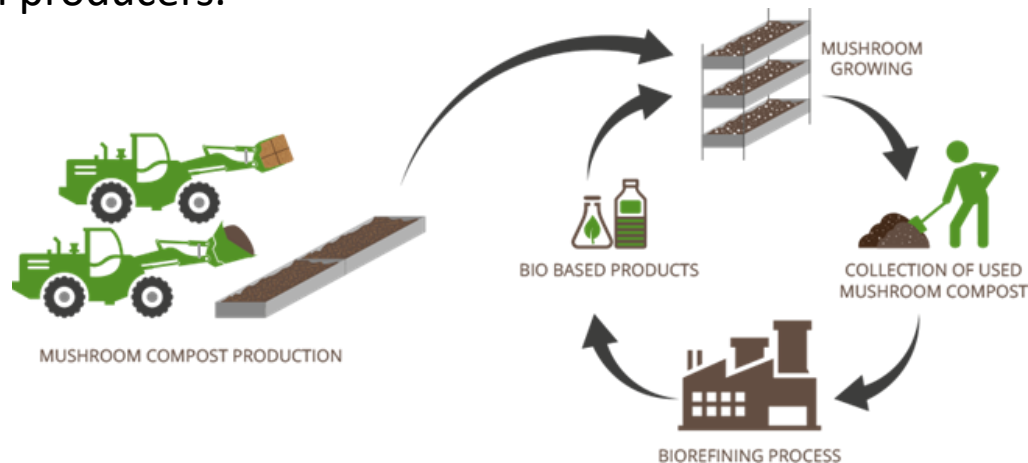
- Global scale
- Operations in Europe and North America
- Feedstock security
- 100% traceable
- Fully integrated supply-chain

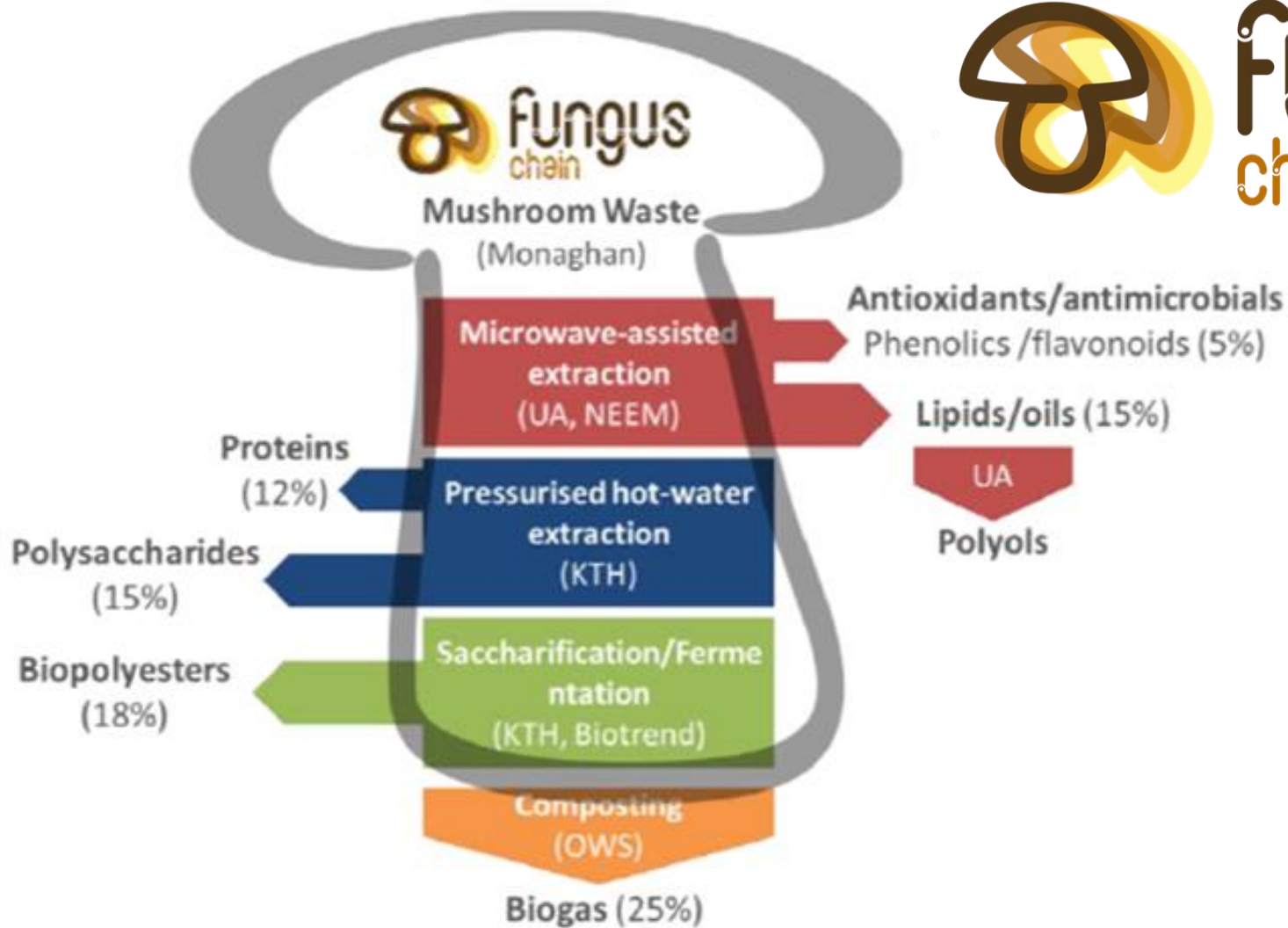


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Objectives

- To demonstrate an innovative and resource-efficient **biorefinery concept** for mushroom compost conversion;
- **To create valuable bio-based products** from mushroom compost and other lignocellulosic feedstocks;
- To achieve a **20% overall cost-reduction** in the enzymatic hydrolysis process;
- **To reduce disposal costs** for mushroom compost and generate a new income stream for mushroom producers.



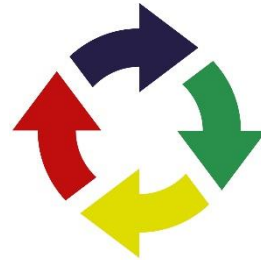


An innovative bio-refinery to process and transform mushroom farming by-products into high value products



Regional Enterprise Development Fund (REDF)

- To achieve its vision MBIO must establish infrastructure in two stages:
 - Stage 1: Centralise all MBIO's biotechnology activities in a single centre to incubate future products and services.
 - Stage 2: a biotechnology centre of excellence to enable production at industrial scale.
- MBIO is motivated to establish both facilities in Monaghan
- **As lead member, recently awarded €5M to build a dedicated Biotechnology Innovation Centre for the region**



BioConnect



Herbel Crest



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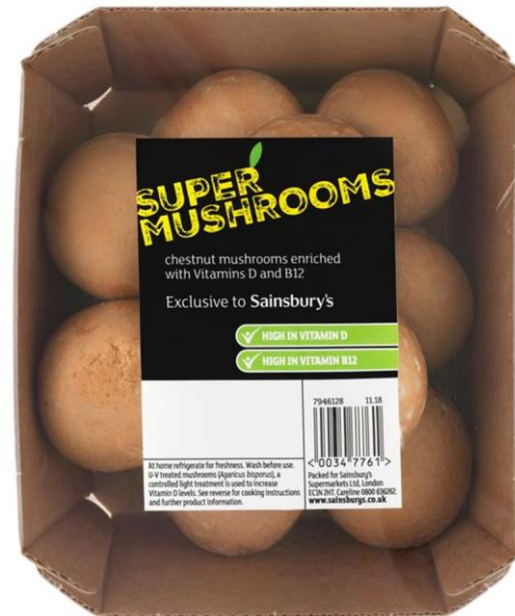
Collaboration & Support

- Monaghan have a strong history of successful program execution and MBio collaborate internationally.
- We are a full member of the Biobased Industries Consortium and lead member of two major European programs FUNGUSCHAIN and BIOrescue.
- MBIO currently have a team of 60 R&D employees based in Monaghan which includes 16 Ph.D.'s and have significant plans in place for the growth of this team.
- MBIO is a client company of Enterprise Ireland



Sustainability – Origin Green

- Reduce waste to landfill by 20%
- Reduce energy usage by 2.5% per unit of output
- Reduce peat used in our processes by 33%
- Conduct biodiversity surveys and implement plans
- Increase paper portion of outer packaging to 10%
- Reduce weight of 300g punnet from 16g to 14g
- Improve fuel efficiency of lorries by 7.5%





MBio

Join the fungal revolution

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