Making Protein Sustainable

Pulses for Healthy Guts
(and healthy environment)

Craig Johnston: CTO and co-founder
craig.johnston@3fbio.com
The market is worth >€1.5 TRN or 500M tonnes,
Currently c.99% of supply is dominated with supply from livestock

<table>
<thead>
<tr>
<th>Type</th>
<th>Volume mT</th>
<th>Average Price</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant</td>
<td>c.5M</td>
<td>c€1800-3000/T</td>
<td>30%</td>
</tr>
<tr>
<td>Fish</td>
<td>c.150M</td>
<td>€3000/T</td>
<td>2.0%</td>
</tr>
<tr>
<td>Meat</td>
<td>c.350M</td>
<td>€3125/T</td>
<td>c.1%</td>
</tr>
</tbody>
</table>

Data Sources: Meat volumes: FAOstat; Meat prices: Index Mundi Commodity Statistics; Protein Ingredient market: Frost and Sullivan, ChronicleLive Business.
Note: fish prices are in a wide range. The price shown is based on FAO data at bottom end of range covering the average for Hake and Pollack (PBO)
Our Mission: “Make Protein Sustainable”
**THERE IS MORE CHOICE THAN EVER**

- Meat Eating
- Reducitarian
- Flexitarian
- Vegetarian
- Vegan

- SOYA PROTEIN
- PEA PROTEIN
- LUPIN PROTEIN
- WHEAT PROTEIN
- ABUNDA® MYCOPROTEIN
- CELL-BASED MEAT
- INSECT PROTEIN
- ALGAE PROTEIN
- JACKFRUIT PROTEIN
The present invention relates to the co-production and isolation of mycoprotein and ethanol from carbohydrate feedstock material (e.g. cereals). The present invention also provides a fermentation system for the co-production of mycoprotein from a carbohydrate feedstock material.
**2-10x greater water efficiency**

- Water consumption efficiency
  - Over 3x more than pulses
  - Over 5x more than chicken
  - Over 30x vs beef.
  - Table 19.13

**1-10x lower carbon emissions**

- Carbon emissions
  - 90% lower than beef
  - 70% lower than chicken
  - 40% lower than eggs
  - 15% lower than pea

**4-20x lower land use**

- Land efficiency
  - Over 3x more than pulses
  - Over 5x more than chicken
  - Over 30x vs beef.
  - Table 19.13


Note – 3F BIO update the Finnegan et al estimate (±1.6kg/kg)
-2018
• Understand the organism

2019/20
• Scale up

2020/22
• Build Plant 1, train, optimize

Image courtesy of BBEPP

1L – 10L

1500L – 15m³

150m³

IBioIC

250L Farm & Kitchen, Glasgow
The first plant is supported BBI JU

€17m Flagship project
DELICIOUS, NUTRITIOUS & SUSTAINABLE

Head of Culinary: Michael Kilkie

JUST CHEF WITH IT!

ABUNDA® mycoprotein is a high-quality source of Protein + Fibre.

As a complete food, it meets the global need for feeding a growing population in a sustainable manner.
NO-Meat made with ABUNDA® mycoprotein
NO-Seafoods made with ABUNDA® mycoprotein
Delicious & Versatile

Clean in taste with a meat-like texture:

Primary Applications include:
1. Meat Alternatives
2. Meat Hybrids
3. A Protein Ingredient

Sustainable & Scalable

... the "most sustainable" source of protein:
1. Lowest Feed conversion
2. Lowest carbon footprint
3. Patented zero-waste process

... scalable in capacity to meet increasing demand

Highly Nutritious & Functional

... contains a combination of functional components:
1. Complete Protein
2. High in Fibre
3. Zero Cholesterol or Trans-Fats