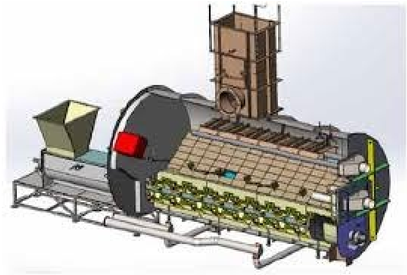
NutriCycleX

Circular Organic Nutrients Upcycling Solutions In Cities and Regions

Lianying Lin LOHAS Fertiliser (UK) www.lohasfertiliser.co.uk e: lian@lohasfertiliser.co.uk

Challenges



Costs

Time and Space required

Emissions

Sustainability

End of the Waste

Regulations: Biosecurity

Stable and Pathogen-free end product

How about if there is a solution to achieve these?

Food waste → Soil Improver/ Peat alternative

Green waste → Soil Improver/ Peat alternative

Animal By-products → Organic-based Fertiliser

AD Digestate → Organic-based Fertiliser

Sewage sludge → Soil Improver/ Peat alternative

Seaweed → Organic-based Fertiliser

What is the solution?

Problem

Challenges of Food waste

1. Cost
2. Process
3. Emissions
4. Legal permission
5. Unsustainable food supply chain

Solution

1.Apply the enzymes

2. 3 hours quick process

3. Fully fermented and fulfils pasteurisation (Stabilisation)

4. Keep all the valuable nutrients

Savings

To skip microbial propagation

Reduce Ammonia Emission
90% reduction in Ammonia Emission

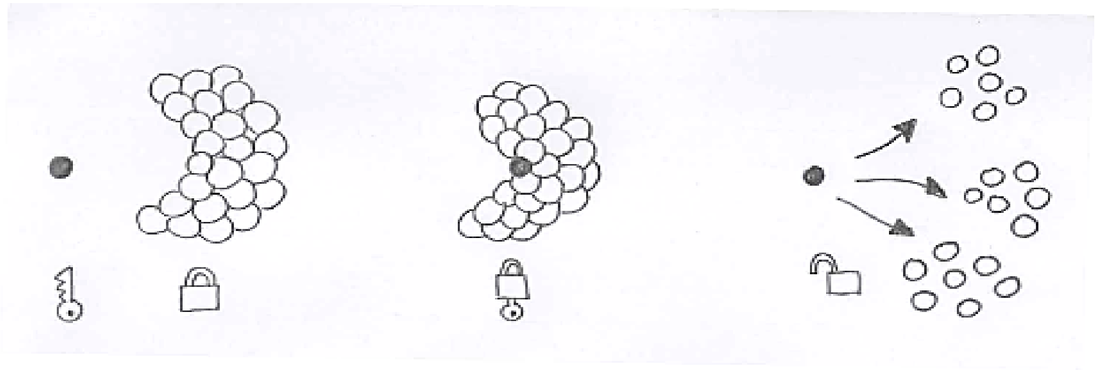
Carbon Sequestration(carbon removing)
95% reduction in CO_2 emissions

50% Improvement in Energy Efficiency

Biosecurity
The process fulfils Pasteurisation
Low Capital Investment
End of the waste

Innovation 1: Revolutionary Proteolysis

Targeted enzymes does all the hard work:

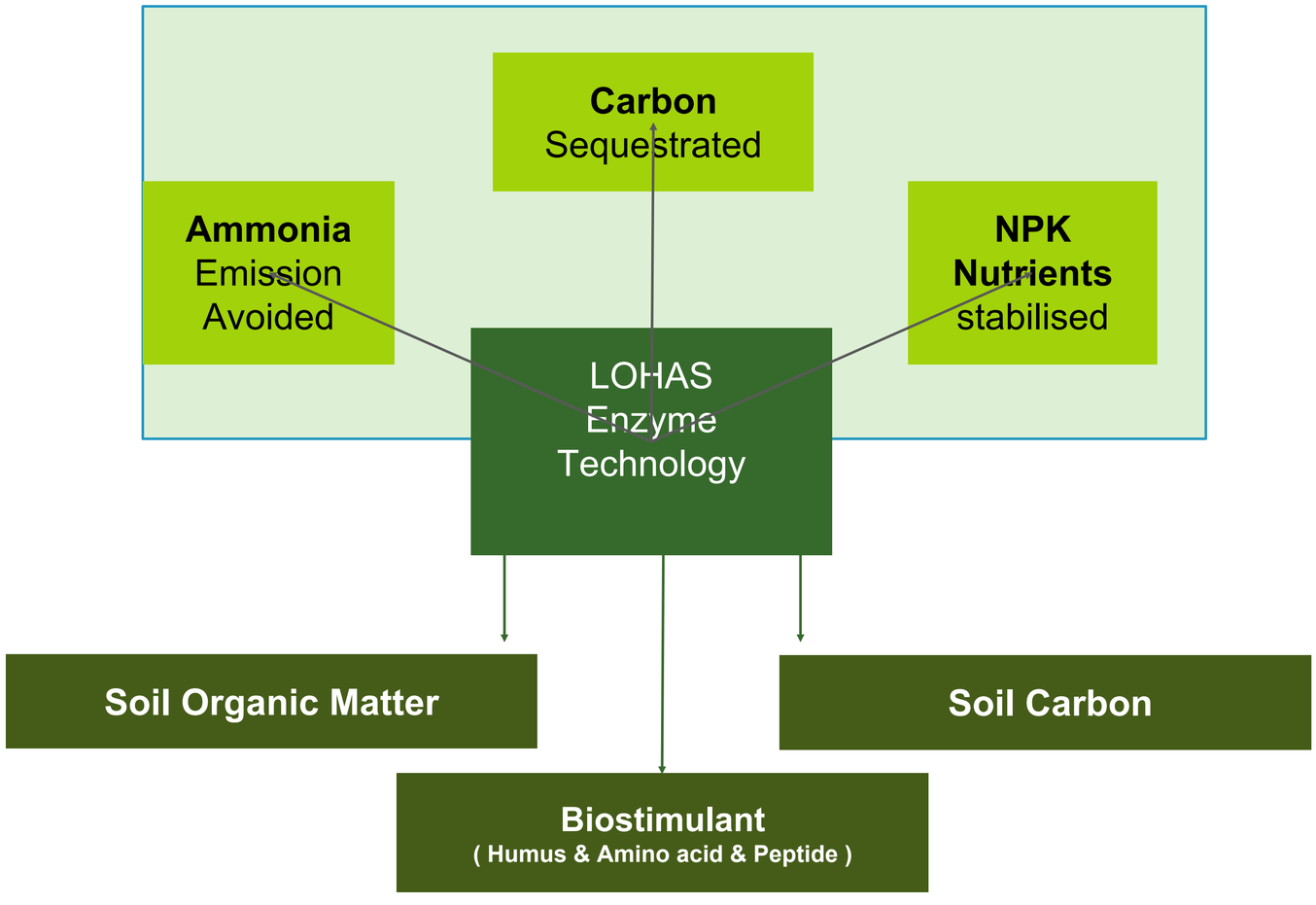


Key Concept: Skillfully skipping the microbiome ‘secreting enzyme to break down organic matter’ process by offering targeted enzymes directly.

Adding Enzymes can **directly and quickly** decompose organic matter into smaller molecules.

This quick process **retains** 100% of the **nutrient** contents from the organic matter, making it a **ZERO POLLUTION** process.

Innovation 2: Effective nutrient circularity



Guess the Operation is easy? Since the enzymes have done the hard work?

Step 1: Source poultry litter

Step 2. Enzyme added to the fresh manure;
Leave the materials in the Proteolysis processor
for 3 hours

Step 3. Fully fermented Organic-based Fertiliser

THE FINAL PRODUCT

Premium Organic-based fertiliser in loose powder or pearls

More about the fertiliser!

soil

Organic Matter

Carbon content

Biostimulants

Amino Acid | Humus | Peptide

Find the difference!

And Why?

*RFT (Rapid fermentation technology).

Precision Agriculture Management

LOHAS FERTILISER

Precise fertilising and nutrition management.

Liquid fertiliser application

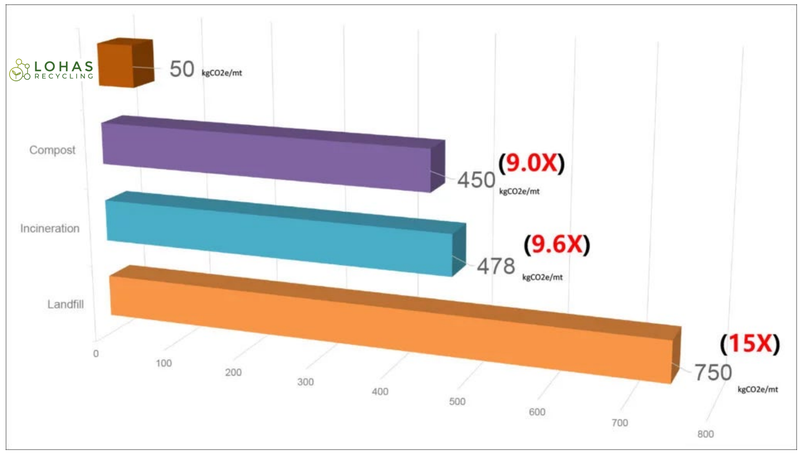
Fertiliser tea: The upcycled nutrients make perfect liquid fertiliser which can be used in greenhouse and irrigation systems.

Solid pellets application

Spreading application: The Organic fertiliser pellets can go onto the fertiliser spreaders for direct and even distribution

Carbon Value

Significantly Reduce farming carbon footprint!



Carbon removing and trading

- 35% carbon & 65% organic matter saving into soil
- Avoid 3 tonnes of GHG emissions for per tonne of food waste recycling in LOHAS way

LOHAS FERTILISER

Chemical Fertiliser alternative:

Reduce reliance on Russian imported fertiliser

- The global trend of reducing chemical fertilisers with locally produced organic fertilisers

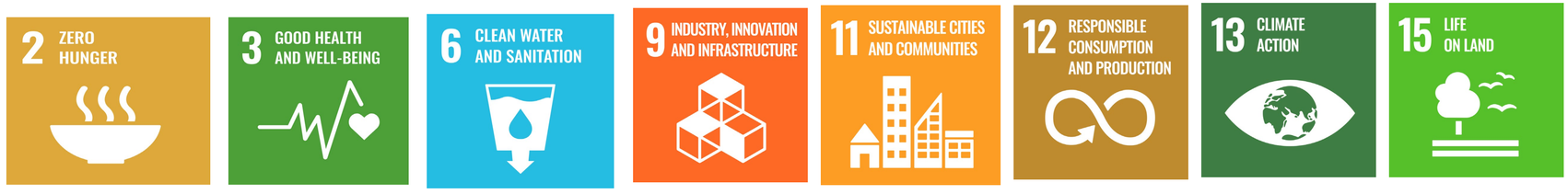
*UK's biggest fertiliser producer CF Industries to shut plant as energy costs bite in 2022

More sustainable Supply chain

To cut greenhouse gas emissions, LOHAS circular NutriCycleX solution offers:

- low carbon fertilisers(✓)
- carbon removal techniques(✓)
- soil health(✓)
- grazing management(✓)
- biodiversity assessment and management(✓)

SDGs Met



Nutrients Upcycling in the UK

Oswestry, Shropshire, England, UK

Poultry manure processing capacity 3,000 tonnes per year

HENCOTE

Significant improve the soil quality and reduce fertiliser cost in luxury Vineyard.

PDM
THE SALAD GROWERS

Low carbon fertiliser trial in salad farm

Oversea technology deployment

(Hongqiao Environmental protection technology ltd)

Food waste processing capacity: 30,000 tonnes annual

桃園

Taoyuan county

County contract food waste recycle hub 80 tonne/ day

tsmc

Semiconductor company subcontract food waste and green waste. 160 tonne/ month

Previous funded innovation projects

Project Title	Funding Body	Milestones Achieved
1.Mid Wales Challenge-led Launchpad : *Solution to reduce environmental impact from organic agricultural waste: poultry manure*	Welsh government	Approve enzyme method for poultry manure solution
2.*Improving energy efficiency in organic-based fertiliser manufacturing for Net Zero UK* Competition: Fast Start: Innovation.	Innovate UK	Energy saving approved
3.Enzyme-based Process for Sustainable fertiliser from poultry manure Competition: Sustainable bio-based materials and manufacture: Feasibility Study	Innovate UK	Chemical fertiliser alternative feasibility
4.Reducing Ammonia Emissions by Stabilising Nitrogen in Manure with an APHA-Approved Enzyme-Based Process Competition: SBRI: Reducing pollution resulting from domestic burning or agricultural practices: Phase 1	Innovate UK	Ammonia and GHG saving
5.*Farm to Fert* Competition: Farming Innovation Programme: Research Starter Round 3	DEFRA & Innovate UK	On site farm trial

Upcoming projects

UK regulator approved new process

Animal & Plant Health Agency

SUNTORY

Suntory Fruit farm
Ribena
(blackcurrant)

Low carbon fertiliser trial in fruit farm

APHA approval number: 35/144/8124

TESCO

Environment Agency

Tesco (retailer)
Sustainability supply chain
Tesco's **supply farm trial fertiliser** to reduce emission / carbon footprint
River Wye recovery by recycle chicken manure

HORIZON-CL6-2025-01-CIRCBIO-07:

Demonstration, deployment and upscaling of circular systemic solutions in cities and regions (Circular Cities and Regions Initiative)

To demonstrate:

In **3 different countries**

And **6 different cities in the EU**

Our vision - Sustainable Environment Centres

Organic waste Upcycling Hubs
- Agricultural By-products: Manures
Food waste
Animal By-Products

Organic Fertiliser Manufacturing Plant
- R &D labs
- Produce high value sustainable fertiliser to reduce carbon emissions from farming

Innovative Farms for growth trials:
- To test the new fertiliser through trials at scales for improved quality and yield for different crops.

Science Museum:
-Combine science, environment, sustainability and agriculture of education for students and public.

Ecology Education Centre
- Life cycle, carbon & nutrition cycle, soil health and plants demonstration.

Tourists Farm Shop
Tourists can come here to buy locally produced organic produces, e.g. veggies, fruits, compost and fertiliser, etc.

LOHAS FERTILISER

Animal & Plant Health Agency

Environment Agency

Harper Adams University

BDC Biorenewables Development Centre

NIAB

LOHAS RECYCLING

ArloesiAber AberInnovation