

ReBALAN:CE

Recycling Biomass to Agricultural LAND: Capitalising on Eutrophication

Dr David Oliver; Dr Richard Quilliam; Dr Nigel Willby; Prof Nick Hanley; Dr Melanie van Niekerk; Prof Davey Jones; Prof Dave Chadwick; Dr Paul Cross; Dr Andy Vinten



UNIVERSITY OF
STIRLING



<http://www.rebalance.stir.ac.uk>

: @rebalance_ac_uk

email: david.oliver@stir.ac.uk

Aim: Identify the breadth of key research opportunities to maximise nutrient recovery from aquatic plant & algal biomass for safe recycling to land

We are building an interdisciplinary team of experts from across academic, policy and stakeholder organisations to prioritise and plan a response to the pressing science needs associated with resource recovery from waste. Specifically, we are exploring nutrient recovery from aquatic plant and algal biomass (AP&AB) production in nutrient enriched waters. Central to our project is the integration of economic, social, environmental and health-related dimensions that cut across traditional academic disciplines.

Thus, ***the overall aim of this project is to facilitate the exchange of knowledge across the disciplinary boundaries of biology, soil and water science, microbiology, human behaviour, risk perception, waste management, economics and catchment management. In turn, we will develop a comprehensive, holistic and targeted programme of research to 'close the loop' on nutrient transfer from land to water.***

Key issues to consider:

Optimising biomass composting for maximum nutrient release.

The impacts of AP&AB removal on freshwater ecology & human health.

The potential social, economic & political barriers that could hinder the use of AP&AB as an organic amendment to soil.

The potential for producing AP&AB biochar as a novel & cost-effective strategy for nutrient re-use & C sequestration.

Work-package 1 (WP1) is our current catalyst grant, which will provide an extensive critical literature review and highlight key opportunities linked to AP&AB recycling in agro-ecosystems. Subsequent WPs for our emerging research programme may include:

WP2: Evaluating the potential for natural harvesting and seeding/cultivation of AP&AB in eutrophic waters

WP3: Assessing ecosystem disturbance versus potential for restoration ecology

WP4: Resource recovery from waste:

- (i) optimising nutrient & energy recovery through processing;
- (ii) reapplication to land and implications for human health

WP5: Ecosystem services and life-cycle assessment

WP6: Economic viability and scaling-up

WP7: Stakeholder and end-user acceptance and uptake

WP8: Translation of science into policy

We are keen to accommodate stakeholder input and end-user needs in our research programme and encourage your participation at our Horizon Scanning Workshop at the University of Stirling in August – please ask for details

