Sustainable Rural Communities: Research and Innovation



The James Hutton Institute



Scotland's centre of expertise for waters

Dr Richard Allan

The James Hutton Institute



- The James Hutton Institute is a world-leading scientific research organisation working to provide solutions to global challenges in **food**, energy and water security.
- Our strengths in land, crop, waters, environmental and socio-economic sciences enable a broad range of disciplines to interconnect, delivering knowledge, products and services that improve the quality of life.
- We work in partnership with people, organisations and governments to enhance sustainable environmental, social and economic development, delivering practical solutions for our shared future.
- In our work on waters we develop systems approaches that improve understanding and management of integrated natural and managed water systems within a catchment context.

Our Sites

Craigiebuckler, Aberdeen Laboratories

Invergowrie, Dundee Laboratories, glasshouses and arable land







Balruddery Farm, Angus Arable farm site of the Centre for Sustainable Cropping





Hartwood Research Station, Lanarkshire

350ha rotational and permanent grassland, moor and woodland

Glensaugh, Kincardineshire 865ha rotational grassland, permanent pasture, heather moor and peat



The CentRe of Expertise for Waters (CREW)



- Scottish Government funded, based on expertise from strategic programme and HEI research.
- Partnership led by the James Hutton Institute (MRP).
- Draws in expertise via partnership with HEI networks:
- CREW holds a register of expertise in water research.





- demand driven research
- co-production
- knowledge exchange
- building skills and networks
- Scottish Government funded partnership Hutton/Universities
- Users:









Institute



Why consider Rural Communities? Example, Private Water Supplies in Scotland¹: Supplies 3% of Population



- Regulations based on two supply categories (A & B)
- Type A is supplies >10Ml per day and/or supplying >50PE.
- Type B are supplies of <10Ml per day and that generally supply single properties.
- There are 2330 Type A supplies and 17,863 Type B supplies in Scotland.
- 95.58% of Type A supplies have been risk assessed.
- Sampling compliance is 90.09%.
- 13.6% Type A supplies failed for E.Coli, with 20.22% of Type B supplies failing.



¹ Based on the Drinking Water Quality Regulators Report 2013

Population on Private Supplies











Engaging the community



Is a closed loop system possible?

Phosphorus Budget







How do we ensure optimal nutrient recovery?



How do we optimise energy within the systems?

Case Study: Dinnet

- Viable low cost low energy approaches to nutrient and waste management
- Link to other anaerobic digestion and energy production systems
- Septic system performance
- Increase resource efficiency







Assessing innovation a multi-criteria approach





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Epidemiology of rural supplies: a risk assessment approach





A risk assesment approach to protecting public health





Outcome Focus

- Sustainable Water
- Energy recovery
- Nutrient Recovery
- Innovation
- Community acceptance



Thank You For Listening

