

Bioenergy crops

WHY DO WE NEED TO ASSESS THE IMPACTS OF BIOENERGY CROPS?

BECAUSE: SUSTAINABILITY MUST BE ASSURED BEFORE INDUSTRIAL EXPLOITATION PROCEEDS

Energy supply is a global issue. Without sustainable energy sources, the world's population cannot survive in its current condition. The UK's generating capacity is set to shrink by 40% before 2020. At the same time, we need to mitigate climate change by reducing our use of fossil fuels and increasing our reliance on renewable energy sources.

Bioenergy crops could deliver 4% of future energy requirements – but what are the challenges that need to be addressed?

- Major land use change is one potential impact of producing bioenergy crops. How do we manage this impact in the face of competing land use demands such as biodiversity, water provision, food, recreation and other human activities?
- How sustainable are different bioenergy crop types?
- Where should they be grown and what are the potential benefits or costs to the environment?



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DELIVERING IMPACT

A strong evidence base is required to make sound decisions about our future renewable energy supplies. CEH's research provides this evidence, thus enabling policy-makers to develop bioenergy crop strategies and effective regulation.

- CEH runs a unique, commercial-scale field experiment, assessing GHG fluxes, water uses, soil nutrient content and biodiversity
- Land-surface modelling expertise and experimental data enable CEH to run predictions of the environmental impacts of bioenergy, which support the formulation of UK government strategy and policy
- CEH's Land Cover Maps and Countryside Surveys have contributed key data to national assessments of potential land use involving bioenergy crops under different scenarios, and continue to provide robust data in support of government policy making
- CEH contributes to the first National Ecosystem Assessment, thereby helping to define the value of nature's ecological services to society

FUTURE CHALLENGES

Society must assess the impacts of bioenergy crops across their full life cycle – not simply in terms of greenhouse emissions but also as regards their impact on ecosystem goods and services. Our main challenges are:

- Understanding potential feedbacks and interactions under future environmental-change scenarios
- Assessing additional environmental gains as a result of using bioenergy crops to maximise benefits, e.g. stabilising ecosystem structure, maximising agricultural yields in unproductive land and protecting against contamination of water courses
- Creating decision-support tools to help inform policy making and environmental practitioners