Social and Economic Analyses of Dothistroma Needle Blight Management

Dothistroma needle blight (*Dothistroma septosporum*) is causing widespread damage to pine forests in Britain. This project aimed to investigate the social and economic barriers to prevention and control. It was found that support for management is widespread but disease management was not consistently undertaken. Barriers included compatibility with existing management objectives, affordability of disease management, and the perceived acceptability and efficacy of the recommended methods.

"… a balance between cost of implementing a plan to manage a pest or disease, versus… the economic consequences of it getting out of hand" (Forest manager)

Background

Dothistroma needle blight (*Dothistroma septosporum*) is a fungal pathogen of pine trees which is known to damage non-native pine forests, and there is growing concern that it has spread to our highly valued native Scots pine. The disease is established in Britain, leaving no option for eradication; however, it is possible to manage forests in a way which will lessen the impact and limit further spread. This project aimed to investigate the social and economic barriers which may prohibit the implementation of effective prevention and control measures, to provide a better understanding of the implications of the disease for a variety of stakeholders.

Objectives

This research aimed to: 1) Draw together new social and economic research on the barriers and opportunities of control options; 2) Identify stakeholders, and understand their beliefs, values and practices relating to disease management; 3) Conduct cost–benefit analyses to explore the financial case for disease management and understand financial barriers; 4) Further our understanding of public attitudes towards tree pest and disease control methods.

Methods

Research involved discussion with key stakeholders through Practitioner Panel workshops and interviews, economic modelling, literature reviews and a survey.

Findings

Support for tree health management is widespread among stakeholders, from pinewood managers to members of the public, although the biology and impact of diseases is little understood. Public support was higher for 'natural' methods such as biological control and felling affected trees, rather than chemical control. Disease management was not consistently undertaken by forest managers, despite an awareness of the management options recommended by experts. This was due to incompatibility with existing management objectives, and the perceived acceptability and effectiveness of the recommended methods. Financial constraints were also influential in choices over disease management (e.g. the direct cost incurred in an operation or the longer term financial implications of the action). Economic modelling confirmed the unclear nature of the case for management, but did highlight the value of replacing crops rather than abandoning silviculture in the face of infection. There is uncertainty over what key messages should be communicated about disease management and consequently which behaviours to target. Some stakeholders see current tree health problems as requiring a technological solution and others perceive it as reflecting the need for a comprehensive rethink in the policy and practice of forestry. The diverse mix of stakeholders involved in disease management requires a context-specific set of measures depending on the groups and forest system in question.

Recommendations

- Develop stronger evidence for efficacy of disease management methods.
- Undertake economic modelling to: i) assess public benefits of trees and forests, ii) develop realistic scenarios of infection and crop types, iii) improve modelling of growth rates post infection, infection progress and mortality.
- Develop an improved communication strategy and targeted messages to the major stakeholder groups.
- Develop forestry practice to deal with uncertainty and emerging threats, (e.g. new decision-making frameworks accounting for climate change and disease).
- Identify key players to lead a new forest management culture.

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