

Strategic Programme

Animal/Plant Health & Disease and Animal Welfare (Health And Welfare) Theme

Introduction

The Scottish Government Rural and Environmental Science and Analytical Services division (RESAS) has initiated a Strategic Research Programme to address major policy issues and deliver evidence based information vital to Scotland's future prosperity and wellbeing.

The Strategic Programme is being carried out through collaboration between leading teams of scientists across the range of Main Research Providers* and is being delivered through two interlinked, multidisciplinary programmes: Environmental Change (Local Responses to Global Change) and Food, Land and People (Optimising the Potential of Scotland's Natural Assets). The Health and Welfare Theme is a component of the Food, Land and People-Programme.

Key Aims and Objectives

The key aims and objectives of this theme are to reduce the burden of disease in plants and animals to secure a safe supply of high quality food from the livestock and arable/horticulture industries in Scotland, the UK and the rest of the world. In the case of the livestock industry this is to be achieved using the highest welfare standards possible. Efficiency and sustainability of production is key to the Theme with the aim of minimising effects on climate change and the environment.

Intended benefits from the Theme's research

- Understand the epidemiology of key endemic diseases of livestock in Scotland and the factors influencing their prevalence/persistence.
- Develop new and improved control measures/strategies for key endemic diseases of livestock in Scotland and the UK/rest of the world.
- Improve the welfare standards for all farmed livestock.
- Develop new and improved control measures/strategies for key pests and endemic diseases of arable/horticulture crops in Scotland and the UK/rest of the world.

Key policy documents underpinning the theme (bullet points)

- Animal Health and Welfare Strategy for Great Britain (AHWS)
- Rural Development Programme for Scotland 2007-13
- Scotland's Biodiversity in your Hands
- The Community Action Plan on the Protection and Welfare of Animals 2006-2010
- Scotland's Climate Change Adaptation Framework (2009)
- HSE Legislation on Maximum Residue Levels 2008
- Plant Health (Scotland) Order (2005)

Theme WP Research Activity

Measurement and Monitoring to Enhance Livestock Health

Work will be focussed upon measuring and monitoring animal health and in evaluating the impacts of various health promoting measures. Realistic biosecurity interventions will be examined and their value judged through impacts on animal health, financial cost, social effects and environmental benefits. The work will seek to establish the benefits of high standards of animal health and welfare with the aim of bringing about behavioural change.

Benefits of the research:

- Improved methods for determining the impact of disease on animal populations
- Greater understanding of the impact of implementing biosecurity measures as a way of controlling disease
- Improved methods for linking nationally-held datasets to advance disease detection and control
- Greater understanding of the multiple risk factors that contribute to the incidence of livestock disease
- Greater understanding of the socio-economic barriers involved in successful disease prevention leading to a better adoption of control strategies
- Greater understanding of the link between livestock disease and harmful environmental pollutants

Prevention and Control of Important Endemic, Zoonotic and New Diseases of Animals

This work will improve our understanding of the pathogenesis of important endemic and emerging diseases of livestock in Scotland and the UK thereby leading to the development of improved control strategies to reduce their burden. The ability to measure the threat to public health from pathogens found in the food chain will also be a focus together with the assessment of the effect that reservoirs of disease in the wild could have on human, livestock and wildlife health.

Benefits of the research

- Sustainable control of important livestock diseases to reduce the use of environmentally damaging chemicals
- More efficient livestock production reducing negative impacts on the environment
- Improved surveillance for new or re-emerging diseases of livestock
- Greater understanding of environmental reservoirs of disease and their impact on animal and human health
- Improved detection of food-borne pathogens
- Greater understanding of the disease threats to iconic Scottish wildlife

Improving Animal Welfare

This work will focus on informing policy how food production can be more successful in meeting societal expectations for animal welfare which includes both animals' physical and mental well-being.

Benefits of the research:

- An evidence base for the practical improvement of the health and welfare of animals on Scottish farms will be created.
- Welfare assessment protocols which measure whether animals have 'a life worth living' or 'a good life' and will be made available to stakeholders with a need to assess and manage welfare on farms.
- Work will focus on reducing pain and improving environmental conditions while maintaining productivity.
- Socio-economic aspects of integrating welfare in the food production chain will assist in lifting welfare standards through more informed consumer behaviour.
- Economic modelling will highlight the costs/benefits of strategies to improve welfare, while behavioural economics will indicate how barriers to implement new ideas may be overcome.
- Greater understanding of the inter-linkages between animal welfare and other externalities such as climate change and food security.

Prevention and Control of Important Endemic and New Diseases of Plants

The main aims are to develop strategies that will protect key crops from pests and diseases in light of legislative changes that restrict availability of pesticides. We aim to maintain or increase crop production through sustainable means within the environmental context and legislative framework for farming.

Benefits of the research

- Knowledge that will help farmers to ensure security of food supply while using sustainable methods.
- Early warning of potential new threats from pests and diseases (indigenous and non-indigenous) arising due to increased international trade and/or climate change
- Risk assessments for existing and future disease/pest threats to key crops
- Improved integrated pest and disease management systems
- Diagnostics for key pests and diseases
- Knowledge on mechanisms of infection by key pests and diseases that will underpin development of new control strategies
- New sources of durable resistance against key pests and diseases
- Markers for breeding resistance in barley and potato
- Research that will benefit government policies on climate change, economic wealth, healthy food production and biodiversity

Key email contacts

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