MANAGING INVASIVE WEEDS, PESTS AND DISEASES (2010-2013)

VISION

Our science ensures that New Zealand's goals for environmental protection, primary sector productivity and human health are not compromised by the impacts of invasive weeds, pests and diseases. We deliver management solutions for invasive species that are effective, efficient and acceptable to the community and our international markets.

CORE CAPABILITY

Research expertise for improved control of terrestrial pests and weeds, and the diseases they carry, for both industry benefit and biodiversity protection.

STRATEGIC CONTEXT

The international context for invasive species (weed and pest) biosecurity management is driven by a set of treaties and international agreements (i.e. Free Trade Agreements, SPS (WTO), IPPC (WTO), OIE, WHO, Codex, UNEP including CITES, CBD, Cartagena Protcol), alongside the national Biosecurity and Biodiversity Strategies. Reductions in funding mean that MAFBNZ has adopted risk-based approaches to most aspects of its activity. Biodiversity and primary production are under increasing pressure from the failure to adequately control established invasive species and regular incursions of high-risk new species. The number of invasive species in NZ continues to increase, particularly in the marine area, and as further exotic plants become established. New and emergent disease vectors pose additional risks to people, agriculture and native biodiversity. Global change will affect the distributions of invasive species, their interactions with other species and the risk of vectored disease outbreaks.

The following issues and challenges are seen as providing the strategic context for biosecurity and weed and pest research undertaken by Landcare Research:

- Biodiversity continues to decline through the impacts of invasive species, and exotic diseases such as avian influenza pose a critical risk to key biodiversity values.
- The effect of invasive species on biodiversity has a rapidly increasing international profile, with a strong current focus on island eradication.
- Continuity of New Zealand’s export trade in primary products is highly vulnerable to impacts from incursion by pests and pathogens of concern to trading partners.
- Established invasive species continue to extend their ranges and new species are intercepted at the border or require incursion responses with increasing frequency. This trend reflects global change, establishment of new trade pathways associated with free trade agreements and poor biosecurity capability amongst trade partners.

- Several policy streams with major implications for invasive species management will reach fruition over the next 2-4 years (i.e. MAF 'Future of Pest Management' work stream, Biosecurity Strategy review, Animal Health Board TB strategy.
- Animal welfare has become a key issue for animal pest management.
- Increasing opposition to broad-spectrum toxins and pesticides in general demands more selective, less toxic and even non-lethal control methods.
- The rationale for invasive species control will be increasingly challenged, requiring a better understanding of relationships between density and impact or pressure on environmental, economic, social and cultural values.
- There is increasing evidence that invasive species impacts can produce 'meltdown' in ecosystems, particularly involving mutualisms between introduced species.
- The costs associated with new chemical registration and maintenance of existing registrations suggests fewer chemically-based control tools will be available.

SCIENCE-BASED RESEARCH PRIORITIES

- Improve the cost effectiveness, safety and acceptability of nationally critical control tools for long-term suppression of priority invasive weeds, pests and diseases, including biological control.
- Identify major patterns and processes driving the ecology, interactions, and impacts of key invasive weeds, pests and diseases and the systems they impact.
- Develop improved systems to translate scientifically-based information for invasive species managers, and of management needs to science providers.
- Develop acceptably humane pest control methods.
- Develop whole-system modelling capability that can meet the challenge and complexity of weed, pest and disease interactions and impacts, in order to provide evidence-based solutions for invasive species managers.
- Develop robust methods to measure the contribution of invasive weeds, pests and diseases management to mitigation of impacts on environmental, economic, social and cultural values.
- Define and describe individual- and population-based processes of key invasive weeds, pests and diseases.
- Enhance research to address invasive weeds, pests and diseases issues of particular concern to Māori, and facilitate pan- Māori engagement to improve cross-cultural integration of, access to, and ability to make use of biosecurity and invasive species information.
- Understand how global change will alter risk profiles and impacts of new and existing invasive species so that priorities can be adapted accordingly.
- Continue identification, risk management and development of innovative biocontrol solutions for high priority weed species.
- Quantify complex pathways of disease transmission for wildlife epidemiology.

- Provide rapid identification services, interpretative advice, and differentiation of taxonomic units within plant pathogen species complexes, for organisms of plant health importance to NZ's primary industries and export trade.
- Provide and curate a comprehensive collection of voucher specimens of invasive weeds, pests, and pathogens to substantiate national records and support NZ's biosecurity system.

RELATIONSHIP PRIORITIES

- Foster stronger collaboration and integrated science solutions with stakeholders and Government agencies (DOC, AHB, MAF, MfE, QEII, OTS, TPK and Regional Councils), through secondments, governance roles, and research collaboration.
- Develop essential collaborations with other biosecurity research providers to form the best available teams.
- Foster strategic links with top universities in New Zealand and internationally, to nurture future core capability and enhance science excellence.
- Enhance relationships with national, regional and local community groups to stimulate weed, pest and disease management and biodiversity conservation initiatives on private lands.
- Expand and deepen relationships with Māori organisations and communities throughout New Zealand. Incorporate Māori Reference Group recommendations in strategies, existing projects and proposals as a primary mechanism.
- Invest Capability Funding to nurture and develop in-house capability to address emerging research issues.

INTERNATIONAL PRIORITIES

- Foster biosecurity research collaborations with exceptional individuals and research groups working on invasive species management.
- Engage with, and contribute to, implementation of the Convention on Biological Diversity in New Zealand and elsewhere.
- Collaborate with emergent groups researching measurement, monitoring, and management of biosecurity risks, biodiversity, and the environment.

SCIENCE EXCELLENCE

- Internal and external review ('standard' review annually, and in-depth review at least every 2 years) by internationally-respected experts in universities and research institutes, to ensure our science meets the highest standards, and draws on knowledge advances internationally.