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Management of environmental risk in perennial land use systems

Ecosystem Science

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Project Team	required
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Context

The development of perennial-based land use systems for management of dryland salinity and to increase the productivity of agricultural systems promises significant environmental and economic benefits, but there are also risks to existing natural biodiversity. These risks include the establishment of plant species in new locations where they may become environmental weeds and the possible gene flow from cultivated populations into natural populations with the potential for hybridisation with native species. Both of these may result in a loss of biodiversity from natural environments. Risk assessment systems can be used to inform selection and management of agriculturally useful species to minimise the risk to natural environments.

Aims

- Develop and implement procedures for the management of environmental risk in the form of assessment and management protocols to be applied to all germplasm under research and development within the Future Farm Industries Cooperative Research Centre (FFI CRC).
- Disseminate information about these processes to a wide audience of researchers, land managers and the community via FFI CRC publications, national weed risk forums and conferences.
- Publish weed and genetic risk assessment protocols and provide advice to encourage adoption of risk assessment procedures within and outside the FFI CRC.

Progress

- An information sheet on weed risk and the FFI CRC assessment protocol has been completed and published on the FFI CRC website.
- New weed risk assessments have been completed for native forage species that may be used outside their natural range and these have been published online on the FFI CRC website.
- A paper describing the FFI CRC environmental risk strategy for minimising the risk to the environment from agriculturally useful species was presented at the 5th Victorian Weeds Conference in Geelong, Victoria. The audience represented a wide range of organisations engaged in the control of environmental weeds from policy development to identification, monitoring and on-ground control.
- The concepts of weed and genetic risk have continued to be promoted in FFI CRC publications and raised in forums with stakeholders in Western Australia and nationally.
- An environmental risk strategy and framework was developed for the FFI CRC. All the components have been published, promoted and implemented. Assessments and other material prepared within this project are published on the Department of Parks and Wildlife website.
- The weed risk assessment protocol, genetic risk assessment protocols, species management guides and field trial guideline have been prepared and published for some species promoted by the FFI CRC to inform management to minimise the risk to natural environments.
- The environmental risk strategy, framework and its components have been promoted widely and a weed risk note provided for a publication on tropical grasses published by the FFI CRC.

Management implications

- Promotion of the concepts of weed and genetic risk management both within and outside the FFI CRC and the development and use of appropriate assessment techniques will reduce the risk of large-scale plantings of new perennial species introduced from outside Australia, native species used outside their natural range or newly developed cultivars becoming environmental weeds.

- Adoption of the genetic risk assessment process will enable the risk of genetic contamination and hybridisation to be assessed on a site-specific basis. This will help in the development and implementation of processes to manage these risks. The information may also indicate where further research is needed to understand gene flow in the environment. Guidelines and risk assessment will inform species selection and trial and planting plans to minimise the risk of agriculturally useful species to native environments during research, breeding and production system development.

Future directions

- The project has been completed with the end of the FFI CRC.