

Native Grass Strategy for South Australia

Broadacre Adoption and Seed Production of Native Perennial Grasses in Agriculture

Chapter 5 – Recommendations





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5 CHAPTER 5 - RECOMMENDATIONS

5.1. GENERAL: KNOWLEDGE

5.1.1. Issue G1: Knowledge gaps relating to native grasses and native grass seed industry

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
M/H Long term	A change at each level of educational training, particularly at the tertiary level in environmental, agricultural and biological study, to include native grasses	<ul style="list-style-type: none"> • Curriculum change to incorporate native grasses; <ul style="list-style-type: none"> ○ Management of native grasses for agriculture and sustainability; ○ Use of native grasses in land management ○ Native grass seed biology ○ Native grass seed ecology • Trial teaching projects • Research • Example applications in relation to course work e.g. mining, conservation, agriculture 	Educational institutions <ul style="list-style-type: none"> • University • TAFE • Secondary • Primary 	Federal review of tertiary curricula with respect to native grasses. State review of <ul style="list-style-type: none"> • tertiary curricula (Environment, Agriculture, Water, Science, Ecology, Biology) • secondary curricula (biology, science) • primary SACCSA Framework (Society & Environment) curricula • with respect to native grasses
H	Landholder and community extension and education service to those individuals and industries working in the agricultural sector	<ul style="list-style-type: none"> • Management and understanding/ecology of native grass pastures • Identification of native grasses • Information related to pasture cropping • Chemical applications suitable for native grasses • Fertiliser applications suitable for native grasses 	Federal Government and State NRM Boards	Federal and State NRM Boards to fund landholder and community extension and education service in native grasses in agriculture



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> • Best practice land class management • Native grass establishment • Selection of native grass species for restoration in broad acre agriculture • Feasibility assessment of native grass and native grass seed production • Extension materials e.g. case studies, fact sheets 		
H	Regional based advisors concerned with native grasses and their potential and existing applications particularly in agricultural and re-seeding activities	<ul style="list-style-type: none"> • Testing of soil for suitability for native grasses • Testing of native grass seed e.g. viability, germination • Fertiliser applications suitable for native grasses • Chemical applications suitable for native grasses • Disease knowledge related to native grasses • Grazing management of native grasses • Information related to pasture cropping • Harvesting of seed and herbage of native grasses • Seed addition (native or exotic) for pasture enhancement • Knowledge of equipment and cleaning for various processing stages of native grass seed 	Federal Government and State NRM Boards	<p>Federal and State NRM Boards to fund landholder and community extension and education service in native grasses in agriculture</p> <p>Appoint and train regional advisors in native grasses in agriculture and re-seeding activities</p> <p>Engage native grass specialists as appropriate</p>



5.2. GENERAL: EDUCATION

5.2.1. Issue G2: Landholder, community and professional education and awareness of native grasses and their seeds

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H Short term	Review and instigate informal and formal education of the community, landholders, professional advisors, educators, associated industry individuals and groups with respect to native grasses and their seeds.	<ul style="list-style-type: none"> • Scientific training of advisors • Regional field advisors • Training of landholders and community organisations 	Federal Government State NRM Boards	<p>Register of service providers both locally and inter-state.</p> <p>Sharing of native grass knowledge related to broad scale agriculture between industry leaders</p> <p>Communication mechanisms</p>



5.3. GENERAL: POLICY AND LEGISLATION

5.3.1. Issue G3: Lack of policy related to native grasses

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H	Review NRM Investment Strategies and Plans in relation to native grasses	<ul style="list-style-type: none"> Identifying the percentage of land class and landscapes suitable for perennial vegetation particularly in relation to native grasses Incorporation of strategies to manage native grasses Identifying the percentage of the landscape requiring perennial ground cover Develop mechanisms for prioritising native grasses within natural resources management 	State NRM Boards State Agencies – PIRSA, DWLBC	Review Investment Strategies and Plans In relation to native grasses Federal Ministerial Presentation and awareness raising of the Natural Resources Council

5.3.2. Issue G4: Native Vegetation Act

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H (Immediate)	Review the Native Vegetation Act in relation to native grasses, native grassland, native pasture, native grass seed harvesting, native grass management, provenance, pasture cropping and native grass reseeding and restoration.	<ul style="list-style-type: none"> Definitions of native grasses and associated terms Harvesting of native grass stands covered under the Act Review the Act in relation to best practise management of native grasses Review the Act in relation to pasture cropping Review the Act in relation to native grass reseeding, restoration and rehabilitation of degraded sites 	Reference Group Agencies – DWLBC and State NRM Boards	Copy of recommendations to Native Vegetation Council and discussions with DWLBC Forum with a view to forming an expert committee to resolve issues related to native grasses and the Native Vegetation Act



5.4. SEED INDUSTRY

5.4.1. Issue S1: Provenance of native grasses in relation to local use

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H	Develop a definition of what provenance means in relation to native grasses	<ul style="list-style-type: none"> • Definition needs to take into account the state of current research into native grasses • Education to government, non-government, community, landholders on the likely impact of provenance regarding use of native grasses 	<p>Agencies – DWLBC, DEH</p> <p>State NRM Boards</p>	State-wide Conference and workshop with a view to forming an expert committee (including seed industry) to resolve issues related to provenance as applied to native grasses
H	Develop a definition of what provenance means in relation to native grasses in relation to a variety of applications and locations e.g. broad acre agriculture, mining,	<ul style="list-style-type: none"> • Definition may need to take into account the fluctuation in availability of native grass seed • Definition to take into account the location of applications related to native grass type • Education to government, non-government, community, landholders on the likely impact of provenance relating to applications using native grasses 	<p>Agencies – DWLBC, DEH, PIRSA (Mining)</p> <p>State NRM Boards</p> <p>Seed Industry particularly related to native grasses</p>	State-wide Conference and workshop with a view to forming an expert committee (including seed industry) to resolve issues related to provenance as applied to native grasses
L	Assess the potential risk of non-local native grasses as weeds	<ul style="list-style-type: none"> • Determine the impact of using non-local native grasses in a variety of applications and locations • Risk analysis of non-local native grasses as weeds • Monitoring of non-local native grasses for weed potential 	DWLBC, PIRSA, DEH	Programs to be developed by the Agencies



5.4.2. Issue S2: Lack of a commercially viable native grass seed industry

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H	Assess the viability of a commercial native grass seed industry	<ul style="list-style-type: none"> • Conduct business feasibility studies • Undertake future market analysis • Implement regular and annual collection of relevant economic and production data • Development of business plans and commercial viability assessments based on market research and costing of capital expenditure. 	<p>Federal research agencies e.g. RIRDC; GRDC</p> <p>National/State – Farmers Federation</p> <p>State Agencies – PIRSA, DWLBC</p>	Federal/State Government provision of establishment business funding
H	Develop an organisational industry structure to oversee the native grass seed industry	<ul style="list-style-type: none"> • Investigate and review existing and potential models for the native grass seed industry • Trial a organisational industry structure model for the native grass seed industry • Review performance and suitability of organisational model 	<p>Federal Government</p> <p>State Agencies – PIRSA, DWLBC</p> <p>Current native seed industry</p>	Engagement of An Executive Officer to investigate models for the native grass seed industry and implementation of organisation structure
	Develop a Native Grass Seed Industry Establishment to direct the industry	<ul style="list-style-type: none"> • Develop a strategic plan • Investigate and review existing and potential authorities for suitability for the native grass seed industry with a view to: <ul style="list-style-type: none"> ○ Regulation of the industry ○ Provide technical support to growers ○ Identify potential investors ○ Improve efficiencies ○ Direct marketing strategies ○ Education and awareness • Reference Group to direct the 	<p>Federal Government</p> <p>State Agencies – PIRSA, DWLBC</p> <p>Current native seed industry</p>	Engagement of an Executive Officer to investigate models for the native grass seed industry and implementation of organisation structure



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<p>initial stages of the establishment of a native grass seed 'industry authority'</p> <ul style="list-style-type: none"> • Trial a native grass seed 'industry authority' • Review performance and suitability of native grass seed 'industry authority' • Regulate the industry <ul style="list-style-type: none"> ○ Provide technical support to growers ○ Identify potential investors ○ Develop more efficient methods of production • Create appropriate marketing strategies • Develop extension materials related to native grass seeds • Supports professional training of native seed advisors and other seed advisors • Liaisons with tertiary institutions regarding curricula and student training • Liaisons with Government and non-government organisations • Develop and implement strategies to create reliable consistent, and accessible demand for native grass seed • Evaluate value of PBR's to the native grass seed industry • Development of seed standards <ul style="list-style-type: none"> ○ Seed purity 		



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> ○ Seed packaging/labelling ○ Seed viability ○ Pure Live Seed (PLS) ○ Costing per PLS ○ Germination • Development of long term demonstration sites 		
L/M	Identify and develop native grass seed industry infrastructure to support a commercial native grass seed industry	<ul style="list-style-type: none"> • Conduct feasibility studies of the necessity of local infrastructure • Identify and develop where infrastructure is required at local, state and national level in relation to <ul style="list-style-type: none"> ○ Seed processing ○ Seed testing ○ Seed harvesting ○ Sowing of seed ○ Marketing ○ Seed storage ○ Seed packaging ○ Seed sales • Strategies by which infrastructure can be developed e.g. <ul style="list-style-type: none"> ○ Purchase ○ Cooperative ○ Hire ○ Contract 	Native grass seed 'industry authority'	Scope infrastructure requirements following appointment of EO and 'industry authority'
L/M	Review and develop mechanisms for seed price structure in the native grass seed industry	<ul style="list-style-type: none"> • Determine pricing signals • Develop a pricing framework/mechanism 	Native grass seed 'industry authority'	Scope pricing mechanisms following appointment of EO and 'industry authority'
L/M	Develop reporting strategies and procedures in order to build a quantitative and qualitative database for future industry analysis	<ul style="list-style-type: none"> • Institute frameworks for the reporting of: <ul style="list-style-type: none"> ○ Economic indicators, 	Native grass seed 'industry authority'	Scope reporting strategies and procedures following appointment of EO and



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> ○ Native seed production ○ Production costs ○ Industry costs ○ Market return ○ Market demand 		'industry authority'
H	Review, develop and implement a package of incentives targeted to native grass seed authority, seed producers, merchants, and end-users	<ul style="list-style-type: none"> • Package of incentives may include: <ul style="list-style-type: none"> ○ Tax incentives (local, state and federal government); ○ Rebates; ○ Discounts, ○ Payment programs • Initial financial support for 'industry authority' establishment 	Federal State Government – PIRSA, DWLBC, DEH; Local Government State NRM Boards	Apply overseas experiences particularly Canada and USA to Australia Meeting and presentation with Federal Climate Change and Agriculture Ministers
M Long term	Implement industry and community education programs in relation to native grasses and their seeds	<ul style="list-style-type: none"> • Raise awareness of the myths and misconceptions concerning native grass seeds and their production • Conduct education and awareness programs of the economic and environment benefits of native grass seed production 	State NRM Boards Local Government	Development of education materials and associated programs. Promotion of native grasses and their seeds to industries/organisations such as TSA, CFS, SA Water.



5.4.3. Issue S3: Quality, variety and availability of native grass seed

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H Short term - immediate	Review, evaluate and further develop the potential for native grass seed production and supply to meet current and future demands	<ul style="list-style-type: none"> • Research and trial species selection for <ul style="list-style-type: none"> ○ Commercialisation ○ Market potential ○ Production capability ○ Applications ○ Demand • Research and trial species for specific niche markets e.g. local cultivars (ecotypes), dune stabilisation, salinity, soil remediation • Investigate the need for grass seed centres and/or plant breeding centres for production of genetic stock • Investigate the need for key growers for production of genetic stock 	Key producers and key researchers PIRSA (SARDI)	Research cooperative of key producers and key researchers to progress native grass seed production To develop from current base information (strategy document) the potential for species and their applications
M Long term	Investigate the value of PBR's to the native grass seed industry	<ul style="list-style-type: none"> • Review the use and value of current PBR's in relation to native grasses • Audit and assess the need for future PBR's in relation to native grasses under production • Investigate the need for alternative models of commercialising genetic selection of cultivars 	Native grass seed 'industry authority'	Native grass seed 'industry authority' Executive Officer to investigate and assess the value of PBR's in the native grass industry



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H	Review the need for; develop and implement seed standards, legislation and policy	<ul style="list-style-type: none"> • Development of seed standards <ul style="list-style-type: none"> ○ Seed purity ○ Seed packaging/labelling ○ Seed viability ○ Pure Live Seed (PLS) ○ Costing per PLS ○ Germination • Investigate standards for domestic animal use of native seeds • Investigate standards for human use of native seeds 	Native grass seed 'industry authority'	Native grass seed 'industry authority' Executive Officer to undertake and direct the process of seed standards, legislation and policy development



5.5. SUSTAINABLE ECONOMIC PRODUCTION

5.5.1. Issue P1: Application and knowledge of grazing management regimes related to native grasses

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
M long term (2 years)	Undertake at state wide level, feed test studies in relation to nutritional and toxicology value of native grasses species	<ul style="list-style-type: none"> Selected native grass species be tested Species be tested in different regions across the state Native grass species to be tested in a range of growing conditions Digestibility (green herbage, dry matter) Toxicology Production and yield data 	Federal State Agencies PIRSA, DWLBC National and State Farmers Federations	Seek funding to establish trials on a State-wide basis. Review studies undertaken elsewhere in Australia in relation to nutritional and toxicology value of native grasses species
M Long term	Appoint regional based advisors charged with native grass grazing management	<ul style="list-style-type: none"> Identify and teach landholders and the community the skills related to the identification of native grass species Disseminate knowledge of native grass species; Advising on the management of paddock size; rotational periods related to grazing management Advising on the management weeds in native grass pastures Develop extension materials related to grazing management Advising on the management of fertiliser application related to management of native grass 	Federal Government State Agencies PIRSA, DWLBC State NRM Boards	Federal, State Government and State NRM Boards to fund landholder and community extension and education service in native grass grazing management Appoint and train regional advisors in native grass grazing management Development of extension material on native grass grazing management for advisors and landholders



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<p>pastures</p> <ul style="list-style-type: none"> Implementing demonstration sites 		Engage native grass grazing management specialists as appropriate
H Long term	Develop and implement a package of incentives targeted to land managers, the community and associated industries according to best management grazing guidelines	<ul style="list-style-type: none"> Package of incentives may include: tax incentives (local, state and federal government; rebates; discounts Payment for pasture grazing practises Payment/tangible credit value for biodiversity pasture management 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Apply, develop and implement overseas (USA), interstate and South Australian experiences in relation to incentives to manage native grass pastures</p> <p>Meeting and presentation with Agriculture Ministers</p>
M Long term	Develop an auditing and assessment system of grazing management practises to enable an understanding of how best to manage native grass pastures in various regions of South Australia	<ul style="list-style-type: none"> Landholders; regional advisors and scientific auditing and assessment as appropriate Review and undertake where necessary studies into: domestic animal preferences; appropriate height to graze pastures to; paddock sizes; rotational periods; species characteristics in relation to grazing; management of weeds through grazing management; fertiliser application related to 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p>	<p>Fund programs for the training of landholders and regional advisors in auditing and assessment of grazing management of native grass pastures</p> <p>Train landholders and regional advisors to audit and assess grazing management of native grass pastures</p>



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<p>management of native grass pastures</p> <ul style="list-style-type: none"> Review and undertake where necessary studies into grazing management related to locations and landscapes, seasonal conditions and extreme climatic conditions 	National and State Farmers Federations	<p>Funding for periodic and long term (>10 years) scientific assessment of grazing management of native grass pastures</p> <p>Disseminate information through informal and formal communication channels</p>
M Long term	Develop an auditing and assessment system for regular and annual collection of economic and production data related to grazing management of native grass pastures	<ul style="list-style-type: none"> Develop extension materials related to economics of grazing management Collate and analyse relevant data to enable trends and predictions related to economics of grazing management of native grasses Undertake cost benefit analysis of grazing management practises 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Fund programs for the training of landholders and regional advisors in collection of economic and production data related to grazing management of native grass pastures</p> <p>Train landholders and regional advisors in collection of economic and production data related to grazing management of native grass pastures</p> <p>Funding for periodic and long term (>10 years) for collection of economic and production data modelled on studies of economic analysis related to grazing</p>



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
				management of native grass pastures Disseminate information through informal and formal communication channels

5.5.2. Issue P2: The process and mechanisms for replanting or enhancing native grass pastures

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
M/H Long term - immediate	Research and evaluate the processes and mechanisms for replanting and enhancing native grass pastures	<ul style="list-style-type: none"> • Review and undertake studies into: <ul style="list-style-type: none"> ○ the addition of summer active native grass species; ○ pasture cropping; ○ addition of combinations of forbs, legumes, shrubs to native grass pastures; ○ weed management; ○ persistence; ○ fertiliser; ○ herbicides, ○ fungicides and insecticides; ○ optimal crop rotation; ○ biological mutualism. • Review and undertake studies into the management of planted native grass stands compared to natural pasture stands 	Federal Government State agencies – PIRSA, DWLBC, DEH; Local Government State NRM Boards National and State Farmers Federations	Funding for periodic and long term (>10 years) scientific assessment of replanting and enhancing native grass pastures Disseminate information through informal and formal communication channels
L/M	Develop guidelines for the processes and	<ul style="list-style-type: none"> • Develop extension materials 	State agencies –	Produce extension



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
Long term	mechanisms for replanting and enhancing native grass pastures	based on research of replanting and enhancing native grass pastures	PIRSA, DWLBC, DEH; State NRM Boards Local Government	materials for regional use on the processes and mechanisms for replanting and enhancing of pastures
M Long term	Appoint regional based advisors charged with implementing methods to rehabilitate, replant and enhance native grass pastures	<ul style="list-style-type: none"> • Identify and teach landholders and the community the skills related to the identification of native grass species • Disseminate knowledge of native grass species • Advising on the management of weeds in establishment and planted phases of native grass pastures • Advising on the management of fertiliser application related to establishment and planted phases of native grass pastures • Develop extension materials related of replanting and enhancing native grass pastures • Implementing demonstration sites 	Federal Government State agencies - PIRSA, DWLBC State NRM Boards	Federal, State Government and State NRM Boards to fund landholder and community extension and education service in replanting and enhancing native grass pastures Appoint and train regional advisors in replanting and enhancing native grass pastures Engage native grass replanting and enhancing specialists as appropriate
M/H Long term	Develop an auditing and assessment system of the replanting and enhancement of native grass pastures to enable best practise management of native grass pastures in various regions	<ul style="list-style-type: none"> • Landholders; regional advisors and scientific auditing and assessment as appropriate • Review and undertake studies into: <ul style="list-style-type: none"> ○ the addition of planted species to rejuvenate existing pasture: 	Federal Government State agencies – PIRSA, DWLBC, DEH;	Fund programs for the training of landholders and regional advisors in replanting and enhancement of native grass pastures



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> ○ the addition of planted species to rejuvenate existing pasture with combinations of forbs, legumes, grasses, shrubs; ○ pasture cropping; ○ weed management; ○ persistence; ○ fertiliser; ○ herbicides, fungicides and insecticides ○ optimal crop rotation ● Review and undertake where necessary studies into replanting and enhancement of native pastures related to locations and landscapes, seasonal conditions and extreme climatic conditions 	<p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Train landholders and regional advisors to audit and assess replanting and enhancement of native grass pastures</p> <p>Funding for periodic and long term (>10 years) scientific assessment of replanting and enhancement of native grass pastures</p> <p>Disseminate information through informal and formal communication channels</p>
M/H Long term	Develop an auditing and assessment system for regular and annual collection of economic and production data related to replanting and enhancement of native grass pastures	<ul style="list-style-type: none"> ● Develop extension materials related to economics of replanting and enhancement of native grass pastures ● Collate and analyse relevant data to enable trends and predictions related to economics of replanting and enhancement of native grass pastures ● Undertake cost benefit analysis of replanting and enhancement of native grass pastures 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards National and State Farmers Federations</p>	<p>Funding for periodic and long term (>10 years) for collection of economic and production data related to replanting and enhancement of native grass pastures</p> <p>Disseminate information through informal and formal communication channels</p>



5.5.1 Issue P3: Knowledge gap relating to the nutrition, toxicology and production of native grass species for domestic animal production

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
M Long term	Research, evaluate and develop nutrition, toxicology and production information related to native grasses in pastures	<ul style="list-style-type: none"> • Selected native grass species (seed; green herbage; dry matter; hay) be tested <ul style="list-style-type: none"> ○ Toxicology ○ Digestibility ○ Macro nutrient composition ○ Micro nutrient composition ○ Selected phyto-chemicals ○ Production and yield measures • Species be tested in different regions across the state • Native grass species to be tested in a range of growing conditions such as with fertiliser addition; saline soils; differing soil types; contaminated soils; soils with differing nutrient profiles 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Funding for scientific assessment of nutrition, toxicology and production information related to native grasses in pastures</p> <p>Disseminate information through informal and formal communication channels</p>
M Long term	Research and evaluate the nutrition, toxicology and production in relation to domestic animal growth, reproduction and health	<ul style="list-style-type: none"> • Evaluate the growth, reproduction and health of domestic animals grazing native grass species (seed; green herbage; dry matter; hay) by investigating: <ul style="list-style-type: none"> ○ Live weight ○ Reproductive capacity ○ Wool production ○ Carcase weight ○ Marbling of meat ○ Longevity of animals 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM</p>	<p>Funding for scientific assessment of nutrition, toxicology and production information related to domestic animal growth, reproduction and health native grasses in pastures</p> <p>Disseminate information through informal and formal communication channels</p>



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> ○ Health of animals ○ Resistance to disease ● Domestic animals be tested in different regions across the state ● Domestic animals to be tested in a range of growing conditions (e.g. soil types); locations and landscapes; seasonal conditions and extreme climatic conditions 	<p>Boards</p> <p>National and State Farmers Federations</p>	
M Long term	Develop guidelines for domestic animal production in relation to native grasses as food sources based on sound nutrition, toxicology and production information	<ul style="list-style-type: none"> ● Develop extension materials based on research into the nutrition, toxicology and production of native grasses in pastures ● nutrition, toxicology and production in relation to domestic animal growth, reproduction and health 	<p>State agencies – PIRSA, DWLBC, DEH;</p> <p>State NRM Boards Local Government</p>	<p>Produce extension material on</p> <ul style="list-style-type: none"> ● nutrition, toxicology and production of native grasses in pastures ● nutrition, toxicology and production - domestic animal growth, reproduction and health
M Long term	Appoint regional based advisors concerned with domestic animal production especially nutrition, toxicology and production information in relation to native grasses in pastures	<ul style="list-style-type: none"> ● Disseminate knowledge of native grass species related nutrition, toxicology and production of native grasses in pastures ● Disseminate knowledge of native grass species and domestic animal production in relation to native grasses as food sources based on nutrition, toxicology and production information ● Advising on the management of native grass pastures being grazed by domestic animals 	<p>Federal Government</p> <p>State agencies - PIRSA, DWLBC</p> <p>State NRM Boards</p>	<p>Appoint and train regional advisors in domestic animal production especially nutrition, toxicology and production information in relation to native grasses in pastures</p> <p>Engage native grass specialists in relation to domestic animal production especially nutrition, toxicology and production</p>



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<p>(sheep, cattle, alpacas and other)</p> <ul style="list-style-type: none"> • Advising on the management of domestic animals grazing native grass pastures (sheep, cattle, alpacas and other) • Develop extension materials related to the management of native grass pastures grazed by domestic animals • Develop extension materials related to nutrition, toxicology, health and production of native grasses for domestic animal management 		information of native grasses in pastures as appropriate
M Long term	Develop an auditing and assessment system of nutrition, toxicology and production of native grasses in pastures	<ul style="list-style-type: none"> • Landholders; regional advisors and scientific auditing and assessment as appropriate • Review and undertake where necessary studies into nutrition, toxicology and production of native grasses in pastures related to locations and landscapes, seasonal conditions and extreme climatic conditions 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Fund programs for the training of landholders and regional advisors in nutrition, toxicology and production of native grasses in pastures</p> <p>Train landholders and regional advisors to audit and assess nutrition, toxicology and production of native grasses in pastures</p> <p>Funding for scientific assessment of nutrition, toxicology and production of native grasses in pastures</p>



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
				Disseminate information through informal and formal communication channels
M Long term	Develop an auditing and assessment system of the nutrition, toxicology and production in relation to domestic animal growth, reproduction and health	<ul style="list-style-type: none"> Landholders; regional advisors and scientific auditing and assessment as appropriate Review and undertake where necessary studies into nutrition, toxicology and production in relation to domestic animal growth, reproduction and health related to locations and landscapes, seasonal conditions and extreme climatic conditions 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Fund programs for the training of landholders and regional advisors in nutrition, toxicology and production in relation to domestic animal growth, reproduction and health</p> <p>Train landholders and regional advisors to audit and assess nutrition, toxicology and production in relation to domestic animal growth, reproduction and health</p> <p>Funding for scientific assessment of nutrition, toxicology and production in relation to domestic animal growth, reproduction and health</p> <p>Disseminate information through informal and formal communication channels</p>
M	Develop an auditing and assessment system	<ul style="list-style-type: none"> Develop extension materials 	Federal	Funding for collection of



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
Long term	for regular and annual collection of economic and production data related to nutrition, toxicology and production in relation to domestic animal growth, reproduction and health	<p>related to economics of domestic animal growth, reproduction and health</p> <ul style="list-style-type: none"> • Collate and analyse relevant data to enable trends and predictions related to economics of domestic animal growth, reproduction and health • Undertake cost benefit analysis of domestic animal growth, reproduction and health 	<p>Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>economic and production data related to nutrition, toxicology and production of domestic animal growth, reproduction and health</p> <p>Disseminate information through informal and formal communication channels</p>



5.6. USE OF NATIVE GRASSES IN LAND MANAGEMENT

5.5.2 Issue L1: Knowledge gaps and applications of the uses of native grass in land management

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
M Long term – medium	Review, evaluate and implement existing and current knowledge of native grasses in the amelioration of land management issues across varying land classes	<ul style="list-style-type: none"> • Identify gaps in knowledge base • Identify methods and strategies that ameliorate land management issues using native grasses • Apply 'new' methods of ameliorating land management issues 	Federal Government State agencies – PIRSA, DWLBC, DEH; State NRM Boards Local Government Community Groups National and State Farmers Federations	Sharing of native grass knowledge related to amelioration of land management issues between industry leaders <ul style="list-style-type: none"> • Develop frameworks and strategies • Produce guidelines • Development of extension materials • Apply best management practise to demonstration sites – long term Implement guidelines and extension activities Communication mechanisms
H Long term	A change at each level of educational training, particularly the tertiary level in environmental, agricultural and biological study, to include the use of native grasses in ameliorating land management issues	<ul style="list-style-type: none"> • Curriculum change to incorporate the use of native grasses in land management; e.g. <ul style="list-style-type: none"> ○ Salinity ○ Erosion ○ Soil acidification 	Educational institutions University TAFE Secondary Primary	Federal review of tertiary curricula with respect to native grasses. State review of <ul style="list-style-type: none"> • tertiary curricula



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> ○ Desertification ○ Soil contamination ○ Water logging ● Trial teaching projects ● Research ● Example applications in relation to course work e.g. mining, conservation, agriculture 		<p>(Environment, Agriculture, Water, Science, Ecology, Biology)</p> <ul style="list-style-type: none"> ● secondary curricula (biology, science) ● primary SACCSA Framework (Society & Environment) curricula ● with respect to native grasses in ameliorating land management issues
M Long term	Landholder and community extension and education service to those individuals and industries working in the agricultural sector where there are land management issues	<ul style="list-style-type: none"> ● Identify and teach landholders and the community the skills related to the identification of native grass species applicable to land management issues ● Dissemination of information related to the use of native grasses in land management issues ● Property and landscape planning in relation to land management issues ● Feasibility assessment of use of native grasses in land management issues ● Selection of native grass species for application to land management issues 	<p>Federal Government</p> <p>State agencies - PIRSA, DWLBC, DEH</p> <p>State NRM Boards</p>	Federal and State NRM Boards to fund landholder and community extension and education service concerned with native grasses and their role in ameliorating land management issues



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> Native grass establishment relating to land management issues Extension materials detailing the use of native grasses in land management issues e.g. case studies, fact sheets 		
M Long term	Research and evaluate the processes and mechanisms for the application of native grasses in relation to land management issues	<ul style="list-style-type: none"> Review and undertake studies into: <ul style="list-style-type: none"> Species suitability Salinity Erosion Soil acidification Desertification Soil contamination Water logging addition of combinations of forbs, legumes, shrubs to native grass pastures; weed management persistence; herbicides, fungicides and insecticides Review and undertake studies into the management of native grasses in land management application 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Funding for scientific assessment of the processes and mechanisms for the application of native grasses in relation to land management issues</p> <p>Disseminate information through informal and formal communication channels</p>
L Long term	Develop guidelines for use of native grasses in land management issues	<ul style="list-style-type: none"> Develop extension materials based on research of native grasses in land management issues 	State agencies – PIRSA, DWLBC, DEH;	Produce extension material on the use of native grasses in land management issues



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
			State NRM Boards Local Government	
L Long term	Appoint regional based advisors charged with the implementation of native grass application in land management issues	<ul style="list-style-type: none"> • Knowledge of land management issues • Identify and teach landholders and the community the skills related to the identification of native grass species • Disseminate knowledge of use native grass species in land management issues • Advising on the management of native grasses used in land management issues • Advising on the management of weeds related to land management issues • Develop extension materials related to land management issues • Implementing demonstration sites 	Federal Government State agencies - PIRSA, DWLBC State NRM Boards	Appoint and train regional advisors in role of native grasses in ameliorating land management issues Engage native grass specialists in relation to the role of native grasses in ameliorating land management issues



5.6.1 Issue L2: Application of native grasses to landscape change processes

Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
H Long term - immediate	Research and evaluate the processes and mechanisms for the application of native grasses in relation to landscape change	<ul style="list-style-type: none"> • Review and undertake studies into native grasses and their role in: <ul style="list-style-type: none"> ○ Climate change ○ Carbon offset ○ Increased drought frequency ○ Land use change (i.e. cropping to grazing) ○ Reestablishment of indigenous grasslands ○ Landscape planning ○ Remediation for feasibility • Review and undertake studies into the establishment and management of native grasses in relation to landscape change as identified above 	<p>Federal Government</p> <p>State agencies – PIRSA, DWLBC, DEH;</p> <p>Local Government</p> <p>State NRM Boards</p> <p>National and State Farmers Federations</p>	<p>Funding for scientific assessment of the processes and mechanisms for the application of native grasses in relation to landscape change</p> <p>Disseminate information through informal and formal communication channels</p>
H Long term	A change at each level of educational training, particularly the tertiary level, in environmental, agricultural and biological fields of study to include the use of native grasses in relation to landscape change	<ul style="list-style-type: none"> • Curriculum change to incorporate the use of native grasses in landscape change; e.g. <ul style="list-style-type: none"> ○ Climate change ○ Carbon offset ○ Increased drought frequency ○ Land use change (i.e. cropping to grazing) ○ Reestablishment of indigenous grasslands ○ Landscape planning 	<p>Educational institutions</p> <p>University</p> <p>TAFE</p> <p>Secondary</p> <p>Primary</p>	<p>Federal review of tertiary curricula with respect to native grass and landscape change.</p> <p>State review of</p> <ul style="list-style-type: none"> • tertiary curricula (Environment, Agriculture, Water, Science, Ecology, Biology)



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
		<ul style="list-style-type: none"> • Trial teaching projects • Research • Example applications in relation to course work e.g. conservation, agriculture, planning and land management 		<ul style="list-style-type: none"> • secondary curricula (biology, science) • primary SACCSA Framework (Society & Environment) curricula • with respect to native grasses and landscape change
M Long term	Landholder and community extension and education service to those individuals and industries working in the agricultural sector in relation to landscape change	<ul style="list-style-type: none"> • Identify and teach landholders and the community the skills related to the identification of native grass species applicable to landscape change • Dissemination of information related to the use of native grasses in landscape change • Property and landscape planning in relation to landscape change • Feasibility assessment of use of native grasses in landscape change • Selection of native grass species for application to landscape change • Native grass establishment relating to landscape change • Extension materials detailing the use of native grasses in landscape change e.g. case studies, fact sheets 	<p>Federal Government</p> <p>State agencies - PIRSA, DWLBC, DEH</p> <p>State NRM Boards</p>	Federal and State NRM Boards to fund landholder and community extension and education service concerned with landscape change in the agricultural sector



Priority	Recommendation	Specifics related to recommendation	Responsibility	Action
L Long term	Regional based advisors concerned with native grasses and their applications to landscape change	<ul style="list-style-type: none"> • Knowledge of landscape change issues • Advising on the management of native grasses used in landscape change • Advising on the management weeds in landscape change • Develop extension materials related to landscape change • Implementing demonstration sites 	<p>Federal Government</p> <p>State agencies - PIRSA, DWLBC</p> <p>State NRM Boards</p>	<p>Appoint and train regional advisors in role of native grasses and their applications to landscape change</p> <p>Engage native grass specialists in relation to native grasses and their applications to landscape change</p>
L Long term	Develop guidelines for native grasses and their applications to address landscape change	<ul style="list-style-type: none"> • Develop extension materials based on research of native grasses in landscape change issues 	<p>State agencies – PIRSA, DWLBC, DEH</p> <p>State NRM Boards</p> <p>Local Government</p>	<p>Produce extension material on the use of native grasses and their applications to address landscape change</p> <p>Produce extension material on the use of native grasses and their applications to address landscape change</p>

