

## 2021-22 Investment Call – SALRC Producer identified RD&A priorities

### Key for SALRC REGIONAL COMMITTEES:

NNSW	Northern NSW	CWNSW	Central/Western NSW	SA	South Australia
SNSW	Southern NSW	SEVT	South East Victoria/Tasmania		
CV	Central Victoria	WV	Western Victoria		

**Table 1: Identify new research, development or adoption gaps, activities and strategies to achieve the desired outcome/s.**

MLA Program Area	Outcome sought	To adequately achieve the outcome, identify R&D and/or adoption gaps or strategies?	Committee origin	MLA Response to Priority
<b>Beef Production</b>	Tools to assist producers avoid stock losses from bloat-including effective prevention treatments, warning systems to identify high risk, grazing management, non-bloating legume varieties.	<ul style="list-style-type: none"> <li>Develop an alternative to Monensin capsules to prevent and manage bloat in beef cattle.</li> <li>Identify potential new bloat management treatments that are acceptable in the supply chain.</li> <li>Tools to assist producers avoid stock losses from bloat-effective prevention; warning systems to identify high risk periods (e.g. sensors on animals).</li> <li>Select and evaluate new pasture legume cultivars with reduced bloat risk.</li> </ul>	WV, NNSW, CV, SNSW	Although not developed in the current call, this priority remains of high importance to MLA to address in future. MLA are updating resources around <a href="#">bloat management</a> , <a href="#">supplementation</a> and also working with Elanco to have the Monensin capsule re-released.
<b>Sheep Productivity</b>	Develop mitigation strategies and management responses to minimise heat stress impacts	<ul style="list-style-type: none"> <li>Develop mitigation strategies and management responses to</li> </ul>	SA, SNSW	This priority is currently being called for through the Sheep Reproduction Strategic Partnership (MLA Donor Company call) with a specific focus on improving

	on sheep production under extensive grazing and confinement feeding regimes.	<p>minimise heat stress impacts on sheep reproduction.</p> <ul style="list-style-type: none"> <li>• Develop improved knowledge about microclimate variability and management in feedlots, confinement feeding and paddocks.</li> </ul>		knowledge of microclimates within paddocks and the influence on ewe behaviours. If this priority is not addressed through this call then the possibility of inclusion in future levy-based calls can be evaluated.
	Develop and evaluate precision weaner management strategies for sheep-including containment feeding for weaners and breeding stock; early weaning.	Demonstrate the productivity and economic impacts of precision management techniques for weaners and breeding ewes.	WV, SNSW	<p>A significant project focused on improving the performance (and survival) of weaners has recently been endorsed for contracting through the 2020-21 Investment Call: 'Managing Marino Weaners to survive and thrive'.</p> <p>In addition, through the MLA Donor Company, MLA are co-investing in a project with Charles Sturt University 'Finishing lambs: optimising preparation' (P.PSH.1212) to improve the post weaning management of weaners in feedlot environments and to reduce the incidence of shy feeders.</p>
<b>Sustainable Feedbase Resources</b>	Pasture species selection, mixes and management practices that provide improved persistence, higher quality feed (ME/kg DM; crude protein; palatability) and adaptation for production in variable climates.	<ul style="list-style-type: none"> <li>• Further development of existing and new varieties of perennial grasses that combine early vigour, persistence, winter production and feed quality.</li> <li>• Pasture species selection, mixes and management packages that provide adaptation for production in variable climates.</li> </ul>	NNSW, CV, SEVT, SNSW	Research into this priority will be conducted under the Terms of Reference in the 2021-22 Investment Call "Matching feed supply in a variable landscape to a changing climate".
<b>Animal Wellbeing</b>	Develop, promote and deliver practical, objective measures of livestock wellbeing that can be	<ul style="list-style-type: none"> <li>• Develop objective measure of livestock wellbeing.</li> <li>• Establish evidence of the benefits of, and guidelines for use of,</li> </ul>	SA, WV, CV, NNSW, SEVT	A number of MLA Donor Company funded projects are underway to provide ways for objective assessment of the wellbeing state:

	<p>tested against livestock husbandry best practice.</p>	<p>registered pain relief products in cattle and sheep management.</p> <ul style="list-style-type: none"> <li>• Increase industry uptake of pain relief products and BMP animal husbandry (including breeding) to reduce the animal welfare impacts of mulesing, castration, spaying, tail docking and dehorning.</li> </ul>		<ul style="list-style-type: none"> <li>• ‘Welfare benchmarking and management for the beef cattle and sheep meat industries’ (P.PSH.0807) will establish a benchmarking system for objective measurement of pain for cattle and sheep;</li> <li>• ‘New approaches to the understanding of underlying causes for neonatal lamb mortality’ (P.PSH.0808) investigates indicators of dystocia contributing to perinatal lamb mortality;</li> <li>• ‘Immune fitness as a measure of animal health, welfare and productivity’ (P.PSH.0816) investigates immune fitness as a measure of animal health, welfare and productivity;</li> <li>• ‘Reducing mortality rates in beef and sheep enterprises’ (P.PSH.0817) looks to reduce mortality in cattle and sheep enterprises through monitoring of behavioural and physiological parameters;</li> <li>• ‘Objective, robust, real-time animal welfare measures for the Australian red meat industry’ (P.PSH.0819) has similar objectives, using smart tag technology;</li> <li>• ‘Development of practical measures of animal welfare’ (P.PSH.1232) will investigate the use of microRNA as an early indicator of compromised wellbeing.</li> </ul>
	<p>Develop ovine pneumonia vaccine and animal health treatment/prevention guidelines.</p>	<p>Develop ovine pneumonia vaccine and animal health treatment/prevention guidelines</p>	<p>WV, SEVT, SNSW</p>	<p>A current MLA Donor Company project ‘Abattoir survey of ovine pneumonia pathogens in Australian sheep flocks’ (P.PSH.2054) aims to establish which are the most prevalent pathogens in sheep pneumonic lesions. Once the outcomes of this project are known, the on-</p>

				farm intervention (vaccination and prevention) guidelines will be drafted.
	Development, adoption and commercial evaluation of new treatments and management procedures to assist producers minimise pink eye in cattle (surveillance, causative agents, vaccine).	<ul style="list-style-type: none"> <li>• Surveillance to determine the prevalence of novel strains of pink eye in southern beef herds.</li> <li>• Research to establish causative agents (especially for Moraxella bovoculi).</li> <li>• Vaccine development for Moraxella bovoculi.</li> </ul>	CV	The current project 'Risk factors, treatment and prevention options for pink eye disease in cattle' (B.AHE.0319) is investigating risk factors, treatment and prevention options. What has become clear, is that a case definition for "pink eye" (infectious Bovine Keratoconjunctivitis) is needed, because the eye reacts in the same way to a wide range of insults and injury. The completion of this project will enable better understanding of the knowledge gaps and future researchable questions in this area.
<b>Sustainability and CN30</b>	Improved understanding of water volumes and water infrastructure requirements to support livestock businesses under increasing climate variability.	Under increasing climate variability, develop recommendations on optimum dam sizes; better understanding of the status of groundwater reserves and their accessibility; how do livestock water requirements change with higher average temperatures	NNSW	A term of reference was developed, however following Red Meat Panel review this has been put on hold in the 2021-22 Investment Call. Comments included that state departments were already doing this work. MLA recommends keeping this priority on the list of top priorities if it remains important. MLA are working to obtain an understanding of the work in this space being completed by State Government's. The outcomes or update on this will be delivered to the RMP in May 2021 to determine if further work is needed from MLA.
	Encourage development, adoption and commercial evaluation of products to reduce methane emissions.	Determine efficiency and efficacy of products to reduce methane emissions from livestock in a range of farming systems.	NNSW, SEVT	This priority will be addressed via a MLA Donor Company consortium <a href="#">National Livestock Methane Program</a> (NLMP) which focuses on livestock methane supplements. This includes forages and low methane livestock (ie breeding/genetics).

				Links to information will be communicated to SALRC when available.
<b>Other</b>	Accelerate herd/flock rebuilding after drought and other extreme events through development of extension/decision making tools and advisory support services.	Communicating and demonstrating regionally specific best practice in genetics, early joining strategies, biosecurity and other areas of management to enable rapid flock and herd rebuilding	SA, NNSW, SEVT, CWNSW, SNSW	This priority will be addressed by utilising existing management practices. Novel research will not be sought, rather, more effective implementation of current practices will be enacted. One project, "Flock Rebuild Strategies", has been tendered for and will be completed by June 2021. The MLA Adoption team will also work on developing resources to progress outcomes. This may include the development of tips and tools and possible e-learning modules to align with the Back to Business Bushfire Recovery program.

**Table 2: Identify ongoing research, development or adoption priorities that remain a priority from previous investment calls:**

MLA Program Area	Outcome sought	To adequately achieve the outcome, is the gap in R&D or adoption?	Committee origin	MLA Response to Priority
<p align="center"><b>Sheep Productivity</b></p>	<p>Develop and evaluate genetics and management tools (including joining length, lambing group size, post-lambing management, scanning) to reduce reproductive wastage in sheep flocks.</p>	<ul style="list-style-type: none"> <li>• Measure lamb survival rates and identify opportunities for improvement including scientific understanding of physiological constraints.</li> <li>• Develop breeding values for lamb survival and maternal traits that will improve overall lamb survival.</li> <li>• Increased extension of current best practice-including taking into account feed costs in variable environments and predator control.</li> <li>• New strategies to improve ewe fertility and lamb survival to weaning.</li> <li>• Long term evaluation and extension of precision management of reproduction processes (joining length, lambing group size, post-lambing management, scanning) to decrease mortalities of ewes and lambs.</li> </ul>	<p>SA, NNSW, SNSW, WV</p>	<p>A comprehensive understanding of the timing and causes of lamb loss has been developed. The major causes of lamb mortality are exposure, starvation associated with mis-mothering, and dystocia, and are largely attributable to environmental conditions or sub-optimal nutrition of the ewe during gestation. Other significant although secondary causes of mortality include foetal losses, disease and predation.</p> <p>Significant ongoing areas of investigation include:</p> <ul style="list-style-type: none"> <li>- Minimising the impact of heat stress on ewe reproductive performance.</li> <li>- Reducing the incidence and losses associated with dystocia.</li> </ul> <p>MLA suggests this remains a high priority but is currently being addressed through existing projects and the ongoing development of Sheep Reproductive Strategic Partnership.</p>
<p><b>Sustainable Feedbase Resources</b></p>	<p>Assess current and alternative legumes and increase legume breeding/selection strategy</p>	<p>Develop improved legume cultivars and management guidelines to improve</p>	<p>CV, SEVT, SNSW</p>	<p>Current work underway in this area include:</p>

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	focus on improved production, nodulation, persistence and low bloat traits.	production, nodulation, persistence, low bloat.		<ul style="list-style-type: none"> <li>• ‘New Powdery Mildew Resistant and Spineless Barrel Medics for Temperate and Subtropical Australia’ (P.PSH.0749).</li> <li>• ‘Rural Research and Development for Profit - Novel Pasture Legumes in Dry Areas’ (P.PSH.1136).</li> </ul>
	Develop feedbase species and grazing management systems specifically for low and medium (<450mm) mixed farming and grazing zones.	Select and evaluate under commercial conditions, new grass and legume cultivars for persistence, productivity and livestock nutrition impacts in lower rainfall grazing and mixed farming areas.	WV	<p>MLA encourages this to be raised as a <a href="#">Producer Demonstration Site (PDS) priority and applications be submitted via PDS Annual Call program</a>.</p> <p>Current research in this area includes:</p> <ul style="list-style-type: none"> <li>• ‘Increasing livestock production by integrating tropical pastures into farming systems’ (P.PSH.1029).</li> <li>• ‘Phosphorus management and requirements of tropical legume pasture swards’ (P.PSH.1050).</li> <li>• ‘Improving the use of forage brassicas in mixed farming systems’ (P.PSH.1044).</li> <li>• ‘Improving legume persistence in permanent pastures through better soil management’ (P.PSH.1044).</li> <li>• ‘Perennial pasture &amp; forage combinations to extend summer feed for southern NSW’ (P.PSH.1048).</li> <li>• ‘Dual purpose crops for lamb production in southern QLD and northern NSW’ (P.PSH.1045).</li> <li>• ‘Novel dual purpose perennial cereals for grazing’ (P.PSH.1036).</li> </ul>

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	Increase adoption of best management practices to better match stocking rate to carrying capacity. Develop new and improved support tools to actively match land capability and feed resources to stocking rate and stock nutrient requirements.	<ul style="list-style-type: none"> <li>• Develop new and improved decision support tools to actively match land capability and feed resources to stocking rate and stock nutritional requirements.</li> <li>• Promote increased adoption of these tools for improved environmental and animal welfare outcomes.</li> </ul>	CWNSW, CV	MLA's Adoption team are currently developing an updated stocking rate calculator and feed demand calculator. This remains a continual area of focus for MLA. It is closely aligned with the digital strategy and analytic tools.
	Undertake a comparative study of factors influencing winter production in grazing crops (forage and dual purpose) and permanent pastures to reveal insights into how to reduce winter feed gap in pasture systems. Evaluation of options to include livestock productivity, animal health and overall economic returns.	<ul style="list-style-type: none"> <li>• Undertake a comparative study of factors influencing winter production in grazing crops and permanent pastures to reveal insights in to how to reduce winter feed gap in pasture systems.</li> <li>• Further development of existing and new varieties of perennial grasses that combine early vigour, persistence, winter production and feed quality.</li> </ul>	SNSW, CV	<p>Current work includes:</p> <ul style="list-style-type: none"> <li>• Livestock Productivity Partnership (LPP) on grasses and legumes.</li> <li>• Grain &amp; Graze deliver material - grazing crops work, early sown late sown crops available.</li> <li>• The Feedbase Investment Plan has completed fact sheets covering: <ul style="list-style-type: none"> <li>○ <a href="#">Phosphorus-efficiency legume pasture systems</a></li> <li>○ <a href="#">Phosphorus efficiency in pastures</a></li> </ul> </li> <li>• This information will also be transferred into an e-learning module.</li> <li>• Extract information from Livestock Productivity Program (LPP) evaluation with perennial legumes including: <ul style="list-style-type: none"> <li>○ 'Improving legume persistence in permanent pastures through better soil management' (P.PSH.1044).</li> <li>○ 'Perennial pasture &amp; forage combinations to extend summer feed for southern NSW' (P.PSH.1048).</li> </ul> </li> </ul>



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				<ul style="list-style-type: none"> <li>○ ‘Dual purpose crops for lamb production in southern QLD and northern NSW’ (P.PSH.1045).</li> <li>○ ‘Novel dual purpose perennial cereals for grazing (P.PSH.1036).</li> </ul>
<b>Animal Wellbeing</b>	Improved, integrated techniques for prevention and treatment of internal parasites in sheep and cattle (grazing management, refuge animals, plant species, breeding for worm resistance).	<ul style="list-style-type: none"> <li>● Increasing resistance issues being faced due to high reliance on drenches.</li> <li>● Increase capability to manage parasites and drench resistance-worm monitoring, drench testing, managing Barbers Pole in southern areas.</li> </ul>	SEVT, CV, NNSW, WV, SA, SNSW	Significant research funding has been invested for this priority, culminating in the establishment of ParaBoss. Current projects include: <ul style="list-style-type: none"> <li>● ‘Designing farm specific nematode control programs for sheep’ (B.AHE.0308).</li> <li>● ‘ParaBoss for cattle parasites’ (B.AHE.0314).</li> </ul>
	Quantify farm productivity, animal welfare and wildlife ecology impacts of control of abundant grazing competitor and predator species. Demonstrate regionally specific application of current best practice techniques to increase uptake.	R&D gaps and adoption strategies: <ul style="list-style-type: none"> <li>● Refine tools and develop novel techniques for cost-effective and humane control and/or exclusion of grazing competitor and predator species.</li> <li>● Develop communication and advisory services and skills on the benefits to productivity and animal welfare of virtual fencing.</li> <li>● Innovative technologies to cost effectively reduce macropod grazing pressure while meeting animal welfare and native species obligations.</li> </ul>	WV, NNSW, CWNSW, SEVT	Projects current underway addressing these outcomes: <ul style="list-style-type: none"> <li>● From 2005 to 2022, MLA will have invested an estimated \$3.4M in 16 wild dog control projects. Of this investment, \$2.4M will have been through the Invasive Animals CRC (2005 to 2017) and its successor, the Centre for Invasive Species Solutions (CISS), in 9 separate projects, whereas \$607K came from co-funding contributions (i.e. not producer levies), and were matched through the MLA Donor Company (MDC) in two projects. Details on the 16 individual projects are provided in the appendix to this paper.</li> <li>● One of the MDC projects is a commitment of \$940,800 over 3 years in a capacity building initiative (Adoption of Best Practice Vertebrate</li> </ul>

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		<ul style="list-style-type: none"> <li>Objective quantification of the contribution of kangaroos to total grazing pressure.</li> <li>Improved community awareness of wild dog impacts and options to address wild dog control at a regional scale.</li> </ul>		<p>Pest Control) specifically targeted at extensive beef producers in northern regions</p> <ul style="list-style-type: none"> <li>MLA's ongoing investment in the CISS covers pest animal control research, principally wild dogs and rabbits, and emerging weeds.</li> <li>MLA does not invest in invest in shooters, trappers and infrastructure (baits and fences) as this does not qualify for R&amp;D funding.</li> </ul> <p>MLA is committed to finding long-term national solutions to this major issue and we are working with key stakeholders.</p>
	<p>Fast track broader supply chain uptake of improved livestock identification, carcass tracking and feedback systems for product quality/biosecurity/animal health monitoring and reporting.</p>	<ul style="list-style-type: none"> <li>Develop practices for collecting and managing animal identification, animal health and product quality/biosecurity throughout the supply chain and ensuring feedback reaches producers in useable and consistent formats.</li> <li>Improved compliance with industry declaration and traceability systems, including development of alternative NLIS tag technologies.</li> <li>Improve feedback to producers from feedlots, processors on animal health, carcass traits, meat yield and quality.</li> </ul>	<p>WV, SA, NNSW</p>	<p>Integrity Systems Company (ISC) is in the process of rolling out implementation of its strategic plan, which includes a vision of a fully automated integrity system that enables seamless data capture across the supply chain. A series of foundational projects have been initiated to look at technology options and recommendations for the future. Outcomes will be delivered in December 2020 and will be shared with SALRC.</p> <p>Livestock Data Link (LDL) have undergone a business planning process in the past 12 months to identify the value proposition for industry and the best possible investment case for the future. Several initiatives are under way with major supply chains as well as other adoption activities including: Direct marketing</p>

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				<ul style="list-style-type: none"> <li>A process to directly contact PIC's who have data in LDL is under way. Will target PIC's that have meaningful data in the system but don't currently have an account.</li> </ul> <p>Engaging with processors</p> <ul style="list-style-type: none"> <li>Marketing campaign to directly contact all processors to pitch the benefits of LDL to them, and their suppliers. Letter and video animation under development.</li> </ul> <p>Develop future model</p> <ul style="list-style-type: none"> <li>Engaging with all level of industry including LDL users and non-users to validate assumption on industry data requirements within the supply chain and scope work for the future of LDL.</li> </ul> <p>Integration with third party systems</p> <ul style="list-style-type: none"> <li>Industry has confirmed that integration with not only supply chain systems but third-party vendors will be critical to ensure adoption pathways are clearly developed and supply chain and customer relationships are strengthened.</li> </ul>
<b>Sustainability and CN30</b>	Develop and promote cost effective, standardised and on-farm applicable methods for measuring trends in the natural capital of farms (carbon emissions, soil carbon, and biodiversity) that can be related	<ul style="list-style-type: none"> <li>Management and demonstration of improvements in the natural capital of farms through the application of technology and new management practices that improve natural capital indicators including carbon balance,</li> </ul>	NNSW, WV, SEVT, SA, CWNSW	This priority will be addressed in the 'NRM in a Changing Climate' project the Red Meat Panel has recommended for contracting in the 2020–21 FY.

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	to sustainable best management practices.	<p>methane emissions, soil carbon and biodiversity.</p> <ul style="list-style-type: none"> <li>• Develop a simple, cost effective tool that captures the whole farm benefits of sustainability best practice (carbon neutrality, water supply/security, shelter belts, agroforestry, land management, grazing management).</li> <li>• Develop and promote practice changes that contribute to CN30-reducing methane emissions and increasing productivity.</li> <li>• Develop better spatial and temporal knowledge of C balances and trends on a regional scale.</li> <li>• Regenerative agriculture-what does it mean and what are the impacts on productivity, profitability and natural capital?</li> </ul>		