

# 2019/20 SHEEPMEAT AND GRASSFED BEEF RD&A PRIORITY



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## NATIONAL: ANIMAL PRODUCTIVITY

### Alignment with Industry Plans

	MLA 2020	MISP 2020	SISP 2020	BISP 2020
<b>Pillar</b>	Productivity and profitability	Productivity and profitability	Production efficiency in farms and in intensive finishing systems	Productivity and profitability
<b>Priority / theme</b>	Production efficiencies in farms and feedlots	Production efficiency in farms and feedlots		Production efficiency on farms
<b>Imperative / activity / program</b>		Increasing livestock productivity through new research	Increasing livestock productivity through new research	Increasing livestock productivity through new research
<b>KPI</b>	By 2020, improvement in total factor productivity of: 1.75% (southern beef); 0.5% (northern beef); 0.5% (sheep meat)	Increasing whole sector productivity growth above baseline through new research – Northern Beef: 0.5%, Southern Beef: 1.75%, Sheep 1.5%.	Reduction in the cost of on-farm sheep meat production (\$/kg liveweight) by 1.5% by 2020, and 5% by 2030	Increasing productivity growth above the baseline: — Northern beef production of 0.5% by 2020 and 2.5% by 2030

### Completed or current RD&A relevant to this priority

MLA has invested in various projects relevant to this RD&A priority including:

- Calf Loss 1
- Heifer efficiency
- CalfAlert

Sheep, as detailed below (MLA or MDC investment ONLY, research organisation cash and in-kind not included)

- \$3,252,966 has been invested in recent and current projects.
- \$3,271,023 from the 2016/17 Open Call has been contracted from the previous round.
- \$2,346,538 from the 2017/18 Open Call has been endorsed as further investment.

The table below shows recent and current investment in relation to this priority area.

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
B.NBP.1619	Remote calving alert for beef cattle – Technology development (Phase 3)	Completed	\$12,000

B.GBP.0001	Development of candidate management interventions to reduce foetal and calf loss in beef herds in northern Australia	Completed	\$197,720
B.GBP.0003	Development and validation of novel tools to assess reproductive traits and improve beef cattle reproductive efficiency	Current	\$62,400
B.LSM.0053	Participatory research evaluating and demonstrating the impact of green feed (particularly Lucerne) on conception	Current	\$496,000
B.LSM.0064	Lifetime Maternals - development of management guidelines for non-Merino ewes.	Completed	\$1,278,359
L.LSM.0001 & 0007	Improving the reproductive performance of ewe lambs — Management guidelines, economic analysis and decision support tools	Current	\$112,000
L.LSM.0002	Fail safe guides to grazing pregnant and lambing ewes on cereals	Completed	\$127,817
L.LSM.0004	Improving lamb survival by optimising lambing density.	Current	\$233,790 MLA (\$973,000 total)
L.LSM.0008	Lifetime Maternals — Phase II: Feeding Standards for Maternal Ewes	Current	\$600,000
E.REP.1404	Informing future sheep extension strategies to improve reproduction and related welfare outcomes	Completed	\$405,000
<b>16/17 Annual Call projects underway</b>			
L.LSM.0011	Maximising the value of existing technology for sheep producers	Current	\$114,700
B.AHE.0318	Reducing foetal and lamb losses in young ewes	Current	\$955,680
L.LSM.0014	Boosting lamb survival by supplementing ewes with vitamins and minerals	Current	\$543,627
L.LSM.0015	New approaches for increasing weaning rate of the national sheep-flock	Current	\$803,012
L.LSM.0013	Managing fecund flocks to improve survival of triplet dams and their lambs	Current	\$854,004
<b>17/18 Annual Call projects underway</b>			
B.GBP.0023	Improving herd production through managing plant toxins	Current	1,518,298
B.GBP.0025	Grazing with self herding to improve productivity	Current	\$350,000
B.GBP.0026	Feeding Leucaena to manage the rumen	Current	\$1,279,984
B.GBP.0027	Investigating the causes of calf loss	Current	\$674,170

B.GBP.0029	'The Sweet Spot' improving breeder herd performance through optimal pasture utilisation.	Current	\$ \$737,206
B.GBP.0030	A novel semen extender to accelerate genetic improvement programs	Current	\$483,632
B.GBP.0031	Reducing calf loss due to exposure	Current	\$407,864
<b>18-19 Annual Call projects under contracting</b>			
B.GBP.0032	Fit for Purpose Biochar to improve efficiency in ruminants	Contracting	\$951,886
j14802	Increased pasture intake and reduced supplement requirements	Under development	-
J14813	Optimising Heifer development and management to increase whole herd profit	Under development	-
J14808	No more gaps with superior shrubs systems	Under development	\$598,438
J14809	What is the nutritive value of modern crop stubbles?	Under development	\$350,130
J14815	Unlocking the keys to ewe survival	Under development	\$600,000
J14869	More lambs from ewe lambs through developing and extending best practice	Under development	\$798,000

### RD&A gaps under this priority

The following gaps remain for this priority:

**BEEF:** RD&A to improve beef weaning through improved in calf rates (herd management, breeding technology) and testing practical interventions to reduce calf loss.

**SHEEP:** Reproductive success, including both lamb and ewe survival, remains a key priority for the sheep industry due to its impact on profitability, and as a key welfare issue. While many aspects of reproductive success can be further explored, it is recommended that the balance of investment be weighted towards development and adoption activities to continue to improve the on-farm application of breeding and management practices known to affect ewe and lamb survival.

### Actions

This area remains a priority for both animal portfolios.

A number of sheep and grassfed beef focussed project applications were received in the last Annual Call in response to the breeder enterprise management Terms of Reference. Eight of those projects have been recommended for funding by the Red Meat Panel. Adding these to established projects will commit the majority of the 18/19 budget.

## NATIONAL: FEEDBASE PRODUCTIVITY

### Alignment with Industry Plans

	MLA 2020	MISP 2020	SISP 2020	BISP 2020
<b>Pillar</b>	Productivity and profitability	Productivity and profitability	Production efficiency in farms and in intensive finishing systems	Production efficiency on farms
<b>Priority / theme</b>	Production efficiencies in farms and feedlots	Production efficiency in farms and feedlots	Production efficiency in farms and in intensive finishing systems	Production efficiency on farms
<b>Imperative / activity / program</b>		Increasing livestock Productivity through new research	Increasing livestock Productivity through new research	Increasing livestock productivity through new research
<b>KPI</b>	By 2020, improvement in total factor productivity of: 1.75% (southern beef); 0.5% (northern beef); 0.5% (sheep meat)	Minimum whole-of-sector increases in productivity growth above baseline levels: northern beef production sector- 0.5% by 2020 and 2.5% by 2030; southern beef production sector- 1.75% by 2020 and 7% by 2030 and Sheep meat production sector - 1.5% by 2020 and 5% by 2030	Reduction in the cost of on-farm sheep meat production (\$/kg liveweight) by 1.5% by 2020, and 5% by 2030	Increasing productivity growth above baseline: southern beef production of 1.75% by 2020 and 7% by 2030 and northern beef production of 0.5% by 2020 and 2.5% by 2030

### Completed or current RD&A relevant to this priority

MLA is investing western, southern and northern projects relevant to this RD&A priority including:

- "New" plants, adaptation (evaluation), constraints to production and utilisation.
- The southern feedbase investment plan (~\$4m pa over 5 years) is nearing completion with investment in improved plants and evaluation, agronomy and management (new legumes phosphorus efficiency, grazing crops, and root disease), grazing management via the EverGraze project, multi-purpose shrubs (via FFI and Enrich).
- The producer research site network support ~25 sites across southern Australia having producers working with researchers in the feedbase themes.
- Pasture Updates have been implemented across southern Australia and BeefUp forums in the north) to raise awareness and signpost.

- A 'harvesting' process has been completed for southern feedbase R&D. MLA board has approved a Feedbase Adoption and Delivery plan, which will be implemented in spring 2018.
- Northern investment in the feedbase has a current focus on evaluating and incorporating legumes in the grass based systems. These areas were supported from the last open call.
- WBC.0001 Rural profit weed biocontrol
- PBE.00387 and 38 – genomics annual legume and phalaris completed
- LPP program of projects on tropical and temperate species – evaluation and agronomy
- PSH.0018 Phosphorus use efficiency – serradellas in NSW, WA and trialling in Vic
- PSH.0001 - tropicals in northern NSW and southern WA – completed to be delivered
- GSM.0008 grazing crops – to be delivered
- ERM.0107 Wambiana Grazing trial – collation of past work completed
- P.PSH.1136 low rainfall zone legumes, rural profit commenced
- PSP.0013 legumes in WA of animal production – to be delivered – case studies animal crop benefits
- TGP.1702 Total grazing pressure business plan underway
- L.LSM.0006 Mixed farming systems business plan completed
- L.MXD.0001 benchmarking mixed farms completed

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
P.PSH.0730	DAFWA Mosaic Agriculture	Complete	MDC
P.PSH.0690	Optimising leucaena-based forage productivity	Complete	MDC
P.PSH.0884	Development of a sterile Leucaena to enhance red-meat production in new regions of Australia	Current	MDC
P.PSH.1039	Autonomous Map and Zap Weed Program Application (stage 1)	Current	MDC
P.PSH.1044	LPP Improving the use of forage brassicas in mixed farming systems	Current	MDC
P.PSH.1050	LPP Phosphorus management and requirements of tropical legume pasture swards	Current	MDC
B.GBP.0025	Grazing with Self Herding to Improve Performance of Pastoral Cattle	Current	\$350,000
P.PSH.1029	LPP – Increasing livestock production by integrating tropical pastures into farming systems	Current	MDC
P.PSH.1030	LPP – Extending the boundaries of legume adaptation through better soil management	Current	MDC
P.PSH.1044	LPP – Improving the use of forage brassicas in mixed farming systems	Current	MDC
P.PSH.1048	LPP – Perennial pasture & forage combinations to extend summer feed for Southern NSW	Current	MDC
P.PSH.1136	RRDfP Novel Pasture Legumes in Dry Areas	Current	MDC

L.LSM.0006	Developing a mixed farming systems RD&A program	Complete	\$347,031
P.PSH.1138	Phase 1 – Maximising the reproductive potential of the meat sheep industry by eliminating high oestrogen clovers, more live lambs on the ground	Current	MDC
P.PSH.0917	Aerodyne – intelligent Livestock and Asset Management System (iLAMS)	Current	MDC
B.WBC.0080	Weed Biological Control: Silverleaf Nightshade RnD4Profit-14-01-040	Current	\$636,958
B.WEE.0141	Facilitated RD&E in weed management – improving strategies for summer perennial weeds	Complete	\$585,714
B.NBP.0749	Evaluating promising stylo lines for southern Queensland	Current	\$829,226
B.NBP.0812	Progressing superior tropical grasses and legumes in seasonally-dry Queensland	Current	\$781,940
J14808	No more gaps with superior shrub systems	Being contracted	\$598,438
B.TGP.1702	Addressing feed supply and demand through total grazing pressure management (business plan)	Current	\$249,994
B.PBE.0039	National Pasture Genetic Resource Centre	Current	\$1,563,6588
B.NBP.0639	Improving productivity of rundown sown grass pastures	Completed	\$1,259,710
B.NBP.0555	Spelling Strategies Spelling strategies for recovery of pasture condition	Completed	\$817,373
B.NBP.0766	Assessment of promising pasture legumes and grasses	Current	\$1,244,250
B.PAS.0355 (startup); B.PAS.0354	Legume best management practice in the Brigalow belt bio-region. (Stage 2)	Current	(\$154,290) \$1,343,988
Various	Wambiana grazing trial	Completed	(\$1.48m across 4 projects)
B.ERM.0108	Wambiana – Grazing strategies and tools to improve profitability and land condition	Current	\$797,298
B.PAS.0236	FFI - Enrich 2: Building the enabling knowledge and technical capacity for multi-purpose forage shrub systems	Completed	\$600,000
B.ERM.0127 & P.PSH.0840	Farm Map Australia – Business Planning & Setup (Stage 1)	Current	\$200,000 MLA MDC
B.PBE.0027	Sheep production from tederas in medium and high rainfall environments in Western Australia	Completed	\$552,072
B.CCH.6621	Advancing the agronomy package for tederas to fill feed-gaps	Current	\$1,097,960



B.PSP.0001	Increase feedbase production and quality of subtropical grass based pastures (East and west)	Current	\$1,395,370
B.PSP.0104	Phosphorus-efficient legume pasture systems	Completed	\$2,189,802
B.PSP.0018	Rural Profit Project: P Efficient Pastures (East and west)	Current	\$5,130,003
B.PSP.0005	Managing Soil-borne Root Disease in Sub-clover Pastures	Completed	\$1,280,722
B.PSP.0013	Pasture legumes in the mixed farming zones of WA and NSW: shifting the baseline	Current	\$1,091,975

### RD&A gaps under this priority

Clear definition of research needs is required, or much more targeted extension to enable utilisation of 'best management messages' specific issues.

For "New pasture / crop species and management practices to optimise growth, perenniality, persistence and utilisation":

- Grazing crops is a key opportunity and being developed in the mixed farming system business plan.
  - Pasture variety trialling network (PTN) to assist decision making on performance across the year is in place and could be developed with the Pasture Picker tool working in association with PTN web site.
  - Forage shrubs investment over the past decade and via the Future Farm Industry CRC need delivery. Benefits address drought preparedness, feedgaps, crop rotations rehabilitation of land, shade shelter, hydrological benefits.
  - Research and a delivery product ("5 Easy Steps") to improve of phosphorus efficiency is available. A rural profit project (B.PSP.0014) will update the delivery tool. Research is needed on WA soils with phosphorus buffering to make the delivery product useful is identified in this priority.
  - Packaging and delivery is needed. A "harvesting" process has progressed from the former feedbase investment plan via the producer research network and researchers – an adoption plan developed. Approvals for implementation are underway.
- The total grazing pressure research need is reiterated in priorities. A program of work is desired rather than component projects. A business plan has been developed and near completion.
  - Soils underpin pasture production. Soil induced constraints on pasture productivity is a gap. These may be physical, biological or chemical factors that impact on water use efficiency, or nutrient use efficiency. Previously plant based factors have been investigated (e.g. root hairs to access water and nutrient). Soil constraints (e.g. acidity or sodicity) impact on pasture production at scale. Soil acidity is a major issue for both northern and southern Australia.
  - Impacts on rhizobia will influence legume production and persistence.

### Weeds:

- MLA is currently investing in the Centre for Invasive Species (CISS) with an investment of \$500,000 per year. Initially investments will be into pest animals, with the portfolio broadening to include weeds.
- For priorities around weeds, MLA requires more detail on what the issue is in relation to the poisonous plants to ensure the priorities align with the right portfolio.
- For many weed species, demonstration of best management practise is the biggest issue. Hence the main gap is to engage a large demonstration network of producers working on different weeds. This could be set up via MDC, e.g. Producer Innovation Fast-track program.

### Action

Key feedbase priorities have been included in this year's Terms of Reference. Projects must link to animal productivity and include adoption activities.

## NATIONAL: PRODUCER ADOPTION

### Alignment with Industry Plans

	<b>MLA 2020</b>	<b>MISP 2020</b>	<b>SISP 2020</b>	<b>BISP 2020</b>
<b>Pillar</b>	Productivity and profitability	Productivity and profitability	Production efficiency in farms and in intensive finishing systems	Productivity and profitability
<b>Priority / theme</b>	Production efficiencies in farms and feedlots	Production efficiency in farms and feedlots	Production efficiency in farms and in intensive finishing systems	Production efficiency on farms
<b>Imperative / activity / program</b>	Producer Adoption	Decision support to improve farming businesses <ul style="list-style-type: none"> <li>➤ Novel and cost-effective solutions identified to significantly raise and measure (a) business skills and (b) capacity to innovate by 2020</li> <li>➤ Significant increase in (a) business skills and (b) capacity to profitably apply R&amp;D to farming operations by 2030</li> </ul>	Systems support to improve the farm businesses	Decision support to improve farming businesses
<b>KPI</b>	Engage ≥ 2,000 producers in decision support programs who will improve business performance by ≥ 5%	Cost of production (\$/kg liveweight) is reduced by 1.5% in real terms by 2020 and by 5% in real terms by 2030	Undertake extension activities to increase knowledge and understanding to enable decision making for productivity & profitability improvement	Increasing number of producers and percentage of national production using proven practises and technology  Increasing levels of producer

			<p>Provide opportunities for producers to establish producer groups and to engage in participatory learning activities</p> <p>Evaluate, develop and implement technologies, tools and strategies to reduce the cost of production and to increase labour efficiency</p>	<p>participation and satisfaction with business skill programs against 2016 baseline</p>
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### Completed or current RD&A relevant to this priority

MLA has invested significantly across various programs covering categories A, B and C, along with newly introduced plans under the Feedbase Adoption Plan and Genetics Adoption Plan:

- MLAs Profitable Grazing Systems (PGS) program commenced roll out in 2017. State coordinators, and a National Program Manager have been appointed. Training of coordinators took place in September 2017. The PGS curriculum is available to assist coaches in developing a supported learning program to submit to MLA for approval prior to running the program with producers.
- In addition to the 10 PGS pilot groups that were run in 2016, 5 groups have engaged during 2017/18 with an additional 8 currently moving through the contracting process covering Financial/Business Management, Breeding, Nutrition and Feedbase. PGS has engaged over 250 producers involved to date.
- 480 producers are directly engaged in PDS and PGS, with 3079 observers following PDS projects nationally in 2017/18.
- MLA has Business EDGE running in both Southern and Northern Australia delivered by one provider in the North and three in the South.
- 1669 producers have engaged in Influence activities across Edge Workshops, BredWell FedWell Sheep & Cattle (Southern), Profitable Integration of Cropping and Livestock and Participatory Research Sites in 2017/18.
- The 'Business Mentoring for the Australian Meat Industry' program (MDC, P.PSH.0745) has engaged participants across the country.
- MLA/AWIs Pastoral Profit program has recently come to an end and was specifically designed to run one day workshops to improve the business analysis capacity of mixed grazing enterprise pastoralists.
- A recently completed MDC project focussed on a supply chain approach to improving continuity of supply and ability to consistently meet market specifications, which included three case studies focused on trialling different approaches to filling the autumn and winter feed gaps. Five case studies have also been developed which investigate the extent of the marginal costs and marginal benefits when investing in eID technology for management purposes.

- The profitable integration of cropping and livestock in southern Australia (due for completion 2018/19 ) and Southern Beef and Prime Lamb Situation Analysis 2017 (completed 2017/18) are collecting and analysing data to define and prioritise key performance indicators to assist red meat producers in their decision making in lifting productivity and profitability.
- More Beef from Pastures and Making More from Sheep Pastoral module available on-line (planned to be updated through a project outside of this call)
- Various producer demonstration sites across the country. Currently looking for opportunities to pilot modified methodology to suit genetics and northern beef programs.
- Producer research and demo sites used to underpin the Feedbase Adoption Plan completed include:
  - ASHEEP – Legumes in Kikuyu
  - Dungog – More beef from tropical pasture
  - Cooks Myall – Legumes in tropical grass
  - Calibration and evaluation of the Crop C
  - Social acceptability of pest animal management
  - PMMC Mesquite Innovation Adoption and Extension
  - 24 current projects with an additional 6 going through the contracting process under the National PDS Program, directly engaging over 320 producers with over 2000 observers over 180 sites. An open call for PDS will take place during 2018/2019.
  - Enhanced Producer Demonstration program currently has 6 active projects, engaging 176 Core producers and 1200 observer producers over 46 sites. 7 additional projects to be contracted in 2018/2019.

MLA online tools support business management e.g. Beefspeccs.

- Piloting of a Soil Health E-learning Module – nearing completion and underpinning the FAP digital toolbox
- Pasture Picker 2013/14 & 2014/15 is in the process of being redeveloped to support the delivery of FAP objectives
- Rainfall to Pasture Growth Outlook Tool was updated in 2017/18 - and will be an integral part of the FAP digital toolkit
- EverGraze was updated in 2017/18 - and will be redeveloped during the next year as an integral part of the FAP digital toolkit
- Pasture Picker is being redeveloped to support the Pasture Trial Network - and will be an integral part of the FAP digital toolkit
- PTN was updated in 2017/18 – with the latest data from FIP trials – and will have a makeover in the next phase to support Pasture Picker and the FAP digital toolkit

### **Capability building:**

MLA invests in a number of industry capacity building projects. These projects support the promotion of careers in the red meat industries, education, mentoring new industry entrants and supporting SME in employing new entrants and providing a career path. Examples include:

- (Pilot) Producer Innovation Fast Track (MDC) – accelerating innovation capability and adoption in red meat producers.
- People In Ag website – ongoing continuous improvement and support
- Rural R&D for Profit across RDC Stimulating the Private sector extension to increase returns from R&D –Rural R&D for Profit – B.INV.1501
- 'A Leg Up' provides mentor support for new red meat RD&A entrants in the work force by pairing them with an experienced industry professional. This project will facilitate effective communication, enable skill transfer, and build a professional network to assist RD&A entrants to set goals and achieve them.- B.STU.0310
- A number of 'train the trainer' activities to ensure consistent messaging, including EDGE Train the Trainer - B.GFB.1735 and B.GFB.1727, and training of PGS coordinators and coaches.

- Fast Tracking Future Livestock Consultants - P.PSH.0683 and P.PSH.0842
- The Beef and sheep industry veterinary residency program (Mackinnon), P.PSH.0719
- RAD Meat project - Developing the talent of Red Meat RD&A professionals - B.STU.0311
- PHD Scholarships, Post Graduate awards, post-doctoral mentoring
- 16 Pasture Update events have been delivered across southern Australia over the last 12 months – and these will continue into early 2019. Following that there will be a new system supporting regional awareness of MLA RDE&A
- Both the FAP and GAP address specific capability building elements for key stakeholders in this area

**Current, completed and planned Adoption projects:**

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
L.ADP.1601-12	Profitable Grazing Systems including 2016/17 pilot project L.ADP.1601	Current	\$10M/4 yrs (\$1,472,000 2016/17 and 2017/18 projects)
N/A	Business EDGE	On going	Commercial product
B.STU.0310	Leg – up	Current	\$97,372
B.STU.0311	RAD Meat - Developing the talent of Red Meat RD&A professionals -	Current	\$96,272
B.MMS.1503	BredWell FedWell for Sheep	Current	\$357,000
B.SBP.1501 & B.GFB.1728	Develop and pilot Bredwell Fedwell for the southern beef industry & Bredwell Fedwell for Southern Beef	Completed & Current	\$89,648 & \$249,600
B.GFB.1735	Southern Business EDGE Train the Trainer	Current	\$12,500
B.GFB.1727	Facilitating industry practice change via service provider EDGENetwork training	Current	\$203,460
Various	PHD Scholarships, Post Graduate awards, post-doctoral mentoring	Current	
L.MXF.0001	The profitable integration of cropping and livestock in southern Australia	Current	\$475,810
L.MXF.0002	Southern Beef and Prime Lamb Situation Analysis 2017 -	Completed	\$152,000
B.GFB.1719	EID case study's – Beef	Completed	\$25,410
E.GRZ.1401	Pastoral Profit	Completed	\$1,104,128
E.INF.1401	Whole Farm Grazing Strategies Train the Trainer	Completed	\$93,000
Various	Producer Demonstration Sites	Current	>\$1.6M (16/17 – 20/21)
E.PDS.1410 L.PDS.1803	Enhanced Producer Demonstration Site	Completed Current	
L.MMS.1803 L.MMS.1801 L.MMS.1802 L.ADP.1900	Its Ewe Time Forums	Current	
P.PSH.0745	Business Mentoring for the Australian Meat Industry	Current	MDC

P.PSH.0683 P.PSH.0842	Fast Tracking Future Livestock Consultants	Current	MDC
P.PSH.0719	The Beef and sheep industry veterinary residency program	Current	MDC
E.PDS.1406	A value chain approach to pasture finish	Completed	MDC
	Producer Innovation Fast-Track program	Current	MDC and levy
E.INV.1601	People In Ag	Current	\$476,000
B.INV.1501	Stimulating private sector extension	Completed	\$260,000
L.FAP.1901	The less weeds, better pastures package	Approved	80,000
L.FAP.1902	Healthy productive Soils (10 Groups)	Approved	90,000
L.FAP.1903	The persistent and productive pastures package	Approved	\$450,000
L.FAP.1904	How do I get More Sub Clover	Approved	\$200,000
L.FAP.1905	How to Series - Tech Writing to Support FAP Awareness	Planned	\$50,000
L.FAP.1906	How to Series - Podcasts & Micro learning products	Planned	\$150,000
L.FAP.1907	Feedbase Tools Updates	Planned	\$100,000
L.FAP.1908	One Day feeder events - Actions to address FAP Four	Planned	\$150,000
L.FAP.1909	FAP Four Networks	Planned	\$150,000
L.FAP.1910	MLA R&D Updates	Planned	\$350,000
L.FAP.1911	MLA Master	Planned	\$500,000
L.GEN.1809	BREEDPLAN and Sheep Genetics Short Videos	Contracting	\$81,955
L.GEN.1810	Proof of Profit from EBV based selection	Contracting	\$87,655
J15009	Sheep Genetics Database Interface upgrade	Applications received	~\$250,000
L.GEN.1805	Northern Beef producer case studies	Commenced	\$55,930
P.PSH.1154	UNE/MerinoLink	Commenced	\$2,133,456
P.PSH.0847	A bull selection decision support tool	Commenced	\$790,929

### Further Genetics Projects occurring internally and or in collaboration with stakeholders

#### *Demonstrate Value and Grow demand*

- A genetics marketing campaign is currently being constructed and planned for launch at Red Meat 2018. The basis of the campaign will be commercial producers who have increased productivity and profitability through the use of genetics and other management. This campaign will be disseminated through multi-channels ensuring that all commercial producer segments have access to the campaign and resources.
- A microsite will house the case study videos, other collateral, the short video series, and direct producers to other resources including workshops and Profitable Grazing Systems.
- As further resources, tools and programs are developed they will be housed in this central location i.e. the microsite.

### ***Pathway to learning - Genetics Network***

- The Genetics Network aims to coordinate, upskill and align livestock stakeholders. Currently there are groups and programs which are underway:
  - Tier one – Southern Beef Technology Services (SBTS)/ Tropical Beef Technology Services (TBTS), Sheep Genetics staff and other breed societies – ensure technical messages and extension messages and activities to leading seedstock sector are aligned. Regular workshops are underway.
  - Tier two – Key consultants, service provider and extension staff. Current working group underway to conduct a BREEDPLAN Champions Network conference in late 2018/early 2019. It is planned this will be combined Sheep and Beef ongoing.
  - Tier three – Vets, Repro Services, Universities, Livestock agents, merchandise staff etc. – still in planning stage. Reviewing the opportunity to create further resources to aid in coordination and training
- Forums/Workshops
  - The Breeding and Genetics Forum was held in Brisbane in Feb 2018. 360 stakeholders.
  - Genetics topics are now being included on a regional basis (and where applicable a standalone event), including BeefUp at Charters Towers in Sep 18
  - The aim will be to replicate the National Forum in the south in 2019.
- Further technical and commercially focussed resources are being assessed to fill regional and species gaps

### ***Simplify the tools and language***

- Current Sheep Genetics ToR for interface upgrade closed (above).
- Current MDC DPI project related to tool which allows creation of personalised indexes targeted at commercial producers, which provides a sort and filter function to find bulls in an easier and simplified manner.
- MLA staff are working closely with Agricultural Business Research Institute (ABRI) to find commonalities between Sheep Genetics and BREEDPLAN delivery.
- The short video series is targeted at commercial producer new to genetics evaluations.

### ***Align Adoption and R&D***

- It is imperative that adoption is embedded into R&D ongoing.



- This will be achieved by adoption plans being created at the initiation of all relevant projects, be developed into the schedule and reported on through the milestones as a key deliverable.
- Two examples where this has been actioned to maximise the value and uptake of the investment are the UNE/MerinoLink project and the Proof of Profit from EBV based Selection.

### RD&A gaps under this priority

MLA is investing significantly in this area via the Producer Adoption portfolio.

A number of activities are planned for 2018-19 financial year including:

- Ongoing training of new EDGE and PGS deliverers.
- Bredwell Fedwell for cattle is being piloted in Northern Australia this financial year.
- Development of an advisor capability strategy
- Development of 'R&D update' series for livestock advisors.
- Four BeefUp Forums – will be piloted in Southern Australia in early 2019.
- Genetics Adoption plan tactics and programs outlined above as part of the Genetics Network aiming at aligning and upskilling the service provider sector
- Key activities as part of the Capability Strategy

### Actions

A standalone Terms of Reference document will not be developed for this area, as a number of activities are already underway this year. However, each R&D project that is successful through the Annual Call, will involve key MLA research and adoption staff working with the service provider to develop an adoption plan at the initiation of the project. This will be built into the schedule and be reported on, in the relevant milestones.

## NATIONAL: ON-FARM ENVIRONMENT

### Alignment with Industry Plans

	MLA 2020	MISP 2020	SISP 2020	BISP 2020
<b>Pillar</b>	Consumer and community support	Consumer and community support		Consumer & Community Support
<b>Priority / theme</b>	Stewardship of environmental resources	Stewardship of environmental resources	Stewardship of our environmental resources	Stewardship of environmental resources
<b>Imperative / activity / program</b>		<p>Sustainable management of the natural resource base</p> <ul style="list-style-type: none"> <li>- R&amp;D results in savings in industry costs due to weeds and feral animals of at least \$50 million by 2020 and \$150 million by 2030</li> </ul> <p>Adapting to climate variability</p> <ul style="list-style-type: none"> <li>- R&amp;D into improved livestock and pasture genetics, and improved climate forecasting, provides technical solutions to mitigate 80% of the potential productivity falls due to climate change (3.5% by 2020 and -5.2% by 2030), particularly in the southern beef and sheepmeat industries.</li> </ul>	<p>Sustainable management of the natural resource base</p> <ul style="list-style-type: none"> <li>- Support the development and commercialisation of new wild pig, wild dog, fox and rabbit control technologies and practices</li> <li>- Develop &amp; provide tools to manage and control the impact of invasive weeds in sheep production systems.</li> <li>- Develop better management systems to enhance natural resources and reduce on and off-farm impacts on the environment (soils, water, biodiversity)</li> </ul>	<p>Sustainable management of the natural resource base</p> <ul style="list-style-type: none"> <li>- Accelerate the application of proven practices in managing the impact of feral animals and invasive weeds in cattle production systems.</li> <li>- Expand industry engagement and participation with local initiatives to achieve better NRM outcomes</li> </ul>
<b>KPI</b>	Reduce cost of feral animals and weeds by \$50m	Maintenance or increase in community support for the industry's	- There are significant savings to industry due to better control of	- R&D to result in savings in livestock industry costs due to weeds and feral animals of at least

		environmental stewardship practices	- weeds and invasive animals Management strategies and improved climate forecasting provide technical solutions to mitigate 80% of the potential productivity falls due to climate change (estimated at - 1.9% by 2020 and -8.0% by 2030)	- \$50m by 2020 and \$150m by 2030. Increasing number of cattle producers aligned with NRM bodies as part of value chains sustainability produced branded products.
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### Completed or current RD&A relevant to this priority

MLA investment of ~\$8.5M is in projects relevant to this RD&A priority including:

- Beef Sustainability Program
- Managing Climate Variability Program
- Forewarned is Forearmed Rural R&D for Profit program
- Fire and Grazing business plan
- Northern Australian Climate Program
- Wambiana long-term Grazing Trial

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
B.CCH.7712	Exploring profitability and resilience through novel livestock and pasture adaptation to future climates	Current	\$599,130
B.NBP.0755	Business and RD&E plan to determine the value proposition for greater use of fire in the grazing lands of northern Australia	Completed	
B.ERM.0108	Wambiana - Grazing strategies and tools to improve profitability and land condition	Current	797,298
E.CEN.1807	Technical expert group for balance of tree and grass cover	Current	57,000
P.PSH.1145	Construction and testing of the first commercial-scale SCANS unit for measuring soil carbon in the Australian red meat industry	Current	246,000
B.CCH.8000	Forewarned is forearmed: managing the impacts of extreme climate events	Current	\$810,538.12
P.PSH.0951	Northern Australian Climate Project (NACP) - Innovative drought and climate variability RD&E to enhance business resilience and build producer capacity to manage climate risk across the northern Australian red meat industry.	Current	MDC
B.CCH.2104	Managing Climate Variability Program – Phase 5	Current	\$1,250,000

P.PSH.0918	Enhancing grazing profitability through improving soil health	Current	MDC
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### RD&A gaps under this priority

The majority of the priorities raised in this program, are already being addressed by work underway, including work undertaken in the MLA Donor Company and via the Beef Industry Sustainability Framework.

A gap not identified would be to develop a better understanding of hydrological systems in areas of the country where grazing systems are dependent on underground water, such Barkly Tablelands – however this is a regional specific issue. In particular sustainable extraction rates relative to recharge of the aquifer plus water quality and impact on production (not all underground water is the same).

### Actions

A ToR will not be developed for this priority due to work already underway and existing funding commitments making it challenging to commit to new work in 2019-20.

## SOUTH/WEST: ANIMAL HEALTH AND WELFARE

### Alignment with Industry Plans

	MLA 2020	MISP 2020	SISP 2020	BISP 2020
<b>Pillar</b>	Consumer and Community Support	Consumer and Community Support		Consumer and Community Support
<b>Priority / theme</b>	Continuous improvement of the welfare of animals in our care	Welfare of the animals within our care	Wellbeing of the animals within our care	Welfare of the animals within our care
<b>Imperative / activity / program</b>		Continuous improvement of animal welfare / Minimising the impact of endemic disease	Continuous improvement of animal welfare / Minimising the impact of endemic disease	Continuous improvement of animal welfare
<b>KPI</b>	<p>Restrict % consumers limiting red meat consumption due to animal welfare concerns to 10%.</p> <p>Four new products including vaccines, diagnostic tests and tools to reduce the cost and welfare impact of endemic and emergency disease in Australia</p> <p>Participation numbers and economic impacts of extension projects to maintaining tools/websites (e.g Paraboss) and delivering courses that cover best practice</p>	Increase in community support for industry animal welfare practices on 2015 baseline	<ul style="list-style-type: none"> <li>➤ Achieve enhanced animal welfare outcomes through the adoption of consistent, science-based practices.</li> <li>➤ Undertake RD&amp;E to reduce the risk of compromised wellbeing of sheep and develop enhanced husbandry and management procedures.</li> <li>➤ Have tools and procedures in place and train sheep industry stakeholders to reduce the risk and impact of emergency animal diseases (EADs).</li> <li>➤ Undertake an ongoing RD&amp;E program to reduce the impacts of major endemic diseases in the national sheep flock and increase uptake of</li> </ul>	<ul style="list-style-type: none"> <li>➤ Industry agreement reached on indicators of on-farm animal welfare for grassfed cattle production.</li> <li>➤ Level of media, government and community engagement with industry on animal welfare through multiple channels (e.g. Target 100 campaign).</li> <li>➤ Community sentiment monitored and activities implemented to mitigate any shifts in perceptions and attitudes towards industry.</li> <li>➤ EAD response strategy in place with timely and effective implementation as issues arise.</li> </ul>

	husbandry, disease and parasite management/control		the Sheep Health Statement. ➤ Increase the proportion of producers using recommended animal health management practices and tools such as Paraboss and Winning with Seeds.	
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### Completed or current RD&A relevant to this priority

Topics covered in previous investment (see also Red Meat Panel Information Paper on Animal Health and Welfare portfolio):

#### **BIOSECURITY PLANS: Develop tools to help manage and mitigate biosecurity risks**

A lot of activity outside of MLA in this space. The AVA has BioCheck for veterinarians consulting to producers. Animal Health Australia has a downloadable template with instructional video. See <https://www.animalhealthaustralia.com.au/wp-content/uploads/On-Farm-Biosecurity-Plan-Template.pdf>

#### **Research and develop new products for bloat prevention**

Assuming the problem is frothy (not free gas) bloat, exacerbated by the withdrawal from the market of monensin capsules. MLA is canvassing pharmaceutical companies for possible MDC co-funding of regaining preventive product(s).

#### **Innovative solutions and novel delivery methods for internal and external parasite management**

- The search for a new drench molecule ~10 years ago (GINTIP; co-funded by AWI) produced one patent, which attracted no chemical industry interest. But, it stimulated the development of monepantel and derquantel, the first novel livestock anthelmintics in ~30 years. Monepantel resistance appeared within <5 years. New molecules have a limited lifespan.
- Probio-TICK initiative which microbes applied to the hide to give a life-long shield of protection against buffalo fly and cattle tick begun December 2017
- New Cattle tick formulation project begun April 2018
- Discussions are underway for several innovative approaches to parasite management:
  - Sterile male technique for blowfly population control.
  - New options for flystrike control
  - Novel methods for the control of worms in small ruminants

#### **Novel on farm assessment of micro/macro mineral deficiencies in livestock and innovative delivery systems (e.g. grain coating)**

There is no one-size-fits-all solution – different minerals require different samples to be analysed (for diagnosing adequacy/status). Also, no blanket delivery method is likely to be appropriate. We need a better-defined researchable question. Is there a need for a better diagnostic approach or methods??

#### ***Theileria*, cost to industry and management strategy**

WA now seems to face the situation in Eastern Australia in 2006, when theileriosis was an emerging disease. Herds which do not have the problem need to be protected with strict biosecurity measures

– please refer to the discussion paper prepared for Cattle Council’s meeting on 16<sup>th</sup> August 2017 (copy available on request). MLA should possibly invite proposals for a prevalence survey of *Theileria* in cattle (PCR diagnosis) and *Haemaphysalis longicornis*, the vector tick.

**How to reduce the impact of *Taenia ovis* (Sheep Measles)**

A dog tapeworm but worm control impossible in wild dogs (tapeworm in foxes an incidental finding). Commercial negotiations underway for introducing a sheep vaccine (similar to a vaccine previously available in New Zealand). MLA to offer MDC co-funding assistance.

**Management of *Biserrula* photosensitivity issue to permit grazing in green phase**

Photo-toxicity is greatest in the green growth phase, and can be mitigated by additional ingestion of non-Biserrula pasture or feed, and skin pigmentation. B.AHE.0236 likely to provide the answers and an extension message will be required.

**Pest and vermin control. Novel approaches to controlling reproduction in wild dogs.**

MLA has invested \$2.5M in invasive animals R&D over the last 10 years via the Invasive Animals CRC.

MLA will continue to invest levies via the Centre for Invasive Species Solutions (CISS). This will generate good leverage, MLA becomes a foundation member and will work to ensure federal investment into CISS does significant R&D into wild dog control. In addition MLA will support the national wild dog coordinator through this channel.

Another priority is to continue R&D into rabbit biocontrol in the long term.

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
B.AHE.0308	Designing farm specific nematode control programs for sheep	Underway. Planned completed date July 2019	1,096,460
J14787	Strategic and novel approaches to reducing flystrike in sheep	Planned	92,000.00
J14791	Formulating a research pathway to provide new options for flystrike control	Planned	137,000.00
J14780	The potential for vaccines against gastrointestinal nematodes of small ruminants	Planned	99,950
J14790	Novel methods for the control of worms in small ruminants	Planned	84,098
J14792	Evaluation of the Sterile Insect Technique for Sheep Blowfly Control	Planned	196,000.00
B.AHE.0318	Reducing foetal and lamb losses in young ewes	Underway. Planned completed date August 2021	955,680.00
J14799	Phasing out of mulesing: costs, benefits and opportunities	Planned	639,503.00
B.AHE.0316	Testing and verification of a single-dose cattle tick vaccine	Underway – planned completion 01-Jul-2019	727,800.00

P.PSH.0800	A cattle tick vaccine using the silica vesicle self-adjuvanting delivery platform (could possibly be single dose).	Co-funder (UK) withdrawn. New funding source being sought.	MDC
B.AHE.0242	Area-wide control of buffalo fly and prevention of southward spread using <i>Wolbachia</i>	Underway – planned completion 31-Dec-2019	905,266.00
B.AHE.0038	PCR survey of <i>Theileria</i> type prevalence	Completed	154,202.00
B.AHE.0048	Buparvaquone (BPQ) efficacy against <i>T orientalis</i>	Completed	29,952.00
B.AHE.0076	<i>Theileria</i> vaccine feasibility	Completed	20,500.00
B.AHE.0078	BPQ tissue residue assay method	Completed	16,485.00
B.AHE.0194	BPQ tissue residue depletion	Completed	244,840.00
B.AHE.0213	PCR diagnostic refinement	Completed	351,560.00
B.AHE.0240	<i>Theileria</i> tick vector	Completed	32,250.00
P.PSH.0832	Chemotherapy and vaccine possibilities	Underway – planned completion 02-Mar-2020	MDC
B.AHE.0058	Economic impacts and epidemiological risks associated with sheep measles	Project complete. Some wild dog examinations still underway.	429,004.00
B.AHE.0236	Photosensitisation in sheep grazing <i>Biserrula pelecinus</i>	Project complete. Final report under review.	351,597.00
P.PSH.0804	Identifying public and producer attitudes to sheep and cattle animal welfare to inform education strategies	Underway – planned completion Jun 2021	689,082.90 levies + MDC
P.PSH.0808	New approaches to the understanding of underlying causes for neonatal lamb mortality	Underway – planned completion Dec 2021	MDC

### RD&A gaps under this priority

- Solutions and delivery methods for parasite management are being addressed in a piecemeal fashion. Whatever solution is “devised” (new chemical, vaccine, sterile males, biological control) will still require commercial collaboration to negotiate the regulatory hurdle.
- Epidemiology of theileriosis in WA needs to be elucidated to facilitate management of the disease. Current research contracted with USyd and UNE addresses some of this need, searching for arthropod vectors (other than *H longicornis*), and possible methods of prophylaxis and treatment. The geographic prevalence of both the parasite and its vector(s) is an ongoing knowledge gap in WA.
- Sheep measles prevention with a sheep vaccine will likewise require commercial collaboration (see above).

### Actions

To work with adoption team to implement better utilisation of available vaccines, alone or in combination



To work with adoption team to implement better utilisation of PAPP baits for humane wild dog control

## SOUTH: SUPPLY CHAIN

### Completed or current RD&A relevant to this priority

MLA has invested significantly across various programs relating to this priority theme.

PROJECT CODE	TITLE	STATUS	PLANNED AUD \$
L.GEN.1704	Advanced genetic evaluation tools and systems enabling faster and more valuable genetic gain in the red meat industries	Current	\$8.3M
P.PSH.0847	Genetics R&D: A bull selection decision support tool	Current	\$790K
P.PSH.0714 and P.PSH.0786	Southern Beef Technology Project and Tropical Beef Technology Services	Current	\$4.7M
B.CMM.0145	3D Imaging Cattle (NSWDPI, UTS & MLA)	Current	\$34,200
B.GFB.1727	Facilitating industry practice change via EDGE network	Current	\$203,460
P.PSH.0815	Assessing value chain improvements in processes, practices and technologies using optimised data capture and analytics	Current	MDC
B.GBP.0014	Prototype on-farm 3D camera system to assess traits in Angus cattle	Current	\$245,000
E.PDS.1406	A value chain approach to pasture finished beef systems	Completed	\$180,000
B.SBP.0111	Enhancing BeefSpecs systems for improving market compliance of pasture fed beef in SA	Completed	\$421,000
B.SCR.0212	Estimating carcass values based on lean meat yield and eating quality	Current	\$2.3M
V.RDP.2000	RRD4P – Advanced Livestock Measurement Technologies	Current	\$12M
L.BSC.0001	3D imaging for trait estimation of beef and sheep carcasses	Completed	\$500K
P.PSH.0709	Tattoo and Applicator for animal lifecycle monitoring	Current	MDC
P.PSH.0776	Automated MSA/AusMeat hyperspectral handheld grading for beef	Current	MDC
B.BSC.0339	Trait measurement from 3D image analysis	Completed	\$225,000
V.RDP.2006	RRD4P – Enhancing Supply Chain Profitability through Reporting Post-mortem Inspection Data to Livestock Producers		\$2M MLA
B.SBP.0121	Value based trading system: image analysis of sheep and beef carcasses- proof of concept	Completed	\$95,156
	Fast-tracking DEXA rollout		\$MDC

	Application of equine CT to in-plant carcase IMF and live animal carcase assessment		MDC
	Application of airport baggage CT to carcase and offal assessment		MDC
	Spectral imaging for EQ, food safety and pasture assessment		MDC
	Digital Supply Chain Extension Officers		MDC