Producer identified RD&A priorities

- *Submitted to MLA*

Council: **NABRC 2024-26**

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1	BRAC CQRBRC KPIAC NQRBRC NWQRBRC SEQRBRC WQRBRC	Grassfed Beef Productivity	Ongoing	Identification and collection of health and nutrition data on farm to assist with real time decision making (crush-side).	**Research Gap** 1. Technological advancements: Improve accuracy and frequency of satellite-based monitoring, on-farm remote sensing, and utilisation of AI and video recognition. 2. Nutrition: Improve understanding of nutritional needs of different cattle classes and development of improved diagnostic tests for nutritional status and diet quality. 3. Data-driven decision making: Develop decision-making programs using data and DNA, create affordable real-time tests for objective decision-making, and develop additional Genomic Breeding Values (GBVs). 4. Accessibility and integration: Improve accessibility and affordability of technology, knowledge sharing across sectors, and integration of genomics into cattle management practices. 5. Exploring new technologies: Explore benefits to industry of emerging technologies like breath analysis. **Adoption Gap** 1. Addressing challenges in determining phosphorus status of paddocks and mobs. Address the challenge in identifying the phosphorus status of cattle and paddocks in marginal areas with multiple land types. 2. Promoting benefits of supplementation: Promote year-round phosphorus and urea supplementation to achieve benefits in deficient areas and enhance herd production and profitability through good supplementation management.

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					3. <u>Development of digital tools for nutritional support</u>: Develop accessible tools like apps for referencing nutritional deficiency symptoms and guidance for rectification to achieve effective nutritional management. 4. <u>Data utilisation and education</u>: Promote and emphasise collection and use of the right data, education about use of genomics and Estimated Breeding Values (EBVs) for informed decision-making. 5. <u>Encouraging adoption and ROI</u>: Address barriers to using objective data, evaluating service providers' capabilities, and demonstrating the cost-benefit of real-time data-driven decisions to encourage technology adoption and enhance ROI.
2	BRAC	Grassfed Beef Productivity		Reducing losses from pregnancy test to weaning	**Research Gap** 1. Further work to quantify calf loss from known reasons such as heat, disease, nutrition, stocking rates, distance to water, predation, mismothering and other animal behaviour, dystocia etc. 2. Identify subsequent research to carry on from previous projects and programs, such as NB2, to quantify the largest causes of calf loss in northern herds. 3. Research to identify methods to address calf loss that have the largest ROI for northern cattle herds. **Adoption Gap** 1. Cost benefit analysis of known methods for reducing calf loss in northern herds. 2. Communication of the findings from previous calf loss studies to assist producers in self-identifying causes of calf loss.
1	ASPIAC BRAC KPIAC Pilbara SQRBRC	Animal Wellbeing		Non-surgical female contraception (both permanent and reversable)	**Research Gap** Identification of female sterilisation methods that are non-surgical, reversible, highly effective for a minimum of 12 months, and cost effective (suggested price point of $12 - $20). The methods need to be extensive grazing operations and not require veterinarian intervention to apply or

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					remove. Suggested methods could be an inter-uterine device or single-shot vaccine. **Adoption Gap** Training and education to develop: • Understanding of management strategies to minimise unwanted pregnancies, • Knowledge of Willis and webbing spaying methods for different animal classes, • More skilled workforce in remote areas to deliver more sensitive procedures.
2	CQRBRC KPIAC Pilbara	Animal Wellbeing		Minimum 6 month efficacy control methods to control buffalo fly to reduce skin lesions and production losses Identification of naturally resistant animals (Low withholding period)	**Research Gap** 1. <u>Parasite management</u>: Focus on management of parasites with strategies such as tick and buffalo fly vaccine, biological control/inhibitors, and genomics for resistance against ectoparasites and endoparasites. 2. <u>Understanding ecosystem dynamics</u>: Investigate the causes of increased buffalo fly and tick infestation to identify and rectify potential ecosystem imbalances. 3. <u>Improved fly management</u>: Explore longer-lasting fly management options such as fly tags that are effective for 6-8 months, incorporating different active agents in fly tags to prevent resistance, and developing more methods for fly control and lesion prevention. 4. <u>Integrated management approach</u>: Implementation of integrated management plans that combine different fly control options for comprehensive and effective pest management. **Adoption Gap** Better understanding required by producers about: • Impacts (both economic and animal health) of parasites (ticks, buffalo fly, worms etc).

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					• Economic benefits of adopting fly control, • Different control methods and strategies already available and their correct application.
1	ASPIAC CQRBRC KPIAC NQRBRC NWQRBRC SQRBRC WQRBRC	Feedbase Production		• Improving land condition for productive and resilient pastures • Understanding grazing behaviour to measure the impact of utilisation rate • Promote adoption of existing forage budgeting, carrying capacity and land condition monitoring tools.	**Research Gap** 1. Improved assessment of carrying capacity: Develop improved methodology for assessment of long-term carrying capacity components like pasture growth, safe utilisation rates and browse consumption to achieve maximum production without landscape degradation. There are methodologies already in place but the limitations are knowledge of pasture productivity and utilisation with mixed land types, mixed species pastures and different weather conditions. 2. Tools and technology: Explore evidence-based equations and tools for carrying capacity assessment, including the potential adaptation of existing tools from northern Australia for use in Central Australia. 3. Economic analysis and adoption: Addressing the lack of economic studies on grazing management impacts, which affects the adoption rate of new practices and the need for better mapping data and accessible monitoring tools. 4. Pasture improvement and grazing behaviour: Address topics related to pasture species measurement, impact of pasture improvements on greenhouse gas emissions, identifying grazing behaviour through GPS data tracking, and exploring tools such as drones for pasture seed distribution. 5. Ecological understanding and sustainability: Focus on understanding grazing behaviour, land condition response, native grass ecology, resilience of landscapes, and the economic impact of land condition on land prices and business resilience. 6. Research integration: consolidate current and previous research into future project targeted at specific outcomes in the area of carrying

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					capacity, wet season spelling and burning programs, and build upon research outcomes from programs like Sweetspot. **Adoption Gap** 1. Comprehensive support programs: Need for comprehensive programs that provide support and assistance to producers in all aspects of grazing land management, animal husbandry, and business to facilitate meaningful practice change. 2. Ecosystem resilience and soil health: Highlight the importance of species diversity, soil health, and function in increasing pasture resilience and productivity. 3. GHG emissions and productivity: Disseminate knowledge about the impacts of grazing management and pasture improvement on greenhouse gas emissions, water infiltration, soil health, animal growth, and the relationship between herd productivity and methane emissions. 4. Data interpretation and financial impact: Address challenges in interpreting data for practical management decisions, understanding the financial impact of land condition on productivity and land values, and educating stakeholders like land valuers, real estate agents, and banks. 5. Monitoring and support: More monitoring by NRM groups, establishment of baseline data to demonstrate positive land condition changes, development of pasture photo standards, evaluating service providers' capability to offer one-on-one support, and addressing gaps in producer understanding of land condition, intake requirements, breed suitability, and management practices for extreme events.
2	BRAC CQRBRC KPIAC SEQ	Feedbase Production		Identifying new tropically adapted legumes, developing methods for propagation and	**Research Gap** 1. Sustainable pasture and soil management: Improve understanding of the relationship between soil health and pasture productivity and

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				augmentation and measuring cost benefit.	investigate the impact of pasture improvements on greenhouse gas emissions to incentivise sustainable practices. 2. Innovative seeding and planting techniques: Explore the use of drones for seed distribution and develop cost-effective methods for legume establishment in tropical and arid regions, considering the narrow planting windows and the need for new approaches. 3. Advanced monitoring and analysis tools: Develop better tools for problem identification within agricultural systems and create user-friendly tools for producers to conduct cost-benefit analyses and quantify emission reductions from sustainable practices. 4. Adaptation to tropical climates: Focus on the development of legume varieties and other crops that are better adapted to tropical and arid climates to improve productivity and sustainability. **Adoption Gap** 1. Comprehensive dissemination of benefits: Promote the wide-ranging benefits of pasture improvement, including enhanced water infiltration, soil health, improved animal growth, and the reduction of greenhouse gas emissions. 2. Productivity and emission reduction knowledge: Promote increased herd productivity, including fertility and growth, as one of the most effective ways to reduce methane emissions per kilogram of beef. 3. Cost-benefit analysis and best practices: Improve understanding of cost-benefit analyses and best practices for establishment and grazing management, including fitting practices within existing burning regimes. 4. Resource availability and policy support: Address issues related to personnel availability, infrastructure, and machinery, and clarify policies around land clearing and water allowances to support adoption. 5. Regional legume guidance: Provide guidance on region-specific legume varieties and establish legume banks to support sustainable agricultural practices by bio-region.

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1	CQRBRC NQRBRC NWQRBRC Pilbara	Environmental Sustainability		Methane mitigation in extensive grazing systems with production benefits	**Research Gap**
					1. Legislation and incentives: Advocate for federal legislation to set standards for methane mitigation levels expected from various methodologies (e.g., Red Asparagopsis, Bovaer, water medication) across different production systems (feedlot, intensive, and extensive pastures). This would incentivize producers to pursue Australian Carbon Credit Units (ACCUs).
					2. Implementation timeframes: Establish realistic expectations regarding the timeframes for implementing various methane mitigation options within the industry.
					3. Supplementation challenges: Research to address the limitations of providing anti-methane compounds in supplements for cattle in extensive grazing systems, leveraging old knowledge developed with other supplements. Develop cost-effective supplementation delivery solutions for emission reduction in extensive beef systems.
					4. Cost-benefit analysis: Conduct comprehensive cost-benefit analyses of emissions reduction solutions, including new supplements, focusing on:
					    a. Cost per head
					    b. Impact on production
					    c. Benefits to greenhouse gas accounting
					5. Rumen modification impacts: Gain a comprehensive understanding of the long-term impacts of methane mitigants on rumen function and overall animal health, given the evolutionary development of the rumen and potential implications of increased hydrogen production.
					6. Rumen function and energy conversion: Improve the understanding of rumen function and explore methods to convert methane into productive energy by manipulating metabolic pathways.
					7. Genetic innovations: Continue the development of Estimated Breeding Values (EBVs) related to methane emissions.
					8. Supplementation innovation:

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					Create easy-to-use, affordable technologies or processes to reduce methane production in extensively grazed cattle. These should be recyclable or biodegradable, durable, low-cost, easily implementable into current management practices, and practical for storage and field conditions. Potential solutions include water-based delivery, supplementation, or vaccination. 9. Measurement and regional variability: Develop methods to accurately measure and account for methane emissions across different regions and livestock types, ensuring region-specific mitigation strategies are effective and tailored to local conditions. **Adoption Gap** 1. Education and awareness: Emphasise the importance of methane reduction and educate stakeholders on its significance to ensure widespread adoption of mitigation practices. 2. Realistic time frames: Clearly communicate the timeframes for the availability and implementation of emerging methane reduction solutions, distinguishing between immediate actions and long-term projects. 3. Complementary practices: Recognise and promote the integration of anti-methane supplements with existing productivity-enhancing practices (e.g., selecting for fertility, improving diet quality, and optimising age of turnoff/weight for age) to reduce methane emissions per kilogram of meat. 4. Effective communication: Improve the coherence and alignment of messages related to methane reduction strategies to ensure clear and consistent information is disseminated to stakeholders. 5. Practical implementation: Ensure that methane reduction solutions are practical and compatible with current production systems. Address potential adoption barriers, such as resistance to using rumen boluses due to processor preferences.

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					6. <u>Extensive trials and research</u>: Conduct large-scale trials in extensive grazing systems, especially in northern Australia, to validate the effectiveness of existing technologies/products beyond intensive feedlot conditions. 7. <u>Cost-benefit evaluation</u>: Evaluate the effectiveness and cost-benefit of implementing methane-inhibiting technologies in extensive grazing cattle, considering environmental benefits, market access, and social license.
2	ASPIAC KPIAC NQRBRC SEQRBRC SQRBRC WQRBRC	Environmental Sustainability		Generate and calculate accurate, standardised, carbon baselines with credibility. Equipping producers with knowledge about carbon and methane measurement and accounting which will allow them to develop a plan to ensure viability of their business in a carbon accountable emissions reduction environment.	**Research Gap** 1. <u>Standardised carbon footprint assessment</u>: Develop reliable and standardised methodologies for benchmarking and assessing carbon footprints, including standardised measurements of carbon sequestration in rangelands. This will help producers accurately evaluate conflicting information and make informed decisions about participating in the carbon market. 2. <u>Environmental impact of pasture improvement</u>: Conduct objective research to determine whether the benefits of improved pastures offset the environmental costs of land clearing, particularly in scenarios like the Northern Territory. Examine the greenhouse gas implications of planting and grazing improved pastures versus managing native vegetation and woody regrowth. 3. <u>Transparent information and clear pathways</u>: Address misinformation and ensure transparency by documenting clear pathways to reduce emissions. Publish this information widely in both public and industry platforms to provide clear and accessible guidance. 4. <u>Industry standardisation and certification</u>: Develop an industry-standardised system for a methane-positive beef brand/program that supports northern production systems and is not aligned with specific supply chains. This should include criteria such as fast turnoff, high efficiency, HGP-friendly practices, and potential genomic testing.

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					5. <u>Carbon scheme evaluation</u>: Research to develop a grading system for existing carbon schemes and companies to provide producers with a numerical scale for assessing the quality and reliability of different carbon companies. 6. <u>Cost-effective monitoring tools</u>: Develop affordable and accurate tools and systems for landholders to monitor natural capital, such as precise satellite imagery-based mapping. This will facilitate better management of resources and monitoring of environmental impacts. 7. <u>Tree management and productivity balance</u>: Provide guidelines on where to retain trees, considering factors like location, planting density, tree/shrub/grass balance, and the impacts on productivity and animal welfare. 8. <u>Market development and data integration</u>: Facilitate the development of a market for sustainable beef in northern Australia, linking to the Australian Beef Sustainability Framework (ABSF) data for value-added sustainable beef initiatives. 9. <u>Methane reduction interventions</u>: Recognise and validate specific methodologies, such as using Leucaena and Desmanthus, as effective methane reduction interventions. 10. <u>Accurate emission measurements</u>: Improve the accuracy of herd and individual animal emission measurements. Develop cost-effective, accessible, and accurate methods for measuring on-farm methane emissions and accessing related data. 11. <u>Carbon lifecycle information</u>: Increase research and information availability on carbon lifecycles in low rainfall rangeland and pastoral production regions to better understand and manage carbon dynamics in these areas. **Adoption Gap** 1. <u>Access to accurate information and expertise</u>: Improve access to accurate information and impartial experts to guide producers in carbon

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					and methane management, addressing the current difficulty in sourcing reliable data. 2. Simplified and effective data collection tools: Simplify complex tools like the MLA carbon calculator for extensive northern herds and provide producers with clear guidance on the necessary data to collect and its usage. 3. Enhanced herd records: Encourage and support producers to maintain more accurate herd records, enabling precise calculation of livestock emissions at the property level. 4. Tool integration: Incorporate tools such as the SB-GAF into existing templates like the NB2 Herdflow to streamline data collection and analysis processes. 5. On-ground support: Deploy MLA-certified consultants to assist producers in understanding and effectively using current tools. On-ground support is crucial until producers are comfortable with these tools. 6. Proactive mindset and valuing wild country: Promote a proactive rather than reactive mindset among producers, encouraging long-term planning and future thinking. Educate producers on the value of 'wild country' and timbered areas for carbon sequestration and ecosystem health. 7. Clarity on suitable tools: Provide clear guidance on the most appropriate carbon/methane accounting tools for producers. Highlight the availability of resources such as the MLA Carbon EDGE program and the Environmental Credentials Platform, which will be accessible by March 2024. 8. Comprehensive training programs: Include detailed knowledge and practical examples of carbon life cycles relevant to the rangelands in training programs like the Carbon EDGE course to enhance producer understanding and implementation.