

2026-28 Producer identified RD&A priorities

Council: North Australia Beef Research Council

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

MLA Program area	Priority Rank	Committee origin	New or ongoing priority? Monitoring or emerging?	Outcome sought: Describe the issue and the outcome(s) producers/industry are seeking.	To adequately achieve the outcome, identify R&D and/or adoption gaps or strategies: - For R&D, clearly identify the research gap. - For adoption, detail a possible strategy that producers would engage with to achieve the intended outcome.
Animal Wellbeing	AW Priority #1	KPIAC SEQ RBRC SQ RBRC BRAC WQ RBRC Pilbara RBRC	Ongoing	Producers have access to new, long-acting, highly effective and affordable control methods for buffalo fly, tick and other pest fly species, including options with a minimum efficacy period of six months and, where possible, naturally based products that minimise or remove withholding periods. These solutions are supported by an integrated pest management strategy that incorporates chemical and non-chemical approaches (such as tunnels), alongside best-practice guidelines to reduce the development of resistance and to mitigate production losses and skin lesions caused by pest fly pressure.	R&D Gap: Existing buffalo fly and tick control options in northern beef systems are largely short-acting, require frequent re-application, and can be cost-prohibitive, increasing the risk of chemical resistance and reducing long-term effectiveness. There is a clear need for continued research to develop and validate long-acting, cost-effective and practical control solutions that are effective across diverse northern production systems. This includes evaluation of integrated and non-chemical control technologies (such as fly tunnels), investigation of genetic and biological drivers of pest resistance (including gene markers and naturally resistant animals), and assessment of the long-term efficacy, economics and system fit of emerging control approaches to support sustainable buffalo fly and tick management. Adoption Gap: Adoption of best-practice buffalo fly and tick management in northern beef systems is constrained by limited awareness, inconsistent use of existing control tools, and insufficient guidance on resistance management. Inappropriate use of treatments, including fly tags, is contributing to reduced efficacy and accelerating resistance development. There is a need for targeted extension, decision-support tools and producer-ready management frameworks to support integrated pest management, appropriate product rotation, and improved on-farm decision-making, enabling producers to effectively implement sustainable control strategies at scale.

Animal Wellbeing	AW Priority #2	WQ RBRC Kimberley RBRC NWQ RBRC Pilbara RBRC	Ongoing	Non-surgical reproductive control methods for both male and female cattle have been developed, made commercially available and adopted as best practice, providing permanent or reversible options that can be administered at weaning in the cradle and removing the need for traditional surgical procedures. These include non-surgical sterilisation techniques for male calves that do not compromise production or wellbeing, a single-dose sterilisation vaccine for entire males that offers an affordable, pain-free alternative to castration, and non-surgical spaying methods that replace current surgical practices. Researchers have also examined treatments to delay the onset of oestrus, with quantified impacts on growth, production and animal-welfare outcomes, ensuring producers can manage reproduction effectively without the welfare and production losses associated with surgical interventions.	R&D Gap: Current reproductive management options in northern beef systems rely on surgical castration and spaying, which present challenges for animal welfare, labour, cost, and on-farm practicality. There is a strong need for continued research to develop and validate a suite of non-surgical, permanent (and where appropriate reversible), cost-effective reproductive control technologies that can be safely and practically applied at scale. Priority research areas include the development of single-dose sterilisation vaccines or treatments for entire males, non-surgical permanent sterilisation methods for male calves that do not compromise growth or production performance and refined non-surgical spaying technologies to replace existing surgical procedures. Additional research is required to understand the production, welfare, and lifetime performance impacts of treatments that delay puberty in females. Any research must also consider downstream implications for meat quality, processing, user safety, and livestock traceability, including the development of consistent industry standards for identifying sterilised animals, to support widespread industry adoption and confidence. Adoption Gap: Adoption of alternative reproductive management technologies in northern beef systems is currently constrained by the absence of commercially available non-surgical options, limited producer confidence in new approaches, and uncertainty around animal welfare, production performance, regulatory acceptance and market impacts. Even where emerging technologies show promise, uptake is likely to be limited without clear evidence of cost-effectiveness, ease of use, and consistency of outcomes under commercial northern conditions. There is also a lack of clear industry guidance and standards for the identification and management of sterilised animals, creating uncertainty for producers, processors, and supply chains. Targeted extension, producer demonstration sites, and decision-support tools will be required to build understanding of when, where and how non-surgical reproductive control methods can be integrated into existing herd management systems, and to support confidence in their impacts on productivity, welfare, meat quality and whole-of-system performance.
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Grassfed Beef Productivity	GBP Priority #1	ASPIAC BRAC NWQ RBRC NQ RBRC Pilbara RBRC	New	Producers have access to cost-effective, non-invasive, crush-side diagnostic tools that use AI interpretative technology to detect pregnancy status, determine foetal age and gender in real time, assess whether a female has cycled, and remotely detect signs of illness or disease such as Three-Day Sickness, Vibriosis, Trichomoniasis, Leptospirosis, Blackleg, Pulpy Kidney and Pestivirus. These tools integrate with existing systems—including data-collection devices to store lifetime animal records, automated drafting technologies to draft animals based on pregnancy weights or other set parameters, and platforms such as Opti-weigh—to support automated, accurate and efficient herd management. By providing an alternative to manual pregnancy testing and offering real-time health and reproductive insights, the technology enables producers to forecast herd numbers and sales, improve mustering and processing efficiency, respond earlier to disease, and better quantify the prevalence and economic impacts of illness and production loss.	R&D Gap: Current pregnancy diagnosis and reproductive assessment methods in northern beef systems are limited by variable accuracy, reliance on invasive procedures, labour intensity, and constrained ability to provide timely, actionable information for management decision-making. There is a clear need for research to harness artificial intelligence and non-invasive sensing technologies to deliver more accurate, real-time determination of pregnancy status, foetal age, reproductive cycle status, and potentially foetal gender. Priority research should focus on developing and validating novel, non-invasive scanning or detection tools, including adaptation of technologies from other industries where appropriate, to reduce development timelines and cost. These technologies have the potential to reduce foetal mortality, lower labour requirements, and improve reproductive management outcomes. Additional research and development opportunities exist to extend these platforms to the early detection of reproductive abnormalities in cows and bulls and disease diagnosis, delivering broader herd health and productivity benefits. Adoption Gap: Adoption of advanced reproductive detection technologies in northern beef systems will be constrained unless tools are cost-effective, robust, and practical under extensive commercial conditions, and provide results that are easy to interpret in real time to support management decisions. Producers require confidence that new technologies deliver clear productivity, welfare and labour-efficiency benefits relative to existing pregnancy testing approaches. Targeted extension, commercial-scale validation, and producer demonstration will be required to support uptake, alongside training for veterinarians, technicians and producers to ensure consistent and correct use. Clear guidance on how AI-enabled reproductive diagnostics can be integrated into existing herd management systems will be critical to achieving adoption at scale and realising whole-of-system benefits.
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Grassfed Beef Productivity	GBP Priority #2	NQ RBRC	Ongoing	New and novel methods that can be used in integrated tick, buffalo fly and parasite management strategies. Potential benefits include removing restrictions of withholding periods if biological controls can be used to replace chemical treatments.	R&D Gap: Chemical treatments currently used to treat pests and parasites are not long acting, and treatment must be repeated frequently which pushes up the input costs. Current chemical treatments also impact industry through the imposition of withholding periods and non-slaughter intervals following chemical treatments. Research is required to develop alternative and ideally biological, novel approaches to pest and parasite treatment and prevention. Long-acting biological agents would remove the problem of ESI and WHP and reduce the frequency of treatment required. Adoption Gap: Ensuring industry-wide adoption and use of new methods will require a targeted extension program. The benefits of new methods will need to be clearly demonstrated to producers to facilitate large-scale uptake.
Feedbase Production	FP Priority #1	CQ RBRC	New	A study that examines the benefits, risks and economic profitability of improving pastures, including ongoing management and maintenance, over the long term in different regions of northern Australia. The information in the study will allow producers to determine if developing specific land types with improved pasture mixes will improve both the productivity and the profitability of their operation over the long term. Examples of case studies in the findings will include pasture improvement, weed control and ensuring long term pasture productivity.	R&D Gap: Whilst considerable R&D has been done to provide better pasture establishment and management options for various regions, there is still a lack of clarity about the cost effectiveness and economic risk of improving pasture quality and productivity, and management strategies at the individual business level. What are the impediments and issues inhibiting uptake of R&D in the red meat industry? What R&D has been completed but not adopted by industry, and why? Adoption Gap: There is a gap between the known technical solutions and their profitable application by individual businesses.
Feedbase Production	FP Priority #2	Pilbara RBRC	Ongoing	Producers need ready access to information tools that facilitate adoption of land management best practices to improve land condition across the broader pastoral sector. Although the pathways are generally known their cost-effectiveness in specific regions is often not well understood. Better land condition is widely understood to lead to higher profitability of beef businesses. Producers that	R&D Gap: Development of an extension strategy to demonstrate to producers that better land condition leads to better profitability. The aim will be to improve land condition generally across the rangelands of northern Australia and simultaneously improve the profitability of the northern beef industry. Adoption Gap: It is well understood by many in the industry that improving land condition improves the profitability of beef businesses in northern

				are equipped with knowledge and tools to assist in improving and maintaining better land condition will contribute to higher overall profitability, and ultimately sustainability, of the beef industry.	Australia. However, for various reasons, including drought events or economic factors such as market fluctuations, many producers do not understand how to go about improving the condition of their property without compromising production.
Environmental Sustainability (On-farm)	ES Priority #1	ASPIAC Kimberley RBRC NQ RBRC SQ RBRC Pilbara RBRC BRAC NWQ RBRC SEQ RBRC	New	Producers have access to accurate, standardised and credible tools and calculators that generate carbon, methane, biodiversity and broader natural capital baselines—including superterranean and subterranean measures at macroscopic and microscopic scales—supported by the ability to geo-reference photographs and integrate location-specific data using AI. These tools provide producers with clear information on the full biogenic carbon cycle (emissions and sequestration) and natural capital processes, enabling them to understand carbon, methane and biodiversity accounting, develop viable business plans in a carbon-accountable and natural-capital-accountable environment, meet reporting requirements for financial institutions, and identify potential revenue opportunities. The tools include datasets specific to arid and semi-arid zones and give producers confidence in the accuracy, integrity and usability of carbon, biodiversity and natural capital assessments.	R&D Gap: Producers in northern beef systems currently lack access to credible, consistent and regionally relevant tools to measure, benchmark and manage carbon, emissions intensity, biodiversity and broader natural capital. While large volumes of data are being generated by research organisations, governments, not-for-profits and private providers, the accuracy, validity, relevance and practical utility of this information remains unclear, particularly for arid and semi-arid production zones. There is a critical need for research to review, validate and standardise carbon, emissions and natural capital baseline methodologies, and to identify or develop fit-for-purpose, cost-effective data collection and calculation tools specifically tailored to beef production systems. This includes addressing gaps in whole-of-system accounting, beyond soil carbon or methane alone, to encompass the full biogenic carbon cycle, biodiversity and other natural capital assets. Priority research is also required to develop credible metrics and benchmarking frameworks that underpin the integrity of carbon and natural capital accounting, support ESG reporting requirements, and provide producers with confidence that participation may translate into legitimate commercial or market opportunities. Tools and outputs must be regionally relevant, scientifically robust, secure, and capable of being understood and applied by producers as part of normal business decision-making. Adoption Gap: Adoption of carbon, emissions and natural capital measurement tools is constrained by low producer confidence in data credibility, uncertainty around commercial pathways, and concerns regarding data ownership, privacy and use. Producers are hesitant to engage with tools or markets that are not independently validated or where the role of private brokers, accumulators and data holders is unclear.

					For adoption at scale, producers must be confident that data integrity, security and ownership are guaranteed, and that there is full transparency regarding how data will be used, by whom, and for what purpose. The absence of clear industry standards for data governance and natural capital accounting is a significant barrier to participation. Targeted extension and engagement delivered through trusted, independent sources (such as government agencies, NRM bodies and RDC-supported programs) will be required to improve producer understanding of carbon and natural capital accounting, clarify potential risks and benefits, and demonstrate how these tools can be integrated into on-farm decision-making to support productivity, sustainability and long-term business resilience.
Environmental Sustainability (On-farm)	ES Priority #2	NWQ RBRC SEQ RBRC BRAC KPIAC SQ RBRC	New	Producers, researchers and government have quantified the economic, environmental and productivity impacts of woody vegetation thickening and encroachment in northern rangelands, including the effects of species like gutta-percha, whitewood and gidgee on grass production, erosion, mustering efficiency, mismothering and enterprise profitability. Producers can access region-specific optimum tree-to-grass ratios that consider declining land condition, shade-related welfare benefits, environmental outcomes and potential improvements from multi-species co-grazing. They can detect woody weeds early using accessible satellite tools and apply novel, cost-effective methods to control thickening and eradicate invasive species such as Prickly Acacia, supported by cost benefit analyses. Producers also have innovative treatment options for woody weeds across extensive rangelands, backed by cost-benefit analysis of how altered tree-to-grass ratios affect water retention, animal productivity and biomass production.	R&D Gap: Woody thickening, encroachment and the spread of woody weeds pose significant but poorly quantified risks to productivity, profitability, biodiversity and landscape function across northern rangelands. The full economic, production and environmental impacts remain inadequately understood, contributing to uncertainty around when intervention is justified and which management approaches deliver the best whole-of-system outcomes. There is a need for comprehensive research to quantify the historical, current and projected impacts of woody thickening and encroachment, including effects on pasture availability, carrying capacity, soil water retention, biodiversity and long-term landscape condition. This should include mapping and modelling of tree-grass cover ratios by region (e.g. NABRC regions), and assessment of the trade-offs between shade benefits, pasture production, animal performance and environmental outcomes to determine optimal tree-grass balance under different land systems. Additional research is required to improve the early detection of woody weed infestations, enabling intervention before establishment and spread, and to develop cost-effective, practical and scalable control options, including novel and biological control methods. Research should focus on identifying management strategies that are effective in extensive northern rangelands while maintaining or improving production outcomes, and that

					can be implemented in partnership with producers, governments and natural resource management organisations. Adoption Gap: Adoption of proactive woody vegetation management in northern beef systems is constrained by limited producer awareness of the production, biodiversity and economic impacts of woody thickening, encroachment and suboptimal tree–grass cover ratios. In the absence of clear, regionally relevant evidence, producers face uncertainty around the costs, benefits and risks of intervention, leading to delayed or inconsistent management responses. There is a need to translate research outcomes into clear, practical best-practice management guidelines, tailored to different land systems, which articulate the impacts of woody thickening and woody weeds and provide cost-effective, stepwise pathways for implementation. Producers also require improved tools and extension support to identify early infestations, assess vegetation condition, and understand the productivity and environmental benefits of maintaining optimal tree–grass balance. Targeted extension, demonstration sites and engagement through trusted delivery partners will be critical to building confidence and supporting adoption of management strategies that maintain productive capacity, protect biodiversity and preserve the long-term health of northern rangeland landscapes.
Items of interest/significance beyond Top 10 Priorities: <i>(NB: These can be relevant to above listed programs, or other program areas. Add more lines if required)</i>					
Grassfed Beef Productivity	Other #1	NWQ	New	Alternative sources of urea and phosphorous, including new and novel manufacturing processes to address supply chain vulnerabilities. Development of manufacturing options that could facilitate local manufacture of urea and phosphorous to ensure continued supply.	R&D Gap: Research is required to investigate and develop environmentally sustainable, cost-effective methods for the synthetic manufacture or alternative production of urea and phosphorous, suitable for use in livestock supplements in northern Australian grazing systems. Urea and phosphorous are essential inputs for maintaining animal performance and reproductive efficiency, yet their supply is constrained by reliance on finite natural resources, global market volatility and high processing and transport costs. Priority research should assess novel manufacturing pathways, alternative raw material sources and localised production models that improve supply

					security while maintaining product quality and safety standards for livestock use. Adoption Gap: Absence of local manufacturing in Australia means the industry is completely reliant on offshore manufacture and supply of critical inputs.
Grassfed Beef Productivity	Other #2	NQ	Ongoing	Research will ideally deliver a social science research project that identifies the reasons why producers are not adopting research outcomes that are proven to deliver positive outcomes to producers that do. The research will identify barriers, possible catalysts to improving adoption, and inform an adoption strategy that will be implemented to improve rates of research outcome adoption within the beef industry.	R&D Gap: Understanding the underlying factors that lead to limited uptake of research and development projects in the beef industry. The research will then be used to develop a targeted promotion and extension strategy to improve rates of adoption of best practices and lift the productivity and profitability of the beef industry. Adoption Gap: The low adoption of proven management practices, products and technology.