



FOSTERING RD&E COLLABORATION AND LEADERSHIP IN NORTHERN AUSTRALIA

*Final Report to Cotton Research and Development Corporation
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1. Background

The Northern Australia Crop Research Alliance Pty Ltd (NACRA) was established in 2016 to undertake producer-driven Research and Development (R&D) in northern (tropical) broadacre cropping areas, and specifically the Ord region of Western Australia. Since that time, NACRA's industry-based owners have prioritised crop R&D requirements according to industry needs, and leveraged State and Commonwealth funding against their own substantial cash contributions. 'The NACRA model' is seen by producers, other agribusinesses, funders and governments as a successful, industry-driven mechanism for prioritising R&D and leveraging investment.

Prior to the commencement of this project, numerous parties, including producers and R&D Corporations, had requested that NACRA consider extending its services across Northern Australia to coordinate broadacre crop R&D prioritisation and secure and distribute funding from and to producers and industry. As a private company delivering R&D, NACRA determined that it may not be the most suitable vehicle to undertake this role. However, NACRA works closely with other producer organisations across

Queensland and the Northern Territory which had shown interest in forming an industry-based crop R&D prioritisation and leadership group. The group that was initially envisaged would operate independently of existing, geographically-specific producer organisations, but with membership comprised of these organisations.

This final report presents the process and outcomes of the CRDC-supported investigation of options for integrating agricultural R&D and Extension (R,D&E) activity in northern Australia.

2. Objectives

This project involved working with crop producers and Regional Development Corporations (RDCs) across Northern Australia to determine the most appropriate structure and arrangements for establishing an industry-based leadership and coordination approach to prioritising, driving and delivering crop Research and Development in northern Western Australia, the Northern Territory and Queensland.

At the outset it was envisaged that a single group could support the various producer organisations and potentially geographically isolated individual farmers to access resources to deliver local, regional and interstate crop R&D priorities. The group would be the 'go to' body of united producers for R&D Corporations, government agencies and other investors seeking to support agricultural production in Northern Australia.

With the onset of Covid-19 soon after the commencement of this project, and the subsequent (predominantly Western Australian) border restrictions, the initial plan for project delivery was adapted multiple times. However, at the completion of the project, the objectives have been achieved.

Were the objectives achieved?

Despite the challenges posed by Covid-19 which commenced shortly after the initiation of this project, the objectives have been achieved.

Shortly after this project commenced, the Cooperative Research Centre for Developing Northern Australia (CRCNA) initiated its *Northern Broadacre Cropping Situational Analysis* (STSS, 2020), with somewhat similar objectives, albeit with a broader mandate (and budget!). The purposes of the situational analysis was to guide future crop R&D investment by CRCNA. Thus, this work was used to inform the Northern Australia R&D Collaboration and Leadership project, finding substantial synergies with the CRDC-funded project.

An initial discussion paper prepared under this project (appended as Attachment A) was considered and reviewed by CRDC, guiding the project roll-out. This paper recommended that the CRCNA support industry-led crop R&D across Northern Australia, partnering with the commodity-based Research and Development Corporations (RDCs).

As described in Section 3 (Methods), initial consultation with stakeholders was undertaken fortuitously during a period of (relatively) 'open' State borders in May 2021. This process secured industry input into preferred processes and priorities for R,D & E in Northern Australia. A key outcome of this activity was the prioritisation of an integrated farming systems approach to agricultural R&D in Northern Australia.

Consequently, and informed by the attached discussion paper, CRDC and CRCNA partnered to investigate, with industry, the opportunities and priorities for an integrated northern food and fibre research program. The recently established 'Cotton, Grains and Cattle' program of the CRCNA, in partnership with CRDC, Grains Research and Development Corporation (GRDC) and supported in-principle by Meat and Livestock Australia (MLA) is a direct outcome of the investment by CRDC and the work undertaken by NACRA in identifying opportunities for integrated R&D in the north.

CRCNA has committed heavily (\$8m) to a four-year integrated farming systems R&D program in Northern Australia, which incorporates cross-industry issues and impediments including those relating to supply chains. CRDC has committed \$1m to this program, with GRDC co-contributing. Importantly, this process, initiated as an outcome of the 'Northern Australia R,D&E Collaboration and Leadership' project, has RDCs and the CRCNA working closely to ensure producer priorities are secured through regionally based steering committees (stakeholder groups).

The objective of this project has been met. It has initiated communication, coordination, R&D prioritisation processes and triggered extensive producer-driven investment in Northern Australia.

3. Methods

A number of integrated processes were developed, adapted (to accommodate Covid-19 implications) and implemented through this project:

- Preliminary discussions with producer representatives from northern WA, the Northern Territory and Queensland (late 2019/early 2020).
- Cross-project research integration to guide, inform and be informed by the CRCNA Broadacre Cropping Situational Analysis, to avoid duplication and maximise outcomes (2020).
- Discussions with RDCs regarding existing and proposed prioritisation processes and investment plans for R,D&E in Northern Australia (2020/2021).
- Review of existing documentation relating to agricultural R&D prioritisation processes (2019-2021).
- Preparation of discussion paper and recommendations for a three-year CRCNA-supported project to enable integrated Northern Australia agricultural R&D, with processes for geographic representation in each jurisdiction (2021).
- Stakeholder meetings: WA and NT (May 2021).

Additional, directly related activities which were implemented following this project include industry stakeholder workshops in WA, NT and Qld under the lead of the

CRCNA in partnership with CRDC. Steering Committees for WA and the NT, to prioritise and guide R&D investment, have subsequently been established by the CRCNA. Processes for supporting agricultural R&D in Queensland are still under development by the CRCNA, and will be geographically and socially relevant.

4. Outcomes

As noted in Section 2, as a direct outcome of this work, the CRCNA has committed heavily (\$8m) to a four-year integrated farming systems R&D program in Northern Australia, which incorporates cross-industry issues and impediments including those relating to supply chains. CRDC has committed \$1m to this program, with GRDC co-contributing. Importantly, this process, initiated due to the findings of the 'Northern Crop R,D&E Collaboration and Leadership' project, has RDCs and the CRCNA working closely to ensure producer priorities are secured through regionally based steering committees (stakeholder groups).

Steering Committees for prioritising and guiding R&D investment have been established in WA and the NT, with suitable options being considered for Qld. Integration of this work is being facilitated by the CRCNA. This is a direct outcome of the work initiated under the *Northern Crop R&D Collaboration and Leadership in Northern Australia* Project.

5. Participation

Producer participation in this activity included industry representatives (crop farmers, agronomists, farmer's cooperative staff), with NACRA and CRDC meeting in May 2021 to discuss R&D priorities and prioritisation process options for Northern Australia.



WA industry representatives meeting with CRDC in Darwin (May 2021)

Additional discussions occurred with representatives of the (relatively new) NT broadacre cropping industry at this time.

In December 2021, initiated as a consequence of this work, the CRCNA and CRDC met with producers and other industry representatives in Kununurra (WA) to further explore processes for prioritising and investing in integrated farming systems R,D&E. A similar workshop occurred in Darwin in February 2022. The purpose of these workshops was to establish the priorities and processes for integrated farming systems, extending the focus to include beef industries, given the potential synergies between cropping and northern beef production.

Multiple, additional 1:1 discussions with producers, industry, RDCs and agencies were undertaken as part of this project.

6. Conclusion

This project has provided the segue to a collaborative, whole-of-Northern Australia integrated farming systems R,D&E program, delivered through the CRCNA's 'Cotton, Grains, Cattle' program.

This is a significant and ground-breaking outcome which will have benefits across agricultural systems in the north. It integrates and synergises the RDC investment with that of broader research programs (eg via CRCNA) and links to subject-specific Cooperative Research Centre expertise and investment via the CRCNA's own networks.

Most importantly, the integration of these parties through a coordinated and supported R&D approach will see producers' R&D needs addressed in the most appropriate and geographically suitable ways. By initiating this work, CRDC has facilitated pathways for producers to bring their R&D requirements to the direct attention of the RDCs. It has fostered an approach to prioritising R&D in 'new' farming areas where traditional grower groups do not always exist, and where they do, the number of farmers involved may be very low, even though the potential areas of production may be significant.

This project has resulted in the initiation of geographically relevant approaches, guided by local industry, to identifying and delivering R&D priorities for sustainable cropping systems in Northern Australia.

7. Extension Opportunities

The next phase of this project, including extension to producers, will be delivered across Northern Australia through the CRCNA's Cotton-Grains-Cattle Program.

REFERENCE

ST Strategic Services and Pivotal Point Strategic Directions, 2020, *Northern Australia broadacre cropping situational analysis*. Prepared for the Cooperative Research Centre for Developing Northern Australia. Available at <https://www.crcna.com.au/resources/publications/northern-australian-broadacre-cropping-situational-analysis>



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DISCUSSION PAPER

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1.0 BACKGROUND

Cotton Research and Development Corporation (CRDC) provided a Grassroots Grant to the Northern Australia Crop Research Alliance (NACRA) to investigate options for crop producers across Northern Australia to determine the most appropriate structure and arrangements for industry-based leadership and coordination to prioritise and drive crop Research and Development in the north.

Such a group or process would it was envisaged, support various producer organisations and potentially geographically isolated individual farmers in Western Australia, Queensland and the Northern Territory to communicate RD&E needs and enable coordination of resources to deliver local, regional and interstate R&D priorities for Northern farming systems.

Coordination through a group or process. Coordination through a group or process could enable a one stop shop for R&D Corporations, government agencies and other investors seeking to support agricultural production in Northern Australia. In the short term, this would mean efficiencies in sourcing R&D grants for local, regional or cross-regional cropping requirements. In the longer term, it will contribute to improving the economic outputs of farming in Northern Australia.

2.0 CONTEXT

There are a range of stakeholders including R&D Corporations, government agencies and other investors with overlapping priorities for developing and supporting agricultural production in Northern Australia. RD&E needs to be scientifically rigorous, driven by need and like production systems in North, R&D programs need to be flexible enough to respond to changing tropical environment and grower needs, while still achieving the strategic intent. New pest challenges, for example, need to be addressed quickly and in a coordinated manner. The progression of fall army worm across northern Australia in 2020 is an example of how quickly a new threat can emerge.

Northern Australia comprises around 40% of Australia's land mass and < 5% of the national population with a temporally and spatially variable tropical climate. Small numbers of farmers with diverse farming systems and businesses that need to be adaptive to climate and markets means traditional R&D priority engagement processes may not be suitable and there is a greater need for cross commodity interaction. Limited regionally based R&D research and agronomy capacity across Northern Australia also reduces the ability of issues to be incorporated into other traditional RDC processes. Producers want R&D engagement but with the least amount of administrative effort and reporting, albeit while maintaining accountability.

In the northern context, production can and does change rapidly, particularly in irrigated agricultural areas where water availability means growers can grow crops for which there is current demand (and therefore potential returns). Maize from the Ord is an example. In 2015/2016, maize was a cover crop. It is currently the Ord's largest volume export, with approximately 6,000ha of irrigated maize cropped in 2020. R&D therefore needs to be responsive to industry needs, which are driven by market demand in addition to production risks and pressures.

Factors driving the preparation of this paper are summarised below (in no specific order):

1. Broadacre cropping in northern Australia is not a new thing, however recent irrigation and dryland expansion efforts across the Top End have contributed to increasing demand for R&D to improve outcomes in dry and wet tropical production systems. Past experience would suggest there isn't going to be one silver bullet commodity for the North, and that RD&E should support development of sustainable and flexible farming systems integrated with existing industry.
2. Cropping systems should be supported by a Genetics, Environment and Management (G x E x M) package that is based on Northern climate, soil types and other relevant factors.
3. Northern Australia is diverse and RD&E needs will not be homogenous across the top end, but there also needs to be opportunities to learn from each other.

4. Farmers want, and will invest in, crop R&D that improves their productivity, profitability and sustainability, particularly where there is rapid turnaround between investment and results.
5. Management and environmental adaptations to existing cropping systems may provide faster returns on R&D investment than the investigation of new crop alternatives. As described in the recent *Northern Australia broadacre cropping situational analysis* prepared for the CRCNA,

there is a temptation to focus on crops that, with some genetic improvement, could be competitive. This may be a legitimate long-term goal, but it is not suitable for short-term development of broad acre cropping options.

(STSS, 2020, p11)

6. Producers want and need to drive the R&D agenda, rather than have the priorities determined by academia or government agencies without producer involvement.
7. Producers also want simple access to R&D support, with minimal administrative effort and cost. Farmers often have neither the time, resources or administrative structures to prepare and manage grant applications, and therefore miss out on opportunities to access funds offered, for example, through the CRCNA. They are often unable to compete with academia or government agencies who maintain staffing and systems to access and manage crop R&D funding opportunities.
8. RDCs (and other organisations) require a framework to identify regional priorities and through which to provide RD&E support to northern broadacre agricultural areas. Wherever possible, RD&E prioritisation processes in northern Australia need to be on par with those in place in other growing regions.
9. Many of the geographic areas in Northern Australia have small numbers of diverse farming businesses, and traditional RD&E prioritisation structures utilised in other growing areas may not be suitable. For example within a region the same small number of producers may be called on to engage with 3 or 4 commodity RDCs.
10. The 'NACRA model', where the organisation is owned by industry and utilises industry cash contributions to prioritise R&D and leverage external investment works very well in the Ord. However, extending the NACRA approach across other regions is not appropriate. Similarly, the NACRA approach cannot be readily applied to other areas unless there are industry parties with the interest and capacity to devote resources and administrative and governance time to ensuring organisational functioning.
11. A 'one size fits all' model will not work. While Northern Australia can be collectively considered a region, there are 3 distinct state government administrative boundaries and systems in play (Qld, WA, NT), with large distances between growing areas (for example, 500km Ord to Katherine, and a further 1500km to the Gilbert River irrigation area).
12. Nevertheless, collaboration and leadership is needed and will assist in achieving northern Australia crop production potential.

Any processes established to facilitate northern crop research need to be capable of supporting R&D objectives which are common across geographic regions, as well as those which are specific to individual farming areas. Broader farming system should be considered with fodder crops and linkage to pastoral industry in Northern Australia is important.

The CRCNA *Broadacre Cropping Situational Analysis* (STSS 2020) identified that while the commodity-specific Research and Development Corporations (RDCs) focus on maximising

production of specific commodities, the opportunity exists to facilitate co-investment across the RDCs (GRDC, MLA, CRDC, HIAL and Agrifutures). This proposal provides a way for this to occur.

The *Broadacre Cropping Situational Analysis* also recommended the establishment of Landholder Advisory Groups (LAGs). Specifically relating to technical input (into research priorities), the report noted that landholder technical input can contribute to:

1. *Validation of research findings – this is particularly important in providing validation of modelled cropping outputs in the field, and*
2. *Setting of research priorities – the effectiveness of participatory R&D, whereby growers determine the best approach to delivering a desired outcome based on expert input (rather than researcher led approaches), has been well established.*

The CRCNA analysis recommended LAGs initially be established in Queensland, and “be actively involved in forming the vision for agriculture in their State or region as well as catchment-based strategies for broadacre agricultural development” (STSS, 2020, page 91). From an industry perspective, these broader objectives are visionary, but in order for LAGs to be useful, producer involvement must translate to direct outcomes for those investing R&D resources. A focused approach is therefore necessary. A group whose objects cover ‘everything for everybody’ will be limited in what it can achieve, particularly when such a broad geographic area, under multiple administrative structures, is to be represented. The focus should be on integrated RD&E for production, with other agricultural related issues, including supply chain management and marketing considered out of scope.

3.0 KEY ELEMENTS OF AN R&D PRIORITISATION AND LEADERSHIP PROCESS

In the context of proposing a structure for R&D facilitation in the north, the key questions are:

- How does industry communicate its priorities (and show R&D leadership) to funding organisations, including governments wishing to invest; and
- How do funders distribute the funds in the most efficient and effective manner?

with the least amount of administrative cost and effort on the part of all parties involved.

Key Elements

- **Northern RD&E priorities are driven by producers:**
 - Process should engage with producers either collectively on a local geographic scale, or individually if necessary, so that drivers and barriers for farming system (economic, social, environment, appetite for risk) are understood and this is used to inform R&D investment.
 - For example producers may be interested in focussing on yield improvement on an already established crop through improving the Genetics, Environment and Management (G x E x M) package or there might be risk or social drivers that are driving a change to new pillar crop or rotation crop.
 - Process can be informed by academia, government and broader industry, but development of priorities should be end user centered to ensure outputs are relevant and adopted.

- Ideally process should facilitate interaction between Northern regions so that shared priorities can be identified in addition to the regionally specific ones.
- Process should enable producers who want to contribute (cash or inkind) to RD&E to do so with administrative burden.
- Process will need to consider how potential producers (in addition to established producers) can be factored into the priority setting process.
- **R&D Processes are efficient with cross commodity engagement to avoid duplication**
 - With large and diverse areas and systems and small numbers of producers, engagement processes need to be efficient with producer's time and resources. Avoiding duplicate processes with different RDCs and government groups is important.
 - Importantly, the *Broadacre Cropping Situational Analysis* (STSS, 2020) recognises the high cost of doing (R&D) business in the north. Resourcing is essential for any R,D&E coordination processes in the north.
 - Cross commodity (GRDC, MLA, CRDC, HIAL and Agrifutures) engagement in RD&E priority priority setting will reduce duplication and enable co-investment in systems research.
 - Cross commodity investment where possible can also help build local capacity
 - Given the long history of R&D in Northern Australia, it is important that any cross commodity approach considers and builds upon past research and producer experience.

4.0 PROPOSED APPROACH – NORTHERN CROP R&D SECRETARIAT

It is proposed that the CRCNA funds a 3-year project that provides a secretariat service to

- develop and support a process to establish drivers and barriers for farming system and advice on R&D priorities from producers – whether as individuals or collectively in geographic groups;
- support RDCs and northern producer groups to set geographically relevant strategic priorities (using processes supported by the individual RDCs);
- work with RDCs to access existing R&D and linkages to southern farming systems research; and
- facilitates producer / group access to available funding.

The secretariat should have a specific crop R&D focus, and not venture into marketing, land tenure/development or other issues affecting cropping in the north. It should also remain focused on the requirements of producers, and not become another avenue for government or academic organisations (which each have their own administrative structures) to access additional resourcing. This approach needs to be about meeting current production challenges and innovation requirements for current crops – targeting the 'low hanging fruit'. Integration of the crop R&D with other elements of the northern farming system (eg beef production; supply chain issues) will provide opportunities to reduce costs and potentially increase producer returns.

Secretariat performance will be measured by the value of industry crop R&D investment directly leveraging RDC direct or CRCNA competitive grants round funds. Outcomes could be

measured by industry growth (for example, the recent cotton industry development in the Ord can be shown to be a direct outcome of recent [2017-2020] R&D programs).

Minimising administration costs is essential. The proposed secretariat would undertake the coordination and submission of grant proposals, reporting and acquittals, on behalf of producers. The secretariat will administer the funds and assist the recipients in their reporting – as NACRA currently does for industry in the Ord.

This proposal is for CRCNA to fund the overarching R&D prioritisation and secretariat function outlined above (or do this itself through a dedicated resource targeting broadacre producers). This will make it easier for regional groups or individual producers to access funds for direct local R&D priorities. This approach fits within the objects of the CRCNA, but tailors the secretariat role to support the delivery of crop R&D to meet producer-identified priorities.

Box 1 – Objects of the CRCNA

Objects

2 The Company's objects are all or any of the following:

- 2.1 Improve the competitiveness, productivity and sustainability of the northern Australian economy by building on the particular strengths of northern Australia including agriculture, food and tropical health;
- 2.2 Assist industry to solve the challenges of doing business in northern Australia and reduce the barriers to investment.
- 2.3 Bring together industry, research organisations and all northern jurisdictions and international partners to grow business opportunities in the northern Australia.
- 2.4 Develop new technologies, innovation, products, processes and services that bring benefit to northern Australian communities;
- 2.5 Promote a skilled and industry-ready local workforce.
- 2.6 The Company may only exercise the powers in section 124(1) of the Corporations Act to:
 - (a) carry out the objects in this rule 2; and
 - (b) do all things incidental or convenient in relation to the exercise of power under rule 2.2(a).

Any funding secured through the secretariat, under this model, would be matched locally. For example, if Ord has a priority for crop R&D worth \$300k, it must find \$150k as a 50% contribution. If Ord and the Douglas-Daly have a similar priority, they may agree to cost-share and partner on a project. Contributions to secretariat time would be required to ensure equity across the north.

This approach provides a mechanism for CRDC, GRDC and potentially HIAL, AgriFutures and MLA to channel resources to on-the-ground trials and developments. This is particularly important for prioritising expenditure of northern Australia-generated grower levies, where there are insufficient numbers of producers to warrant the establishment of regional panels, as occurs in southern regions.

There is also a need for project-specific extension in the north, which can be built into individual proposals for which funding is sought.

How would it work? Example operational scenarios

- 1) A local producer group wants research funds to do XYZ. It contacts the secretariat and asks for advice on what funding is available via CRDC, GRDC, MLA, CRCNA, or others. The group states 'we have \$100k to do XYZ'. Secretariat writes the application on their behalf, possibly with a small cost-covering administration fee (but majority supported by the CRCNA). The secretariat then auspices the funding, provides payments to the grower group, and ensures the reporting is done. The producer group remains responsible for scientifically supported methods and delivery, and utilises resources of the funding bodies (eg CRDC, GRDC) for quality assurance in research methods and reporting.
- 2) An individual northern Australia farmer seeks research funding advice and support to do XYZ. The method for accessing funds is the same as above.
- 3) A WA group + an NT group + a Qld group all want to undertake similar research. Secretariat prepares the funding application. Works out the contributions. Delivery is as above.

This approach is not dissimilar to how the CRCNA currently works, however the focus will specifically be on producers and their 'low hanging fruit' crop R&D needs. Academia and R&D agencies will be excluded from accessing this secretariat function

REFERENCES

ST Strategic Services and Pivotal Point Strategic Directions, 2020, *Northern Australia broadacre cropping situational analysis*. Prepared for the Cooperative Research Centre for Developing Northern Australia. Available at <https://www.crcna.com.au/resources/publications/northern-australian-broadacre-cropping-situational-analysis>

An earlier version of this paper (dated October 2020) was reviewed by Ms Susan Maas, CRDC. Subsequent discussions informed this current iteration. It is noted that this approach is a work-in-progress, which will continue to be informed by industry and RDCs.