



WA Agricultural Research Collaboration

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Capacity needs analysis for the Western Australian agricultural research, development and extension sector: Interviews

- Workforce pipeline and early career attraction

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JANE WIGHTMAN
CONSULTING



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1. Executive summary

This report presents findings from a series of interviews exploring workforce pipeline and early career attraction in the context of the Western Australian (WA) agricultural research, development and extension (RD&E) sector. The study forms part of a broader capacity needs analysis for the sector.

Semi-structured interviews were conducted online with nine interviewees from a diverse cross-section of the WA agricultural sector, including government research agencies, universities, grower-led organisations, private consultants, commercial agribusinesses and a First Nations agricultural organisation.

The interviews present a unified message: WA's agricultural RD&E workforce pipeline is constrained by deep structural, cultural and funding challenges, yet there is strong consensus about what needs to change. Interviewees describe a system weakened by declining applied training in universities, limited early exposure to agriculture in schools, unstable short-term funding, fragmented partnerships, and a public image that fails to reflect the modern, science-rich nature of agricultural RD&E. At the same time, they emphasise clear areas of strength, particularly the commitment of grower groups, previous school-based initiatives, and examples of high-quality interdisciplinary and cross-cultural collaboration.

Across the research, participants consistently highlighted that rebuilding capacity requires long-term, coordinated effort from schools through to early career employment. They stressed the need to strengthen hands-on science experiences, renew applied and field-based university training, embed meaningful work, integrated learning, and create multi-year, stable early career roles that give graduates the time and security to develop. Interviewees also pointed to the critical importance of collaboration; within organisations, across institutions, and between disciplines, arguing that WA must move beyond siloed, project-based arrangements toward long-term partnerships that build shared capacity.

A consistent theme throughout the interviews is that meaningful First Nations participation requires systemic reform. Participants emphasised the need to align agriculture with cultural values, rebuild trust, create culturally grounded learning pathways, and elevate the visibility of First Nations leaders and projects.

2. Foreword

The WA Agricultural Research Collaboration (WAARC) is Western Australia's (WA's) platform for collaborative agricultural research and development, bringing together government, universities, and industry to address key challenges such as climate resilience, productivity, sustainability, and biosecurity. Through its "Team WA" approach, WAARC drives practical, industry-led research that maximises impact while building capacity and strengthening the State's future agricultural workforce.

In August 2025, WAARC commissioned a capacity needs/gap analysis (Needs Analysis) to identify and validate WA's current and future human capacity requirements in the agricultural research, development and extension (RD&E) sector. This work is intended to guide WAARC and others in planning and investment to equip the sector with the expertise, skills and workforce structure to meet emerging challenges over the next 5 to 15 years. The work is a point in time stocktake, conducted by Queensland-based Jane Wightman Consulting.

Five reports relating to the Needs Analysis are now publicly available (May 2026):

1. Capacity needs analysis for the WA agricultural RD&E sector: Summary report
2. Capacity needs analysis for the WA agricultural RD&E sector: Literature review
3. Capacity needs analysis for the WA agricultural RD&E sector: Sector-wide survey
4. Capacity needs analysis for the WA agricultural RD&E sector: Interviews (Workforce pipeline and early career attraction) **(this report)**
5. Capacity needs analysis for the WA agricultural RD&E sector: Interviews (Data, digital and modelling)

Apart from the Summary report, these reports reflect the chronological flow of the study, which began in August 2025 and was completed in December 2025. The reports should not be considered independently of each other, but as a part of a package.

The aim of the Literature review was to ascertain what evidence was already available about needs/gaps in human capacity in the sector for WA, and to use this information to guide the structure and questions for the survey. The sector-wide online survey was the key data collection mechanism for the Needs Analysis, with 92 respondents from middle/senior manager, cross-discipline positions across the WA agricultural RD&E sector. Two focused interview topics were then selected from survey findings, with 15 interviews conducted. The Summary report brings together an overview of the findings from the suite of reports.

At each key step in the Needs Analysis process, feedback and validation were sought from a Strategic Advisory Group, comprised of senior and middle managers from key organisations and businesses across the agricultural RD&E sector.

By the WA Agricultural Research Collaboration, May 2026

3. Introduction

This report presents findings from the workforce pipeline and early career attraction interviews. Insights will be used to shape recommendations specific to this area of capacity need in the final section of the report.

Throughout this report, the term ‘capacity’ is used and is intended to encompass the skills, knowledge and competencies of individuals and the overall resources, systems and workforce depth that enable delivery. This use of the word capacity reflects how stakeholders commonly describe workforce strengths and gaps across the RD&E system.

Note: Elements of the original Introduction have been deleted to reduce repetition with WAARC’s Foreword, which is included for consistency and context across the suite of Needs Analysis reports.

4. Methodology

Interviewees

The nine interviewees represent a diverse cross-section of Western Australia’s agricultural RD&E ecosystem, spanning senior scientists and technical leaders in government and universities, tertiary educators, private consultants and farm advisers, grower-led organisations, and a First Nations agricultural organisation. Collectively, they contribute perspectives from across the RD&E pipeline from university training and curriculum design, to applied on-farm research, extension, regional delivery and culturally grounded land-based capability development.

Interviewees include those leading research programs and supervising staff and students; consultants and advisers employing and mentoring graduates; tertiary educators shaping curriculum and preparing students for RD&E careers; leaders of grower group organisations coordinating regional research and capacity building; and First Nations organisations undertaking regenerative agriculture, natural capital and applied research projects alongside ranger teams. One interviewee also represented an innovation-focused consultancy supporting start-ups and skills development.

Together, the interviewees reflect a diversity of organisations involved in WA’s RD&E workforce development:

- Public research agencies
- Universities and tertiary educators
- Private consulting and advisory businesses
- First Nations agricultural organisations
- Grower group and industry-led RD&E bodies

Nominations for interviewees were provided by the Needs Analysis Strategic Advisory Group.

Across all roles, the common thread is their shared reliance on, contribution to and concern for the future capability, skills and sustainability of Western Australia's RD&E workforce.

Analysis of interviews

All interviews were conducted online by the project lead and recorded.

The analysis combined quantitative and qualitative methods. ChatGPT Plus was used to assist in analysing de-identified responses to identify key themes and capacity relationships. All AI-assisted outputs were reviewed and validated by the project lead, ensuring analytical rigour and contextual accuracy.

This hybrid approach, combining human expertise with AI-enabled text analysis, allowed for systematic identification of key themes, validation of quantitative trends with qualitative insights, and the development of an integrated understanding of WA's current and emerging RD&E capacity needs for this subject area.

Acknowledgment

We sincerely thank all interviewees for their time, openness and thoughtful contributions. Their insights, drawn from their professional experience, provided the depth and real-world context essential to this analysis. Their willingness to share experiences, challenges and aspirations has directly strengthened the Needs Analysis findings, and we gratefully acknowledge their expertise and generosity.

5. Systemic changes and enablers needed

Interviewees offered a detailed, and at times, candid critique of the current system shaping the RD&E workforce pipeline in Western Australia. They highlighted systemic weaknesses from early schooling through tertiary education and into RD&E employment, arguing that without structural reform, the state would continue to face capacity shortages.

At the same time, several interviewees pointed to bright spots, promising models and encouraging developments that showed what is possible when the system works well.

5.1 Early, science-rich exposure to agriculture and RD&E in schools

Interviewees repeatedly argued that failure to cultivate interest in agriculture long before university was a fundamental bottleneck, one saying ‘the pipeline theoretically begins in primary school’, but that agriculture has very little presence in early education. Students therefore reach Year 12 with little understanding of agriculture as a modern, technology-rich field. As one participant noted, agricultural science is often perceived as a ‘low-status or niche option’, which directly undermines university enrolments and, ultimately, RD&E workforce supply.

Several pointed to the need for practical, hands-on science experiences in schools to spark curiosity. Without this, ‘we are simply not getting enough young people coming through’, especially in critical enabling sciences like biology, chemistry, data science and environmental science.

Interviewees highlighted that some promising reforms were already emerging in WA schools. These include modern curriculum elements such as new agribusiness and agricultural science subjects that have been introduced to a couple of private schools, and co-designed teaching materials that bring contemporary agriculture into the classroom. Teachers who receive high-quality packaged resources are becoming strong advocates, with one interviewee noting that teachers ‘become more confident when they have access to packaged experiences’ and ‘ready-made’ units.

Suggestions included industry and universities strengthening school engagement by hosting teacher professional development activities including site visits to agribusinesses, fertiliser companies, robotics and digital agriculture organisations and farms. Universities could offer turnkey experiences for schools, such as field station visits that reduce pressure on teachers and inspire students through hands-on exposure to real RD&E environments. Partnerships could also prioritise outreach to schools most receptive to agricultural content, including private and boarding schools with strong regional connections. Importantly, industry involvement would not need to be intensive, as even short teacher visits to modern agricultural workplaces could significantly enhance classroom confidence and student interest in agricultural careers.

5.2 Reversing the decline in practical, applied training in universities

A major theme across interviews was a shift away from applied learning in universities, which interviewees believe has seriously weakened the RD&E pipeline. One participant described ‘a move away from practical training to more theory-based learning’, leaving graduates underprepared for the field-based, problem-solving demands of applied RD&E roles.

Another interviewee stressed that universities have moved away from activities that used to give graduates a strong applied grounding, noting that ‘traditionally we tried to employ graduates and then give them real-world training’ through fieldwork and trials, but that this model is now harder to sustain due to reduced institutional capacity and resourcing.

Collectively, interviewees argued that curriculum reform, increased field time and stronger industry-university collaboration were essential to rebuild graduate readiness.

One interviewee emphasised that improving work-integrated learning was less about additional technical training and more about helping graduates collaborate effectively across disciplinary boundaries. Modern agriculture requires teams of biophysical scientists, data specialists, statisticians and technologists - groups that ‘speak very different languages’. He noted that without deliberate design, mid-level leadership and time to build translation skills, partnerships often fail, resulting in ‘low-value outputs or frustrated collaborators’. Graduates do not need to enter the workforce as data or modelling experts, but they do need capacity in co-design, negotiating shared goals and engaging meaningfully with researchers and industry. The interviewee suggested that WAARC could add significant value by strengthening collaboration, communication and co-design skills, remarking that ‘I would put a lot more effort into that than running additional training courses... those courses already exist’.

5.3 Stable, long-term funding to support people, not just projects

Interviewees highlighted that insecure, short-term funding models are one of the most damaging systemic barriers to workforce development. One described the RD&E system as being ‘so dependent on soft money’ that organisations could not offer stable career pathways. Without long-term roles or progression structures, young people see RD&E as risky compared to other industries, which offer more predictability.

Another interviewee noted that instability in funding ‘undermines mentoring, succession and the ability to grow early career staff’. Long-term positions, not short-term contracts, were repeatedly identified as a key enabler of pipeline stability. There is strong potential for more formal partnerships, but limited funding often drives universities, government and industry into siloed project bids, with grower groups frequently missing out on applied research involvement. More effective models would build collaboration in from the outset, with joint project design between universities, DPIRD and grower groups, and structured opportunities for students to work with industry throughout their degree. Funding remains the central barrier, as meaningful collaboration only occurs when time and engagement are properly resourced.

Even within unstable funding structures, interviewees emphasised the continued strength and commitment of grower groups, which remained deeply engaged in RD&E delivery. Their ability

to collaborate, support trials, host student projects and maintain regional capacity, even without secure funding, was highlighted as a major asset the system could build upon.

5.4 Fixing fragmentation by strengthening partnerships and system coordination

Interviewees widely agreed that the RD&E workforce pipeline is weakened by poor coordination among universities, government, industry and grower groups. One participant emphasised that institutions need to ‘work together rather than in silos’ if they want to build a coherent pipeline.

Another interviewee said that systemic issues spanned ‘the whole education-to-employment pipeline’, arguing that WA needed a coordinated approach involving all major RD&E organisations rather than disconnected initiatives. Better alignment of curriculum with industry needs, shared placements, joint appointments and regionally based applied training programs were all seen as high-impact enablers.

The ACIAR collaboration model was highlighted as a strong example of how structured, intentional teamwork can overcome silos. One interviewee described how working together overseas as a team builds deep trust, shared purpose and enduring professional relationships. These examples demonstrate what successful system coordination can look like and provide a model for WAARC, DPIRD, universities and industry to emulate.

5.5 Addressing structural issues in tertiary education and training pathways

Several interviewees described significant structural weaknesses in tertiary agricultural education. One commented on the decline in specialist academic staff, explaining that universities ‘no longer have the depth of expertise needed to deliver strong agricultural training,’ which contributes to graduates entering the workforce with gaps in core skills and knowledge.

Another interviewee criticised the system for failing to prioritise disciplines that underpin RD&E capacity, noting a ‘shift in curriculum and institutional priorities away from applied agricultural science,’ leaving fewer opportunities for students to develop RD&E relevant competencies.

These issues, combined with funding instability, create ‘deep structural problems’ that will require long term institutional reform.

5.6 Stronger career messaging and modernisation of agriculture’s public image

Interviewees also emphasised the need for improved career promotion. One noted that students ‘don’t see agriculture as a modern, science rich industry,’ making it difficult to attract high calibre STEM students into agricultural RD&E pathways. Several suggested that coordinated career engagement, with modern messaging around sustainability, technology, data, and innovation, would significantly strengthen the pipeline.

5.7 Systemic changes needed to strengthen the First Nations RD&E workforce pipeline

The interviewee emphasised that long term RD&E pipeline solutions must confront the structural, cultural and institutional barriers that uniquely affect First Nations participation. Key shifts required include the following:

Reframe agriculture to align with cultural values and Country-based stewardship: The sector must provide more than extraction and production if it is to attract First Nations people. As they noted, 'Ag has to become far more than an extractive industry... it's got to offer something that other industries don't, and that's a connection to country.' Strengthening regenerative, cultural, ecological and Indigenous led models of agriculture will help build an authentic value proposition.

Address historical trauma and rebuild trust: Deep historical legacies of missions, displacement and forced labour continue to deter participation. There remains 'a lot of scepticism on both sides of the fence,' System level cultural safety and relationship building are essential.

Counter strong competition from mining and energy sectors: Mining attracts highly trained First Nations graduates with far higher wages. As the interviewee explained, 'There's such a massive pull from the mining and oil and gas industry'. The near absence of Aboriginal researchers in agriculture is a critical constraint. The interviewee stated: 'I'd pretty much find it impossible to find someone who could mentor or support that person from a First Nations perspective,'. Without competitive salaries and attractive career pathways, it will be challenging to recruit First Nations talent.

6. Redesigned partnerships for effective integrated learning

6.1 Partnerships should be long term, co-designed and built around shared themes, not short project contracts

Across the interviews, the strongest message was that current partnerships are too fragmented, short-term and project-based, making it impossible to deliver meaningful work integrated learning. Several interviewees said partnerships need to shift from isolated projects to enduring, thematic collaborations where universities, government and industry deliberately work together around shared RD&E priorities.

One interviewee explained that the best partnerships involve 'themes of work that bring together diverse teams', allowing students to see how they connect to a broader mission rather than to a one-off task. Another noted that partnership arrangements are currently 'project-based and driven by funding cycles', which limits continuity, mentoring and graduate exposure to applied RD&E environments.

Positive signs already exist, including examples of strong international collaboration models, industry-university co-delivery of practical modules, and environments where graduates form deep and lasting professional relationships. These bright spots demonstrate that high quality work integrated learning is achievable when partnerships are intentional, long-term and built around shared RD&E missions.

6.2 Work-integrated learning must be genuinely applied, with students embedded in real RD&E settings

Interviewees repeatedly emphasised that work-integrated learning must involve substantive, applied experiences, not superficial placements. They stressed the importance of students spending time in trials, industry settings, government research stations, grower groups and advisory environments so they graduate able to work in real systems.

Several stated that students need to 'work within real teams' and be exposed to 'actual RD&E activities, not shadowing or watching from the sidelines'. Authentic immersion was considered essential for developing practical skills, professional habits and confidence. One interviewee commented '...graduates underprepared for the field based, problem solving demands of applied RD&E roles'.

Interviewees also highlighted the need for students to get exposed to how farmers make decisions, 'people get frustrated that farmers aren't wanting to use my tech, but you don't understand how farmers make decisions'. The importance of understanding how finances play a role in farmer decision making was raised, one interviewee highlighting 'that financial side is not really well taught.'

6.3 Stronger communication, relationship building and structured interaction between early career staff and students

Several interviewees underscored the importance of structured interpersonal engagement, noting that early career researchers benefit enormously from time spent building relationships with other graduates, researchers and practitioners.

One interviewee explained that graduates thrive when they can 'get to know early career scientists', and described how informal, semi social environments help people develop confidence and professional networks. They commented that students and early career staff need opportunities to collaborate naturally, rather than being placed in situations where they feel they must 'sell themselves'.

6.4 Joint appointments, shared teaching models and co-delivery of curriculum

Some interviewees called for joint roles and shared teaching arrangements across universities, industry, government and grower groups. They argued that bringing practitioners directly into teaching roles ensures coursework reflects real world RD&E challenges and gives students stronger industry visibility.

One interviewee recommended structured teaching collaborations where 'industry co-designs and co-delivers courses', ensuring the curriculum better matches future workforce needs.

6.5 A coordinated placement system that reduces the burden on industry and grower groups

While grower groups and consultancy businesses are willing to host students, many lack the time or capacity to coordinate placements. They argued that universities and government need to play a stronger role in organising placements, supporting supervisors and managing logistics so that hosting students is not an administrative burden.

One interviewee proposed a practical model where a central coordinator matches students with applied RD&E projects, reducing duplication and increasing access, particularly for smaller organisations. One interviewee recommended that WA rebuild compulsory, practice-based industry placements, noting that in their experience this created a strong employment pipeline because 'industry knew who we were, and industry invested in us'. They called for the return of structured internships like those once offered through commercial companies and urged WA to adapt successful national models such as Marcus Oldham College in Victoria, where 'they do a substantial placement... they come out very industry-ready'. Their core message was that universities, government and industry must co-design practical, credible work integrated learning programs, as current three-year degrees leave graduates 'just not skilled enough when they're coming out'.

6.6 Providing students with better visibility of RD&E career pathways

One interviewee noted that even with good placements, many students lack a clear understanding of how RD&E careers unfold. Partnerships should therefore include career-mapping conversations, mentoring and exposure to multi-disciplinary teams, helping students understand the breadth of opportunities.

6.7 Redesigning partnerships to deliver authentic work-integrated learning with First Nations participants

More equitable partnerships between universities, government and industry are essential to create meaningful work-integrated learning pathways, particularly for First Nations participants. Four key mechanisms were outlined:

- Co-delivery of projects that integrate Western science and First Nations knowledge - Effective models pair scientific design and research capacity with Indigenous land access, cultural knowledge and on-ground operations. As the interviewee explained, organisations can 'provide the First Nations knowledge' while universities contribute scientific structures and supervision.
- Embedding First Nations rangers and community members in field components - Hands-on involvement allows rangers to learn directly from researchers, gaining 'a greater level of understanding... why is he doing it?' This can also support a pathway from ranger to technician to future researcher.
- Fund on-ground participation as a core part of RD&E projects - Many projects 'haven't got any funding for anyone to do anything on the ground,' limiting real learning opportunities. Ensuring adequate resourcing enables genuine work integrated roles, rather than unpaid or peripheral involvement.
- Require local community participation in grower group and industry projects - The interviewee stressed that when research is undertaken locally, project partners should consider: 'How do they involve the local [First Nations] community in the work?' Structured involvement strengthens relevance, capacity development and local ownership.

7. Mechanisms to better align tertiary outputs with future skill needs

Presented below are interviewee perspectives on mechanisms to better align tertiary outputs with future skill needs. These insights collectively highlight the need for deeper, longer, more authentic university-industry partnerships, stronger applied scientific training and fully connected pathways from school to early career RD&E roles

7.1 Earlier and stronger university-industry connections

Interviewees most frequently emphasised that better alignment requires stronger and earlier connection between universities and industry, supported by long term, structured and meaningful work experiences.

Many noted that students need early exposure to real workplaces so they can 'understand industry expectations' and develop the confidence and practical skills required to work directly with growers and industry partners.

Questions were raised as to whether short term placements were effective, as 'two-week work experience programs rarely provide meaningful outcomes', making multi-month or semester long placements a preferred mechanism.

Interviewees also stressed the need for earlier and clearer links between universities and local employers so students know which pathways exist and can access placements at the right time of year.

7.2 Applied research training

A major repeated theme was the need to reinstate or strengthen applied research training throughout undergraduate study. Interviewees argued that degrees no longer develop the scientific foundations required for RD&E roles. One noted that 'graduates come out and do not even know what a research question is', contrasting current programs with earlier training where 'hypothesis, control, fundamentals' were core expectations.

Honours was repeatedly identified as essential for developing these applied scientific skills, with one interviewee stating, 'honours is essential... for trial design and the research question'. It was also noted that honours graduates, not PhD graduates, are those typically suited to grower group roles.

7.3 Strong relational and collaborative skills

Interviewees also argued that better alignment depends on strengthening relational, contextual and collaborative skills, not narrowly defined technical knowledge. One cautioned against the industry expectation that graduates should be 'job-ready', stating that no student from a PhD,

Masters or undergraduate program 'could ever emerge knowing every fungicide or agronomic rule'. Instead, they emphasised that alignment requires teaching 'respectful relationships... They do not know what they do not know', alongside humility and critical thinking.

7.4 Curriculum modernisation

Another theme raised by multiple interviewees was the need to modernise curriculum content, so agricultural degrees reflect the skills required in contemporary agriculture, including digital, engineering and AI capacity.

One interviewee said, 'the amount of digital ag and autonomy and robotics and AI being taught is very minimal.' Stronger applied training would also help students 'decide that this is the pathway they want to go down' and 'tailor their studies a bit more' to match industry needs.

Some interviewees expressed concern about low domestic enrolments, noting that 'the lack of people going through the course means you can only provide so many different pathways', and that building student numbers would enable universities to offer more specialised and relevant training options.

7.5 Curriculum co-designed with industry

Interviewees also highlighted the importance of co-designing the agricultural degree curriculum with industry, ensuring it is practical and directly aligned with the roles graduates enter after university. They noted that not all graduates pursue RD&E careers and that universities must identify students with research interests early, 'hooking them' into research pathways before they drift into other options.

7.6 Teaching quality and program seriousness

A further mechanism raised was the need to improve the quality and seriousness of university teaching. Interviewees linked skill gaps directly to weakened program delivery, stating that the degree 'is not taken seriously enough' in some universities, and that agricultural programs are 'considered poor cousins'. They argued that agricultural science must be supported with dedicated facilities, consistent delivery and strong industry engagement.

7.7 Statewide agricultural education roadmap

Several interviewees emphasised the need for a statewide agricultural education roadmap to connect the pathway from secondary school to university and beyond. Mechanisms they identified included the two high school agriculture subjects (Agribusiness and Ag Science & Technology), which help students consider an agricultural degree, and the importance of giving students visibility of future agricultural roles as early as Year 10.

Interviewees argued that the entire pathway, from schools, to TAFE, to undergraduate study, honours, internships and industry placements, needs to be connected, explaining that 'we do not have a collective approach' and that current investments are 'piecemeal', indicating 'the links in the chain need to be connected a lot better'.

7.8 Co-supervision models with DPIRD, CSIRO and industry

Interviewees also pointed to co-supervision models between universities and DPIRD, CSIRO and industry facing researchers as mechanisms that expose students to more applied and impact focused work.

7.9 Extended on-farm immersion

Extended on farm immersion was also highlighted, with one describing the months spent with growers as 'absolutely eye-opening', rapidly improving early career capacity to collaborate, problem solve, and design applied RD&E.

7.10 DPIRD research stations revitalised as training hubs

Interviewees identified better use of public research infrastructure, noting that 'DPIRD research stations are ghost towns... we should make them hubs' to give students and early career staff real applied RD&E experience.

7.11 More inclusive and culturally grounded pathways for First Nations participation

Several mechanisms were identified to make RD&E pathways more inclusive, culturally grounded and skills focused for First Nation Peoples:

- Co-design curriculum and projects with First Nations knowledge at the centre, expanding agriculture to include cultural land management, restoration, native foods and stewardship. As they noted, linking training to 'being back on country... healing country' makes agriculture a more attractive option.
- Develop joint projects and joint appointments across universities, industry and community organisations. Their collaboration with Curtin/Healing Country was highlighted as a working example of effective alignment.
- Expand non-degree training pathways, acknowledging that strong RD&E capacity can also be built through practical, applied routes outside traditional university degrees.

8. Early career investment that would yield the greatest long-term return

Presented below are interviewee perspectives on the most impactful early career investments.

8.1 Long-term, stable funding for early career roles

Many interviewees argued that the most significant barrier to building WA's RD&E capacity is short term, project-based funding, which traps early career staff in unstable roles. One interviewee described the system is suffering from 'disinvestment', noting that 'our investment in human capital is just not there'. Another said early career researchers are stuck on a 'treadmill of project funding... short term funding... the human is the person who gets caught up in that'.

The strongest recommendation was to invest in longer-term employment contracts, creating time and space for early-career professionals to learn, apply skills and remain in the sector. Interviewees stressed that WA must put 'minds over machines... the human still plays a really valuable part', and that without dedicated support 'we really need to put time and space into people', WA risks permanently losing capacity built over '15–20 years of exceptional R&D'.

8.2 Co-funded graduate research roles to reduce/share employer risk

Several interviewees emphasised that small RD&E businesses face major financial risk when hiring graduates. One explained that employing a graduate 'cost me... \$150,000 a year', and that 'people won't pay consulting fees to someone who doesn't know anything yet'.

Co-funded, multi-year research roles was supported where graduates work on a structured applied project in consultancy businesses. Where the graduate takes the lead, supported and mentored by a senior staff member/ researcher. By the end of a three-year project, graduates 'have got a fair experience under their belt', without the employer needing to hold them for six to eight years to justify the investment. This model was seen as beneficial for both skill development and generating useful research outputs.

Some interviewees proposed starting with 'three to five' such graduate positions statewide each year, as an open tender to DPIRD, CSIRO, universities and private consultants.

8.3 Embedded cadetships

Another strongly repeated theme was the value of cadetships that embed graduates in multidisciplinary, multi-agency teams. Interviewees noted that 'the best students and early career scientists I see coming through are working across several agencies, not just embedded in one', because these rotations broaden exposure and strengthen integration.

8.4 Summer scholarships and structured internships that offer real agricultural experience

Several interviewees emphasised the value of summer scholarships and extended internships, describing them as extremely effective in other fields decades ago. These programs:

- expose students to real agricultural contexts early
- help them decide whether to pursue research or industry pathways
- provide meaningful summer employment instead of retail or hospitality work
- give students industry language and practical understanding
- help companies identify and shape future employees

Interviewees stressed that private companies, particularly those struggling to fill roles, should play a central part in offering these opportunities.

The value of scholarships was further reinforced by an interviewee who emphasised that WA must compete with high salary sectors such as mining. They argued scholarships 'need to be well compensated' if WA is to attract top science and engineering graduates into RD&E.

8.5 Mentoring, relationship building and belonging in the industry

A recurring theme was that early career staff need help building confidence, and in building networks within the RD&E community. Interviewees noted that 'feeling like you belong in an agricultural career is really, really hard', particularly for international students or those without farming backgrounds. Relationship rich investments were consistently described as more valuable than technical programs alone.

8.6 Learning outcome-driven investments, not mechanism-driven programs

One interviewee cautioned against focusing on specific tools, scholarships, cadetships or placements, without first defining the desired capacity outcomes. As they said, 'I would start with the learning outcomes... then think about the methods'. The most important outcomes identified were:

- strong communication and co-design skills
- industry appreciation
- humility and openness to learning
- practical understanding of agricultural operations

8.7 Culturally grounded, and progression-focused pathways for First Nations participants:

- Funded project roles for First Nations rangers, offering paid, structured on-ground research experience. These roles build practical skills and may create upward mobility into higher RD&E positions.

- Opportunities that connect young people to country, with programs emphasising 'connection to country... healing country' and presenting agriculture as broader than farming.
- PhD or Honours scholarships embedded in First Nations led projects, modelled on the Curtin collaboration where postgraduate students work directly within community led agricultural trials. This strengthens applied capacity and builds long term research leadership.
- Early career roles linked with grower groups and DPIRD that integrate cultural land management, linking grower groups focused on regenerative agriculture with First Nation students 'if they're [grower groups] open to regen ag, they're open to other philosophical ideas.'

9. Positioning agricultural RD&E as a prestigious and visible career pathway for young professionals

9.1 Start early - build visibility and interest through schools

Several interviewees emphasised that visibility must begin well before university. They stressed the need for early exposure 'in classrooms and through school visits, presentations and student engagement', explaining that these activities help raise agriculture's visibility for urban and regional young people. Interviewees argued that early, consistent exposure makes the pathway feel real, modern and valued. The diversity of the agricultural RD&E roles also needs to be promoted saying 'We need the data scientists... the technical gurus... to guide us through a very exciting but disruptive time'.

One interviewee lamented the recent withdrawing of funding for the PRIMED program, 'they've pulled out of the PRIMED program... that concerns me'. This program was set up to prepare students in Years 7-10 for futures in primary industries in WA. Although resources previously developed for schools/ teachers are still available to use, the program component has ceased. This interviewee believes WAARC, DPIRD and partners must actively advocate for continuation and expansion of these foundational programs.

Interviewees highlighted the need for an overarching state strategy to promote and enable an active career pipeline starting at school. 'It's linking the chain strategically... what are we doing about schools, what are we doing about university, what are we doing about honours, what are we doing about TAFE...' and 'Connecting the dots needs to happen a lot better'. The need to promote agricultural RD&E roles a long with on farm roles as being open to anyone and not just those from farming families was also raised.

The emphasise to showcase the full breadth of exciting, modern agricultural projects rather than relying on outdated 'person in a paddock' stereotypes was raised, highlighting the diverse opportunities available to young professionals. They stressed the importance of communicating through the channels young people actually use, noting that this varies by cohort and requires understanding 'how they like to communicate' and who they trust. There was a recommendation to target key influencers, such as parents, teachers and career advisors, because these decision shapers play a crucial role in guiding young people toward agricultural RD&E careers.

9.2 Provide authentic, inspiring experiences that show the modern face of RD&E

Interviewees highlighted the importance of real world, hands-on experiences that show the technological and scientific sophistication of agricultural RD&E. This includes farm tours, research site visits and structured interaction with early career scientists.

One interviewee described taking students to see modern RD&E practices as a powerful engagement tool, explaining that industry should 'bring out early career scientists and do a tour and have a look around'.

The need to identify what encourages young professionals into agricultural RD&E (value proposition), was raised, suggesting it may not be the same as what enticed those who are now in senior RD&E roles. One interviewee explained it 'I think we my generation, we were more interested in job security and long-term career stability, you know we wanted to have a career pathway. I think increasingly it's more about the experience and the opportunity. It's almost we need to really consider what the current graduate's looking for. And think about how we provide that. And I think it's different to what my generation were chasing'.

9.3 Strengthen public communication and urban engagement

One interviewee argued that agriculture is struggling with its public image, stating that the sector is 'very poor at getting the message through to urban audiences'. To position RD&E as prestigious, the industries societal value, scientific depth and environmental importance must be communicated more effectively.

Promoting the benefits of a regional lifestyle was raised. This is seen as important, to stem the flow of families moving to the city when their children reach high school age and encourage people from the city to move and experience the regional and rural lifestyle.

9.4 Building community for young researchers

se Interviewees stressed that RD&E feels invisible partly because young professionals lack a sense of belonging. One suggested developing 'an official network for young researchers', giving graduates community, visibility and peer recognition.

9.5 Building WA's RD&E prestige through focus and capacity

The success and continuance of WARRCs scholarship programs and postgraduate program was supported. One interviewee emphasised that raising the visibility and prestige of agricultural RD&E in WA requires a strong focus on people and clear capacity pathways. One interviewee emphasised that the value of WAARC lies not in additional scholarships but in creating cohesive cohorts, shared experiences, and transferable skill development across institutions and regions. For them, building the state's pipeline is about bringing people together, not simply funding more individuals. They stressed that WARRC should stay tightly focused on enabling collaboration, nurturing emerging leaders, and providing the relational frameworks that universities and industry can collectively build upon.

An opportunity was raised for WA to showcase a distinctive RD&E niche in agricultural engineering, robotics and optimisation, drawing on the state's existing strengths from mining and energy. While it was noted that WA is currently a 'receiver of technology, not the innovator,' it was believed the state is well placed to lead in areas such as machinery optimisation and integrating robotics with data systems. It was argued that building this kind of focused niche,

aligned with RDCs, would help make RD&E a more visible and attractive career pathway for young professionals. In one interviewee's view, 'prestige comes from focus, strategic clarity, and excellence', rather than attempting to spread effort across too many domains.

9.6 Elevate the visibility and appeal of RD&E careers, particularly for First Nations youth:

- Promote the full breadth of agricultural careers, highlighting opportunities beyond farming, from business planning and food analysis to marketing, branding and innovation. As noted, 'There is a whole range of opportunities...'
- Highlight roles that blend office-based work with on-country experiences, showing that young professionals can build careers that involve both professional environments and hands on fieldwork.
- Frame agriculture as a pathway to cultural renewal, positioning RD&E as a meaningful way to contribute to 'healing country', 'looking after country' and restoring ecological systems.
- Support and promote regenerative agriculture, which is already attracting strong interest and is culturally aligned with First Nations values.
- Increase the visibility of successful First Nations leaders, rangers and projects, demonstrating real career pathways and real outcomes. Elevating these role models can counter past exploitation and help inspire young people to see RD&E as a respected and impactful profession.

10. Additional workforce pipeline issues or related insights

Interviewees suggested the following when asked if they had anything additional to add to the interview discussion.

10.1 Strengthen local collaboration with WA universities

One interviewee reported much greater engagement with Eastern States universities due to national project pushes, creating ‘distance’ and fewer opportunities to build a WA-focused pipeline. They also highlighted the loss of university-based extension training, such as UWA’s former extension unit, calling for extension to be brought back into tertiary programs to strengthen graduates’ communication and practical engagement capabilities.

10.2 Avoid spreading investment too thinly

Several warned against WA’s habit of ‘spreading investment too thinly across regions, industries and programs’, describing this as delivering ‘two thirds of nothing’. They urged clearer strategic alignment between institutions and funders, stronger collaboration rather than competition, and choosing a small number of shared priorities where partners ‘stay in their lane’ and work together deliberately.

10.3 Stronger mid-level leadership to bridge disciplinary gaps

Interviewees also pointed to the need for mid-level leadership capable of bridging disciplinary divides, particularly between data science and biophysical research, to translate innovation into impact. They stressed that attracting national and international staff requires long-term visibility, because ‘people need to see a future in the state’, not a three-year contract horizon.

10.4 Retaining professionals in regional areas

Gaps in regional infrastructure and schooling was raised again as major drivers of mid-career professionals leaving when their children reach high school age, undermining regional workforce continuity. Some suggested the need for stronger incentives or ‘lower taxation rates for rural areas’, even if offered tongue in cheek, to counter the steady centralisation of services in Perth.

10.5 Digital capacity and connectivity essential

One interviewee highlighted the importance of connectivity, such as the benefits Starlink has brought to regional internet connectivity. It was also noted that capacity building must include digital and data literacy for both consultants and farmers as RD&E becomes increasingly technology enabled.

10.6 Build on existing Education Program work

There was frustration from an interviewee who felt the barriers and enablers of workforce pipeline and early career attraction are already known and have been identified by the Lead from the Centre for Engineering Innovation: Agriculture & Ecological Restoration at UWA. Strong endorsement of their work was given as they described the Program Lead as ‘the Ag education and workforce guru in Western Australia’. ‘We really just now need to be implementing some of those findings’ and ‘put funding towards projects that are going to implement’ solutions such as teacher support and curriculum embedding.

10.7 Grower group capacity to support training

It was noted that there is latent capacity within grower groups to support training if funded, meaning that grower groups could play a more active role in the workforce pipeline if resourced appropriately.

10.8 Cross-cultural collaboration must be embedded

Cross-cultural collaboration must be embedded, not superficial, with the ‘Ag sector... [having] to embrace’ First Nations frameworks and knowledge as core to how the system operates. The sector needs to rethink how it defines RD&E roles, recognising that capacity includes rangers, field workers, technicians and others doing land-based work, not only researchers.

11. Recommendations

These recommendations are drawn from the workforce pipeline and early career attraction interviews and reflect the priorities, challenges and solutions identified by practitioners across WA's agricultural RD&E system.

Interviewees consistently highlighted the need for a coordinated, long-term approach to strengthening the education-to-employment pipeline, rebuilding applied training, improving collaboration, modernising digital capacity, and elevating the visibility and value of RD&E careers.

Together, these recommendations outline a practical roadmap for WAARC, DPIRD, universities, grower groups and industry partners to build a resilient, skilled and inclusive RD&E workforce, one that meets WA's future needs and supports meaningful participation for First Nations peoples.

The recommendations presented below sit within the following priority pillars:

Section 11.1 - Human capacity building recommendations

PILLAR 1 - Rebuild the workforce pipeline from school to early career

PILLAR 2 - Strengthen collaboration, culture and interdisciplinary capacity

PILLAR 3 - Make agricultural RD&E a prestigious, visible and high-value career pathway

PILLAR 4 – Build digital, data and modelling capacity across the system

Section 11.2 - Enabling human capacity recommendations

PILLAR 5 - Reform funding models, governance and system architecture

11.1 - Human capacity building recommendations

(Listed/prioritised from most to least frequently emphasised by interviewees)

PILLAR 1 - Rebuild the workforce pipeline from school to early career

- a) Improve university training and job readiness - Restore applied training, rebuild Honours pathways, embed field experience and improve teaching quality.
- b) Strengthen agriculture in schools - Expand Ag Science/Agribusiness subjects, build STEM–agriculture challenges, and create exciting experiences (field visits, competitions, private school pathways) with the aim to counter the perception of agriculture as a 'low-status or niche option'.
- c) Rebuild early career pathways - Introduce summer scholarships, multi-agency cadetships, structured internships and long-term early career roles; consider increasing salaries to attract high quality students.

- d) Modernise agricultural career messaging - Promote agriculture as a high-tech, digital, global, sustainability focused sector; target non ag university students; communicate through the channels young people use and through their influencers.
- e) Embed First Nations knowledge and Country based learning in school, TAFE and university agriculture programs
- f) Fund structured, paid early career roles for First Nations rangers and technicians - Provide on ground RD&E experience and progression pathways.
- g) Expand First Nations culturally grounded non degree training pathways -Land-based learning programs, micro-credentials and diplomas.

PILLAR 2 - Strengthen collaboration, culture and interdisciplinary capacity

- a) Recruit and reward for collaboration - Reward team outcomes, applied impact and cross disciplinary collaboration, not only research publications.
- b) Support cohesive interdisciplinary teams - Integrate biophysical science, modelling, digital, extension and grower knowledge into functioning systems teams.
- c) Develop cross disciplinary skills - Teach communication, inquiry, reflection, negotiation and relational maturity.
- d) Build system level collaboration pathways - Support stronger, long-term partnerships between DPIRD, universities, grower groups and RDCs; reduce siloing; co-design projects.
- e) Build long term, co-designed partnerships with First Nations organisations - Share leadership, cultural knowledge, land access and research roles.

PILLAR 3 - Make agricultural RD&E a prestigious, visible and high-value career pathway

- a) Start early - build visibility and interest through schools; Use visits, school engagement, PRIMED-style programs and structured exposure to RD&E careers.
- b) Provide authentic, inspiring RD&E experiences - Farm tours, research site visits, interactions with early career scientists.
- c) Strengthen public communication and urban engagement - promote an agricultural career as innovative, focused on making a difference, inclusive of high tech and sustainability.
- d) Build community and identity for early career researchers - Networking forums, mentoring, peer recognition.
- e) Elevate the visibility and appeal of RD&E careers for First Nations youth; Highlight breadth of roles, link RD&E to cultural renewal, support regenerative agriculture pathways and increase visibility of First Nations leaders.

PILLAR 4 - Build digital, data and modelling capacity across the system

- a) Develop hybrid roles - Digital agronomists, data translators, analytics enabled extension specialists, on farm experimentation specialists.

- b) Build digital literacy and modelling capacity within biophysical teams - Or embed digital specialists into multidisciplinary teams.
- c) Strengthen digital infrastructure - Improve connectivity, telemetry, shared data platforms and integration workflows.
- d) Support First Nations participation in digital agriculture - Training in remote sensing, monitoring, natural capital measurement, drone operations and digital environmental systems.

11.2 - Enabling human capacity recommendations

The recommendations presented below are enabling human capacity recommendations - foundational system, funding and governance changes needed to support Section 11.1.

PILLAR 5 - Reform funding models, governance and system architecture

- a) Provide stable, long term workforce funding - multi-year roles, stable early career positions and co-funded graduate roles to reduce soft-money churn.
- b) Move toward bottom-up, WA relevant funding models - Align with state-based challenges and grower priorities.
- c) Improve governance and coordination - Develop statewide education roadmaps, align university–industry–DPIRD priorities, adopt co-designed curricula and joint supervision models.
- d) Scale models of excellence e.g., Centre for Crop and Disease Management (CCDM) - Replicate success factors such as leadership, co-investment, digital platforms, industry partnerships and shared pipelines.
- e) Ensure all RD&E project budgets include paid on-ground labour roles - Support meaningful First Nations participation (e.g., rangers, field workers).
- f) Develop long term, place based First Nations RD&E hubs - Integrate universities, DPIRD, grower groups and ranger teams.
- g) Strengthen digital infrastructure - Improve connectivity, telemetry, shared data platforms and integration workflows.

12. Conclusion

The interviews present a unified message: Western Australia's agricultural RD&E workforce pipeline is constrained by deep structural, cultural and funding challenges, yet there is strong consensus about what needs to change. Interviewees describe a system weakened by declining applied training in universities, limited early exposure to agriculture in schools, unstable short-term funding, fragmented partnerships, and a public image that fails to reflect the modern, science rich nature of agricultural RD&E. At the same time, they emphasise clear areas of strength, particularly the commitment of grower groups, previous school-based initiatives, and examples of high quality interdisciplinary and cross-cultural collaboration.

Across the research, participants consistently highlighted that rebuilding capacity requires long-term, coordinated effort from schools through to early career employment. They stressed the need to strengthen hands-on science experiences, renew applied and field-based university training, embed meaningful work, integrated learning, and create multi-year, stable early career roles that give graduates the time and security to develop. Interviewees also pointed to the critical importance of collaboration; within organisations, across institutions, and between disciplines, arguing that WA must move beyond siloed, project-based arrangements toward long-term, partnerships that build shared capacity.

A consistent theme throughout the interviews is that meaningful First Nations participation requires systemic reform. Participants emphasised the need to align agriculture with cultural values, rebuild trust, create culturally grounded learning pathways, and elevate the visibility of First Nations leaders and projects.

Interviewees also stressed that rebuilding WA's RD&E capacity depends on modernising curriculum, improving teaching quality, strengthening digital and data capacity, revitalising public research infrastructure, and creating a cohesive statewide roadmap that connects schools, TAFE, universities, grower groups and employers. They highlighted that capacity development must focus on people, not just technical skills but relational, collaborative and cross-disciplinary strengths that enable teams to work effectively on complex agricultural challenges.

This analysis reinforces the strong and consistent message that WA's agricultural RD&E workforce requires long-term, coordinated investment to strengthen and rebuild capability across the workforce pipeline.