

Detailed regional priorities for Tropical North Queensland

Priority Theme	Priority issues
1. <i>Drought and climate change adaptation</i>	<ul style="list-style-type: none"> • Identifying and addressing risks of increased evaporation, reduced rainfall, or greater rainfall variability to: <ul style="list-style-type: none"> ○ water storage and allocation for irrigated cropping ○ water storage and allocation for irrigated horticulture ○ stock and domestic use in livestock enterprises and ○ water security in vulnerable communities • Identifying and addressing risks of increased frequency of drought-related heatwaves to agricultural production in: <ul style="list-style-type: none"> ○ horticulture production systems ○ cropping production systems and ○ livestock production systems • Adding value to existing drought knowledge, platforms and tools, and related current RDEA&C especially through promotion and adoption within the TNQ Hub region by: <ul style="list-style-type: none"> ○ collaborating with the Northern Australia Climate Program to develop a knowledgeable and trusted climate resource across the TNQ Hub region ○ increasing the awareness and use of LongPaddock products by primary producers and service providers ○ working closely with Climate Services for Agriculture to add value to existing services and industry needs • Utilising long-term experimental sites to generate new drought preparedness and resilience knowledge • Translating technical information (e.g. future drought probabilities, seasonal forecasts, forage tools) to relevant property, locality or regional scales for improved understanding, decision making and planning • Identifying the costs, benefits and risks of enterprise level adaptation to changing drought and climate risks through diversification (for example transitioning between sugarcane, cropping, horticulture or livestock production) • Identifying drought management techniques in rangeland systems which improve: <ul style="list-style-type: none"> ○ landscape health ○ carrying capacity ○ animal productivity and ○ long-term enterprise viability • Supporting the adoption of improved agricultural production systems and business management practices fundamental to resilient natural resources and drought-ready agricultural operations • Identifying irrigation systems and overland flow management for cropping land to: <ul style="list-style-type: none"> ○ optimise water use efficiency, and ○ mitigate risks arising from potential diminishing ground water resources • Identifying risks and impacts of drought and climate change on water quality and runoff

- Optimising the economic benefits from efficient and sustainable agricultural production systems to build greater financial resilience at:
 - enterprise
 - town and community and
 - regional scales
- Identifying and supporting opportunities to generate income during extended droughts at:
 - farm
 - community and
 - regional scales
- Identifying and piloting innovative financial models that generate income during drought through:
 - advance knowledge and understanding about environmental markets
 - new insurance products for drought resilience
- Supporting regional drought resilience planning processes through translating data and increasing awareness of future drought risks and vulnerabilities
- Supporting implementation of regional drought resilience plans
- Identify and enhance knowledge on the impact of heatwaves and increasing temperatures on:
 - farm workers and
 - livestock
- Identifying and translating potential changes in rainfall patterns into useful farm-level information

2. Land and soil management

- Enhancing land condition for drought resilience, animal production and environmental market opportunities including:
 - prevention of land degradation through best management grazing practices such as wet-season-spelling and balancing grazing pressure with existing conditions and pasture availability
 - restoration of degraded lands
 - weed control and restoring tree-grass balance
 - management practices that contribute to healthy soils
 - management practices that contribute to functioning ecosystem processes and biodiversity
- Enhancing drought resilience through improved recovery of 3P grasses to rainfall during and at the break of drought through:
 - grazing management which 'primes' 3P grass to respond effectively ('rain ready pastures')
 - maximising ground cover (relative to Land Type potential)
 - understanding impacts of insect incursions on perennial grass response
 - understanding impacts of total grazing pressure on perennial grass response
 - understanding impacts or benefits of burning on perennial grass response
- Enhancing soil health in cropping, sugarcane and horticulture production systems for improved drought resilience through development and adoption of management practices to:
 - optimise soil organic matter content
 - optimise soil moisture absorption and retention, and availability for crop production
 - sustain and improve soil biological systems

	<ul style="list-style-type: none"> Identifying risks of increasing soil salinity through irrigation (e.g., through high level watering, or declining water quality)
<p>3. Innovation and technology</p>	<ul style="list-style-type: none"> Increasing commercial application of intellectual property, technology and technical services in drought resilience Facilitating an innovation and technology ecosystem that integrates industry problem statements, practical understanding of ag-tech solutions, and on-farm demonstration and/or testing of: <ul style="list-style-type: none"> technologies and practices to assist monitoring and improvement of soils, pastures and land condition technologies to integrate pasture, feed quality, and animal production decisions technologies to integrate soil moisture, crop requirements and irrigation scheduling livestock drought resilience traits e.g., reproductive performance during drought; feed conversion during drought water availability, quality and allocation to address climate variability in rangeland grazing areas, irrigated agriculture and indigenous enterprises smart irrigation technologies to increase water and energy use efficiencies Facilitating innovation and uptake of technologies that enhance drought resilience Increase the value of demonstration and experimental sites through virtual access systems
<p>4. Enhancing skills and human capacity</p>	<ul style="list-style-type: none"> Build agricultural businesses adaptation to drought through: <ul style="list-style-type: none"> succession planning and leadership skills educational pathways & linkages/ industry placements and associated activities improved pathways to attract and develop agricultural professionals by engaging in high school programs, internships and scholarships increasing the awareness and interest in the broad range of roles available in agriculture Collaborating with service providers to identify opportunities to attract and retain agricultural workers through community support and leadership programs Facilitating collaborative and co-design pathways which generate new drought resilience practices based on traditional knowledge, local knowledge, experiential learning, and scientific understanding Upskilling multi-agency staff and primary producers to promote practice change within three whole of business themes: (1) land management; (2) agricultural production; and (3) people/business Upskilling research, academic and extension professionals in co-design and engagement techniques to ensure meaningful and practical outcomes Building greater adaptive capacity in grazing land managers and communities to manage impacts of climate variability and change Improving the understanding of behavioural barriers to uptake and trigger points for engagement and adoption Supporting the translation of research into practice Creating partnerships between RDEA&C providers, policy decision makers, funding opportunities and communities (scaling up), speeding up adoption/adaptation by learning from others with similar problems

	<p>and contexts (scaling out), and changing the perceptions and mental models of non-residents to better understand the needs of TNQ (scaling deep)</p> <ul style="list-style-type: none"> • Supporting community of practice groups including young farmers and grower groups • Providing scholarships for producers to travel to learn more about what is happening in other areas (e.g. visit other field trial sites, and other travel to participate in training)
<p>5. Enhancing sustainable Aboriginal and Torres Strait Islander resilience</p>	<ul style="list-style-type: none"> • Entry level Indigenous enterprise support such as mapping/ assisting involvement in water planning and feasibility studies on a micro scale • Supporting new and existing Aboriginal and Torres Strait Islander agricultural enterprises through access to water and land, by establishing and strengthening sustainable community business networks and governance structures • Activating access to water allocations to establish and enhance agricultural enterprises through training, capacity building and/or improved governance • Identifying and supporting opportunities through the 2032 Queensland Olympics • Supporting the identification of information needs for agricultural systems transformation and enterprise development to incorporate into Aboriginal and Torres Strait Islanders future plans • Supporting Aboriginal and Torres Strait Islander Peoples' knowledge and aspirations in sustainable agribusiness and in Indigenous led sustainable supply chains • Contributing to Aboriginal and Torres Strait Islander identified needs for: <ul style="list-style-type: none"> ○ Water security ○ Agricultural development and food security ○ Innovation and agricultural technology ○ Improved pastoral sector resilience ○ Workforce and labour shortages ○ Cultural burning to enhance land condition