



Climate change and food production

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National Research
FLAGSHIPS
Climate Adaptation

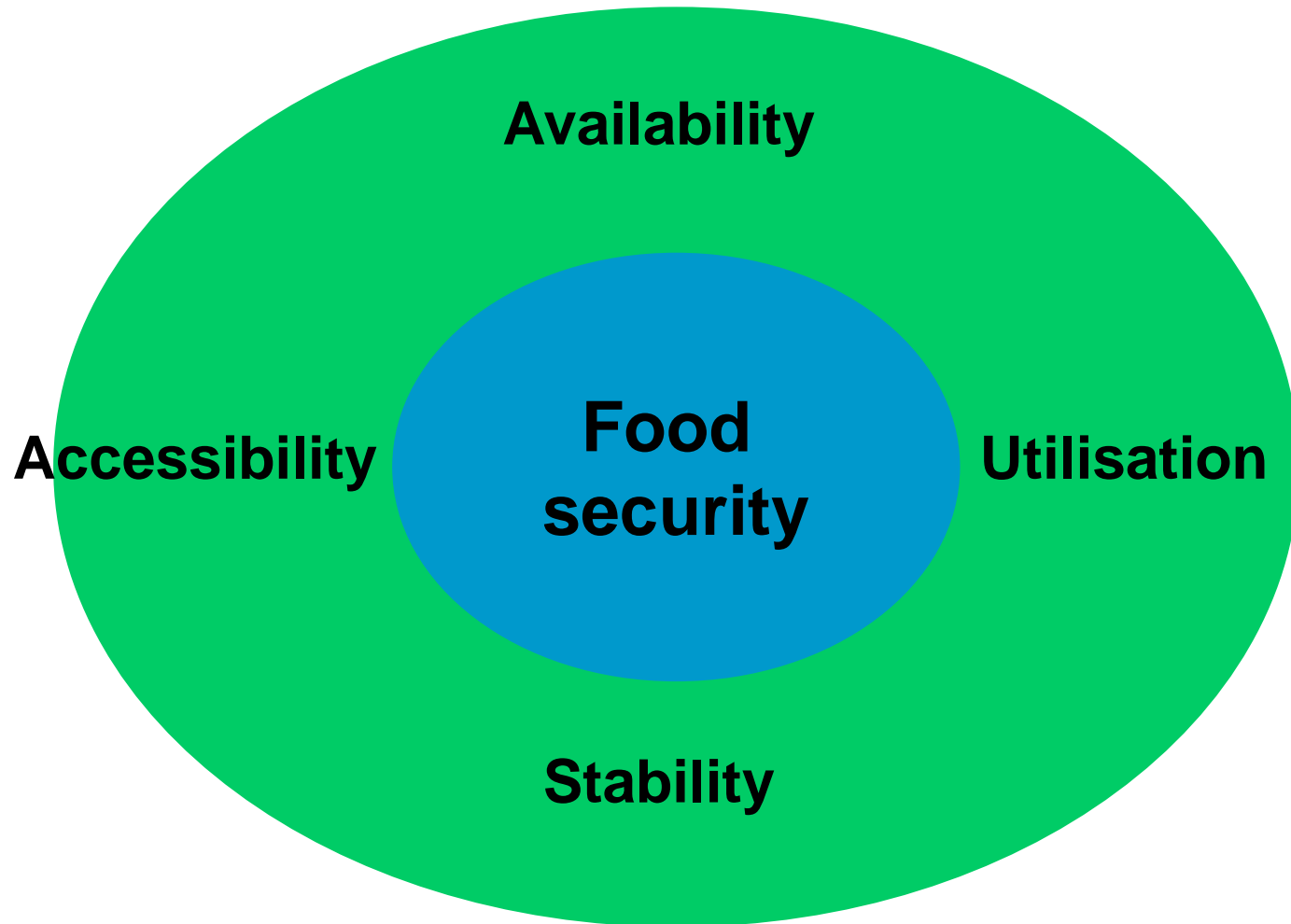


The food security challenges before us

Increasing food production by ~70% or more by 2050 given:

- population growth
- per capita consumption growth (in some nations)
- **adapting to climate changes**
- emission-reduction needs
- increasing input constraints (fuel, N, P, water)
- degradation status of terrestrial/marine resources
- biodiversity status and threatening processes
- lower R&D expenditure
- increased volatility incl. through a range of governance issues, biofuels etc etc

Food security and climate: a systems view



Australia's contribution to global food security: exports

- Beef (2nd biggest exporter globally and Qld has largest herd)
- Grains
- Vegetables, fruit and wine
- Dairy
- Other high value products

Effectively feed 40 million people overseas



Climate and food production

- Australia has the most variable climate of any continent
- Queensland is the State with the highest climate variability in Australia
- this variability affects food production across the board
 - what is grown, where, how, markets and prices, inputs, infrastructure, social fabric
- climate change is likely to further affect food production in many different ways through both changes in climate means and extremes
- effective responses needed

Mitigation characteristics

- atmosphere is a global commons – requiring global action
- strong public good element and lack of market mechanisms
- hence strong rationale for government role in establishing the overarching policy environment
 - emissions trading schemes or carbon taxes
 - regulation and other direct intervention
 - research and development
- mitigation implementation essentially invariable
 - global solutions

Adaptation characteristics

- Adaptations are adopted in anticipation of benefits – so often have a strong private benefit component
- However:
 - often a lack of information on impacts and adaptation options and significant uncertainty around these
 - adaptation technologies not available
 - policy and other barriers not addressed
 - capacity building not keeping pace
 - uniqueness of application, the context constantly changes

With adaptation, context is everything



Working with industry: grains

- Increasing the resilience of cropping and mixed grazing businesses (*DAFF-funded national project*)
 - participatory engagement, exploring most profitable and less risky systems under climate change
 - co-research that brings the knowledge of researchers and producers together and provides enhanced adoption paths
 - incremental to transformational change



Working with industry: grazing

- Climate Savvy Grazing and Climate Smart Grazing (*MLA, DAFF*)
 - developing and testing strategies looking for economic, best practice adaptations
 - reduce greenhouse gas emissions
 - demonstration sites



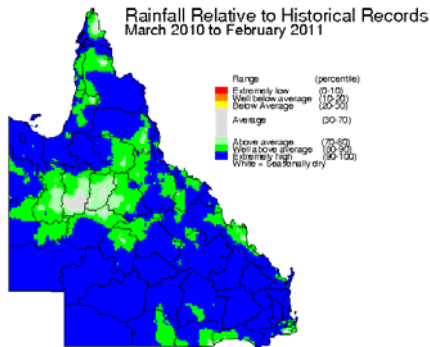
Working with industry: horticulture

- Understanding risks and opportunities and developing strategies for apple, pear and avocado industries (*HAL, Growcom*)
- Understanding critical temperature thresholds and associated adaptive strategies (*HAL and Woolworths*)

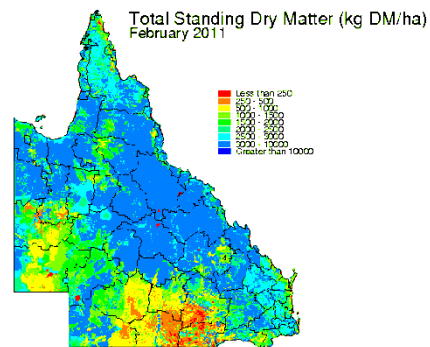


Providing relevant information

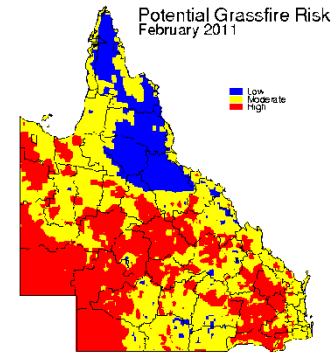
- Tools and information systems that cross scales (QCCCE)
 - provide information for specific decisions by different decision-makers
 - SILO, AussieGRASS, LongPaddock, Forage, HowLeaky, SCOPIC, Flowcast



www.LongPaddock.qld.gov.au



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Building capacity across commodities and regions

- Helping primary producers adapt to climate change (*Climate Q*)
 - flow on effects of impacts and adaptations for regional economies
 - multiple sectors (horticulture, mixed grain-grazing, fisheries)
- Risk management tools for different sectors (*Caring for Country*)



Climate change and food production

- The broad problem space has been defined
- There are many contextually-relevant responses feasible from local to national scales
- Effective co-research options are being explored across scales, across industries and across disciplines
- There is much still to do, but a good start has been made



Climate Adaptation Flagship

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Thank you

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