

International Drought Management Research Network (a component of IDMP)

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Photo: PACASA



World Meteorological Organization
Weather • Climate • Water

Rationale – Core issues



- Drought Research and development issues are extremely complex and not capable of being tackled by single institutes or even countries in isolation.
- ‘We cannot do this work alone’ – values in learning from each other through a dedicated network – “the whole is greater than the sum of the parts” (Aristotle)... ‘something is much better or more effective as a team, combination, than would be expected when looking at the different parts that form it’.
- Significant gaps in connectivity, research, policy and practice remain, particularly regarding the merits of risk management compared with traditional crisis management approaches (IDMP, 2017).
- As a component of IDMP, the creation of an International Drought Management Research Network that will initiate global research networking initiatives, including building upon key existing regional initiatives, that are already providing valuable developments.

Potential Outcomes



- Enhanced exchange of knowledge and practice, globally.
- Enhanced preparedness for drought, globally, through innovative research (eg drought intensity and spatial extent under climate change; improvement in seasonal and multi-year forecasting of drought; innovative insurance, continued work on ‘flash droughts’, integrated drought agricultural systems research, etc)
- Improved drought policy development through major improvements in exchange of concepts.
- Enhanced linkages to WMO Global Drought Classification System, IDMP CoP!.
- Improved monitoring systems, globally.
- Enhanced global food security.



Some potential network partners/nodes (not complete). .

- National Drought Mitigation Center (US)(NDMC).
- Canadian Drought Monitor.
- Queensland Drought Mitigation Centre (QDMC) Australia.
- NIDIS, National Integrated Drought Information System, (US)
- National Drought Monitoring Centre, Islamabad, Pakistan.
- The Drought Management Centre for Southeastern Europe (DMCSEE), Slovenia.
- SADAC Drought Monitoring Centre, Botswana (still operational?).
- Caribbean Regional Climate Center – Caribbean Drought Bulletin (CIMH).
- System for Information about Droughts (SISSA) (Regional Climate Centre for Southern South America).
- K-water (Rep Korea).
- East African Climate Centre of Excellence (ICPAC).
- BoM Drought Knowledge centre (Australia).
- National Agricultural Drought Assessment and Monitoring System (NADAMS)(India).
- New Zealand Drought Monitor (through NIWA)
- Asian Disaster Preparedness Center (ADPC) Bangkok.
- Australian Drought Hubs (8) for building long-term resilience.

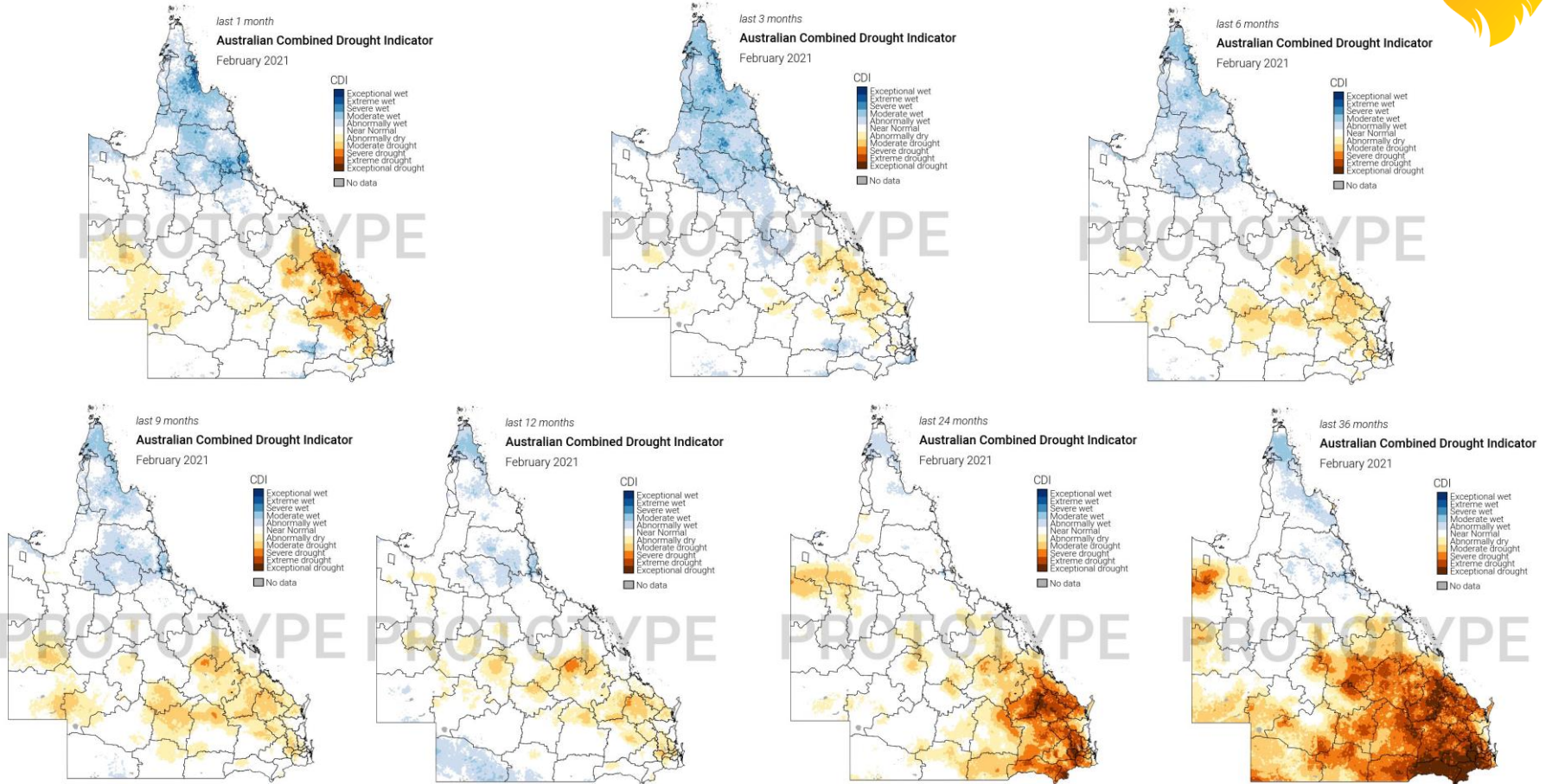
Examples: High value in a collaborative research framework that has a focus on management systems.

- Improving seasonal climate forecasts
 - Improving the ability of forecasts to predict multi year/decadal droughts-S2S
 - Climate change adaptation for agricultural industries
 - Producing enhanced “named-peril” crop insurance systems /similar index-based systems
 - Improved crop yield and production forecasts
 - Developing products for use in drought monitoring: drought indices
 - Developing and customising decision support tools
 - Revamping Managing for Climate user engagement Workshops
 - Crop production modelling under climate change and regional adaptation
 - Assessing the economic value of improved climate risk management strategies through the application of seasonal climate forecasts for key agricultural industries
-
- sub-seasonal to seasonal climate variability and their impact on US drought.
 - Assess and utilise decadal prediction systems
 - Evaluating/developing dynamical climate models: includes hybrid statistical-dynamical type techniques
 - Assess ‘flash droughts’ – short term development of severe droughts.
 - Linking land surface initial conditions with modelling to provide an important source for skilful drought forecasts
 - interdisciplinary research and applications: - to ensure federal research is as coordinated and integrated into decision-making as practicable, inspiring interaction between the research community and beneficiaries.

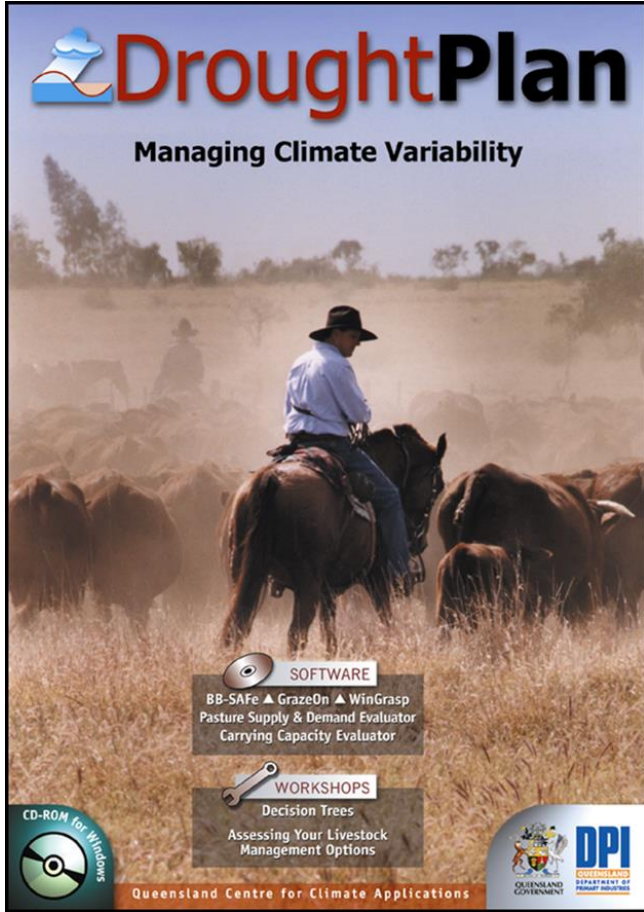
QDMC

NIDIS/USDMC

Development of the Australian Drought Monitor



Developed through close interaction with NDMC Nebraska

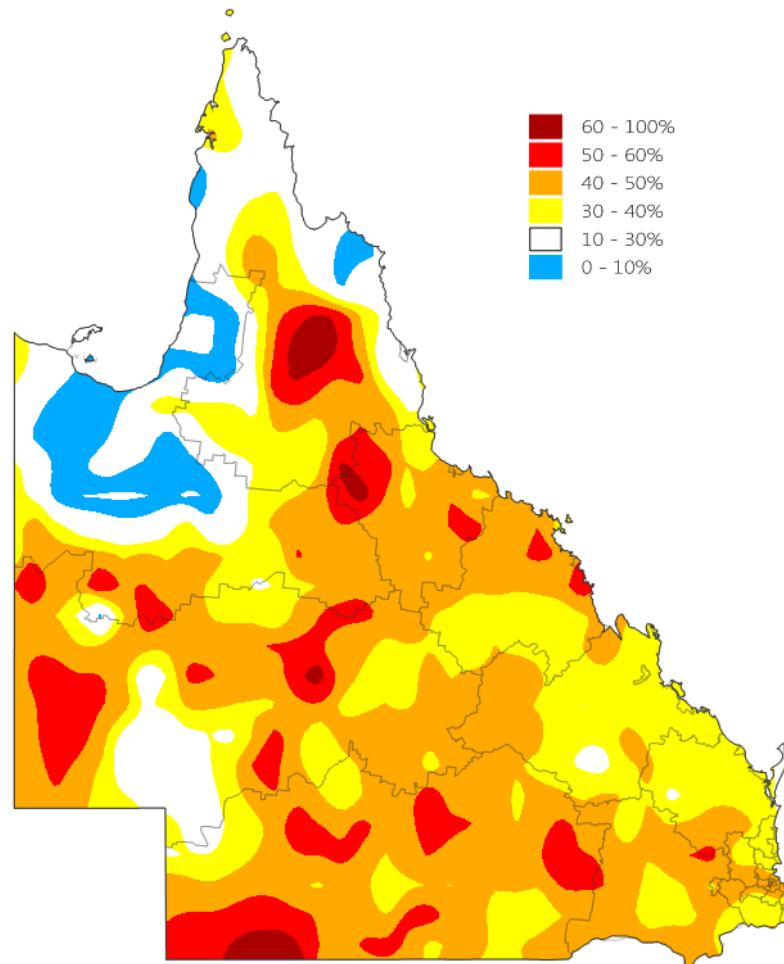


Integrated seasonal climate and pasture/crop simulation models

Probability of Being in the Lowest 20% of Rainfall

August / October

Based on Consistently Negative phase
during June / July



Further
improvement to
this type of
output

Drought insurance tool example

1. Enter strike and limits

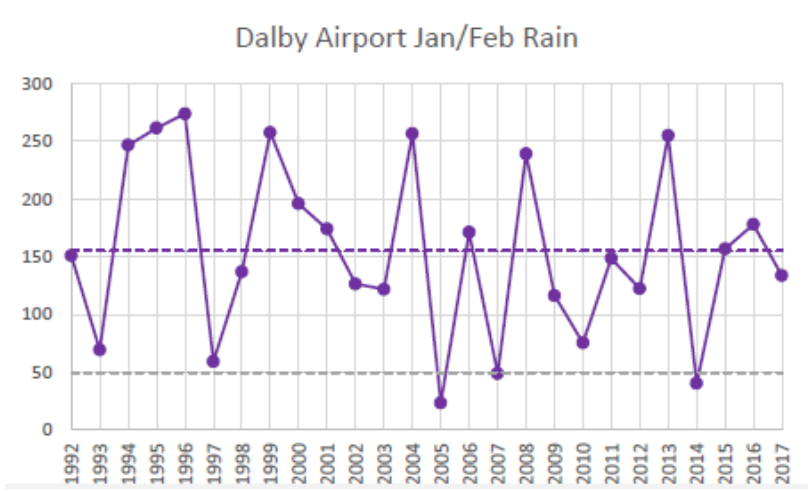
Inputs	
Attachment Strike	50
Limit Strike	0
Tick Value (AUD)	1,000



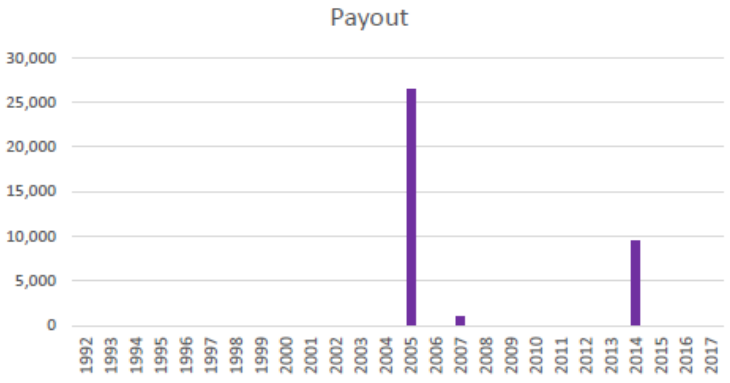
•Image from: <https://www.linkedin.com/pulse/collaborating-improve-drought-tolerance-crops-amarjit-s-basra>

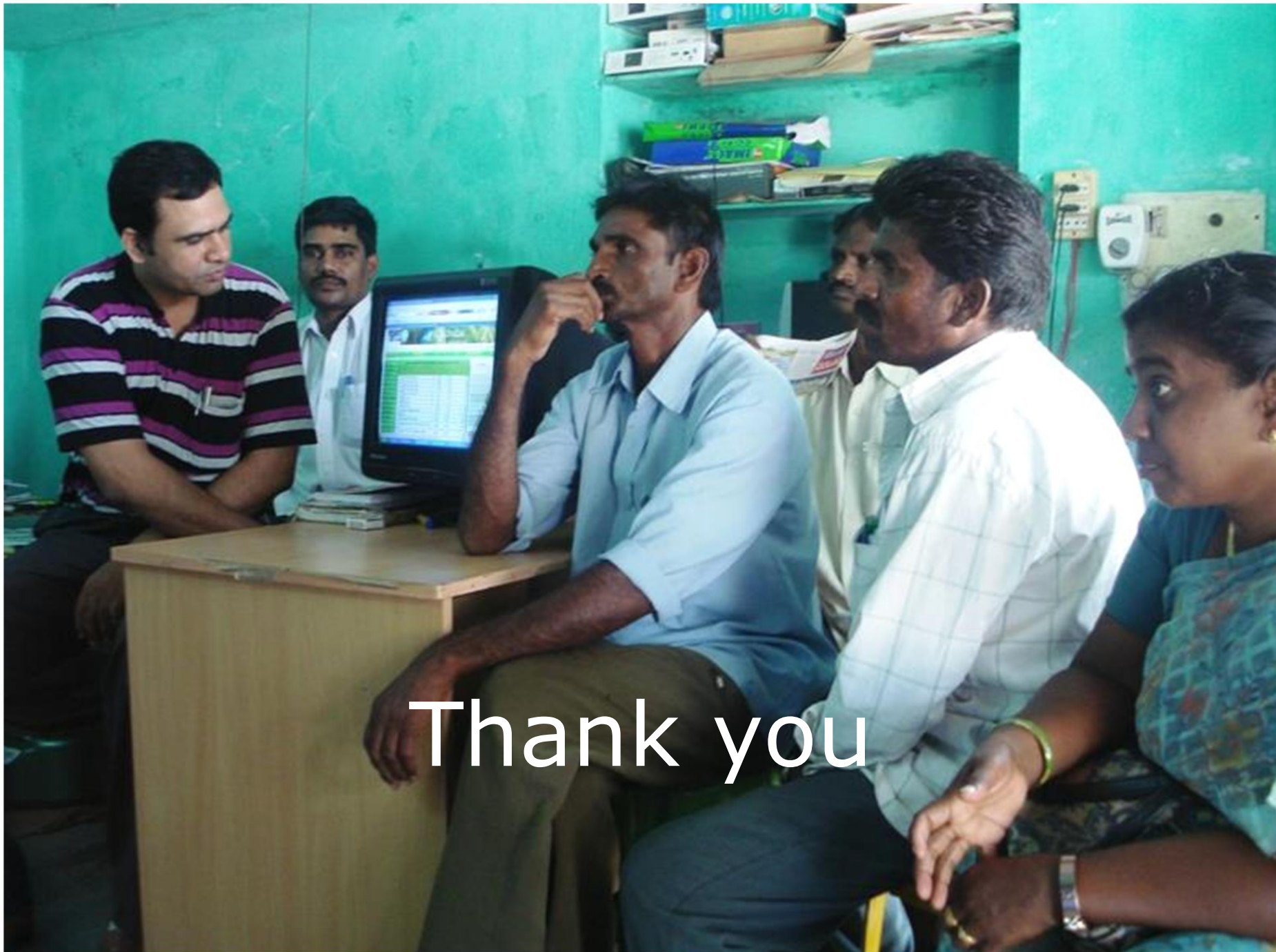
Crop losses from low seasonal rainfall

→ 2. Assess when low seasonal rainfall occurs



↓ 3. Calculate payouts for when low seasonal rainfall occurs

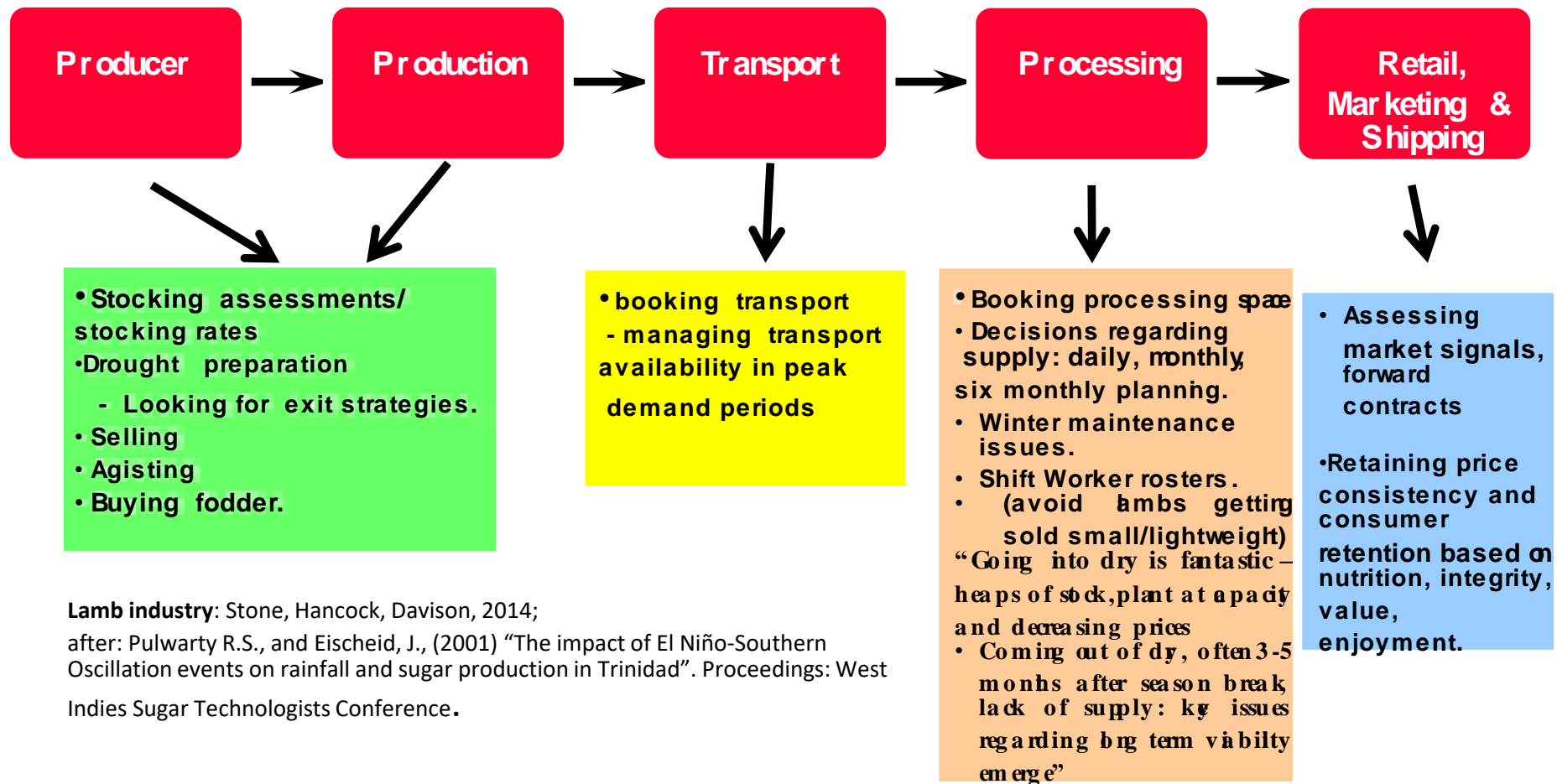




Thank you

Climate/drought information/forecasting research has no value unless it changes a management decision ...

(interdisciplinary research example: agricultural supply chain)



Lamb industry: Stone, Hancock, Davison, 2014;
after: Pulwarty R.S., and Eischeid, J., (2001) “The impact of El Niño-Southern Oscillation events on rainfall and sugar production in Trinidad”. Proceedings: West Indies Sugar Technologists Conference.