

SUMMARY REPORT NUMBER 3: SEASON QUALITY

This report is one of a series of reports summarizing outcomes from a project completed for the Department of the Environment: "Graziers with better profitability, biodiversity and well-being", funded under the National Environmental Science Program.

Overview:

This project showed that regenerative management practices have potential to increase the health of Australia's grassy woodlands and at the same time improve financial and farmer wellbeing outcomes. This report summarizes some findings related to seasonal influences. Substantial Land Health and farmer wellbeing benefits were also measured on the 16 properties in the sample and are summarized in further reports.

Over a 15-year period this component of the project found:

- Eleven of the past 15 years (around 70%) had some degree of deficit in rainfall from long term averages and were classed as "unfavourable"
- Project participants interpreted this as meaning they should avoid making production and budget forecasts that require "average" seasons.
- Project participants interpreted this as farm business should be structured to be successful for the 70% of seasons classed as "unfavourable" rather than the 30% of years that were classed as "favourable".
- This work is experimental in nature and is continuing to examine decisions made by regenerative managers taking into account season and subsequent impacts on profitability and wellbeing

Background:

For some decades, regenerative land managers have claimed that their production practices have led to regeneration of ecological functions and biodiversity and this has enabled them to generate a strong and stable level of farm profit.

Agriculture is greatly impacted by variability in the quality of seasons and the project sought to include this as a variable in analysis of comparative profitability

Classifying seasonal quality:

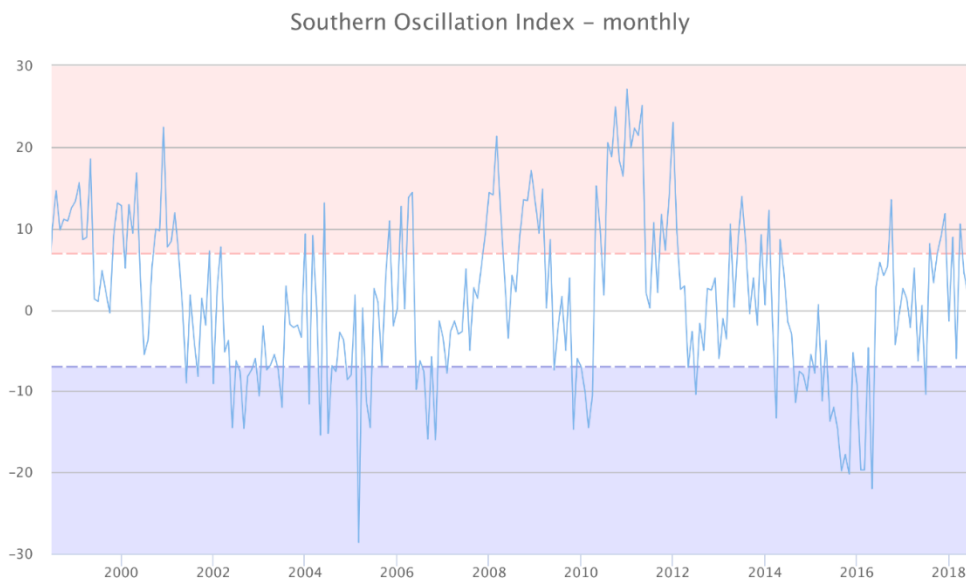
To provide a prototype to inform the direction of this analysis, Dr Ivan Hanigan of the University of Canberra, generously provided a Hutchinson Drought Index (HDI) for each participating property so that the intensity and duration of rainfall deficiency could be investigated as an estimate for season quality.

Using this Index, each financial year was classified as "favourable" or "unfavourable" based on whether a substantial rainfall deficiency in the year was observed. We produced an experimental chart to indicate the quality of seasons for each participant

location. Caution should be taken with interpretations of apparent associations from these simple indicators, as representing the Hutchison Drought Index in this manner is experimental.

The team considered using the Southern Oscillation Index (SOI) as a proxy for season quality. The SOI gives an indication of the development and intensity of El Nino or La Nina events in the Pacific Ocean. Sustained negative values are usually accompanied by a reduction in winter and spring rainfall over much of eastern Australia. Sustained positive values are associated with stronger Pacific trade winds. Together these give an increased probability that eastern and northern Australia will be wetter than normal.

The southern oscillation index (SOI) for the period is shown in Figure 16. It shows negative values during 2005, 2007, 2009 and 2015. These years are also represented in the Hutchison Drought Index as “unfavourable” years for most project participants.



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SOI for the period of interest for the NESP-EP farm profitability and biodiversity project. Source: Australian Bureau of Meteorology, Canberra Australia accessed July 13, 2018.

Season quality:

The output of the experimental development of season quality 'indices' (based on the Hutchinson Drought Index), classified seasons as "favourable" if no rainfall deficit emerged in a financial year or "unfavourable" if it did. It is represented in the table below.

Farm Code	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Farm 1														
Farm 2	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable
Farm 3	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable
Farm 4	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable
Farm 5														
Farm 6	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Favourable	Unfavourable
Farm 7	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable
Farm 8	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable
Farm 9	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable
Farm 10	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable
Farm 11	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable
Farm 12	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable
Farm 13	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable
Farm 15	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Favourable	Unfavourable	Unfavourable	Unfavourable	Favourable	Unfavourable	Unfavourable

Classification of financial years as being favourable or unfavourable seasons based on the Hutchinson Drought Index.

This information was presented to both project participants and a wider farmer audience for discussion and preliminary interpretation. Feedback from participants and the wider farming community indicated the value of this information was high. However, it remains experimental.

Implications for farm business planning:

This experimental component of the project indicates that for most project participants, eleven of the past 15 years (around 70%) showed a deficit in rainfall from long term averages. It was evident that this knowledge shaped participants decision making in relation to stock numbers and forward planning.

This information was interpreted by the participants as meaning:

- Farm business should be structured to achieve owner's goals for the 70% of years that are "unfavourable" rather than the 30% of years that were classed as "favourable".
- Production choices that require "average" seasons for success should be carefully assessed given the extent of unfavourable seasons
- An adaptive and planned management and decision making approach is considered a key success factor in regenerative management.

Further information, more project summaries or to obtain a copy of the full 91 page report please contact us. A workshop is being prepared that presents the projects findings, this will be available from November 2018.

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