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# **Farmers' Adjustment Strategies to the Millennium Drought and the Association with Profitability**

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# Farmers' Adjustment Strategies to the Millennium Drought and the Association with Profitability

**2016 AARES Conference Presentation**

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# Introduction

- Title: Farmers' Adjustment Strategies to the Millennium Drought and the Association with Profitability
- Comprises of 3 main chapters:
  1. Socio-economic impacts of the Millennium Drought on the Murray-Darling Basin
  2. Adjustment strategies commonly adopted by farmers faced with livelihood threats
  3. Outcomes of farmers' adjustments strategies on their profitability

# Research questions and methods

***What are the adjustment strategies undertaken by farmers to cope with livelihood threats?***

Method: Literature review

Objective: To formulate meaningful conclusions by clustering strategies into groups

***Did the adjustments help farmers to improve their wellbeing?***

Method: Regression using 2013 Regional Wellbeing Survey data

Objective: To find out the effectiveness of the adjustment strategies undertaken by farmers and if any pattern of outcomes of adjustments on profitability exist

<p><b>Input-related strategies</b>  <i>Management of variable inputs to achieve cost minimisation and return maximisation in the short- or medium-run</i></p> <ul style="list-style-type: none"> <li>Reduced hired labour</li> <li>Increased own work hours on the farm</li> <li>Reduced use of non-labour inputs</li> </ul>	<p><b>Output-related strategies</b>  <i>Changes to scale of production or changes to output mixes</i></p> <ul style="list-style-type: none"> <li>Changed products</li> <li>Found new markets</li> <li>Reduced farm production</li> </ul>
<p><b>Land-related strategies</b>  <i>Changes to land use</i></p> <ul style="list-style-type: none"> <li>Purchased or leased additional land</li> <li>Sold or leased some of my land</li> </ul>	<p><b>Technology- and investment-related strategies</b>  <i>Physical and non-physical enhancements to boost productivity and capacity in the long-run</i></p> <ul style="list-style-type: none"> <li>Invested in new technologies</li> <li>Postponed investment in farm capital</li> </ul>
<p><b>Off-farm strategies</b>  <i>Engagement in off-farm and non-farm sectors to diversify income sources</i></p> <ul style="list-style-type: none"> <li>Increased off-farm work</li> </ul>	<p><b>Finance-related strategies</b>  <i>Involves flows of money</i></p> <ul style="list-style-type: none"> <li>Received financial supports from government</li> <li>Borrowed from family or friends</li> </ul>
<p><b>Water-related strategies</b></p> <ul style="list-style-type: none"> <li>Bought temporary water entitlement</li> <li>Bought permanent water entitlement</li> <li>Sold permanent water entitlement</li> <li>Sold temporary water entitlement</li> </ul>	<p><b>Others</b></p> <ul style="list-style-type: none"> <li>Shared expenses with other farmers</li> <li>Temporarily stopped farming</li> </ul>

# Findings and conclusion

## *Adjustment strategies commonly adopted by farmers*

- Some strategies, though popular and deemed effective, are not feasible to the most impoverished and desperate farmers
- Farmers exhibit awareness and consciousness on the need to resolve their problems. In fact, proactive attitude, collective actions and risk-sharing behaviours can be observed among the farmers
- Therefore, facilitation from government or other institutions could be crucial

## Adjustment strategies adopted by farmers to deal with challenges in 2008-2013

Adjustment strategies	Dryland farmers (%)	Irrigators (%)
<b>Input-related strategies</b>		
Reduced hired labour	54.0	63.6
Increased own work hours on the farm	59.9	72.6
Reduced use of non-labour inputs	53.6	57.5
<b>Output-related strategies</b>		
Changed products	37.1	37.9
Found new markets	32.9	39.6
Reduced farm production	45.1	50.9
<b>Land-related strategies</b>		
Purchased or leased additional land	30.5	26.4
Sold or leased some of my land	14.6	16.0
<b>Off-farm strategies</b>		
Increased off-farm work	41.0	45.7



## Adjustment strategies adopted by farmers to deal with challenges in 2008-2013

Adjustment strategies	Dryland farmers (%)	Irrigators (%)
<b>Technology- and investment-related strategies</b>		
Invested in new technologies	57.4	67.4
Postponed investment in farm capital	60.2	64.8
<b>Finance-related strategies</b>		
Received financial supports from government	26.5	32.2
Borrowed from family or friends	12.8	15.9
<b>Water-related strategies</b>		
Bought temporary water entitlement	Not Applicable	30.3
Bought permanent water entitlement	Not Applicable	11.5
Sold permanent water entitlement	Not Applicable	15.9
Sold temporary water entitlement	Not Applicable	28.3
<b>Others</b>		
Shared expenses with other farmers	18.2	21.3
Temporarily stopped farming	14.4	17.2

## Regression results between adjustment strategies adopted by farmers and profitability

Adjustment strategies	Dryland farmers	Irrigators
<b>Input-related strategies</b>		
Reduced hired labour	-0.470***	-0.800***
Increased own work hours on the farm	-0.547***	-0.561***
Reduced use of non-labour inputs	-0.420***	-0.805***
<b>Output-related strategies</b>		
Changed products	0.147	-0.262
Found new markets	0.105	-0.117
Reduced farm production	-0.690***	-0.478***
<b>Land-related strategies</b>		
Purchased or leased additional land	-0.006	0.097
Sold or leased some of my land	-0.506**	-0.799***
<b>Off-farm strategies</b>		
Increased off-farm work	-0.246	-0.715***

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

## Regression results between adjustment strategies adopted by farmers and profitability

Adjustment strategies	Dryland farmers	Irrigators
<b>Technology- and investment-related strategies</b>		
Invested in new technologies	0.156	0.322*
Postponed investment in farm capital	-0.222	-0.508***
<b>Finance-related strategies</b>		
Received financial supports from government	0.032	-0.185
Borrowed from family or friends	-0.800***	-1.059***
<b>Water-related strategies</b>		
Bought temporary water entitlement	Not Applicable	0.157
Bought permanent water entitlement	Not Applicable	0.175
Sold permanent water entitlement	Not Applicable	-0.187
Sold temporary water entitlement	Not Applicable	-0.489***
<b>Others</b>		
Shared expenses with other farmers	0.183	-0.025
Temporarily stopped farming	-0.130	-0.142