



Department of  
Primary Industries



# The economic benefits from changing livestock producers' attitudes towards wild dog management in northern NSW

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# Background

Between Nov 2017 and Feb 2018, NSW DPI and the UNE launched a survey to collect data on

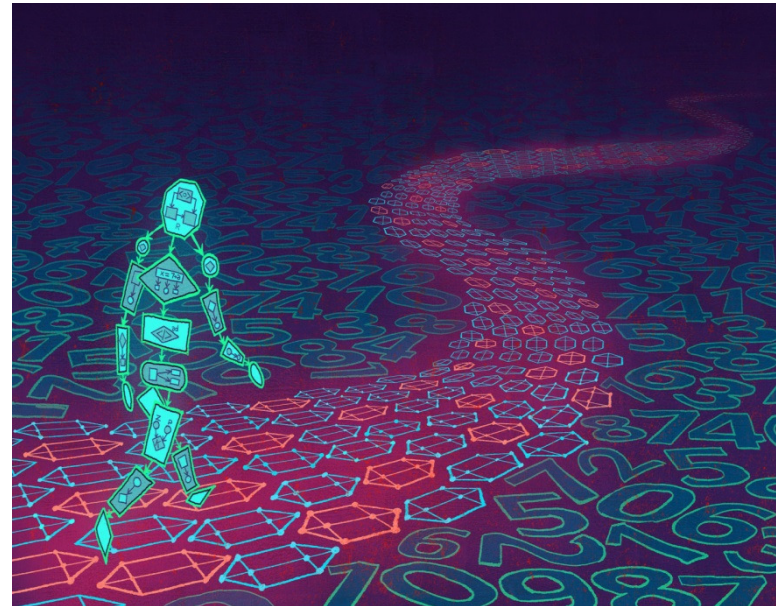
- control triggers and motivations ( economic, social and environmental)
- control techniques, periods, frequency and costs
- frequency of predation and attack
- control impacts (private and public benefits)

## Study objectives

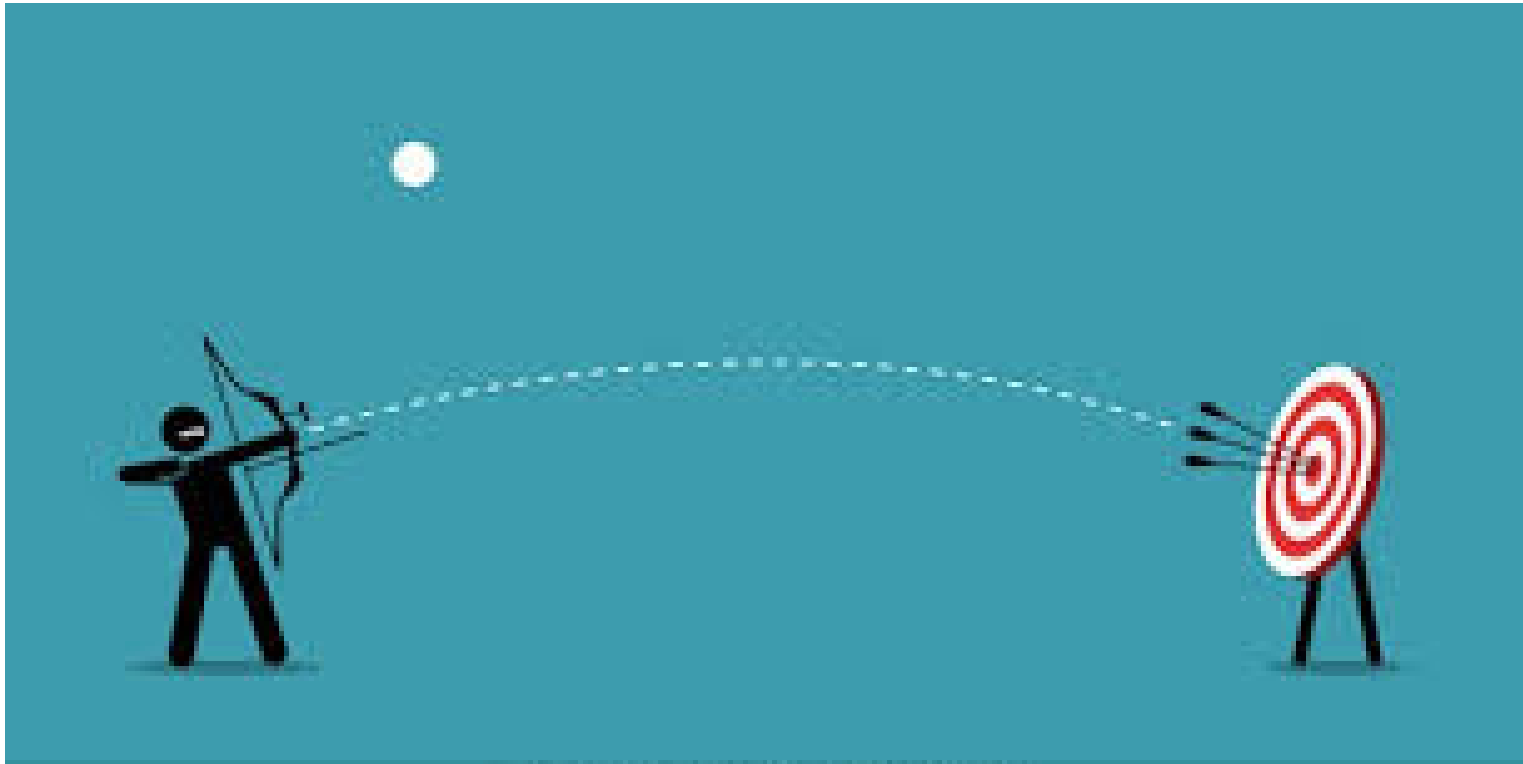
- identify factors driving management
- estimate economic impact
- Identify market failure (externality issues)
- identify cost effective control option and provide recommendations

# Key findings and the road ahead

- 1. Triggers and motivations to control:**
  - economic , not social nor environmental
- 2. Control and damage costs**
  - combinations of techniques
  - avg cost = \$10,650/property
- 3. Hot spots**
  - sheep enterprises and proximity to public lands
- 4. Control impacts**
  - beneficial but not improved livestock productivity and profitability
  - unsure of environmental and social outcomes
- 5. Major issue identified**
  - externality and free rider problem
  - Collective control returns net benefit

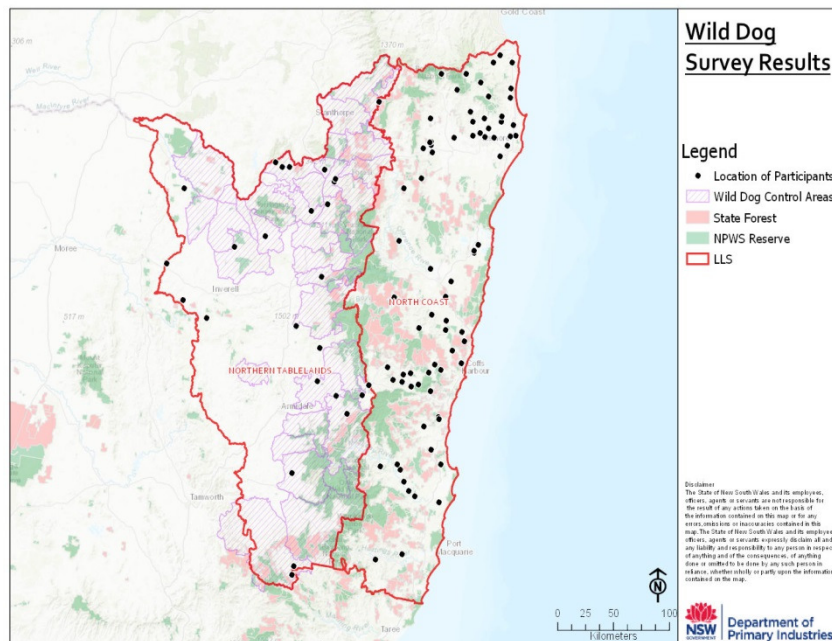


# What we have done



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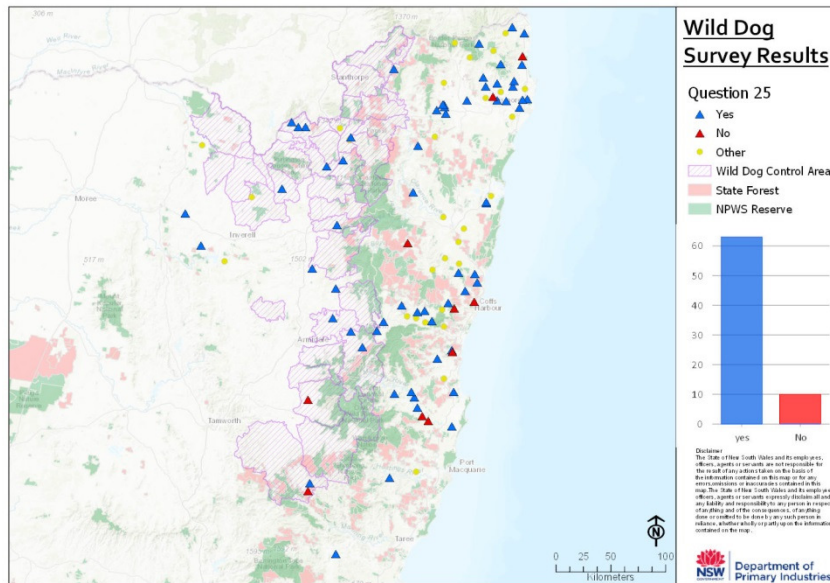
# Survey overview



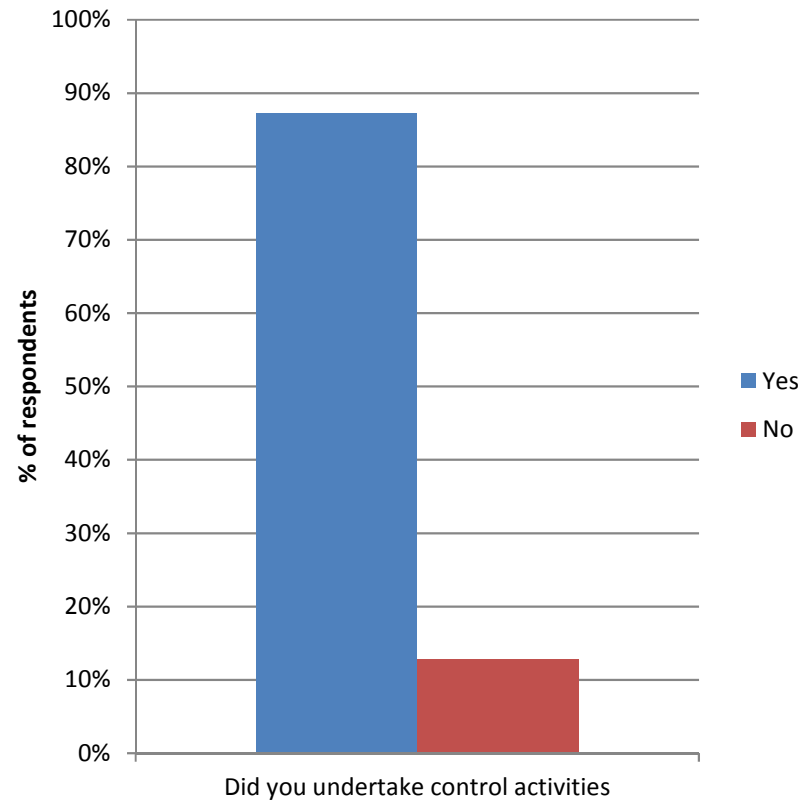
- ❑ consisted 50 questions
- ❑ surveyed 370 livestock producers (110 responses, 30% response rate)
- ❑ segregated responses:
  - ✓ Northern Tablelands and North Coast LLS (25 different postcode)
  - ✓ membership to control associations
  - ✓ proximity to state forests and reserves
  - ✓ land use type

# Wild dog impacts and management

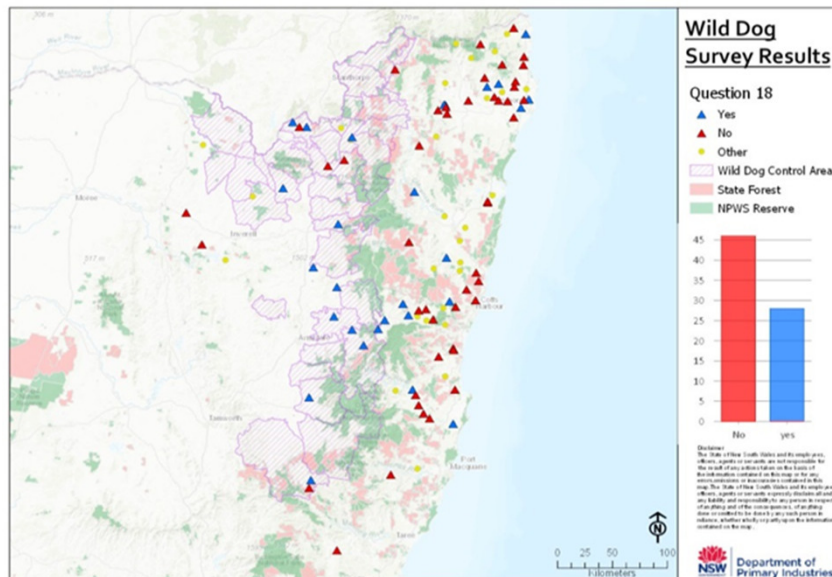
## Affect SR and enterprise choice



## Did you undertake control activities in the last 12 months?



# Group or independent management



60% are non-members, control independently

- No control assoc. in the area

Sheep producers are largely members

- many control associations are found in NT than NC LLS

up to 20 years of membership

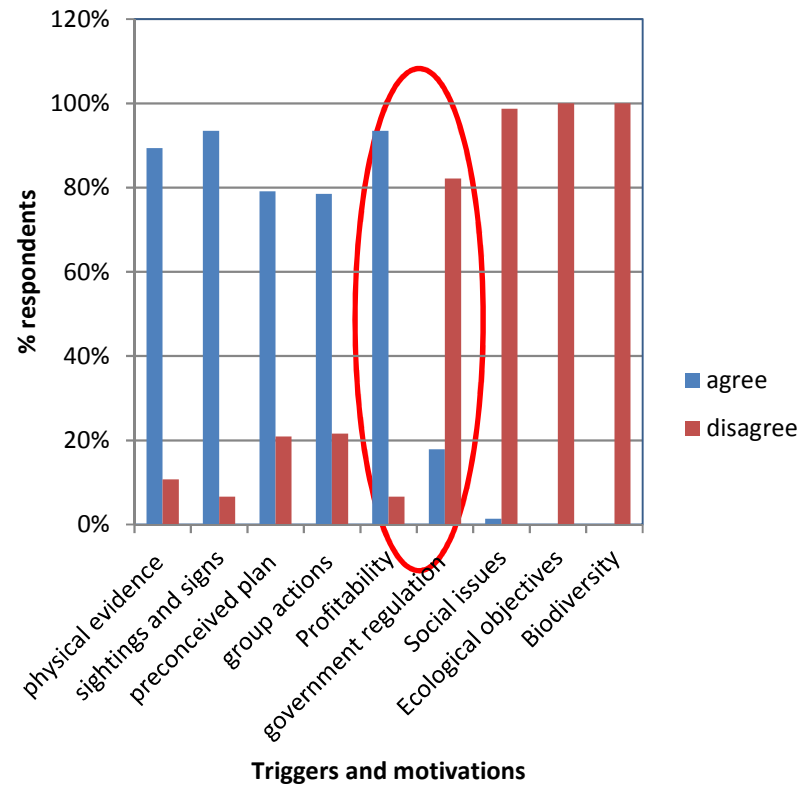
- information
- Free baits

# Triggers and motivations to control

Economic motivation drives control



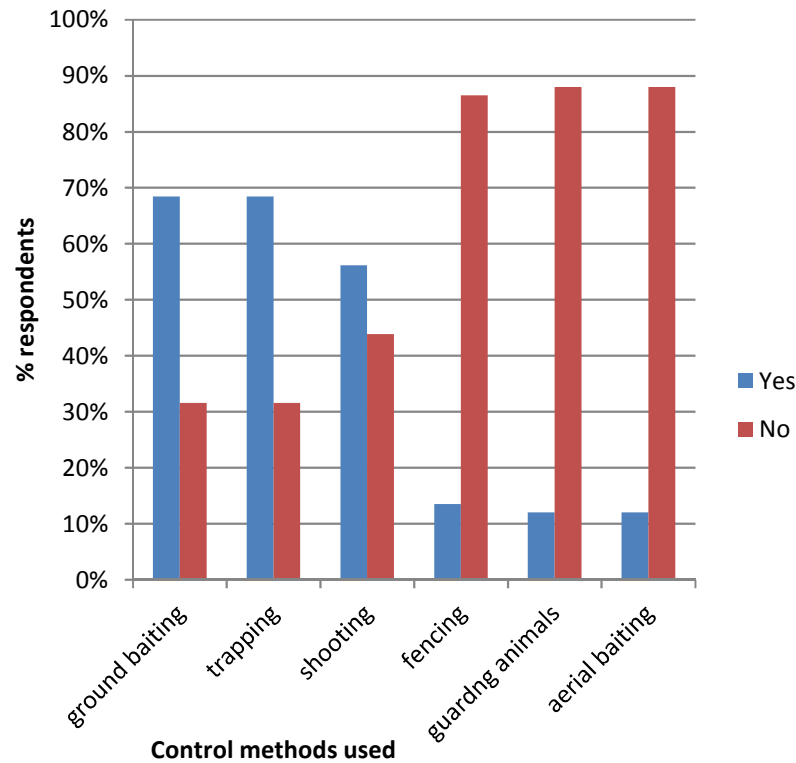
Minimal role for government regulation in driving control



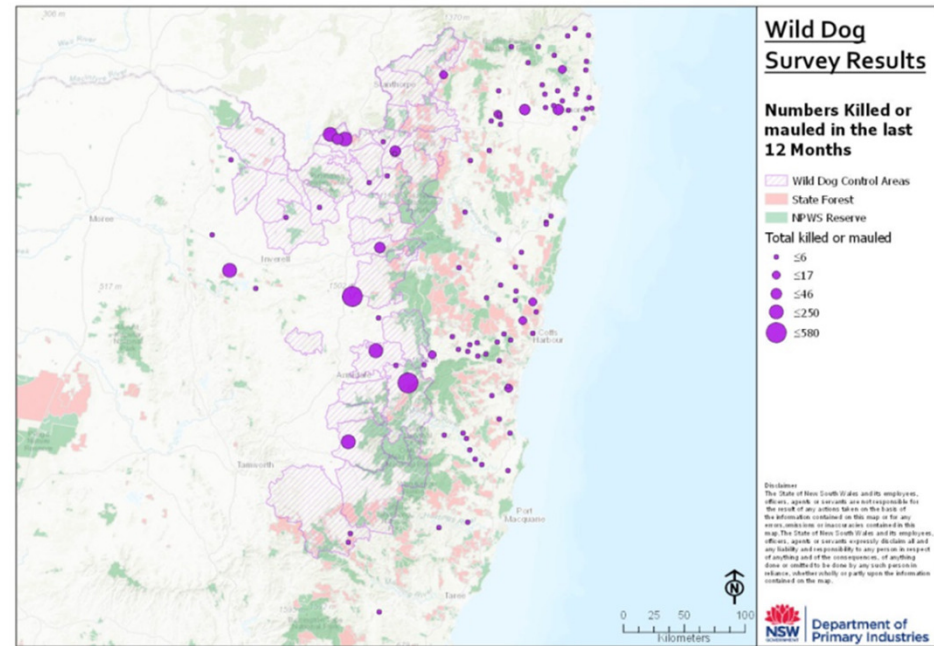


# Control and damage cost (range :\$0.80-\$3.0/head)

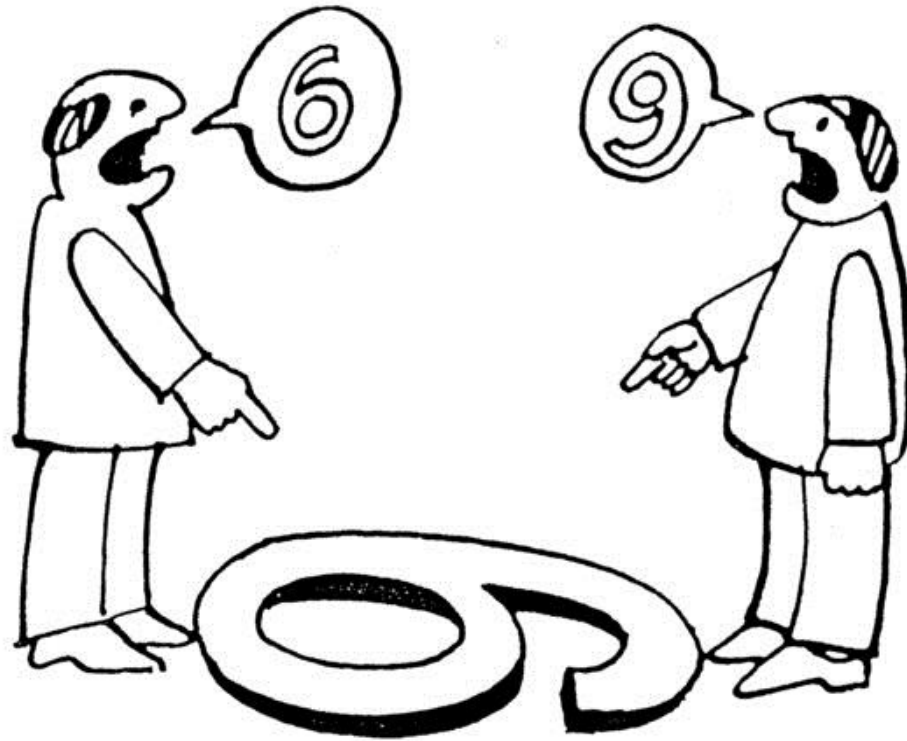
**Control methods and cost  
(range: \$0.35 – \$1.30/head)**



**Damage cost  
(range: \$0.45 – \$1.70/head)**

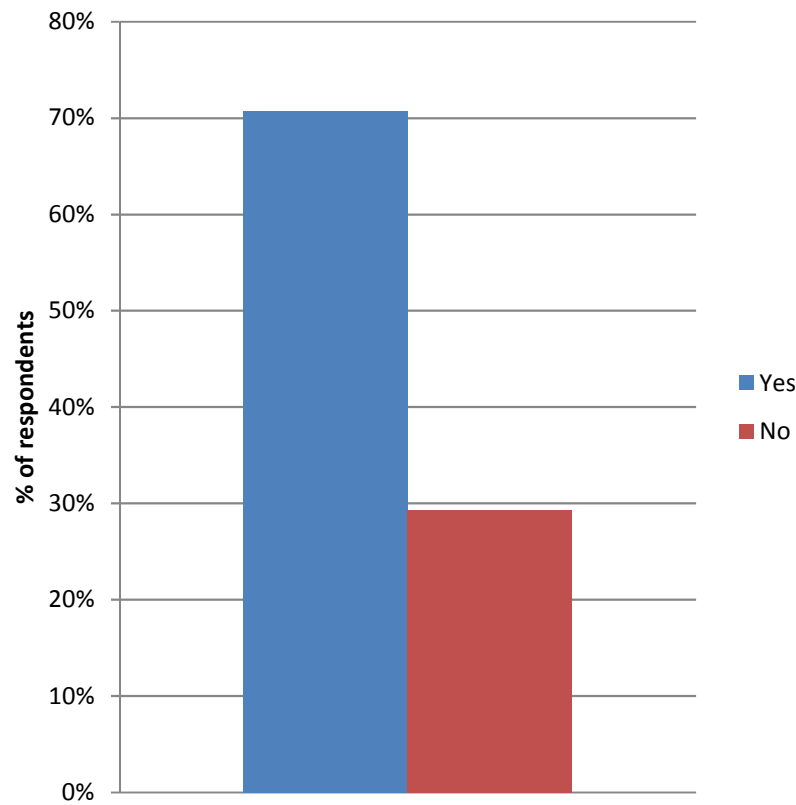


# Perceived control benefits

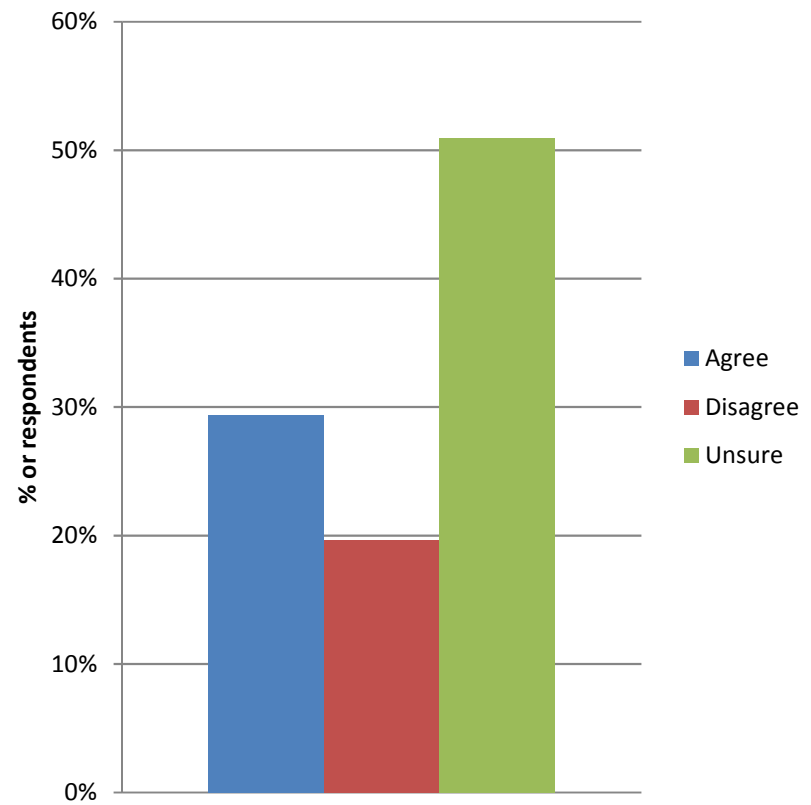


# Did you observe any benefits from controlling wild dogs?

## did control has benefits?

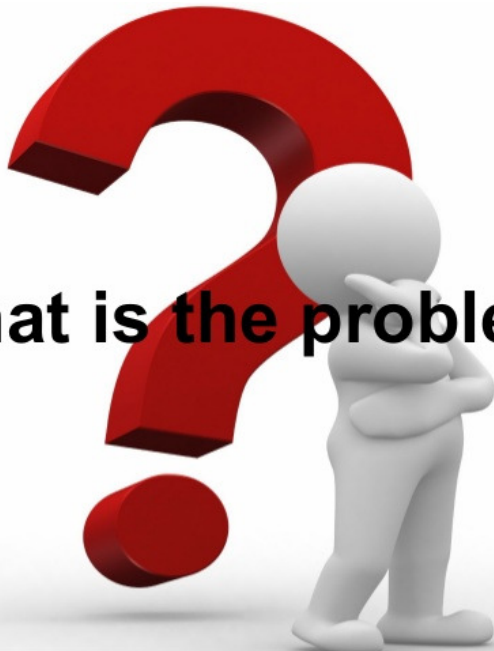


## increased livestock productivity and profitability



# Why didn't control increase productivity and profitability?

**What is the problem?**



## **Possible reasons**

- they do not keep record
- unable to separate the impacts from other variables
- reached optimal control
- under investment
- different stages of response to control
- Externality (“dogs keep coming from other areas”)**

# Internalise the externality in collective action

## Collective action



## Internalise the externality

When either private negotiations or government action lead the price to the party to fully reflect the external costs or benefits of that party's actions.

# Internalising the externality in collective action: the economic benefit of landscape scale aerial baiting

## Assumptions

- Study area:
  - TL and NC LLS
  - Sheep and cattle enterprises
- Cost: \$2M/year for 5 years (33% less than the current total estimated cost = **\$6M/year**),
- Benefits:
  - 66 % cost saving
  - 10% reduction in livestock predation and attack
- Project period: 5 years
- DR = 7%
- Adoption rate = 80%

## Economic return (\$M)

	Negligible attack	Moderate attack	Severe attack
NPV	12.5	29.4	136.8
BCR	2.5	4.5	17.0

better off with economies of scale, with potential benefits to social and the environment outcomes.

Richards, T.J et al (2010), Market-Based Instruments for the Optimal Control of Invasive Insect Species: B. Tabaci in Arizona

# Conclusions

- ❑ productivity and profitability are the major drivers of wild dog management
- ❑ externality (free rider problem) is the major management problem in wild dog management
- ❑ Collective action internalises the externality and returns net benefits
  - ❑ Involves transaction costs
- ❑ **The road ahead:** Risk-based spatial and temporal economic analysis

# Acknowledgements

- Survey participants in Northern Tablelands and North Coast LLS





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Research Ethics Committee approval no. HE17-002

**THANK YOU**

