

GRDC, 15 August 2023

Critical adoption principles

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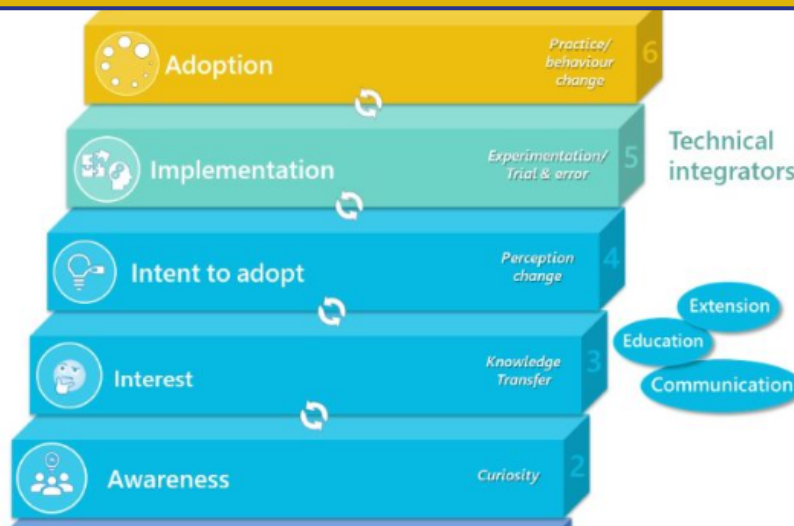


DPI Agriculture Industry Adoption Portal

Welcome to the Agriculture Industry Adoption Portal. This site contains information on best practice principles associated with adoption. The portal includes a method for applying these principles, and tools, templates and tips to support the design and implementation of activities that achieve greater levels of practice and behaviour change (adoption) within target agricultural systems.

The Portal is managed by the Industry Adoption team in the NSW DPI Agriculture branch. We regularly update the content www.gov.au

Research is not complete until adoption takes place



What is adoption?

Research, Development, Extension and Adoption (RDE&A) can and does mean different things to different people. In the context of NSW DPI, the RDE&A system is a mechanism where we invest NSW taxpayer money, often in partnership with other funding sources, to solve problems and create opportunities within the Australian ag sector. **We turn research generated knowledge into value.**

This value is realised when members of the

Agricultural adoption

- Thousands of studies since 1950s

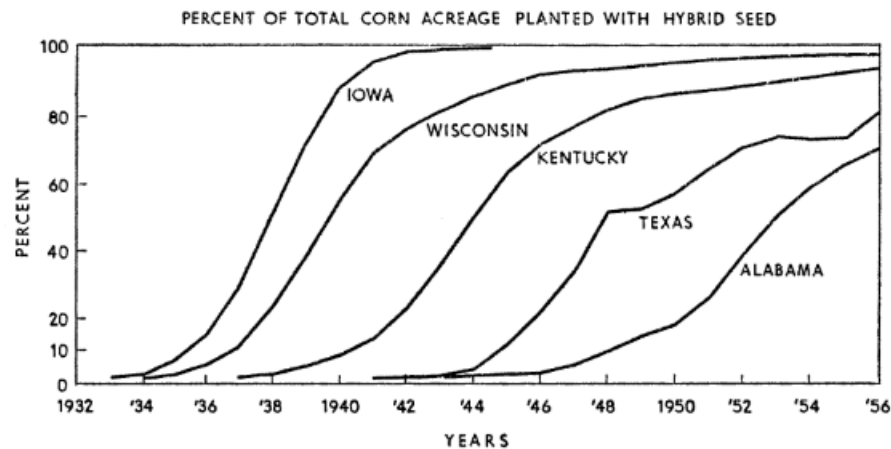


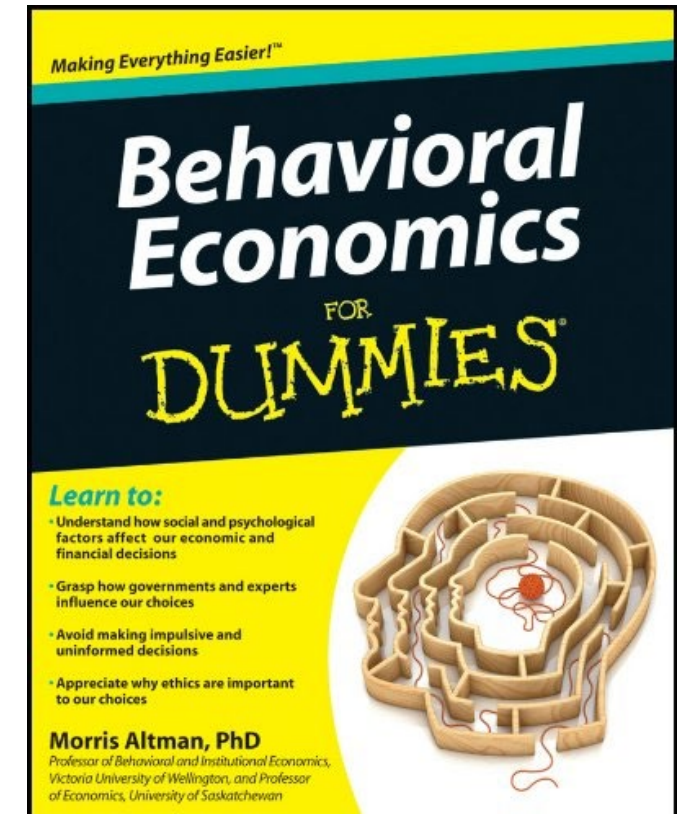
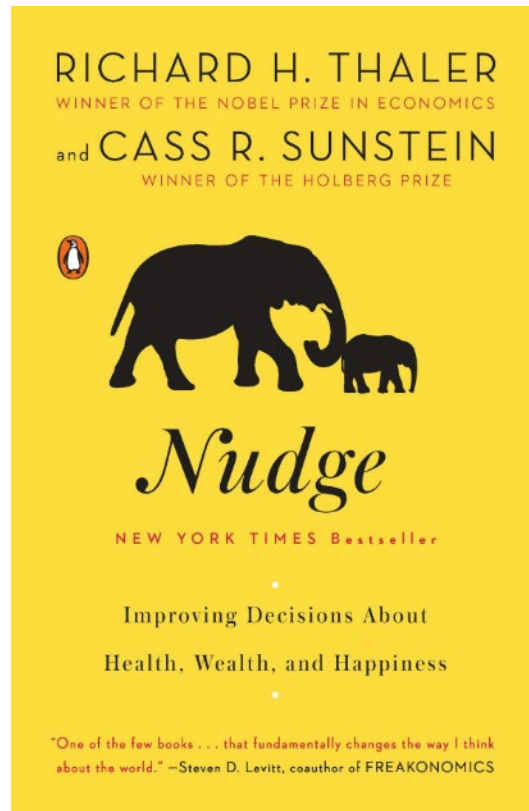
FIGURE 1.—Percentage of Total Corn Acreage Planted with Hybrid Seed.
Source: U.S.D.A., *Agricultural Statistics*, various years.



- Statistical studies of actual adoption of new practices
 - Mostly cross-sectional, some longitudinal
 - Mostly survey-based

Behaviour change more broadly

- Emergence of Behavioural Economics → new focus on behaviour in economics

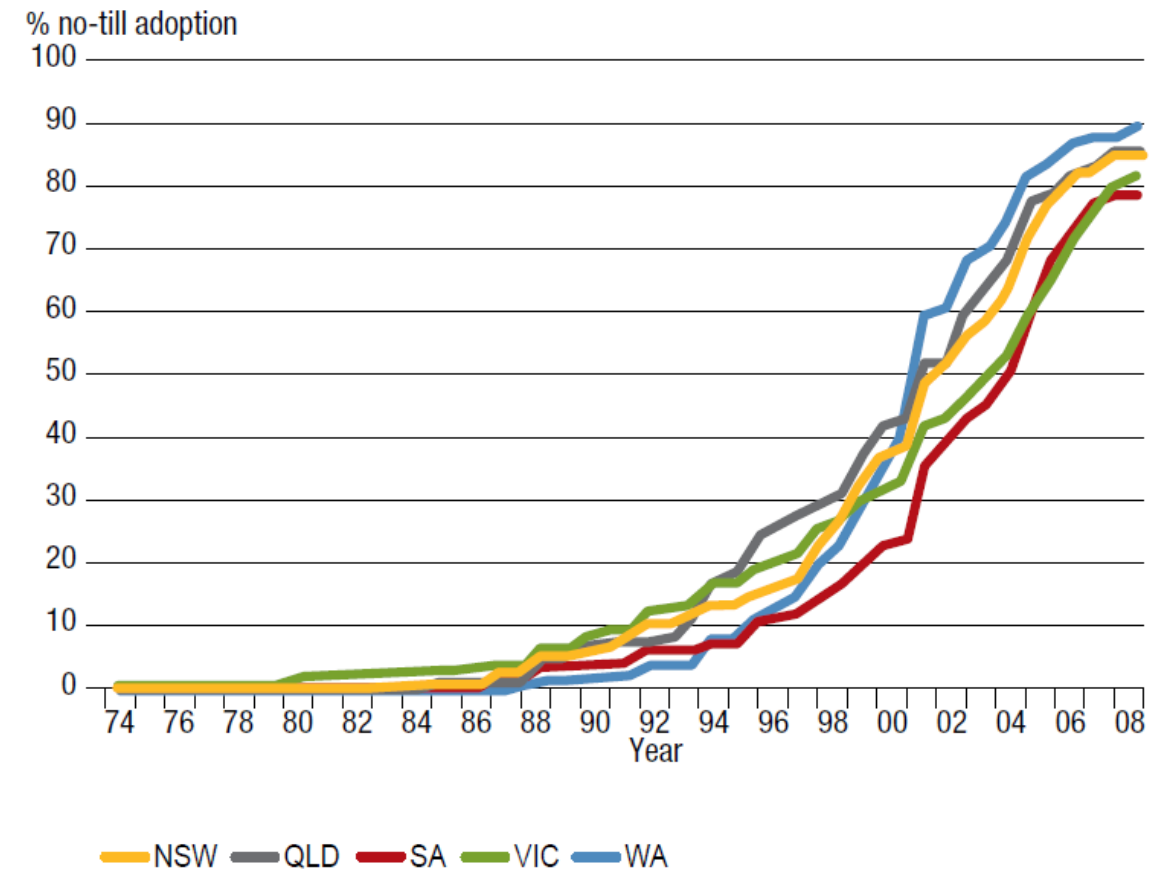


Adoption is often slow

- Slower than people expect
- Even practices that get widely adopted



FIGURE 7 Cumulative adoption of no-till (decision to first use no-till) by respondents classified by state



Source: Llewellyn and D'Emden (2009), Adoption of no-till cropping practices in Australian grain growing regions, GRDC

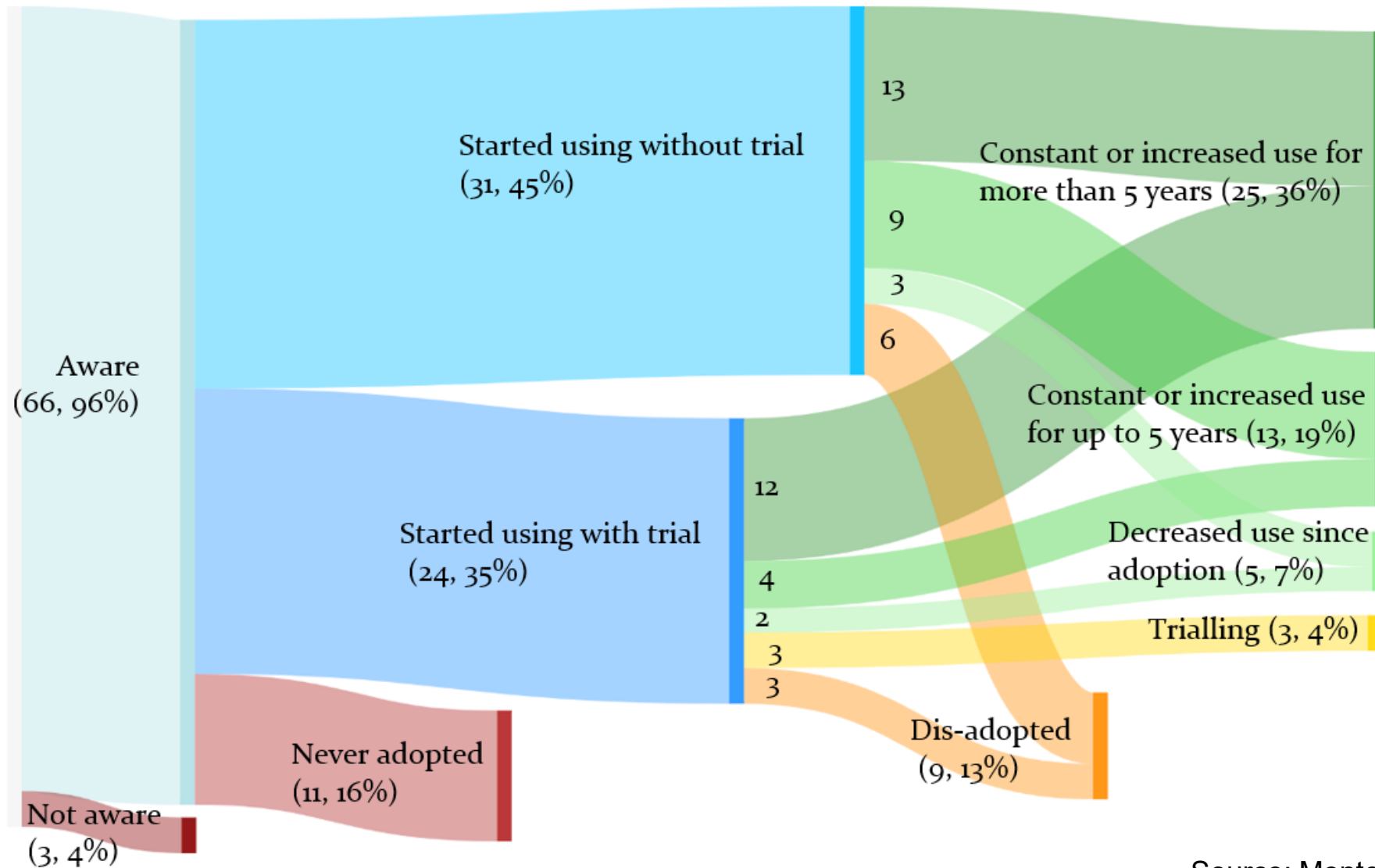
Farmers are heterogeneous

- Personal goals, skills, preferences
- Soils
- Climate
- Farm size
- Farming system
- Attitudes to risk

Even successful practices are partially adopted

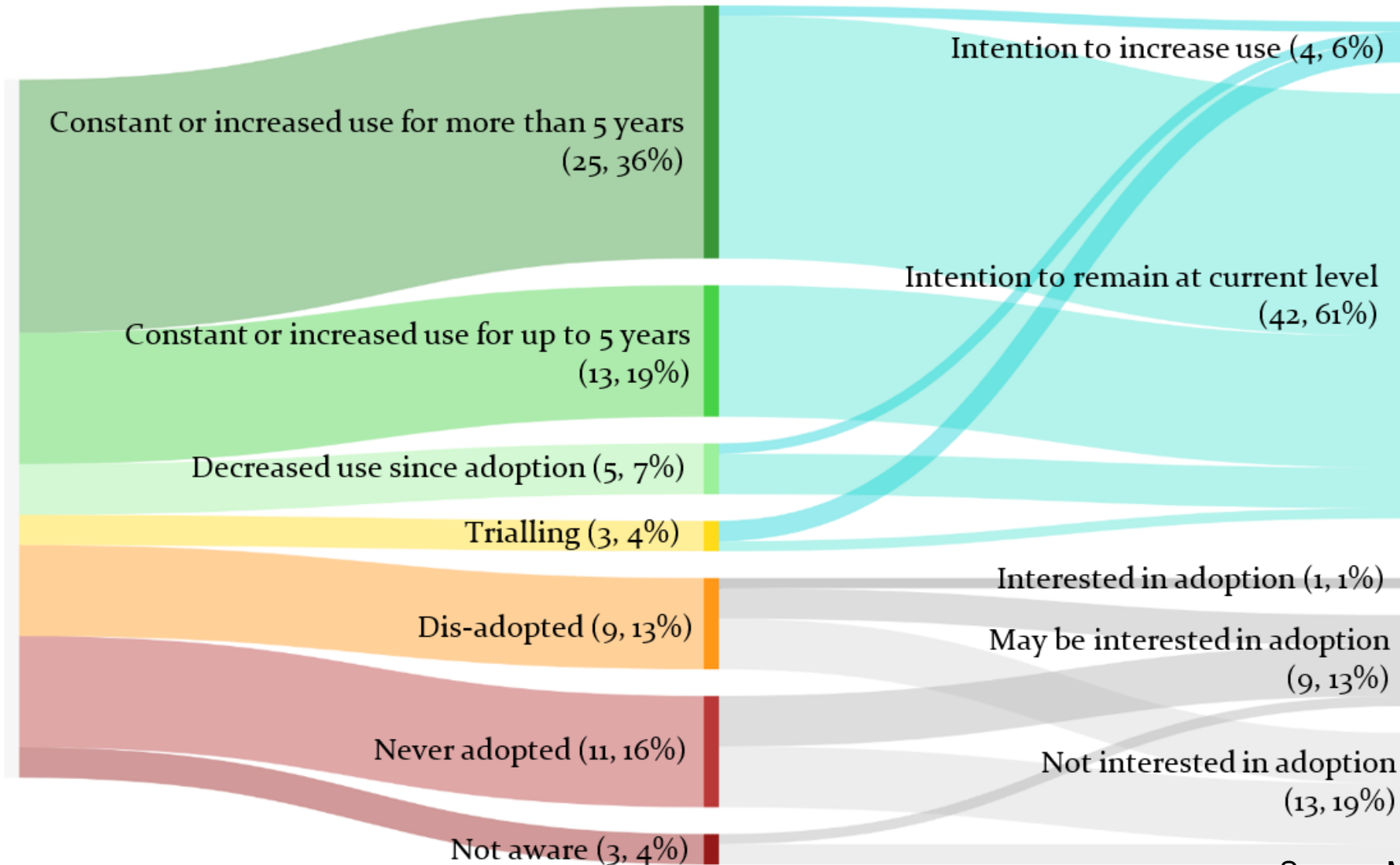
Benefits from market segmentation, if feasible

Adoption pathways analysis



Adoption pathway for the use of body condition scoring amongst pastoral farmers in New Zealand

Adoption pathways analysis



Future pathway for the use of body condition scoring amongst pastoral farmers in New Zealand

It's a learning process

- Awareness of problem or opportunity
- Non-trial evaluation
- Trial evaluation
- Adoption (or not)
- Review and modification
- Disadoption



Trialability

- How easy is it to get over the learning hump?
 - Trialable at small scale?
 - Cost of trialing
 - Complexity of the technology
 - Similarity to existing technologies
 - Visibility/detectability of result
 - Education level of farmers
 - Advisory support



Relative advantage

● Practice characteristics

- Profitability of practice (incl. stewardship \$)
- Riskiness of practice
- Transition cost
- Complexity
- Environmental impacts
- Ease and convenience

● Farmer characteristics

- Profit motivation
- Risk attitudes
- Environmental attitudes
- Family goals



Both the innovation and the adopter matter

- “Relative advantage” of a new practice depends on
 - The goals of the potential adopters
 - How well the practice delivers those goals
- Examples
 - Profit motivation of farmers and profitability of practice
 - Risk attitudes of farmers and riskiness of practice
 - Environmental attitudes and environmental impacts of practice



Social/cultural factors

- Communication, trust, credibility
 - Social networks
 - Physical proximity
 - Extension



Factors influence different stages

Stage	Social	Relative advantage	Trialability
Awareness	★ ★ ★		
Non-trial evaluation	★ ★ ★	★	★ ★
Trial eval.	★ ★	★ ★	★ ★ ★
Adoption	★	★ ★ ★	★
Revision	★	★ ★ ★	★
Disadoption	★	★ ★ ★	

Each innovation has a unique adoption story

- Zero tillage



Factors influencing no-till adoption

- Higher education
- Participation in extension activities
- Use of paid consultant
- Years since first awareness of nearby adopter
- Occurrence of a very dry year
- Fall in price of glyphosate
- Location (region/state) & average rainfall
- Effectiveness of pre-emergent herbicide (trifluralin)
- Soil-moisture-conservation & seeding timeliness



NOT SIGNIFICANT: Erosion risk; soil conservation benefits; membership of land conservation group

MESSAGE: Adoption might not be for the reason you are promoting the practice

Extension is part of the adoption story

- But just part of the story
- Many see extension and adoption as synonymous
- Logically, extension leads to adoption only if practice is adoptable (high rel. adv.)
- Participatory extension addresses this
- Modelling & economic analysis also help
- Choice of research topics is also critical

Need realistic expectations for extension

- Main contribution is to accelerate adoption slightly (e.g. by 1-2 years for lupins in Australia)



Adoption mindset

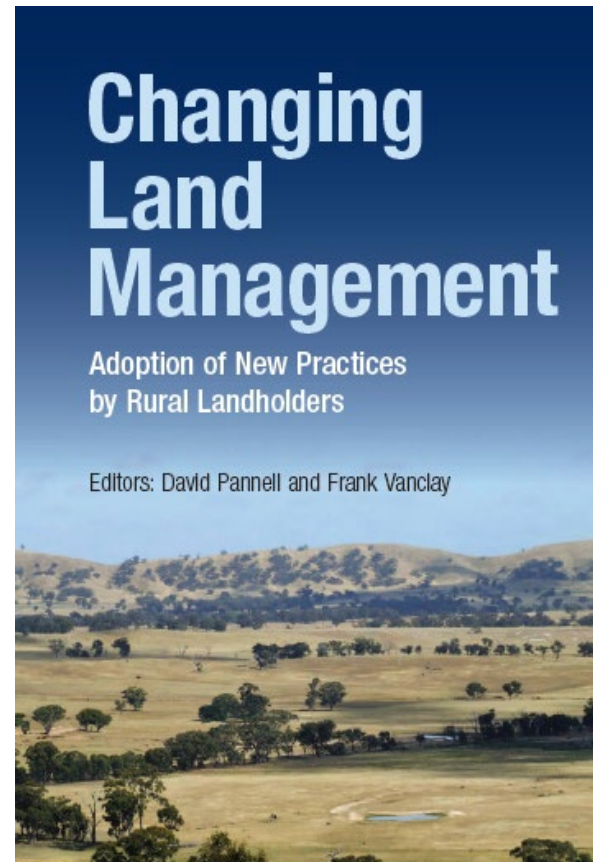
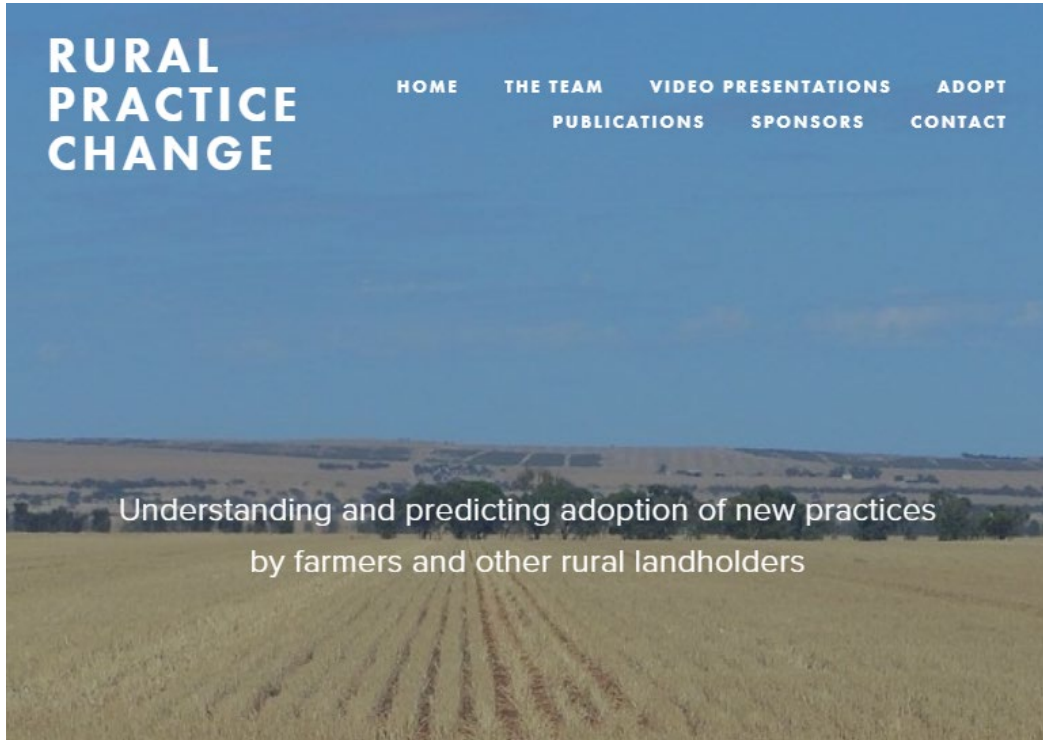
- An “adoption mindset” is critical to effective
 - Research
 - Extension
- Should be asking
 - Is the practice adoptable?
 - By which farmers?
 - How much adoption is likely?
 - What would it take to get adoption?

Conclusion

- Various factors influence behaviour
 - Social factors, relative advantage, trialability
- Each practice has its own adoption story
- Ability to predict adoption can help with targeting of effort and design of programs
- Need realistic expectations
 - Not all practices get adopted
 - Not everyone adopts
 - Adoption takes time
- Adopt an adoption mindset

Additional resources

<http://www.ruralpracticechange.net/>



Special issue of *Applied Economic Perspectives and Policy* (March 2020)

