From adaptation to adoption – a case study of burgundy bean

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Abstract

Burgundy bean is a well-adapted legume on heavy clay soils used in mixed farming systems of the sub-tropics. Evaluation of its early adoption was conducted in semi-structured interviews based on the 5 stages of the 'innovation-decision' process of technology adoption. Producers who had planted burgundy bean soon after its commercial release and State agency extension officers were interviewed. Of the seven themes emerging from the evaluation, the reoccurring issue was agronomic 'knowledge gaps'. Producers identified a range of predominantly production-related issues. They stated that more knowledge of these topics would address their uncertainty in decision making about including burgundy bean in future management strategies. This indicates that producers need an on-going research program that includes applied agronomy for better informed mixed farming management.

Key Words

Adoption, burgundy bean, knowledge gaps, semi-structured interview

Introduction

The tropical legume burgundy bean (*Macroptilium bracteatum*) was commercially released in 2004 for mixed farming systems in the sub-tropics of southern Queensland and northern New South Wales. It is a well adapted, short-term ley legume that provides soil and animal production benefits. Adoption of this new technology by producers across the northern grains region of Australia is still in the early phase.

To ensure burgundy bean research is relevant to producers, and to assist in its rapid and widespread adoption across the northern grains region, researchers can learn from the early adopters. Target areas of research can be identified based on producers' current knowledge and experiences growing burgundy bean. This paper presents feedback from part of an evaluation of burgundy bean production based on interviews with early-adopting producers and State agents in the northern grains region of Australia.

Methods

The burgundy bean study targeted producers who had sown burgundy bean seed in the first season of commercial release. Five producers across the northern grains region and two State agent agronomists with local knowledge of legumes in farming systems were interviewed. Each interview was semi-structured with a set of 12 leading questions based on the 5 stages of the 'innovation-decision' process of technology adoption – knowledge, persuasion, decision, implementation and confirmation (Rogers 2003).

The interviews, conducted by telephone and digitally recorded, provided qualitative data. These data were transcribed, then coded and analysed using the NVivo software package (www.qsr.com). This process allowed the exploration of detail through specific questions and answers to the point where recurring themes or issues were identified.

Results

From the interview data, seven common themes or issues emerged:

1. Producers agreed that burgundy bean has favourable attributes for adoption

2. 'Knowledge gaps' in the adoption of burgundy bean were identified

3. Barriers to the adoption of burgundy bean were identified

4. Prior knowledge of similar legumes was valuable in decision making

5. Decision-making in farming systems management is complex

6. Producers trust change agents

7. Producer networks are valuable for communication

Most of these themes or issues are relevant to the future research direction of burgundy bean. However, only the recurring issue of 'knowledge gaps' – the unknowns in the adoption of the technology – is presented here. All interviewees indicated an on-going desire for more management information about burgundy bean and the need for increased knowledge through understanding its agronomic performance, particularly within different farming/grazing systems of the region 'Knowledge gaps' are summarized into two stages of management, establishment and utilization (Table 1).

Table 1. 'Knowledge gaps' in decision-making, summarized into two stages of management.

Management	'Knowledge gaps'
Establishment	Range of regional adaptation e.g. climate, rainfall, soil type, waterlogging
	Optimal sowing conditions e.g. rate, depth, time, temperature
	Range of sowing conditions tolerated e.g. soil types, rate, depth, time, temperature
Utilization	Nitrogen fixation capability, nitrogen, benefit, level of nitrogen contribution over time
	Effect of grass competition, levels of seedling regeneration, effect of grazing pressure, management of grazing, response to slashing
	Value as a pasture rotation in cropping systems, value as a rotation in grazing system, management of stubble for erosion control
	Effect of weed competition, control of weeds, response to herbicides
	Methods of seed harvesting, seed yields, seed protein levels, development of niche markets

Discussion

This study identified a set of agronomic 'knowledge gaps' reported by producers who sowed burgundy bean soon after its commercial release. Burgundy bean is well adapted to the medium to heavy textured farming soils of southern inland Queensland, confirming the results of Whitbread (2005). Addressing these 'knowledge gaps' in future research may contribute to the more rapid and widespread adoption of burgundy bean in farming systems across the northern grains region.

The producers interviewed adopted burgundy bean without full knowledge of its agronomic requirements. They realized the potential benefit of burgundy bean for increasing production in their farming system. The 'knowledge gaps' they identified were not barriers in their initial adoption decision. However, all

interviewees acknowledged that answers to the ‘knowledge gaps’ would aid them, and the majority of other producers, in making decision about including burgundy bean in their farming/grazing systems in the future.

The results suggest there are two stages of future research required to assist in the adoption of burgundy bean in the northern grains region. Initially, it needs to be determined if these ‘knowledge gaps’ are barriers to adoption by the majority of other producers. If so, agronomic research providing answers to the ‘knowledge gaps’ will support the promotion of burgundy bean as a new technology for incorporating in farming/grazing practices.

Providing answers to the ‘knowledge gaps’ in the burgundy bean establishment phase could expand the rate and areas of adoption of burgundy bean across a wider range of environments, while answers to the ‘knowledge gaps’ in the utilization stage could increase its acceptance and inclusion in a wider range of farming and grazing enterprises.

Conclusion

This interview technique identified significant issues that producers face in adopting burgundy bean as a new technology in their farming or grazing systems. The agronomic ‘knowledge gaps’ reported suggest a future research directions to assist in the rate and extent of burgundy bean adoption in the northern grains region of Australia.

References

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