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Producers have a positive attitude toward improving lamb survival rates but may be influenced by enterprise factors and perceptions of control

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ABSTRACT

The current high rates of lamb mortality pose both economic and social risks for the Australian sheep industry. Research has shown that certain practices, such as the provision of shelter, focus-feeding and selection for temperament, can reduce lamb mortality rates by up to 50% but adoption of these strategies by producers has been low. This study used the Theory of Planned Behaviour as a framework to explore producers' beliefs, attitudes, social norms and perceptions of control about lamb mortality and the strategies designed to improve lamb survival rates. We found that, although producers expressed positive beliefs and attitudes towards improving lamb survival rates, they had mixed beliefs and attitudes towards individual improvement strategies. Social norms and perceptions of control appeared to play an important role in determining behaviour. Enterprise factors, such as goals and the primacy of sheep, appeared influence producers' attitudes towards lamb survival and the strategies designed to improve it.

1. Introduction

Australian sheep producers are under increasing financial pressure. Over the last three decades low levels of productivity growth on sheep farms have, on average, failed to offset a decline in the terms of trade (the ratio of prices received to prices paid; ABARE, 2009; Productivity Commission, 2005). In addition, producers are facing increased costs and market risks associated with growing societal concerns about farm animal welfare. For example, the phasing out of the practice of mulesing to prevent fly-strike in response to pressure from People for the Ethical Treatment of Animals (PETA) and other animal welfare groups has been estimated to cost the industry an additional $1.50 to $2.50 per sheep (Bell and Sackett, 2005). Consequently, increased productivity and improvements in animal welfare are critical for the continued viability and sustainability of the Australian sheep industry.

A significant productivity and welfare challenge currently facing the Australian sheep industry is the high rate of lamb mortality. It has been estimated that between 15 and 35% of lambs die within the first seven days after birth (Alexander, 1984), an estimated loss of 8.4 to 19.6 million lambs each year (estimated from Mellor and Stafford, 2004, based on a national flock size of 70 million ewes). Losses on individual properties, however, may be up to 70% (Alexander, 1984). The cost of productivity losses due to lamb mortality has been estimated to be between AU$100.8 million and AU$960.4 million each year (estimated from Young, 2005).

In addition to economic losses caused by high lamb mortality rates, societal concerns about the welfare of sheep could put the sheep industry at an increased risk of activism, which may affect profitability. Animal suffering and distress have been cited as inherent in the major causes of lamb mortality (i.e. hypothermia and starvation; Dwyer, 2008; Mellor and Stafford, 2004). Therefore, the relatively high rates of lamb mortality in Australia may put the sheep industry at an increased risk of activism, as has been seen in the case of mulesing (Sneddon and Rollin, 2010).

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In an attempt to reduce lamb mortality rates, Australian agricultural research organisations have invested in research aimed at improving lamb survival. Management strategies that have emerged from the results of this research include:

1. The provision of shelter to lambing ewes (Alexander and Lynch, 1976; Alexander et al., 1980; Egan et al., 1972; Lynch et al., 1980);
2. Shearing prior to lambing to increase shelter-seeking behaviour in ewes (Nowak and Poindron, 2006);
3. Focused feeding of lupins to pregnant ewes (Nottle et al., 1998); and
4. Selecting ewes for calm temperament (Bickell et al., 2010; Murphy et al., 1998)

In addition to extensive research aimed at developing strategies to improve lamb survival, research organisations have developed and delivered a range of programs to extend these management strategies to farmers (e.g., Prime Time or Making More from Merinos, EDGE Network programs and Lifetime Wool). However, although knowledge of these extension activities is wide-spread in the farming community, only 17% of producers have actually participated in the workshops and training sessions (Logan, 2005) and practice change as a result of participation is not guaranteed (Barnett and Sneddon, 2006; Logan, 2005). Reflecting this, there has been no appreciable decrease in lamb mortality rates (as estimated from marking rates, or the number of lambs marked per number of ewes joined) in recent years (Barnett and Sneddon, 2006). Further, Alexander (1984) argues that there has been no appreciable decrease in lamb mortality rates for the last century. Therefore, the consistently high rates of lamb mortality in the Australian sheep industry suggest that available lamb survival strategies are not being widely adopted by farmers with high rates of lamb mortality on their farms, despite both economic and market risks.

The reasons for poor levels of adoption of lamb survival strategies at the individual farm level are not well understood. However, the disciplines of social psychology and marketing may provide a framework for examining this issue. Research in these disciplines has shown that beliefs and attitudes are key determinants of behaviour (Ajzen and Fishbein, 1980; Davis et al., 2002; Sheppard et al., 1988). Social referents, such as family members and peers, and perceptions of control over external factors (e.g., health condition and family situation) have also been shown to influence intentions and behaviour (Davis et al., 2002). Little is known about the beliefs, attitudes, social norms and perceptions of control of Australian sheep producers towards lamb mortality and the strategies designed to improve survival rates. Therefore, an exploratory study of these attitudes, social norms, perceptions of control, and the beliefs behind them, was warranted. The specific aims of the study were to investigate producers' beliefs and attitudes about lamb mortality and lamb survival strategies, in addition to the social norms and control factors surrounding these.

2. Methods

The Theory of Planned Behaviour (referred to in this paper as the TPB; Ajzen, 1991) was used as the theoretical framework for this study, based on its previous successful use in an agricultural context (Artikov et al., 2006; Bergevoet et al., 2004). The TPB is an extension of the Theory of Reasoned Action (referred to in this paper as the TRA; Ajzen and Fishbein, 1980) including an attitude-intention-behaviour approach to behaviour prediction. That is, an individual has a set of beliefs about a new behaviour and their evaluation of these beliefs results in attitudes, either favourable or unfavourable, towards the behaviour (Ajzen and Fishbein, 1977). These attitudes lead to the formation of an intention to perform (or not perform) the behaviour, and the intention leads, in turn, to the performance of the behaviour in question (Ajzen and Fishbein, 1980). In addition to attitudes, the TPB includes subjective norms and perceived behavioural control (referred to in this paper as PBC) as antecedents to intentions (Ajzen, 1991; Fig. 1). Subjective norms refer to the product of the individual's perceptions about the expectations of important referents and his/her motivation to comply with these perceived expectations (Ajzen, 1991). PBC is the perceived degree of control the individual feels he/she has over the performance of the behaviour in question (Ajzen, 1991). The inclusion of PBC allows the TPB to more accurately predict the performance of behaviour, which may not be completely under the volitional control of the individual (Ajzen, 1991). For instance, external factors, such as climatic conditions or limited financial resources, may constrain individuals' performance of the target behaviour. Prior research supports the role of external factors, such as individual and organisational characteristics, in influencing beliefs, attitudes, social norms and perceptions of control (Lee et al., 2006; Moores et al., 2009). While these factors are outside the TPB model, depicted in Fig. 1, they are expected to influence intentions and behaviour through perceptions of the constraints that make the behaviour easy or more difficult (PBC).

The TRA and TPB have been applied in a range of studies in the agricultural context, including attitudes towards policy reform, natural resource management and conservation practices (Artikov et al., 2006; Beedell and Rehman, 1999, 2000; Gorton et al., 2008; Hu et al., 2006; Wilson, 1996). In the livestock industry, the TRA has been used to investigate the adoption of techniques to detect oestrus in dairy cows (Garforth et al., 2006; Rehman et al., 2003, 2007) and other dairy farming technologies (Flett et al., 2004). The TPB has also been used to examine the entrepreneurial behaviour of dairy farmers (Bergevoet et al., 2004). A modified version

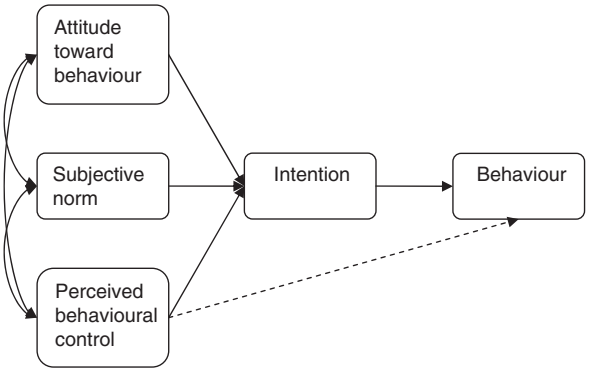

Fig. 1. The Theory of Planned Behaviour (Ajzen, 1991).