Producers dealing with problem pasture species that cause seed contamination and production losses in lamb production systems

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Introduction

Previous research has shown that the seed shed by some prevalent pasture species during spring and early summer in the Central West slopes of NSW, have a substantial negative effect on lamb health and production (Campbell *et al.* 1972). The problem is particularly severe in young sheep and results in production losses on-farm from reduced live weight gain, wool contamination and carcass contamination reducing returns to the producer (Little *et al.* 1993). Animal health and welfare issues that also cause major concerns include abscess formation from seed penetration, flystrike and reduced mobility which impacts upon feed and water intake. Within the supply chain processors experience reduced efficiency due to the trimming required for heavily seed contaminated carcasses.

In 2008, a group of producers came together with the aim of forming effective networks where information could be distributed and discussed on relevant sheep industry issues (titled the Central West Sheep Producers group). With the supervision of private and government researchers, the group aimed to discover effective ways of managing problematic pasture species in their district. The group identified two stages that would be used to investigate the problem. This paper reports the outcomes from the first stage of experimental work and introduces the proposed methodology for the second stage.

Stage 1: Minimising the impact through the reduction of wool length

The first stage of the trial investigates the effectiveness of reduced wool length in managing the grass seed problem, as earlier work has displayed the benefits of shearing to reduce wool length prior to the main period of grass seed pickup in late spring and summer (Campbell *et al.* 1972; Warr and Thompson 1976). Wool removal methods were compared by investigating the biological effectiveness of the Bioclip™ method of wool harvesting to conventional shearing and not shearing, in reducing the impact of grass seed contamination on wool and meat production in weaners.

Method

On a commercial property near Yeoval, Central NSW in 2008, 168 Dohne x Merino weaner lambs of mixed sex were randomly allocated to three treatment groups: unshorn (US), conventionally shorn (CS) and Bioclip™ harvested wool (BC). All lambs were crutched prior to treatment on day zero (5 November 2007). Bioclip™ nets were removed and wool harvested from treatments CS and BC on day 30. Post treatment, lambs were moved into a naturalised pasture paddock visually estimated to have contained approximately 35% barley grass (*Hordeum spp.*) at 30 cm height and in early senescence; 5% corkscrew (spear grass; *Austrostipa spp.*) and 30% crows foot (*Erodium spp.*) both at 40 cm height and flowering; 15% silver grass (*Vulpia spp.*) at 15 cm height and in early senescence. The remaining 15% comprised of subclover (*T. subterraneum*), annual ryegrass (*Lolium rigidum*), bare ground and other species.

Lambs remained set stocked until day 154. After this they were grazed on lucerne pasture and, for one week prior to slaughter (day 185), offered hay supplements. Fasted lamb liveweight (at days 0 and 176) and fat score (day 30 and 176) were recorded. The effects of treatments on carcass and skin attributes measured at slaughter

are shown in Table 1. Seed measurements were made on the skins and carcasses in four regions and converted to a score. Scores given were 0 (no seeds), 1 (light, 1 to 5 seeds), 2 (moderate, 6 to 10 seeds) and 3 (heavy >11 seeds) per region.

Results and Discussion

BC lambs had significantly lower skin contamination scores than CS which in turn was less contaminated than US lambs. BC and CS lamb carcases did not differ significantly, though they were less contaminated than US lambs. There were significant differences between all treatments for the skin value, with highest returns from US skins and least for BC (Table 1). This was due to the greater staple length of the US skins and the processing system into which the skins were sold, where fellmongering is a processing option. Most lamb skins sold don't have this option and the US skins would usually carry a price penalty.

Carcass weight and GR (fat depth) of the BC lambs was significantly higher than US lambs, although not significantly higher than that of CS lambs. These results are consistent with findings of Campbell *et al.* (1972) and Warr and Thompson (1976) in that reducing wool length reduces seed contamination, thus boosting lamb production.

Stage 2: Determining pasture benchmarks and economic thresholds for proactive management

Stage 2 work during 2009/2010 aims to collate both field data on the levels of problem seed species contamination of pastures in the Cumnock/Yeoval district, and do co-operator trials to determine benchmarks and thresholds for the pro-active management of problematic species. Using co-operator trials a combination of strategic (preparing seed-safe pastures) and tactical methods (e.g. Bioclip or shearing) will be tested in order to determine pasture composition benchmarks and economic thresholds. The proposed methodology uses repeated measurements of both pasture composition, quality and quantity, and livestock performance from each treatment group (Bioclip, conventionally shorn and unshorn groups) to compare actual in-paddock performance against expected modelled performance using GrassGro (Freer *et al.* 1997).

The information from this modelling will be used to determine economic thresholds for the control and management of seed problem species in pastures. These activities will be run under commercial conditions with multiple on-farm replicates over the seed risk period.

Conclusions

Stage 1 of this producer initiated research identified the biophysical benefits and costs of using wool length reduction strategies to minimise the impact of problematic pasture species causing seed contamination and production losses in lamb production systems.

The second stage of this work aims to provide indicative benchmarks and economic thresholds for the implementation of both pasture and livestock strategies that minimise the impact of problem species. Such research work is unique and is required to address what is a complex grazing systems issue. An additional focus of these activities is on changing the management of this problem from reactive (e.g. shearing lambs during the risk period) to proactive (preparing seed safe pastures or pre-contamination treatment of livestock). It is hoped that these

Table 1. Effect of grass seeds on weaner sheep production under three shearing treatments.Values followed by the same letter within columns are not significantly different (P > 0.05)

Treatment	Skin score (0 to 3)	Skin value ($)	Carcass score (0 to 3)	GR Fat depth (mm)	Trimmed cold carcass weight (kg)
US	1.95a	16.83a	0.96a	5.1a	17.5a
CS	1.58b	13.43b	0.60b	6.0ab	17.8ab
BC	1.35c	9.94c	0.66b	6.5b	18.7b

trials will also increase producer participation and skills.

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