A survey of farmer practice on the establishment, duration and production of pastures in the mixed farming zone of southern New South Wales

Abstract

This paper reports the results from a survey conducted in the mixed farming zone of southern New South Wales to determine the method and success of pasture establishment, farmer perceptions on pasture production, timing and methods for ending the pasture phase, as well as livestock production and feed base sources throughout the year. The survey was conducted at 7 farmer forums organised by various farming systems groups and district agronomists. A total of 114 responses were received. Averaged over the whole region, 48% of growers established pastures by under-sowing in greater than 75% of occasions while 32% of growers never used the under-sowing technique. Cover-crops used for under-sowing were primarily wheat (56%) and barley (30%). Pasture mixes primarily included lucerne (72%) with phalaris the second most common perennial (33%). In an average rainfall year, 60% of farmers rated their pastures as excellent or satisfactory, while 62% of farmers rated their pastures as satisfactory or poor over the ten drought years from 2000-2009. During average years, 70% of farmers had a pasture phase for 4-6 years but during the drought years, only 47% of pasture phases ran for 4-6 years while 30% of pasture rotations were 4 years or less. Poor persistence was ranked by 75% of producers as one of the top three reasons for ending the pasture phase. The average stocking rates were 6 DSE/ha and 11 DSE/ha based on total farm area and total pasture area respectively. Feed for adult stock over a calendar year was primarily pasture based (57%) with stubble as a significant contributor (18%). In contrast, feed for young stock was 65% pasture based and only 7% reliance on stubble, but 14% on grazing crops.

Key Words

Mixed farming system, cover cropping, grazing, livestock.

Introduction

Pastures in the cropping zone have played an essential role in nitrogen budgets for crops, meat and wool production and diversification of farm enterprise. Typically, mixed farms in southern NSW operate a phase farming system with 4-6 years of pasture in rotation with 4-6 years of cropping (Kirkegaard et al. 2011). Surprisingly, there is little quantitative information to describe what a mixed farm looks like, what influences the decision making process, or how and when farming operations are conducted. A previous study conducted by Li et al. (2010) reported that on average, 52% of the land on mixed farms in southern NSW was under cropping, 29% was in perennial pastures and 19% in annual pastures. The current survey described here sought to determine: (i) how and what pastures were established, (ii) how farmers perceive the productivity of their pastures, (iii) what critical factors initiated the change from pasture to crop, (iv) what was the stocking rate of these pastures and (v) what was the major source of feed used on farm.

Methods

The survey targeted a range of mixed farms across southern NSW with rainfall ranging from 400-750 mm. The survey was conducted at 7 farmer forums organised by various farming systems groups and district agronomists. A total of 114 responses were received. Averaged over the whole region, 48% of growers established pastures by under-sowing in greater than 75% of occasions while 32% of growers never used the under-sowing technique. Cover-crops used for under-sowing were primarily wheat (56%) and barley (30%). Pasture mixes primarily included lucerne (72%) with phalaris the second most common perennial (33%). In an average rainfall year, 60% of farmers rated their pastures as excellent or satisfactory, while 62% of farmers rated their pastures as satisfactory or poor over the ten drought years from 2000-2009. During average years, 70% of farmers had a pasture phase for 4-6 years but during the drought years, only 47% of pasture phases ran for 4-6 years while 30% of pasture rotations were 4 years or less. Poor persistence was ranked by 75% of producers as one of the top three reasons for ending the pasture phase. The average stocking rates were 6 DSE/ha and 11 DSE/ha based on total farm area and total pasture area respectively. Feed for adult stock over a calendar year was primarily pasture based (57%) with stubble as a significant contributor (18%). In contrast, feed for young stock was 65% pasture based and only 7% reliance on stubble, but 14% on grazing crops.
Pasture legumes

Potential of Desmanthus spp. in northern New South Wales

Companion legume species maximise productivity of chicory (Cichorium intybus)

Success of perennial pasture establishment at different sowing times and under a cover crop in the mixed farming zone

Summer sowing: a new alternative technique to introduce annual pasture legumes into mixed farming systems

Seed rain of Microlaena stipoides

Novel Cocksfoots for SE Australia & #8211; Establishment and production

A survey of land use and management, North-West Slopes of New South Wales

The germination, passage and viability of Desmanthus virgatus (L.) Willenow seed through sheep and its implication for dispersal in tropical rangelands

Low-input, high-quality legume hays for north Queensland.

Evaluating new phalaris populations for lower rainfall margins in SE Australia

The advantages and disadvantages of pasture cropping in Western Australia

The search for sustainable stocking rates on Chinese desert steppe

Improving mineral availability for grazing livestock in Australian pasture systems by using plantain and chicory

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Results

Pasture establishment

Some 48% of growers used under-sowing as their main method of pasture establishment (i.e. >75% of the time), while 31% of growers reported that they never used this approach. Seventy-six percent of growers sow pasture in the middle or end of sowing operations. Only 9% sowed pasture early in the sowing operation with 14% sowing in spring. Under-sowing was believed to be a successful means of establishing a pasture greater than 60% of the time in an average rainfall year by 85% of growers, but only 34% of growers reported that this technique was successful during the 2000 to 2009 years of drought. The perception of success rate changed depending on conditions (Figure 1). In an average year, most farmers determine under-sowing to be satisfactory if the success rate was above 80%. Under-sowing was deemed as satisfactory if the success rate was greater than 50% success rate during drought. The wide range of responses demonstrated the diversity of views on what constituted a satisfactory pasture establishment.

Figure 1. Farmer perception of whether under-sowing establishment is satisfactory or not and how it is related to their perceived success rate of under-sowing. Box plots for all data response with boxes to 25-75% of data, median line within the box, whiskers out to 5 and 95% percentiles and stars marking outliers.

Pasture mixes

Lucerne was the primary pasture species with 72% of respondents using it in their pasture mix while phalaris was used in 33% of pasture mixes. Chicory, perennial ryegrass and cocksfoot were used 17, 12 and 7% in pasture mixes, respectively. Forty eight percent listed “clover” as a component of their pasture mix, but did not specify species. Subterranean clover was used by 40% of respondents, but the reported usage of other annual legumes was at very low levels.

Pasture production and persistence

In an average rainfall year, 60% of farmers rated their pastures as excellent or satisfactory, while 62% of farmers rated their pastures as satisfactory or poor over the drought years of 2000 to 2009. On average, 70% of farmers retained a pasture phase for 4-6 years. Drier conditions during 2000 to 2009 changed that to 47%, with 30% of farmers having a pasture phase of less than 4 years. Poor persistence was ranked by 75% of producers as one of the top three reasons for ending the pasture phase. Poor pasture establishment (69%) and annual grass weeds (67%) were rated as the other main reasons for ending the pasture phase. Twenty six percent of producers...
To under-sow or not? A decision support tool to determine the most profitable method of pasture establishment.

Nutritive value of silage from perennial ryegrass, plantain and lucerne pastures in south west Victoria.

Crop yield, pasture yield, and environmental impact of pasture cropping with sub-tropical perennials.

Identifying lucerne growers' usage and needs through a survey for breeding new generation lucerne varieties.

Opportunities for grazing crop/pasture intercrops.

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not identify the species or cultivars of clovers that were sown and often used the generic term "clover". A very low number of farmers used alternative annual legume species other than subterranean clover, with arrowleaf clover being the highest at 7%. The common use of the generic term "clover" could contribute to an underestimation of the use of species other than subterranean clover but anecdotal evidence would indicate most meant subterranean clover. Presumably alternative annual legume species are yet to clearly demonstrate their benefits to the mixed farming system.

Livestock enterprises predominantly utilised pastures with stubbles as an essential feed source over the summer period as expected. The use of grazing crops has become widespread and were mainly utilised in the winter period during periods of low pasture growth. Hay and silage continue fill the autumn feed gap.

**Conclusion**

Within the mixed farming zone of southern NSW, pastures continue to be an important component although it appears that establishing pastures has a lower priority than cropping operations. Farmers were generally satisfied with pasture production, but primarily moved back into the cropping phase due to poor persistence presumably manifesting itself in low productivity. There is little benchmarking of pastures undertaken in the mixed farming zone and it is possible that farmer perception may not match reality. Lucerne continues to dominate pasture mixes and it appears that alternative annual legume species have not become widely adopted. Pasture was the predominant feed source for livestock however stubble, grazing crops and hay and silage were essential to complete the year round feed budget.

**References**


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