

Producer perceptions of feedbase limitations to livestock production and requirements for amelioration

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Abstract

This study found considerable limitation of current feedbase resources to attain livestock production goals of producers. Total feed production and feed quality were top ranking factors limiting livestock production. Information and training on pasture establishment and pasture management ranked as most important in achieving livestock production targets with a strong preference for regional trials, field days and training to facilitate adoption. Producer ability to match feedbase resources to livestock needs was poor. We suggest training emphasis should be placed here to illicit immediate improvement in livestock production.

Keywords

Adoption, survey.

Introduction

Considerable investment has been made over time in research to increase livestock production, frequently with a focus on increasing genetic merit of animals (e.g. Johnston and Graser 2009) along with significant research investment in developing new pasture and other forage species to increase feedbase production (e.g. Smith 2013). Extension of research findings has tended to focus on either the animal or feedbase disciplines with a lack of integration of livestock and feedbase research outcomes limiting significant quantifiable shifts in productivity and profitability of feedbase-supported livestock enterprises. Current poor returns from cropping enterprises coupled with buoyant returns from livestock and wool has seen resurgence in interest in livestock systems. However, the previous 25 years of cropping expansion through the mixed farming zone coupled with poor returns from livestock enterprises relative to crop in this region (or in totality in the permanent pasture zone) resulted in a decline in area dedicated to high performance feedbase (i.e. improved pastures) or a decline in quality of remaining pasture areas due to reduction in allocation of inputs (e.g. fertiliser) to these areas (Henzell 2007). This has resulted in reduced ability to support livestock production systems. Given the renewed interest in livestock and the potentially significant investment being made by producers to expand or re-enter livestock enterprises, it is critical to assess the potential of the feedbase to support livestock production and to assess the areas where producers require support to achieve production targets. This paper reports findings of a survey involving more than 285 producers in central and southern NSW to assess current feedbase ability to support their desired livestock production enterprises quantify producer skill set in matching livestock needs to feedbase resources and identify key areas where producers require assistance to enhance feedbase management to meet production goals.

Methods

Nine producer workshops were held in February 2017 in the Central Tablelands (CT) (Bathurst), Central West (CW) (Eugowra, Dunedoo, Tooraweenah, Forbes, Condobolin, Trangie) and South West Slopes (SWS) (West Wyalong and Temora) of NSW. Participants at the workshops were asked to complete a survey on their farming system. Each question was asked in a way that enabled producers to respond along a marked continuum, that is, responses were not categorised. The questions reported related to:

- i. The ability of their current feedbase to enable sale and/or maintenance of livestock in the condition score desired (Response range 0 = feedbase always limiting; 100 = feedbase never limiting)
- ii. The ability of the producer to match feedbase resources (those they currently use) as well as other potential resources to livestock needs. For each feedbase resource producers were asked to indicate response in the range 0% = poor knowledge to 100% = excellent knowledge
- iii. Rate the relative importance of a given list of factors that may potentially limit livestock production.

- iv. From a list provided, indicate which factors they as an individual, most require assistance with to better manage their feedbase and livestock systems.
- v. Rate the relative importance of a given list of factors in influencing the individual producer's decision to adopt new feedbase technologies.

For questions iii)-v) producers were asked to indicate response in the range 0%= not important to 100 = extremely important; for questions ii)-iv) producers were invited to add 'other' factors and indicate their relative importance. Producers provided information on property area and average annual rainfall. In total, 287 producers attended the workshops (often multiple attendees from the same landholding. Only one survey per landholding was submitted. Completed surveys (n=175) were submitted.

Results and Discussion

Average annual rainfall was highest amongst participants in the CT and lowest for those from the SWS group (Table 1). Freehold property area was smallest on the CT with the average for the other two regions the same. Leasing of additional land was more common in the SWS region and areas leased, larger. In total, participants responding to this survey were responsible for management of more than 270 000 ha.

Table 1. Average annual rainfall (mm), land area managed (freehold and lease (ha)), landholders leasing property (%) and total land area (ha) managed by survey participants in the Central Tableland, Central West and South-West Slopes regions of NSW. Range in values is shown in parentheses.

	Central Tablelands	Central West	South-West Slopes
Average annual rainfall (mm)	730 (550-950)	571 (400-850)	444 (375-600)
Average freehold (ha)	330 (10-1400)	1734 (80-24 000)	1732 (14-6333)
Producers leasing additional land (%)	10	14	29
Average lease area (ha)	472	436	802
Survey participants	50	104	21
Total land area managed by survey participants (ha)	18 901	186 994	41 425

When producers were asked to indicate which factors and the extent to which they limited livestock production, the top ranking response averaged across regions was total feed production (80.9%), followed by feed quality (75.9%) with the reported limitation greatest on the CT (Table 2). The perceived impediment imposed by feed quality on the CT is interesting given the softer growing environment, but it may be due to reduced prevalence of pasture species requiring higher soil fertility for optimum growth as reported in the CT region as compared to other regions including the CW and SWS (Hackney et al. 2017). Pasture persistence was the third ranked issue averaged across all regions (75.8%) and was perceived as more important in the SWS region presumably due to harsher growing conditions as a result of lower rainfall compared to other regions. Interestingly, the SWS also reported increased importance of animal health as limiting livestock production (Table 2). Soil nutrient deficiency and soil acidity were recognised as limiting productivity at a similar level across all regions though these ranked 6th and 8th out of issues presented to producers and this may indicate a lack of awareness of the limitation such deficiencies have on feedbase and therefore livestock production across the region. Hackney et al. (2017) reported soil acidity as being limiting to pasture production in more than 75% of paddocks containing annual *Trifolium* spp. with P and S deficiency in up to 60% and 95% of paddocks respectively within these survey regions. Water availability had the least perceived impact on production on the CT where rainfall was highest. Paddock size was cited as a greater issue in managing livestock production in the SWS compared to other regions presumably due to difficulty in managing utilisation. There was no difference between regions in the importance of access to advice in affecting livestock production (ranked 6th) averaged across all regions (Table 2).

Self-rated knowledge of matching feedbase resources to livestock needs did not exceed 60% for any feedbase resource (Figure 1). Considerable differences were found between regions with CT producers generally rating their level of knowledge as less than counterparts in other regions. This may be reflective of a higher proportion of part-time farmers and desirability of rural holdings in this region for lifestyle pursuits in combination with primary production. The highest level of knowledge recorded was 58.8% for permanent pasture by CW producers while CW and SWS producers reported an average of 57% for dual purpose crops.

In terms of supplement feedbase resources, producers were most confident in matching hay to livestock needs while SWS producers had higher level of competence in matching cereal grains (55.3%) and pulses (48.2%) to livestock needs compared to their counterparts in other regions. South west Slopes reported higher level of competence in matching of silage to livestock needs (34.2%). However, competence in matching of silage to livestock needs rated lowest of all feedbase resources averaged across regions (25.6%).

Table 2. The importance of a range of feedbase and livestock factors in limiting productivity of livestock enterprises as rated by producers in the Central Tablelands, Central West and South West Slopes regions of NSW. (0 = never limiting, 100 = always limiting)

	Central Tablelands	Central West	South West Slopes
Total Feed	88.0	76.8	77.8
Feedgaps	76.3	72.7	69.8
Feed quality	80.3	74.1	73.4
Pasture persistence	74.9	71.3	81.1
Soil acidity	63.8	63.6	65.1
Soil nutrient deficiency	64.1	70.4	66.9
Paddock size	49.1	50.8	59.4
Livestock Water	54.9	66.1	63.3
Livestock health	66.1	66.7	75.2
Access to advice	66.8	67.7	66.6

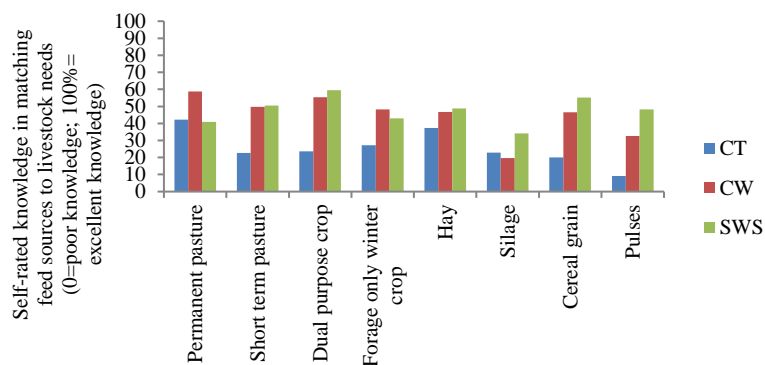


Figure 1. Self-rated knowledge in matching feedbase resources to livestock needs by producers in the Central Tableland, Central West and South-West Slopes regions of NSW. (0=poor knowledge, 100=excellent knowledge).

Averaged across regions, pasture species selection (81.9%), pasture establishment (78.6%) and pasture management (77.7%) were issues producers most required assistance with in order to better manage their feedbase and livestock systems (Figure 2). The next cluster of factors was soil test interpretation (66.1%), grazing management (65.7%) and matching feedbase resources to livestock needs (65.1%). All of these factors were considered of greater importance by CT producers. Animal health advice (63.4%), access to advisors (63.7%), access to training (63.3%) were the next highest rating cluster with CT producers scoring these as more important than producers in other regions. Averaged across regions, marketing (49.6%) and crop management (49.1%) were considered least important. Lower interest in cropping management is not surprising in the CW and SWS regions given the prevalence of cropping in these areas and its expansion over the last 25 years. However, CT producers rated crop management lowest of all factors (37.8%) which is rather surprising given this region identified feedgaps as the third most important factor limiting livestock production and strategic use of crops in this region can be a useful management tool in alleviating feedgaps.

Field days, regional trials and advice from agronomists/consultants were the factors producers considered most important in their decision to adopt new technologies in all regions (Table 3). However, notation on more than half of producer surveys prefaced use of agronomist/consultant advice on the basis of reputation and/or independence of the advisory individual rather than application of this rating to the general advisory sector. Training days/programs also scored highly in all regions (average 75.8%). Written management material also scored highly averaged across all regions (68.7%). Considerable disparity between regions was found in terms of importance of information from funding body updates, use of farmer case studies, publicity information and on-farm commercial scale sowings with CT producers generally valuing these as a less important mechanism in initiating adoption than producers in the SWS region. Video and social media scored more than 20% lower than any other factor (averaged across regions) as a factor used to initiate

adoption of new technology. South West Slopes producers were more likely to utilise these factors as an adoption initiating mechanism than producers in other regions.

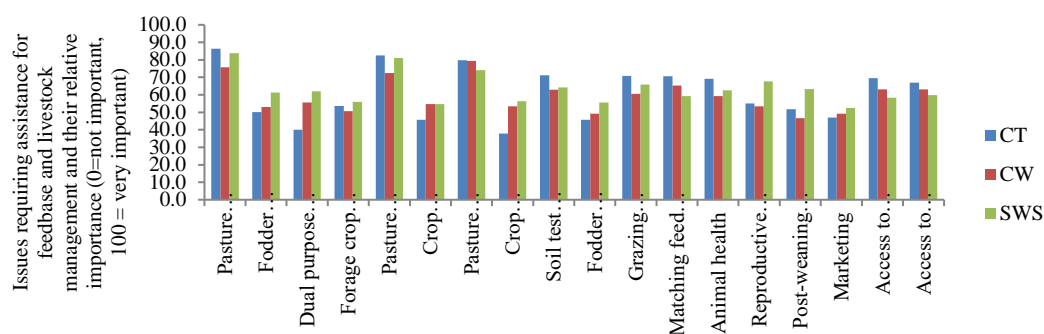


Figure 2. Rating of issues where producers require assistance to better manage feedbase and livestock systems as determined by producer survey in the Central Tablelands, Central West and South-West Slopes regions of NSW.

Table 3. Rating by producers in the Central Tablelands, Central West and South-West Slopes regions of NSW of the importance of a range of factors in decisions to adopt new technologies.

	Central Tablelands	Central West	South West Slopes
Regional trials	81.6	74.9	77.2
Field days	82.8	75.2	77.4
Training days/programs	76.6	74.0	76.8
Funding body updates	55.3	66.7	73.8
Farmer case studies	54.2	66.5	72.2
On farm commercial scale trials	45.4	58.4	77.4
Written management material	70.5	66.5	69.1
Publicity information (Beyond bale, Feedback etc.)	54.6	59.3	67.9
Advice consultants/agronomist	74.8	78.2	78.5
Video	32.8	36.4	48.7
Social media	24.7	35.4	47.6

Conclusion

The current feedbase used by producers for livestock production is limiting their ability to deliver to market or maintain retained livestock in the condition score required 50% of the time. This finding indicates a pressing need to assess feedbase resources and their utilisation particularly with renewed interest and investment in livestock enterprises. Failure to do so has considerable implications for financial well-being of producers through inability to produce high quality livestock for domestic and international markets. Further, inappropriate matching of feedbase resources to livestock needs can result in decline land stewardship with greater exposure of the resource base to degradation and significant implications for livestock welfare. Producers are seeking advice to better manage their feedbase-driven livestock production systems with a strong preference for regional trials and face-to-face training to facilitate adoption of new technologies. More superficial information mediums such as social media, while perhaps useful in raising awareness of new technologies, were not rated highly as a mechanism to trigger adoption by producers in this survey.

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