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Agribusiness Sheep Updates - 2004 part 3

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Can Merino Ewes be Teased to Synchronise Oestrus for a Summer/Autumn Mating?

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ABSTRACT

There are critical times during the reproductive cycle when focus feeding will enhance the lambing performances of ewes (1; 2). For example, feeding corn for a brief but specific stage of pregnancy has been shown to increase colostrum production (2). To benefit from such opportunities a farmer must know with some accuracy the stage of pregnancy in a ewe (1; 2). Using teaser males to initiate and thus synchronise oestrus prior to joining is a successful, low cost way to do this (3). This is useful to farmers who join prior to the summer solstice, when daylight hours are getting longer (long days). Ewes joined after this date are likely to have spontaneously commenced cycling in response to the daylight hours getting shorter (short days) (3). Once anoestrus has ceased ewes do not respond to the introduction of males. However, little research has been done on the use of the male effect on sheep during short days. This research found that by teasing Merino ewes in December, to establish synchrony, and continuing to tease them, maintained a level of synchrony until February.

To prevent the occurrence of short cycles a single injection of 20 mg of progesterone (4) was given to half of the ewes in each treatment group. The effect of the progesterone was not significant in the teased treatment groups. In the control group however it appears that a degree synchrony has occurred among the ewes that were not treated with progesterone. There is no straightforward explanation for this occurrence, but it is a curious result that is worthy of further investigation.

AIMS

Farmers who join during long days are able to use the male effect to induce oestrus in seasonally anoestrus ewes. When short days begin ewes will commence cycling in response to the changing photoperiod. Farmers who join during short days are therefore not able to use the male effect. The opportunity for focus feeding is then lost.

The research reported here investigated whether ewes that were teased during long days to synchronise oestrus, would maintain synchrony over a number of cycles. This would provide late joiners with a low cost way to synchronise their ewe flock and provide opportunities for focus feeding.

METHOD

Eight wethers were used as teasers. All wethers were injected with 2 ml of Ropel Liquid Testosterone (Jurox Pty Ltd) on days -14, -7, 0, 14, 31 and 49. Day 0 was the day teasers were introduced to ewe groups 2 and 3.

Three hundred Merino ewes were allocated by age and weight to three groups of 100. Half of the ewes in each group were given 20 mg of Progesterone (Jurox Pty Ltd). Group 1 (control) was not teased. Group 2 was teased in mid December (day 0) and the teasers removed on day 14. These two groups were then put in separate paddocks that were isolated from male sheep. Group 3 was teased in mid December (Day 0) and teasers were left with them until February. The teasers used with these ewes were changed on Day 14 and 31 to ensure that ewes did not become habituated to one group of wethers (4).

On day 48 the three groups of ewes were put together to monitor the ewes for indications of the occurrence of oestrus. All teasers were harnessed with marking crayons and put with the ewes. The crayon marks were then recorded each Monday Wednesday and Friday from day 52 to day 68 and the incidence of newly marked ewes recorded.

RESULTS

Table 1 shows the cumulative percentage of ewes that were marked at each observation period during the oestrous cycle. Analysis of this table shows an interaction between the progesterone and the teased

groups (using ordinal regression, p = 0.02). However, this would seem to be due to the results of the Group 1 (-P) treatment. If this treatment is excluded, the interaction becomes not significant (p = 0.15). By Day 7 the difference between the two control treatments is 22%, indicating that they are significantly different (p = 0.02). By excluding Group 1 (-P) only the main effect of teasing is significant (p = 0.012). At Day 7, the average for Group 3 is significantly higher than the other treatment groups. This indicates a level of synchrony has been established in December and maintained until February.

Table 5: Cumulative percentage of ewes showing oestrus over a full oestrous cycle.

Teased	Treatment Progesterone (+/-)	Day 3	Day 7	Day 9	Day 11	Day 14	Day 16	Day 18
GROUP1	(+P) n=52	13	31	44	54	65	75	81
CONTROL	(-P)n=49	31	53	63	73	82	90	92
GROUP 2	(+P) n=48	4	27	31	50	69	77	88
TEASE 1	(-P) n=51	14	35	53	61	69	76	78
GROUP 3	(+P) n=50	22	54	64	74	80	84	86
TEASE 3	(-P) n=50	12	48	54	62	76	86	86

The average 5% Least Significant Difference between Treatment percentages is 16%.
The average 5% Least Significant Difference for the Teasing groups is 12%.

CONCLUSION

The results show that teasing Merino ewes prior to the commencement of short days and then continuing to tease will maintain a degree of synchrony of oestrus over three oestrous cycles. When teased during long days, Merino ewes have demonstrated a response of between 40 – 100% (4). Maintaining a level of synchrony of greater than 50% in the first week, after three cycles, is a promising result. The reliability of the method needs to be tested by further trials and the efficiency refined. A cost-benefit analysis needs to be undertaken to determine whether the technique is viable on farm, or under what conditions it would be. Consideration needs to be given to the level of synchrony required, the level of productivity gains needed, the cost of inputs and the price received for the product.

It would appear that the Control (-P) treatment group has somehow experienced a degree of synchrony. The reasons for this result are not immediately apparent and would seem to worthy of further investigation.

KEY WORDS

Teasing, Synchrony, Long days, Short days.

ACKNOWLEDGMENTS

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Paper reviewed by: Dr James Skerritt.

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Damara Sheep: Now Looking Domestic

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ABSTRACT

The majority of Damara sheep produced in Australia are exported through live trade/shipping; however the potential to supply Damara meat products to the domestic market is untapped. In 2003, the Wheatbelt Damara Grower Group (WDGG) began to explore their potential to access a domestic meat market. This analysis uses a value-chain model to identify the level of value-adding occurring amongst growers of the WDGG. Results indicate only 4% of value-adding to Damaras takes place off-farm. This suggests there is large potential for further value-adding within the meat sector in Australia.

AIMS

To determine the current level of value-adding to Damara sheep amongst producers of the WDGG in order to identify opportunities in Australia for further value-adding.

METHOD

A census survey was distributed amongst growers of the WDGG group to collect information on Damara numbers and time of sale for each property. Data from the survey was collated and results were used in the Value-chain model. The Value-chain model was derived from the WA Sheep Industry model (Islam, 1997), and is used to calculate the level of value and profits generated by each sector within the supply chain. The WDGG was used as a case study to gauge the level of value-adding occurring in the Damara industry within Western Australia.

RESULTS

On-farm value-adding

Value-adding is the process of changing or transforming a product from its original state to a more valuable state. Many raw commodities have intrinsic value in their original state. For example, field corn grown, harvested, and stored on a farm and then fed to livestock on that farm has value. In fact, the value of corn is added by feeding it to an animal, which transforms the corn into animal protein or meat (Coltrain *et al*, 2000). Figure 1 illustrates that of all value-adding that occurs amongst producers of the WDGG, only 4% occurs off-farm, with the remaining 96% occurring on-farm. The reason such a high percentage of value-adding occurs on-farm is that almost all Damaras produced by the WDGG are sold live to overseas markets. Consideration has been given to alternative markets such as chilled or domestic meat markets and development is slow due to the ability to supply a consistent product regularly. In this instance, the value-chain for Damara sheep is short, and any opportunity for creating additional wealth within the Australian economy is lost.

Off-farm value-adding

The live export sector accounts for 17% of the value-adding that occurs off-farm, with the remaining 83% of off-farm value-adding occurring in the sectors: abattoir; retail; other meat processing (OMP); and tannery (Figure 1). The sheep meat value-chain may extend through each of these sectors, for example;

Farm ⟶ Abattoir ⟶ Wholesale butcher ⟶ Retail butcher Consumer

creating additional wealth within Australia. This occurs through the generation of jobs which results in extra income and profits circulating through the economy.

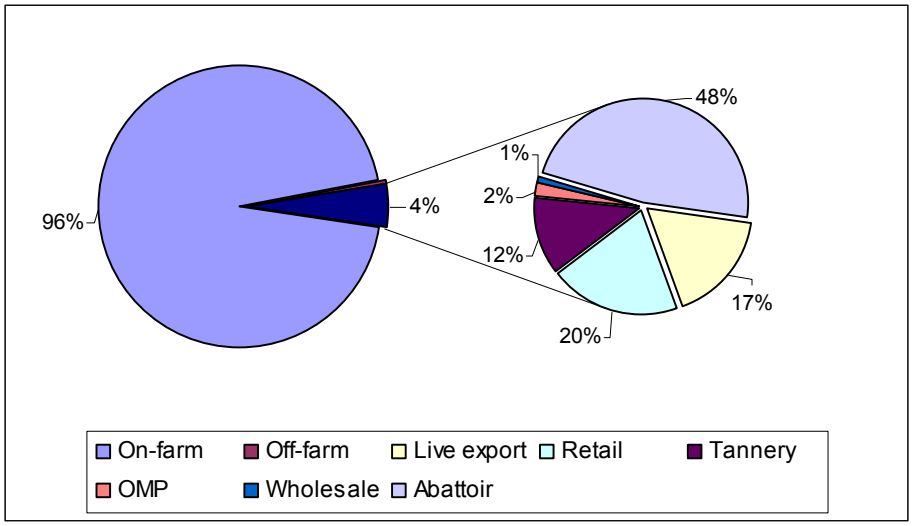

Figure 1. Distribution of total value-adding for the Damara breed (on farm vs off farm) and breakdown of the off-farm value-adding sectors for growers of the WDGG.

The proportion of on-farm value-adding occurring within the WDGG (96%) is significantly higher than results of Islam (1997), who found that the on-farm sector contributed 35% to the value-adding. This suggests there is large potential for further value-adding of Damara's to occur off-farm.

If we consider the two examples where the Damara is 96% on-farm and the sheep meat industry is 35% on-farm value-adding; in both examples the value-adding is worth $50 in total on-farm. The potential to value-add to a Damara is very small, only another $2, which is the remaining 4% for a total value-adding of $52. The potential to value-add within the general sheep meat industry is much greater at another $92.85, which is the remaining 65% for a total value-adding of $142.85 due to more value-adding occurring along the value-chain and within Western Australia.

CONCLUSION

The current level of on-farm value-adding to Damara sheep amongst producers of the WDGG is 96%. These results differ from an analysis by Islam (1997) who found that the farm sector contributed 35% to the value-adding of the sheep meat industry. This suggesting that there is a large potential for further value-adding to occur within Australia. It is recommended that in pursuit of a domestic meat market that greater levels of meat science analysis are undertaken on the Damara to assist in market development of this sheep breed.

KEY WORDS

Value-chain, value-adding, Damara

ACKNOWLEDGMENTS

Paper reviewed by: Emma Kopke

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Production and Water Use of Lucerne and French Serradella Under Three Sowing Rates

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ABSTRACT

Sowing lucerne at 2 to 8 kg seed/ha made no practical difference to dry matter production and water use. Similar results were obtained when French serradella was sown at 4 to16 kg pod/ha. Lucerne used more water and produced less dry matter than French serradella. Lucerne densities imposed at higher sowing rates were excessive initially but they became similar to the lowest rate at the end of the pasture phase. This is important for producers because they can achieve the same results in production and water use of lucerne with less seed, which means lower establishment costs.

AIMS

Lucerne is the only option available at a commercial level to increase water use of pasture/crop rotations in recharge areas and minimise the risk of soil salinisation. One of the barriers to adoption of lucerne is high costs of establishment, the seed representing nearly 30%. This study evaluated the effect of sowing rate on persistence, production and water use of lucerne. Lowering sowing rate could be a good alternative to reducing establishment costs as long as the benefits of having lucerne in the system are maintained. French serradella was used to compare production and water use of a deep-rooted annual with lucerne.

METHOD

The experiment was designed in completely randomised blocks with four replicates. The size of each experimental plot was 12.2 m (the width of the farmer's seeder) x 50 m. Lucerne cv Sceptre was sown at 2, 4 and 8 kg seed/ha and French serradella cv Cadiz at 4, 8 and 16 kg pod/ha on 13 July 2001 in Meckering. Mean annual rainfall on this site is 325 mm. The soil was a duplex of fine to medium texture on the top 1-m layer. Subsoil (10 - 20 cm) pH ($CaCl_2$) was 4.4, which is below the required for lucerne (Latta *et al*. 2003), but the rest of the profile was above 4.9. Plant density and dry matter were sampled using six - 0.25 m^2 quadrats per plot. Samples were processed individually per quadrat. Stored soil water was determined to a depth of 3 m using a neutron moisture meter. Data were collected during three years and analyses of variance were used to compare treatments.

RESULTS

Dry matter production

Lucerne established and persisted throughout two seasons with below-average rainfall. Under these conditions, sowing rate made no difference ($P > 0.05$) to dry matter production during the pasture phase (Figure 1).

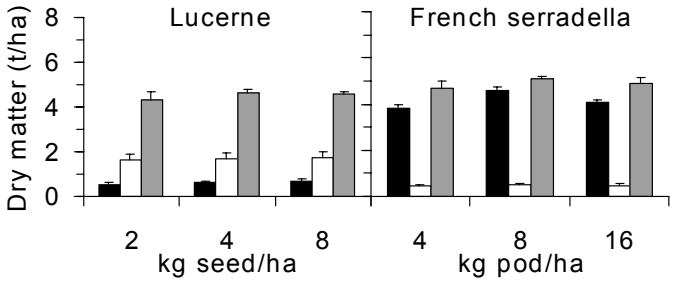

Figure 1. Dry matter production of lucerne and French serradella under three sowing ratesfrom July to June in 2001-02 (■), 2002-03 (□), 2003-04 (▩) in Meckering, WA.

For French serradella however, dry matter production sown at 8 kg pod/ha was significantly higher than at 4 or 16 ($P < 0.05$), but only in the year of establishment.

Water use

Lucerne used more water than French serradella during the pasture phase (Figure 2). However, water use patterns between sowing rates were practically the same within species. French serradella dried the soil profile more rapidly than lucerne only in the first year of the pasture phase. The deficit of water created by serradella in the spring 2001 was maintained throughout the summer and autumn 2002 because of the lack of rainfall. Once rainfall occurred in summer 2002-03, the soil profile under serradella and lucerne was filled, but lucerne continued to utilise summer rainfall and to dry the soil profile. This did not occur under serradella because the annual had already senesced.

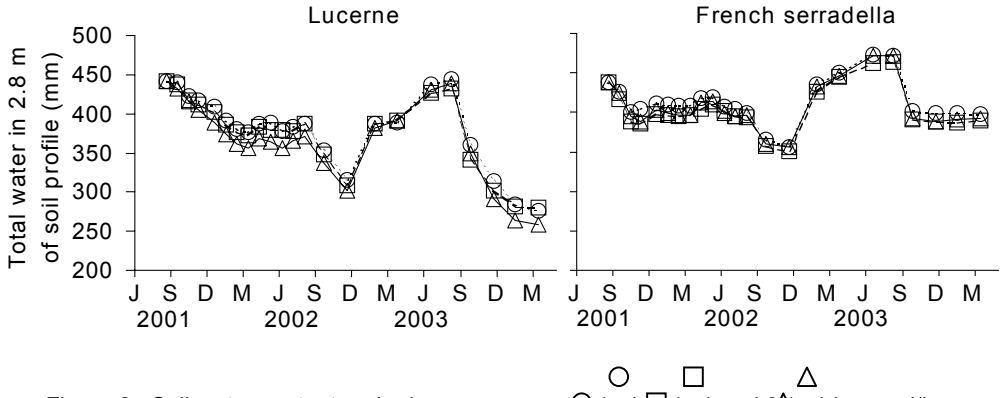

Figure 2. Soil water content under lucerne sown at ○ ( ), □ ( ) and 8 △) kg seed/ha and under French serradella sown at 4 ( ), 8 ( ) and 16 ( ) kg pod/ha in

CONCLUSION

The results demonstrated that lucerne uses very similar amounts of water when sown at low or at high rates. Although sowing rates produced significantly different initial plant densities, the final densities were similar in all treatments. This means that it is possible to reduce the costs of establishment by using less seed and still obtain the benefits that the perennial offers to managing recharge. Lowering sowing rate is a feasible alternative providing producers follow best practices for establishment and management of the pasture. The results also showed that lucerne uses more water than the deep-rooted annual pasture French serradella. If rainfall occurs during summer and autumn, then lucerne has the ability to use out-of season water, produce dry matter, minimise the chances of recharge and provide options for grazing or hay production.

KEY WORDS

Lucerne, French serradella, sowing rate, water use

ACKNOWLEDGMENTS

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Paper reviewed by: Jeisane Accioly

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E-SHEEP - Individual Animal Management is here

Sandy Turton & Martin Atwell, Department of Agriculture, Western Australia, Narrogin

ABSTRACT

Sheep have been traditionally managed on a whole flock basis, not allowing producers to realise the full potential of each animal. Individual Animal Management (IAM), through the use of electronic tag readers, portable computers and animal database software, potentially holds the key to long term profitability and precision sheep-meat production.

In the Narrogin District, along with six Q-lamb producers, nearly 3000 lambs have been tagged with electronic RFID ear tags. Sites have also been established at Esperance and in NSW and Victoria. The tagged lambs have been followed from weaning through to slaughter and the quality of the carcase they produce will be assessed and related to their growth rates.

The E-Sheep project is testing the hypothesis that growth rate will be a significant predictor of the performance of an animal, so that the most appropriate market for an animal can be targeted.

AIMS

The E-Sheep project has three primary aims. Firstly, in cooperation with our collaborators we will be looking at ways of using IAM to gain the maximum benefit for producers by finding the optimal time to slaughter an individual lamb or a group of similar performing lambs.

Secondly, to trial the use electronic technology in real life situations in order to provide some baseline data and feedback on throughput, failure rates and potential labour savings.

Thirdly, to assess the major hurdles to adoption of this technology, with particular interest in how farmer's attitudes to the technology change, as they become more familiar with it.

METHOD

Background

The sheep industry has failed to achieve annual productivity gains, unlike all other livestock industries. A key factor limiting these gains is the mentality of treating sheep as a flock. Individual animal management is seen as a step towards achieving greater gains by managing individuals, or groups of similar performing animals, to their potential.

The Sheep CRC funds the E-sheep project in conjunction with the Western Australian Department of Agriculture and other collaborating organisations interstate.

Trial design

Randomly selected lambs were tagged with electronic (RFID) tags at weaning on each property. The lambs are weighed on a monthly basis whilst on pasture or stubble and fortnightly in the feedlot. Weighing was undertaken using either an automatic weighing and drafting unit (ie. a Racewell® Super Sheep Handler) or an Allflex® stick reader connected to the collaborating producers existing weighing system.

When the lambs reached their target weights for Q-lamb, generally 45kg, they were sent to slaughter at Hillside Meats, Narrogin. Due to the cost of the tags (approximately $2.50) the tags have been salvaged for recycling. Carcase weight, fat depth and condition score are recorded.

Producer attitudes

The collaborating producers were surveyed at the start of the project, to gather information on their current practices, production levels and profitability.

A record was made of their current use of individual animal management, perceived benefits of using RFID and perceived opportunities.

Changes in attitudes will be monitored over the life of the project.

DISCUSSION

There are a number of other papers or poster presentaions that provide detail on the technology and results from this project. (See 'Using radio frequency technology on-farm' by Atwell & Turton; The role of radio frequency identification (RFID) technology in prime lamb production - a case study' by McFarland & Archer; 'RFID technology - Esperance experiences' by Brown).

Bodyweight is the major determinant of when a lamb is ready for entering the feedlot or slaughter. None of the collaborators had a system that could identify individual lambs. The time on the feedlot for individual lambs was, in most cases, unknown. Monitoring of individuals has shown large variations in performance (e.g. time in a feedlot varied from 10 to 100 days).

The major issues raised by the producers with regard to RFID technology have included cost, equipment reliability, data management and implementation. The project is currently addressing these issues.

The E-sheep project is also investigating the use of RFID monitoring systems in abattoirs. This will potentially allow individual animals to be followed from farm to the supermarket. A pilot system in Hillside Meats, Narrogin is currently being investigated.

CONCLUSION

Data collected is still being analysed, but with the use of electronic RFID technology, producers can easily benchmark their stock's performance and identify areas for improvement. The technology has given the producers an opportunity to see the large variation in the performance of individual animals.

The project is continuing with the aim of developing a system that will be able to assist producers to make real time management decisions in the yard. The abattoir system will also provide potentially valuable information for producers and processors on product quality and performance.

KEY WORDS
Individual animal management, E-Sheep

ACKNOWLEDGMENTS
J. Skerritt, I. McFarland

Paper reviewed by: Ian McFarland

Using Radio Frequency Identification Technology on Farm

Martin Atwell & Sandy Turton, Department of Agriculture, Western Australia

ABSTRACT

- What works and how well does it work in an on farm situation?
- Is it easy to use? (Do I need to be a Philadelphia lawyer to run an RFID setup?)
- Why Change? (What I am doing now is working well)
- Will it be value for money? (It is expensive, so what can I get out of it to justify the start-up cost?)

These and many other questions are what producers involved in the E-sheep trials have been asking.

AIMS

To investigate the uses of, and attitudes to, radio frequency identification (RFID) technology on farm.

METHOD

The E-sheep project is funded by the Sheep CRC in collaboration with the Western Australian Department of Agriculture and other core organisations interstate. RFID technology has been used on 10 prime lamb properties in Western Australia, New South Wales and Victoria.

The collaborating producers were surveyed at the start of the project, to gather information on their current practices, production levels and profitability. A record was made of their current use of individual animal management, perceived benefits of using RFID and perceived opportunities.

Equipment used

- RFID ear tags - Leader and Allflex full duplex RFID tags. The tags cost about $2.50 each.
- Racewell Super Sheep handler - automatically reads the RFID tag, weighs the lamb and automatically drafts the animal (through a three-way draft). The Racewell uses a Tru-test weighing indicator and load bars, and an Allflex panel reader. A Racewell unit, depending on the configuration, costs about $18,000.
- Allflex stick reader - can be connected to later model weighing indicators (was used with a Tru-test XR3000 and Ruddweigh 600 indicators). The stick readers cost about $1,000 each when we purchased in late 2003. They have since come down to about $700 - $800.

RESULTS

What works and how well does it works in an on farm situation?

RFID tags - The failure rate was low (< 1%) and tag losses were minimal (some losses occurred from over zealous sheep dogs and getting caught in fences). Both brands of tag worked well. Leader tags tended to have a slighter longer read range (up to 15 cm).

Sheep handler - The Racewell unit has worked well achieving a throughput of up to 600 sheep per hour (weighing and drafting three ways). Throughput rate was lower with RFID tagged sheep at 450 per hour. This slower rate is being addressed by re-adjusting the setup on the weighing indicator.

The Racewell has a system that catches sheep with a crush once they break the beam on a set of electronic eyes. The catching facility must be set to a position prior to weighing a mob, so some catching problems were encountered with mobs of mixed sheep (eg. ewes and lambs or woolly and shorn sheep).

Setting up the electronic catching eyes to accommodate different speeds of sheep was also tricky initially. The more we used the handler, the better we got at this.

Allflex stick reader - is a cheaper and effective alternative to the sheep handler. It can be used with most of the later model weighing indicators. The trial site in Victoria has achieved a

throughput of 700 lambs per hour by just using a stick reader, Tru-test weighing crate and two people.

Is it easy to use?

Yes, the equipment we used was, in the main, user friendly. It did take some time to learn the basics of operation and what bugs to be on the look out for. Minor things could and did lead to some major time lost, but most were easily fixed. **Product support from manufacturers and knowledgeable distributors is vital.**

There are a range of tags and RFID equipment available, allowing producers to tailor a system to meet their individual situations. **You do not need a full-on automatic drafting system to get into IAM**.

Why Change?

Using RFID is not a radical change from normal farming practice and will make it easier to identify similar performing animals and potentially target more appropriate markets.

Automatic weighing and drafting saves time and labour. Aside from the set-up time (we had a portable system that took about 20 minutes to set-up), we could weigh and draft (three ways) 450 sheep / hour.

The system made it possible to track growth rates and identified areas that need improvement (eg. lambs in the finishing feedlot for more than 60 days).

Will it be value for money?

Tags are relatively expensive (about $2.50), but the price is coming down and they could be re-cycled several times. However removing tags is an added expense.

There are potential savings in time and labour costs. Actual cost savings are currently being determined on the collaborating properties.

The real value is in the information you can retain on individual animals, which can potentially lead to better production and profits. This project has focussed on the prime lamb enterprise however it goes without saying there would be enormous benefits for the ram breeder using the technology for data recording. For the commercial sheep and wool producer, the benefits of RFID are however less clear.

CONCLUSION

The use of RFID technology in sheep is likely to grow over the coming years as equipment evolves becomes cheaper, and the benefits of individual animal management are demonstrated. There is also the quality assurance issue and increasing requirement for traceability of exported products.

The producers involved in the E-Sheep trials initially had mixed opinions of RFID technology. But all now agree that RFID could be a very useful tool and without it individual animal management would not be considered. Storage and manipulation of the data require further development. Systems that can provide real time management recommendations in the yard are the next step.

If you can use a computer you can use RFID, however, things can, and do go wrong. Most are due to operator error. Making the equipment as user friendly as possible and product support for purchasers is very important.

KEY WORDS

IAM (Individual Animal Management), RFID eartags

Paper reviewed by: Ian McFarland

The Impact of Introducing Lucerne into a Wheat / Sheep Farming System on Wool and Meat Production

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ABSTRACT

An established lucerne pasture represents an excellent alternative for meat and wool production especially in years with out-of-season rainfall.

AIMS

Lucerne or alfalfa (*Medicago sativa* L.) can be sown in recharge areas to increase water use and minimise the rising of the water table. The aim of this study was to investigate the impact of the introduction of lucerne into a traditional grain/sheep farming system on animal production. Little knowledge in this area is a barrier to the adoption of lucerne. We expect the results of this study will impact on the farmers' confidence to make a decision about introducing this change into their farm.

METHOD

The study involved two mobs of 90 merino ewe weaners each. Both groups had identical initial distributions for body weight. One group was allocated to the system with lucerne and the other one to the traditional annual stubbles/pastures system.

The farmer ran the experiment from 27 December 2002 to 28 August 2003. He made decisions on rotational grazing over four paddocks of lucerne and chose not to provide any supplementary feeding to the lucerne mob during the experimental period despite food on offer sometimes dropped below required levels. The reason for this was that he wanted to 'try the system at its hardest'. He ran the other mob, as he would do it traditionally on annual stubbles during summer and autumn, supplementing with grain and hay as required and on annual pastures during winter. Live weight was recorded on a fortnightly basis and wool characteristics at shearing.

RESULTS

During the summer/autumn period, the animals in the system with lucerne gained significantly ($P < 0.01$) more weight than those on annual stubbles/pastures did, even though the second group was supplementary fed with grain and hay. In the same period, more than 90 % of the animals gained between 13-22 kg in the system with lucerne and between 6-15 kg in the traditional system. The animals in the system with lucerne produced meat of similar quality to those in the traditional system ($P > 0.06$). During the winter, animals in the traditional system compensated weight after grazing on annual pastures and the differences in mean live weight between the two systems at the end of the experiment were statistically similar (Table 1) in contrast with those in the summer-autumn period. These results and those on wool production and quality taken from the fleeces are shown in Table 1.

Table 1. Mean meat and wool production per animal under two farming systems: traditional annual stubbles/pastures and lucerne.

	Units	Stubbles/ annuals	Lucerne	F prob.	Change to lucerne
Live wt gain	kg	30	33	n.s.	3
Grease fleece wt	kg	3.3	3.5	0.014	0.20
Wool yield	%	63.1	62.2	n.s.	-0.9
Clean fleece wt	kg	2.1	2.2	n.s.	0.12
Fibre diameter	micron	17.9	18.1	n.s.	0.2
Staple strength	N/Ktex	30.6	31.2	n.s.	0.6

Grease fleece weight was significantly higher in the system including lucerne ($P < 0.014$). Clean fleece weight was also higher on lucerne, but as yield decreased slightly, the difference between the two systems was not significant. Mean fibre diameter and the variation between the maximum and minimum fibre diameter along the wool staple was similar in both systems. The increase in staple strength in the lucerne system was not significant statistically (Table 1).

The system including lucerne was more profitable than the traditional system because it was more productive and did not involve hand feeding.

Table 2. Mean meat and wool production/ha during the experimental period under two farming systems: traditional annual stubbles/pastures, and the same system with lucerne.

	Units	Stubbles/ annuals	Lucerne	Change to lucerne
Stocking rate	animals/ha	6	9	3
Live wt gain	kg	186	297	111
Grease fleece wt	kg	20.5	31.5	11
Clean fleece wt	kg	12.8	19.6	6.8
Fibre diameter	micron	17.9	18.1	0.2
Hand feeding	$	5.17	0.00	-5.17

CONCLUSION

An established lucerne pasture represents an excellent alternative for meat and wool production. In years with out-of-season rainfall, lucerne offers an inexpensive option to fill the summer-autumn feed gap, with potential for an increase in carrying capacity. In winter, sheep production on lucerne and annual pastures is similar. Characteristics for wool processing are similar in animals grazed in a system that includes lucerne compared to the traditional system.

Producer Robert Beard said: “I am pleased to verify that incorporating lucerne into my traditional farming system to manage salinity has a positive impact on sheep production. During summer-autumn having a green pasture like lucerne brings new options for meat production. The improvement in wool production is little, yet, it means a more profitable business”.

KEY WORDS

Lucerne, sheep, meat, wool

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