DUNDAS TALL WHEAT GRASS, OUR NUMBER ONE SALINE AGRONOMY SPECIES FOR THE HIGH RAINFALL ZONE (550 mm +)

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Abstract

The aim of this 7 month pilot study was to evaluate the feed value of tall wheat grass over the growing season under different farm management systems. Our incentive for this study came from producers requesting information relating to the potential feed quality of tall wheat grass during its growing season.
We collected 12 tall wheat grass samples of various heights from 9 properties each month (total of 84 samples), across southwest Victoria from October 2002 until April 2003. Different management practices at each site were also recorded for each sample.
The samples were sorted into pure tall wheat grass, dried at 40 degrees and submitted for feed value testing. Test results included crude protein (% dry matter), metabolisable energy (MJ/kg), digestibility (% digestible dry matter) and neutral detergent fibre.
The results showed that height over time was the critical factor in determining feed quality. The tall wheat grass feed quality results have also been compared to other perennial pasture species (Fescue, Phalaris, and Ryegrass) over the same period. Results indicated that tall wheat grass can be equal to, or better than, other perennial pasture species during the growing season.

Introduction

One of the barriers to adoption of saline agronomy is a common belief that one of the most useful species for these areas, tall wheat grass, has low nutritional value. Successful graziers managing tall wheat grass pastures correctly, as well as trials conducted by the DPI at Hamilton, have proven that this belief is incorrect. Tall wheat grass is an important salt tolerant pasture species that has the potential to reclaim most of the salt effected unproductive areas on farms within Victoria and other states. As well as being an important species for farm managers to turn unproductive saline land into productive areas, tall wheat grass is also a high water-using salt tolerant species that has the potential to help the environment by:

- Lowering local water tables in discharge areas.
- Utilising water from saturated soil profiles
- Form a perennial surface cover on bare saline soils thus reducing soil erosion
- Reducing evaporation from the soil surface and the concentration of salts

There are two varieties of tall wheat grass available; Tyrrell and a newer cultivar called Dundas. Dundas was developed (from Tyrell) by the DPI at Hamilton, to enhance the plant's leafiness, productivity and digestibility.
Tall wheat grass trials conducted by the DPI, Hamilton, over the last few years showed that well managed tall wheat grass pastures have a digestibility of about 78 percent in July increasing to 85 percent by late October dropping back to 73 percent by late November. By January the following year digestibility was back up to 78 percent (Smith *et al* 1994).

Combined with suitable legumes such as Balansa or Strawberry clovers these pastures are able to promote growth in weaner stock.

Method

Questions from producers relating to the feed value of tall wheat grass prompted a pilot feed quality study. We collected and measured the height and recorded the management technique of 84 samples from 9 different locations across southwest Victoria to test feed quality at various times of the year. The sites included newly renovated and old established pastures including both Tyrell and Dundas cultivars. Old established sites that had been mismanaged for years and allowed to go rank (above 1m in height of dry rank feed) were deliberately chosen to see if we could bring them back to productive pastures by grazing or other management. Samples off these old (rank) sites were collected prior to slashing/mulching/burning (tall wheat grass >1m) and after (tall wheat grass < 20 cm).
The samples were collected within the first week of every month starting in September 02 and concluding in April 03. Samples were collected randomly across the sites using hand shears to cut plants down to ground level. These samples were sorted into pure tall wheat grass, dried at 40 degrees C and analysed for quality. Tests included crude protein (% dry matter), metabolisable energy (MJ/kg), digestibility (% digestible dry matter) and neutral detergent fibre. The chosen sites were being managed differently so that a direct comparison could be made between management techniques and quality. By linking management of tall wheat grass to feed quality we hoped to show that keeping these pastures well grazed is critical if good quality feed is desired. Some of the treatments studied included:

- Burning and grazing
- Slashing, burning and Grazing
- Mulching and grazing
- Rotational grazing.

Results and Discussion

The results clearly indicated that by removing the rank grass and allowing new green growth to regenerate a significant improvement in pasture quality (digestibility, crude protein and energy Mj/kg) was achieved. (See table 1).
The data collected was not able to show a direct link between the different management techniques and feed value. However the results strongly indicated that effectively managed tall wheat grass pastures (kept < 20cm) are high quality pastures more than capable of filling the summer /autumn feed gap, whilst most other pastures are dormant or dead. This clearly indicates that tall wheat grass pastures must be kept short and vegetative and how this is achieved is not really important. The study also showed that old rank tall wheat grass pastures could be easily returned to productive pastures just by slashing/ burning or mulching old growth. When effectively managed, tall wheat grass pastures sown with a companion legume are capable of increasing stocking rates from 0.5 DSE/ha to 12 DSE/ha. (Nichols 2002).
Tall wheat grass pastures when kept below 20 cm have an equal or higher feed value (crude protein, digestibility and energy MJ/kg) than Phalaris and Annual ryegrass pastures over the same period. From the average Feedtest results tall wheat grass shows a lower feed value than Tall Fescue and Perennial Ryegrass. It should be remembered that tall wheat grass samples included both poorly and well managed sites. If we looked at the best managed Dundas tall wheat grass sites only the average crude protein and energy (MJ/kg) would

increase to 18.6 and 12 respectively, significantly higher than Perennial Ryegrass and Tall Fescue district average during the same period. (See table 1).

Table 1: Mean feed quality results for Spring 2002.

Species	CP (Protein) %	Digestibility %	EST_ME (Energy MJ/kg)
Tall Fescue	20.0	74.5	11.2
Perennial Ryegrass	21.2	77.3	11.3
Annual Ryegrass	13.2	70.6	10.3
Phalaris	14.3	74.9	11.0
Mixed Pasture	19.3	72.7	10.6
Tall Wheat Grass (< 20cm)	18.9	75.3	11.0
Tall Wheat Grass (>20cm)	15.2	66.4	9.6
Tall Wheat Grass (>1m)	7.6	52.4	7.4

It is interesting note that tall wheat grass reduced in quality over late summer even when kept short and green. However when compared with other perennial species over the same period tall wheat grass was the only green pasture available on farm. In our experience tall wheat grass is the most successful perennial grass species that can be grown in high salty (up to 14 ds/m) unproductive areas on the farm. Tall wheat grass pastures can be used as an alternative pasture type in times of stock health problems on farm. In areas that are renowned for experiencing ryegrass staggers and phalaris toxicity problems in early autumn farmers have been traditionally caught out by not being able to move stock off these pasture types to aid recovery. Tall wheat grass pastures have the potential to address this issue.

Tall wheat grass can become an environmental problem if it is allowed to spread through self-seeding (KTRI 2000). Tall wheat grass should not be sown in areas were it can't be grazed or controlled by other means such as slashing or burning. If grazing is not an option due to a lack of stock numbers then tall wheat grass can be successfully cut for hay or silage. Providing it is cut early enough before it becomes too stalky (< 50cm), good quality hay or silage comparable to other perennial pasture hay should be expected.

A more comprehensive study is planned to develop effective guidelines for the management (fertilizer and grazing) of tall wheat grass pastures.

Conclusion

Tall wheat grass is a hardy perennial grass that can grow in and rehabilitate saline, bare, unproductive areas with a soil salinity level of up to 14 ds/m on farm. Tall wheat grass may be sown in more saline areas but productivity and persistence can be expected to reduce significantly. Managed correctly, tall wheat grass is a high nutrition pasture that grows in summer and is able to fill the summer/autumn feed gap. Tall wheat grass pastures have the potential to impact positively on the environment by lowering water tables and reducing salinity.

For further information contact DPI Hamilton, Victoria on (03) 55 730 701.

References

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