Increasing the value and marketability of feed grains for the grains industry

Summary

Every season, growers face varying degrees of financial loss due to downgraded cereal grain that fails to meet intended market specifications. Opportunities exist for growers to market these grains based on their nutritive characteristics, hence increasing their value and marketability. Nutritive characteristics and variations were assessed across a range of grain samples over three seasons for variety, site, species and season. A dollar value was then assigned to all downgraded grain samples based on their potential value to livestock producers. This method of trading grain offered a financial benefit of between $105.6 to $212.3 million p.a. to Australian growers over the three years of the project.

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Conclusions

The variation between varieties within species and across sites, as well as across seasons, indicates a need for growers to analyse grain for nutritive value prior to marketing as feed grain. As the current cost of such analyses generally ranges from $55 to $65 (excluding GST), it is not an onerous cost to incur for the grower to then gain an additional grain marketing strategy.

Variation exists between and within species for all nutritive characteristics of value to livestock, such that assumptions should not be made for these nutritive characteristics; however, it is clear that some species tend to be higher in nutritive value than others, and that some are more variable than others. Some varieties of each species have the potential to provide value for growers marketing grain on a nutritive value basis, particularly where that grain is likely to be downgraded from its originally intended specifications. For example, 77% of Dunnart oats and 72% of Yallara oats had protein greater than or equal to 12%, while only 37% of Mitika oats had protein at similar levels. Similarly, only 9% of Mace wheat samples had protein levels greater than or equal to 15%, while 45% of Gladius wheat samples had protein at those levels.

The acidosis index has the potential to become an important component of any pricing tool, however further research is required to validate this and at this stage, no further research appears to be planned. The near infrared reflectance (NIR) prediction for 'metabolisable energy (ME) sheep' and 'ME cattle' with whole and rolled grains is also in need of further validation before these calibrations become widely used.

There are substantial price advantages that could potentially be received by grain growers in marketing their grain based on its nutritive characteristics. If the grain value calculator was readily available to growers and producers, and awareness of this new method of valuing grain was raised, then growers and producers stand to make significant advances in production and profit.

Recommendations

- Discuss with Australian Fodder Industry Association (AFIA) and the Quality Evaluation Committee the potential to revisit the consistency or results of grain analyses between laboratories, and to investigate the discrepancies between the AusScan calibrations and the current calibrations being used by the laboratories.
- Investigate the potential to invest in validation of the acidosis index with relevant funding partners such as Meat and Livestock Australia (MLA) and Dairy Australia (DA).
- Liaise with SGS Australia as to the outcomes of this project.

Outcomes

Economic outcomes
The identification of feed grains and specific varieties with improved nutritive values will provide growers with greater flexibility in selecting varieties suited to their market needs. This project will underpin the growth and development of the feed grain market and intensive livestock industries by potentially providing increased grain value for growers and alternative markets for grain. Economic benefits to Australian growers ranged from $105.6 to $212.3 million p.a. over the course of the project.

Environmental outcomes
Improved access to appropriate feed grains of specified nutritive value will enable livestock producers to have increased confidence in removing stock from paddocks in autumn and into containment areas for managed feeding until significant paddock feed becomes available after the break of the season. The improved nutritive value and hence economic value of oats, in particular, will increase crop rotation options for growers.

Social outcomes
Changes in attitude in regard to alternative grain options within existing crop rotations. Increased returns per hectare for downgraded grains, and increased marketing opportunities for growers with the potential to forward contract grain to livestock producers.

Achievements/Benefits
As growing seasons across southern Australia appear increasingly variable in line with a changing climate, the ability to finish livestock to a saleable weight is becoming increasingly challenging without grain supplementation. The demand for feed grains is predicted to increase and therefore livestock managers will need to become more astute in sourcing grain based on the predicted value to livestock productivity rather than purely on a dollar per tonne basis. There is an opportunity for growers to capitalise on this growth area by marketing grain on its nutritive value. The hay industry has successfully adopted a system of marketing hay by nutritive value, and there is an opportunity for the grains industry to follow suit.

The nutritive values of particular importance to livestock producers include crude protein, metabolisable energy and neutral detergent fibre, as well as potentially the acidosis index. Grain can vary significantly in energy and protein concentration between seasons, sites, varieties and species. These values are often high, particularly when grain is downgraded on a traditional grading system by screenings, test weight, retention and protein parameters. This project attempted to quantify and potentially exploit the variation in nutritive value of oats, barley, triticale and wheat to increase returns to growers, and to provide growers with the tools to select appropriate grains for specific livestock markets.

An analysis of samples collected from the National Variety Trial (NVT) sites and the Hart Field Site in South Australia (SA) for the 2010, 2011 and 2012 seasons was conducted to determine their nutritive value and the variation of these values across varieties, sites, seasons and species. Laboratory analyses of grain samples which provided a range of nutritive characteristics were completed by SGS Australia, an accredited laboratory which uses AFIA guidelines, as well as AusScan calibrations developed from the Premium Grains for Livestock Program (PGLP).

Significant variations between varieties, sites, seasons and species were found for all nutritive characteristics, highlighting the importance of testing grain for nutritive value, rather than using industry averages, to enable grain to be sold on this basis. A dollar value was then assigned to all downgraded grain samples based on their potential value to livestock producers. The potential financial benefits to growers in SA and Australia wide were generated. A grain value calculator was developed for online use to enable growers to value their own grain should they decide to use this marketing option. This method of trading grain offered SA growers over the three years of the project a financial benefit of between $18.6 and $55.7 million p.a. which extended to $105.6 and $212.3 million p.a. nationally.

Other research
- Further research on acidosis risk rating via the index would be extremely valuable, as it is likely that there would be considerable preference by livestock producers to be able to purchase grain with a lower risk rating.
- Carefully plan a strategic information campaign directed initially at dairy farmers, the dairy industry and industry advisers, and particularly nutritionists, to create a demand for grains of specific nutritive value at relevant times of the year.
- Liaise with the South Australian Grains Industry Trust (SAGIT) and GRDC to have the Grain Value Calculator operational on-
line at an appropriate time - potentially by the start of the 2014 harvest.

- Plan an information campaign for grain growers as to the potential of this new marketing opportunity.

**Intellectual property summary**

The outcome of this project is intended to be the development of a value-based trading system for coarse feed grains that growers can access on an annual basis to determine the economic and feeding value of their grain. Any intellectual property (IP) generated from this project is assigned to GRDC. Productive Nutrition does not claim IP from this project. The South Australian Research and Development Institute (SARDI) is a project partner and Pamela Zwer (principal oat breeder) has assured that no IP restrictions or claims apply. SAGIT is a co-funder of the project (22%) with GRDC the major funding organisation (78%).