

2004/V01



Producer Research Support

Reducing Dark Cutting in Gippsland

Gippsland Natural



The project

Only graded carcasses can be sold under the Gippsland Natural trademark. All ungraded carcasses are sold as generic product, and where they are very dark (meat colour 5+) they are difficult to sell as they are generally used for manufacturing. This situation is compounded by the fact that in some times of the year there is an industry surplus of dark-cutting carcasses which means that prices are severely depressed. Carcasses may be sold at a loss.

All pricing, to both the producer and the retailer, is based on carcass grading. The producer with ungraded carcasses is disappointed in the returns and the retailer can be put into a situation where there is insufficient graded product to supply retail outlets.

Gippsland Natural aimed to work with producers to reduce the incidence of dark-cutting beef through the supply chain of Gippsland Natural (and other MSA brands processing through Radford's abattoirs) and evaluate the efficacy of Nutrimol as a treatment for stock prior to slaughter.

Objectives

1. Provide Gippsland Natural members (32) with the latest research information on the factors affecting dark-cutting beef and discuss the implications for on-farm management when supplying cattle to Radford's abattoirs in the high risk dark-cutting months of February/April and July/August;
2. Train six members in the technique of drenching the electrolyte product Nutrimol;
3. Train members in estimating pasture feed and the use of FeedTest;
4. Measure the effect of drenching the above product in reducing the incidence of dark cutting beef in late winter 2004 and late summer 2005;
5. Better understand the factors that influence dark-cutting in beef and change on-farm practices to reduce its incidence; and
6. Undertake on-farm trials using Nutrimol as a pre-slaughter dietary supplement to ascertain if it can help reduce the incidence of dark-cutting.

For the past three years Gippsland Natural has been monitoring reasons why carcasses are not grading to MSA specifications. By far the largest factor is high pH.

Comparing the returns for graded carcasses and returns for the ungraded dark-cutting carcasses during the 2003/2004 year showed an average loss per carcass for the dark cutters was \$ 69.77.

Gippsland Natural embarked on this Producer Research Support project to understand factors affecting meat colour and pH.

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Producer Research Support

MLA Producer Research Support offers support funding of up to \$15,000 over three years for groups of producers keen to be active in on-farm research and demonstration trials.

These activities include:

- Producer Initiated Research and Development
- More Beef from Pastures demonstration trials
- Prime Time Wean More Lambs demonstration trials
- Sustainable and productive grazing grants.

Contact Gerald Martin -
Producer Research Support Coordinator.

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What was done

Two producer workshops/forums were organised to:

1. Understand the cost of dark-cutting beef to the beef industry as a whole;
2. Discuss the possible causes of dark-cutting;
3. Discuss ways in which the incidence of dark-cutting can be reduced by implementing changes to on-farm practices; and
4. Hear how farmers who have low incidence of dark-cutting manage their properties and livestock.

Guest speaker Dr Graham Gardner from University of New England has extensively studied dark-cutting in beef.

In conjunction with the Department of Primary Industries in Victoria, producers who had higher instances of dark-cutting or had lower incidences of dark-cutting, as highlighted by the Meat Standards Australia (MSA) grading sheets, and who supplied Gippsland Natural and Castricum's between January and July 2004, were interviewed to ascertain:

- level of nutrition prior to slaughter – where possible, feed tests were taken of pastures/supplements;
- weight gains prior to slaughter;
- climatic conditions post and prior to transport;
- transport – whether there should be a change to the carrier used;
- temperament of stock; and
- water supply/quality.

The results of these case studies were presented to producers at a second workshop/forum in October 2004.

On-farm trials utilizing Nutrimol were organised and a supplement was used six weeks prior to slaughter of cattle.

In June, 50 producers, both members of Gippsland Natural and suppliers to Gippsland Natural were asked for interested producers to take part in two trials - the first between August and October 2004 and the second between January and March 2005.

Seven producers responded. All were contacted to determine the number of head available and the preferred time. One producer did not have sufficient head (20 head). One producer was away on leave. One producer supplied regularly and had very little incidence of dark-cutting. Where it did occur, he was able to identify the reasons. One producer supplied cattle that were outside the specifications of Gippsland Natural (although he is a member of the business).

This left only two possible contenders to supply cattle for the trial, so the trial was abandoned because the sample size would have been too low to obtain statistically valid information.

The relatively high price of cattle for the past eight months may have influenced producer participation. The extended good season and high prices through January, February and March meant that producers held stock for longer because there was available feed in the paddocks, and therefore grew cattle out to heavier weights.

Competition for cattle also meant that producers sold through the saleyards where the stock is prime finished stock.

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What happened?

Depletion of muscle glycogen causes dark-cutting. Dr. Graham Gardner's research concluded that nutrition is one of the major causes of dark-cutting. The introduction of a supplement prior to slaughter may hamper depletion of muscle glycogen.

This factor was highlighted in the case study in which the producer utilized Maxitrans in the water supply 36 to 24 hours prior to transportation to the abattoirs. None of the cattle cut dark but an analysis of the feed and their temperament gave a contrary indication. An estimate of their daily feed intake indicated that they would have gained less than 0.6kg per day prior to slaughter, which is lower than the recommended weight gain for cattle to grade to MSA specifications.

Cattle that had low weight gains in other case studies, although lower than 0.5kg per day, did result in dark-cutters in the consignments.

As a result of these case studies and the data supplied by Dr Graham Gardner, the project team concluded that there is definitely a place for water borne supplements (such as Maxitrans) in the management of cattle pre-slaughter, in times of likely glycogen depletion. Where animals have low glycogen stores due to nutritional factors the introduction of such supplements can help to maintain the level of glycogen so that the additional stress of yarding, transporting and lairage does not deplete the reserves below that at which the carcass will grade to MSA specifications (no more than 5.7pH).

One of the most interesting cases involved cattle with good weight gains (0.8kg per day) and all were quiet. The factor believed to have had the major effect on incidence of dark-cutting was the barley grass in the last paddock in which they grazed. This fact was discussed with Dr Graham Gardner. It was agreed that the high level of nitrate in the barley grass actually prevented the cattle from stock-piling glycogen prior to slaughter, despite the high weight gains. This factor was not previously recognised as contributing to dark-cutting.

It was agreed that cattle should not be grazed on barley grass immediately prior to slaughter. It was also decided that where possible, the species of grasses should remain constant in the six weeks prior to slaughter. Changes in species may affect the level of nitrate intake, which in turn may result in lower glycogen levels at slaughter.



Discussion

As a result of the information that was presented at the workshop 80% of participants in the October workshop indicated that they would change their on-farm management of cattle pre-slaughter

Some of the practices specified were:

- maintain consistent diet – same grass species;
- better planning before selling – maintain same mobs prior to sale;
- nutrition – ensure animals are well fed, gaining at least 0.6kg per day; and
- consistency with both feed and handling.

The objective of setting-up on-farm trials using Nutrimol as a supplement prior to slaughter was not met due to insufficient numbers of cattle being available to participate.

After the results one farm achieved using Maxitrans, many participants commented that this would be worthwhile using in the summer months, as it is easily administered via the stock water and it appears to reduce the incidence of dark-cutting. A cost analysis of the cost to purchase the product versus the prevention of possible loss due to dark-cutting has not been undertaken.

In particular, the effect of barley grass, which was new information to all group participants will be passed onto other beef producers through the involvement with beef producer groups and their networks.

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