

final report

Project code: P.PIP 0570

Prepared by: Désirée Jackson
Désirée Jackson Livestock Management

Date published: 20 May, 2019

PUBLISHED BY
Meat and Livestock Australia Limited
PO Box 1961
NORTH SYDNEY NSW 2059

Evaluation of an adoption model with a vertically integrated company: A case study on a Nutrition EDGE workshop

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government and contributions from the Australian Meat Processor Corporation to support the research and development detailed in this publication.

This publication is published by Meat & Livestock Australia Limited ABN 39 081 678 364 (MLA). Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests. Reproduction in whole or in part of this publication is prohibited without prior written consent of MLA.

Abstract

The purpose of the project was to evaluate the customisation of an EDGE training package to a vertically integrated company and how it could be modified to increase adoption of skills and technology on-property and across all levels of management.

The Nutrition EDGE package is usually delivered to participants who come from a diverse range of backgrounds and levels of knowledge and experience, so there is variation in the level of adoption.

This workshop was condensed from three days into a two-day workshop and delivered on-property to Stanbroke staff, including station managers and head stockmen, but also to head office management.

Participants completed pre-workshop and post-workshop skills audits to establish and measure levels of confidence, knowledge and skills, and management practices in nutrition, to tailor delivery of future workshops, to evaluate the changes three months post-workshop, and to get feedback on what further assistance and follow-up training they required.

The feedback and outcomes for the pre-workshop and post-workshop skills audits have formed the basis for recommendations for more flexible and effective delivery of the EDGE training packages, ongoing training and assistance with practical implementation of nutritional principles including synergies with formalised coaching groups and follow-up consultancy work.

The EDGE package for many participants is the first step in identifying nutritional priorities by increasing their technical understanding of, and practical skills in, ruminant nutrition. This increased understanding provides a platform to seek further advice and assistance in implementing nutritional management changes, and to identify skills that need further development both formally and informally, as well as additional training requirements as they relate to nutrition.

Executive summary

The adoption and application of nutritional principles, skills and strategies by individuals attending the Nutrition EDGE workshops has not been measured since the EDGE Review was completed in 2017.

Previously, a follow-up day was an integral part of the Nutrition EDGE workshop. It was run 3-6 months after the Nutrition EDGE workshop however, approximately only 30-50% of workshop participants attended the follow-up day. There was very little formalised structure in the follow-up workshop and participants were canvassed just prior to the follow-up workshop to find out what topics they wanted covered. Most participants saw this as a refresher and didn't have a clear idea of what they wanted assistance with to improve their nutritional management despite having a sufficient time lag between the workshop and the follow-up for participants to implement some of what they learned.

The purpose of the project was to evaluate the current adoption model and explore potential pathways for facilitating better adoption of the nutritional principles, skills and strategies from the Nutrition EDGE workshop in a vertically integrated company.

The three-day workshop was condensed into two days so some of the module training relating to pasture growth and forage budgeting was omitted because there was insufficient time to deliver the workshop in its entirety so the decision was made to focus more heavily on fundamental nutritional principles.

All station managers and head stockmen who attended the Stanbroke Nutrition EDGE workshop were required to complete a pre-workshop questionnaire, to provide information about their operation, including scale, land types and management. They also identified the specific nutritional problems they wished to solve, production targets and goals they wanted to meet, and any nutritional issues they were experiencing on their properties. This information was reviewed at the start of the workshop to get a clearer understanding of the issues and to increase awareness of the issues by all of the company staff who attended the workshop, including head office management.

A key feature of this Nutrition EDGE workshop was the use of pre-workshop and post-workshop skills audits that each participant had to complete. The pre-workshop skills audit was completed electronically by the workshop participants and returned to the presenter. The pre-workshop skills audit provided the presenter with an indication of:

1. Each of the participants' confidence, skills and knowledge in cattle nutrition;
2. Current nutritional management practices on each of the stations.

The post-workshop skills audit measured changes both quantitatively and qualitatively, three months following the workshop. The audit was deliberately conducted three months after the workshop to allow participants enough time to:

1. Evaluate what they learned in the context of the properties they worked on and their role within the Company;
2. Implement some of what they learned in their role with Stanbroke; and
3. Gauge their retention of knowledge and skills. It also provided them with an opportunity to evaluate the workshop overall and provide valuable feedback on the workshop content, format and delivery.

The post-workshop skills audit more specifically:

1. Measured the change in participants' confidence, skills and knowledge in cattle nutrition;
2. Identified any changes in nutritional management practices on the stations and the degree to which they were adopted;
3. Enabled participants to identify where they wanted additional knowledge, skills and assistance in nutrition;
4. Other areas that the participants wanted more training in that were related to nutrition.

There was no consistent increase in the level of confidence in nutritional knowledge and skills before and after the workshop. This was influenced by the role of the participant within the company. For example, head stockmen appeared to have less confidence overall than station managers.

By contrast, there was a lift in knowledge and skills of all participants, in the majority of nutritional technical aspects covered by the Nutrition EDGE workshop. If the participants were interviewed again in a year's time following on from the workshop, this may be a sufficient enough timeframe for them to increase their confidence as it would have given them more opportunity and time to improve their skills and knowledge, and apply what they learned.

There were distinct differences in what nutritional information was relevant to participants within the company, depending on what their position with the company was. This is because the focus shifts with the responsibilities for that position. For example, the head stockmen are more hands-on with nutritional management, compared to head office managers at the other end of the hierarchy who have to have a more strategic focus on nutritional management as well as being responsible for co-ordinating all of the properties and making the budgetary decisions.

The post-workshop skills audit was effective in determining what participants need more help with and identifying further training requirements. This audit could be utilized at both workshops for the general public, and in-house training for pastoral companies.

The skills audits should be consistent and directly relate to the nutritional concepts and skills delivered in the Nutrition EDGE workshop, to determine the uptake of information from the workshop. The post-workshop skills audit was conducted three months after the workshop. It would be judicious to conduct another post-workshop skills audit one year following the workshop, to look at the long-term nutritional management changes that are made.

The skills audits should preclude the section which asks nutritional knowledge questions because it does not abide by adult learning principles, in providing a safe learning environment. This can be very off-putting to those participants who only want to attend the workshop and not attend any follow-up activities. However, for those who want to make changes to their operation and are committed to identifying their goals and developing a plan for executing the changes, the skills audits to be useful for identifying where further training is required.

Telephone interviews should be utilized in both the pre-workshop and post-workshop skills audits, to be consistent and to better explain questions so that they are answered properly and fully. It also allows the interviewer to draw out the participants to get more comprehensive qualitative information as well as providing the participants with more clarification on questions where required. However, there is a considerable time cost associated with conducting the skills audit by telephone.

The post-workshop skills audit, can be used in place of the MLA evaluations, to save duplicating the evaluations and considerably reduce the amount of time spent by participants in completing M & E questions.

The pre-workshop and post-workshop skills audits would be extremely useful if the Nutrition EDGE workshop is used as a feeder activity, or an integral part of a coaching (or PGS) program. The skills audits don't need to be limited to Nutrition EDGE and could be applied to all formalised training, however, the length of the skills audit should be reduced for shorter workshops. Due to the time commitment in collecting the information, if the information is to be used by MLA or if the skills audits become an obligatory part of the EDGE workshop delivery process, then presenters need to be remunerated for their time spent in gathering the information if it is to be made compulsory.

Coaching groups could be utilised as an effective means of reinforcing what is learned at workshops by having on-property sessions to practice some of the skills or implement technologies which will result in a stronger

commitment to adopting the technologies through the long-term assistance from the coach and support from coaching group peers.

Time should be allocated in identifying goals and strategies at the start of the workshop so that participants can immediately consider what they are learning in the context of their goals and strategies and how the information may be implemented.

Ideally, the traditional three-day workshop could be split into two or three delivery days, with time in between to enable participants to seek help to gain a better understanding of what was learned and explore means of implementing new nutritional technologies. Because of the significant costs associated with time and travel in splitting the workshop into several segments, this may only be achieved if the participants are part of a coaching group run by the presenter, or in the case of pastoral companies, if the presenter is engaged in other work for the company.

Alternatively, the workshop could be split into two 2-day workshops to facilitate greater uptake of knowledge and knowledge and skills, and to incorporate more practical sessions, resulting in a higher level of adoption of nutritional management practices.

There was benefit in having senior management staff attend the Nutrition EDGE workshop along with the station management and head stockmen because it provided them with an opportunity to gain more understanding about the challenges on the stations as well as a greater appreciation and understanding of the complexities of the nutritional management of cattle on the properties and the rationale behind the management and nutritional budgets for the stations. In order to include all levels of management and staff at a common in-house workshop, there have to be clear guidelines for the workshop to ensure that everyone feels safe to ask questions, discuss issues and participate.

The one-day follow-up workshop used to be an integral part of the workshop package and was most successful when it was delivered within six months of the workshop, to maintain momentum. However, there wasn't perceived value by participants, in attending the follow-up, evident by the low attendance rate by workshop participants. However, for those who committed to attending, the feedback was very positive. Provided participants have an opportunity to really identify where they would like to learn more or reinforce what they have learned at the Nutrition EDGE workshop, or have a clear goal for how they want to implement the information, there would be benefit in reinstating the follow-up workshop as a separate stand-alone day. This would enable the presenter to tailor the day to meet the needs of each participant.

The follow-up day would only be successful if a post-workshop skills audit were carried out following the Nutrition EDGE workshop, to identify the areas that needed to be covered at the follow-up day. The follow-up day would be most effective if it were held on-property, enabling participants to practice some of the practical aspects of the workshop.

Table of contents

1	Background	9
2	Project objectives	10
2.1	Purpose and scope	10
2.2	Expected outcomes	10
3	Methodology.....	10
3.1	Pre-workshop preparation for Nutrition EDGE workshop customised for Stanbroke	10
3.1.1	Pre-workshop questionnaire	10
3.1.2	Pre-workshop skills audit	11
3.1.3	Review diet quality reports, photos of pastures, land system information, hay samples and supplement nutrient analyses for properties	11
3.1.4	Workshop preparation of pasture and practical activities	11
3.1.5	On-site at “Warren Vale”	12
3.2	Delivery of the Nutrition EDGE workshop materials	12
3.2.1	Catering for all learning styles.....	13
3.2.2	Expectations	13
3.3	Program monitoring and evaluation	13
3.3.1	Morning review	13
3.3.2	Afternoon review day 1	13
3.3.3	Day 2 final review	13
3.3.4	MLA evaluation	14
3.4	Evaluation of the outcomes of the Nutrition EDGE workshop.....	14
4	Results	15
4.1	Pre-workshop questionnaire and skills audit	15
4.1.1	Pre-workshop questionnaire.....	15
4.1.2	Pre-workshop skills audit.....	15
4.2	Expectations, delivery of workshop, monitoring and evaluation	16
4.2.1	Expectations	16
4.2.2	Delivery	16
4.2.3	Monitoring and evaluation.....	16
4.3	MLA workshop evaluation.....	21
4.4	Post-workshop skills audit.....	25
4.4.1	Your confidence in your skills and knowledge in nutrition	25
4.4.2	Your understanding of fundamental nutritional principles.....	28

4.4.3	Your new nutritional management practices	30
4.4.4	Post-workshop feedback.....	35
5	Discussion	40
5.1	Pre-workshop preparation	40
5.1.1	Pre-workshop questionnaire.....	40
5.1.2	Pre-workshop skills audit.....	41
5.2	Delivery of Nutrition EDGE workshop	41
5.3	Workshop reviews	41
5.3.1	Review of workshop expectations	41
5.3.2	Group reviews.....	41
5.3.2.1	Learning review	41
5.3.2.2	Afternoon and morning reviews Days 1 and 2	42
5.3.2.3	Day 2 final review	42
5.4	MLA Evaluation.....	42
5.4.1	Delivery of modules – content and presentation.....	43
5.4.2	Overall feedback on event.....	43
5.4.3	Feedback on presenter	43
5.4.4	Feedback on information from workshop	43
5.4.5	Extra information required following on from the workshop.....	43
5.4.6	Open questions.....	44
5.5	Evaluation of the outcomes of the Nutrition EDGE workshop.....	44
5.5.1	Post-workshop skills audit.....	44
5.5.2	Post-workshop feedback.....	51
6	Conclusions/recommendations	53
6.2	Recommendations	55
6.2.1	Pre-workshop skills audit.....	55
6.2.2	Expectations in conjunction with nutritional issues.....	55
6.2.3	Learning reviews	55
6.2.4	Group reviews.....	55
6.2.5	Post-workshop skills audit.....	56
6.2.6	Delivery	57
6.2.7	Workshop group dynamics	58
6.2.8	Follow-up activities	58
7	Bibliography	59
8	Acknowledgements	59

9 Appendix.....	60
9.1 Pre-workshop questionnaire	60
9.2 Pre-workshop skills audit	62
9.3 MLA evaluation.....	66
9.4 Post-workshop skills audit.....	69

1 Background

The EDGE training packages have been delivered to the beef industry in northern Australia since 2002, with varying degrees of success in uptake and adoption of the nutritional technical information, skills and strategies learned at the workshop.

The workshops are generally delivered to willing participants and to lesser degree, in-house to pastoral companies who nominate their staff to attend. There is considerable investment by pastoral companies to provide this training so the aim is to explore effective means of ensuring the best retention of knowledge and skills and implementation of what is learned, by station managers and head stockmen.

There are differences in roles and responsibilities on-station between managers and head stockmen, so individuals have a different focus on nutritional management of the cattle in addition to significant variation in level of knowledge and experience in nutrition going into a workshop.

As a normal part of the delivery of the Nutrition EDGE workshop, participants are requested to complete a pre-workshop questionnaire, which aims to get background information on each operation as well as identifying the nutritional issues and goals of each workshop participant, in a very simple way.

The pre-workshop and post-workshop skills audits developed for the Stanbroke Nutrition EDGE workshop established the participants' level of confidence, knowledge and skills in nutrition and management practices. This allows the presenter to tailor the workshop to be relevant to the participants' property, to meet their training requirements, and address their goals.

The Nutrition EDGE workshop is seen as a distinct entity for learning about cattle nutrition but has no formalised component of ongoing activities following the workshop. It is an excellent tool for teaching basic nutritional principles and skills however, equally as important is the need to maintain momentum and assist with implementation of some of the nutritional principles and to consolidate the participants' skills, as the considerable amount of information that participants learn can be quite overwhelming and provides no direction on where to begin with making changes except for those who have a clear idea of the skills and knowledge they require, to solve specific nutritional problems they have identified.

The EDGE packages have recently undergone a significant review process and upgrade of the workshop notes and other workshop materials. Previously, workshops were delivered in their entirety, usually in a block of three days. The new format for delivery following on from the review builds in flexibility which allows presenters to determine with the participants whether to deliver a three day EDGE workshop at once or deliver segments of the workshop over a period of time. While it may be more effective for implementation to deliver the material over a time period, the logistics of co-ordinating a group of people and the travel costs associated with delivering the workshop over a time period can make it both time and cost-prohibitive to the presenter.

Delivery of a limited number of modules over a two-day period and customising the workshop to meet the specific group requirements, enables the presenter to target the group's specific requirements. By specifically tailoring the workshop to a group's needs, particularly pastoral companies which are distinct groups with a common purpose, goals and mode of operation, training can be more targeted and effective, with significant positive outcomes and high adoption levels.

Following on from the workshop, conducting a post-skills audit enabled the presenter to identify on an individual basis what the more specific nutritional issues were on-property and to assist participants with implementing changes in a less formalised way. This also builds on the participants' knowledge and skills base on a practical level and in the context of their position with the company they work for. This will come at an additional cost but result in more effective outcomes and targeted management with a better return on investment on the initial training.

2 Project objectives

2.1 Purpose and scope

The purpose of the project was to evaluate the customised design and delivery of a learning and development program to a vertically integrated livestock group. The provider, assisted by MLA, facilitated the qualitative measurement of uptake of workshop materials specifically through changes implemented as a result of the workshop. The outcome of the project was to measure qualitatively the effectiveness of delivery and uptake of a customised nutrition learning and development package with a vertically integrated company. The results from this project is expected to allow Stanbroke Beef and MLA to design future adoption and delivery initiatives based on the outcomes of case study.

The specific objectives were:

- Design a customised Nutrition EDGE workshop, condensed into two days, to a vertically integrated livestock group
- Delivery of the customised Nutrition EDGE workshop to up to 16 participants, and follow up on their feedback on the content and delivery style
- Qualitative measurement of uptake of workshop concepts and skills specifically through changes implemented as a result of the workshop.
- Disseminate the findings and learnings of delivering customised adoption programs to input into future adoption and delivery models in the future.

The overall objective was to design, deliver and measure the success of the customised adoption package at the conclusion of the workshop.

2.2 Expected outcomes

The outcomes of the project that were measured qualitatively included the effectiveness of delivery and the uptake of a customised nutrition learning and development program with a vertically integrated pastoral company. The learnings of such a pilot customised adoption model was proposed to be used to design future adoption and delivery services. A Stanbroke Beef confidential report was delivered by the provider with assistance provided by Stanbroke Beef. A public final report was also produced that was approved by Stanbroke and MLA for industry release including the learnings from the adoption framework used. The results from this project is expected to enable Stanbroke Beef and the wider industry to future adoption and delivery services.

3 Methodology

3.1 Pre-workshop preparation for Nutrition EDGE workshop customised for Stanbroke

3.1.1 Pre-workshop questionnaire

Stanbroke Agribusiness managers, station managers and head stockmen completed a pre-workshop questionnaire (see Appendix 9.1) which is a normal Nutrition EDGE procedure. This information provides background information on each of the operations, land types, herd dynamics and markets to the presenter. The workshop participants also identify the specific nutritional problems they wished to resolve, production

targets they wanted to achieve, and nutritional issues they are experiencing on their properties. The information from the pre-workshop questionnaire was collated and reviewed with the workshop participants at the start of the workshop, to get further clarification and understanding, and to increase awareness by the whole group of the nutritional issues and challenges on each property, as well as their production targets.

Expectations of each workshop participant was separately, formally recorded to ensure that their individual, specific nutritional issues were met. The nutritional issues identified from the pre-workshop questionnaire and the expectations, were reviewed at the end of the workshop, to ensure that each participants' expected outcomes from attending the workshop were met.

3.1.2 Pre-workshop skills audit

Stanbroke employees attending the Nutrition EDGE workshop were asked to complete a pre-workshop skills audit (see Appendix 9.2), to get an understanding of:

- Their confidence, and skills and knowledge in nutrition
- Their understanding of fundamental nutritional principles
- Their current nutritional management practices
- Their plan and strategies

This provided an insight into the range of skills, knowledge and confidence in cattle nutrition for both delivery of the workshop and head office management.

Participants were asked to write down a goal or target they have in their role with Stanbroke, and the steps they have taken so far. The goal would become a focus for the workshop for that participant, which would provide context around how they could apply what they learned to achieve their goals or targets.

3.1.3 Review diet quality reports, photos of pastures, land system information, hay samples and supplement nutrient analyses for properties

Previous to the workshop, several properties had undertaken diet quality analyses using diet quality, or F.NIRS (Faecal Near Infrared Reflectance Spectroscopy) technology. A number of diet quality reports were reviewed by the group at the workshop to gain better understanding of the information following on from a discussion of the F.NIRS technology and fundamentals of nutrition, animal nutrient requirements and fundamentals of pasture growth, quantity and quality.

Participants brought along samples of hay fed on-property to:

- Evaluate the nutritional value of the hay
- Assess physical characteristics of the hay and how these were related to quality
- Determine which class(es) of stock the hay was appropriate for

Participants brought supplement nutrient analyses to:

- Apply their new knowledge on analysing a lick label to their own specific lick
- Determine whether their lick was balanced with the nutrients delivered from the pasture and the nutrient requirements of their cattle, based on information from their diet quality reports and phosphorus status of the country
- Determine whether the lick was effective in providing their cattle with the required nutrients
- Review any diet quality reports for properties where available, as well as photos of pastures and land system information

3.1.4 Workshop preparation of pasture and practical activities

- Purchase and preparation of workshop consumables

- Order Nutrition EDGE Workshop Notes and Workbooks from printers and collate all printed material into folders
- Prepare all Workshop materials, including:
 - Hand-out materials (eg. exercises, photo standards, business planning cycle)
 - Evaluation forms
 - Additional technical material
 - Hay and feed samples
 - Certificates of Accreditation
- Set up training room day before in preparation for workshop

3.1.5 On-site at “Warren Vale”

- Set up pasture site (forage yield and dry matter [DM]) day before workshop, for forage budgeting exercise.
- Collect native perennial pasture species at different growth phases for pasture quality assessment exercise.
- Organise ruminant digestive system to dissect with the group to demonstrate how pasture and feedstuffs are digested and what the requirements are for optimal rumen function.

3.2 Delivery of the Nutrition EDGE workshop materials

The delivery of the Nutrition EDGE workshop was held at 27-28 February, 2018 at “Warren Vale” south of Normanton. This work was condensed down to a two-day workshop from a standard three-day workshop. There was considerable consultation with head office management to identify the key aspects that needed to be delivered within the two-day timeframe, to give maximum return on investment. Because the workshop was condensed over two days some of the module delivery relating to pasture growth and forage budgeting had to be omitted from the training.

The Nutrition EDGE workshop was delivered using standard protocols as set out by MLA. To tailor the workshop to Stanbroke, pre-workshop questionnaires were completed by all participants to identify nutritional issues and knowledge gaps, as well as goals and strategies for each property.

The aim of the workshop was to deliver nutritional information in both technical and practical sessions, and to monitor the level of understanding and how the information would be applied on-property.

Information was segregated into distinct modules. Within each module there were practical activities, both inside and outdoors, or exercises that needed to be completed using the information just learned.

To increase the relevance and probability of adopting what was learned, participants were encouraged to bring along hay and feed labels that they used on their property, to learn how to evaluate the hay and supplements they were feeding. Group discussion was encouraged where possible, to look at how to address issues where hay or supplements needed to be modified or used differently within the operation. Diet quality reports from Stanbroke properties were used as examples for explaining the F.NIRS diet quality technology and how it can be used as a management tool.

Aspects of delivery, reviews and monitoring and evaluation, to encourage a higher probability of improved knowledge and understanding, and adoption, included:

1. Catering for all learning styles
2. Expectations
3. Group reviews
4. MLA evaluation

3.2.1 Catering for all learning styles

Technologies were delivered via PowerPoint slides, group discussion and practical sessions. Participants had the opportunity to talk about what was delivered in the context of their property. At the end of each module, participants were able to complete a learning review, reflecting on what they learned, how they could apply what they learned and what actions they would take.

Practical sessions were used to reinforce understanding of information. This included: dissection of a digestive system, evaluating hay, forage budgeting and doing pasture quality assessments and plant identification. These sessions were particularly useful to staff who spend a significant proportion of their time in the paddock.

3.2.2 Expectations

At the start of the workshop, participants had the opportunity to have a discussion with each other in pairs to gain an understanding of issues facing other properties and to develop rapport with other staff members so they felt more comfortable in the learning environment, and to encourage them to ask questions and participate more fully in group discussions during the course of the workshop.

Each participant was asked what was the one expectation they had of the Nutrition EDGE workshop for it to be a successful workshop for them. These were recorded and discussed with the group and at the end of the workshop, each of the expectations was reviewed to ensure they were met to a satisfactory standard.

3.3 Program monitoring and evaluation

To reinforce retention of information, reviews were conducted at the various stages throughout the program beginning first up in the morning, then at the end of each day and the again following morning. In addition, as part of the requirement for delivering the EDGE packages, MLA provides each participant with an evaluation at the conclusion of the training.

3.3.1 Morning review

On day 2, participants were split into small groups to discuss and record what stood out for them from the previous day's learnings. They were also asked to identify any points of clarification required, or any additional issues. Each group presented their findings and issues to the rest of the group, which was followed by general discussion.

3.3.2 Afternoon review day 1

At the end of days 1 and 2, a general group review was conducted to ask each participant the following:

- i) What stood out for them?
- ii) What they would implement from what they learned that that day?

3.3.3 Day 2 final review

At the completion of the workshop, each participant was requested to record what changes they would make in their role in nutritional management on their property, including:

- iii) What they would start doing?
- iv) What they would continue doing?
- v) What they would stop doing?

All of the information from the reviews was collated and sent to each participant and to Stanbroke senior management at head office for further action and future reference and planning.

3.3.4 MLA evaluation

As part of the requirement for delivering the EDGE packages, MLA provides each participant with an evaluation form which they must complete (see Appendix 9.3). The evaluation provides feedback to MLA on:

- Content and presentation of each module and value to participant
- Overall feedback on the EDGE workshop
- Feedback on the deliverer including knowledge, delivery and ability to answer questions
- How much the workshop increased knowledge
- Whether action would be taken as a result of the workshop and what type of action would be taken
- What was most valuable about the workshop

3.4 Evaluation of the outcomes of the Nutrition EDGE workshop

The evaluation of the outcomes of the Nutrition EDGE workshop was conducted using the qualitative adoption tool with each of the workshop participants. This involved running the adoption tool, then collecting data for analysis.

Following on from the delivery of the Nutrition EDGE workshop that was held at 27-28 February, 2018 at “Warren Vale” south of Normanton, a post-workshop skills audit (see Appendix 9.3) was conducted three months after the workshop through individual phone interviews with each workshop participant. The timing of the post-workshop skills audit allowed participants sufficient time to think about their nutritional goals and targets and steps they had taken to achieve the goal.

The format for the post-workshop skills audit was identical to that for the pre-workshop skills audit, with questions formulated around what participants learned and changes in their confidence in nutritional management, changes in management practices, and new plans, goals and strategies. They were also asked qualitative questions regarding feedback on the workshop and what further assistance and future training they wanted.

The post-workshop skills audit was deliberately conducted three months following the workshop to allow participants sufficient time: a) to evaluate what they learned in the context of the properties they worked on and their role within the Company; b) to implement some of what they learned in their role with Stanbroke; and c) to gauge their retention of knowledge and skills. It also provided them with an opportunity to evaluate the workshop overall and provide valuable feedback on the workshop content and format.

The workshop participants consisted of staff from head office in managerial roles, station managers and head stockmen. Head office staff weren't required to complete the skills audit because the majority of the questions related to nutritional management of the cattle and properties. However, some head office staff did complete qualitative questions in relation to plans, goals and strategies, and qualitative feedback on the workshop.

The post-workshop skills audit results were collated and compared with the pre-workshop skills audit results, to gauge the changes in confidence, knowledge and skills, and changes in management. The post-workshop skills audit also captured additional feedback on the workshop content and how it related to the participants' role with the company, what they needed more assistance with and what topics they would like covered if a one-day workshop were held.

4 Results

4.1 Pre-workshop questionnaire and skills audit

4.1.1 Pre-workshop questionnaire

Participants completed a pre-workshop questionnaire, which included identifying their nutritional issues and goals. A summary of the workshop participants' nutritional issues and goals and strategies identified in the pre-workshop questionnaire included:

- Stud weaners to hit 400kg at 22 months
- See what this course brings first
- Turn off weaners earlier but at our current weights
- What additional nutritional requirements will females require the longer calves are left on their mothers before weaning
- What are the seasonal nutritional impacts on the breeding herd and how can this be measured?
- I would like to briefly understand what nutritional deficiencies impact the Gulf cattle herd in general and how and when to correct these deficiencies, suspect prior to joining and calving for the timing
- Lift in calving percentages
- Increase calving rates in breeders by 10%
- How do I calculate the needs of the cattle and match what they are getting out of existing grass and what to supplement them that is cost-effective?
- Keeping breeders greater than CS 3 at calving
- Feeding program for drought conditions
- Increase heifer weights for joining
- Lift weight of weaners
- Higher calving percentages
- How to read your feedback and ideas on mapping performance
- Increase weight gain from 0.4 to 0.6 kg / day on all turn off steers, and from 0.35 to 0.5 kg/day on heifers
- Increase BCS on first round weaner mothers by 1.5 CS

4.1.2 Pre-workshop skills audit

The design of the pre-workshop skills audit is found in Appendix 9.2. This audit breaks up questions into:

- Participants' confidence in skills and knowledge in nutrition
- Participants' understanding of fundamental nutritional principles
- Participants' current nutritional management practices
- Participants' plans and strategies

The pre-workshop skills audit (Appendix 9.2) completed by each staff member who attended the Nutrition EDGE workshop was an important addition to the pre-workshop questionnaire because it identified the variation in confidence, knowledge, skills and experience across the group. Participants in general, willingly completed the pre-workshop skills audit and were committed to identifying areas where they wanted to improve their skills and knowledge, understanding of nutrition, and how it could be applied to their role with Stanbroke.

Results from the pre-workshop questionnaire and post-workshop skills audits have been collated, analysed, and provided to Stanbroke management for further action. The pre-workshop skills audit established the benchmark for the participants' confidence, knowledge, skills and goals. This benchmark enabled measurement of the changes and adoption following the workshop, determined by the post-workshop skills audit.

4.2 Expectations, delivery of workshop, monitoring and evaluation

4.2.1 Expectations

At the start of the workshop, following on from a discussion of the nutritional issues and goals and strategies identified from the pre-workshop questionnaire, participants were asked what expectation they needed to have met for the workshop to be successful for them, if it was not already identified in the nutritional issues and goals and strategies.

A summary of participants expectations were:

- Cost-effective nutrition and supplements
- Supplementary feeding knowledge
- How to identify deficient country and choose the correct supplement
- Understand nutritional requirements
- Right lick in the right cattle at the right time
- Production systems in north and how to improve them
- Cost-benefit analysis of lifting weaning percentage
- More knowledge in nutrition

4.2.2 Delivery

The full Nutrition EDGE workshop consists of seven modules and is delivered over three days. Stanbroke negotiated a two-day Nutrition EDGE workshop, determining that Module 4, relating to pasture growth and forage budgeting, would be left out as there were opportunities with other EDGE packages to learn more about this area.

4.2.3 Monitoring and evaluation

To reinforce retention of information, reviews were conducted at the end of day 1 and the following morning. In the afternoon reviews, the group would be asked:

- i) What stood out for them?
- ii) What they would implement from what they learned that that day?

On day 2, the workshop participants were split into small groups to discuss and record what stood out for them from the previous day's learnings. They were also asked to identify any points of clarification required, or any additional issues. Each group presented their findings and issues to the rest of the group, which was followed by general discussion.

At the end of day 1 there was a group discussion around what was learned and what stood out most for each participant, which was summarised below. On day 2, participants discussed in small groups what they had learned on the first day to reinforce their retention of the information, and each group presented their learnings and any requests for clarification, to the rest of the group. Refer to Table 1.

Table 1. Participants' feedback as part of the evaluation at various review stages.

Review period	Participant's feedback	
	<i>What stood out?</i>	<i>What will I Implement?</i>
Day 1	<ul style="list-style-type: none"> • 30g urea will give 30% increase DMI if CP and ME in balance • Values of what they're eating and what we're trying to achieve • Importance of identifying deficiencies in pasture and formulating ration to suit • Everything • Understanding that urea converts to CP and how it works • Tropical grasses deficient for wet and late pregnancy cows in phase 3 growth onwards • Having a holistic approach with re-breed/weaning and nutrition • Difference between energy and protein and in lick • Importance of balance between ME and CP • Impacts of water quality • Might not always get what you pay for • Digestive system is a lot more complicated than I thought • Difference between ME and CP • Information gives tools to capture potential of production system 	<ul style="list-style-type: none"> • Build a spreadsheet for manager on nutrient requirements for cattle • Water testing of bores • Pasture testing • Dung testing • Test hay • Analysing paddock, cattle and reformulate lick • Cost comparison of ME of feed • Calculation • How to get better use of supplement • Making a start on everything above except the spreadsheet • Timing of supplement • Measuring • Monitor pasture and water quality • Analysing data sheets (F.NIRS) • New custom feed mixes based on F.NIRS and pasture assessment • Have a good look at weaning process to set up right so there are no setbacks
Day 2 Morning Review	<ul style="list-style-type: none"> • Anatomy of digestive system of cattle • Difference between protein and energy eg. molasses versus urea • Cheapest not always the best option • Minimise setbacks • Importance of quality water • Working out protein and energy requirements with formulas was interesting 	

	<ul style="list-style-type: none"> • Knowledge to drive questions and plans and implements changes as required • Cost-effectiveness of urea and benefits • Difference between energy and protein • Phosphorus is important in diet • Having access to high quality water and hay • Digestive tract explained • Tropical diseases • Everything • Calculating ME requirements • Difference between energy and protein • Whole management approach 	
<p>Day 3 Final review</p>		<p>Start doing, keep doing, stop doing Start doing</p> <ul style="list-style-type: none"> • Sampling dung, pasture and water • Build a cattle requirements spreadsheet • Analysing labels to ensure consumption is correct to get most out of lick, etc. • More scrutiny around what's in lick and dollars per what we want to achieve • Seek advice on mix • Paying more attention to pastures and animals' dietary requirements • Start paying more attention to the water quality and the animals characteristics around water • Water testing • Diagnosis of lick samples • Analysing supplement closer • Testing water quality • Target specific groups with targeted supplement • Source best quality supplements and have a whole season plan for supplements • Testing more regularly • More suited lick mixes for class of cattle

		<ul style="list-style-type: none"> • Matching dung analysis to supplements • Pasture quality intake – F.NIRS analysis • Calculating cost per required nutrient • Soil testing • Water testing • Monitor water quality • Going ahead with it all – testing • Water and pasture analysis • Calculating energy and protein gap in pasture • Monitor pasture condition/score • Make sure we feed cattle correctly <p>Keep doing</p> <ul style="list-style-type: none"> • Continue matching stocking rates to paddocks • Analysing dung samples • Continue F.NIRS testing • Feed lick • Feeding supplements • Feed lick • Asking questions of lick supplements • Feeding lick – dry and wet, weaning at optimum time • Monitor stock and pasture • Continue feeding lick • Feeding lick but more in a more controlled way • Provide more of energy supplements to growing/lactating cows • Test some watering • F. NIRS • Kynofos 21 (feed P) • Monitoring pasture growth • Feeding lick • Keep feeding lick • Monitor stock
--	--	--

		<ul style="list-style-type: none">• Do more NIRS• Continue monitoring stock condition• Faecal samples• Feed lick <p>Stop doing</p> <ul style="list-style-type: none">• Stop feeding cull heifers• Accepting sales people's recommendations• Believing everything on a lick bag• Feeding the incorrect supplements that are not tailored to my country• Feeding lick late• Breeders from loss BCS after calving/more supplement at the correct timing• Stop taking feed companies' word for gospel in regard to claims about their products without more analysis• Stop feeding incorrect supplement• Stop feeding incorrectly• Better understanding analysis sheets• Stop feeding incorrect lick
--	--	--

At the end of the workshop, each workshop participant recorded anonymously what, as a result of the Nutrition EDGE, they would “start doing, continue doing, and stop doing”.

At the completion of the workshop, each participant recorded changes they would make as a result of the Nutrition EDGE workshop, in nutritional management on their station, including:

- i) What they would start doing?
- ii) What they would continue doing?
- iii) What they would stop doing?

All of the review information was collated and sent to each of the workshop participants and Stanbroke management from Head Office.

All of the information from the reviews was collated and sent to each participant and to Stanbroke senior management at head office for further action and future reference and planning.

4.3 MLA workshop evaluation

As part of each of the EDGE network packages, participants are required to complete a formal evaluation provided by MLA. This is a rapid-completion evaluation which participants are asked to update as each module is completed. The evaluation allows them to provide feedback on:

- Content and presentation each module
- Value of the module to the participant
- Satisfaction, knowledge and improved confidence in nutrition from attending the workshop
- Identifying topics covered that they are still not clear on
- Rating of the presenter’s delivery of the workshop
- How the information will be used from the workshop
- Feedback about the overall workshop

Some of the questions requested a rating of the topics and content covered as well as the delivery. Other questions required brief explanation.

This evaluation must be completed by all workshop participants at EDGE workshops, as a requirement by MLA of deliverers of the EDGE packages. This evaluation provides both the presenters and MLA with feedback on the content and delivery of the workshop, the presenter, the overall workshop package, what additional information participants require, how they will use the information and the benefits from attending the workshop including the return on their investment.

Below is a summary of the average scores from the quantitative aspects of the workshop evaluation and a collation of the qualitative feedback from the workshop. A summary of average scores from quantitative aspects of the MLA workshop evaluation and collation of the qualitative feedback from the workshop is detailed in Table 2.

Table 2: Summary of average scores from quantitative aspects of the MLA workshop evaluation and collation of the qualitative feedback from the workshop

Modules	Assessment criteria & Score <i>(average rating out of 10)*</i>	Additional comments
Content and Presentation	1. Digestion and nutrients 9.3 2. Animal nutrient and water requirements 9.2 3. Pasture intake, pasture quality and diet quality 9.2 4. Mineral nutrition 8.9 5. Supplementation and other tools 9.1 6. Practical nutritional management 9.2	
Content - Value to you	1. Digestion and nutrients 9.2 2. Animal nutrient and water requirements 9.3 3. Pasture intake, pasture quality and diet quality 9.2 4. Mineral nutrition 8.8 5. Supplementation and other tools 9.2 6. Practical nutritional management 9.3	*Because this workshop was condensed to two days from three, Module 4 was not delivered to the group.
Overall feedback on event	1. Overall how satisfied 9.5 2. Overall how valuable for knowledge 9.5 3. Overall how valuable for confidence 9.2	What areas covered are you still not fully clear about? • Reading the lick label • %'s on label analysis
Feedback on presenter (Désirée Jackson)	1. How would you rate delivery of workshop? 9.8	Comments on presenter • Very well-presented • Great subject knowledge • All very well-delivered • Very informative • 10/10 for knowledge and ability to answer questions • Very good • Désirée was an excellent presenter with a practical approach to the course • Very good • Very high knowledge of subject matter, very confident with Q & A
Feedback on information from workshop	Using information heard over last 3 days: 1. Increased understanding 8.4 2. Reinforced things already doing 7.8	Do you plan to take action/make changes? 86% - Yes 14% - No Which boxes ticked 1 = Follow-up further advice 1 = 83%; 2 = 83%; 3 = 8%; 4 = 25%

		<p>2 = Assess my current operation in light of what was learned</p> <p>3 = Purchase new equipment</p> <p>4 = Make a specific change</p> <p>5 = Other (Please state)</p> <ul style="list-style-type: none"> • Better use of lick and measuring requirements • Make sure lick, etc. is consumed in right quantities for requirements of urea
<i>Extra information required following on from the workshop</i>		<p>What extra information is needed?</p> <ul style="list-style-type: none"> • More sampling • Not much, just dung samples, etc. • Water and faecal analysis • Consult with nutrition specialist • Reading back through the workshop notes to double check my decisions • Make sure we look into lick we are going to buy • More pasture management • Advice and information • Grazing Fundamentals workshop
<i>If not making changes, why not?</i>		<p>If not making changes, why not?</p> <ul style="list-style-type: none"> • Not a property employee
<i>Open questions</i>		<ul style="list-style-type: none"> • Label reading • Understanding impacts of lick and water • Understanding labels and consumption • The whole thing was valuable • Supplement appraisal to make sure it is cost-efficient • Role of energy in lactating cows' diet • Modules 2, 3, 4 • The four stomachs, very interesting • Reading lick labels, shows room for dollars added • Everything • Practical discussion • Module 7 • Supplement analysing

		<ul style="list-style-type: none"> • Modules 1, 2, 3 – they were the basics • The whole workshop • Label reading, understanding impacts of lick and water • Understanding labels and consumption
Least valuable aspects of the workshop and why?		<ul style="list-style-type: none"> • All valuable • Nothing • Trace minerals, as protein and energy are the most valuable • Digestion and nutrients, already have a very clear understanding • Module 5 as I couldn't understand it properly • Nothing. I enjoyed it all. • Digestion and nutrients, least out of a very good workshop. • HGP's • All valuable
Benefits in terms of time and money		<ul style="list-style-type: none"> • Well worth it • Getting more value for money in lick consumption and results (2 people with this response) • Great • Find better cost-benefit of supplements and utilising pasture • Very worthwhile, great forum to discuss do's and don'ts of supplements • Great value for money, only need to change a small amount to ROI • Very good • Very helpful • Having the knowledge to purchase the correct lick and better pasture management • Great for the managers • Understanding more about value of feeding right supplement

4.4 Post-workshop skills audit

Each Stanbroke workshop participant was contacted three months after the Nutrition EDGE workshop, to gauge their level of confidence in the nutritional management of their properties and cattle, to measure the change in their knowledge and skills in cattle nutrition, and to identify the changes they made in the nutritional management of their cattle. This was done through a post-workshop skills audit (Appendix 9.4).

The information from the post-workshop skills audit was collated and compared to the results from the pre-workshop skills audit to quantify the changes, even though the requirement for this project was purely to identify qualitative changes (i.e. in confidence, knowledge and skills in cattle nutrition).

4.4.1 Your confidence in your skills and knowledge in nutrition

This first group of questions related to how the workshop participants' confidence level change in both nutritional technical knowledge, and the application of nutritional principles to the nutritional management on-property (Refer to Figures 1-5).

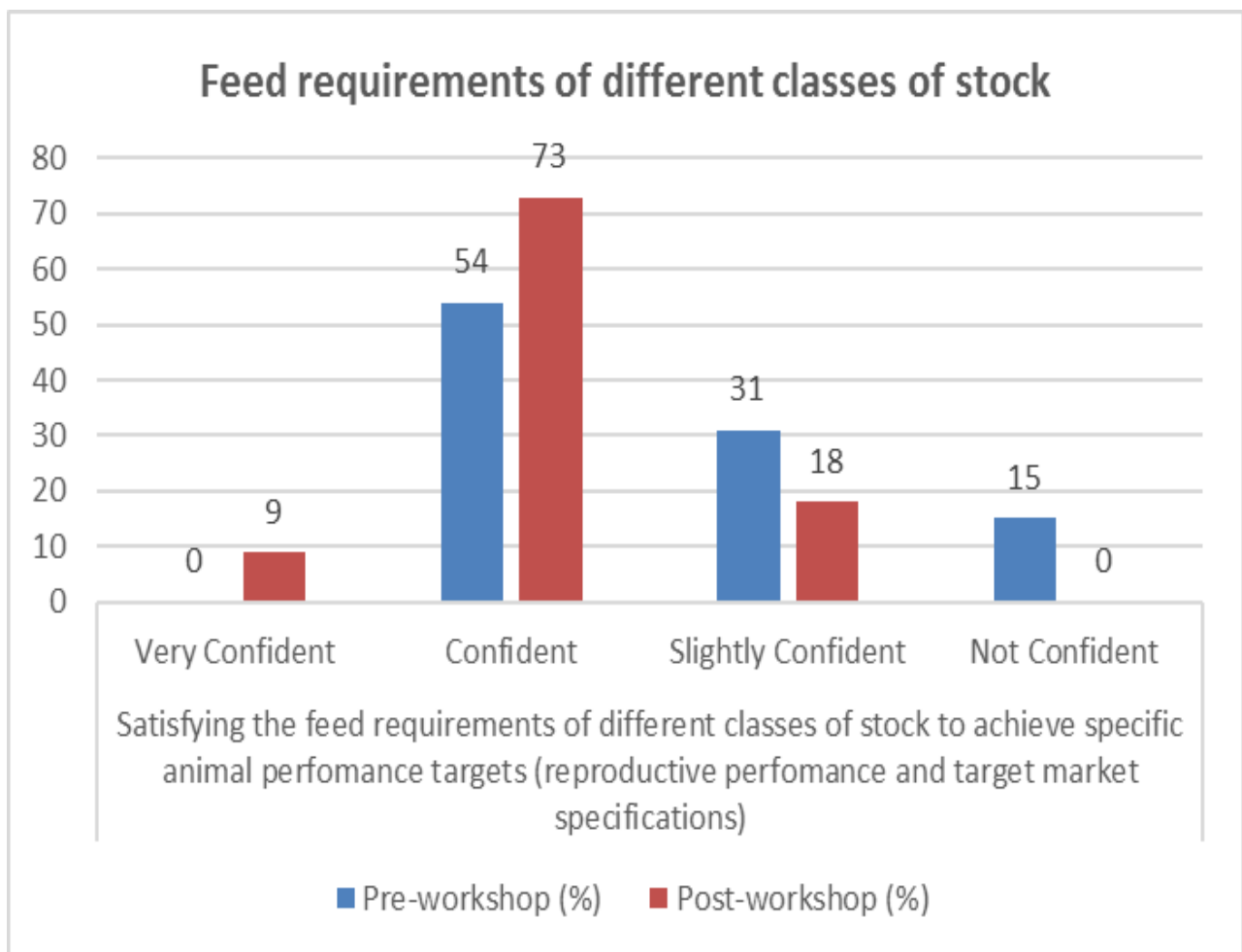


Figure 1: Confidence in satisfying the feed requirements of different classes of stock to achieve specific animal performance targets (reproductive performance and target market specifications).

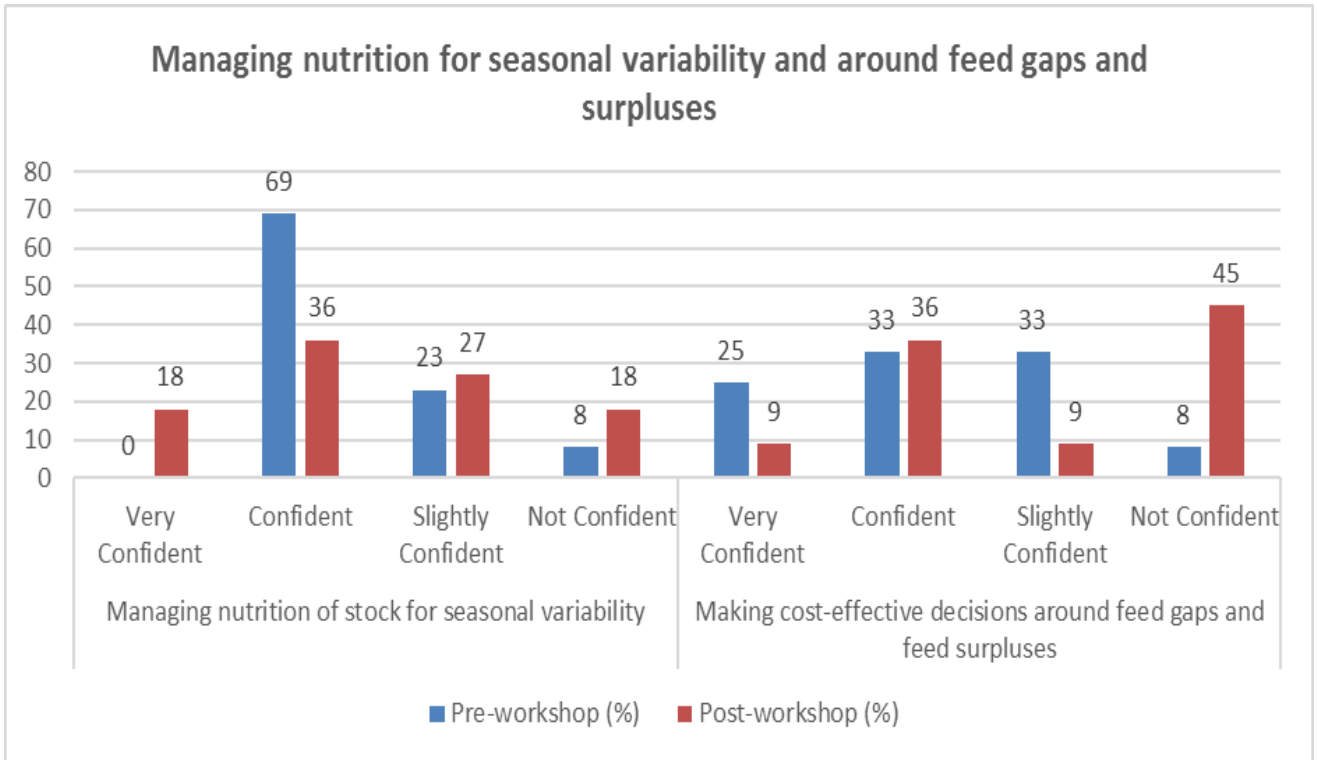


Figure 2a: Confidence in managing nutrition of stock for decisions seasonal variability.

Figure 2b: Confidence in making cost-effective around feed gaps and feed surpluses.

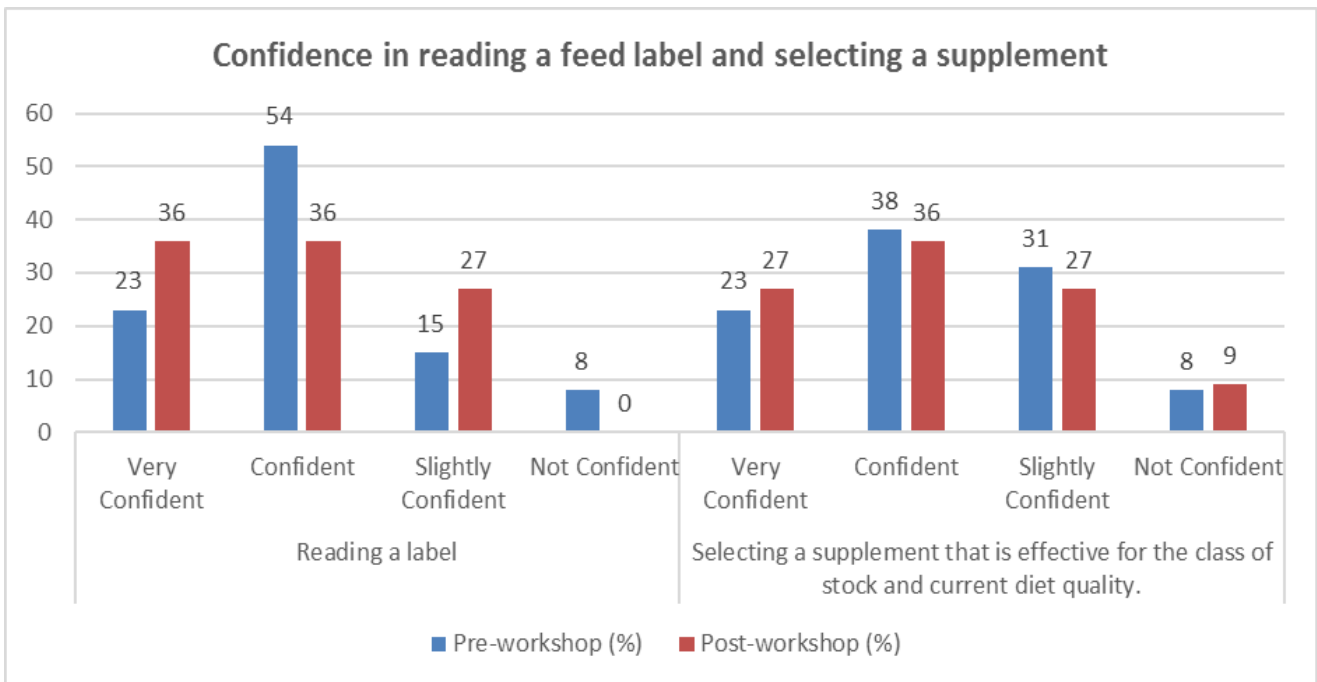


Figure 3a: Confidence in reading a label.

Figure 3b: Confidence in selecting a supplement that is effective for the class of stock and current diet quality.

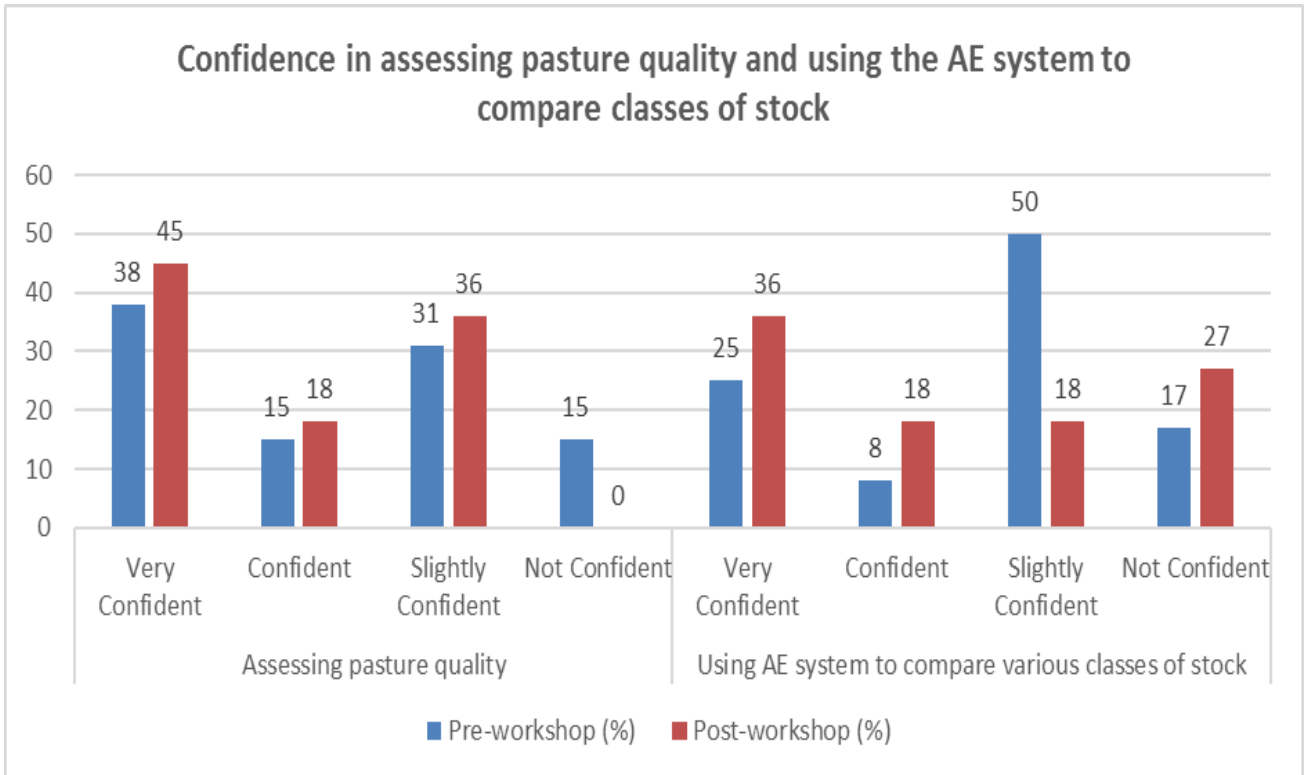


Figure 4a: Confidence in assessing pasture quality.

Figure 4b: Confidence in using AE system to compare various classes of stock.

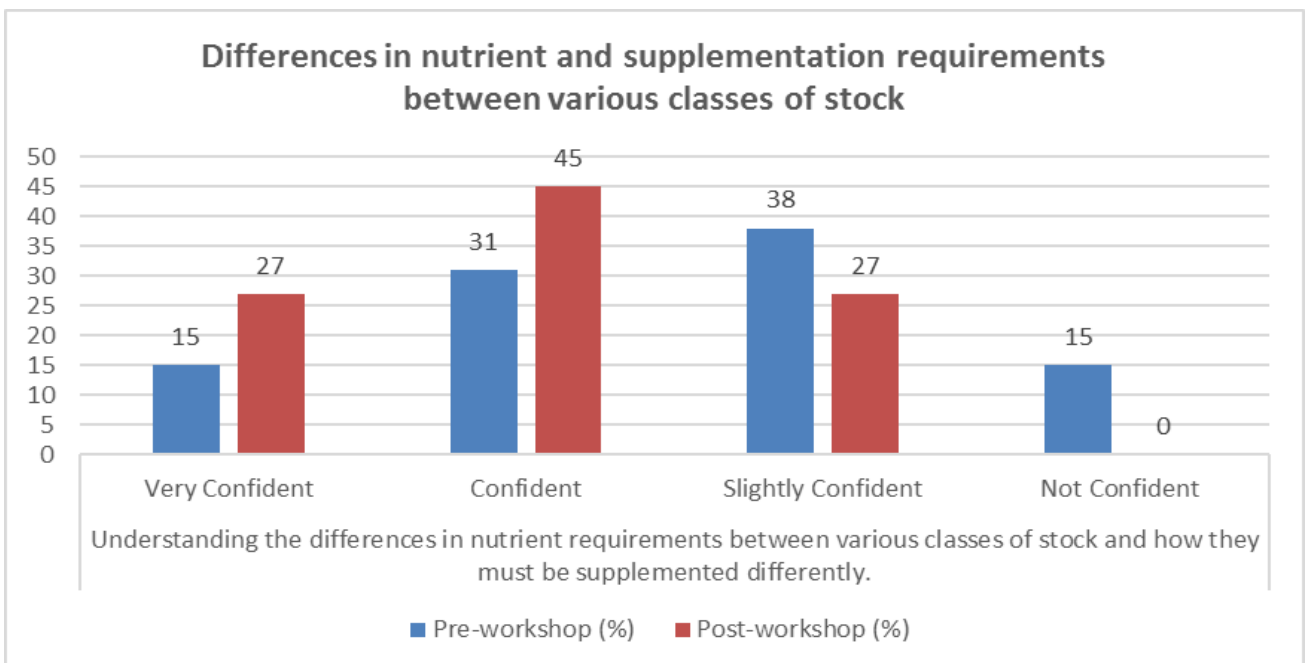


Figure 5: Confidence in understanding the differences in nutrient requirements between various classes of stock and how they must be supplemented differently.

4.4.2 Your understanding of fundamental nutritional principles

This group of questions in the skills audit related to their knowledge in nutrition. The questions were based on what was delivered in the Nutrition EDGE workshop and related to key areas they need to be familiar with to effectively manage the nutrition of the cattle on the stations they work on.

Workshop participants were asked the same series of questions in the post-workshop skills audit, that they were asked in the pre-workshop questionnaire. However, in the pre-workshop skills audit, they answered the questions on their own, and submitted the completed audit in their own time. In the post-workshop skills audit, participants had to answer the questions over the phone. For some participants, particularly those in more senior levels, there was additional pressure to answer the question correctly (Refer to Figures 6-9).

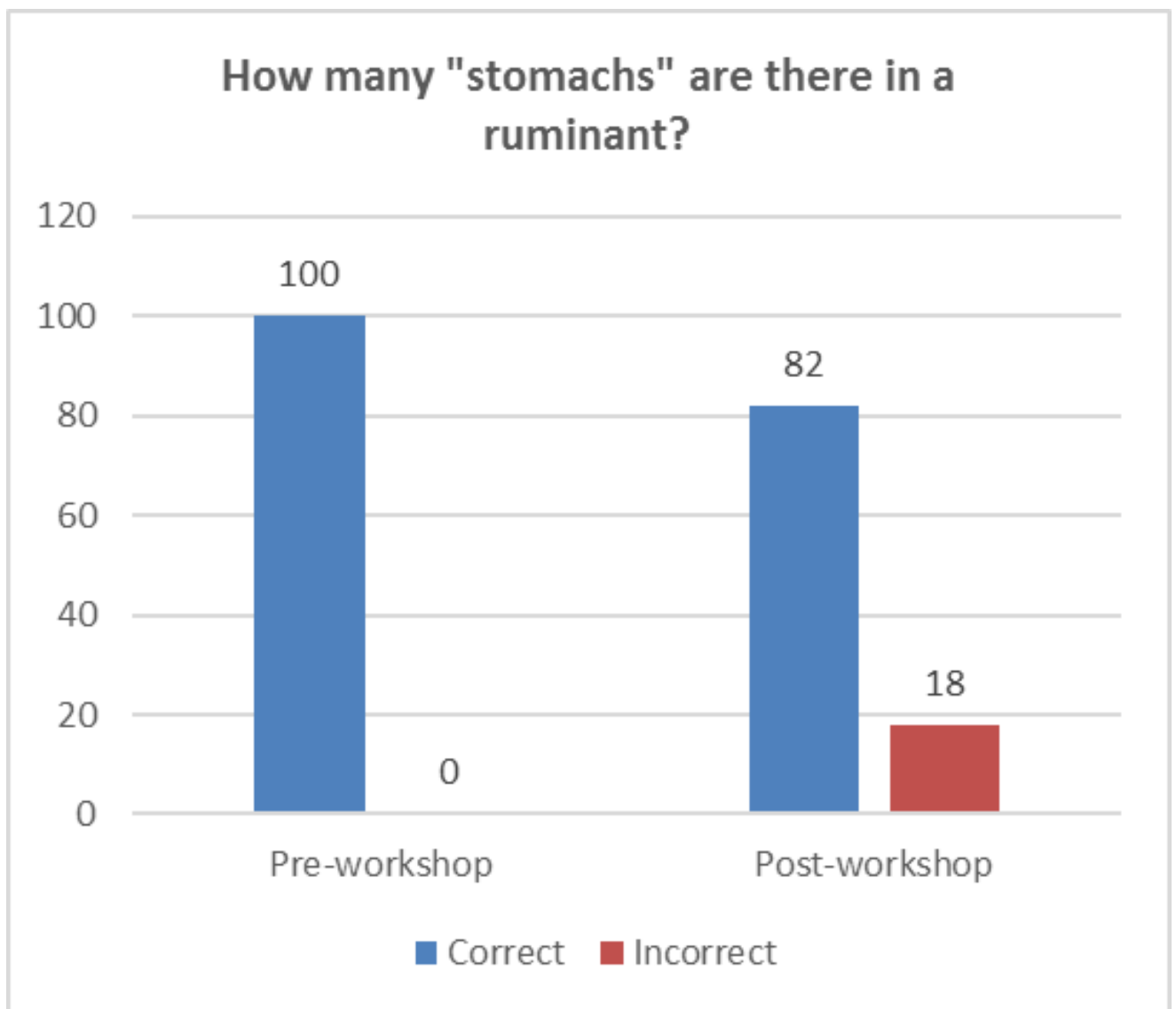


Figure 6: How many “stomachs” are there in a ruminant?

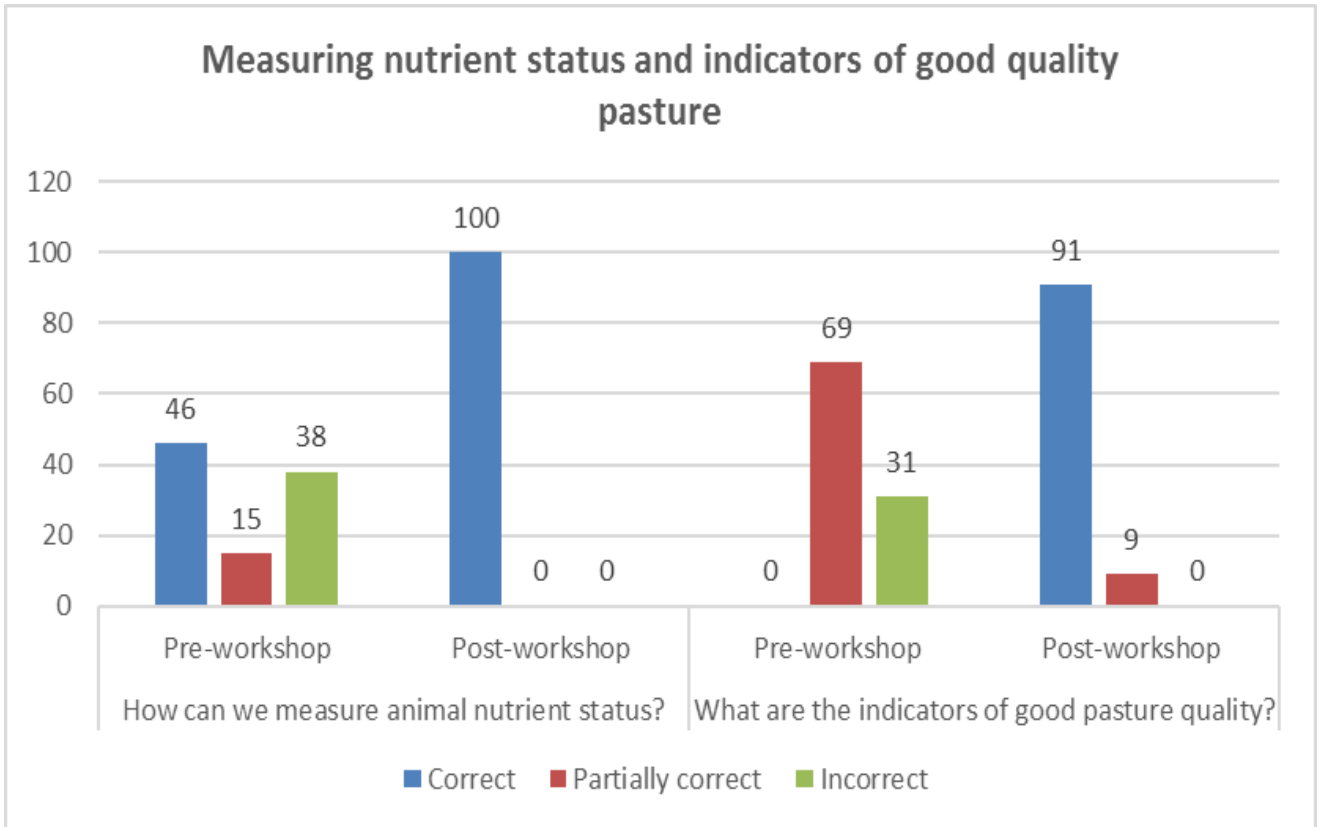


Figure 7a: How can we measure animal nutrient status? **Figure 7b:** What are the indicators of good pasture quality?

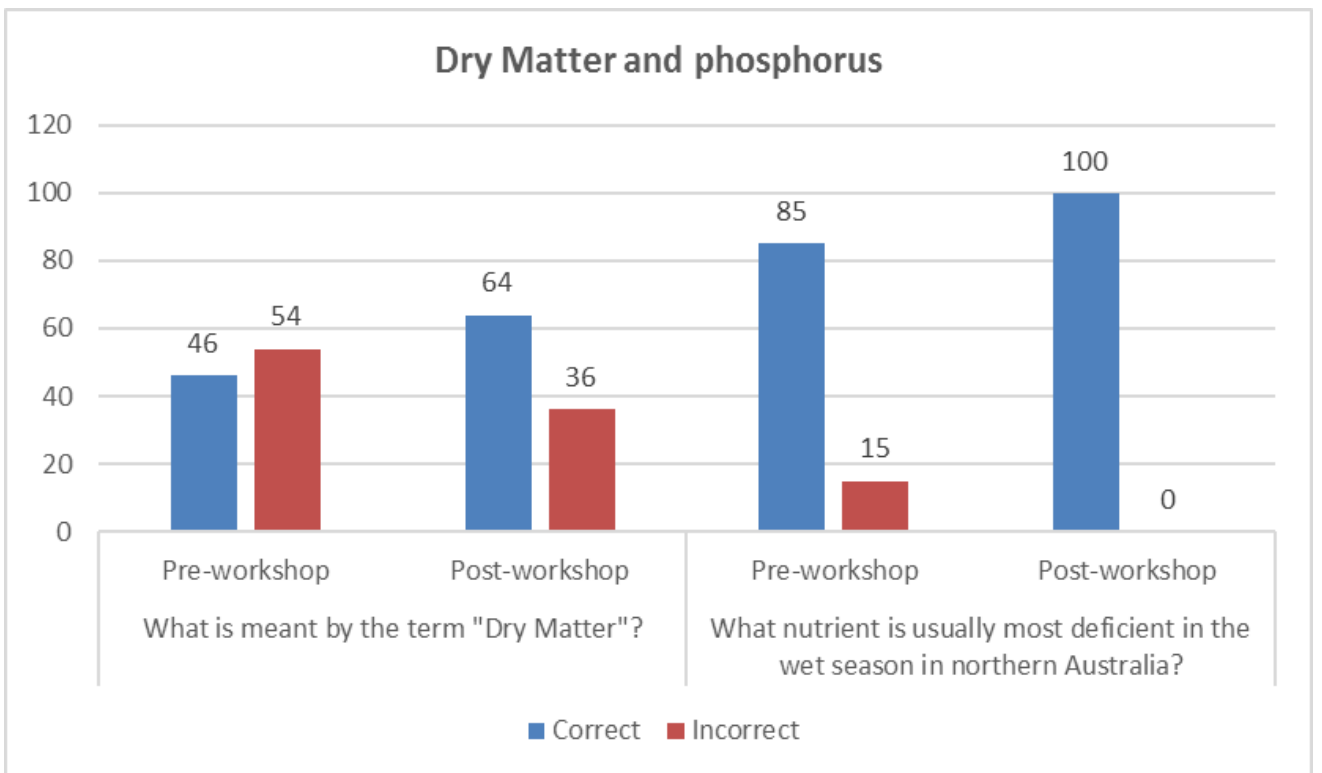


Figure 8a: What is meant by the term 'Dry Matter'? **Figure 8b:** What nutrient is usually most deficient?

in the wet season in northern Australia?

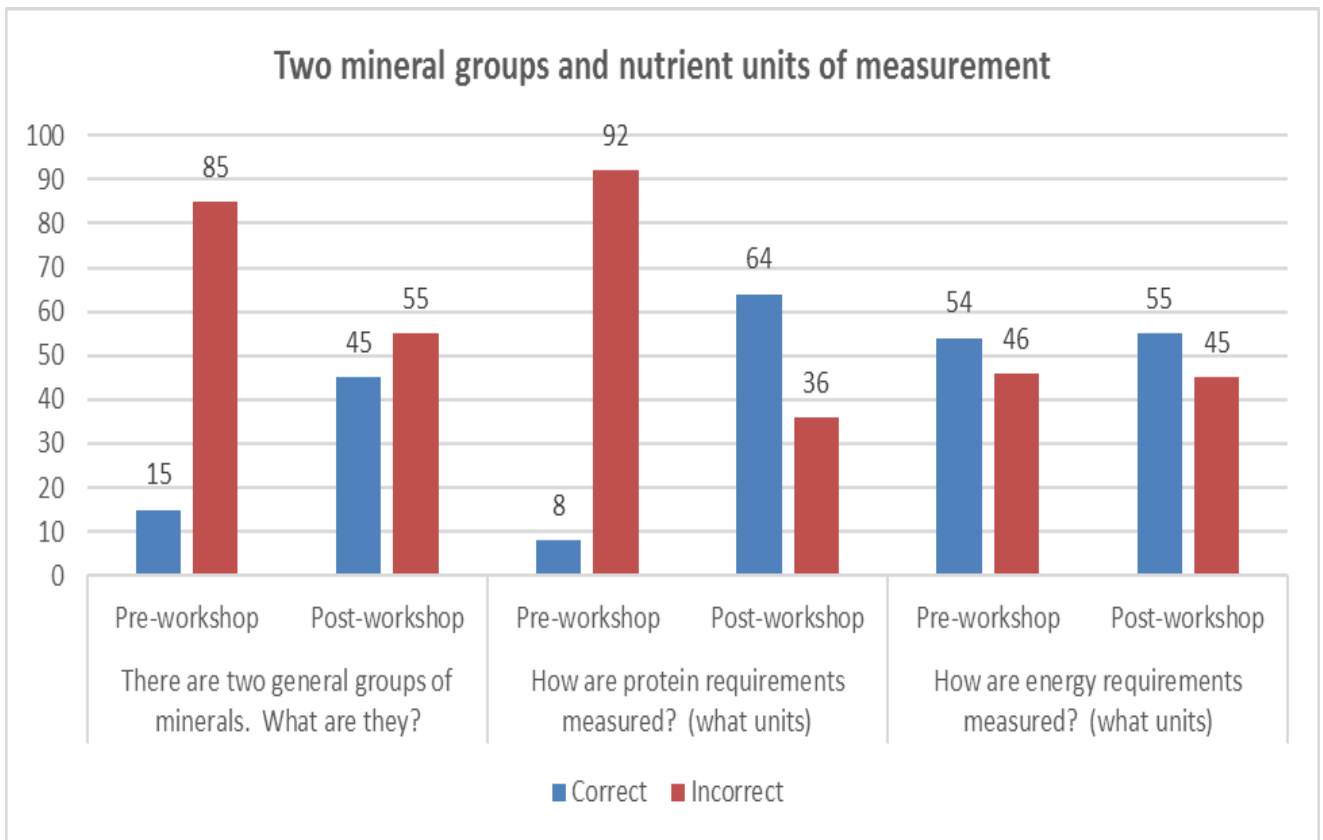


Figure 9a. There are two general groups of minerals. What are they?

Figure 9b. How are protein requirements measured?

Figure 9c. How are energy requirements measured?

4.4.3 Your new nutritional management practices

This group of questions in the skills audit looked at the degree to which various nutritional technologies, skills and systems were being implemented on the Stanbroke properties, following the Nutrition EDGE workshop and how this compared to the nutritional management practices prior to the workshop. The post-workshop skills audit was conducted three months after the workshop to allow workshop participants to process and implement some of the technical concepts into the nutritional management of their cattle. These questions were also asked in the initial pre-workshop skills audit. The results from both audits were then compared to see what changes to nutritional management occurred (Refer to Figures 10 -16).

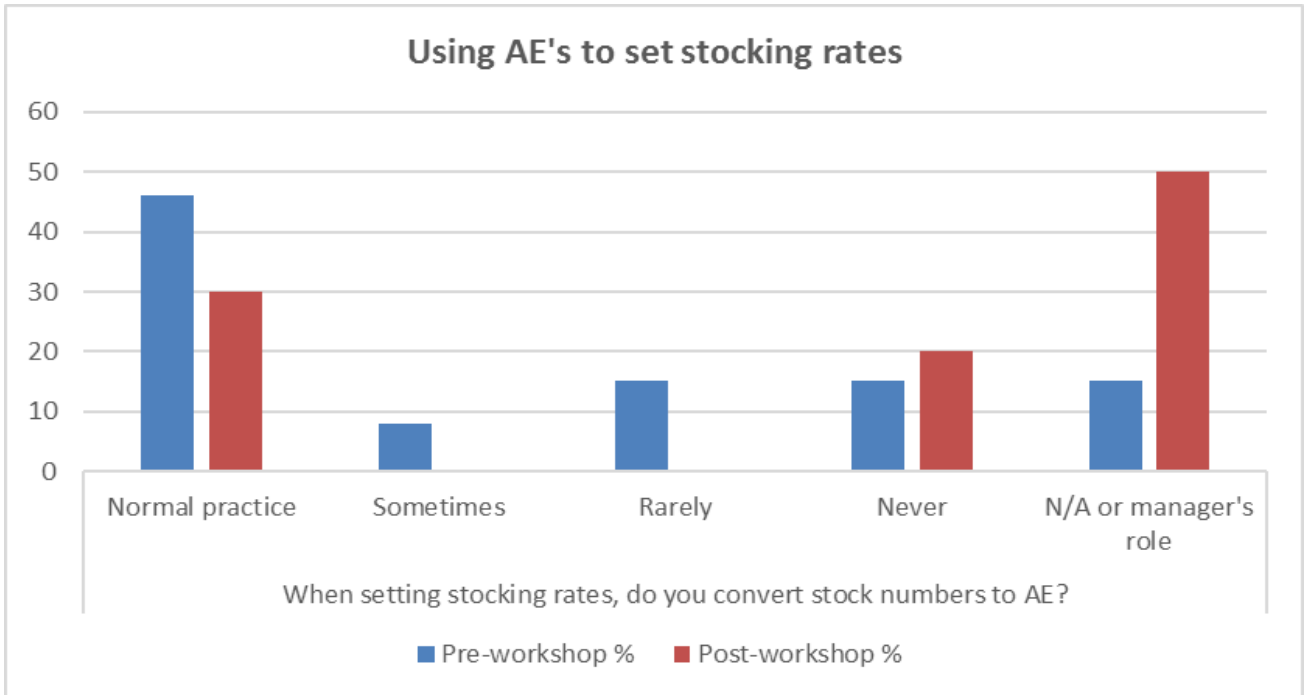


Figure 10: When setting stocking rates, do you convert stock numbers to AE?

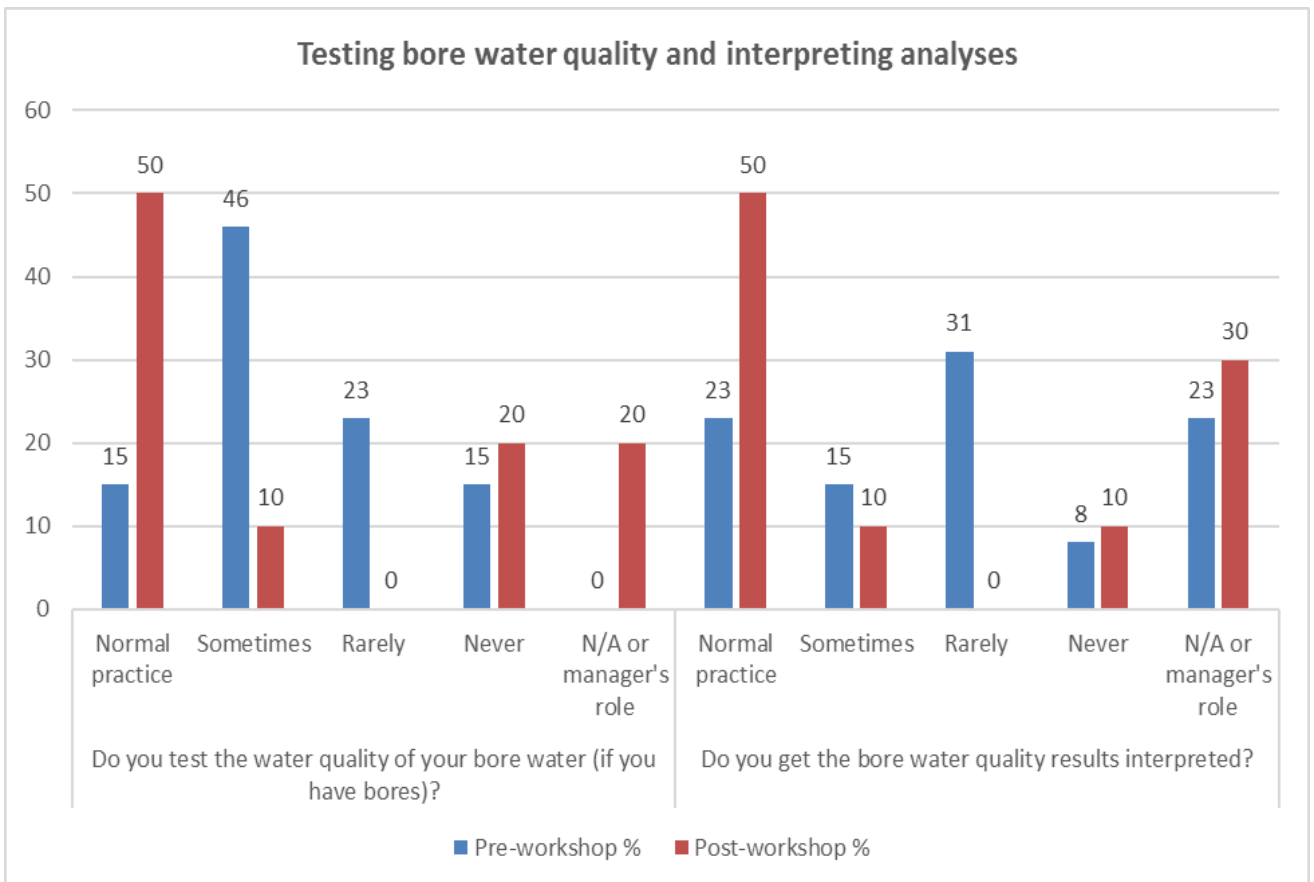


Figure 11a: Do you test the water quality of your bore water **Figure 11b:** Do you get the bore water quality results interpreted?

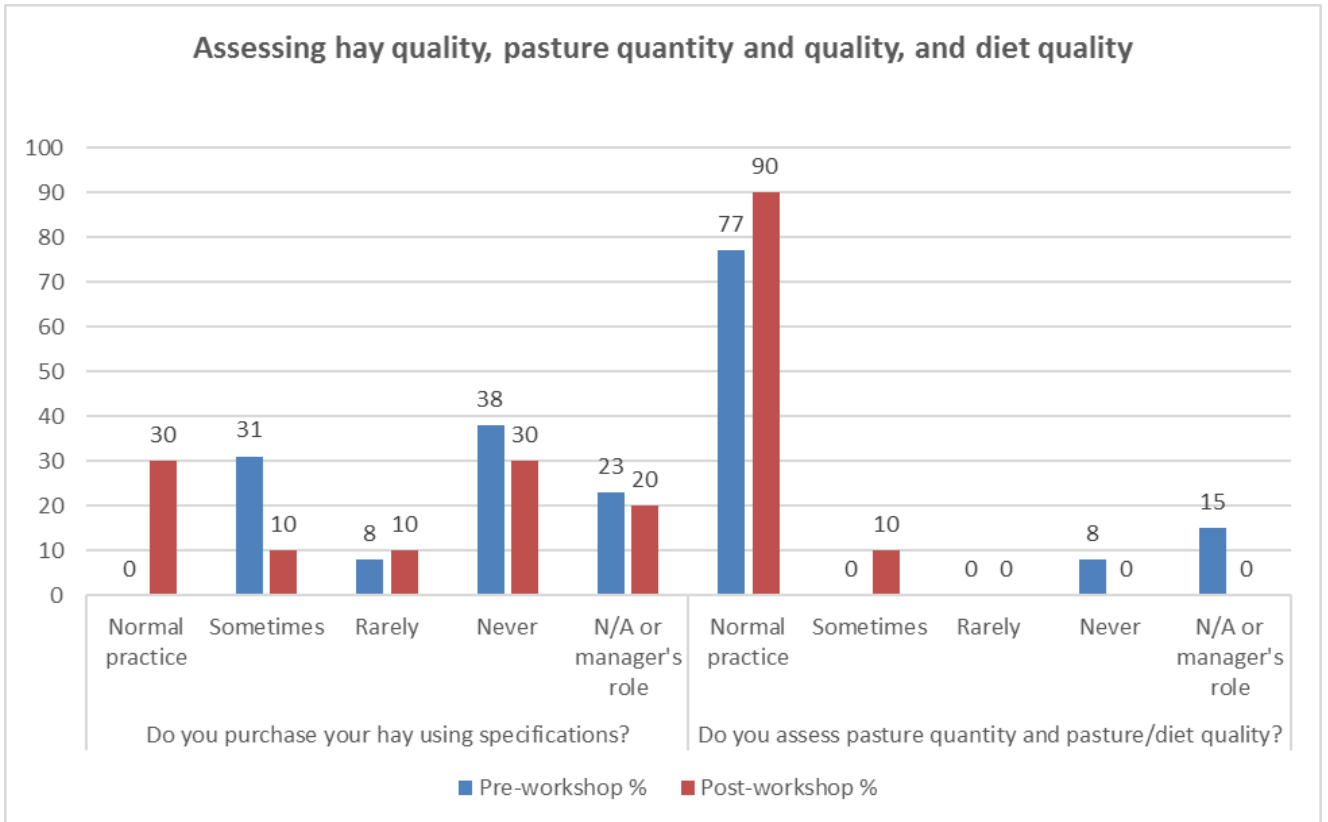


Figure 12a. Do you purchase your hay using specifications?

Figure 12b. Do you assess pasture quantity and pasture/diet quality?

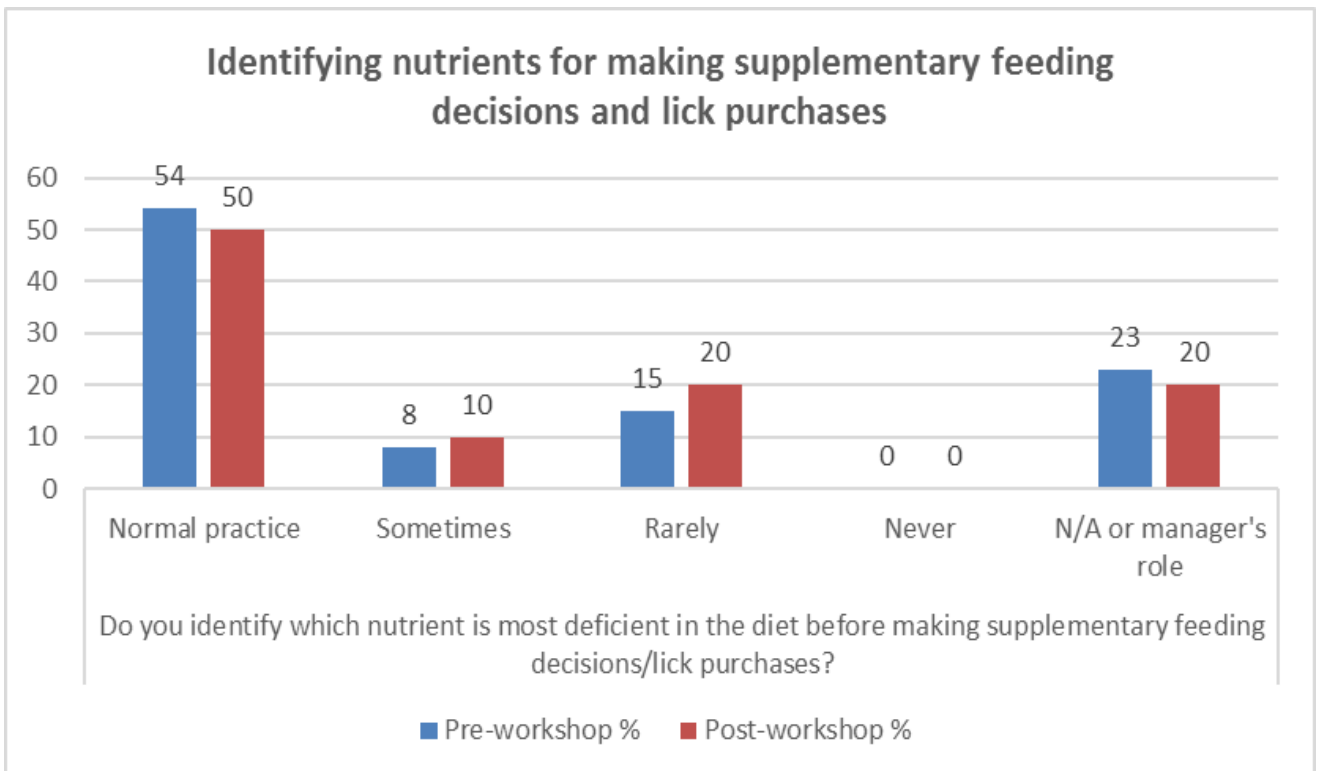


Figure 13: Do you identify which nutrient is most deficient in the diet before making supplementary feeding decisions/lick purchases?

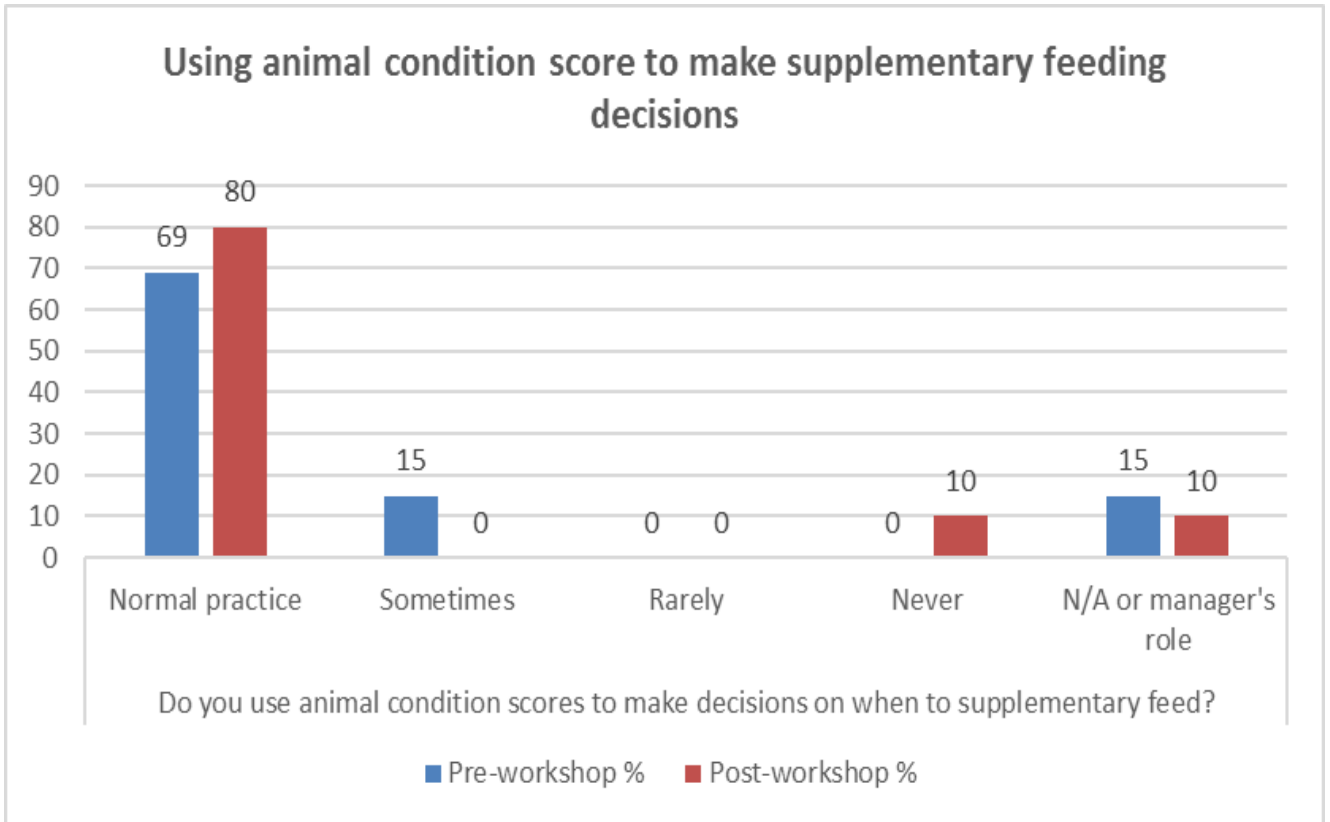


Figure 14: Do you use animal condition scores to make decisions on when to supplementary feed?

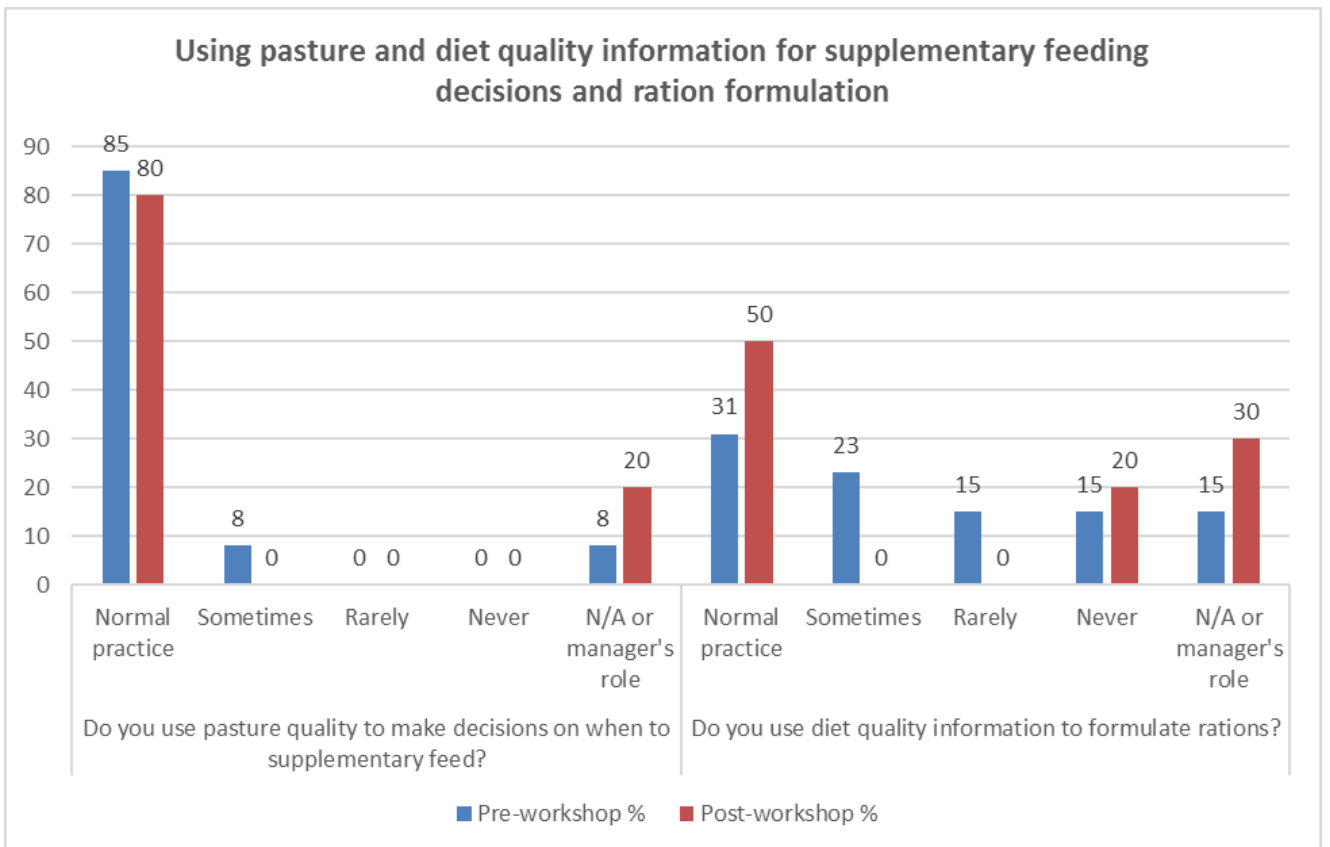


Figure 15a. Do you use pasture quality to make decisions on when to supplementary feed?

Figure 15b. Do you use diet quality information to formulate rations?

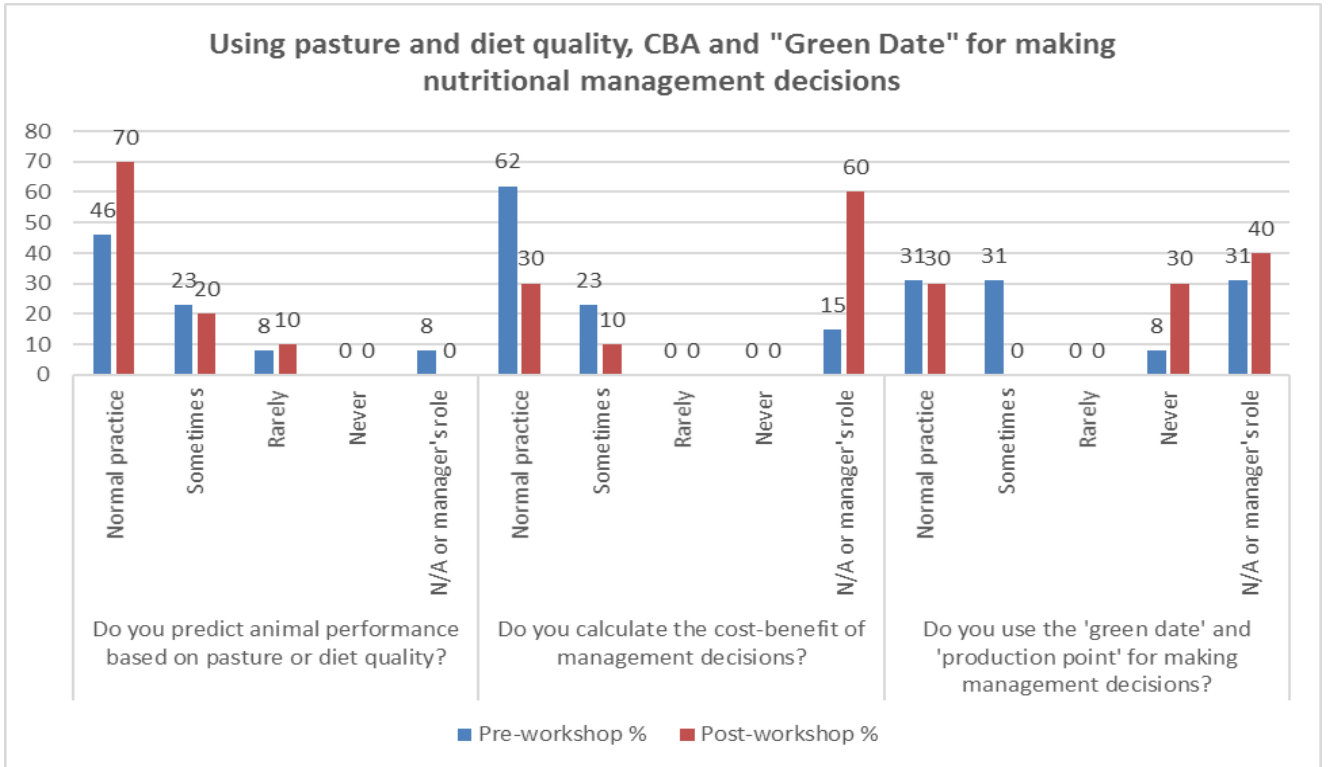


Figure 16a. Do you predict animal performance based on pasture or diet quality?

Figure 16b. Do you calculate the cost-benefit of management decisions?

Figure 16c. Do you use the 'green date' and 'production point' for making management decisions?

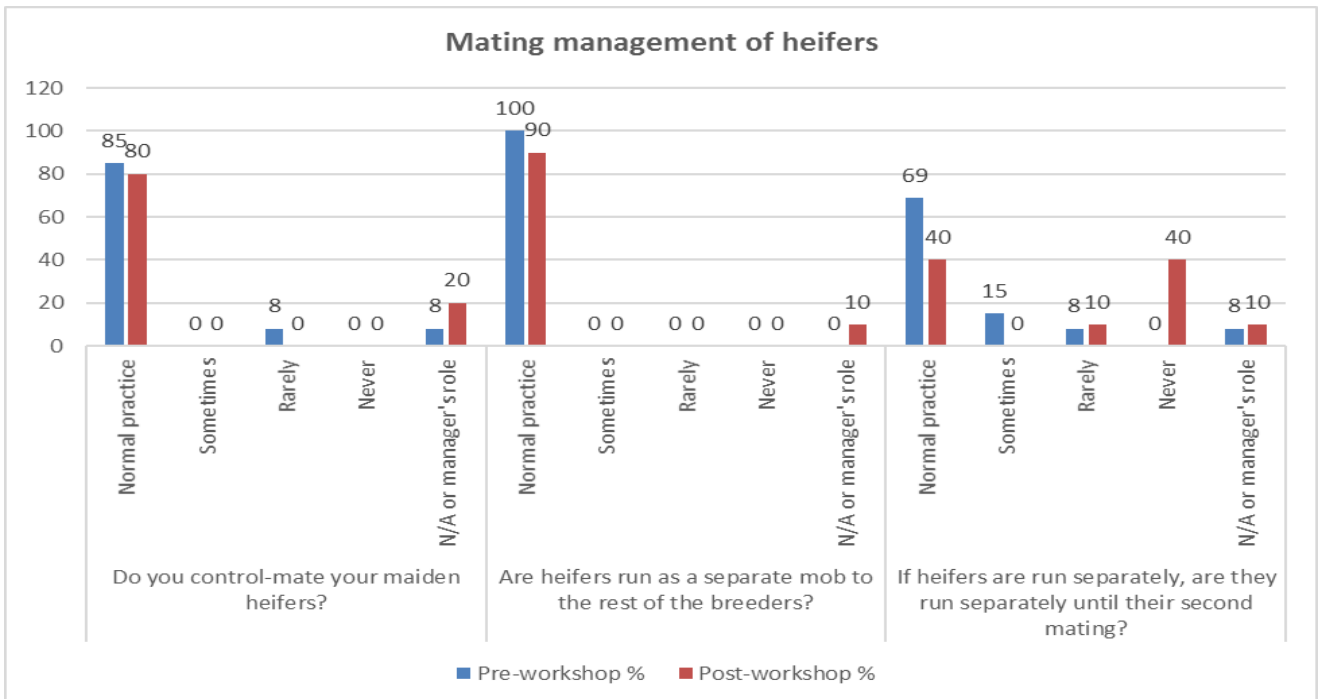


Figure 17a. Do you control-mate your maiden heifers?

Figure 17b. Are heifers run as a separate mob to the rest of the breeders?

Figure 17c. If heifers are run separately, until their second mating?

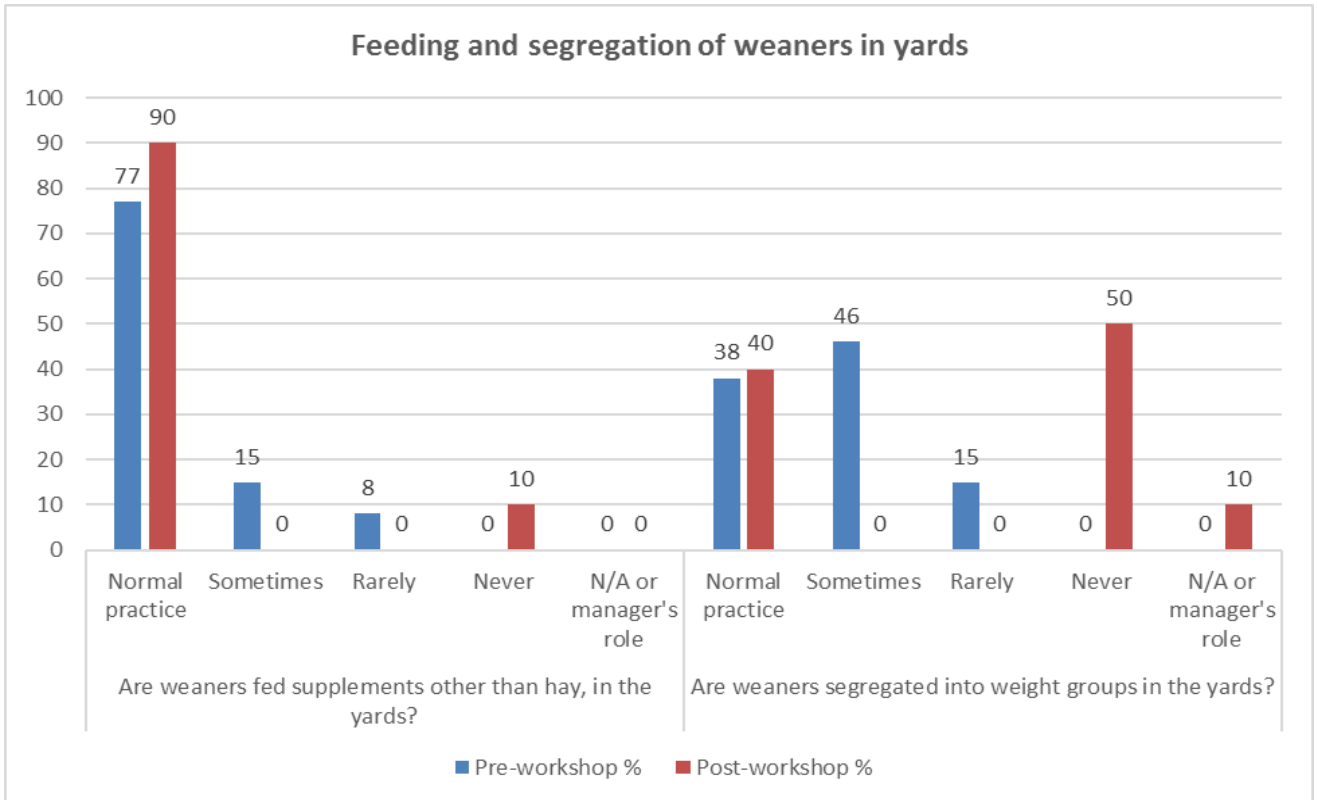


Figure 18a. Are weaners fed supplements other than hay, in the yards?

Figure 18b. Are weaners segregated into weight groups in the yards?

4.4.4 Post-workshop feedback

In this group of questions in the skills audit, workshop participants were asked questions about the content of the workshop and what was useful and not useful, what was relevant to their job description, and to identify what they would like further training or assistance with in relation to what they had learned (Refer to Table 3).

Table 3: Post-workshop feedback from participants.

Skills Audit Questions	Feedback
What did you find most useful from the workshop?	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Running through numbers of what cattle need 2. Highlighting that we have a feed gap in the north and different ways to fix it 3. Practical application of knowledge 4. Identified knowledge we didn't know <p>Station managers</p> <ol style="list-style-type: none"> 1. Assessing different licks and comparing with different growth phases, e.g. phase 3 2. Talking to Désirée at a technical level 3. Feedback on different ideas from Désirée 4. Good to know where other managers are at and benchmarking with other managers 5. Analysing the supplement labels 6. Better understanding of dietary requirements

	<ol style="list-style-type: none"> 7. Better understanding of digestibility 8. Water quality – how minerals (in water) affect major minerals and tie them up 9. Use of molasses vs urea dry lick 10. Understanding differences in nutrients and what they do and getting balance right, and reading it 11. ME vs CP 12. Everything <p>Head stockmen</p> <ol style="list-style-type: none"> 1. All of it 2. First time attending so would like to go again 3. Got fundamentals 4. Better understanding, getting the right lick not the wrong lick; if they don't need it, waste of dollars 5. Rumen microbes and stomach 6. The whole thing 7. Formulas with lick label exercise working out what we need
<p>What did you find least useful from the workshop?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Everything was extremely useful 2. Out in the paddock, struggled to find different growth phases of grass (because of the dry) 3. Nothing <p>Station managers</p> <ol style="list-style-type: none"> 1. Not much 2. Technical data on what each part of the stomach does but is it important (intestines). Focus on nutrition and how we do our jobs more efficiently 3. It was all useful 4. Nothing – all good 5. Nothing really 6. Nothing really <p>Head stockmen</p> <ol style="list-style-type: none"> 1. The more technical side (calculations) not relevant to role 2. Nothing 3. Nothing 4. Nothing, crammed – information overload 5. Nothing
<p>What was most relevant to your role with Stanbroke?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Calculating the feed gap and looking at all supplements to plug the gap 2. Read lick labels and what we need, what we're getting and what we're paying for 3. Guys who order and sort out what and when – how they apply the lick to the best benefit <p>Station managers</p> <ol style="list-style-type: none"> 1. Making some cattle going forward and wet rebreeds 2. Feed quality with point where cattle need to be supplemented to decrease weight loss 3. Breeders and phosphorus, and increasing calves on the ground 4. Managing pasture and supplements

	<ol style="list-style-type: none"> 5. Break breeders into smaller mobs to preserve breeder condition score 6. Feeding licks – knowing when to feed/not to feed 7. More dung samples and water tests <p>Head stockmen</p> <ol style="list-style-type: none"> 1. Pasture quality assessment 2. Lick labels 3. Figuring out what needs to be in a lick 4. Better understanding of needs of cow and calf and pregnant cow, and the requirements they need is much higher than I thought 5. Knowing that phosphorus will increase weight gain and why we're putting it out 6. Knowing phosphorus can be fed in the dry season 7. Pasture quality exercise 8. Consequences of going backwards if weaners weigh less than 150k
<p>What would you like more information on or need more assistance with?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Linking diet quality analysis with management decisions 2. More assistance with P lick for the next wet season before the price goes up 3. Continue to do what we're doing <p>Station managers</p> <ol style="list-style-type: none"> 1. Choosing cost-effective supplements 2. Using dung sampling information to make licks 3. Most efficient use of our money 4. Any other products or feeding system where we can look after our calves and cows more efficiently and that saves labour 5. Diet quality with this grain, protein, etc. 6. More on pasture management 7. Plant i.d. day 8. Dry matter of some of the gulf plants 9. Being able to grasp better what we learned 10. No. Go to the book (workshop notes) now 11. What we can feed the poddies <p>Head stockmen</p> <ol style="list-style-type: none"> 1. Read book 2. Do the calculations 3. Grass and pasture i.d. 4. No. Work out lick calculations, reading labels and knowing how to do calculations 5. Not really
<p>If a one-day follow-up workshop were held, what topic(s) would you like covered?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Forage budgeting 2. What's in the paddock 3. Different strategies on how to manage the gap 4. Interpreting dung sample results 5. Reading supplement analyses <p>Station managers</p> <ol style="list-style-type: none"> 1. Reading labels

	<ol style="list-style-type: none"> 2. Working out what the animal needs 3. Weaner strategies and options out there; how to make it more cost-efficient to give weaners best start possible 4. Dietary requirements refresher 5. Pasture i.d. 6. Analysing pastures 7. Getting results from dung samples quicker 8. Go over working out charts again 9. How to do a feed budget and monitor pasture 10. Feeding poddies 11. Plant i.d. <p>Head stockmen</p> <ol style="list-style-type: none"> 1. Calculations 2. Plant i.d. 3. More on reading lick labels 4. Heifer management 5. Weaner management 6. Working out lick calculations 7. Reading labels 8. Knowing how to calculate 9. Weaner heifer management 10. Joiner heifer management 11. Lick label analyses
<p>What nutritional goals/targets have you set as a result of the workshop?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Actions – work on model to calculate feed gap and most cost-effective way to plug it. Look at everything differently 2. Productivity – better use of supplements – 5% increase in brandings (it would pay lick bill). 3. Managers/head stockmen/lick distributors – better understand nutrient requirements; is there a way I can do that better? 4. Can we use water medicators instead? 5. Understand if they miss a week – lose productivity <p>Station managers</p> <ol style="list-style-type: none"> 1. No. Same targets but more cost-effective to getting to a breeder condition score or weight for age and supplement earlier and longer period of time 2. Heavier weights for green date on heifers 3. Heifer program – well-looked after Wagys are kept going forward (rising plane) 4. Smaller mobs of weaners 5. Look after weaners better – backgrounding to help with marbling 6. Make sure getting right lick <p>Head stockmen</p> <ol style="list-style-type: none"> 1. Getting steers to 360kg at 2 years; getting more cattle to that weight 2. Heifers to joining weight earlier 3. Paddocks – assessments of paddock and what cattle and where 4. Personal – heifers get looked after, steers on molasses, smaller heifers just in paddock and onto dry lick

	<ol style="list-style-type: none"> 5. Heifers need to go onto better feed 6. Cull heifers on molasses are just as good as replacement heifers
<p>What are some steps you have taken to achieve this goal so far?</p>	<p>Head Office executive staff</p> <ol style="list-style-type: none"> 1. Looked at everything differently 2. Understanding lick requirements 3. What elements to provide different classes of cattle <p>Station managers</p> <ol style="list-style-type: none"> 1. Dung samples 2. Cattle weighed and monitored 3. More efficient supplementation 4. Water quality test 5. Homework with hay which didn't go anywhere 6. Have spoken to feed company regarding weaners in the second round 7. Put a fencing proposal forward for breeders 8. Purchased heifer supplement (dry loose mix with urea) custom mix 9. Started on a yard mix for weaners 220kg average (down to 180kg weaner) 10. Starting to feed when they're supposed to be fed 11. Had a discussion with management about when they are supposed to be fed 12. Sent samples away for diet quality analysis 13. Trying to identify stock to feed, what to feed and targets 14. Backgrounding all different weights. Some only 3 weeks, some smaller cattle (250-280kg) end of year turn-off (don't get weaners) 15. Young bulls with targets 16. Feed days available – need more understanding and value of it <p>Head stockmen</p> <ol style="list-style-type: none"> 1. Make sure they have lick in first – don't run out 2. In the right paddocks – weaner heifers on high diet quality rather than lower diet quality 3. None yet 4. Have spoken to manager about heifers. The Yard mix supplement was the result of workshop 5. Look at cattle more 6. Observing cattle more – whether they're losing and what might be causing it 7. More objective about cattle 8. Would have been good to sit down with manager rather than hit the ground running 9. Discussion with manager regarding animal performance 10. More communication regarding decision-making

Each participant was asked what follow-up activities relating to nutrition they would like. Because of the significant differences in responsibilities in the roles of head office executive staff, station managers and head stockmen, their responses were grouped according to their position with Stanbroke.

This workshop was condensed down into two days, so the decision was made in conjunction with Stanbroke head office management to leave out the module on pasture growth and forage budgeting. Not surprisingly, a number of workshop participants indicated that they would like to learn more about forage budgeting.

There were several issues identified by each group, each targeting a slightly different focus. It would be useful to have station managers and head office management together at a workshop as they work closely together. However, a separate workshop for head stockmen would be effective because it would target what they would like more information on, on a very practical level.

This group of questions related to the nutritional plans, goals and strategies the participants have set following on from the workshop, and what steps they have taken to meet the targets. The expectation was that head stockmen were less likely to set goals because their role was very much more operational and out in the paddock, and that there wouldn't have been many goals set only three months after the workshop because participants would have still been processing the information.

There were quite a number of goals set by head office executive staff, station managers and head stockmen and these were in alignment with their job position description.

5 Discussion

5.1 Pre-workshop preparation

5.1.1 Pre-workshop questionnaire

The nutritional issues identified in the pre-workshop questionnaire completed by each participant related to specific knowledge gaps in nutrition or issues managers and staff were having on-property. Each nutritional issue was discussed with the group at the start of the workshop for clarification and verification.

The nutritional issues identified in the pre-workshop questionnaire and were subsequently grouped under the following these:

1. Improving fertility through improving breeder condition score and weight gains in weaners and heifers;
2. Improving weight gains in store animals, beginning at weaning; and
3. Greater understanding of cattle nutrition and how animal nutrient requirements vary with class of stock.

Most managers had very specific production goals whereas head stockmen indicated that they wanted more general knowledge in nutrition.

In addition, each participant, including head office staff who either attended the entire workshop or a proportion of the workshop, was asked what their expectation was of the workshop to ensure that the workshop was a success for them.

Both the nutritional issues and expectations were revisited at the end of the workshop to ensure they had all been addressed and answered satisfactorily.

All of the workshop nutritional issues, expectations, review and feedback were collated and sent to both head office management and workshop participants.

5.1.2 Pre-workshop skills audit

The pre-workshop skills audit information provided an indication of the range of confidence, knowledge and skills of the workshop participants prior to the workshop, which allowed the presenter to tailor the workshop to meet the variation between participants well in advance.

The purpose of the pre-workshop and post-workshop skills audits was to gauge the change in confidence, skills and knowledge of each of the workshop participants. In section 4.4, a comparative analysis of the results between the pre-workshop skills audit and the post-workshop skills audits is detailed.

Each workshop participant provided their expectations of the workshop at the start, which is summarised in section 4.2.1. During the final review session, participants re-examined their expectations, to ascertain whether their expectations were met, which is detailed in section 5.3.1.

5.2 Delivery of Nutrition EDGE workshop

The MLA Nutrition EDGE package was developed as a three day workshop and has strict delivery and process protocols which must be adhered to.

For this project, considerable consultation between the presenter and Stanbroke occurred to determine which topics were a priority for the two-day workshop. A proposed modified program to fit within a two-day period was provided to Stanbroke which was further modified to suit their needs. The requirement for a two-day workshop was based on the need for managers and head stockmen to return to their properties earlier so that the first-round muster could begin.

5.3 Workshop reviews

5.3.1 Review of workshop expectations

At the start of the workshop, following on from a discussion of the nutritional issues and goals and strategies identified from the pre-workshop questionnaire, participants were asked what expectation they needed to have met for the workshop to be successful for them, if it was not already identified in the nutritional issues and goals and strategies.

There were a number of common expectations amongst workshop participants. The main aims were:

1. To improve their understanding of nutrition and specific nutritional needs of cattle in the Gulf of Queensland
2. To improve their knowledge and understanding feeding supplements so that it could be done more cost-effectively and strategically
3. To understand animal nutritional requirements so that they could be supplemented appropriately

All of the participants indicated that their expectations of the workshop had been met. This was further evidenced by the feedback, both quantitative and qualitative, provided from the completed MLA evaluations.

5.3.2 Group reviews

5.3.2.1 Learning review

On the completion of each module, each participant spent time recording in their books, the topics and activities in the module, what they learned or found interesting, what was relevant to their business or property management and what changes, if any, they could make to their business or property management.

Participants recorded how this information, if put into practice, could enhance their business and lifestyle. They also recorded what further information or help they required or where to get more information. These sessions were opportunities for participants to sit quietly and reflect on what they had learned and how it could be implemented.

5.3.2.2 Afternoon and morning reviews Days 1 and 2

At the end of day 1, there was a group discussion around what was learned and what stood out most for each participant and what each person would implement from what they learned each day (Refer to Table 2). On day 2, participants discussed in small groups what they had learned on the first day to reinforce their retention of the information, and each group presented their learnings to the rest of the group, and any requests for clarification.

There was a variation in the list put together by each group, with a slightly different focus on what was important. Because the participants had time for reflection overnight with their peers, their list was also different to the compilation the afternoon before.

A number of tasks identified that participants said they would implemented have been actioned, including: hay testing, diet quality analysis, better timing of the start of supplementation, bore water analysis and interpretation, and customizing supplements for weaners and breeders in relation to animal nutrient requirements, diet quality results and intake.

5.3.2.3 Day 2 final review

This final review was done individually and anonymously, so participants could be frank about what changes in nutritional management they would make on-property as a result of attending the Nutrition EDGE workshop. Participants wrote down on individual slips of paper what they would start doing, keep doing and stop doing as a result of the workshop. These are collated in Table 2. Once everyone had completed their slips of paper and posted them on a sheet, everyone had the opportunity to read what others had written.

These changes were collated and sent to participants to remind them of what they had committed to. At a follow-up workshop, these actions could be reviewed to look at the level of adoption.

New nutritional management activities and tasks that participants said they would start doing focussed largely around the themes of:

1. Diet quality analysis using F.NIRS technology
2. Water quality analyses and interpretations
3. Understanding lick labels and being able to source the right lick
4. Monitoring pasture quality and pasture condition

Nutritional management practices that participants identified they would stop doing are:

1. Putting lick out too late
2. Just purchasing lick on faith and recommendation by feed companies. They would now do their homework on what was required and analysing lick analyses to determine what they were supplying.

5.4 MLA Evaluation

This evaluation must be completed by all workshop participants at EDGE workshops, as a requirement by MLA of deliverers of the EDGE packages. This evaluation provides both the presenters and MLA with feedback on the content and delivery of the workshop, the presenter, the overall workshop package, what additional information participants require, how they will use the information and the benefits from attending the workshop including the return on their investment.

5.4.1 Delivery of modules – content and presentation

This workshop was an in-house training workshop so staff were nominated to attend, which is slightly different to Nutrition EDGE workshops where most of the workshop participants self-nominate to attend, so they naturally are motivated by changes they would like to make to their current management.

Although staff were told to attend this workshop, there were high ratings for both the content and presentation of the workshop and the value to them, as shown in Table 2. Ratings on content and presentation ranged from 8.9 and 9.3, with an overall average of 9.15. Ratings on the value of the modules to the participants ranged from 8.8 to 9.3, with an overall average of 9.17. In both assessments the mineral nutrition received the lowest rating.

5.4.2 Overall feedback on event

Participants rated overall satisfaction of the workshop, how valuable it was for knowledge and confidence as 9.5, 9.5 and 9.2 (See Table 2). They identified that they were still not fully clear about reading a lick label and the percentages on lick labels. This is a complex area which requires considerable training

5.4.3 Feedback on presenter

Feedback on the presenter averaged at 9.8 (See Table 2). This would likely have a strong influence on participant satisfaction with the workshop and the increase in the knowledge they pick up as well as the increase in their level of confidence.

5.4.4 Feedback on information from workshop

In the feedback, participants rated that the workshop reinforced what they knew about nutrition at 8.4 and rated the increase in their level of understanding at 7.8. Interestingly, in the post-workshop skills audit, whilst there was an increase in the participants' skills and knowledge in nutrition, their understanding of nutritional principles and the nutritional practices adopted on their stations, their confidence level didn't increase markedly. This correlates with their lower rating of their increase in level of understanding which is likely more about their confidence in how much they learned rather than a true reflection of how much they learned.

There was also an increase in the level of uptake of 86% of participants indicated that they would make changes however, 14% of participants said they wouldn't make changes (See Table 2). The 14% who said they wouldn't make changes were staff who were not based on the station and didn't have a role in making nutritional management decisions.

5.4.5 Extra information required following on from the workshop

When questioned about what extra information they needed, the common responses identified in Table 2 were grouped around:

1. Dung sampling for F.NIRS diet quality analysis
2. More pasture management fundamentals
3. Water analysis
4. Further consultation and advice

Interestingly, the pasture management module of the workshop was left out because the workshop was reduced to two days from three. This reinforces the important role pasture management plays in the nutritional management of cattle, and that it is an integral part of the Nutrition EDGE workshop.

The only circumstances in which a workshop participant indicated that they wouldn't be making any changes to nutritional management were staff from head office who didn't have a role in the management of the cattle.

5.4.6 Open questions

The results (See Table 2) from what participants found most valuable and why in the MLA evaluation correlate well with the feedback in the final review of the workshop. Being able to understand a feed label and analysing a supplement, were mentioned most frequently as being the most valuable aspect of the workshop. Module 1, which was about digestion and nutrients, Module 2 which was about understanding animal nutrient requirements and water requirements and Module 3, which was about pasture quality, diet selection and diet quality, were the three modules mentioned most frequently as being valuable.

The topic of HGP's which was covered very briefly in the workshop, was mentioned by one person as being least valuable and two people mentioned the subject of minerals as being least valuable by two other people as they found other aspects such as protein and energy, to be more important (Refer to Table 2).

There was a strong focus on being able to purchase and feed lick more cost-effectively, improve pasture management, and discussing the do's and don'ts of feeding supplements as being the benefits in attending this workshop in terms of time and money invested (Refer to Table 2).

5.5 Evaluation of the outcomes of the Nutrition EDGE workshop

5.5.1 Post-workshop skills audit

Three months following on from the Nutrition EDGE workshop, individual workshop participants were contacted for a phone interview, to complete the post-workshop skills audit. The skills audit consisted of both quantitative and qualitative questions into the following groups:

- Your confidence in skills and knowledge in nutrition
- Your understanding of fundamental nutritional principles
- Your new nutritional management practices
- Post-workshop feedback
- Your plan, goals and strategies

Three staff who attended the workshop were unavailable to complete the post-workshop skills audit because they had left the Company during this period and one other staff member was uncontactable due to work commitments.

The pre-workshop and post-workshop audits served a number of purposes:

- Provide an indication of the success in increasing the participants' confidence, skills and knowledge in cattle nutrition;
- Identified to the presenter where weaknesses, if any, still existed, and where additional training and assistance are required;
- Identified where further information and one-to-one advisory work may be required.
- Provided workshop participants with a greater understanding of the complexity of cattle nutrition and to better prioritize nutritional management, budgetary expenditure on supplements, timing of management and supplementation practices in relation to seasonal condition, animal nutrient requirements and diet quality;
- Provided management with an insight to capacity of staff to make judicious nutritional management decisions and to request well-executed proposals by station managers, for supplementation programs for budgetary consideration.

i) Your confidence in your skills and knowledge in nutrition

Overall, following the Nutrition EDGE workshop, there was no consistency in the change in level of confidence in either the participants' nutritional knowledge or how it could be applied. The change in confidence was often influenced by the role of the participant within the company (e.g. station manager or head stockman) so their level of experience or previous exposure to these principles and nutritional management would have a significant influence in the short-term.

If the workshop participants were interviewed in a year's time following on from the workshop, this may be a sufficient enough timeframe for them to increase their confidence as it would have provided them with more opportunity and time to improve their skills and knowledge and apply what they learned.

ii) Confidence in satisfying the feed requirements of different classes of stock to achieve specific animal performance targets (reproductive performance and target market specifications)

As shown in Figure 1, almost half of the workshop participants were either Not Confident or only Slightly Confident about feed requirements of different classes of stock to achieve specific animal performance targets, prior to the Nutrition EDGE workshop. Following on from the workshop, none of the participants indicated that they were Not Confident and more than 80% of the participants were either Confident or Very Confident in this skill.

iii) Confidence in managing nutrition of stock for seasonal variability

In Figure 2a, just under 20% of participants became Very Confident about managing nutrition of stock for seasonal variability however, the remainder actually became less confident overall. This is likely because in order to manage for seasonal variability there are a number of factors to consider at once.

iv) Confidence in making cost-effective decisions around feed gaps and feed surpluses

In Figure 2b, there was a decrease overall in the level of confidence in making cost-effective decisions around feed gaps and feed surpluses. This is likely due to the complexity of the number of decisions and the calculations required to make these decisions which weren't known prior to the workshop. Following on from the workshop, a number of workshop participants cited that they wanted more assistance and training in making cost-effective decisions around feed gaps.

v) Confidence in reading a feed label

One of the most difficult aspects of the Nutrition EDGE workshop is the ability to read a label due to the many pieces of information that must be evaluated and the balances between the nutrients, the effective levels of nutrients in a lick recommended intakes, and appropriateness for the targeted class of cattle, and land type and associated dietary deficiencies and primary limiting nutrients. It also included associated cost comparison calculations between supplements.

As shown in Figure 3a, 8% of the workshop participants had no confidence in reading the label but following the workshop, all workshop participants had at least some confidence. 18% of those who indicated at that they were Confident prior to the workshop, either became Very Confident or less confident (Slightly Confident) following on from the workshop. For those who became less confident, it was likely due to the awareness of the complexities of reading the label as outlined above. In the feedback on future activities, a number of workshop participants cited that they needed to spend more time on reading labels and doing associated calculations.

vi) *Confidence in selecting a supplement that is effective for the class of stock and current diet quality*

The issues with reading a label flowed on to selection of supplements (Figure 3b) where there wasn't a large improvement in confidence in selecting a supplement that is effective for the class of stock and current diet quality. While there was clearly an increase in knowledge and skills following on from the workshop as shown in section 6.1.1.2, there didn't appear to be a significant increase in the confidence to link all of the technical information to make nutritional management decisions that were cost-effective, without some assistance.

vii) *Confidence in assessing pasture quality*

Prior to the Nutrition EDGE workshop, 15% of participants had no confidence in assessing pasture quality (Figure 4a), but following the workshop, all participants had at least some confidence in assessing pasture quality. The biggest increase was the number of participants who were Very Confident in assessing pasture quality.

viii) *Confidence in using the AE system to compare various classes of stock*

A common term that is used in industry is AE's, or Adult Equivalents which all participants indicated that they were conversant with, prior to the workshop. However, following on from the workshop, there was a shift in the number of staff who indicated that they were Not Confident in using the AE system to compare various classes of stock (Figure 4b). This shift was comprised of head stockmen and an overseer. All managers had increased their confidence to use the AE system.

ix) *Confidence in understanding the differences in nutrient requirements between various classes of stock and how they must be supplemented differently*

In Figure 5, 15% of workshop participants indicated prior to the workshop that they weren't confident in their understanding of the differences in nutrient requirements between various classes of stock and how they must be supplemented differently, however, following on from the workshop, all of the participants had some level of confidence. There was a significant increase in confidence, with over 60% of participants becoming either Confident or Very Confident, compared with only 46% of participants either Confident or Very Confident prior to the workshop.

x) *Your understanding of fundamental nutritional principles*

This group of questions in the skills audit related to their knowledge in nutrition. The questions were based on what was delivered in the Nutrition EDGE workshop and related to key areas they need to be familiar with to effectively manage the nutrition of the cattle on the stations they work on.

Workshop participants were asked the same series of questions in the post-workshop skills audit, that they were asked in the pre-workshop questionnaire. However, in the pre-workshop skills audit, they answered the questions on their own, and submitted the completed audit in their own time. In the post-workshop skills audit, participants had to answer the questions over the phone. For some participants, particularly those in more senior levels, there was additional pressure to answer the question correctly.

xi) *How many stomachs are there in a ruminant?*

All of the workshop participants correctly indicated that a ruminant has four stomachs (Figure 6), prior to the Nutrition EDGE workshop however, three months later this declined to 82% of correct answers. It could possibly have been due to nerves because it was the first question asked.

There was also considerable discussion about digestion in each of the organs of the digestive system during the workshop, which sometimes led to participants believing that a more complex answer was required both during the workshop and in the post-workshop skills audit interview, when a simple answer was all that was required.

The result for this question may have been an indication that the participants had taken in a considerable amount of information, which they still had to process in the context of their position with the Company and their daily tasks. As mentioned above, there was also the additional pressure of having to answer technical questions over the phone, without any preparation.

xii) How can we measure animal nutrient status?

Figure 7a indicates that only 46% of workshop participants had a full understanding of how to measure animal nutrient status, prior to the workshop, but following on from the workshop, this increased to 100% of the workshop participants.

xiii) What are the indicators of good pasture quality?

Figure 7b indicates that, prior to the Nutrition EDGE workshop, none of the participants fully knew what all of the indicators of good pasture quality were but 69% of participants knew some of the indicators of good pasture quality. In the post-workshop skills audit, more than 90% knew what all of the signs were. This is a reflection largely of the nature of the work of most of the workshop participants, where they are out in the paddock and observing the cattle and pastures on a day-to-day basis, so this skill is highly relevant to their position description.

xiv) What is meant by the term "Dry Matter"?

The concept of Dry Matter was complex for some of the workshop participants, however, there was a slight lift in the understanding of Dry Matter, following on from the workshop. Only 46% of participants knew what Dry Matter meant before the workshop and this increased to 64% following the workshop, as shown in Figure 8a.

It is important to have a good understanding of Dry Matter, to calculate dry matter intake (DMI) of pasture by various classes of cattle, for calculating forage budgets, setting stocking rates and utilization levels, and for calculating intake of protein and energy from pasture intake, and how they match with animal nutrient requirements.

xv) What nutrient is usually most deficient in the wet season in northern Australia?

The majority of workshop participants had a good understanding of the primary limiting nutrient in the wet season, which was phosphorus, as shown in Figure 8b. This figure rose to 100% following on from the workshop, so all of the workshop participants are fully cognizant that cattle in phosphorus-deficient country require a wet season phosphorus supplement.

xvi) There are two general groups of minerals. What are they?

There was a significant lift in understanding the two general groups of minerals following on from the workshop, from 15% to 45% of staff understanding this (Figure 9a). Further discussion around minerals on the phone indicated that the workshop participants had a reasonable understanding of the minerals cattle require but still struggled to categorize them into major and macro minerals.

xvii) How are protein requirements measured?

Figure 9b shows a strong increase in the number of workshop participants who know the units used to measure protein requirements, from 8% to 64%. It is important to understand the units they are measured in because intake of pasture is measured in kilograms, so to calculate an animal's protein requirements there is a

conversion to grams, and hence, determine the gap between what it is consumed and how this differs from the animal's requirements. In addition, workshop participants evaluated supplements by determining how much total crude protein, and more specifically, how much urea the cattle were consuming from a supplement at the recommended intakes.

xviii) *How are energy requirements measured?*

Figure 9c indicated that there wasn't an increase in how energy requirements were measured following the workshop. However, almost 50% of participants already knew what units ME was measured in prior to the workshop.

Energy is not a tangible nutrient and the unit it is measured in is megajoules (MJ), however, there were actually considerably more workshop participants who knew what unit energy was measured in compared to protein prior to the Nutrition EDGE workshop. This level of understanding didn't appear to increase following on from the workshop, in regards to units of energy, likely because intake of protein can be measured by weight, which is easier for people to relate to whereas intake of energy which isn't tangible and is measured in units that people are less conversant with.

xix) *Your new nutritional management practices*

This group of questions in the skills audit looked at the degree to which various nutritional technologies, skills and systems were being implemented on the Stanbroke properties, following the Nutrition EDGE workshop and how this compared to the nutritional management practices prior to the workshop. The post-workshop skills audit was conducted three months after the workshop to allow workshop participants to process and implement some of the technical concepts into the nutritional management of their cattle. These questions were also asked in the initial pre-workshop skills audit. The results from both audits were then compared to see what changes to nutritional management occurred.

xx) *When setting stocking rates, do you convert stock numbers to AE's?*

There was an obvious shift in the number of workshop participants that indicated in the pre-workshop skills audit that using AE's to set stocking rates was a management practice from Normal Practice or used Sometimes or Rarely, to being the Manager's Role. The participants who indicated that this was the Manager's Role were comprised of head stockmen and an overseer.

It is likely that the use of AE's to correlate animal class, weight and stage of production with grazing pressure, to adjust stocking rates, which they also indicated that they didn't have confidence in doing earlier in the skills audit, was deemed to be the role of the station manager.

xxi) *Do you test the water quality of your bore (if you have bores)?*

There was a considerable increase in the number of workshop participants who have adopted water quality testing as Normal Practice following on from the Nutrition EDGE workshop, rising from 15% to 50%, while the number of workshop participants who Sometimes did water quality tests fell dramatically, from 46% to 10% (Figure 11a).

xxii) *Do you get the bore water quality results interpreted?*

Similarly, there was also a strong increase in the number of participants who now deem getting bore water quality results interpreted as Normal practice (Figure 11b), which rose to 50% of participants. This means that it is likely that everyone who gets a water quality test done, also gets the water quality results interpreted. This is a simple but important practice to adopt because it is easy and straightforward to do.

There needs to be a follow-up on any of the issues with bore water quality were managed once an interpretation was received.

xxiii) Do you purchase your hay using specifications?

In the post-workshop skills audit, 30% of participants indicated that it was now Normal Practice to purchase hay using specifications compared with none of the participants indicating that it was Normal Practice prior to the workshop. In contrast, 30% of participants post-workshop indicated that they never purchased hay using specifications, and a significant number of participants indicated that this was the Manager's Role (Figure 12a).

xxiv) Do you assess pasture quantity and pasture/diet quality?

The majority of workshop participants indicated, prior to the workshop, that it was Normal Practice (77%) to assess pasture quantity and pasture/diet quality (Figure 12b) and 15% saw this as the Manager's Role. Following the workshop, 90% of workshop participants indicated that this was now Normal Practice, with none of the participants seeing this as the Manager's Role. Assessing pasture and/or diet quality is an integral step in identifying the nutritional gap between the nutrients the pasture is supplying and the requirements of the class of stock grazing in the paddock.

xxv) Do you identify which nutrient is most deficient in the diet before making supplementary feeding decisions and lick purchases?

Identifying which nutrient was most deficient in the diet to make supplementary feeding decisions and lick purchases proved to be more difficult, as there wasn't an overall increase in the number of participants that improved this skill enough to be able to this (Figure 13). However, at least 50% of participants were doing this as Normal Practice, while 20% of participants indicated that this was the Manager's Role. It would be useful to test the workshop participants again a year on from the workshop as asking them this question three months after the workshop did not give them enough time to practice this new skill so that they were comfortable enough to add this to their list of responsibilities.

xxvi) Do you use animal condition score to make decisions on when to supplementary feed?

The majority of workshop participants identified using animal condition score to make supplementary feeding decisions as Normal Practice (Figure 14) prior to the Nutrition EDGE workshop, however, this figure increased three months after the workshop, from 69% to 80%. Only a small proportion of staff (10%) saw this as being the Manager's Role.

xxvii) Do you use pasture quality to make decisions on when to supplementary feed?

Prior to the workshop, 85% of participants indicated that it was Normal Practice to use pasture quality information to make decisions on when to supplementary feed, while 8% of workshop participants saw this as the Manager's Role (Figure 15a). There was a strong lift in the number of participants who saw this as the Manager's Role (20%) following the workshop. All of the participants who saw this as the Manager's Role were head stockmen.

xxviii) Do you use diet quality information to formulate rations?

In Figure 15b, there was a significant increase in the number of workshop participants who indicated that using diet quality information to formulate rations was now Normal Practice, rising from 31% to 50%. The sharp rise from 15% to 30% in the number of participants, indicating that this was the Manager's Role after the workshop. This came from the head stockmen and overseer.

xxix) Do you predict animal performance based on pasture or diet quality?

There was a very sharp rise in the post-workshop skills audit, in the number of workshop participants who now consider predicting animal performance based on pasture or diet quality as Normal Practice (Figure 16a), rising from 46% to 70%. All workshop participants who completed the post-workshop skills audit use this tool to some degree, with only 10% rarely using this tool.

xxx) Do you calculate the cost-benefit of management decisions?

In Figure 16b, there was a significant shift in the number of workshop participants who no longer indicated that they calculate the cost-benefit of management decisions, declining from 62% prior to the workshop to 30% following the workshop. This is likely due to gaining a considerable amount of knowledge on the many factors that must be considered when carrying out a cost-benefit analysis, as well as how to calculate a cost-benefit analysis. There was a rise in the number of participants who indicated that this was a Manager's Role, from 15% to 60%. Staff who indicated that this was the Manager's Role comprised both station managers and head stockmen, which means that in the case of station managers, this would be something they would rely on the business analyst to calculate for them.

xxxii) Do you use the "green date" and "production point" for making management decisions?

There was a large shift in the number of workshop participants who initially indicated that they used the "green date" and "production point" for making management decisions from 62% for those using it as "Normal practice" or "Sometimes", to 30%, with the most significant increase in those "Never" using "green date" and "production point" for making management decisions, from 8% to 30%. There was also a lift in the number of staff (head stockmen) who indicate that this was either "Not applicable or manager's role", from 31% to 40% following the workshop.

This decline in the number of the people using this tool was due to gaining an understanding of the complexity and science in making management decisions around the "green date" and "production point". While everyone appeared to understand the concept of "green date", few of the participants knew what "production point" was or the reasons for needing to make decisions on stock movements at this stage when there hasn't been a break in the season.

xxxiii) Do you control-mate your maiden heifers?

Prior to the Nutrition EDGE workshop, the majority of workshop participants indicated that heifers were control-mated (Figure 17a), however, after more clearly defining control-mating, this figure declined slightly, from 85% to 80%, after the workshop. There was an increase in the number of participants who indicated that this was the Manager's Role.

xxxiiii) Are heifers run as a separate mob to the rest of the breeders?

100% of workshop participants indicated prior to the Nutrition EDGE workshop that heifers are run as a separate mob to the rest of the breeders (Figure 17b). This figure decreased to 90% with a rise to 10% of participants indicating that this was the Manager's Role. This shift was likely due to the interpretation of the question, rather than a real change in how the heifers are managed as a separate group.

xxxv) If heifers are run separately, are they run separately until their second mating?

69% of workshop participants indicated in the pre-workshop skills audit that, where heifers that are run as a separate breeder group, they are run separately until their second mating (Figure 17C). Following the workshop, after this was more clearly defined, there was a decrease in the number of participants who indicated that the heifers were run as a separate group until their second mating. Again, this change following on from

the workshop is more likely due to a clearer understanding of the question rather than a change in how the heifers were managed in the three-month period.

It was not surprising that there was no increase in managing heifers as a separate group in the short-term because changes to the dynamics of how breeders are managed in the paddock require considerable labour input and strategic direction, so are considered to be long-term management decisions.

xxxv) *Are weaners fed supplements other than hay, in the yards?*

77% of workshop participants indicated in their pre-workshop skills audit that weaners were fed supplements other than hay, in the yards (Figure 18a). Following the workshop, this figure increased to 90%.

xxxvi) *Are weaners segregated into weight groups in the yards?*

84% of workshop participants indicated prior to the Nutrition EDGE workshop that segregating weaners into weight groups in the yards was sometimes done or Normal Practice (Figure 18b). Following on from the workshop, 50% of workshop participants indicated that segregation of weaners in the yards was not practiced. This is likely due to how the question was interpreted prior to the workshop and following the workshop when participants had more technical understanding of how the nutritional requirements differed for the various weight groups of weaners. This change in how the question was answered was not likely due to a change in weaner segregation management.

5.5.2 Post-workshop feedback

In this group of questions in the skills audit, workshop participants were asked questions about the content of the workshop and what was useful and not useful, what was relevant to their job description, and to identify what they would like further training or assistance with in relation to what they had learned.

i) *What did you find most useful from the workshop?*

The head office executive staff valued the new nutritional knowledge from the workshop, and having a number of means to address a nutritional issue, and practical ways to address problems (See Table 2).

Station managers valued the technical discussions with the presenter on the nutritional issues they were experiencing, lick and water analysis sessions, understanding nutrients and animal nutrients requirements, and getting to know where other managers are at benchmarking with them.

ii) *What did you find least useful from the workshop?*

In Table 2, head office executive staff found all of the information and sessions in the workshop to be useful, and this was the same for the station managers with the exception of one manager who wanted to focus completely on how what he learned could make him more efficient in his position rather than some of the more technical aspects of the digestive system even though this had a very practical link to how cattle are managed in the paddock.

Because ruminant nutrition is such a complex, multi-faceted aspect of cattle management, the link between some of the technical aspects and how cattle are managed are not always immediately apparent, because there are a number of a different factors that influence animal performance.

Head stockmen generally found value in the workshop however, some head stockmen didn't grasp the technical concepts as easily as others. This workshop is generally targeted at the manager/property owner level, however, head stockmen and overseers often attend these workshops and learn the concepts quite easily but generally, as in this the case in this workshop, there occasionally is a head stockman that finds the concepts harder to grasp, either due to lack of industry experience or working at a level where they might be doing

considerable stock work but not being given the responsibility of making informed decisions on nutritional management.

iii) What was most relevant to your role with Stanbroke?

In Table 2, head office staff indicated that the information on supplement including timing of putting out supplements, supplement type and how to get the best benefit from supplements, as most important to them.

Station managers indicated that better breeder management with supplements, pasture and supplement management, diet quality and water testing, and managing supplements was most relevant to them.

Head stockmen spend the majority of their time out in the paddock so they do most of the manual labour and spend more time looking at cattle and pastures than staff at higher levels. They found that understanding the value of phosphorus, learning how to read a lick label, pasture quality assessments and implications of not feeding properly were most relevant to their role.

iv) What would you like more information on or need more assistance with?

When asked what participants wanted more information on or needed more assistance with in Table 2, head stockmen wanted to focus on plant identification and improve their skill in lick calculations whereas the managers identified a number of areas they required assistance with including more technical understanding but also taking a systems approach to improve productivity.

To meet the needs of the head stockmen a one-day workshop on plant identification and reviewing calculations would likely be sufficient however, for the station managers, there appears to be a need to have both a follow-up day to review some of the areas that they have identified, in addition to providing assistance to them individually. It would be useful to involve senior management from head office in the process of working with the managers and updating them. In addition, this would enable them to have a clearer idea of what is being proposed and the benefits so that they can carry out cost-benefit analyses for the station managers.

v) If a one-day follow-up workshop were held, what topic(s) would you like covered?

Each participant was asked what follow-up activities relating to nutrition they would like. Because of the significant differences in responsibilities in the roles of head office executive staff, station managers and head stockmen, their responses were grouped according to their position with Stanbroke (Refer to Table 2).

At all levels, there was a common need to learn more about plant identification and what was on offer to cattle, and to be able to understand a supplement analysis.

Head office staff were interested in the strategies to manage nutritional gaps between the animal and what the pasture feed was providing, and both head office staff and managers wanted to utilize the diet quality technology more.

Head stockmen had a very strong interest in getting more training in carrying out lick calculations and managing various classes of cattle.

This workshop was condensed down into two days, so the decision was made in conjunction with Stanbroke head office management to leave out the module on pasture growth and forage budgeting. Not surprisingly, a number of workshop participants indicated that they would like to learn more about forage budgeting.

There were several issues identified by each group, each targeting a slightly different focus. It would be useful to have station managers and head office management together at a workshop as they work closely together.

However, a separate workshop for head stockmen would be effective because it would target what they would like more information on, on a very practical level.

vi) What nutritional goals/targets have you set as a result of the workshop?

At all levels within the Company, some staff had very specific goals that they wanted to achieve and others had more general goals related to nutrition. There were quite a number of goals set by head office executive staff, station managers and head stockmen and these were in alignment with their job position description, shown in Table 2.

This group of questions related to the nutritional plans, goals and strategies the participants have set following on from the workshop, and what steps they have taken to meet the targets. The expectation was that head stockmen were less likely to set goals because their role was very much more operational and out in the paddock, and that there wouldn't have been many goals set only three months after the workshop because participants would have still been processing the information.

vii) What are some steps you have taken to achieve this goal so far?

At each level within the company, staff who attended the Nutrition EDGE workshop have made a number of changes to management, and these were quite diverse (see Table 2). Both managers and head stockmen indicated that they spoke with upper management regarding various aspects of nutritional management.

Head office staff have a clearer understanding of lick requirements and what different classes of cattle require.

Station managers have followed up on purchasing hay with nutrient analyses but found that this was difficult to source. Station managers have also undertaken water testing and diet quality testing, and have been more strategic with timing of supplementation and reformulating licks for various classes of cattle.

Head stockmen indicated that they have been ensuring that cattle don't run out of lick and they are making more observations of changes in the paddock and cattle. They also indicated that there has been more communication regarding decision-making.

6 Conclusions/recommendations

6.1 Conclusions

The workshop participants' knowledge level appears to be higher than their change in confidence level so while they understand the nutritional concepts, technologies and skills they have acquired better than they believe, their lack of confidence likely serves as an impediment to making changes. This is why it is so vital to continue providing ongoing support and practical nutritional skills training to reinforce what is learned.

There were distinct differences in what nutritional information is relevant to participants within a company depending on what their position description is. This is because the focus shifts with the position description. For example, where the head stockmen have almost a complete hands-on perspective of nutrition in their role because they are mostly out in the paddock, head office managers at the other end of the hierarchy have to have a more strategic focus on nutritional management as well as being responsible for co-ordinating many properties and making budgetary decisions.

Communication between head stockmen and managers, and between managers and head office staff, has increased in relation to a number of aspects of nutritional management of stock.

Pre-workshop and skills audits are also a useful tool for exploring where there might be issues in learning the workshop material through getting an understanding of confidence levels and familiarity with various nutritional management practices and the variation that will be encountered across a workshop group.

Properties have sought ongoing assistance and advice, and workshop participants expressed a desire and need to have formalised follow-up training to reinforce what was learned, to improve their skill and understanding, and to receive more training in areas that were identified, such as plant identification.

There were distinct differences in what nutritional information is relevant to participants within a company depending on what their position description is. This is because the focus shifts with the position description. For example,

Providing more detail about the participants' confidence, knowledge and skills, and what their nutritional goals and strategies are, assists senior management in the Company with further developing staff capacity in these areas. It can also serve as a conduit for raising issues between properties and higher levels of management in future planning and budgeting, and possibly restructuring the herd dynamics to address nutritional issues, where appropriate.

The in-house training model for pastoral companies is ideal for their staff because the pastoral company properties have common goals and work towards similar markets and there are transfers of livestock from breeder properties to backgrounding properties and feedlots. There is more cohesiveness between participants at company in-house training workshops and participants can speak more frankly about their operations. Because the operations work together, there is additional benefit from requesting participants to complete a pre-workshop skills audit, for the benefit of the trainer and management of the pastoral company, to gain an understanding of the issues that each of the properties are experiencing, where there is commonality, and whether these issues can be addressed on a whole of company basis or individually with the property managers.

There was a benefit in having staff from senior management, station management and head stockmen attending the same workshop as it enabled senior management to understand the challenges individual staff as well as properties, faced, and to discuss nutritional issues technically and with a presenter with technical expertise to provide objective feedback. However, it was also much more challenging due to differences in perspectives, experience, knowledge and skills from having a wide variety of positions at all levels represented at the workshop.

It is important to conduct a follow-up from workshops to see how participants are doing, what progress has been made and to offer assistance, which would significantly increase adoption. Delivery of in-house workshops develops rapport more quickly because everyone works for the same company. Private consultants delivering in-house training can provide further support and advice on an individual basis following a workshop, which government organizations may have less capacity to do because the issue of private benefit to individuals. There has been considerable follow-up advice and assistance provide following the Nutrition EDGE workshop with Stanbroke.

6.2 Recommendations

6.2.1 Pre-workshop skills audit

The skills audit is a means of establishing a benchmark for each participant's level of confidence, skills and knowledge in ruminant nutrition. This enables the presenters to measure both qualitatively and quantitatively, the changes made by each participant following the workshop.

The pre-workshop skills audit, in conjunction with the post-skills audit provides the presenter with valuable feedback on their success in effecting change in the participants' confidence, skills and knowledge in cattle nutrition, and assisting participants with applying what was learned at the workshop to their management and operation.

The skills audits are particularly helpful for consultants who wish to work with participants:

1. As a group in a follow-up day to focus on areas identified as priorities for further learning;
2. Individually, in assisting participants with specific nutritional issues; and
3. To provide recommendations for further formalised training.

Although workshop participants can complete the pre-workshop skills electronically, there is considerably more value in going through the audit with each participant, to personalize the audit, to allow for more qualitative input from the participants, and to establish rapport with each participant prior to the workshop.

Nutritional issues, and goals and strategies from the pre-workshop questionnaire must be re-visited with the group at the start of the workshop to get clarification and reinforce the issues and goals and strategies whilst maintaining anonymity of the contributors. The goals and strategies provide context on which to apply their learnings at the workshop. It is important to ensure that each participant writes down their goals and strategies. The learning review at the end of each module should serve as an opportunity to reflect on the goals and strategies and the new information that can be applied to achieving them.

6.2.2 Expectations in conjunction with nutritional issues

The nutritional issues identified by workshop participants at the start of the workshop, form the basis of what information participants wish to gain from the workshop, however, further expectations are identified once participants discuss nutritional issues with other participants at the workshop. Both the nutritional issues and further individual expectations are reviewed with the group at the end of the workshop. It is critical that time is allocated to enable the presenter to revisit the issues and expectations, to ensure that all participants are satisfied that they are able to implement what is learned, or know where to seek further information.

6.2.3 Learning reviews

It is imperative that time is allocated to completing learning reviews. The learning reviews are timely because they are completed immediately following the delivery of each module, to facilitate retention of what is learned at the workshop and to enable participants to consider actions they can take to implement what is learned in a practical context, or follow-up on seeking more information or assistance.

6.2.4 Group reviews

The daily reviews in the morning reinforce what the participants have learned the previous day, and provide them with the opportunity to ask for further clarification once they have had a chance to summarize what they learned. Participants also have an opportunity to discuss with their peers what they have learned and how it applies to their property.

At the end of each workshop day, an additional review is conducted to immediately get participants to consider how they will apply what they have learned in a practical sense. This encourages them to make decisions and apply what is learned. The regular reviews assist with participants' ability to retain the knowledge once they return to their property or other business.

The final review on changes that participants commit themselves to is an important step to making changes. A summary of the group reviews and individual reviews is collated and sent to each participant following the workshop, which holds them accountable to the changes they committed to making, even though the changes are written anonymously.

Although the majority of the time is spent in delivering technical information and group exercises and practical sessions to implement what is learned, the monitoring and evaluation is a critical aspect of the workshop because it allows the participants to evaluate what is learned and how it can be applied to their operation, increasing the probability of adoption of the technologies learned.

The group and individual reviews are an integral and vital part of the workshop process to ensure a high level of adoption, so it is imperative that all deliverers ensure that participants undergo all of the review processes.

6.2.5 Post-workshop skills audit

The post-workshop skills audit was effective for determining what participants need more help with and to identify further training requirements. This could be utilized with both in-house company training and training for the general public.

Post-workshop skills audits could be carried out by an independent body however, they are best conducted by someone they have established rapport with, which may be the deliverer. It is important that the audit is conducted by someone who is familiar with the package, if it is not the deliverer because they may be required to provide more clarification on the questions asked, and so participants can be drawn out more on what their knowledge gaps, training requirements and needs for further reinforcement are.

An additional skills audit should be conducted one year on from workshops to further identify what long-term changes are made to the nutritional management of cattle, particularly those that take longer to implement.

Skills audits should be consistent and in alignment with the nutritional concepts and skills in the Nutrition EDGE workshop to determine the uptake of information from the workshop. The post-workshop skills audit conducted for this project was carried out three months following the workshop. This would be considered to be a short-term timeframe to make nutritional management decisions because for some of the more major decisions, there would need to be changes to infrastructure, budgetary approvals, and increases in labour. Conducting a follow-up audit 12 months later would be a better reflection of long-term committed change in nutritional management.

Providing more detail about the participants' confidence, knowledge and skills, and what their nutritional goals and strategies are, assists senior management in the Company with further developing staff capacity in these areas. It can also serve as a conduit for raising issues between properties and higher levels of management in future planning and budgeting.

There is a need to develop questions in a format other than what was used in the pre-workshop and post-workshop skills audits, to test knowledge levels in a less threatening way than asking direct questions. This would reduce the pressure on workshop participants to answer them correctly. Participants in the workshop expressed considerable discomfort in the pressure to answer questions correctly, particularly if they are operating at a higher level in the company. This information is valuable for establishing where participants are

at in their level of knowledge prior to the workshop, to assist with workshop preparation. It is also useful for determining how much learning was retained from the workshop. However, the benefits of this aspect of the skills audit is overshadowed by the increased stress and pressure it places on workshop participants so alternative means of gathering this information need to be explored.

The use of pre-workshop and post-workshop skills audits is recommended for in-house training with pastoral companies; however, it should not include the section on their level of knowledge in nutrition as this doesn't cater to adult learning principles, and it increases the risk of participants not completing their skills audits and returning them prior to the workshop.

Telephone interviews should be utilized in both the pre-workshop and post-workshop skills audit, to be consistent and to better explain questions so that they are answered properly and fully.

The post-workshop skills audit in conjunction with the daily group evaluations can be used in place of the MLA evaluations, to save doubling up on additional time spent by participants in completing monitoring and evaluation. Some of the skills audit can be completed after each module however, there was real value in conducting the post-workshop skills audit to gauge changes in practices and understanding of concepts. Conducting the skills audit via telephone is effective but very time-consuming, so unless the deliverer is going to use this information to carry out consultancy work or run more workshops, if this becomes an obligatory component of MLA's EDGE workshop delivery requirements, then deliverers must be remunerated for their time.

Where the pre-workshop and post-workshop skills audits would be extremely useful is when the workshop is either a feeder activity or integral part of a coaching (or PGS) program. However, because the skills audits are very involved and time-consuming, PGS coaches need to be funded separately to conduct them, if the skills audit information is shared IP with MLA.

6.2.6 Delivery

EDGE workshops have been used as feeder activities to develop coaching groups through the MLA PGS program. The coaching groups could also be utilized as an effective means of elaborating on what is learned at workshops by having on-property sessions to practice some of the skills or implement technologies which will result in a stronger commitment to adopting the technologies through the long-term assistance of a coach and support from peer learners.

In order for workshop participants to get more value from the workshop, they should go through the process of writing their nutritional goals at the start, or even before the workshop commences. During the course of the workshop, workshop participants should be regularly reminded to look at how the technical information, strategies and skills can be applied to meet that goal, or identify other factors that will influence the goals that are set, which may or may not be nutrition-related.

Ideally, the three-day workshop could be split into two or three delivery days, with time between to allow participants to absorb the information and concepts and implement what is learned or seek help to gain a better understanding and explore means of implementing what is learned. However, the costs for delivering the workshop in separate segments can be considerable, and co-ordinating mutual times to suit everyone can be difficult and time-consuming. In the case of the Nutrition EDGE package, the modules interlink and reinforce what is learned in previous modules. If the workshop is stretched to a two separate two-day delivery dates format, then the pricing structure needs to be adjusted. This will also allow for more technical discussion and for deliverers to go into more detail on concepts delivered, where required.

6.2.7 Workshop group dynamics

The in-house training model for pastoral companies is ideal for their staff because the pastoral company properties have common goals, may have common markets that they are working towards, and there are transfers of livestock from breeder properties to backgrounding properties and feedlots. For those companies with their own meatworks, there is also a direct feedback mechanism available to look at the influence of management changes on compliance with market specifications and meat quality.

There is more cohesiveness between participants at company in-house training workshops and participants can speak more frankly about their operations. Because the operations work together, there is additional benefit from requesting participants to complete a pre-workshop skills audit, for the benefit of the trainer and management of the pastoral company, to gain an understanding of the issues that each of the properties are experiencing, where there is commonality and whether these issues can be addressed on a whole of company basis or individually with the property managers.

There was a benefit in having staff from senior management, station management and head stockmen attending the same workshop as it enabled senior management to understand the challenges individual staff as well as properties, faced, and to discuss nutritional issues technically and with a presenter with technical expertise to provide objective feedback.

In order to include all levels of management and staff at a common in-house workshop, there have to be clear guidelines for the workshop to ensure that everyone is in an environment that they feel safe to ask questions, discuss issues and participate, and not feel intimidated or constrained by their position with the company relative to that of others at the workshop.

6.2.8 Follow-up activities

It is important to conduct a follow-up from workshops to see how participants are doing, what progress has been made and to offer assistance. There has been considerable follow-up advice and assistance provided following the Nutrition EDGE workshop with Stanbroke.

Conducting follow-up activities to ascertain what additional assistance and workshop activities are required to reinforce what is learned, is critical to the adoption of skills and technologies on-property, or at least to ensure that these are valued by the property, even though they might engage a private consultant to assist with implementing them on-property.

The one-day follow-up used to be an integral part of the workshop package and was most successful when it was delivered within six months of the workshop, to maintain momentum. However, there wasn't perceived value from attending the follow-up which was evident by the low return rate of participants. Those who attended the follow-up reinforced what they previously learned and had the opportunity to apply what was learned so they came back with more questions on the implementation to further facilitate the adoption of what they learned and improve nutritional management.

The follow-up workshop should be reinstated as a separate stand-alone follow-up activity. This workshop should be formalised so that it is recognized as an important and critical aspect of making changes to the nutritional management of the herd or flock, following on from a Nutrition EDGE workshop.

The use of webinar or online meeting technologies to further reinforce what is learned at workshops can be utilised by deliverers, based on the outcomes of the post-workshop skills audit and the topics the workshop participants identify for further training.

7 Bibliography

Jackson, D, 2017, Nutrition EDGE material finalization, Final Report, B.GFB.1717, Meat & Livestock Australia Limited, North Sydney, NSW.

Jackson, D, McIntosh, F, Milson, J, Oxley, T, Farrell, R & Cavallaro, K, 2015, Review and update of the FutureBeef extension training packages, Final Report, E.IFL.1302, Meat & Livestock Australia Limited, North Sydney, NSW.

Jackson, D & McIntosh, F 2017 Nutrition EDGE Workshop Notes, revised edition, Meat & Livestock Australia Limited, North Sydney, New South Wales.

8 Acknowledgements

The author would like to acknowledge Jack Luxford for his assistance in executing this project and reading through draft milestone reports, and Harry Evans for reading through the final report. The author would also like to acknowledge Stanbroke for their commitment to the project, and MLA for funding the project.

9 Appendix

9.1 Pre-workshop questionnaire



Nutrition EDGE Pre-Workshop Questionnaire

*February 27-28, 2018
Stanbroke*

1. Name of attendee(s)

2. Property name(s)

3. Property size(s) combined

4. Land type(s) (and approximate proportions)

5. Cattle

	Breeders (including replacement heifers)	Growing and Finishing (including heifers)
Number of head		

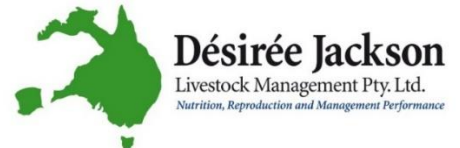
6. Current markets you sell to/target

7. Please document any nutritional questions and issues you have

8. Write a nutritional goal you would like to incorporate into a nutritional management plan (eg. increase weaner turn-off weight from 180 to 200 kg)

Please return completed form to:

E-mail: desireejackson@djlm.com.au



9.2 Pre-workshop skills audit

Stanbroke 2-day Nutrition EDGE workshop Monitoring and Evaluation **Pre-workshop skills audit**

Name _____

Position _____

Property _____

(or location)

Your confidence in your skills and knowledge in nutrition

	Very confident	Confident	Slightly confident	Not confident
Satisfying the feed requirements of different classes of stock to achieve specific animal performance targets (reproductive performance and target market specifications)				
Managing nutrition of stock for seasonal variability				
Making cost-effective decisions around feed gaps and feed surpluses				
Reading a feed label				
Selecting a supplement that is effective for the class of stock and current diet quality				
Assessing pasture quality				
Using the AE system to compare various classes of stock				
Understanding the differences in nutrient requirements between various classes of stock and how they must be supplemented differently				

Your understanding of fundamental nutritional principles

Answer the following questions. This is used as a guide to tailor the workshop to meet your requirements.

How many “stomachs” are there in a ruminant?	
What are the key nutrients of concern in northern Australia?	
What two factors have the biggest influence on pasture intake?	
How can we measure animal nutrient status?	
What are the indicators of good pasture quality?	
What are the different supplement groups?	
What is meant by the term “Dry Matter”?	
What is the fairest way of comparing the cost of two supplements?	
What nutrient is usually most deficient in the wet season in northern Australia?	
If there are no nutrients that are limiting in the diet, which class of stock has the highest ADG on a weight basis?	
What can happen to cattle under 150kg in the long term if they undergo weight loss before they reach 150kg?	
There are two general groups of minerals. What are they?	
How are protein requirements measured? (what units)	
How are energy requirements measured? (what units)	



Désirée Jackson

Livestock Management Pty. Ltd.
Nutrition, Reproduction and Management Performance

Your current nutritional management practices

	Normal practice	Sometimes	Rarely	Never	N/A
When setting stocking rates, do you convert stock numbers to Adult Equivalents?					
Do you test the water quality of your bore water (if you have bores?)					
Do you get the bore water quality results interpreted?					
Do you purchase your hay using specifications?					
Do you assess pasture quantity and pasture/diet quality?					
Do you identify which nutrient is most deficient in the diet before making supplementary feeding decisions/lick purchases?					
Do you use animal condition scores to make decisions on when to supplementary feed?					
Do you use pasture quality to make decisions on when to supplementary feed?					
Do you use diet quality information to formulate rations?					
Do you predict animal performance based on pasture or diet quality?					
Do you calculate the cost-benefit of management decisions?					
Do you use the "green date" and "production point" for making management decisions?					
Do you control-mate your maiden heifers?					
Are heifers run as a separate mob to the rest of the breeders?					
If heifers are run separately, are they run separately until after their second mating?					
Are weaners fed supplements other than hay, in the yards?					

Are weaners segregated into weight groups in the yards?					
---	--	--	--	--	--



Your plan and strategies

1. In what area of managing the nutrition of your cattle do you want to learn more to assist you?

2. What is one nutritional goal/target you have either for your role with Stanbroke or with the management of the cattle on the property you are on.

3. What are some steps you have taken to achieve this goal so far?

9.3 MLA evaluation



Nutrition EDGE Workshop – “Warren Vale”, Normanton (Stanbroke, in-house)

Feedback sheet

Thank you for completing this questionnaire. Your feedback helps us to improve future Nutrition EDGE workshops.

Name: _____ Workshop (location): _____

Property Size (Ha): _____

Total No: Beef (hd): _____ No: turned off per year (hd): _____ Breeder No: (hd): _____

Total Sheep No:(hd): _____ No: ewes (hd): _____ No: lambs turned off per year (hd): _____

On a scale of 1-10, please rate the sessions for a) content & presentation, and b) value to you. Scale: 1 = Poor, 5 = Average, 10 = Excellent

Module / Session	Content & Presentation	Value to you
Module 1 – Digestion and nutrients	/10	/10
Module 2 – Animal nutrient and water requirements	/10	/10
Module 3 – Pasture quality, diet selection and diet quality	/10	/10
Module 4 – Pasture growth, intake and forage budgeting	/10	/10
Module 5 – Mineral nutrition	/10	/10
Module 6 – Supplementation and other tools	/10	/10
Module 7 – Practical nutritional management	/10	/10
Event		
Overall, how satisfied are you with this event?		/10
Overall, how valuable was this event in improving your knowledge to manage your business?		/10

Overall, how valuable was this event in improving your confidence to manage your business?	/10
What areas covered are you still not fully clear about?	

Presenter(s)	
How would you rate the delivery of the workshop	/10
What comments do have on the presenter(s), their knowledge and delivery of content and ability to answer questions?	

Using the information you heard over the last two days:

How much did you feel you increased your understanding and/or skills about the topics covered at the workshop? (where 1=very little; and 10 = a lot)	/10			
To what extent did the information reinforce things you are already doing? (where 1=very little; and 10 = a lot)	/10			
Do you plan to take actions and/or make changes to your business as a result of attending this forum?	<table border="1"> <tr> <td>Yes</td> <td>No</td> <td>Unsure</td> </tr> </table>	Yes	No	Unsure
Yes	No	Unsure		
If you do plan/expect to take actions or make changes, what might this be? <input type="checkbox"/> Follow up for further advice, discussion, training or information. <input type="checkbox"/> Assess my current operation in the light of what was learned. <input type="checkbox"/> Purchase new equipment (what): <input type="checkbox"/> Make a specific change to my advice/enterprise management (brief details): <input type="checkbox"/> Other – please state:				
What extra information or assistance would you need to act on these plans?				
If you are not taking any action or changes, briefly describe why not?				
Open questions for comment:	Please provide a response in the space below			
What aspect of the workshop did you find the most valuable & why?				
What aspect of the workshop did you find the least valuable & why?				

How would you describe the benefits of the workshop in terms of your investment of time & money?	
---	--

Workshop Feedback

MLA may use the feedback provided by me on this form in the promotion of Nutrition EDGE workshops.

(please tick box if you **agree**)

Please give us any feedback about the overall workshop that would help us improve future events.

MLA may contact us by phone in the future as part of the evaluation process for this course

(please tick box if you **agree**)

Would you like to receive information (via email or by phone) from MLA or MLA's service providers in relation to other MLA supported adoption projects which may complement what you have learnt here today?

(please tick box if you **agree**)

Are you an MLA member Yes No - if no, would you like to join Yes No

Thank you for giving us your feedback. We hope you had a great time.

The information you are providing to meat and livestock Australia Limited ABN 39 081 678 364 ("MLA") may be personal information under the privacy act. We will collect, hold, use and disclose the email address you have given us and the personal information you provide in the manner set out in MLA's privacy policy (located <http://www.mla.com.au/General/Privacy>) including for evaluating this workshop, improving our services, keeping you informed about member benefits, market news, industry information and other communications from MLA. If you do not provide the personal information requested MLA may not be able to provide you with products or services. By providing MLA with your personal information you consent to the collection and handling of your personal information in accordance with MLA's privacy policy which can be viewed at <http://mla.com.au/General/Privacy> or obtained directly from MLA by calling 1800 023 100. The EDGENetwork® concept is jointly owned by Meat & Livestock Australia Limited and the Department of Primary Industries, Victoria

9.4 Post-workshop skills audit

Stanbroke 2-day Nutrition EDGE workshop Monitoring and Evaluation Post-workshop skills audit

Name _____

Position _____

Property _____

(or location)

Your confidence in your skills and knowledge in nutrition

	Very confident	Confident	Slightly confident	Not confident
Satisfying the feed requirements of different classes of stock to achieve specific animal performance targets (reproductive performance and target market specifications)				
Managing nutrition of stock for seasonal variability				
Making cost-effective decisions around feed gaps and feed surpluses				
Reading a feed label				
Selecting a supplement that is effective for the class of stock and current diet quality				
Assessing pasture quality				
Using the AE system to compare various classes of stock				
Understanding the differences in nutrient requirements between various classes of stock and how they must be supplemented differently				



Désirée Jackson
Livestock Management Pty. Ltd.
Nutrition, Reproduction and Management Performance

Your understanding of fundamental nutritional principles

Answer the following questions. This is used as a guide to tailor the workshop to meet your requirements.

How many “stomachs” are there in a ruminant?	
What are the key nutrients of concern in northern Australia?	
What two factors have the biggest influence on pasture intake?	
How can we measure animal nutrient status?	
What are the indicators of good pasture quality?	
What are the different supplement groups?	
What is meant by the term “Dry Matter”?	
What is the fairest way of comparing the cost of two supplements?	
What nutrient is usually most deficient in the wet season in northern Australia?	
If there are no nutrients that are limiting in the diet, which class of stock has the highest ADG on a weight basis?	
What can happen to cattle under 150kg in the long term if they undergo weight loss before they reach 150kg?	
There are two general groups of minerals. What are they?	
How are protein requirements measured? (what units)	
How are energy requirements measured? (what units)	



Désirée Jackson

Livestock Management Pty. Ltd.
Nutrition, Reproduction and Management Performance

Your new nutritional management practices

	Normal practice	Sometimes	Rarely	Never	N/A
When setting stocking rates, do you convert stock numbers to Adult Equivalents?					
Do you test the water quality of your bore water (if you have bores?)					
Do you get the bore water quality results interpreted?					
Do you purchase your hay using specifications?					
Do you assess pasture quantity and pasture/diet quality?					
Do you identify which nutrient is most deficient in the diet before making supplementary feeding decisions/lick purchases?					
Do you use animal condition scores to make decisions on when to supplementary feed?					
Do you use pasture quality to make decisions on when to supplementary feed?					
Do you use diet quality information to formulate rations?					
Do you predict animal performance based on pasture or diet quality?					
Do you calculate the cost-benefit of management decisions?					
Do you use the "green date" and "production point" for making management decisions?					
Do you control-mate your maiden heifers?					
Are heifers run as a separate mob to the rest of the breeders?					
If heifers are run separately, are they run separately until after their second mating?					
Are weaners fed supplements other than hay, in the yards?					
Are weaners segregated into weight groups in the yards?					

Post-workshop feedback

4. What did you find most useful from the workshop?

5. What did you find least useful from the workshop?

6. What was most relevant to your role with Stanbroke?

7. What would you like more information on or need more assistance with?

8. If a one-day follow-up workshop were held, what topic(s) would you like covered?

Your plan, goals and strategies

1. What nutritional goals/targets have you set as a result of the workshop?

2. What are some steps you have taken to achieve this goal so far?

