Developing a Beef Cattle Nutritional Management Education Package for Producers in Northern Australia

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ABSTRACT: Meat and Livestock Australia (MLA) and the Queensland Beef Industry Institute (QBII) used the marketing process Quality Function Deployment (QFD) to determine the education needs of beef producers in northern Australia with regards to beef cattle nutrition management. This is the first time that such a process has been conducted in this sector of the industry. 290 producers from across Queensland, the Northern Territory and Western Australia were interviewed. The results of this process provide considerable insights into issues of concern to northern producers in terms of beef cattle nutrition and how education, extension and research organisations can ensure that they meet the needs of their target audience.

Key Words: Beef Cattle, Nutritional Management, Beef Producers, Northern Australia

INTRODUCTION

In recent years there has been considerable interest from producers and industry organisations in improving producer skills in, and management of, beef cattle nutrition. There has also been frustration regarding the apparent or perceived lack of adoption or application of research findings relevant to ruminant nutrition. Quality Function Deployment is a customer focussed market analysis tool to better understand what 'external' customers, north Australian beef producers, require in terms of beef cattle nutrition management education or training.

MATERIALS AND METHODS

'North Australia' in this context includes Queensland, the Northern Territory and the northern half of Western Australia.

Becker Associates (1998) describe QFD as '…a methodology for building the voice of the customer into product and service designs. It is a team tool, which captures customer requirements and translates those needs into characteristics about a product or service. QFD is a systematic means of ensuring that customer requirements are accurately translated into relevant technical descriptors throughout each stage of product development. Meeting or exceeding customer demands means more than just maintaining or improving product performance. It means building products that delight customers and fulfil their unarticulated desires'.

The QFD process was used to determine the market requirements, expectations and design of appropriate products to deliver a beef cattle nutrition management education program to northern beef producers. The process involved:

- Extensive customer research and consultation of beef producers (external customers) to ascertain the outcomes or benefits of a product that they hold as valuable or desirable;
- Developing a questionnaire based on these outcomes and benefits;
- Surveying producers using this questionnaire;
- Gaining an appreciation of what producers think of competing products and where ours sits by comparison;
- Repeating this process with potential deliverers and other stakeholders (internal customers) of the package; and
- Assimilating the feedback from producers and potential deliverers to specify product design characteristics.

Internal customers (primarily extension staff and private consultants) are important to the ultimate 'on-selling' and implementation of the final product. However they have commonly been neglected in the past. This is a key strength of the QFD process.

The QFD project team was comprised of 12 representatives from a range of stakeholder organisations and disciplines. The main steps of the process were the conduct of:

1. Project Brief Workshop
2. Qualitative Outcome Research
3. Outcome Research Results Workshop
4. Quantitative Research
5. Internal and Unspoken Outcomes Workshop
6. Positioning Workshop
7. Enabling Strategies Workshop
8. Deployment Workshop

Project Brief Workshop.

The project team was identified and the CD-MAP® (QFD) process was detailed as it related to the development of a nutritional education program. The team then defined the project: description; rationale; deliverable's; scope; objectives; schedule; team; and, project sponsors. A qualitative research brief was prepared, the population defined, broad issues identified, and an action plan established.

Qualitative Outcome Research.

29 producers from different customer types, or categories, were interviewed, resulting in an in-depth and rich understanding of the issues.

Outcome Research Results Workshop.

The analysis indicated 25 possible outcome statements that producers require from nutrition management education. These were refined and a quantitative research brief developed.

Quantitative Research.

The survey was administered partly by an external survey firm, and partly by a selected team of members, working from lists of producers and their contact details generated from tail tag numbers. The sample design was a stratified random sample with various quotas such as pasture type. The sample sizes achieved were in excess of the planned sample sizes with the exception of those with herds less than 100 cattle. Here the data was too small to provide meaningful statistics and was combined with respondents with herds between 100-300 cattle for analysis.

The survey was constructed in two parts. Part I comprised 24 questions gathering a description of the respondent, their enterprise and general attitudes to nutritional education. Part 2 of the survey was the list of 25 outcome statements developed from the qualitative survey. Respondents were asked to rate them in terms of, 'How relatively important to you is it that…' The survey involved telephoning producers, explaining the survey and asking the questions to Part 1. Part 2 of the survey was then faxed or posted out. Producers were called at a convenient time for their responses.

In addition to interviewing external customers a cross-section of internal customers were also surveyed to determine how to maximise the effectiveness of product delivery.

Internal & Unspoken Outcomes Workshop.

The internal or operations population was defined, the broad issues identified, and an action plan established for surveying internal customers. A total of 50 responses were received from this group which included: extension officers; training organisations; nutrition companies; merchandisers; and, stakeholders.

Considerable time was spent identifying 'Unspoken Outcomes' or 'Basic' product requirements. These are outcomes that are often assumed, but if not consciously planned for can mean the success or failure of a potentially excellent product.

Positioning Workshop.

The quantitative research results were analysed, the 'value proposition' defined, 'added-value' outcomes selected and marketing communications highlights defined.

Enabling Strategies Workshop.

Predictive success factors were defined and prioritised with target values, strategic options were generated and, an optimum set of strategies selected.

Deployment Workshop.

Action plans for developing a nutrition education package were determined with priorities, accountability, deliverable's, etc. The action plans were scheduled with resources and milestones.

RESULTS

External customers

From the lists of producers for every 10 potential contributors, 3 were not able to be contacted, 2 refused to participate and 1 did not complete the second part of the survey leaving only 4 out of 10 who completed the survey in full.

Respondents.

There were 290 respondents of which 244 (84%) completed Part 2 of the questionnaire. Of the 290 respondents 241 (84%) were male, 47 (16%) were female. 32% were <41 years old, 40% were between 41-55 and 28% were older than 55. 80% were owner-managers, 18% managers and 2% for corporate companies as shown in Table 1.

The production types were 74% beef, 8% beef-sheep and 18% beef-other. The range of total herd size (head) was 1% were <100, 10% had 100-300, 35% had 300-1000, 37% had 1000-5000 and 18% had >5000. 32% of respondent classified their production mix as primarily breeder, 8% were primarily finishers and 60% of respondents classified their production mix as breeder-finisher. The average area used to run beef cattle was 185,000 hectares with a standard deviation (SD) from the mean of ± 960 ha. The average annual rainfall was 717 mm (SD ± 555). The main pasture types were: 21% speargrass pasture; 21% brigalow; 19% box eucalypt; 14% mitchell grass; 12% tropical tall grass; and, 12% arid spinifex.

Use of nutrition aids.

Responses were analysed by enterprise type and management. Dry season supplementation was most important to owner-managers and managers alike. However, computer software packages used for making nutrition decisions were seldom used (Table 1).

Table 1. Use of nutritional aids

Nutritional aids	Owner-mgrs %	Mgrs %	HQ Corp %
Wet season supp.	25	40	100
Dry season supp.	59	73	100
Production feeding	18	19	100
Forage crops	28	15	80
Trace elements	22	27	40
Drought survival	27	25	40
Feed budgets	19	29	80
Pasture monitoring programs	29	44	80
Nutrition computer packages	0	6	40

Producer confidence.

Beef producers (irrespective of gender or age) had similar confidence in their nutritional management decisions with a range of 6.8 to 7.5 (out of 10). There was an indication that producers older than 55 years were more confident (Table 2).

Table 2. Confidence in nutritional management

Respondents	Confidence score (SD)
Females	6.9 (1.9)
Males	7.2 (1.6)
Age <41	7.1 (1.5)
Age 41-55	6.8 (1.8)
Age >55	7.5 (1.5)

Likelihood of reviewing nutrition management practices within the next 12 months.

Female respondents and all respondents up to 55 years were more inclined to review their nutritional management decisions in the next year (Table 3).

Table 3. Likelihood of reviewing management

Respondents	Yes %	No %
Females	51	49
Males	74	26
Age <41	77	23
Age 41-55	75	25
Age >55	58	43

Nutrition management education activities.

Of the 290 respondents 80 (28%) were not interested in being involved in any education or training.

Rating of potential providers of education.

Given a choice of state agricultural departments, TAFE, universities, Kondinin, RCS, producer groups or other - respondents rated them all between 2.6 and 4.1. That is, between just below average and above average. There were not large differences between groups.

Awareness of nutritional management education.

Agricultural newspapers, followed by newsletters, were the most frequently identified sources of information about nutritional management education. In contrast the least recognised sources were the Internet, TV and local papers.

Attitude to nutrition management education.

Respondents primarily showed a preference to understand the underlying principles of nutritional management solutions followed by a strong interest in nutrition during times of drought. Older respondents favoured less use of electronic media but greater use of recipes and supplementation in preference to pasture management (Table 4).

Table 4. Attitudes to nutritional education

Attitudes*	Age			
	<41	41-55	>55	Total
1 Field vs indoor	77	73	79	76
2 Electronic	43	38	8	31
3 Consultancy	37	39	40	39
4 Recipe	54	60	69	61
5 Supplements	37	50	65	51
6 Theory	91	91	89	91
7 Negotiable	78	72	68	73
8 Accreditation	36	42	44	40
9 Drought	91	86	88	88
10 Non-drought	82	73	60	72
11 QA	67	59	54	61

* Ref: Blakeley (1999).

Duration, distribution, location and price of training.

In terms of the reasonable length of a nutrition management education program 36% of respondents preferred one day, 36% preferred two days and 29% preferred 3 or more days.

In this study, on-property training was favoured by 40% of respondents, 40% preferred their local town and 20% their regional centre. 48% of respondents indicated a willingness to pay more than the minimum of $100. Older respondents were less inclined to pay more than $100.

Main barriers to participation.

Time is by far the biggest barrier to participation across gender and age groups. Distance was the main 'other' barrier to participation (Table 5).

Table 5. Barriers to participation.

	% of respondents				
Barrier	Female	Male	<41	41-55	>55
Time	65	74	77	71	69
Child-care	6	2	4	3	0
Cost	13	12	8	13	16
Other	15	13	11	13	14

Outcome statements.

In evaluating the importance of the outcomes to producers the data was analysed to show the 'Top 2' (percentage of respondents placing each outcome as 'Most Important' or 'Above Average Importance'). The results showed significant priorities given to outcomes relating to pasture, ie: Managing pasture 82%; Balancing pasture and stock 72%; Assessing pasture 70%; Supplementation needs 60%; and, Pasture growth 59%.

Other important outcomes were: Understanding soil and water 56%; Financial impacts 56%; Particular type of country 52%; Cattle performance 51%; Proven in your area 49%; and, Mineral deficiencies 46%.

Internal customers.

The Top 5 outcomes for internal customers were: Can be adopted to meet regional needs and relevant local

issues; Is able to accommodate participants with different levels of knowledge; Utilises people in its delivery who have a high standard of technical knowledge; and, Assists people involved in delivery to acquire any additional technical knowledge.

DISCUSSION

The 30% of respondents who were not interested in participating may reflect the high level of confidence indicated in the nutritional skills of respondents.

Respondents.

The attitude of the respondents reflects the diverse characteristics of the north Australian beef industry, ie the diversity of environments, enterprise types and mixes, distances involved and nutritional issues.

The low response of females (16%) leaves opportunity to speculate whether the sample was representative of the industry. Factors that may have influenced this low response rate may have been the time of day when respondents were called, the introduction of the survey by interviewers and the management structure on properties.

Duration, distribution, location and price of training.

The question of duration of training is difficult to answer in the absence of any set, pre-determined training activity. It was surprising that there was not a gradient from 1-4 days, ie with the greatest demand or appreciation for up to 2 days, since the greatest barrier to prevention of participation in nutrition management education was given as 'time'. The on-property option may have been ambiguous to some respondents. This response in terms of preferred locations also reflects the geographic diversity of the industry.

The absence of knowledge of the nutrition program content makes it difficult for respondents to establish a dollar value for the product. That older respondents were not prepared to pay more than $100 is perhaps a reflection of the different cultural attitudes to education and its value to this group.

Program design specifications.

The general or common specifications identified by external and internal customers reflect the adult learning principles as described by Malouf (1994): learners must feel the need to learn; the learning environment must be mentally and socially safe; learners must set their own learning goals; learners must participate actively in the learning; learning must build on, and use, the learner's experience; learners must see that their learning has been successful; and, learning must involve effective two-way communication. It is surprising that respondents did not identify their need to set their learning goals with higher priority. This may be a reflection of a combination of age categories and attitude to educational styles.

An education package is undergoing development based on these market research results.

CONCLUSION

The industry has more confidence in its nutritional skills than many consultants and advisers would have thought. The focus for training irrespective of land system types must be on an integration of pasture assessment and management in association with development of supplementation and understanding of ruminant function.

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