

finalreport

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An Evaluation on the PDS Project

- 1. Achieving Change**
- 2. Attitudes & Interests**

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Abstract

Producer Demonstration Sites (PDS) is a beef industry, technology transfer project. Commenced in 1986, it aims to achieve technology adoption by demonstrating relevant research findings on commercial properties. The project, with Meat Research Corporation funding and QDPI resource input, has dozens of sites scattered throughout northern Australia involving a wide range of technologies. PDS relies on producer groups, extension specialists and scientists identifying problems or opportunities and then demonstrating solutions.

Success is dependent on adoption of a new technology and/or a change in the knowledge and skills of producers. To examine the relevance and success of the PDS method two studies were carried out in north-west Queensland.

The first study by Peter Smith evaluated an existing PDS that demonstrated sodium and sulphur supplementation in the Hughenden area. The evaluation was based on a survey to determine changes in knowledge, attitude, skills and aspirations of producers within the group. The main findings indicated:

- ⇒ those producers directly involved with the demonstration were much more likely to adopt the technology than the near-by producers not involved
- ⇒ the value of small groups where learning and change is enhanced by 'hands on' seeing and doing.

The second study by Dominic Marshall used a simple postal survey of 18 producers in the Burke Shire to assess their attitudes to PDS and to identify the issues most relevant to them.

The survey approach proved useful in getting producer's thoughts, attitudes and experiences recorded, documenting their priority needs and getting support for a PDS. In addition the survey found:

- ⇒ nutritional constraints were the important concern
- ⇒ to be relevant to group members, PDS type and location must be relevant in terms of environment, enterprise and property budgets
- ⇒ group members were prepared to travel at least 100 km to participate in PDS activities.

The joint exercises showed that producer involvement identified key technology areas where PDS were needed. Close involvement in running the site was more likely to lead to a better understanding and adoption of new technology.

Section 1

Producer demonstration sites

- achieving change

An evaluation of the effectiveness of Producer Demonstration Sites (PDS) in achieving adoption of relevant technologies in the extensive beef industry of Northern Australia.

a study conducted by

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Summary

A study was conducted to evaluate a simple methodology capable of providing information on the effectiveness of Producer Demonstration Sites (PDS) as a technology transfer technique. The study focused on one PDS situated in a semi-isolated area of the inland basalt soils of North Queensland.

This PDS was selected as producers were known to have been involved in the establishment and management of the site and the technology demonstrated was simple and effective.

Seven of eight producers known to have been involved in the demonstration adopted and continued to use the technology demonstrated. Only one of four producers who had not attended any activities at the site had adopted the technology.

The study also confirmed that for producers in this area, the preferred information source was other producers followed closely by DPI newsletters, demonstration sites and DPI staff.

This study confirms the strengths of small groups and adult learning, that is, learning by seeing and doing in achieving changes in knowledge, attitude, aspirations and adoption of technology. The study also suggests that while an individual may possess the attitude, knowledge and skill, adoption of new technology may not occur.

Seeing technology at work may result in the desire to change.

Introduction

The Meat Research Corporation has been funding Producer Demonstration Sites (PDS) as part of their North Australia Program for a number of years. Sites have been and are being conducted at locations throughout northern Australia, demonstrating many "items" and "packages" of technology.

Many PDS sites in Queensland have been managed by QDPI field staff who are the major contributors to sites in terms of staffing. MRC usually provides a significant portion of operating funds for sites and the producer provides facilities, cattle, site maintenance and hosts producer group meetings.

PDS are intended to be an effective method of transferring/demonstrating technology to producers using adult education principles and action learning (Strachan R.T., Winks L., 1990) Producers involved in demonstration sites are able to learn by observing and participating in activities at individual sites thus creating a sense of ownership and familiarity with the technology being demonstrated.

Producer involvement is encouraged at individual sites. Typically a production opportunity or problem is identified by individuals or a group in a specific geographic or production area. In the case of DPI supported sites an extension officer usually assists producers to identify existing or new technology which may address the challenge

identified. The technology used may require some modification or development to be relevant to the group. Producer involvement in this phase of PDS is considered to be very useful to create "ownership" of the technology and to ensure the practicality of the solution.

A producer group should be involved in site selection as well as in the design of a demonstration process which will provide them with a reliable outcome. Producers are also encouraged to have ongoing input into the management of the PDS.

Stakeholders in the PDS project; MRC, DPI field staff and management and producer groups, have expressed an interest in assessing the existing PDS project to determine its effectiveness in producing changes in producers knowledge and skills leading to adoption of relevant "new" technology.

With the assistance of the staff of the Rural Extension Centre (REC) a simple evaluation process was developed. This process was aimed at determining changes in the knowledge, attitude, skills and aspirations (KASA) of producers in addition to practise changes resulting from individual PDS. The evaluation process was developed using the Bennett Hierarchy principles (Bennett C.F. 1977).

Information on inputs, activities, people involvement and reactions; levels 1 - 4 of the Bennett Hierarchy; are reported annually for all PDS facilitated by the DPI. KASA and practise change or adoption of the technology demonstrated is not so readily available for PDS.

The "Clothes Peg" PDS, conducted during the period 1989-91, was targeted as a convenient site on which to test an evaluation process. The technology being demonstrated at this site was most useful on basalt country and there was a good record of attendance at various activities associated with the site.

Key Questions relevant to the "Clothes Peg" site were developed:

- ⇒ How effective was the PDS technique in transferring knowledge related to salt and sulphur supplementation of breeders and growing cattle?
- ⇒ How effective was the PDS in achieving changes in supplementation practises?
- ⇒ How could the effectiveness of the PDS technique be improved?

Questions were formulated so that these matters were addressed.

"Clothes Peg" PDS

"Clothes Peg" is situated on basalt country 300 km west of Charters Towers and 160 km north of Hughenden. A needs assessment meeting conducted in the area some years previously had identified low brandings, high breeder mortality and poor growth rates as production problems.

A PDS was subsequently conducted at another property in the area focused on earlier weaning (weaning to 3-4 months of age and early in the year) as a means of increasing reproduction rates and increasing cow survival. This demonstration was completed with good producer participation over a two year period.

During this period information became available from a field trial on another area of basalt which suggested the performance of cattle with low saliva sodium levels could be improved by supplementing with salt and sulphur during the growing season. A subsequent survey of breeders lactating during the growing season revealed that sodium deficiency was widespread on basalt country.

These findings were discussed with the producer group in the "Clothes Peg" area and a PDS was established to demonstrate the effect of salt and sulphur supplementation during the growing season on conception rate of breeders and growth rate of young cattle. This demonstration was carried out during 1989-91 (Appendix A).

Producer Involvement - "Clothes Peg"

Producers from some 40 properties situated on basalt country were invited to the original meeting to discuss the establishment of the PDS. Producers from fifteen mostly local properties attended this meeting. As a result of this meeting the "Clothes Peg" PDS was established. There were 4 subsequent meetings at "Clothes Peg" during the demonstration. Attendance at these meetings varied from 10 to 15 people representing 6-10 mostly local properties. Advertising of these meetings was by open written invitation to some 20 properties who had attended or shown interest in the initial meeting.

Progress results of the demonstration were circulated to all producers on the basalt on two occasions each in the Insufferbulletin and Northern Muster Newsletters.

Methods

A questionnaire to collect a combination of qualitative and quantitative information was developed to determine producers attitude to the "Clothes Peg" demonstration and suggestions to improve the PDS technique (Appendix B).

Other questions were formulated to determine if producers had adopted the technology demonstrated and what they thought the benefits of adoption were. Answers to these questions would determine if the PDS had resulted in changes in producers knowledge, attitude and skills as well changes in practises.

Questions relating to the value producers placed on various information sources and preferred options for accessing information were also included.

This questionnaire was checked by REC personnel to determine technical merit and with the DPI, PDS project manager as a stakeholder. One producer was interviewed in person to determine any difficulties with the questions. As a result of these activities and work commitments a survey was conducted by phone.

Attempts were made to contact all persons who were known to have attended at least one activity at "Clothes Peg". The first 8 (50%) actually contacted were interviewed. A further group of producers who were known not to have attended any activities were also contacted. Only producers from neighbouring areas where the technology was relevant were contacted. Four producers were surveyed from this group.

Results and discussion

1. Site outcomes - suggestions for change

The producers who had not attended any of the PDS activities had all heard about the demonstration from newsletters and DPI staff. Three of the four people interviewed had also heard about the demonstration from other producers.

The majority of people who had attended one or more activities felt that it would be difficult to improve on the format of the "Clothes Peg" site. This may reflect "group ownership" of the site as well as a simple design producing results that producers "could relate to" and "could see the difference". One producer felt that activities should have been more widely advertised and reports more widely circulated. This was also noted by one of the respondents who had not attended.

The most useful outcome of the demonstration was seen as supplementation resulting in improved conception rates of breeders and increased growth rates of young cattle. This outcome was also quoted by 3 of the 4 people who had not attended the site. Other useful outcomes recorded were the demonstration of early weaning in practise; benefit of wet season supplementation to animal condition; access to DPI, CSIRO and producers from other areas at meetings. When asked what may have made the demonstration more meaningful, 2 of 4 producers who had not attended any activities were concerned that the technology may not work on all areas of basalt (several different basalt flows are recognised) in North Queensland.

2. Supplementation practices

Six of the eight people surveyed who attended any of the activities at the site and one who had not, adopted salt and sulphur supplementation during the 1990/91 growing season. This was after only one year of results from the demonstration and one year before the demonstration concluded. One each of attenders and non attenders had adopted or tried the practise since. The original adopters are continuing with supplementation in spite of poor growing seasons experienced since 1990/91.

The main advantages reported by adoptors of the technology were better conditioned breeders, more calves, easier to muster due to congregation of cattle around supplements, and improved growth of young cattle.

All of the people surveyed fed dry season supplements the majority of which were dry licks containing salt and sulphur. The concept and results of dry season supplementation was well known and accepted.

3. Information networks

Seasonal conditions was the main reason for change to management during the last 4 years (11 of 12 responses). Other reasons for change were: experience of other managers

(6 of 12); increased costs (4 of 12); reduced income (3 of 12); labour requirement and quality of labour available (2 of 12); changes in family commitments (1 of 12).

Experience of other managers was rated the most useful source of information for decision making. Contact with DPI staff, local DPI newsletters and demonstration sites rated a close second. Demonstration sites were ranked the same by both people who had and had not attended the "Clothes Peg" site. ABC radio and the Queensland Country Life newspaper were ranked as moderately useful sources of information while other rural publications, agribusiness and TV rated as the least useful sources of information.

When asked how they would prefer to receive information to assist in decision making respondents indicated they preferred to read information and then contact authors, people quoted in the report or people they considered as resource people, including "experienced" DPI staff and other producers, to discuss the "real story". DPI staff were seen as particularly useful as they were seen as having an overview of the performance of the particular practise or system under local conditions. They were also perceived as having knowledge of likely benefits and pitfalls experienced by producers who had tried the technology and could nominate these producers for contact for further information.

Producers who were using or who had tried a particular technology were seen as the most reliable and accurate source of information for costs, returns and practical benefits and difficulties, with new or unfamiliar technologies.

Demonstrations to develop/extrapolate research findings in local areas and small groups with a common interest theme were also a preferred method of receiving information about management options. One respondent nominated the use of a video magazine as being potentially useful.

Conclusions

The PDS technique is capable of achieving KASA and practise changes among producers. The findings of this evaluation suggested that changes in knowledge, attitude and skills was much more likely to occur if people attended or were actually involved in activities at the site.

The technology demonstrated at the site studied was simple and obviously seen as relevant by producers involved. The history of the group, having already been involved in one management demonstration, and the geographic and social links of the majority of group members may also have contributed to the apparent success of this demonstration.

It is interesting that all those surveyed who had not attended activities had heard about the demonstration from DPI staff or publications and also from other producers. Only one of these people had adopted the demonstrated supplementation strategy and another had experimented with a small group of cattle in one year only. This group appeared to be aware of the technology. They had acquired the knowledge and already had the attitude and skills as evidenced by their use of dry season supplements, but apparently not the aspiration to achieve practise change by adopting the demonstrated technology (Seeing must surely aid believing). A larger sample group is required to support or refute this finding.

In spite of poor seasons experienced in the area since the completion of the demonstration it is interesting that supplementation during the growing season is still being used some three years later. This confirms that the technology demonstrated was effective and relevant.

Motivation to change may also have been clouded by poor seasonal conditions and generally poor market returns for traditional turnoff cattle. Responses suggested that change was generally more reactive than proactive although the adoption rate of wet season supplementation would not support this. Cash returns from increased cattle sales resulting from wet season supplementation would only now be coming apparent. Expected savings from reduced dry season feeding costs may have still been apparent in spite of poor dry season conditions.

The very high ranking placed on other managers as an information source confirms that producers, like most people, prefer to learn from each other. The high ranking placed on DPI newsletters and demonstration sites was expected considering the group surveyed. The ranking of DPI staff on the same level was possibly a little flattering and open to suggestions of bias. The low ranking of agribusiness, usually identified as "agents" was surprising. ABC radio and Queensland Country Life newspaper were confirmed as useful sources of information.

Recommendations

Every effort should be made to include producers in all stages of conducting PDS. Although only a small group, the "Clothes Peg" group were involved in all stages of the demonstration from problem/opportunity definition some years ago to completion of the site late in 1991. "*Ownership*" appears to be a key to practise change at least for PDS focused on cattle management changes.

Increasing attendance at PDS activities should be considered. Big numbers may not necessarily mean higher adoption rates. Large PDS activity days (field days) may reduce the strengths of the small group and ownership. This may be balanced by a change in knowledge and attitude of a larger number of people without increasing adoption.

Based on the findings of this evaluation a process involving both producers who attend and others who don't attend PDS should be further evaluated with larger samples. Results will no doubt vary greatly with individual sites, technology and geographic areas but the principles of ownership should still apply providing facilitating staff can distance themselves from the "field trial" mentality common in the past and concentrate on what producers perceive as credible. PDS are after all focused on "known technology".

Acknowledgments

Tony and Alison Murphy of "Clothes Peg" hosted the demonstration. Their co-operation and hospitality was appreciated by all associated with the demonstration.

Mr Rob Webber, QDPI Mareeba, site leader of the "Clothes Peg" PDS and Mr John Wadsworth, CSIRO Townsville, are to be congratulated on their role in conducting this successful demonstration.

The assistance of Beth Woods and Arnold Wissemann in providing motivation and support for this project is gratefully acknowledged.

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- BENNETT, C.F. (1977) - *Analysing Impacts of Extension Programs*. US Dept of Agriculture, Washington DC.
- STRACHAN, R.T. and WINKS, L. (1990) - *Producer driven demonstration sites in technology transfer*. Proceedings of the QDPI Extension Conference. May 1990.

APPENDIX A

PDS FINAL REPORT 1992

TITLE: Sodium and sulphur supplementation, "Clothes Peg" Hughenden

Summary

A group of 50 cows their calves and 2 groups of steers (No. 9's and No. 0's) received a supplement of salt and sulphur for the period December 1989 to September 1991. A similar group of cattle receiving no supplement was run in a comparable paddock at a similar stocking rate as a control group.

During the 1989/90 and 1990/91 growing seasons supplemented lactating cows gained 36 kg and 10 kg liveweight more, respectively, than unsupplemented cows. Calves suckling supplemented cows were 12 kg and 11 kg heavier at weaning in 1990 and 1991 respectively. Overall conception rate in 1990 was 98% with supplemented cows conceiving earlier. In 1991 83% of supplemented cows and 58% of unsupplemented cows had conceived by September.

No. 9 steers supplemented for the 1989/90 and 1990/91 growing seasons gained 28 kg and 8 kg more respectively than unsupplemented steers. No. 0 steers supplemented during the 1990/91 growing season gained 33 kg more than unsupplemented steers.

Saliva Na/K ratios measured at each observation have shown a response to supplementation.

Supplemented cattle consumed some 37 kg a head of the supplement of 88% salt and 12% sulphur for the period December 1989 to September 1991. The cost of supplement was approximately \$11 a head.

The target audience of this demonstration is some 80 properties on the northern dry tropic basalt provinces of Chudleigh, McBride, Nulla and Sturgeon. Outcomes are also of interest to cattlemen from other sodium deficient areas.

Project objectives

- ⇒ To measure and demonstrate any liveweight response in deficient breeders, their calves and steers due to Na and S supplementation.
- ⇒ To measure and demonstrate any branding rate response in deficient cows due to Na and S supplementation.
- ⇒ Increase awareness and understanding of Na and S supplementation on deficient properties.

⇒ Depending on outcomes, facilitate the adoption of Na and S supplementation of deficient cattle.

Materials and methods

The paddocks used at "Clothes Peg" consist of mixture of red earth and basalt soils. The demonstration was initiated with one hundred cows with calves aged from 4-12 weeks and forty No. 9 steers in December 1989. A further 40 No. 0 steers were included in the demonstration from December 1990. One half of each group was supplemented year round with salt and sulphur (88% stock salt and 12% elemental sulphur) while the others remained as unfed controls. Filler cattle were used in each paddock to maintain stocking rates at similar levels.

Experimental measurements

1. Liveweight: Experimental cattle were weighed 3 times per year.
2. Fertility: Pregnancy and branding rates were recorded each year to measure responses to supplementation.
3. Saliva samples: Saliva samples were collected from 20 head of breeders and 10 head of each age group of steers from each treatment group at each observation.
4. Supplement intakes were recorded.

Results and discussion

1. Producer involvement

Management of the project has been discussed at several meetings at "Clothes Peg". At the August 1990 meeting it was decided to alternate the paddocks and include another group of yearling steers. These changes were subsequently made at the December 1990 observation.

At a producer meeting convened in September 1991 it was decided to discontinue the breeder part of the observation. Among the reasons for this decision were:

- (i) The unsupplemented group were in urgent need of survival feeding. The supplemented group were in better condition but may have required survival feeding later in the season.
- (ii) Liveweight and conception responses measured had data produced about some reliable information on which to "do the sums" on salt and sulphur supplementation in the target areas.

At this meeting it was also decided that further demonstration/investigation was justified to clarify responses in both male and female growing cattle to supplementation with salt and sulphur.

2. Liveweight responses

The liveweight response to supplementation by lactating breeders in the 1989/90 growing season was quite obvious and was maintained throughout the year. Survival feeding of this group late in 1990 may not have been necessary due to their better performance during the growing season. Liveweight response of lactating breeders was not as marked in the 1990/91 growing season.

Only small liveweight responses were measured in calves suckling supplemented cows. 12 kg and 11 kg respectively, in each of 2 growing seasons. However, late calves suckling supplemented cows gained 39 kg in the May to September period in 1991. Calves the same age suckling unsupplemented cows gained only 20 kg during the same period.

TABLE 1. "Clothes Peg" sodium and sulphur supplementation demonstration - liveweight change

TREATMENT	DEC 89- APR 90	APR 90- AUG 90	AUG 90- DEC 90	DEC 90- MAY 91	MAY 91- SEPT 91
Wet Cows					
Supplement	42		-136	91	-80
Control	6		-135	81	-70
Dry Cows					
Supplement		49	-74		-30*
Control		49	-49		-28*
No. 0 Calves					
Supplement	98	10			
Control	86	12			
No. 1 Calves					
Supplement				127	39**
Control				116	20**
No. 9 Steers					
Supplement	83	25	-40	108	-47
Control	55	38	-53	100	-40
No. 0 Steers					
Supplement				119	-28
Control				86	-30

* Cows wet in May and dry in September (calves weaned in May)

** Calves the same age (26 weeks in September) Yearling steers responded to supplementation in their first growing season in each of the two growing seasons. No. 9

steers supplemented for 2 growing seasons were 26 kg heavier in September 1991 than unsupplemented steers. No. 0 steers following one season of supplementation were 34 kg heavier.

Liveweight changes over the period December 1989 to September 1991 are shown in Table 1 above.

TABLE 2. "Clothes Peg" sodium and sulphur demonstration - saliva analysis

TREATMENT	Na/K RATIO					
	DEC 89	APR 90	AUG 90	DEC 90	MAY 91	SEPT 91
Cows						
Supplement	3.7	32.0	21.1	32.2	32.0	22.7
Control	1.5	2.3	5.3	19.7	6.6	15.5
No. 9 Steers						
Supplement	21.1	39.4	18.9	29.2	27.3	23.7
Control	21.4	1.6	1.7	25.3	4.68	12.3
No. 0 Steers						
Supplement					28.9	22.9
Control					3.22	10.2

Notes: Cows were lactating in December 1989, April and December 1990, and May 1991.

The rise in ratio in the control group in December 1990 was probably related to survival supplementation with molasses and urea at that time.

The adequate ratios recorded for the control animals in September 1991 were probably a reflection of poor animal performance associated with very poor seasonal conditions experienced during 1991.

3. Fertility

All cows were pregnancy tested in each of two years. While 98% of all cows conceived in 1990, supplemented cows conceived earlier than unsupplemented cows. Seventy five percent of supplemented cows and 58% of control cows had conceived before weaning in April 1990. Overall conception rate for 1991 as determined in September was 83% for supplemented and 58% for unsupplemented cows. 73% of supplemented cows had conceived before weaning in early May 1991 compared to only 30% of unsupplemented cows. A further 10% of supplemented and 28% of unsupplemented cows conceived following, and probably as a result of, weaning.

It appears that the earlier conceptions measured in the supplemented cows in 1990 (Figure 1) had an effect on overall conceptions and time of conception in 1991 (Figure 2).

4. Saliva analysis

Saliva samples have been collected from cows and steers at each observation. Results of analysis of these samples are shown in Table 2.

5. Supplement intake

The supplement consisting of 88% crushed coarse salt and 12% elemental sulphur by weight was fed to the supplemented group. Except for some short periods during the heavy wet season experienced in early 1991 the supplement was on offer at all times. Intakes recorded for various periods are shown in Table 3.

TABLE 3 "Clothes Peg" sodium and sulphur supplementation - supplement intake

PERIOD	DEC 89 JUNE 90	JULY 90 DEC 90	DEC 90 MAY 91	MAY 91 SEPT 91
Supplement Intake g/head/day	89	37	49*	48

* Feeding out difficulties were experienced during this period. Total consumption per head for the whole feeding period to Sept 1991 was 37 kg a head costing some \$11.00.

Costs and benefits

An economic assessment was conducted to assess the cost/benefits of supplementation on a grossly deficient herd. This was carried out using the Breedcow/Dynama computer herd models.

Net property income may be increased by \$60,000 by year 5 in a grossly deficient herd and the supplementation program pays for itself in the second year. A 5% increase in branding rate or the extra income from the steers alone are sufficient to cover the costs of supplementation.

Evaluation

A phone survey of basalt producers is planned for 1992 to assess the impact of the demonstration and extension efforts on the adoption of salt and sulphur supplementation by basalt producers.

FIGURE 1

"Clothes Peg" Sodium and Sulphur Supplementation Demonstration
Conceptions by Month 1989/90

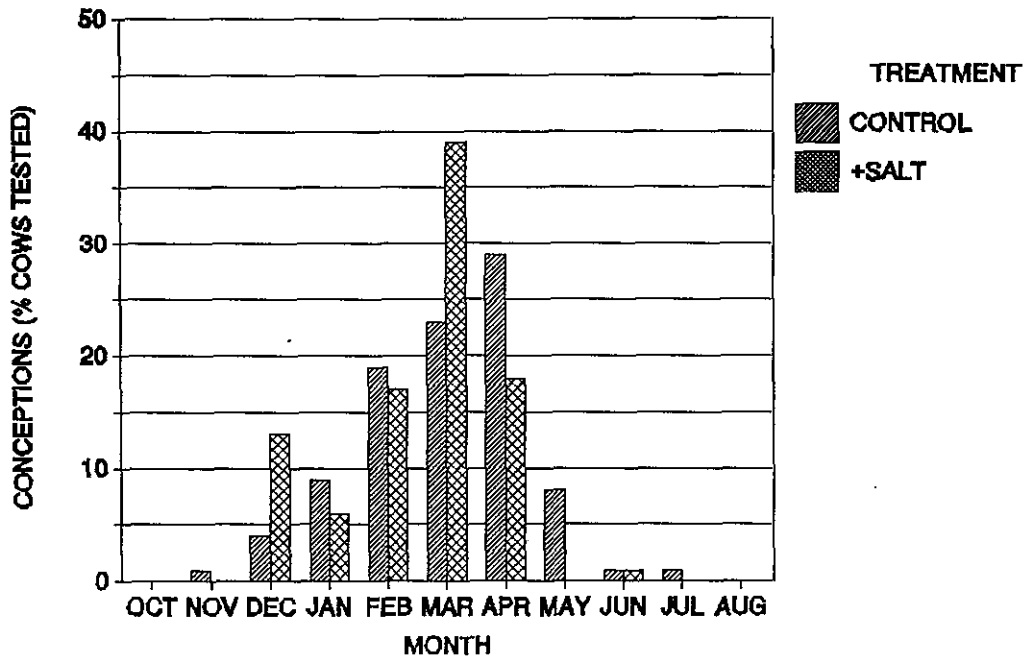
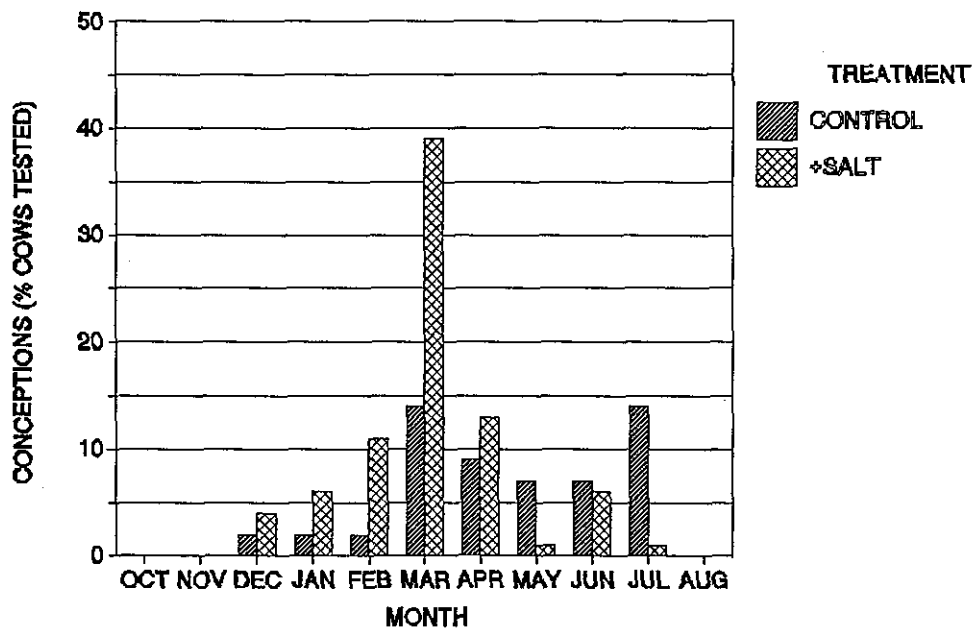


FIGURE 2

"Clothes Peg" Sodium and Sulphur Supplementation Demonstration
Conception By Month 1990/91



Acknowledgments

Tony and Alison Murphy of "Clothes Peg" have made this demonstration possible. The beef producers of the area and the QDPI and CSIRO staff involved sincerely appreciate their hospitably and co-operation.

The support of the Meat Research Corporation in financing this demonstration is gratefully acknowledged.

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APPENDIX B

PDS SURVEY

1. A demonstration was conducted at "Clothes Peg" during 1989-91 which showed a response to salt and sulphur supplementation during the growing season.

1.1 How many "Clothes Peg" meetings did you attend ? Nil 1/2 3 or more

1.2 If didn't attend any meetings (Nil 1.1), from whom did you hear about the outcomes of this demonstration?

Other producers Yes No

DPI publications

Other s (Specify).....

.....
.....

1.3 (a) (Yes to 1.1)
From your involvement with the "Clothes Peg" site what changes would you suggest to the format to make the results more meaningful to producers in this area?

.....
.....
.....
.....

(b) (Nil 1.1)
From your knowledge of the "Clothes Peg" demonstration what were the most useful outcomes?

.....
.....
.....
.....

1.4 (Nil 1.1)
From what you heard about Clothes Peg what changes could have been made to the demonstration to be more meaningful to producer in this area?

.....
.....
.....

2. Supplementation practices

2.1 During the **growing season** did you supplement these groups of cattle during the years of

	CODES	90/91	91/92	92/93
breeders (females and bulls of mating age)	(B)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
growing cattle	(G)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
turnoff cattle (bullocks)	(T)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.2 What supplements did you use? (CODE B,G,T)

	90/91	91/92	92/93
Salt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt and Sulphur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt, Sulphur and Urea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.3 Based on your experience what do you think the result of supplementation with salt and sulphur during the growing season would be?

	Yes	No	Don't Know
Better conditioned breeders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More calves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stop eating dirt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easier to muster	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not cost effective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No effect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other			

2.4 Do you use supplements during the **dry seasons**?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

2.5 What supplements did you use during the years 1991-1993? (CODE B,G,T, see 2.2) (tick all relevant boxes)

	91	92	93
Salt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt and Sulphur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt, Sulphur and Urea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Urea based blocks/mixes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Molasses based mixes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grain based mixes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Information networks

3.1 What has encouraged you to make changes to your cattle/property management over the last 4 years?

- reduced income
- increased costs
- changes in family commitments
- peer experience
- labour input too high
- seasons
- Other

.....

.....

.....

.....

3.2 How do you rate the usefulness of the following information sources when making decisions about cattle management?

	Very Useful	Useful	Not very Useful
Agribusiness (agents, feed merchants etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DPI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newsletters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other rural publications eg BIN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Experience of other managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstration sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rural newspaper reports etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.3 How would you prefer to receive information to assist you to make decisions concerning management changes within your enterprise.

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SECTION 2

Attitudes and interests in producer demonstration sites (pds) in far north-west Queensland

An evaluation of producer interest in the establishment of PDS in the Burke Shire

a study conducted by

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Summary

To encourage greater and more effective adoption of improved management practices, a PDS (producer demonstration site) has been suggested for the Burke Shire, north of Mount Isa.

To determine whether this was appropriate and desirable a survey was distributed to all property owner/managers (18) in the targeted area.

The survey achieved a seventy-five percent response. Considering producers work schedules at this time of year this indicated a high level of interest. All the survey respondents were in favour of the establishment of a PDS.

A wide range of issues has been suggested by graziers as possible projects with nutritional deficiencies (especially phosphorus) being singled out as the number one issue. This has reinforced suspected production limiting factors in these areas and is an indication of what focus a prospective PDS should have.

Introduction

The PDS project is a network of demonstration sites on commercial cattle properties throughout northern Australia. The aim of the project is to encourage greater acceptance and adoption of industry and research technologies by producers, thus contributing to a more viable cattle industry.

PDS focus on specific problems in an area with each site having a defined time frame and budget. Funding is allocated from the Meat Research Corporation, mainly through the three state departments of agriculture, (QDPI, NTDPI&F & WADA).

The establishment and management of the PDS is based on producers and advisers/researchers, identifying particular local problems or management opportunities. For maximum effectiveness in the local situation, these demonstrations need to be adapted to particular locations and or situations. There have been over 70 sites established in northern Australia, with 44 of these in Queensland. Sites have covered a wide range of issues including supplementary feeding, breeder management, cattle trapping, pasture development, crop and feedlot finishing and genetic improvement.

The total area of the Burke Shire is 3,475,066 ha. Soil types range from sand ridge ocean frontage to heavy cracking clay river flats. In 1993 the shire supported a herd of 161,000 head (ABS).

This evaluation study has been conducted as a formative evaluation to collect and collate the thoughts, ideas and experience of producers in the far north west. This is to ensure that a PDS project established in the area is relevant and therefore supported by the majority.

Objectives

1. To determine whether producers feel a need for a PDS and are willing to support it.
2. To determine the main cattle production issues for producers in the far north west.
3. To determine how far producers are willing to travel to a PDS in their region.
4. To determine what characteristics, a PDS would need to make it relevant to an individual producer.
- 5a. To determine whether producers are prepared to nominate their property as a PDS site.
- 5b. If yes, what issue would they nominate for study now?

Methodology

In consultation with Mr Mick Sullivan (Beef Cattle adviser, Mt Isa) a survey questionnaire was developed and distributed (Appendix C). A two fold approach was used in presenting the survey. Initially, I attended the July 1994 meeting of the Burke branch of the Cattlemans Union (CU). Seven of the targeted eighteen properties were represented at the meeting. Following the meeting, eleven producers that were not present were posted a survey form with a letter explaining the proposal.

At the Burke Shire C.U. meeting a short introductory briefing was given similar to a letter posted out to producers. All producers present at the meeting willingly participated. Two producers took their questionnaire home for further consultation and returned it by post. Of the eleven surveys mailed out, six had been returned within a reasonable period.

The format of the questionnaire was designed to allow individuals' thoughts and management related experiences to be expressed rather than having the producers comment on a set of predetermined issues. Responses to the questionnaire were collated resulting in a general report and discussion of information supplied by individual owners.

Results and discussion

Three quarters of the producers surveyed returned a positive, informative and well thought out response. The high level of interest in the establishment of a PDS in the Burke Shire is evident by a 100% positive response to Q1. (*Would you like to see a PDS established in your shire?*).

Responses to Question 2 of the survey are shown in Table 4. The survey results clearly show that producers identified nutritional constraints as the number one issue limiting production. The first three issues listed (nutritional deficiency (mainly phosphorus, seasonal conditions and grass quality) are closely linked in themselves and have a direct bearing on breeder fertility.

TABLE 4. Common factors identified by producers as limiting production.

FACTORS LIMITING PRODUCTION	No OF RESPONSES
Nutritional deficiency	9
Seasonal conditions - drought,	5
Grass quality - protein - soil fertility	4
Breeder fertility	4
Scarcity of appropriate labour	4
Water (access, shortage, costs)	4
Supplementary feeding - formula (costs)	3
Mustering - (trapping, fencing systems)	3
Woody weeds	2
Weaner management	2
Ticks & buffalo fly control	2
Disease control	1
Dehorning	1
Mortalities	1
Markets	1

In line with this is the general belief within the grazing industry that eighty to ninety percent of production is achieved by what the animal eats. If the pasture is unbalanced in nutrients then the animals growth and performance will suffer. This can be overcome to some degree by correct formulation of supplementary feeding programs. Other PDS established in northern Australia have demonstrated programs to overcome native pasture deficiencies.

Another major issue raised is the scarcity of appropriately skilled labour. This is of particular concern due to health and safety regulations and standards. Competition from highly paid mining jobs in the area has depleted the size of the rural work force. On grazing properties, initiative and a variety of skills are needed to carry out daily tasks. Such skills are developed mainly through working with experienced workers. Remuneration for hours worked is often less than in other industries. Therefore skilled workers tend to drift away making the training of new workers difficult. Ways in which these problems could be overcome, would no doubt be welcome discussion in a PDS.

Watering improvements are essential in the development of large area properties. Depending on the type and variation of the country, watering facilities always have been a major financial expense. To control livestock, land degradation and aid mustering, large scale fencing programs are undertaken in conjunction with property development. The various ways producers organise these programs as well as organise their improvements would provide valuable information and discussion.

Responses to Question 3 (*How close would a PDS need to be to your property for you to travel to the site to participate in activities?*) indicated that a distance of 100 km would be acceptable to all producers with sixty percent suggesting that they would be willing to travel up to 200km. This is a reflection of the size of properties and distances people have to travel in normal daily property work. The Burke Shire covers an area of 3,475,066 ha which is mainly under the management of 18 pastoral holdings. This would give each

property an average size of 190,000 ha. It must be remembered that significant areas of land are under the management of National Parks, Aboriginal Communities and other relevant government organisations must be considered when choosing a PDS.

Responses to Question 4 of the survey are shown in Table 5. (*What characteristics would a PDS site have to have for it to be relevant to your property management?*).

TABLE 5. Most common characteristics identified by producers for a PDS to be relevant to their property management.

RELEVANT PDS CHARACTERISTICS	No. OF RESPONSES
Similar land type (soil & pasture)	9
Relevant to own property management	9
Run within normal Property budget	9
Supplementary feeding	9
Work force size	5
Similar watering facilities	5
Cattle breed type	4
Vegetation (woody weeds, rubber vine)	4
Animal health (ticks etc.)	3
Dehorning	1
Dealing with drought	1
Success rate	1

Producers have identified the following issues as the major criteria in establishing a PDS in the Burke Shire: similar land type, supplementary feeding and relevant property management within set budgeting guidelines. Though the responses given are similar to those stated for Question 2, (Table 4), a subtle difference is that they are directed more at the area of property management rather than the generalised responses given for regional production limiting factors.

It is understandable that producers would only support a PDS project if they could relate it to their own property management and budget. Due to the large size of properties in the Burke Shire, most producers have a variety and range of soil and land types. This has led to the consistency of responses identifying nutritional deficiencies as the main issues to be addressed in Q2, Q4 and Q5.

Access to skilled labour is always a major priority in remote areas as explained in the discussion of Table 4.

Bos Indicus infused cattle are preferred in these areas because of their tick and buffalo fly resistance, heat tolerance and greater walking ability, enabling them to access and utilize all land types. However, individual producers have their own breed type preferences such as Brahman, Droughtmaster etc., and as such may find difficulty in accepting the relevance and value of the results obtained at a PDS stocked with a breed type different to their own

Responses to Question 5 (*Would you be prepared to use your property as a PDS?*) indicated that 60% of respondents were willing to host a PDS.

Table 6 lists the responses given to the second part of the question. (*What activities would you be interested in addressing on your property?*)

Responses to Q2 and Q4 are reconfirmed by the response to Q5 that nutrition is seen as the major issue in the region. Results shown in Table 6 have placed producer emphasis on cattle management aspects relevant to a PDS on their own property. Controlled mating and fertility of breeding stock are important as they may increase calving percentages while at the same time reduce mustering and associated labour costs. The need to have productively sound breeding animals are vital in obtaining maximum conception and pregnancy rates. The use of legumes and improved pastures is often associated with weaner management to increase quality of pasture to the young growing animals. Good weaner management will ultimately lead to higher calving rates in both First calf heifers and the older breeding herd. Proper disease and pest control will ensure production is not lost from known production limiting factors or market restrictions.

TABLE 6. Activities that producers would like to undertake in a PDS on their own property.

ACTIVITIES TO BE UNDERTAKEN ON RESPONDENTS PROPERTIES	RESPONSES
Nutrition - deficiency	6
- use of legumes and improved pasture	2
Watering points - trapping	3
- costs	2
Weaner management	3
Controlled mating	2
Fertility - bull percentage	3
- genetics	
Relevant management (in general)	3
Disease and pest control (ticks, tick fever, buffalo fly)	3

Conclusions

Even though the target group for this study is small in number it covers a significant area of north-west Queensland. High level of interest in establishing a PDS in the Burke Shire is shown by a hundred percent of respondents supporting the concept. The responses to Question 2 coincides with current known issues limiting beef production in the northern region. A number of additional issues were also highlighted including breeder fertility and the availability of appropriate labour for remote areas.

Nutritional deficiencies in the Gulf areas fall into two main areas, phosphorus deficiency and the seasonal protein drought that accompanies the dry season in the second half of each calendar year. Variations in quality and distribution of yearly rainfall can create serious drought conditions in some years. However, the phosphorus deficiency and

seasonal protein drought are yearly occurrences of major concern. It is these two areas that have been clearly highlighted in the survey results.

Other factors to receive consideration include the shortage of and the costs associated with stock watering facilities. Producers also expressed the need for additional research etc. into breeding stock fertility. Of particular concern was individual animal performance (e.g. bulls) to meet market specifications.

Cost effective labour is considered essential in regard to mustering techniques and general property improvements.

Other issues identified by respondents could potentially be incorporated into PDS activities. These include the control of internal and external parasites, livestock mortalities, dehorning and market monitoring. The use of pastures, legumes and woody weed control are topics that will require more discussion and information to focus on a project format.

The general view that "the closer the PDS the better", would seem an appropriate and understandable human response. The responses show that people in this region regard one to two hours travelling as an appropriate distance.

The suitability of suggested PDS work on supplementary feeding requirements was confirmed in Question 4. The majority of respondents felt that any PDS site would have to have land type similar to their own property to be applicable. It was also considered important for the site property to be run within a normal property budget.

Other concerns raised in the survey were the need for management practices that are in line with markets and market specifications e.g. tick control, dehorning and breed type.

A number of the negative respondents to Question 5 felt that their properties were not sufficiently developed and therefore unable to devote the time needed for the additional work associated with a PDS. The sixty percent of respondents who answered in the affirmative again showed the strong interest in the nutritional aspects of cattle production. Other areas strongly supported include breeder fertility and weaner management. Use of economic mustering and cattle control systems is paramount. The underlying theme of the respondents was for practical, relevant and financially sound management practises to be developed at any PDS project site.

The use of such a formative evaluation study has been appropriate in getting peoples individual thoughts and experience recorded. By using a survey approach, a written commitment has been received from the majority of producers. This survey form of information collection gives people more time to ponder over the questions than a telephone interview, especially when the information being collected is not necessarily related to everyday work practices. Those who have not responded to the original survey, will be contacted by phone call to determine their view point on a PDS and made welcome to join in activities when the PDS is established.

The best result from this type of approach was getting a good response to the survey and in turn gaining support for establishing a PDS. A negative result to this approach may

have been in getting a low response to the survey. It is generally acceptable to gain a thirty to forty percent return of surveys. Therefore a seventy five percent return was very encouraging for the future success of the PDS with only a small base group, in number, a low response rate could have made it difficult to make any recommendations of real worth.

Recommendations

It is recommended that:-

1. A PDS be established in the Burke Shire.
2. The PDS would be best located towards the centre of the eastern side of the Shire. (An approach be made to producers, north of Gregory on the Gregory Burketown Rd who answered yes to Q5 and have shown nutritional deficiencies as a major production limit factor. This would place the PDS within 100km from the majority of properties, the desirable distance stated in the survey).
3. The initial PDS should deal with nutritional deficiencies and design should allow for expansion into other highlighted issues at a later date.
4. The PDS should be established on an average sized property that best typifies local land types and property management.
5. The PDS be designed to operate within normal property budgetary constraints.

Acknowledgements

The collection and organisation of data in this report would not have been possible without the investment of time and energy from Mr M. Sullivan. A special thanks also to Mr A. Wissemann who initially gave the study direction and Dr B. Woods for editing and final appraisal.

The author would like to thank the producers for completing the questionnaires and giving direction to future projects in their region. Finally thanks to the Mount Isa DPI staff especially Mr T. Vinson and Ms T. Janhu for their greatly appreciated input of time and patience in getting to the final document.

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APPENDIX C

DPI PRODUCER SURVEY

AIM: *To determine producer interest in the establishment of Producer Demonstration Sites (PDS) in far north west Queensland.*

- Q1. Would you like to see the establishment of a PDS in your shire?
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- Q2. Within cattle management list the (5) five most important factors which limit production.
 - (a)
 - (b)
 - (c)
 - (d)
 - (e)

- Q3. How close would a PDS need to be to your property for you to travel to the site once or twice a year and participate in activities being organised there?
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.....

- Q4. What characteristics would a PDS site have to have for it to be relevant to you in your property management?
 - (a)
 - (b)
 - (c)
 - (d)

- Q5. Would you be prepared to use your property as a PDS site? Yes/No.
If yes, what activities would you be interested in addressing on your property?
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