DAIRYING RESEARCH CORPORATION LIMITED

DRC

Information Transfer of Dairy Farm Production Research

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EXECUTIVE SUMMARY

The Dairying Research Corporation (DRC) was established as a joint venture between the New Zealand Dairy Board (NZDB) and AgResearch in December 1990 to provide on-farm dairy Research and Development. DRC leads the New Zealand Dairy Board's national programme for on-farm Research and Development. Providing extension activities and working with extension officers to ensure that research is delivered effectively is an important part of this programme.

Currently, DRC undertakes its extension activities using a mixture of communication mediums. These include field days, conferences, industry magazine articles, Internet usage, scientific publications, newspapers and the Consulting Officer Service. The aim of this study was to examine the transfer of DRC research information from the researchers through to the target audience and to identify improvements for the information transfer process in future.

Research was carried out using a mixture of quantitative and qualitative research methods. The research aimed to determine the information transfer links between farmers, consultants and the researchers and aspects that would enhance the flow of information in future.

The study found that consultants have a high awareness and regard of DRC and its research although there are no formal contact links for consultants other than those links with the Consulting Officers. Consultants obtain their research information from published written articles and this includes the DRC publication 'Research Update'.

The most effective learning styles for farmers include those that utilise face-to-face methods. Farmers and consultants would like to see regional demonstration farms to demonstrate applicability of DRC dairy farm production research principles.

With the current information transfer process there is a need to package research information for direct delivery to farmers. Respondents emphasised the need to gain farmer support for future research funding.

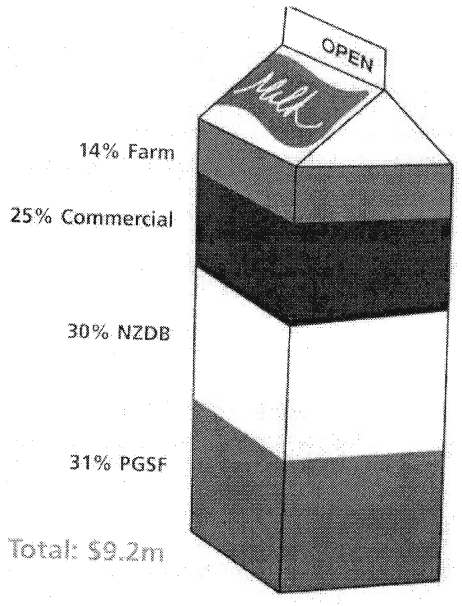
1. INTRODUCTION

1.1 Background

New Zealand has traditionally been a world leader in the efficient production of milk, meat and fibre products, with the natural advantages of year-round pasture production and healthy stock, combined with the innovative flair of New Zealand farmers and researchers. Pastoral agriculture will remain the cornerstone of the New Zealand economy for the foreseeable future, but emphasis in the new environment is on high nett added value, low volume products targeted to niche markets. To achieve this, New Zealand needs to increase production efficiency and to become more sensitive to the demands of consumers for high quality and safe products. This requires the development of high quality production, processing and distribution systems and improved quality assurance systems (AgResearch NZ homepage, 1999).

The Dairying Research Corporation (DRC) was established as a joint venture between the New Zealand Dairy Board (NZDB) and AgResearch in December 1990 to provide on-farm dairy Research and Development. DRC has established itself as a provider through a lead role in areas such as milksolids production, dairy cattle fertility, and management of mastitis. Research is funded through investment by the New Zealand Dairy Board, the Crown via the Public Good Science Fund, by income from farm operations, and by private sector R & D contracts.

Figure 1. Sources of Funding 1999/2000



Source: "DRC Annual Report" 1999/2000

DRC leads the New Zealand Dairy Board's national programme for on-farm Research and Development. DRC works to ensure that dairy research capabilities and programmes remain secure. DRC demonstrates commitment to this position through its mission:

"To lead and facilitate a national co-operative centre for dairy farm production research which adds value to dairy farmers"

DRC acts as custodian of the total farm Research and Development portfolio by:

- Securing investment for dairying research on behalf of New Zealand farmers,
- Ensuring high priority research is provided,
- Collaborating with other research providers,
- Providing extension activities and working with extension officers to ensure that research is delivered effectively.

The approach to scientific research at DRC is flexible and responsive to the needs of the dairy industry and its commercial clients. Presently the organisation has six specialist programmes that provide integrated farm systems research; dairy cattle fertility, dairy cow nutrition, farm practices and milk characteristics, mastitis and milk harvesting, forage and feed production, and farm systems management.

1.2 Current Strategy

In the past each individual research department handled the process of technology transfer. Currently the Communications and Information Manager co-ordinates the provision of information and DRC field days and conferences. DRC undertakes its technology transfer using a mixture of communication mediums. These include the Ruakura Farmers' Conference, the DRC No.2 Field Day, presentations at other conferences and field days nation-wide, print media such as monthly NZ Dairy Exporter articles and contributions to dairy company newsletters, through digital media such as the DRC Web site and email and through the Consulting Officer Service.

Consulting Officer Service

The Consulting Officer Service has provided another extension link between the researcher and the farmer although there has been no formal arrangement between DRC and the Consulting Officer Service regarding this information transfer link. This has been an important means of information transfer although the strength of this relationship has fluctuated for various reasons. The link with the Consulting Officer Service has at times been a major means of information transfer from DRC. Unlike the researchers, the Consulting Officers (CO's) are in regular contact with farmers as their most common extension practice is the use of discussion groups. When the link between the CO and the researcher is increased the flow of research information to the farmer is also increased.

1.3 Future Strategy – *Centre of Excellence*

DRC, currently a joint venture between AgResearch and the Dairy Board, will dissolve and will combine with the consulting officer and education services operated by Livestock Improvement Corporation to form the nucleus of the Centre of Excellence (CoE). This will mean the dissolution of the joint venture with the CoE being owned by NZDB. The prime objective of the CoE will be to implement the new industry initiative, the four-percent on-farm productivity improvement target. The Centre of Excellence will realign and re-focus the dairy industry's research and extension activities with the objective of achieving the productivity goal the industry has set itself (NZDB media release,28 June 2000).

This new structure will see the CO's and researchers closely associated and will provide the opportunity to assess the current information transfer process and implement any changes.

As part of the transition issues associated with the formation of the CoE, DRC will be relocating to a new research site based at Newstead outside of Hamilton. New research farms have been purchased and one farm is already supporting research trials. A new office and laboratory complex is yet to be built at the Newstead site.

The NZDB will be putting a levy system for research funding in place in two years time. DRC recognises that farmers must operate collectively in the future to organise, fund, and realise the benefits of farm research and development. It is therefore important that farmers recognise the importance of DRC as a provider of this research.

1.4 Purpose of this Study

The purpose of this study is to examine the transfer of DRC research information from the source of the research through to the target audience and to identify improvements for the information transfer process in future.

1.5 Scope

This study focuses on three main groups; dairy farm consultants, dairy farmers and DRC researchers. Two different questionnaires were designed to collect specific information relating to two different groups, namely dairy farm consultants and DRC researchers. A questionnaire was mailed to farm consultants via the New Zealand Institute of Primary Industry Farm Management. This same

questionnaire was emailed to Consulting Officer Service CO's and to Livestock Improvement Corporation Farmwise consultants. DRC researchers were emailed a different questionnaire. Farmer information was collected by the use of farmer focus groups and interview survey technique. Adler Bryant Ltd marketing services collected all farmer information.

1.6 Research Objectives

The research objectives of this study are to:

- Examine current contact levels and desired contact levels between the three groups involved in the information transfer process (consultants, farmers and researchers).
- Identify methods of consultant contact with researchers and determine future requirements.
- Evaluation of current research and investigation of research priorities for each of the three groups.
- Identification of the best medium for information transfer for farmers as perceived by each group.
- Identify areas to improve the current information transfer process.

2. METHOD

Questionnaires were used to collect information from both the consultant and researcher groups. Information from the farmer group was collected via farmer focus groups and interview surveying. It was deemed inappropriate to mail questionnaires to the farmer group for two reasons;

a) there was no unbiased means of mailing a survey to a comparatively small, by survey standards, group of farmers, and
b) the information was collected during spring, a very busy time for farmers and for this reason it was felt the response rate would be very low.

2.1 Questionnaire – Consultants

The questionnaire to the consultants (Appendix I) was constructed based on the research objectives. The questionnaire was proof read and pre-tested to ensure questions had all the required options and were balanced and not misleading. Included in the questionnaire was a brief about the purpose of the questionnaire also with the intention of stimulating a response. To help improve the response rate all completed surveys went into a draw for outdoor furniture. The questionnaire was mailed to 250 farm consultants via the New Zealand Institute of Primary Industry Farm Management and was also emailed to the Consulting Officer Service CO's and to Livestock Improvement Corporation Farmwise consultants. Of the 250 farm consultants with the New Zealand Institute of Primary Industry Farm Management it was not known how many of the 250 were dairy farm consultants.

The survey was divided into three sections:

Section A	For all consultants general questions regarding information transfer and DRC research.
Section B	For Consulting Officer Service only, questions regarding links with DRC.
Section C	Demographic information for all consultants.

Section A: General questions to all consultants

This was the main section of the questionnaire for all consultants. This section gathered information about main areas of advice to farmers, sources of information, best methods for information transfer, research priorities, contact with DRC and use of the publication "DRC Research Update".

Section B: Consulting Officer Service CO's only

This section questioned CO's about their link with DRC researchers and methods of sourcing DRC research information.

Section C: Demographic Information

This section provided respondent profession and location information as well as names and contact details. It also asked respondents to indicate whether they wished to receive the publication "DRC Research Update" in future.

2.2 Questionnaire – Researchers

This questionnaire (Appendix II) was targeted to one group and for this reason was not broken down in to sections. The target group that has been termed "researchers", consisted of all scientific staff and those technical staff associated with information transfer at DRC. The objectives of the questionnaire were to determine researchers views on:

- Perceived best methods of information transfer for farmers
- Changes needed in the information transfer process
- Changes to current research focus and delivery
- Desired input from consultants and farmers on research prioritisation
- Time involved in information transfer
- Area of research involvement.

It was felt important to identify the area of research each respondent was involved in to identify any research group differences in the information transfer process. Throughout this questionnaire researchers were given the opportunity to comment on questions where necessary.

The questionnaire was proof read and pre-tested to ensure questions had all required options and were balanced and not misleading. This questionnaire was emailed to researchers and a brief about the purpose of the questionnaire was included in the email message.

2.3 Collection of Farmer Information

(Conducted by Adler Bryant Ltd)

Focus Group Discussions

Seven independent focus groups were held around the country, two in Northland, two in Waikato, and three in the South Island. Four groups were run with motivated farmers and three groups with less

motivated farmers. Those questions asked at the focus groups that pertain to dairy farm production research are shown in Appendix III. No focus groups were held with non-contact farmers, as it was believed focus groups would not stimulate a response.

2.4 Limitations

All the farmer information for this investigation was collected by Adler Bryant Ltd on behalf of the Consulting Officer Service. This information has been collected without specific focus on dairy farm production research and with a focus on the Consulting Officer Service. The farmer results presented are only those that pertain to dairy farm production research or learning styles and information sources as viewed by the author.

3. RESULTS

3.1 Consultant/Advisor Survey

A response rate of 28% was achieved from the questionnaire (69 from 250). Of the 250 surveys sent out to consultants it was not known how many of these consultants were in fact dairy consultants.

The total number of consultant responses for Sections A and C was 89. This total includes the 20 Consulting Officer respondents who answered Sections A, B and C.

3.1.1 Section A

The predominant areas of information consultants advise farmers on

	Frequency
Farm cover and pasture/rotation management	45
Financial or budgeting advice	17
Information from whole farm model or simulation model	6
Animal health management	2
Herd reproductive management	1
Milking machine and dairy shed management	0
Other areas	16

Other areas included whole farm systems and profitability, and fertiliser issues.

Where is dairy farm production research information sourced from?

Published articles ranked slightly higher than DRC as the two main sources.

	Frequency
Published Articles	36
DRC	28
Field days	8
Conferences	7
Discussion groups	4
Commercial company research	3
Other	8

Other areas included colleagues, internal information sources and specialists of particular areas.

Best means of information transfer for dairy farmers

One-to-one was recognised as the best means of information transfer with a very high ranking compared to other methods. Discussion groups were the second preferred method.

	Frequency
One to one	55
Discussion groups	18
Published articles	8
Field days	7
Conferences	1
Visual eg video	1

Dairy farm production research priorities

Consultants ranked farm systems management as the highest research priority, followed by feed production and then nutrition.

	Frequency
Farm systems management	33
Feed production	28
Nutrition	17
Reproduction	9
Milk characteristics	2
Mastitis and milk quality	1
Other (varied priorities)	3

Awareness of the Dairying Research Corporation

All consultants were aware of the DRC.

Consultant contact with DRC in the past year

81% had made contact with the DRC.

Method of consultant contact with DRC

	Frequency
Contacted DRC researcher directly	47
Field days	41
Conferences	40
DRC website	20
Other methods	6

The predominant "other" method was via a DRC researcher as a guest speaker at a discussion group/meeting.

Rating of DRC farm production research

83% rated DRC research as highly or very highly.

12% rated it as average and

5% rated it with doubt

Awareness of the publication "DRC Research Update"

85% were aware of the Research Update while slightly less (80%) use or refer to the Research Update.

DRC research principles are applicable to regions other than the Waikato.

80% agreed that research principles are applicable outside of the Waikato.

Even though many agreed additional comments were also included;

"Some research is applicable to other regions but not all."

"Need to do more research in other regions."

"Need to push principles not just results."

"Need to modify principles to accommodate regional differences."

"This is the most difficult selling point of DRC research."

More contact between consultants and researchers

95% were supportive of more direct contact.

Individual consultant involvement with DRC trials

70% would like to have personal involvement with future DRC trials.

Common areas of desired involvement;

- Receiving trial results
- Involvement in trial design
- Researcher and consultant discussion groups/meetings

Other suggested areas of involvement/comments;

- List of current research topics and contact names
- Discussing how research can be applied on farm
- Email system for contribution to trial design
- There are farmers outside of the DRC/LIC loop that have useful innovations for new trials

3.1.2 Section B

(Completed by Consulting Officers from the Consulting Officer Service only)

Consulting Officer response rate was 66% (20 from 30), specific to Section B only.

Proportion of CO time spent on information transfer of DRC research

	Frequency
< 10% of time	12
10-20%	5
>30%	3

Source of recent DRC research trial results

	Frequency
DRC Research Update	16
Through the LIC network	16
Directly from DRC researcher	9
Scientific publications	7
DRC website	2
Other methods	3
(Other included visits to DRC)	

Approachability of DRC researchers

13 CO's consider researchers to be approachable or very approachable while 7 felt they had no experience to answer this question.

CO understanding of DRC research for the purpose of information transfer to farmers

13 always or most of the time had an adequate understanding of the research

7 sometimes had an adequate understanding of the research.

CO's requiring researcher assistance for information transfer

12 wanted researcher assistance

3 did not want assistance

5 were unsure

Changes for the information transfer process of the Centre of Excellence

CO comments

- More CO input on research design due to farmer feedback readily heard
- A closer working relationship with researchers
- Simple interpretation of trial results for delivery to farmers
- More regional research
- No need for any changes
- DRC researchers a little less insular and protective of science. CO's have a better understanding of the limitations of science and provide researchers with greater feedback from farmers.
- Use of many forms of media to launch a new concept or breakthrough.

- A strong working relationship is essential to the success of the CoE and steps will need to be taken to join the two groups together (DRC and CO Service).
- Researchers out in the field more.
- With a closer working relationship CO's will be better informed leaving researchers more time for their research.

3.1.3 Section C

What region do the respondents work in?

There was a least one respondent working in each region. Some respondents work in several regions.

Regions with the six highest response rates.

Waikato	33
Bay of Plenty	13
Taranaki	12
Northland	10
Manawatu	10
Canterbury	9

Which best describes their profession?

64 respondents classified them selves as dairy consultants/advisors

3 as vet/consultants

22 other

"other" constituted predominantly as:

- 7 fertiliser technical representatives
- 5 consultants with dairying as a very minor aspect
- 3 rural valuer/consultant

3.2 Researcher Survey

A response rate of 69% was achieved from the researcher questionnaire (18 from 26).

3.2.1 Researcher Time

Time spent on the transfer of research findings to farmers.

7 spend less than 5%

10 spend between 5-20%

Time spent on the transfer of research findings to consultants.

10 spend less than 5%

7 spend between 5-10%

Should the Researcher spend more or less contact time involved in information transfer with farmers?

10 said no change from present

3 said less time

4 said more time

Comments

- It is not accepted by DRC's major funders that researchers spend time involved in the transfer of research information to farmers.
- Time involved in information transfer has decreased in recent years.

3.2.2 Information Transfer

Who should be informing farmers of research findings?

14 said a combination of researcher and consultants

Comments

- Predominantly consultants with some assistance from researchers
- Researchers should assist information transfer when it involves larger groups, difficult concepts or new findings.

Best methods of information transfer to farmers

One-to-one was considered the best method of information transfer for farmers. This was followed by discussion groups then field days.

	Frequency
One to one	10
Discussion Groups	6
Field days	2
Published articles	1
Conferences	1
Visual eg video	0

Comments

- One-to-one is not an economic method of information transfer.
- The effectiveness of information transfer is inversely proportional to the size of the audience
- Farmers receive a barrage of information. DRC research information needs to be unique and considered with confidence.

Changes to current information transfer methods

All researchers felt there should be changes to current information transfer methods.

Changes

- Predominant changes related to greater links with consultants/advisors and the Consulting Officer Service.
- Include an extension specialist whose job was to package and deliver research to consultants and third party professionals (TPP). Have an extension specialist for each main research area.
- Build our profile with farmers by undertaking a marketing strategy. Once the profile is developed farmers will be more receptive of our information.

3.2.3 Research

DRC research principles are applicable to regions outside of the Waikato

17 researchers agreed or strongly agreed.

Comments

- Need regional demonstration, especially of regional issues that don't obey general principles.
- Information needs to be tailored for a different region.

More research on commercial dairy farms

8 agree or strongly agree

3 disagree

7 neutral

Comments

- Predominant comments referred that this would be useful provided control and design was maintained.
- This would aid farmer understanding of research and uptake.
- Is suited for some research areas but not for others.

Alternative areas of research not currently included in DRC research programmes

One third of researchers were unsure. Of the remainder, two thirds were supportive of alternative research.

Alternative research suggestions

- Farm economics and cost benefit studies
- Organic farming
- Animal Health e.g. lame cows
- Environmental issues

3.2.4 Dairy Consultants/Advisors

There should be direct contact between consultants and researchers

15 agreed or strongly agreed.

Comments

- Need to get together with them formally on a regular basis and include other third party professionals.
- Researchers already spend considerable time involved in information transfer. Contact needs to be more controlled and targeted.

Relationship/process with the CO Service

13 said this was OK

5 said ineffective

Comments

- Poor relationships between CO Service and DRC, no links at present.
- Depends on individual CO as to how they see their relationship with DRC
- Relevant messages or difficult concepts often not understood.
- High CO turnover.

3.2.5 Research Input

It would be beneficial to have input from consultants/advisors on trial design

11 agreed or strongly agreed

6 were neutral

Comments

- Their contribution to ideas but not the design of the trial.
- Good and bad issues relating to this.
- This would provide more feedback from farmers on their research requirements.

Input from farmer focus groups on research prioritisation would add value to DRC research

16 agreed

Comments

- Many felt it would help farmer ownership of the trials but wouldn't improve the ideas or the science.
- Farmers are good at prioritising research but not good at suggesting new topics/areas of research.
- Don't lose the science.

Annual forum of researchers and consultants/advisors to discuss research, would benefit

a) research

16 agree

2 unsure

b) farmer uptake of research

12 agree

2 disagree

4 unsure

Comments

- Inform consultants directly and improve the targeting of research.
- With the future CoE this must be essential.
- Doesn't personalise research so difficult for farmers to take up.

Should DRC review on farm adoption of new technologies

16 agree

2 unsure

Comments

- This is very important.
- Adoption can take a long time and is not easy to measure.
- Not our job, should be funded in its own right.

3.2.6 Future

Changes in the information transfer process for the CoE

Comments

- Many comments referred to the improvement of the integration of researchers and consultants.
- Improve links with TPPs.
- It is not information farmers want, it is how to apply the information to implement the change.
- Future information transfer/extension needs to be different to reach the large group of farmers who we don't impact on. Need to work on the adult learning process and tailor our efforts eg mentor group schemes.
- Extension specialist to package and deliver research to consultants and TPPs.

3.3 Farmer Focus Groups

Information should be delivered to farmers by:

- Discussion Groups
- Mini field days
- One-on one for newcomers to the industry
- Buddy system for new entrants

There was a suggestion from several groups that discussion groups should be tiered.

"It is all about motivational transfer of information"

"I would like to see more DRC people out on our farms"

Most preferred ways to learn:

1. Discussion groups
2. Fellow farmer
3. Field-day/seminar
4. 'Dairy Exporter'
5. 'Farm advisor'
6. Internet

Critical factors for the 4% productivity gain:

- Farm and regionally driven research and analysis is critical for success and uptake of information.
- Continuation of focus farms
- Information free of commercial bias
- Advice and updates on latest information through discussion groups and regionally relevant research

Regional research

- More local research needed
- New CoE should lease farms to undertake research relevant to the South Island or run trials on existing farms

4.0 DISCUSSION

Mediums for information transfer currently practised by DRC are many. Conferences, field days and the DRC publication "Research Update" are regular features on the information transfer calendar. Of less regularity are research articles appearing in industry journal publications, although, industry journal coverage of DRC research material is good with DRC articles featuring in many of the various publications. The Consulting Officer Service contributes to information transfer to farmers via their discussion group network and indirectly information transfer is being carried out by dairy consultants/advisors over the entire country. Of increasing importance in this day and age is the use of computers for information transfer, more specifically, the Internet.

The role of this investigation is to discuss the links between the researchers, consultants and farmers in the transfer of DRC dairy farm production research information.

4.1 Information Sources and Mediums

Survey findings show that currently the most common source of dairy production research information for consultants is from written published articles and DRC. From the consultant survey it is not possible to identify how much of this written material is produced from DRC. DRC is a major producer of dairy farm production research in New Zealand and it is likely that much of this material does originate from DRC.

With the increased world-wide use of the Internet as a means of information transfer, it is interesting to note that only 3 of the surveyed consultants made reference to sourcing dairy farm production information from the Internet and did not rate the Internet highly in their ranking or information sources. A report of the DRC Internet site (Dawson, 1999) highlighted that key DRC audiences recommended that the DRC website feature a comprehensive library of technical and subject based information. This comprehensive library is not yet available on the DRC website and may contribute to explaining why the Internet does not feature highly as a source of dairy farm production information for consultants. Farmers rated the Internet as the sixth most preferred way to learn while 20% of farmers are linked with the Internet (Dawson, 1999). Farmers recognise the potential of the Internet but feel they need to know how best to use it.

All three groups, researchers, consultants and farmers, recognise that the most effective techniques for farmer learning utilise the face-to-face method of information transfer, one-to-one and discussion groups. One-to-one is an uneconomic method of information transfer and only suitable when the entire target audience is a very small group. The effectiveness of the information transfer method tends to be inversely proportional to the size of the audience, this reflects the level of personalisation the audience

feels and the greater the level of personalisation the greater the information uptake. Farmers also rate very highly learning from other farmers and see one-to-one as particularly useful for new entrants to the industry.

Discussion groups allow for information transfer to a larger audience without losing the personal touch. Discussion groups also provide a forum for discussion between farmers, and between farmers and consultants. The CO Service is well known for their use of discussion groups with their main method of extension utilising this method. The proportion of CO's time spent on transfer of DRC research information is currently less than 20%. As a direct link with farmers nation-wide and given that the CO Service form part of DRC's information transfer process, albeit a very informal arrangement, it accounts for an unexpected low proportion of the CO's time. This view-point is from the DRC perspective and may demonstrate an incomplete understanding of the role of the CO. This part of the information transfer link may be weaker than DRC perceives. Farmers continue to be very favourable of discussion groups as a means of information transfer. Discussion groups give farmers enthusiasm and provide the personal aspect. Extension agents can target specific behaviour changes in clients by implementing strategies that use learning preference and belief data (Paine, 1993).

DRC conferences and field days do function as a direct link with farmers but not on a regular basis and not readily at a nation-wide level. DRC contact with South Island farmers is limited to CO's and consultants providing the greatest link. In some instances DRC has speakers presenting at South Island conferences such as South Island Dairy Event (SIDE) but direct contact with South Island farmers is limited.

The DRC publication 'Research Update' is published quarterly and provides brief updates and information on DRC research and staff. This publication is highly recognised and utilised by consultants from around New Zealand, for many it is their main link with DRC. The Research Update provides consultants with names and contact details but this is only providing they have access to this publication. The Research Update is now on the DRC website so for those with Internet access will ensure they have access to this publication.

4.2 Research Needs

Farmers prefer to learn from other farmers. New tools or information which farmers can see on farm and in use by other farmers has greater credibility and likelihood of being adopted than information or tools not in use at a local or farm level. Farmers believe that local research is needed, this was particularly emphasised in the South Island. Consultants also emphasise the need for local research to demonstrate and identify regional differences of research principles. Although 80% of consultants agreed that research principles were applicable outside of the Waikato, there were many comments regarding the need for more regional research. This suggests the difficulty portraying this message to

farmers in their local areas and that knowledge derived from formal science does not equate to locally relevant and trusted knowledge for decision making.

Researchers believe research principles are applicable outside of the Waikato but recognise that information needs to be tailored for different regions. There is a great deal of researcher apprehension about the need for mini-research farms throughout New Zealand. Researchers have mixed view about the use of commercial farms for research. Commercial farm research gives credibility of the information/tools for farmers. Researchers main concerns of commercial farm research is that often it is not an appropriate place for the research and that experimental control is limited specifically because it is a commercial farm. There appears to be a need for the use of more commercial farms to demonstrate trial principles i.e. demonstration farms while still ensuring that the initial research is carried out at the best place for that particular research. Researchers acknowledge that if the best place for a particular research is on commercial farms, then this is where it should be carried out.

The emphasis by consultants and farmers upon the need for more regional research, raises the issue as to whether the need is for more regional demonstration of research principles, or for actual 'regional research'. There may be a difference of interpretation of 'research' by researchers versus consultants and farmers. Bodeker (2000) identified that dairy farmers want farm systems research researched and demonstrated locally so new ideas can be tested and systems developed to suit their farming operations.

4.3 Research Priorities

Of the current research programmes, farm systems management, feed production and nutrition were rated as the highest research priorities by consultants. Farm systems management incorporates differing management strategies and their effect on profitability. These three research programmes combine to form the basis of the main topic upon which consultants advise farmers, namely farm cover and pasture management. So their ranking of research priorities is no surprise.

Researchers essentially believe that the current research programmes encompass the main research requirements. Although three additional areas of research were mentioned by researchers;

- Animal health eg lame cows
- Farm economics and cost benefit studies
- Organic dairy farming

As the 4% industry target becomes the focus of the CoE, it seems highly relevant that farm economics and animal health would impact on the 4% productivity goal. Organic dairy farming is becoming increasingly topical and an area that New Zealand dairying cannot ignore.

The farmer survey information on future needs was collected without specific relationship to DRC's current research programmes or in reference to research in particular. The three future issues farmers foresee as important and which relate to farm production research are biotechnology, milk harvesting technology and environmental issues. Farmers are aware of the need to keep up with technology and the potential that technological advances could have on the New Zealand dairy farm. Environmental issues were predominantly of concern to Waikato dairy farmers.

4.4 Consultant-Researcher Links

From the survey findings it is evident there is a high awareness of DRC and its research with the DRC research being regarded highly by 85% of consultants. However, comments from consultants consistently related to the poor linkage they have with researchers. Currently CO's visits to DRC and the publication 'DRC Research Update', are the only formal contact consultants have with researchers/research. This is emphasised by the most frequently used method of consultant-to-DRC contact being the consultant contacting the researcher directly. Consultants information needs are not currently being met and as they are the main point of contact with the farming community it is important that their dairy farm production information needs be met to ensure an unhindered transfer of dairy farm production research information.

Researchers believe that:

a) there should be more direct/formal contact with consultants, and,
b) this contact be more controlled, targeted and specific.

An annual or biannual meeting of consultants and researchers to discuss research would fulfil the requirements of both groups and result in an enhanced transfer of research findings. Consultants want to receive trial results and have some contribution to research design as well as being involved in research conducted in their local area. Researchers are in agreement that consultant contribution to research ideas and prioritisation would be beneficial as consultants have the direct contact with farmers, but felt that the actual trial design remains the responsibility of the researchers.

It is recognised by both the CO's and the researchers that the links between these two groups are in need of strengthening. The strength of the current relationships is dependent on the individuals concerned. Researchers feel that in the past the high CO turnover has inhibited the CO's ability to develop a rapport with researchers. CO's want to work more closely with researchers and have greater access to researchers and their scientific expertise.

4.5 The Role of the Researcher in Information Transfer

Less than 10% of researcher's time is involved in information transfer to farmers. Even less time is spent in the transfer of information to consultants. Researchers want to continue their involvement with direct information transfer to farmers but believe it to be principally the consultant's role. The researchers see their role as support when required or for the introduction of new findings and assistance with difficult concepts. CO's want researchers assistance to inform farmers of recent research findings and farmers want to see DRC researchers out on their farms more. There is some disparity regarding the transfer of DRC findings as DRC's major funding does not provide significantly towards the transfer of research information, yet farmers want to see more of DRC researchers.

4.6 The Future

With the formation of the CoE (DRC and Livestock Improvement Corporation Consulting Officer Service and Education Services) and the focus of the CoE to initiate the 4% industry productivity target, it is likely there will be changes in the information transfer process of dairy farm production research.

The most likely of the changes is the improvement of the relationship between researchers and CO's. The combination of these two groups will stimulate a greater two-way flow of information resulting in enhanced transfer of information and feedback of farmer research initiatives. The opportunity exists to bridge the gap between researchers and CO's regarding the packaging of research information. CO's want the research information interpreted ready for delivery to farmers yet researchers believe their role is neither in information packaging nor as technology transfer experts. This packing information link could be fulfilled by an extension/marketing specialist whose job was to package and deliver research information to CO's, consultants and media outlets. This would not only ensure research information was presented for delivery in an appropriate format and without any information loss, but also provide a contact point between researchers and all consultants. Levels of technology and information adoption can be enhanced by researchers presenting research outputs using communication methods compatible with target clients' preferred learning styles (Paine, 1993).

With the forecast changes in the Dairy Board funding of dairy farm production research (the introduction of a farm levy for research funding) there will be changes needed to gain the required support from farmers to continue the current levels of dairy farm production research. Marketing dairy farm production research to farmers will need to be a key focus of the CoE in order to heighten farmer awareness of dairy farm production research. Inclusion of dairy farmers in local research and demonstration farms as well as farmer involvement in research prioritisation would enhance farmer ownership of research. Targeting farmer awareness of the importance of dairy farm production research needs to be extended beyond the Waikato and regions local to the Waikato. The CO's are

located nationally and so provide national contact points that would be better used to disseminate research information and awareness of dairy farm production research.

5. CONCLUSIONS AND RECOMMENDATIONS

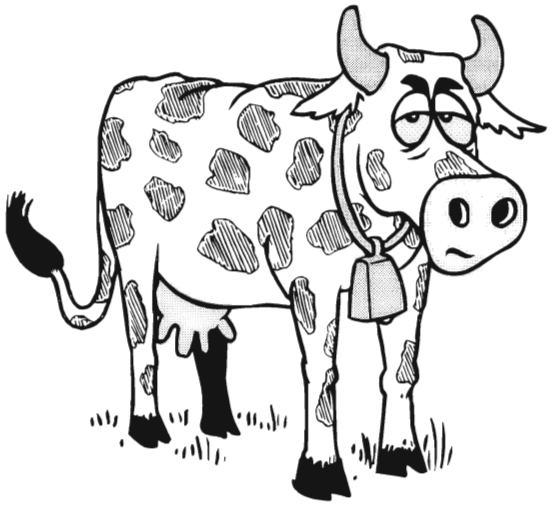
DRC is the leading producer of dairy farm production research in New Zealand. The transfer of this research information is via many mediums. DRC researchers carry out much of the transfer of this information. Consulting Officers from the Consulting Officer Service also contribute to the transfer of research information to farmers via their use of discussion groups and monthly visits to DRC for information collection. Indirectly dairy consultants/advisors from around the country are also involved in the transfer of dairy farm production research to dairy farmers.

All three groups (researchers, consultants and farmers) recognise that the most effective learning styles for farmers involve face-to-face information transfer. Consultants obtain most of the dairy farm production information from written published articles and this includes the DRC publication 'Research Update'. Consultants have a high awareness of DRC and a high utilisation of the Research Update. The Internet did not feature highly as one of their sources of dairy farm production information.

Farmers and consultants emphasised the need for more regional research. Consultants have difficulty portraying to farmers that the research is applicable to regions outside of the Waikato. Researchers believe that the research should be conducted in the best place for the research whether it is a commercial farm or a research farm. Demonstration farms would provide a means of applying research principles in different regions and would involve local farmers and aid farmer uptake of research principles.

Researcher and consultant links are recognised by both groups as limited and in need of formalising. An annual or biannual forum specifically for discussion of dairy farm production research may fulfil the needs of both the researchers and consultants. Input from both farmers and consultants on research needs would stimulate ownership of the research and help the transfer of research information. CO's are the only consultants with any formal links with DRC researchers, but both groups agree that these links need strengthening.

The future formation of the CoE will see many changes in the information transfer process of dairy farm production research. The packaging of research information is an area that is currently limiting the information transfer process. Creating an extension/marketing specialist to package and deliver information to consultants and media outlets would enhance awareness and provide a point of contact for consultants. The introduction of a farmer levy for funding dairy farm production research will require a greater emphasis on 'marketing' of the CoE and dairy farm production research to farmers to ensure adequate farmer support.



Survey - Information Transfer

Help dairy farm production research reach you

If you are a dairy farm consultant/advisor please take the time to fill out this survey as it is designed to benefit you in two ways. Firstly, these results will help improve the transfer of dairy farm production research to consultants/advisors and farmers and secondly, you will go in the draw to win some luxurious outdoor garden furniture.

Please answer each question either by following the instructions or tick [✓] the appropriate box.

The information provided will be collated and will not be attributable to any one individual. Furthermore this information will not be available to anyone other than the researcher.

Please return your completed questionnaire as soon as possible by posting in the self-addressed envelope supplied or faxing to 07 838 5670.

If you have any questions regarding this survey please contact Bridget (Bid) Clark 07 838 5733 at the Dairying Research Corporation, Hamilton.

Dairy Farm Consultants / Advisors

Section A

1. What is the main area of information you advise farmers on?

Rank in order of priority 1(highest) - 6 (lowest)

☐Farm cover and pasture/rotation management ☐Herd reproductive management
☐Financial or budgeting advice ☐Animal health management
☐Information from whole farm model or simulation model eg UDDER, Molly, the Cornell Model
☐Milking machine & dairy shed management
☐Other *(please specify)* _____

2. Where do you get your dairy farm production research information from?

Rank in order of frequency 1(highest) - 7 (lowest)

☐Published articles ☐field days ☐conferences
☐commercial company research ☐ Dairying Research Corporation ☐discussion groups
☐Other *(please specify)* _____

3. In your experience what do you believe are the best means for information transfer for dairy farmers?

Rank in order of priority 1(highest) - 7 (lowest)

☐Published articles ☐field days ☐conferences
☐discussion groups ☐One to one ☐visual eg video
☐Other *(please specify)* _____

4. Where do you think dairy farm production research priorities should be focused?

Rank in order of priority 1(highest) - 6 (lowest)

☐nutrition *(understanding pasture enabling accurate predictions of milk yield from pasture)*

☐reproduction *(optimising fertility of the dairy cow in the New Zealand farm system)*

☐milk characteristics *(improving the value of milk by understanding the effects of farm practices on milk characteristics)*

☐feed production *(providing farmers with options that overcome summer/autumn decline in pasture growth and nutritive value)*

☐mastitis and milk quality *(generating research which allows mastitis and somatic cell counts to be more effectively managed in NZ)*

[see over]

☐farm systems management *(evaluating effects of different farm management strategies and inputs on profitability)*

☐other *(please describe)*

_____

_____

_____

_____

5. Are you aware of the Dairying Research Corporation?

☐Yes ☐No

If you have answered "No" to the above question please go to section C

6. Have you, in the last year, had contact with the Dairying Research Corporation (DRC) field day, conference, or consulted a DRC researcher directly for the transfer of dairy farm production research?

☐Yes ☐No

If you have answered "Yes" to Question 6 please answer 6a.

6a. By what method did you make contact with the DRC.

☐field day ☐ conference ☐DRC website
☐contacted a DRC researcher directly ☐ other (please specify) _____

_____

7. How do you rate DRC dairy farm production research?

☐Very highly ☐highly ☐average
☐with doubt ☐not at all

8. Are you aware of the "DRC Research Update"?

☐Yes ☐No

9. Do you use / refer to the "DRC Research Update"?

☐Yes ☐No

10. Do you think that DRC research principles are applicable to regions other than the Waikato?

☐Yes ☐No ☐Don't know

If No please explain _____

11. Do you believe there should be more direct contact between dairy farm consultants/advisors and DRC researchers?

☐Yes ☐No

12. Would you like to have more involvement with DRC research trials? eg planning or co-ordination of trials or receiving the information resulting from the trials.

☐Yes ☐No
If yes explain how you would like to be more involved
_____
_____
_____

If you are a Livestock Improvement Corporation Consulting Officer please answer section B, otherwise go straight to section C

Section B *(for Livestock Improvement Corporation Consulting Officers only)*

13. Currently what proportion of your time as a Consulting Officer (CO) is spent involved with information transfer of DRC research?

☐less than 5% ☐5-10% ☐10-20%
☐20-30% ☐more than 30%

14. How do you find out about recent DRC research trial results?

☐Directly from DRC researchers ☐Scientific publications ☐DRC Research Update
☐Through the LIC network ☐DRC internet site
☐other *(please specify)* _____
_____

15. How approachable are DRC Researchers when you need further information about trial results?

☐Very approachable ☐ approachable ☐not very approachable
☐have no experience to answer this question

16. When you are informing farmers of recent DRC research, do you believe you have an adequate understanding of the research for the purpose of information transfer?

☐Always ☐most of the time ☐sometimes
☐not often ☐never

17. Do you require DRC researchers to assist reporting recent trial results to farmers?

☐Yes ☐No ☐Unsure

18. With the formation of the future Centre of Excellence (COE) opportunities for change in the information transfer process of dairy farm production research exist. What changes would you like to see occur?

_____
_____
_____
_____
_____

Section C

19. Which region do you work in?

☐Northland ☐East Coast ☐Marlborough/Nelson
☐Auckland ☐Central Plateau ☐Canterbury
☐Waikato ☐Hawkes Bay ☐West Coast
☐Bay of Plenty ☐Manawatu ☐Otago
☐King Country ☐Wellington ☐Southland
☐Taranaki

20. Which best describes your profession?

☐Dairy Consultant/advisor ☐Veterinarian/consultant
☐Other *(please specify)* _____
_____
_____
_____

Thank-you for taking the time to fill in this questionnaire. Please fill in your name, address and contact details below for entry into the draw to win some luxurious outdoor furniture.

Name: _____

Address: _____

_____

_____

Daytime phone: _____

Are you interested to receive the "DRC Research Update" on a regular basis?

☐Yes ☐No

Scientists/Researchers

Information transfer of DRC research findings is currently via DRC field days, conferences, industry articles, internet, DRC Research Update, scientific publications and the Consulting Officer Service.

Please tick the appropriate box ✓ or comment where necessary

1. **How much time do you as a researcher spend actively involved in the transfer of research information to farmers?** (This includes telephone, email, field days, conferences, discussion groups, industry articles, *not* scientific publications)

☐ less than 5% ☐ 5-10% ☐ 11-20%
☐ 21-30% ☐ more than 30%

2. **How much time do you as a researcher spend actively involved in the transfer of research information to consultants?** (This includes telephone, email, field days, conferences, discussion groups, industry articles, *not* scientific publications)

☐ less than 5% ☐ 5-10% ☐ 11-20%
☐ 21-30% ☐ more than 30%

3. **Do you think you should spend more or less contact time with farmers involved in information transfer?**

☐ More ☐ Less ☐ no change from present ☐ Not sure

Comments

4. **Who do you think should be the person relaying research findings to the farmers?**

☐ the researcher ☐ the farm consultants
☐ a combination of researcher and consultants ☐ Not sure
☐ Other (please specify)

Comments

5. What are the best methods of information transfer to farmers?

***Rank* in order of effectiveness 1(highest) - 8 (lowest)**

☐ published articles ☐ field days ☐ conferences

☐ discussion groups ☐ One to one ☐ visual eg video

☐ internet ☐ other *(please specify)*

Comments

6. What changes to DRC's current methods of information transfer to farmers would you make to achieve greater farm uptake of research findings?

☐ None ☐ Not sure

☐ Changes (please specify)

7. DRC research principles are applicable to regions other than the Waikato.

Please tick the appropriate box

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
❑	❑	❑	❑	❑

Comments

8. DRC should be doing more research on commercial dairy farms.

Please tick the appropriate box

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
❑	❑	❑	❑	❑

Comments

9. Are there any areas of dairy farm production research that are not currently part of any of DRC research programmes that you believe should be included in DRC research?

☐ No ☐ Yes (please specify) ☐ Not sure

Comments

10. There should be more direct contact between dairy farm consultants/advisors and DRC researchers.

Please tick the appropriate box

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
❑	❑	❑	❑	❑

Comments

11. In the past, DRC utilised the CO Service of LIC for part of the transfer of research findings to farmers. How effective do you believe this relationship/process is?

Very Ineffective	Ineffective	OK	Effective	Very Effective
❑	❑	❑	❑	❑

Comments

12. Input from dairy consultants and advisors on design of research trials and farmer research requirements would add value to DRC research?

Please tick the appropriate box

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
❑	❑	❑	❑	❑

Comments

13. Input from farmer focus groups on research prioritisation would add value to DRC research?

Please tick the appropriate box

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
❑	❑	❑	❑	❑

Comments

14. Do you think a biannual or annual forum of researchers and dairy advisors/consultants to discuss past, present and future research, and farmer needs, would be of benefit to

a) Research?

☐ Yes ☐ No ☐ Not sure

b) farmer uptake of research?

☐ Yes ☐ No ☐ Not sure

Comments

15. Should we review regularly the on farm adoption of new technologies?

☐ Yes ☐ No ☐ Not sure

Comments

16. With the future formation of the Centre of Excellence how do you see the transfer of information from research findings changing?

☐ no change from present ☐ Not sure

☐ Changes include .....(please specify)

17. Which area of research are you predominantly involved with?

- ☐ Nutrition
- ☐ Dairy Cow Fertility
- ☐ Computer Modelling
- ☐ Farm Systems Management
- ☐ Milk Characteristics
- ☐ Mastitis and Milk Quality
- ☐ Forage Production

Thank-you for taking the time to fill in this survey.

Please either email this survey back to Bid or drop a printed copy on Bid's desk.

APPENDIX III

Farmer focus group questions

Where do you mostly go for information? (what media form)

- Internet
- Newspapers
- Industry magazines
- Newsletters
- Direct mail
- Courses
- Conferences
- Discussion groups
- Other farmers
- Other

What type of information do you look for? (long articles, adverts, pictures)

Where do you look for information or learning tools?

How would you describe your preferred learning method or environment?

How do you evaluate new ideas or inventions?

REFERENCES

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