

# SOME OBSERVATIONS ON THE TRANSFER OF NEW FORESTRY AND FOREST PRODUCTS TECHNOLOGY

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## ABSTRACT

*In an attempt to overcome some of the problems associated with the dissemination and implementation of research findings within N.Z. Forest Service, a scientific liaison and information group has been set up at the Forest Research Institute (FRI) which includes scientific liaison officers, and journalists and editors. For this group to be effective, certain action needs to be taken by both the FRI and the Forest Service in general.*

- (1) Networks of extension-oriented staff need to be set up within each FRI research division.*
- (2) The number of conflicting statements which emanate from FRI need to be minimised.*
- (3) Forest Service conservancies and some Head Office divisions need to be formally made responsible for the reception and implementation of FRI research findings.*
- (4) Co-ordinating boards need to be set up within each FRI research division and each Forest Service conservancy and other relevant groups to formulate policy concerning their relevant technology transfer programmes.*

## INTRODUCTION

The New Zealand Forest Service is a large organisation (total employees about 7800) involving seven somewhat autonomous regional conservancies responsible to the Director-General, and a head office for nine divisions concerned with various aspects of forestry. The Forest Research Institute (FRI) is the research wing of the Forest Service. It employs about 350 scientific and technical staff in the three research divisions of Protection Forestry (mainly concerned with the enhancement of the indigenous forest resource and the land protection role of forests), Production Forestry (mainly concerned with the establishment, management, and

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harvesting of the exotic forest resource), and Forest Products (mainly concerned with utilisation of the exotic forest resource).

The principal objective of the FRI is to undertake a comprehensive research programme, with extensive investigations throughout the country in the fields of forestry and forest products to support the principal objectives of the Forest Service and provide for the needs of the national forestry and forest products industries. The practical utility of research is a major criterion influencing priority for effort and expenditure.

The allocation of research effort and the setting of priorities are based on considerations of the cost-effectiveness of alternative practices, the potential gain from improved quality and quantity, the values at risk from damaging influences, and the probability of the research being successful.

As part of the Forest Service it is the responsibility of the FRI to do any necessary research, to report the findings, and to ensure that practical recommendations are distributed to, and understood by the people and organisations who need to use them. Furthermore, it must also be the role of FRI to make every effort to ensure that forestry and wood processing practices followed throughout the Forest Service and the private sector are in accordance with tested research recommendations. In many instances the testing of research findings must be carried out within Forest Service organisations other than the FRI.

With a large and complex organisation such as the FRI, communication between research divisions can be limited, let alone that between researchers and the users of research findings and recommendations. Before effective programmes of technology transfer can be prepared the basic problems must first be isolated.

### IDENTIFICATION OF THE PROBLEMS

At present, very real problems exist in effectively disseminating research findings to the wide range of forest planning, management, and utilisation staff within the Forest Service. Although the transfer of information takes place through both formal and informal channels, there is no formal system which ensures reception and evaluation of results, and co-ordination of action at the regional level. Many examples exist where FRI research findings and recommendations have not been adequately considered and evaluated by some conservancies. In many instances, research findings and recommended practices have been ignored, often when demonstration step-out trials are available in their own region.

Over the years FRI has put substantial and increasing resources into both the publication and the dissemination of research results. These have obviously not been entirely satisfactory and alternative and/or additional mechanisms of technology transfer need to be developed.

The image and credibility of FRI and its scientists are not enhanced when conflicting recommendations or statements emanate from different scientists and/or different research groups. This is not an uncommon occurrence which often happens when statements prescriptions and/or recommendations are requested, and when the research base is either non-existent or inconclusive. In such circumstances the statements given reflect opinion rather than fact and can often be very misleading. It is essential that statements or recommendations of this type be formulated on a co-ordinated basis so that FRI (and research as a whole) can more often be seen to be speaking with a single voice.

As far as FRI is concerned, the first step in improving research communication with direct users has been taken with recognition of the problem and initiation of action to overcome it. This has been done by setting up the FRI Scientific Liaison and Information Group.

### FRI SCIENTIFIC LIAISON AND INFORMATION GROUP

The FRI scientific liaison and information group consists of liaison officers, information staff, journalists and editors. Additionally, the group also acts as the "publishing house" of all FRI publications. The primary aim of the group is to ensure that FRI research is made available, is communicated to, and is understood (and when applicable, practised) by the people or organisations which should use it.

Any system set up to improve the transfer and application of FRI research findings within the forestry sector must necessarily use the large pools of expertise already available in the three FRI research divisions. In consequence, the scientific liaison and information group can only be effective if supported and complemented by the actions and efforts of individual research fields. It is not intended at this time that the scientific liaison and information group be considered as having extension or advisory roles since the strength of the FRI must lie in the specialist knowledge of its scientists and technical staff. Thus it is envisaged that the section should consist of a relatively small group of people capable of understanding the needs of users, and of ensuring that

such needs are identified and effectively satisfied by the FRI. To be able to do this it is necessary that an active network of extension or advisory-type officers be set up to act both within and between the three research divisions as well as with specific end-users. Such officers would be expected to continue many of their present duties, with a proportion of their time being allocated to extension or advisory work. A network of research extension officers of this type would be used by the scientific liaison and information group to facilitate two-way communication of information between users and researchers.

Some specific roles of an interactive scientific liaison and information group are as follows:

- (1) To identify the most effective means of communicating specific research findings to specific users, and of having research results and prescriptions accepted and effectively used by the forest industry. Again this must be followed by action to have the identified procedures put into practice. An example would be the requirements of forest managers and supervisors in terms of the need for, and the design of, effective "proper practice" and "how to" manuals or handbooks.
- (2) To identify the research needs of users in both the public and private forestry sectors. This includes the research needs of forestry sector planners and strategists through to those involved in supervising and carrying out forest or wood-utilisation operations. The identification of research needs must necessarily be followed by the initiation of suitable action to have them considered for inclusion in FRI research programmes or for co-ordinated FRI/user research and development projects.
- (3) To identify where researchers have been unable to come up with satisfactory or effective answers to forest management and operational problems. This must be followed by the identification of the causes of such research deficiencies, and the setting into motion of effective action to overcome them.
- (4) To identify whether forest practices are being carried out in accordance with research findings. Where incorrect or unsatisfactory practices are being followed, the scientific liaison officer should determine the reasons for this and initiate action to have it rectified.
- (5) To co-ordinate conservancy and FRI research as well as step-out and demonstration trials within conservancies.

- (6) To interact with educational institutions such as the Forestry School and the Forestry Training Centre so that research findings become included in relevant courses as soon as possible. Also, to be aware of the types of courses as well as the personnel attending FTC so that relevant contacts with FRI staff can be initiated.
- (7) To develop a research base for quantifying the efficiency and effectiveness of present and future technology and research communication mechanisms.
- (8) To have a pool of editorial and journalistic expertise which, through close association with both scientific liaison officers and FRI authors, can match information gaps with material requiring outlets.
- (9) To expand journalist activities from the production of *What's New* only to the preparation of semi-technical articles for trade and industry-related magazines. Also, news-type articles will be prepared for both technical magazines and the press when applicable.
- (10) To organise training courses for FRI staff in such areas as public speaking, and the design and use of visual aids in the presentation of scientific information.
- (11) To identify the need for and when necessary organise internal seminars to inform staff of important research findings or of other on-campus activities.
- (12) To develop skills in the design and preparation of audio-visual slide shows and video tapes. The preparation and editing of scripts for such stand-alone shows is an important and essential part of their overall production. For stand-alone audio-visual productions standards must be high and technical contents must be in line with FRI refereeing, editing and publications policy.

### *Scientific Liaison Officers*

FRI scientific liaison officers interact with both scientists and research users to identify the needs or deficiencies of either group, and to subsequently initiate action to get new research under way or to effectively communicate already available research results. These scientific liaison officers cannot be considered to be true extension or advisory officers since they are required to identify research needs and initiate suitable action in the three fields

of research, extension, and forest operations. They are the catalysts of change within and between the various groups.

To do this, FRI scientific liaison officers travel throughout the forestry sector of New Zealand at regular intervals meeting with people and examining current forestry practices, and relating these to available research results and current research programmes. In doing this, the scientific liaison officer identifies deficiencies in FRI methods of communication and research programmes, and initiates action which effectively overcomes such deficiencies. Furthermore, such officers have the unique opportunity to develop total overviews of forestry and forest practices throughout New Zealand, and to initiate and co-ordinate action which brings useful practices to the notice of people working in widely different geographic locations.

### *Research Officers*

A research base is required to assist in the identification and quantification of the best means of communicating FRI research findings to the user. Specific questions need to be answered such as "How effective is the *New Zealand Journal of Forestry Science* in disseminating FRI research to other scientists and the direct users?" On another tack, FRI open days are generally considered as being highly successful. The question is, however, with whom are open days successful, the research user and/or the public? We need to be able to quantify this type of information so that FRI budgets and resources can be utilised and directed for maximum advantage. There are a great number of questions of this type which require answers.

A research officer with expertise in the area of research communication will need to be included in the scientific liaison and information group to assist in the identification and evaluation of present and future FRI communication procedures. It is recognised that some research of this type can be contracted to outside institutions such as university groups. One of the duties of the FRI communication research officer would be to determine which research should be contracted out or carried out by FRI staff.

### *Editors and Journalists*

Amalgamation and restructuring of the FRI editorial, scientific liaison, and information groups has changed the roles of all staff to some degree. Editors and referees are becoming more concerned with the types of material being produced in relation to the medium in which it is to be published. Why is it being published in

a particular form in a particular journal? Would it not be better for the same information to be produced in an alternative form and medium to get the message across to the user more effectively? Editors with journalistic skills are encouraged to assist research field extension staff in the preparation of technical and semi-technical articles for trade magazines and for FRI "proper practice" and "how to" handbooks.

News-type articles for publication by trade magazines and the press are prepared by an information officer after interviewing scientists and technical staff. Both editors and journalists are expected to inform authors and an information officer when material is considered suitable for news-type articles.

The responsibility of the editorial group covers production of the *New Zealand Journal of Forestry Science*, *What's New*, Timber Insect leaflets, Pathology leaflets, the Annual Report, and FRI Bulletins, and editing of all technical and semi-technical papers for publication elsewhere. Other types of publications will also be considered provided they can be justified in terms of specific end-user requirements.

### *Information Officers*

The information group is responsible for the distribution and storage of technical publications, the photolibrary, the production of stand-alone audio-visual slide and video programmes, and the administration of conference room and visual aid facilities. In addition, this group is concerned with the organisation of visits by technical and user-type people, as well as FRI open days and other technical field days and displays. (Requests for visits to FRI by non-forestry interest groups are referred elsewhere and casual off-the-street enquiries are directed to the Rotorua Conservancy Forest Information Centre.) The emphasis of the information group is on effectively disseminating useful information to research users and on servicing the publication, photolibrary, and visual-aid requirements of research staff. Spin-off from such user-orientated activities can be directed towards enhancing public relations in general.

## FRI RESEARCH DIVISIONS

Since the scientific liaison and information section was set up with the primary objective of co-ordinating research extension activities and programmes for the three research divisions, the effectiveness of the group is very dependent on the desire and



goodwill of research staff. It is the research staff which must have, and be seen to have, the extension and advisory roles of the FRI. To do this, active networks of extension and advisory type officers need to be formally set up under network co-ordinators within each of the three FRI research divisions.

It will be the responsibility of these division co-ordinating officers to assist with the design and setting up of an extension officer network and to ensure that such a group is an effective means of communication both within FRI (within and between divisions) and between FRI and user groups. A close affinity with research staff will be the strength of these division co-ordinators and extension staff since they will be able to gauge scientist concerns and attitudes and when necessary utilise their skills and expertise. Relevant officers of the scientific liaison and information group will also be members of these divisional networks.

At present the primary objective of these networks must be to examine the incidence of conflicting statements and recommendations which emanate from FRI and the reasons for these. Furthermore, network and scientific liaison staff must subsequently be responsible for formulating usable procedures to minimise the release of conflicting information. Other objectives of the divisional networks will be to evaluate present FRI research dissemination practices in terms of their relevance to the end-user, and the types of research and/or development being undertaken by individual divisional research fields. These types of analyses will subsequently lead to alternative and/or additional mechanisms of research dissemination being formulated.

### FOREST SERVICE REGIONAL CONSERVANCIES

As outlined when identifying the problem, very real difficulties exist in effectively disseminating research findings to the wide range of forest planning, management and utilisation staff within the Forest Service. To overcome some of these problems and to make FRI research communication efforts effective, the responsibility for keeping up to date with relevant research results and proper forestry practices must clearly be laid on individual conservancies. To do this a Deputy or Assistant Conservator, or a Principal Forester should be made responsible for ensuring that his conservancy is fully conversant with FRI research findings. It would be the responsibility of these designated officers to delegate (when necessary) areas of responsibility (*e.g.*, land preparation and establishment) to other conservancy staff who will act as co-



ordinators for forest staff and ensure that correct and current practices are followed. Ultimate responsibility must, however, remain with one person — the Deputy or Assistant Conservator or Principal Forester — depending on the conservancy. FRI scientific liaison officers clearly have the responsibility to interact with these officers and their delegated co-ordinators, and ensure that they are fully conversant with current FRI research findings and recommended practices. It is imperative that such a system be formalised with conservancy responsibilities and personnel being specified and periodically updated. This will ensure improved communication and understanding between FRI and conservancies, as well as between conservancies.

### CO-ORDINATION OF FOREST SERVICE RESOURCES

Effective dissemination of research results throughout the Forest Service requires that efficient means of communication be developed both between and within its various groups and organisations. Communication within Forest Service research divisions and conservancies has been discussed previously in this paper. It is the development of a package which will ensure effective communication between the various FRI research divisions, the regional conservancies, and Head Office divisions and groups which requires further comment.

It is proposed that co-ordinating boards be formally set up within these various Forest Service organisations with the specific objective to consider and monitor relevant aspects of communication and technology transfer. Each such board would consist of one or two senior staff from within the division, group or conservancy, and the head of the FRI scientific liaison and information group. The frequency of meetings and the topics discussed would depend on the requirements of the groups involved. For example, the co-ordinating boards set up for the FRI research divisions would need to meet formally at monthly or bi-monthly intervals since it is imperative that these divisions and the scientific liaison and information group remain in close communication with one another.

On the other hand, board meetings for the Forest Service groups could be at annual or bi-annual intervals. Such a system of co-ordinating boards would allow the success or otherwise of relevant research dissemination activities and programmes to be formally assessed at regular intervals. Each board would therefore be in the position to make recommendations to their respective

Forest Service conservancy or group, or to the relevant FRI research division through their scientific liaison representative.

The existence of the co-ordinating boards would also ensure that maximum use is made of Forest Service staff and technological resources in the communication and technology transfer areas. For example, meetings of the Forest Extension, Forest Training and Forest Utilisation boards would allow identification of certain activities which could be transferred to or concentrated on by one or other group. Duplication of effort could be minimised and overall efficiency substantially increased. There are many instances where research or "proper practice" recommendations being disseminated by the FRI could be more effectively "taught" and "monitored" by the Forest Training Centre and by conservancy management staff respectively.

It is expected that the leader of the FRI scientific liaison and information group would act as the ultimate communicator to senior staff of the various Forest Service groups, and would have the authority through the co-ordinating boards to identify and influence change in both FRI and Forest Service divisions and conservancies.

## CONCLUSIONS

The Scientific Liaison Group at FRI has the responsibility to ensure that research results are made available, are communicated to, and are understood (and when applicable, practised) by the people or organisations which should use them. To ensure that this group can work most effectively, further developments are needed:

- (1) Each of the three (FRI) Divisions should set up networks of extension-oriented staff to identify, initiate, co-ordinate, and monitor the effectiveness of technology transfer programmes in their respective Divisions. A scientific liaison officer will be a full member of these networks.
- (2) FRI needs to take steps to minimise the number of conflicting statements and recommendations which emanate from its scientists and research groups.
- (3) Forest Service conservancies should be formally made responsible for the reception and evaluation of FRI research results and recommended practices. To do this a senior conservancy officer such as an assistant conservator is needed to be responsible (and accountable) for ensuring that conservancy staff

are conversant with relevant FRI research findings. It will be the responsibility of these officers to delegate (when necessary) areas of responsibility to the conservancy staff who will act as co-ordinators for forest staff and ensure that correct and current practices are followed.

- (4) Co-ordinating boards should be set up within each FRI division, conservancy, and other relevant Forest Service groups or divisions. These boards would consist of one or two senior staff from the relevant Forest Service group, and the leader of the FRI scientific liaison and information group. Each co-ordinating board would formulate policy and evaluate the effectiveness of its technology transfer programmes. The leader of the FRI scientific liaison group would be the link between the various Forest Service groups including the three FRI research divisions on technology transfer matters.

This strategy for co-ordinating Forest Service technology transfer mechanisms should result in existing problems being widely discussed and new or modified procedures being formulated. The recognition that technology transfer is a responsibility of the total Forest Service, rather than of FRI alone, should ensure that many problems disappear