

## COMMUNICATING RESEARCH RESULTS

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In *N.Z. Jl For.*, 17 (2), 1972, appeared an Editorial Note entitled "Forest Research Institute public relations and the application of research findings". It was there stated that "on the whole the impact of research findings on forestry practice is small". Remedies suggested were that "the Forest Research Institute (FRI) clearly needs to identify with considerable care the particular 'public' to which reports of research findings should be directed . . . Seeing could be much more potent than reading . . . Perhaps also FRI should take a hard look at advertising methods . . ."

Since then FRI has made a number of changes in its efforts to communicate. In May 1975, a series of glossy four-page publications was launched entitled *What's New in Forest Research*. In 1975 the Annual Report of the Director of Research was made more colourful and informative; instead of a long catalogue of activities, a few selected items were dealt with in some depth. Some excellent films have been produced, which have gained wide acclaim both here and overseas. Open days have been greatly improved. The FRI was invited to be guest exhibitor at the National Field Days at Mystery Creek in 1979 and made an outstanding contribution. A lesser effort at the Hawke's Bay A & P show in 1980 was also successful. A series of pamphlets on forest insects is being produced. A colourful cartoon, dealing with tree handling and planting, struck a chord with the men at the end of the line, and has received wide commendation.

On the other hand, divisional reports (promulgated but not published) cannot now be quoted in published papers, although a great bulk of FRI research has been produced only in this format. There is still reluctance amongst scientists to publish papers because the refereeing system remains cumbersome and stultifying and, instead of facilitating publication, still tends to delay it. Scientists keen on accomplishing a large quantity of research are discouraged by the system from publishing.

The complaint that research results are not, by and large, put into practice, is still common. Indeed, in a recent review of research projects, a major suggestion was that the whole area of communicating research results in order to ensure their adoption

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should be thoroughly examined by both researchers and forest managers; another was that FRI staff should devote considerably more time to demonstrating research results to forest managers and practitioners in their own territories by means of field days and joint step-out trials.

The complaint that practitioners are not adopting research results is equally common in the field of agriculture, even though the Ministry of Agriculture and Fisheries maintains a fairly large field staff whose job is to help farmers to be aware of, and to adopt, research findings. Recently, also, the MAF has begun to produce the "Aglink" series of simple handouts, generally concerned with how to do specific tasks, and aimed clearly at practitioners.

There are many reasons, including psychological attitudes, for this hiatus between researchers and operators. An examination of them might lead to the discovery of better means of communication to the point where practitioners are prepared (or even keen) to put research findings into operation. A solution suggested by N. L. Round-Turner as a contribution to Session No. 7 of the MAF Research Staff Seminar in Dunedin in July 1980 was that all information should be computerised and the printed word should be abolished; assuming that every farmer has a computer terminal on his farm, this may well work. Maybe, in time, everyman will have a computer terminal at his elbow, and access to all the world's information, but this does not get over the problem of sifting the essentials which need to be used in a given situation. The practitioner has no way of understanding the relevance of each piece of information to his own problem and certainly would not have the time to boil down the mass to a digestible compass. Such means are for the specialist, not for the producers of goods and services, one of whose constraints is that he (or his customer) wants the correct information right now. Those who have used computer data retrieval systems are aware that they are only as good as the keywords fed into them in the first place, and that one is either swamped by an avalanche of information, or one misses much that is really relevant to the matter at hand. However, the explosion of information is immense. (It has been said that, if the increase in scientific papers continues to accelerate at the current speed, then that literature will weigh more than the planet Earth in 2031.) The computerisation of information is now with us, and is growing at a fast rate, and scientists will increasingly use the systems now devised and being refined, but this does not help the public or the practitioner, because the method is inappropriate for them.

It is necessary to recognise that there are many "publics". Once this is understood, then it is needful, for any particular discipline, to recognise and define those "publics" so that information can be provided for them in the way they can best understand and benefit by it. As far as forestry research is concerned, it is possible to recognise a number of "publics" and to make some assessment of their needs, their importance, and their feedback roles in relation to forestry research.

The first recognisable consumer is the public at large. The public (as widely acknowledged by scientists and administrators) is not friendly towards science and has not yet grasped the benefits of scientific advances in terms of reduced human effort, increased wealth and improved quality of life, although these have not been achieved without related costs and diseconomies, and the distribution of the benefits of these advances has been grossly uneven. The public loves the "ain't it awful" approach, and science is an easy target since it is largely allied with big and suspect organisations — military, commercial, financial, and governmental — who tell the public as little as possible and who seem indeed to deliberately obfuscate issues. Scientists have tended to disclaim responsibility for this misunderstanding. They are the true representatives of what Robert Ardrey has called "The Age of the Alibi". While scientists remain entrenched in their ivory towers, and the media are their only interpreters to the public at large, the present nadir of the scientists' image must be entirely predictable.

If the scientist, and science, are to be understood, the scientist must stand openly on the TV and cinema screens, and publish through radio, the press and books. He must invite the public into the area where he works and demonstrate what he is up to, its objectives, and the benefits that can accrue to the public from his work. Since those who finance scientific endeavour have signally failed to direct scientists to do this, then scientists themselves have a responsibility to do it, but, if they try, they are likely to be thwarted because of the policy of their paymasters. The only way out of this impasse is for the public to demand it, but since the public does not know, and is hostile, it cannot happen.

Another "public" is fellow scientists, either in the same or in allied disciplines. This is a completely different public, able to look critically at scientific work and judge its worth. Scientists often want to duplicate the work of other scientists, either to test their hypotheses or to use them as a basis for further advances. Scien-

tists have therefore to explain their work fully and carefully, traditionally by means of the scientific paper. Access to papers has been by way of printed "Abstracts" which define with greater or lesser precision what each paper is about. There is no question that abstracting will become more and more the province of computerised data-retrieval systems, but it seems that the paper as such need not be superseded, if only as a ready-at-hand reference for scientists working in a particular field.

The Forest Research Institute tends to produce a greater number of divisional reports than published papers. These divisional reports (formerly branch reports) were designed to promulgate research findings quickly and were generally available to practitioners and scientists in similar work areas both in New Zealand and overseas. This is no longer the case; divisional reports are now generally in-house documents, which cannot be quoted in published papers unless they, too, go through the system of refereeing and approval. If FRI research results are to be officially published in recognised journals, then production will tend to be slow, and the conduct of research will be attenuated.

The third major public is the practitioner, but this is a much more complex area. In the first place, what is the scientist's objective? There is a view that if scientists are set moving (like the monkey at the typewriter) then they will produce the goods; this is pure research which may or may not be of any practical use. On the other hand, most research organizations are established to provide information on how to develop or improve technology; their objective is to serve a particular field of human endeavour. The scientific paper obviously still has a place, in order to cross-fertilise with other similar research establishments or scientists, but it should not have the main place because it is no earthly use to some of the levels in the practising hierarchy. To make sense in this area, one needs to identify these levels. In forestry in New Zealand (and in most other developed countries) one can identify the following:

1. *Top management.* Usually this level is concerned with both the direction of research and the direction of operations. It should thus be the meeting place of policies designed to integrate the two. Top management needs to find out from the operational branch of the organisation what research is needed and to convey this information, as a directive, to the research branch. The research branch, on the other hand, has a need to inform top management of the research results

it has obtained. These results must be couched in a form that can be readily and quickly assimilated by top managers, who should then have the obligation of determining if, and where, and when the research findings should be applied, whether research projects should be terminated or expanded, and what new developments should be pursued on the basis of results. Top management in New Zealand has signally failed to fulfil this role.

2. *Middle management.* This is the level of those responsible for regional control of operations. It is within their regions that scientists carry out their research. They are busy people with day-to-day decisions to be made, plans to be laid for next year and the future, crises to be met and resolved. They need to be informed, in as brief a format as possible, of research results, and be given some guidance as to the relevance and importance to them, of those results. At the moment they are deluged with divisional reports, journals of this and that, papers, handouts of every size and relevance, and they cannot cope with it. This level of management has been responsible for initiating or encouraging a mass of local research which, by and large, has been ineffective. A difficulty with forestry research is that, in many cases, findings have to be tested and modified in order to give optimum results on local sites. Researchers, and middle management, should make a virtue of necessity and do their fine tuning in local step-out trials once the principles involved have been well demonstrated. There would be a good case for such trials to be requested by management and carried out on a co-operative basis, with scientific staff providing the research expertise. This would provide clearly visible local demonstrations and perhaps inhibit local staff from trying to carry out research work for which they have not the training, or the time to evaluate previous work on the same theme.

Retrieval systems at this level would be valuable, but the interpretation of retrieved information would most likely have to be undertaken with the assistance of scientific staff. Some of the best feed-back for scientists should come from this level, and contacts need to be formalised to ensure regular fruitful contact.

3. *Forest managers.* These people have hour-to-hour decisions to make, and they cannot be expected to study anything. Information needs to be fed to them in a simple and direct

manner. In some countries this is attempted by way of handbooks, but these themselves become so prolific that they obstruct their own objective — that is, to give guidance to operations, techniques and procedures. The way research could help here is to produce broadsheets with the objective of giving practical details of how to carry out procedures, etc. These could be held in loose-leaf binders, but they need to be continually updated in the light of new research findings. Some indication of “why” needs to be incorporated, so that operations are not carried out by rote, but on the basis of an understanding of the reasons for the procedures, and how they relate to other aspects of forest management and silviculture.

4. *Front-line supervisors and labourers.* There is a need to bring the front-line supervisors and labourers into the communications scheme. Again there is a need to produce broadsheets on “How to . . .” in the simplest and least time-consuming format possible, but again, these people should also be told “why”. Cartoons, comic strips, diagrams, photographs — these are the proper means of communication at this level.
5. *Teachers.* A good deal of the difficulty of relationships between researchers and practitioners could be mitigated during training. It seems doubtful whether teachers (at whatever level) make it their business to keep fully up-to-date with research results or to amend their teaching notes accordingly. Nor do teachers make it their business to explain to their pupils the relevance of research to their chosen profession. Scientists themselves need to be brought into the teaching faculty, but to be effective they need to be taught how to communicate at the various levels of training.

One may well ask what precisely should be the role of scientists in communicating their findings to all these levels. It is indeed a difficult area. A public relations officer (or even a team of officers) could not deal with all the facets of forestry, or even with the facets covered by the Production Forestry Division at FRI. The people who have done the research (assuming they are rigorously unbiased and communicate only well-researched and clearly demonstrated results) are the best people to explain their findings — indeed the only possible people. Yet communication is a highly specialised discipline in which scientists, on the whole, are not trained. Scientists therefore need to be guided through the technicalities of the means of communication by a skilled staff

whose job it would also be not only to determine the best means of communicating with different "publics", but do do a great deal of the work as well.

The FRI in New Zealand is funded by the taxpayer and is a branch of the N.Z. Forest Service, a government department, which is required to carry out research for the benefit of all forest growers, forestry contractors and wood users. Because research is funded by government, the private sector (including now about 50% of the forestry sector and almost all the wood manufacturing interests) supplies very little research finance and thus has no great stake in results. There could well be a case for a completely different type of funding by which private forestry, logging and wood manufacturing organisations provide finance for research, and would thus have a direct interest in the results achieved. The forest owners could be levied on the basis of area (possibly indexed by a productivity multiplier); the loggers could be levied on production; and the manufacturers could be levied on the basis of input. Research Advisory Committees (which inevitably tend to comprise people who have become administrators, rather than researchers or practitioners) would then be replaced by Management Committees whose policies researchers would be bound to pursue. The problem then would be that researchers would be forced to concentrate on current problems of practical significance. However, this may not in the long run be in the best interests of the practitioners themselves, and researchers with imagination, vision and intuition may be persuaded to move elsewhere, but because it may lead to better integration between researchers and practitioners, it is an area which needs full evaluation.

Finally, one needs to determine the major objective of research. Much research funding is now supplied by organisations, both public and private, who do not want the results generally promulgated. Commercial firms carrying out their own research know well how expensive it is, and thus will provide information only for some *quid pro quo*, including hard cash. These organisations direct research towards what they want to know, and state their objectives more precisely than publicly financed research, whose objectives are often more loosely defined. There is an inevitable tendency for the merits of scientists in the public sector to be assessed on the number, rather than the intrinsic merit of papers produced: however, if research organisations are set up with the objective of improving technology within specific fields, scientific work could well be evaluated by practitioners on the basis of the

impact the research has on practice. If this were done, there would be a good case for paying scientists on the basis of a retainer plus payment by results, which would have a powerful influence on the selection of research topics. Cost benefit analysis of the possible gains to be made by a research project could be conducted before the research would be allowed to proceed.

Clearly such an approach would be quite inappropriate for fundamental research, where only the most brilliant of scientists should be employed, but it could have a dramatic effect on the discipline of the ordinary plodding scientist in public scientific institutions, and it could be even more useful if the whole system were subject to public scrutiny and debate. This would also tend to make it quite clear where the scientist stood in relation to the public, and vice versa.