



Fire Technology Transfer Note

Number - 23

September 2000

**New publications produced with the support of the
NZ Fire Service Commission's Contestable Research Fund**
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Introduction

In early 1999, *Forest Research's* rural fire research programme was successful in a bid to the New Zealand Fire Service Commission's (NZFSC) Contestable Research Fund. The resulting contract was based around obtaining assistance for production of technology transfer publications, and the first outputs ensuing from this arrangement have recently been printed. This *Fire Technology Transfer Note* (FTTN) introduces these publications, and acknowledges the support of the NZFSC's Contestable Fund in their production.

The NZFSC Contestable Research Fund

The New Zealand Fire Service Commission established the Contestable Research Fund in 1998/99, with the purpose of advancing knowledge in fire prevention and fire management in New Zealand in order to meet the NZFSC's statutory interests under the Fire Service Act 1975. The fund is administered by a Research Advisory Group, consisting of representatives from the NZ Fire Service, National Rural Fire Authority (NRFA) and fire engineering, forestry science and social science fields. The Research Advisory Group was set up with the express purpose of inviting research proposals, identifying quality projects and making recommendations for funding to the NZFSC.

The funding process for each year starts with a public invitation to submit expressions of interest to the Research Advisory Group. These are then assessed against a set of criteria to

identify those projects that are most likely to succeed in meeting the Commission's aims. A shortlist of organisations is drawn up from the expressions to submit detailed proposals. The detailed proposals are evaluated, and the selected projects forwarded to the NZFSC for approval.

The assessment of proposals is guided by research priorities set by the Commission in each year, and by principles of seeking excellence in the research organisations, innovation and relevance in the research proposed, and value for money. As well as publicising the existence of the fund to external bodies, invitations to submit proposals are issued to the New Zealand Fire Service and the NRFA. These proposals are assessed according to the same principals as for external bodies.

In addition to the Fire Research programme's technology transfer support contract described here, the NZFSC's Contestable Research Fund has also recently contributed to several new rural fire-related research initiatives for 2000/01. These include research into integrated climate and fire season forecasting (NIWA), spatial analysis of vegetation fire risk and hazard across New Zealand (Landcare Research), and a pilot study to identify strategies to assess vegetation fire hazard (Chilton St James School). *Forest Research's* rural fire research programme is involved as a collaborator in the NIWA project to integrate climate and fire season severity, which aims to extend the regional fire climatology analyses undertaken by the fire research programme.

The Landcare work contributes to the National Rural Fire Authority's (NRFA) Wildfire Threat Analysis project. Additional expressions of interest for projects to be funded in the 2001/02 financial year are currently being sought.

Background

As suggested by its title, "Technology transfer support mechanism for the Fire Research programme", the contract with the NZFSC Contestable Research Fund covers the provision of funding to assist with transferring research results from *Forest Research's* rural fire research programme to the New Zealand and international fire communities. The arrangement enhances the current technology transfer efforts of the programme, but it differs from the existing mechanism in that production of outputs is accelerated and research that would otherwise not be widely distributed is written up in easily useable formats.

The technology transfer support mechanism is designed to provide assistance at two different levels. The first involves the production of case study type publications, which are formal, glossy productions that include colour photographs, are typically peer-reviewed and are presented in an easy to read format. The existing Karori (Fogarty 1996a), Tikokino (Rasmussen and Fogarty 1997) and Berwick Forest (Fogarty *et al.* 1997) wildfire case studies that have been published in the *Forest and Rural Fire Scientific and Technical Series* are examples of this form of technology transfer. The second level of assistance includes taking research results and scientific writing and simplifying these into general report or newsletter formats for use by a wider audience. The FTTN newsletters are a good example of this process.

Specifically, the mechanism involves utilising 'in-house' support from *Forest Research's* Publications group. As well as having significant experience in the provision of editorial support (i.e., taking technical scientific material and simplifying this into a range of outputs for general use), the Publications group also has expertise in formatting and desk-top publishing, graphics,

and liaising with printers. By shifting these responsibilities, fire research staff are able to spend more time on fire research activities, including staying in touch with international developments, as opposed to the time consuming process of technology transfer.

Under the current contract, the Fire Research programme was successful in gaining funding for a two-year period (with the possibility of further extension) to cover the production of at least five outputs, principally via the programme's *Forest and Rural Fire Scientific and Technical Series (Forest Research Bulletin No. 197, see Fogarty 1996b)*. The outputs include:

- a reprinting of Alexander's (1992) fire behaviour paper;
- a brochure on the flammability of native New Zealand plant species;
- a case study on the 1998 Bucklands Crossing Fire burnover incident;
- a report on the methodology behind the species flammability brochure; and
- a reprint, with updating, of Alexander's (1994) fire danger class criteria report.

The first two of these outputs have been completed, and are included with this mailout package.

Alexander's (2000) fire behaviour report

Since it was first published in the 1992 Forest and Rural Fire Association of New Zealand (FRFANZ) Conference proceedings, Alexander's (1992) paper entitled "Fire behaviour as a factor in forest and rural fire suppression" has been instrumental in re-shaping rural fire management in New Zealand. It is a core component of fire behaviour and other rural fire training, and also provided the foundation for the development of initial attack guidelines for local pine plantations. As such, it benefits significantly from a reprinting and wider distribution.

The report provides an overview of the fundamental characteristics associated with free burning fires as they influence fire control operations, based primarily on a review of relevant overseas literature and current

developments in the field of rural fire management. It presents a good introduction to fire behaviour physics, the importance of elapsed time, initial attack effectiveness and resource productivity, and the requirements for fire suppression based on fire characteristics such as intensity and flame size. At the time it was first written, the paper provided a number of suggestions for applying fire behaviour knowledge to improving rural fire management in New Zealand, and these all remain relevant despite of the intervening years.

Species flammability brochure

Research into the flammability of native New Zealand plant species is a classic example of work that can benefit from the new technology transfer process. The original survey of fire managers on which this study was based was conducted in 1994 (Fogarty 1994), and attempts to publish the results (Fogarty 1997) in international journals have been unsuccessful because the information was deemed to be only relevant in New Zealand and an appropriate local publication medium has been difficult to find. And with the leading researcher (Liam Fogarty) having moved on, the work could easily have been forgotten and left unpublished. However, the NZFSC funding has allowed the Fire Research programme to take another look at dissemination of this highly beneficial research.

As a first step, a brochure has been produced summarising the study's main findings (a copy is included with this package). The brochure, entitled "Flammability of native plant species: a guide to reducing fire hazard around your home", is aimed at householders living in rural areas or the rural/urban interface. As well as providing a list of common New Zealand native plant species that have been ranked into flammability classes based on the original survey, the brochure also outlines how homeowners can create defensible space by reducing fire hazard and planting less flammable species.

An initial printing of the brochure is being circulated here, and the Fire Research programme is willing to take orders from

interested Fire Authorities for a second printing for much wider circulation to the general public (e.g., for inclusion with rates mail-outs or displays in reception areas). In addition, a full report on the work will be produced in the new year detailing the methodology behind the species flammability analysis.

Other outputs

Thanks to the continuing assistance of the NZFSC's Contestable Research Fund, a number of further publications will be produced by the fire research programme in the next few months. These include the Bucklands Crossing wildfire case study, species flammability report, and Alexander (1994) fire danger class criteria reprint mentioned above, which will all be produced as reports in the Fire Research programme's *Forest and Rural Fire Scientific and Technical Series*.

The 1999 Bucklands Crossing wildfire case study, in particular, is nearing completion and is currently undergoing peer review prior to being printed as Report No. 4 in the Bulletin series (Pearce *et al.* 2000). This is a particularly important case study as it investigates a burn-over incident where several firefighters were injured, and contains a number of lessons learned as a result. While production of this report has been delayed by the need for review, this is a critical part of the technology transfer process that ensures publications meet an appropriate standard and do not include unfounded conclusions or overlook relevant international literature.

Alexander's (1994) report on the "Proposed revision of fire danger class criteria for forest and rural fire areas in New Zealand" is currently out of print and would also benefit greatly from an editorial updating and reprinting as part of the *Forest and Rural Fire Scientific and Technical Series*. However, it includes a very good overview of the criteria on which fire danger rating in New Zealand is and should be based, and is presented in a format suitable for both the scientific community and the fire generalist. This report will be produced by June 2001.

Conclusion

The provision of funding through the New Zealand Fire Service Commission's Contestable Research Fund has greatly enhanced the Fire Research programme's technology transfer capability. It has enabled the publication and wider distribution of research results in a greater range of formats with broader applicability, and in a more timely manner. It has also freed up fire research scientists to spend more time on adding to the growing knowledge base on rural fire in New Zealand.

References cited

Copies of the two references highlighted are included as part of the mail-out package with this FTTN.

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