

is applied to the nominal stocking rate to provide a "divisor" (e.g. a nominal stocking of 1200 stems per hectare is increased to 1260 stems per hectare). The five per cent figure was based on a sample survey of forest companies carried out by the Forest Owners' Association.

The commercially available figure is divided by the divisor to produce a nominal hectare figure, which for the prediction is rounded down to the nearest 100 hectares (the final step in the provision of a conservative prediction).

The result is a conservative estimate of the number of hectares which could potentially be planted (or were planted) from the available planting stock.

#### Estimate of clearfelling

Clearfelling is estimated by calculation using Ministry of Forestry Roundwood Removal statistics for the March year, as follows.

The roundwood removal in cubic metres (which is for all species) is split into the four NEFD species categories by applying the percentage of the estate under each category for the preceding year to the total roundwood removal.

A production thinning allowance of 10 per cent is subtracted and a yield ( $m^3/ha$ ) applied to give a theoretical national clearfell area. The yield is taken from the NEFD National Yield Tables using a national average clearfell age for each species category. The clearfell area is rounded up to the nearest 100 hectares to give an optimistic clearfell area by species category.

#### Estimate of restocking and new planting

It is assumed that all the area clearfelled during the March year is restocked that winter, so new planting is estimated by subtracting estimate restocking from the potential hectares.

The March survey **predicts** new planting, whereas the November survey **confirms and predicts** new planting.

#### Drawbacks to the nursery survey

There are a large number of assumptions in the methodology for estimating new planting from nursery surveys. Some examples include:

- survey replies are frequently quoted to the nearest 100,000 seedlings, which may imply a lack of accuracy in the survey returns;
- stocking rate estimates could vary by  $\pm 100$  to 200 stems per hectare within an area, depending on the site, regime or forest owner's policy;
- the method of estimating clearfelling from roundwood removals may be imprecise;

- not all clearfelled areas may be restocked, at least not in the following winter;
- the system is designed for one-year-old planting stock. It does not account very well for stock older than one year, e.g. Douglas fir.

Also, the survey provides a national estimate of new planting area, but cannot accurately describe it by region or district because nursery sales across regional or district boundaries are difficult to measure with any precision.

#### Advantages of the nursery survey

The survey is the only vehicle available for making reasonably informed predictions, based on collected data, about new planting for the coming winter. This information is required by the Minister and is of interest to many other parties.

Also, it is the only way of producing a figure for new planting **immediately following** the planting season. This information is required by the Minister and is of interest to many other parties. There is a 12-to-14-month delay before new planting data is available from the NEFD.

#### Reconciliation with NEFD

The planted area estimation (both new and restock) can be reconciled with the NEFD when the NEFD survey results for the year which includes that particular planting season are available. For example, the 1994 planting season (June-94 to Aug-94) comes within the NEFD year Apr-1-94 to Mar-31-95. Allowing a reasonable time for the NEFD processing, and assuming a planting sub-set can be extracted from NEFD prior to the release of the main data, it is likely to be September 1995 at the earliest before planting areas for winter 1994 are available.

#### Discussion

Why use the nursery survey to predict and 'confirm' new planting? The main reason is the immediacy of the result vis-a-vis the only other forestry survey (the NEFD). An alternative could be to survey forest growers directly, in a sort of 'mini NEFD', just asking for their new planting area. There are two problems with this, (a) 'survey fatigue' and (b) incomplete address lists.

Regarding the last point about address lists. Since 1991, there has been a dramatic increase in new planting by growers not previously involved with forestry and most of the 'new growers' are in the small growers category. The ratio of 'small growers' to major forestry companies involved in new planting programmes is approximately 80:20. While it is difficult to quantify, most of the new growers are not on any current address

list, either Ministry or NEFD. So a direct survey of new planting would be compromised by a lack of coverage.

In an attempt to address this problem of "capturing" the new players, the Ministry has produced a return-paid planting survey card for distribution by nurseries to their customers. However, it is a voluntary system for both the nurseries (who – if they agree to participate – usually distribute the card in the same envelope as their invoices) and the growers (who don't have to complete and return the card if they don't want to). While this does pick up some growers previously unknown to the Ministry, it doesn't (a) meet the immediacy requirements, or (b) address the need to predict new planting levels, or (c) increase the coverage to anything like 100% (the return rate is quite low).

#### Conclusion

While the inadequacies of the nursery survey as a means of estimating new planting are recognised, the method is likely to continue to be used by the Ministry because of the need to predict new planting levels and provide the Minister with timely information which is not available from other sources.

Without the cooperation of nursery owners and managers the nursery surveys could not be possible, and their participation is gratefully acknowledged.

---

## New fund for sustainable management

A new fund aimed at providing financial assistance for environmental projects has been established and began operation on July 1 this year.

Called the Sustainable Management Fund (SMF), it refocuses the Resource Management Subsidy programme to reflect the Government's long-term environmental aims. It provides support for projects aimed to achieve improvement in a wide range of environmental management areas. These will be consistent with the Government's environmental Strategic Result Areas (SRAs) which are set out in the Environment 2010 Strategy consultation document.

Projects considered for funding will be in two categories: Environmental Risk Assessment and Management, and the Development of Sustainable Management Options.

Within each category there will be certain projects that will have priority. These will be reviewed each year.

Potential applicants will include local authorities, non-government organisations, private sector specialists, iwi, industry groups, and tertiary institutions. Money granted will range in amounts from \$20,000 to \$500,000 per annum for up to three years.

Projects that are eligible for funding should not be those that are considered the responsibility of the Ministry for the Environment (MfE) or any other central or local government authorities.

### First Project Category

The first project category, Environmental Risk Assessment and Management, will involve the identification of environmental risk issues and the implementation of methods for addressing environmental problems. These issues and problems will be those especially related to sustainable land management and the non-point sources of water pollution; contaminated sites and degraded environments; hazardous waste identification, collection and disposal; waste management including pollution emission inventories, waste reduction, and cleaner production; or monitoring and comparative risk assessment.

### Second Project Category

The second project category, the Development of Sustainable Management Options, involves developing or trialing methods and options designed to enhance the sustainable management of the environment. This includes matters such as voluntary methods of environmental management; economic instruments; innovative practices and training related to the Resource Management Act and the Hazardous Substances and New Organisms Bill, or developing environmental quality standards.

### Guide for Applicants

A guide for applicants has been produced by the Ministry. This sets out details of the SMF such as activities and projects eligible for grants, criteria for applications, assessment of proposals, eligibility of applicants, contractual arrangements, reporting requirements and application forms.

There will be three funding rounds each financial year. Applications for the first round in the year 1995/96 close on June 30, 1995.

Further information is available from Murray Bell, MfE, Wellington.

## The Forestry Handbook

*NZIF Forestry Handbook, edited by Don Hammond, \$NZ55 incl. GST and P&P within NZ. Overseas, add \$NZ10 to Australia, \$NZ20 elsewhere. Published by NZ Institute of Forestry (Inc), P.O. Box 19840, Christchurch. Telephone/Fax 64-3-384 2432. ISBN 0-473-03186-8. 240p + viii.*

In 1977, as a 50th anniversary project of NZIF, a Forestry Handbook was proposed. A reluctant, but eminently qualified, Geoff Chavasse was pressed into the editorship. The resulting work, a compilation of articles, painted a background and provided a wealth of reference material to both published and unpublished information.

It was written with the readership in mind. It was the 'first essay' in the production of a New Zealand Forestry Handbook, which Geoff Chavasse hoped would be useful to a large number of forestry people. It undoubtedly achieved his purpose.

## BOOK REVIEW

By 1986, there was a need to revise the handbook. Hamish Levack, the 1986 editor, included major changes and upgrading of the content, but drew heavily on and identified his handbook as being based on the Chavasse edition.

The accelerating pace of change that necessitated the first revision after only nine years, has led to a second edition after a further seven. Don Hammond, editor of the 1995 edition, feels that forestry has come of age, and, again, aims his handbook at his readership with an endeavour to foster mutually beneficial cooperation between the various parties.

The cultural changes that have taken place in the last 18 years are emphasised by the removal of the large number of names and addresses included in the 1977 edition. The New Zealand Forest Service was swept aside by the economic reform of the 80s and replaced by more focused, economically efficient units. It is significant that Geoff Chavasse chose to open his work with lists of names and addresses; Don Hammond chose to end his with much abbreviated lists of Acts and Regulations and addresses only. A graphic illustration of the cultural change!

All editions have chosen, however, to open with a condensed classification of the native forests of New Zealand. Originally by J.L. Nicholls, it was revised and updated by Nicholls and Herbert in 1986 and again in 1995. Links with earlier editions are still apparent, although these areas which Don Hammond felt required

enhancement have been treated accordingly and do vary subtly. That in this edition he has chosen to devote an entire section to the marketing of forest products indicates that forestry has indeed come of age and is being moved by the market.

The Forestry Handbook is a must for any serious student of forestry. It is a superb introduction to the variety of topics that make up the art and science of the profession. It is not the sort of book which one would read from cover to cover. It is, however, a most useful compendium and starting point for a wide range of information.

Over 100 individual papers provide a wide variety of views and a taste of all forestry topics. Certainly, to read every article would not change the reader into a forester, but equally, no foresters could consider themselves fully equipped without a copy of the 1995 Forestry Handbook at their elbow.

Don Hammond's editorship has further polished, enhanced and updated a series that was previously very good.

Bill Studholme

## News about NZ science

Keep up-to-date with what happens in science and technology around New Zealand with the recently-launched Science Digest – a summarised newsletter published monthly by The Royal Society of New Zealand.

The four-page Digest is packed with short, easy-to-read news items about science and technology.

The Digest's key role is to communicate news from the national Society to branches, constituent societies, and individual members of the Royal Society, and to other organisations such as universities, polytechnics, research institutes, educational organisations and schools.

The Society has a growing and varied range of activities such as in science and technology education; science publishing (including seven science journals); specialised science committees, involvement in awards, fellowships, lecture tours etc; plus liaison with Government science agencies, universities, polytechnics and industry.

Single copies of Science Digest are distributed to each Royal Society branch, individual scientific societies and affili-