

the importance of Canada's forest resources and the need for conserving them; the distribution of research publications and the interpretation of the scientific work of the Department to industry and to the general public; the dissemination of departmental and forestry information to the press, radio and television; the production of exhibits, displays and posters; and the maintenance of a photographic library dealing with forestry subjects.

The research functions of the Department and the Federal-Provincial Forestry Agreements program are described in the following paragraphs.

Research on Silviculture, Tree Biology, Forest Soils and Fire.—The objects of such research are (1) to provide basic information on the characteristic occurrence, growth, development and behaviour of forest tree species throughout the wide range of forest types and environmental conditions of Canada and (2) to develop and test new or improved methods for use in forest management and forest fire control. The programs are conducted throughout Canada, often in co-operation with other federal departments, provincial forest authorities, other research agencies, universities and industry.

Many of the silvicultural studies involve assessing the factors responsible for the success or failure of natural regeneration following various cutting methods and treatment of seedbeds, comparing different methods of seeding and planting, and determining the effects of different methods of intermediate cutting on the development of residual trees and stands. Studies are made of successional changes in most of the important forest types. Application of silvicultural techniques as well as research in regulation of cut and in methods of protection is aimed at determining how forests may be maintained at the highest levels of production. The relationships between forest growth and site are being studied with a view to the assessment of long-term productivity. The requirements of light, temperature and moisture that will produce optimum conditions for growth and development are being determined for seedlings. The physiological processes of growth and reproduction are under investigation for a limited number of species. In tree breeding, superior strains are selected or developed and there is a continual improvement in propagation and breeding techniques. Research in forest land encompasses forest geography and land classification. Research in soils is directed toward determining the relation of tree growth and nutrition to chemical and physical properties of the soil.

Techniques used to measure the volume, distribution and growth of the forest resource are constantly under review and study; new methods are tested and developed. Research in forest inventory methods is of increasing importance because of the continuing programs of forest inventories being conducted in most provinces and in the northern territories. Data from air photographs are correlated with field observations to develop new techniques for estimating timber. Research is continuing in methods for measuring tree images to determine heights, crown widths, canopy density and other data from photographs taken in different seasons under various conditions. The use of large-scale photography of sample areas is also being investigated and studies are being made in the identification of species and sub-types. Data on the growth and development of typical forest conditions are being collected on many thousands of semi-permanent sample plots.

Adequate protection of forests against fire is of vital importance in Canada. The Department works in full co-operation with provincial forest services in almost all phases of forest fire control and has made major contributions in the fields of forest fire danger measurement and forecasting and in fire control planning. Investigations are being made of forest fire behaviour, of the use of prescribed fire for hazard reduction and seedbed preparation, of better methods of reporting forest fires, and of fire damage appraisal and related factors in forest protection standards. Studies are being continued in the use of chemicals for fire suppression and pre-suppression, of fire fighting equipment and techniques, and of the use of aircraft in forest fire control. Another important field of endeavour is the study of fire hazard created by slash from various kinds of logging practices in different species.

Forest Products Research.—This work is directed toward obtaining background data on the properties of Canadian woods, developing new and better uses for wood