

tion program includes the issuing of publications designed to increase public awareness of 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.

A substantial portion of the research program in silviculture involves the study of factors responsible for the success or failure of natural regeneration following various methods of cutting and treatment of seedbeds, and the development of improved methods of regenerating forest stands following logging or fire and of creating forests on abandoned farmland, heathland or bogland. Different methods of seeding and planting are being compared, and increased emphasis is being given to problems associated with container planting. The effects of mechanization of logging on reproduction and on slash and soil conditions are being investigated. Studies of different methods of stand tending such as pruning, cleaning and thinning are under way to determine means of increasing both quantity and quality of wood production. Investigations of successional changes are under way in most of the important forest types and the relation of forest growth to 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.

Improved techniques for determining tree and stand volume are being developed and the various factors that influence growth are being investigated and quantified. Considerable attention is devoted to the evaluation of existing forest inventory methods and to developing new and improved techniques which incorporate the use of large-scale aerial photography. Studies of methods to estimate stand volumes from air photographs are continuing. Increased attention is being given to studies of growth and yield of typical forests and mathematical models are being developed to describe the growth responses of stands and individual trees.

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 for different species.