

Forest research is an essential feature of the approach to forest management and one in which the Federal and Provincial Governments and industry are all interested. The principal agency for such activity is the Forestry Branch of the Federal Department of Resources and Development. The Provincial Governments and the forest industries carry on research in forestry to a limited extent.

Research in silviculture, forest management, fire protection and forest air-survey methods are carried out by the Forest Research Division of the Forestry Branch at Ottawa and at five Forest Experimental Areas in New Brunswick, Quebec, Ontario, Manitoba and Alberta, totalling 227 sq. miles in area. Supplementary studies are conducted in other areas in co-operation with the Provincial Governments and with industry.

Research in silviculture is concerned with the study of the forests as a dynamic community. One of the most important problems is concerned with devising methods of regenerating forest areas which do not produce satisfactorily following cutting, fire or other disturbances. Natural means are used whenever possible, but if they prove unsuccessful, artificial methods are employed. Studies of growth and succession in the more important forest types are made and attention given to the development of a satisfactory basis for classifying forest stands and sites for the effective assessment of their growth and productivity. Research in tree breeding is also carried on by selection and development of superior strains for artificial propagation.

Research on forest management is essentially empirical. Its objective is to devise methods of applying to forest areas the knowledge of silviculture, regulation of cut, protection, and forest economics that is presently available in order to maintain these areas at their most productive level.

The objectives of the forest-fire protection research of the Forestry Branch are: the improvement of methods of measuring fire danger and the adaptation of these methods to the various forest regions of Canada; the development of simple apparatus for direct readings of forest-fire danger; the study of weather inversions in mountainous country and their effect on forest inflammability; the development of standards of adequate forest-fire protection, and fire-control planning techniques; and the continued investigation and improvement of equipment for fire detection, communication and fire suppression. The Forestry Branch has developed methods for the daily measurement of the prevailing degree of forest-fire danger. The system has been successfully used by the Forest Experiment Stations and National Parks, and is being increasingly employed by the provincial forest protective agencies. Research has been undertaken in co-operation with several of the provincial forest services in order to adapt the system for local climatic and forest fuel conditions. The principal field work in this study is now being carried out in Manitoba and Newfoundland.

Canada has pioneered in the use of aerial photographs for forestry purposes and many of the techniques now in general use were developed in this country. Research in forest air-survey methods by the Forestry Branch is proceeding along the following lines: the development of improved methods of interpreting forestry information from aerial photographs and of checking their accuracy by detailed information collected on the ground; the construction of photogrammetric and other scientific apparatus required in the interpretation of photographs or in the measurement of tree images; and the development of methods and techniques for aerial photographs which will provide the details required for forest interpretations at the lowest cost. Aerial photographs taken to scales suitable for mapping purposes covering upwards of