

Soil fertility investigations include a study of the influence of crop rotations on the nitrogen and organic-matter content of prairie soils, the effects of rotations in maintaining soil fertility in the production of canning factory crops, the effects of ground limestone at varying rates of application on soil reaction and the development of potato scab, studies of the minor element content of soils and of the occurrence of brown heart in turnips. Special investigations are in progress on phosphate fixation, reclamation of saline soils resulting from flooding by sea water and on the fertilizing value of industrial by-products.

Research in plant chemistry includes studies on carotene, the effects of storage on oil-bearing seeds, factors affecting the quality of silage, methods of curing and storing hay, leaf symptoms of mineral deficiency in orchard crops, investigational work on Vitamin C content of fruit and vegetable products and the preservation of fruits and vegetables by freezing.

Investigations under way in the field of entomology embrace insects affecting man and animals, forests, fields, gardens, orchards, factories, and materials and products in transit or in storage. Specific projects relate to the collection and identification of insects; studies of the life histories, habits, and distribution of harmful and beneficial forms; appraisal of insect damage; means of salvaging injured products, of protecting susceptible crops and materials, and of destroying the pests themselves; and the design and performance of mechanical devices required in the application of control measures. The methods of control under study include management practices, cultural measures, chemicals, and the production and dissemination of parasites and diseases that attack noxious insects.

Studies on insects attacking man and animals include a wide range of household pests, fleas, and such enemies of cattle as warbles, ticks, and lice; the preparation and testing of repellents for protection from biting flies; and control of mosquitoes and houseflies over extensive areas. Much attention is being given to the use of the newer insecticides and practical methods for their application.

Forest-insect control activities embrace the nation-wide forest insects survey, begun in 1936, which has been intensified in recent years in an effort to devise a reliable means of forecasting impending outbreaks and as a guide to timing the cutting in advance of threatened destruction in Canada's vast forests. Biological and control studies have also been expanded, particular attention being given to such widespread destructive pests as the spruce budworm and sawflies attacking conifers, to the hemlock looper and bark beetles in British Columbia, and to the bronze birch borer in the Maritimes. Control investigations centre around long-term forest-management projects, the use of parasites and diseases, and the exploration of the possibilities of chemical control.

Field-crop and garden insect investigations include such important pests as grasshoppers, wheat-stem sawfly, wireworms, cutworms, white grubs, European corn borer, root maggots, potato aphids, and nematodes. The abundance and distribution of these pests are measured annually by extensive field surveys which provide a basis for planning large-scale control campaigns. Insecticides are widely employed in investigations upon the control of garden insects and even for certain pests of field crops, but for most of the latter cultural control has been highly developed.

Of the orchard pests, codling moth, European red mite, eye-spotted budmoth, apple maggot, oriental fruit moth, oystershell and San Jose scales, and pear psylla are the subjects of major study. Emphasis is being placed on the use of recently