

### 9.2.3 Department of Agriculture

The Research Branch is responsible for a major program of research on agricultural plants and animals, and covers all phases except for economics research (Economics Branch), animal pathology (Health of Animals Branch), and grain quality (Grain Research Laboratory). The program is located at some 40 units across the country from coast to coast with headquarters at the Central Experimental Farm, Ottawa. There are about 800 professionals on the staff with supporting teams of sub-professionals including technicians and labourers.

The research activities are planned and co-ordinated by a group of about 15 research co-ordinators located in Ottawa. They each carry commodity or disciplinary responsibility for advising line managers on the nature and extent of the research program. This is centred about a system of national research objectives and specific, clearly defined goals. The latter number 64 and comprise a diverse but effectively integrated program designed to identify and solve the problems faced by farmers in the various sectors of the industry.

Individual research units and stations are each administered by Directors who, themselves, have been working scientists and have advanced through the ranks of the research staff. This is likewise true of the co-ordinators and line managers in headquarters. Line responsibility at Ottawa is in the hands of three Assistant Directors General who in turn answer to the Director General and Assistant Deputy Minister (Research) for Agriculture Canada.

Most research units, with the exception of a few specialized ones such as the disciplinary institutes, carry a program of balanced research involving crop or animal production, protection from pests, and utilization. Production research starts with plant or animal breeding to develop improved cultivars or breeds. These are essential to efficient production under the unique Canadian conditions and recent introductions include several new forage grasses, new cultivars of rapeseed and other oil seed crops, a new scab resistant apple, the first hardy dwarfing apple rootstock, several high quality peaches, a new strawberry for the east and one for British Columbia, an improved raspberry for the Fraser Valley, new vegetable varieties including a seedless cucumber for greenhouse production, a new table stock potato variety, several new ornamental shrubs, among them a prize winning hardy rose and four hardy rhododendrons, new varieties of wheat resistant to disease and having improved quality to maintain Canada's world-wide reputation for high quality wheat, a new feed barley and one for malting purposes, several varieties of oats including one with high protein for processing, a number of inbred lines of grain corn for use by commercial companies to produce special hybrids, new varieties of flue-cured and cigar tobacco, new field beans, peas and even buckwheat. Altogether the plant breeding program of the Branch has a massive effect on crop production in Canada.

Animal breeding, though complex and requiring much longer periods of time to achieve new breed development is making steady advances in a parallel program. Perhaps the most spectacular in recent years has been the use of "exotic" strains of beef cattle imported from other countries through the special and unique facilities of the Animal Quarantine Station at Grosse Île, Que. The hybrids and further backcrosses achieved through the use of these animals has made a significant breakthrough in the beef cattle industry of North America.

Other animal breeding research with such species as sheep and swine has attempted to increase the efficiency of reproduction through intensive physiological studies on the reproductive productivity related to environmental conditions and hormonal action.

Other research on the husbandry and management of crops and animals forms an important sector of the Branch program, and has led to new and improved procedures for increasing the efficiency of growth and protection from plant and animal pests. Much of the latter is through the use of chemical pesticides, but because of some of their undesirable side effects, much research is being centred on attempts to develop integrated control programs that utilize both biological factors, such as predators or parasites, and the specification of more precise chemicals that kill only the undesired species without injuring other kinds that are beneficial. There is also extensive research to determine the effects of the pesticides on the surrounding environment, and to develop procedures and chemical compounds that are less toxic and less persistent, yet capable of performing the necessary control action. In essence, the procedure has changed from a "shot-gun" approach to a highly specific and sophisticated program.