Measuring carbon dioxide in the atmosphere

Agriculture Canada researchers are pioneering new equipment and expertise to study the affects of rising concentrations of carbon dioxide in the atmosphere.

"The carbon dioxide content of the earth's atmosphere has been increasing steadily since the mid-nineteenth century," explains Raymond Desjardins, an agrometeorologist at Agriculture Canada's Land Resource Research Institute in Ottawa.

Carbon dioxide, or CO_2, is being released into the atmosphere through the burning of fossil fuels and land use practices, such as forest clearing and extensive tilling.

At the present rate, estimated to be a third of 1 per cent yearly, the amount of CO_2 in the atmosphere is expected to double by the middle of the next century. Before that happens, however, some scientists believe this rising concentration will cause major global climatic changes.

"Although these changes will probably develop slowly we will have to adapt our agricultural practices and adjust genetic strains of crops to maintain food production," Dr. Desjardins says.

Agriculture Canada has recently developed a new system for measuring CO_2 exchange using aircraft-mounted instruments.

Researchers are using the new equipment to calculate the net movement of CO_2 in an area. This figure – called the flux value – can be positive, indicating that more CO_2 is being released into the air than is being absorbed, zero, or negative, indicating that more CO_2 is being absorbed than released.

The new equipment allows researchers to determine CO_2 exchange over various land areas at less cost and more rapidly than with conventional ground-based equipment.

Research so far has shown that realistic flux values can be obtained by flying at low altitudes above areas such as agricultural fields, forests and cities.

"The airborne technique for rapid large-scale mapping of CO_2 absorption and release will greatly increase our understanding of the CO_2 cycle. However, it is a global problem and other countries must be encouraged to obtain similar measurements in order to give a more accurate estimate of this cycle," Dr. Desjardins says.

Agriculture Canada researchers are pioneering new airborne equipment to record build-ups of carbon dioxide in the atmosphere. Increased carbon dioxide concentrations could affect climate and agricultural production.

Charge covers company acquisition

The federal government recently implemented a special Canadian ownership charge on sales of oil and natural gas to cover most of the costs of Petro-Canada's acquisition of Petrofina Canada Incorporated.

The charge was set at $1.15 a barrel (0.8 cent a litre) on all oil processed or used domestically (including imported petroleum and petroleum products) and 15 cents *per* thousand cubic feet on natural gas used in Canada, said Minister of Energy, Mines and Resources Marc Lalonde. The charge will cover 85 per cent of the Petrofina acquisition cost.

Petro-Canada negotiated the purchase of Petrofina's assets in February (see *Canada Weekly* dated February 25). The total cost of all outstanding shares is $1.46 billion. An additional $350 million will also be set aside to cover financing costs, which will depend on the timing of share tendering during the 25 month acquisition period.

New Brunswick uses Telidon in field trial

The New Brunswick Telephone Company is using Telidon terminals in its "home of the future" field trial that began recently in St. John.

Project Mercury, as the program is called, is the first Atlantic trial of Telidon. Telidon is the two-way television technology developed by the federal government. The telephone company is buying 25 Telidon terminals and another 20 are being provided by the federal Department of Communications. The project will consist of a telephone-based alarm system for fire, police and ambulance services in addition to Telidon.

The system will serve 75 homes, businesses and community institutions in the Saint John area. Public terminals will be placed in the local community college, a newspaper office, the Saint John public library, the University of New Brunswick's Saint John campus and a high school.

Telidon users in the project will be able to access a variety of information such as news, weather, "Yellow Pages", business information, emergency information, entertainment, travel and educational information.