

joint projects with the provinces and international organizations.

"Wise investments now and over the next few years in selected areas of energy research and development could result in timely solutions or additional options when the gap between our energy supply and demand is most severe," the Minister added.

Register of heritage properties

Establishment of a Canadian register of heritage properties with the possibility of financial assistance, through matching grants with the provinces for those properties requiring restoration, has been proposed by Judd Buchanan, Minister of Indian and Northern Affairs.

In a speech to the Women's Canadian Club of Montreal, Mr. Buchanan said the register was conceived as an official list of federal, provincial and territorial heritage properties considered worthy of preservation, either publicly or privately owned. "It would be our nation's list of heritage properties."

In July 1974, Heritage Canada produced a Brown Paper in which it recommended a Canadian heritage registry similar in principle to that now proposed.

"The major element in the new program is the possibility of providing grants to assist property owners in restoring properties which have been included in the Canadian register," said Mr. Buchanan.

"Fortunately, most provinces already have or are preparing systems for designating or registering buildings of provincial and regional significance along with appropriate protective legislation supported by advisory bodies and heritage foundations. Quebec in particular is among the leaders in such legislation."

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Mr. Buchanan said he was confident the new program could be incorporated into the individual provincial and territorial programs so that a broadly uniform system could apply across Canada. The idea was favourably received by provincial officials at the preliminary consultations.

"Because of the current economic restraint, funds are limited now," said Mr. Buchanan, "but we would expect that this heritage conservation program would have a legitimate and important place in the federal expenditure budget."

"Eventually," he concluded, "and this could be within two or three years, it is envisaged that a joint system of matching grants by federal and provincial governments will be financially feasible. That would mean that any private group, or individual owner of a registered heritage property whose property was in need of structural repair, would be eligible to receive financial assistance — up to certain limits — from the federal and provincial governments."

Sub-Arctic tomatoes

Warm-season tomatoes seem to be short on sense when it comes to performing under sub-Arctic conditions. It's generally believed that they will set fruit only when temperatures are higher than 15° C. So how can yields of 14,000 pounds of ripe fruit an acre be harvested in the Peace River Valley, well north of the 55th Parallel? (In southern Ontario, average yields are 30,000 pounds an acre.) And why has a 100 percent set of fruit occurred under the continuous light of summer at Inuvik, on the coast of the Arctic Ocean?

Genetic manipulation is the answer, and it has taken 55 years of dedicated work for tomato plants — cherry to standard varieties — to flourish under conditions that would wither the backyard varieties.

Tomato-cultivar testing started in 1918 at the Agriculture Department Research Station, Beaverlodge, Alberta, and was followed by management studies on effects of seeding dates, mulching, fertilizing and plant-protection.

Twenty years later, a breeding program was started to produce a tomato

variety specifically for the Peace River region. It involved the crossing of 21 cultivars in numerous combinations. More cultivars were added in 1945 and 1959. Nine selections were finally retained.

Part of the program had to be cancelled because genetic transmission of some plant weaknesses had occurred. But in 1970 more crosses and rigorous selection resulted in five selections showing potential for early maturity and high fruit yield.

For prospective growers, the results hanging from the vines were proof enough of the program's success. They had tomatoes that flourished under sub-Arctic conditions.

But to the plant-breeder the success of these varieties was based on four identifiable factors for which scientists had searched during the program.

Most critical was the position of the stigma in the flower. In sub-Arctic varieties, it is located close to the pollen source, eases pollination and reduces chances of loss under harsh conditions.

Other factors included uniform development and ripening of flower and fruit stalks, stockier plants with stalks growing at lower levels than usual, and large stalks that produce more than 20 fruit apiece.

Work did not stop with the development of the early small-fruited tomato. In 1974, one cherry and one standard variety were released to growers.

Bob Harris, the scientist who guided the project in recent years before moving to the Sidney, B.C., Research Station, sums it up: "It took nearly 20 years to identify the causes of poor tomato production in this area, and then another 20 years of breeding and selection to produce parents with the ability to ripen fruit in this climate."

"After the parents were produced it took only ten years to breed and select three new cultivars", he added. "Once the reason for the earliness, cold-set ability and concentrated ripening was known, it took less than five years to breed and select two new cultivars."

The program here has had some obvious beneficial effects, besides extending the area in Canada where tomatoes can be grown.

"But there's still room for improvement," says Dr. Harris.