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New technique for growing crops in cold regions

A new type of solar greenhouse, developed by a team of researchers at the University of Quebec in Chicoutimi, has made greenhouse production in the colder areas of Canada a more viable and less costly undertaking.

Last year, quality tomatoes were produced in a commercial-size dual tunnel greenhouse built on the grounds of the Union Carbide plant in Chicoutimi, using the warm water expelled by the plant.

Double tunnel technique

"With the double tunnel technique, the researchers based their work on the principle that it was sufficient to adequately heat the space right around the plants rather than heat the whole greenhouse," said Harold Jackson, an Agriculture Canada researcher.

Tunnels one-metre wide by one-metre high were installed along the entire length of the greenhouse. These tunnels were covered with a layer of transparent polyethylene during the daytime and a thermic screen made of very light aluminized mylar in the evening.

During the daytime, when the temperature inside the greenhouse rose, the thermic screen was removed, as was the transparent polyethylene tunnel, if necessary.

Comparative experiments have shown that the energy requirements of this type of greenhouse are from three to five times less during the night than the conventional double polyethylene-walled type.

The system can readily be adapted for installation in traditional greenhouses. The installation and withdrawal of the screens can also be automated. The temperature of each tunnel can be varied to suit the needs of different crops being grown in the same greenhouse.

The research team also found that the energy savings were even greater when hot water, circulating in plastic pipes laid under the plants, was used to keep the ground and water in the tunnels at a

Plants are covered with polyethylene during the day at the University of Quebec's Chicoutimi greenhouse.

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