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CANADA

Climate Changed: Quebec farmers improve soil as water supply becomes less reliable

By **Jacob Serebrin** The Canadian Press

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SAINT-OURS, Que. - On the Beauchemin family farm in southern Quebec, the problem used to be too much water. But Raphaël Beauchemin says that over the years, his grandfather, father and uncles learned how to cope.

Now, with the changing climate, he said, Fermes J.N. Beauchemin et Fils faces a new challenge: long dry periods in the summer.

Beauchemin's father, Ghislain Beauchemin, who has been bringing his children into the dairy and grain farming business for around 15 years, said there are still intense rains that sometimes bring 10 centimetres in 24 hours, but at other times the ground can be parched for two months.

"You can manage a period when it's too flooded and then you can manage one that is too dry," he said in an interview at his farm in St-Ours, Que., around 80 kilometres northeast of Montreal. "You have to adapt to be able to take it all, so that it doesn't cause disasters in each case. That's where we're working."

A climate change forecast by the Quebec-based non-profit organization Ouranos predicts that rising temperatures will dramatically affect the province. The organization, which brings together government and university researchers, expects temperature increases in southern Quebec will be double the global average. As farmers like the Beauchemins see an already changing climate, they're partnering with non-profits and government to find ways to adapt.

Divided by the wide St. Lawrence River, southern Quebec appears to be awash in water, but farmers say dry spells and heat waves are increasingly drying out the ground and threatening their crops. One of the key ways farmers are adapting is by working to improve soil quality. Good-quality soil drains better, but it also holds moisture — which is important when dry spells follow heavy rains, Ghislain Beauchemin said.

Many elements go into soil quality, he said, including the use of "cover crops" — plants that are grown and then plowed back into the ground in the spring as "green manure" to return organic matter to the soil.

At the Au pays des petits fruits farm, in Mirabel, Que., north of Montreal, co-owner Pierre-Yves Éthier said he's been seeing the effects of climate change for around a decade.

"What we're seeing a lot is ... hotter temperatures. We feel it, it brings more heat waves, and the heat waves are affecting the crops," he said in an interview.

Éthier, whose primary crops are strawberries, raspberries and blueberries — but who also grows beans, cucumbers, peppers and cherry tomatoes — said the late strawberry crop is most affected by the heat. "When the root system of the strawberry exceeds 30, 32 degrees, it creates an enormous stress. It's as if the plant completely stops producing," he said.

Éthier took over the farm from his father in 1991, and he worries that as the number of heat waves rises, his production will “decrease enormously.”

“Climate change, often what it does is cause extremes. Sometimes you have heat extremes in a short period that do damage. That also puts stress on water resources, there will be a lack of water, often droughts, droughts that last longer,” he said.

Warmer temperatures have also led to the arrival of new insect pests, and warmer winter temperatures mean more rain and less snow, which is also putting crops at risk.

In the past, the snow would cover the berry plants and protect them from freezing. When the snow didn’t reach the upper branches of his highbush blueberries last winter, production declined dramatically.

And the issues are likely to get worse. Éthier’s farm is a “pilot farm” with Agriclimat, a program created by the Conseil pour le développement de l’agriculture du Québec, a non-profit organization that supports sustainable agriculture in the province.

The program has produced a climate forecast for Éthier’s farm over the next 40 years that shows the issues he’s seeing already will likely continue. But the program is also helping Éthier adapt.

Some changes are easier: there are materials that can cover strawberry plants in the winter, and Éthier now puts his raspberry plants, which grow in 10-litre pots, in a freezer for the winter, where they’re held at -2 C.

But dealing with long-term challenges around water is more difficult. Like Beauchemin, he sees improving the soil as one way to address the issue. That will aid with water retention, allowing plants to have a root system that better resists periods of drought and heat, he said.

Adding organic matter to the soil can also capture carbon and could reduce the amount of chemical fertilizer he uses in the future, reducing his farm’s greenhouse gas emissions. But it’s a long-term process and one that costs money — the fields that are being used to grow cover crops aren’t yielding products he can sell.

“It’s a long process, but it’s one that is feasible,” he said.

Sarah Delisle, the climate change project co-ordinator at the Conseil pour le développement de l’agriculture du Québec, said water is one of the major climate change adaptation issues for farmers in southern Quebec.

“We have the impression that we have a lot of water, but in reality, we don’t have it at the right time,” she said in an interview. “At the time when it’s needed the most, that’s when it’s the most difficult to obtain.”

So far, her organization has developed regional climate change forecasts for 12 of the province’s regions and partnered with 38 pilot farms, and she says farmers are keen to take part.

At the Beauchemin farm, another project that’s helping Quebec farmers adapt to climate change is launching a new phase this month.

Agrisolutions climat, a joint program of the province’s farmers association, the provincial grain growers association and the Conseil pour le développement de l’agriculture du Québec, will offer personalized assessments to show farmers how they can adapt to the changes they’re seeing and reduce their greenhouse gas emissions.

At the launch, Christian Overbeek, the president of the grain growers association, said adapting to climate change and reducing emissions will make Quebec farms more productive, contribute to a cleaner planet and give consumers confidence that farmers share their concerns about the environment.

Consumers who are more confident will be more willing to buy the products grown by those farmers, he added. “In that way, in five years, in 10 years, the social contract that’s established between agricultural producers and the society that consumes those products will have a better bond of trust.”

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