

[Back to 'We need to pay farmers ... to protect nature'](#)

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Most farmers look at a crop field and see profit, or hope to.

When farmer Bryan Gilvesy looks over his 44 acres of native tall-grass prairie in Norfolk County, Ont., on Lake Erie, he sees truly green fields.

By planting this ancient "crop," which once covered much of Southern Ontario and is now one of the most endangered in North America, he is also showing that farmers can become leaders in combating climate change.

These native grasses thrive in draught, extreme heat and poor soils. The roots, which plunge up to 16 feet into the ground, can sequester as much as 1.8 metric tons of carbon per acre.

The extensive cover, up to seven feet high, can either feed livestock or produce a biofuel that regenerates year after year without damaging inputs, making it far superior to corn. So what the former tobacco farmer turned environmental visionary would also like to see when he looks out over his grand experiment is payment for producing not only food but clean air, water and soil.

Gilvesy is the chair of the Alternative Land Use Services (ALUS) project in Norfolk County, which is developing a new model for farm support that could shift Canadian agriculture into a greener future.

The farmer-driven initiative has cobbled together a small, \$1 million budget from 16 funding sources to run a three-year pilot that pays farmers \$150 annually for every acre they devote to ecological functions, the rental rate for cropland in the area.

"We need to pay farmers in order to engage them to protect nature," says Gilvesy. "Farmers are highly skilled water managers. Farmers understand soil. They're experts at sequestering carbon. Farmers are excellent stewards of the land. Paying farmers attaches a value on ecological services they provide that all of society benefits from."

The incentive is clearly effective. In just two growing seasons and with just one staff person, 53 farming families that work some 6,300 acres have managed to convert 438 of those most vulnerable acres into waterway buffers, wetlands, pollinator hedgerows, prairie grass and native Carolinian forest and oak savannah.

The project is a small green example of what agriculture, globally, must pursue on a grand scale. Agriculture and food production in North America and Europe are major contributors to greenhouse gasses (accounting for up to 20 per cent of emissions per country), and industrial agriculture is responsible for extensive degradation of the world's waterways. The European Union overhauled its agricultural subsidies to support environmental stewardship and ecological food production. But Canada's new agricultural policy, unveiled this year, remains stuck in the past, with no strong targets for reducing the sector's environmental impacts.

Implementing ALUS across Canada, according to a review commissioned by the Delta Waterfowl Foundation, would conserve 36 million acres of environmentally sensitive areas on private farmland – the size of the state of Michigan – and deliver \$820 million in societal benefits through greenhouse gas sequestration alone. The work of Gilvesy and his band of Norfolk farmers has grabbed the attention of major conservation organizations, farming groups and local food enthusiasts. Last spring, 78 of them formed the Ontario ALUS Alliance to press for government funding to continue growing ALUS across the province. The Ontario government has resisted, and the program has generated little interest at the federal level.

Gilvesy remains undeterred. He sees ALUS as the future of farming. And he's far from alone.

The first major global assessment of agriculture, initiated by the World Bank and United Nations and delivered last year, called for a shift to ecological farming systems; payment to farmers for restoring land, soil and air, to ensure future harvests; and a new partnership between farmers and science to increase ecological food production rather than corporate profits.

Often dubbed agriculture's Kyoto, it concluded that Canada's dominant form of agriculture – high-input, energy-intensive, export-oriented

industrial food production – was no longer a viable option as it causes soil and water degradation, increases deforestation, undermines rural livelihoods, and, if unchecked, will threaten future world food supplies.

The assessment won the support of 59 countries. Only three dissented: Canada, the United States and Australia. The Canadian government has all but buried the assessment, not even submitting it to the standing committee on agriculture and agri-food. That hardly surprises University of Toronto professor Harriet Friedman, one of hundreds of experts from around the world who developed the assessment. "All three countries have a high commitment to massive production of crops and livestock for export. When a certain production system becomes widespread, ministries develop to support it. But they'll have to shift fundamentally."

How that's done will require a major overhaul of the more than \$8 billion Canada currently spends on agricultural programs.

The Harper government's new national policy for agriculture, "Growing Forward," merely bundles together old programs and includes no support for shifting agriculture into a greener future. According to University of Saskatchewan agricultural economics expert Murray Fulton, the policy sinks billions into income-stabilization programs that largely protect export commodity producers from world price fluctuations. Risk-management programs are "disaster subsidies" – bailouts for a system of agriculture that actually creates the conditions for those disasters, as industrial farming methods make animals and crops vulnerable to disease, pest infestations and drought.

The first outbreak of swine flu was in the Mexican village of La Gloria, which is surrounded by factory swine and poultry operations, and villagers complained for years about respiratory infections before the outbreak of the pandemic. Such tax-funded bailouts are not helping farmers become economically sustainable. Government programs and industry encouraged farmers to invest millions in expensive technology so they can produce more with less labour. Now Canadian farmers are staggering under a collective debt of more than \$50 billion. But the profits, or even savings, have not flowed back to farmers. According to the National Farmers Union (NFU), net farm income plunged to zero this decade, while a whole supply chain that feeds off the work of farmers – food processors, retailers, chemical and seed companies, equipment dealers – harvested record profits.

What's required to change this, along with payment for environmental stewardship, is support for production of healthier foods and more ecologically farming methods. The shift to that is happening, if slowly, and it's partly the result of a surge in consumer demand for local and sustainable foods. Transitioning just 10 per cent of Ontario's cropped acres into organic production (from the current 1 per cent) would reduce environmental costs of agriculture by \$2.18 billion over 15 years, according to a study commissioned by the Organic Agriculture Centre of Canada. Government support for the program would cost \$51 million, but farmers would save on expensive, damaging fertilizers and pesticides and also get an organic premium in the market, reducing other agriculture support payments to farmers.

Says Friedman: "We all live in this ecosystem. It's our collective responsibility to pay farmers if they're growing health food and providing ecosystem services for us. They get a good living, respect and skilful and interesting work producing food that can be afforded by everyone."