# Protecting biodiversity starts with preserving seed

Farmers and gardeners involved in seed library grow-outs, variety trials and plant breeding

**BY HELEN LAMMERS-HELPS**
*Ontario Farmer*

Seeds are the foundation of our food supply. With much of the vegetable seed sold in Canada imported from elsewhere, some farmers and home gardeners are working to create a more secure seed supply.

The pandemic has highlighted the vulnerability of international supply chains, said Bob Wildfong, Executive Director of Seeds of Diversity, a non-profit organization in Waterloo with a mission to protect Canada's seed biodiversity. Seeds of Diversity maintains a seed library of almost 3000 regionally adapted and rare seed varieties.

The Bauta Family Initiative on Canadian Seed Security (delivered by charitable organization SeedChange) has a goal of increasing the quality, quantity, and diversity of Canadian-grown ecological seed. The organization works in partnership with producers, farm organizations, and researchers across Canada.

The Ecological Farmers of Ontario (EFAO) has been the host organization for the Bauta Family Initiative in Ontario since 2019.

EFAO provides high quality training, on-farm research, and networking programs on seed production for farmers across the entire province, said Rebecca Ivanoff, manager of EFAO's seed security programs. "We're supporting the work that farmers have been doing for a long time."

"Seed sovereignty is having farmers, gardeners, seed producers and seed keepers with the capacity to grow, save, sell and share seeds. It's about having high quality seed, in enough quantity and the diversity to meet the cultural and social desires of the community. Having regionally bred and selected seed means these needs are being met," said Ivanoff.

Based on input from farmers, EFAO's Seed Works Plant Breeding Club developed and released a short-season, blocky, red pepper called Renegade.

"It's doing really well," said Kim Delaney, a certified organic seed producer near Palmerston and a member of the Seed Works Plant Breeding Club. She said Seed Works is focusing on breeding crops best suited to the Canadian climate and to prepare for climate change.

EFAO is also involved in the Canadian Organic Vegetable Improvement (CANOVI) Project, a network of farmers and researchers across Canada testing varieties for nutrition and flavour, adaptability to ecological farming practices and suitability for local seed production.

The Bauta Initiative has allowed seed producers from across Canada to connect with one another, said Delaney. "That changed everything."

Delaney said there are farmers and gardeners across Canada who continue to improve open-pollinated (non-hybridized) varieties. While heirloom varieties, defined as more than fifty years old are important, it's also important to keep that work happening, she said.

When Delaney, who owns Hawthorn Farm Organic Seeds, began growing vegetable, flower, and herb seed more than 15 years ago, she had to go to conferences in the United States to learn about the intricacies of growing crops for seed.

Now, Delaney said growers can gain knowledge and skills through EFAO and Seeds of Diversity. "EFAO is really great at the education part of it. They organize and host workshops, both digital and on-farm, to teach seed saving." To learn more about the Ecological Farmers Association of Ontario's seed saving workshops, variety trials and on-farm plant breeding programs, go to https://efao.ca/seed-security/.

And for those who want to get started in seed security work, Delaney said Seeds of Diversity has a seed swap listing on their seeds.ca website. "This is a great way for people to learn about some of the more unusual seed stories and to learn basic seed saving techniques."



Kim Delaney grows heirloom and farm-selected vegetable, flower and herb seed at her farm near Palmerston.

## Enzyme releases soil-bound P

An enzyme that can help release phosphorus from its organic forms has been identified in a study from the University of Sheffield.

According to a university report, the enzyme can help reduce the need for phosphate chemical fertilizers.

While soils hold plenty of phosphorus, much of it is in organic forms and requires enzymes, commonly known as phosphatases, to release the phosphate so that plants can use it as a nutrient.

In this study, researchers identified a unique bacterial phosphatase abundant in the environment called PafA. It can rapidly mineralize naturally occurring organic phosphate independently of phosphate level, a process which was found to be inhibited with other common enzymes, especially in soils with adequate amounts of inorganic P.

Researcher Dr. Ian Lidbury noted that PafA can be "a valuable overlooked resource for finding ways to help plants and animals more efficiently capture essential nutrients and will be crucial to help us reducing our reliance on the world's limited stocks of non-renewable chemical phosphorus fertilizers."

The team is now looking at what makes certain forms of PafA more active than others, aiming to design an enzyme that can be used in sustainable agriculture systems.