**A more sustainable farming model**

*Nova Scotia Federation of Agriculture’s Living Labs aim to help farmers better tackle climate change*

By Jon Tattrie, Climate Story Network

Nova Scotia farms and fields have been turned into “living labs” in a bid to help farmers grow better crops and tackle climate change.

The Agricultural Climate Solutions (ACS) Living Labs project is active across Canada, funded by Agriculture and Agri-Food Canada. The Nova Scotia Federation of Agriculture (NSFA) was selected as one of nine organizations establishing these living labs, and in this province they are studying orchard laneways, cover crops, a land swap involving cattle, and riparian zones.

Keith Fuller, a soil scientist with Agriculture and Agri-Food Canada, is studying orchards and vineyards from the Kentville Research and Development Centre. They’re in the second harvest of a five-year study.

Fuller said with woody perennials like apple trees and grape vines, farmers typically let random grass and broad-leaf weeds grow in the lanes.

“If we could seed these with a productive crop like clovers, we could sequester more carbon because the root system of clovers is very deep,” he says. “We could also fix more atmospheric nitrogen, because clovers are a legume.”

Over time, that could mean farmers need to use less fertilizer while also reducing greenhouse gas emissions. It could also lessen the need to till the soil, which can damage it. Fuller said they can see a difference in the fall harvest. They’ll study the data over the winter to see what changes.

“The project is really designed to be an education for growers and to focus on the fact that any time you are sequestering carbon into the soil, it’s a good thing. And when you plant trees, over a period of 15 or 20 years, you store a lot of carbon in the tree itself,” he says.

All of which should lead to healthier and more fruitful harvests with farmers needing to seed the lanes every second or third year.

Carolyn Marshall, Environment and Climate Change Manager for the living labs, said the project could help Nova Scotia’s 2,744 farms fight climate change.

“Each one has the same goal: to research farming practices that will help increase carbon sequestration and reduce greenhouse gas emissions,” she says.

The cover crops projects are looking at four crops that farmers could plant to rest their fields from cash crops in a way that protects the soil from the elements and provides nutrients when the cover crops die.

“We’ve known about cover crops for decades, but there are a lot of farmers that aren’t cover cropping. So, part of the project is finding out why,” she says. “What are the barriers to a farmer trying these practices and how can we help them get over those barriers?”

Another project is a land swap between livestock and crop farmers. One cauliflower farmer is rotating his fields by planting grass and letting cows graze. The grass protects the soil and the cows “pump” nutrients back into the soil, Marshall says, though she adds that means you “need to watch where you’re walking.”

“Earth worms and dung beetles love cow patties and tend to move under those fields,” she says. “They take the cow dung and the carbon that’s in it and the really good nutrients, and they pull it down into the soil through their burrows, and then it can stay long term.”

Riparian zones are areas where water and land connect. ACS Living Labs have established six new sites in blueberry fields, and they will monitor the water, soil, and plant quality. These sites could be good places to sequester carbon.

Marshall said she’s been fascinated with soil since she was a child.

“Ninety-five per cent of the food in the world starts in soil,” she says. “Everything basically but fish either grew in the soil or ate something that grew in the soil.”

The Living Labs project will end in March 2027.