national farmers union union nationale des fermiers

Long-Term Planning for Emissions Reduction

Eight Things You Can Consider on Your Farm

Canadian farms are about to experience major changes. Here is how we know:

- **Canada has committed to reduce greenhouse gas (GHG) emissions by 30% by 2030**, and to be carbon neutral by 2050. Canada is about to transform its energy, manufacturing, transport, housing, and food-production systems. Our farms will be part of that transformation.
- **On our current course, Canadian temperatures will rise by 3 to 6 degrees C this century**. If we allow this to happen, it will devastate food systems here and around the world. But we can correct course and move farms and food systems toward resilience, sustainability, and climate compatibility. But we must correct course; we must make major changes to all human systems.

Big changes are needed. Big changes are coming. But change takes time on the farm: machinery and buildings last a long time; investments should be made only after careful consideration; and long-term, intergenerational planning is critical. **We must save the Earth, but we mustn't "lose the farm."** It is important that farmers—collectively and individually—get this right. So, it pays to think ahead.

Here are 8 on-farm emission-reduction measures you can consider as you plan for the future:

1. **Consider a fundamental change to your farm's production approach;** consider low-input methods, organic production, reduced tillage, holistic management, rotational grazing, regenerative agriculture, agroecology, mixed farming, diversification, production for local markets, or increasing above- and below-ground biodiversity through intercropping, cover crops, or more complex rotations.

2. **Work to reduce nitrogen fertilizer use**. Nitrogen fertilizer is perhaps the largest single source of agricultural emissions. N fertilizer is a major source of all three main greenhouse gases: nitrous oxide (when used), carbon dioxide (in production), and methane (from its feedstock, natural gas). Canadian farmers have doubled nitrogen tonnage since 1993. In coming years, all farmers will be asked to find ways to reduce fertilizer use. In your long-term planning, perhaps consider:
   a. Getting more N from biological sources: legumes, intercropping, perennials, manure, compost, etc.
   b. Adopting 4R nitrogen efficiency measures: using the right product, the right rate, at the right time of year, and putting it in the right place. 4R techniques can cut fertilizer use without hurting yields.
   c. Consider using data collection and variable-rate technology to reduce fertilizer use. (But be wary of corporate-controlled precision ag. platforms and the entanglements of Big Data.)

3. **Develop a long-term plan for reducing emissions from energy/fuel use**:
   a. Work with experts to do an energy and emissions audit of your farm.
   b. Electrify everything possible: appliances, stationary engines, and building and water heating.
   c. In provinces where electricity is generated by burning fossil fuels, consider an on-farm solar array.
   d. Insulate buildings, consider "deep" retrofits, and investigate passive and net-zero structures.

e. Make medium-term plans to upgrade all pumps, lights, refrigeration and heating equipment, appliances, etc. for maximum efficiency and energy savings.
f. Tune up existing tractors and equipment to operate efficiently and with minimum emissions.
g. Look for opportunities to invest in battery-electric trucks, tractors, and other equipment. Long service lives for machinery means that we must soon stop investing in fossil-fueled equipment.

4. **Preserve trees and wetlands**. In order to avoid "de-sequestering" carbon, keep wetlands, tree bluffs, and shelterbelts intact. Plant trees and return marginal cropland to grass. Increasing the area of wetlands and grasslands also offers protection from flooding—important as intense storms become more common.

5. **Use best-possible grazing systems**: rotational, adaptive multi-paddock, holistic, regenerative, etc. Seek an optimum balance that builds soils and increases soil-carbon levels while minimizing livestock emissions (via efficiency and best-possible genetics, herd health, feeding, breeding, etc.).

6. **Manage manure to reduce emissions**. Best approaches vary from farm to farm and according to species and management methods. On some farms, methane-capturing biodigesters will reduce emissions and provide heating fuel or electricity. On other farms, composting may be the best approach.

7. **Make emissions reduction part of your planning process.** Balance the pursuit of yield with emissions reduction. Doing so can position your farm to avoid disruptions as pressures to cut emissions intensify. And as carbon taxes increase, low-emission farms may come out money ahead. The NFU wants changes to business risk management (BRM) programs that support and protect farmers trying out low-input, low-emission approaches.

8. **Look for opportunities to substitute human work, management, and biological methods for fossil fuels,** technologies, and purchased inputs. Canadian farm emissions are at a record high and the number of farmers is at a record low. This is not coincidence. The history of the past hundred years is one of replacing farmers with machines, fuels, and inputs. As this has happened, emissions have soared.

In conclusion, let's imagine a low-emission farming system, perhaps in the 2030s:

- While most continue to buy some fertilizers, all farmers adopt the biological methods of supplying soil nutrients now used by organic and low-input farmers;
- On-farm solar arrays provide energy for battery-electric trucks and tractors;
- Electric transport trucks ply rural roads on a regular schedule to move food to regional processing plants then on to towns and cities;
- Wetland area and tree cover are increasing, retaining carbon and creating habitat;
- Best-possible grazing systems build soils, protect grassland ecosystems, and enhance natural nutrient cycling on mixed farms;
- Expanded rotations, intercropping, and cover crops begin to move all farms toward agroecological approaches;
- Farmers get advice from independent agrologists rather than input sellers;
- Government policies increase the number of young and new farmers after recognizing that having more stewards on the land helps us adapt to changing weather patterns and make needed transformations on our farms;
- Government policies focus on sustainability and resilience rather than export maximization;
- Governments embrace food sovereignty: local and regional food systems democratically shaped by the needs of producers, consumers, and communities, and focused on sustainability, justice, and the dependable provision of delicious, healthy food for all.

If you are not an NFU member or associate member, please join and become part of our collective work to build a better, healthier Canadian food system. Please go to www.nfu.ca/join

The NFU is a proud, founding member of the coalition Farmers for Climate Solutions. Learn more [here.]