



FarmFolk CityFolk Society
PO Box 22316 RPO Cedar Cottage
Vancouver, BC V5P 0E2
info@farmfolkcityfolk.ca
www.farmfolkcityfolk.ca
604-730-0450

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Presentation to the Select Standing Committee on Agriculture, Fish and Food
By Abra Brynne, Policy Advisor

Thank you for the invitation to appear before this committee today and for attending to such an important component of our province's future well-being.

FarmFolk CityFolk, founded in 1993, is B.C.'s oldest and largest food and agriculture charity. We have earned a reputation as a sector collaborator, program catalyst, community builder, and trusted voice for food growers.

We work from seed to plate to address barriers to sustainable farming and support the sector through innovative programs, policy advocacy, and education. Through these activities, we engage a network of farmers, seed growers, researchers, food system advocates, policymakers, community partners, and eaters.

In terrestrial food systems, healthy soils are foundational; they are dynamic, complex and highly impacted, both positively and negatively, by how they are managed. In a lifetime of listening to farmers, I have heard frequently from experienced, skilled farmers that they grow soil, not crops. The crops are a by-product of healthy, well managed soils.

Farmers have diverse ways of understanding what is going on in their soils. Amongst organic farmers, it is a long established practice to routinely test their soil and make management practices based on those results, practices that include the addition of amendments that align with the needs of the crops to be grown in that soil. Optimal levels of carbon contribute to productive crops, in addition to the sequestering that has become so much a part of the climate change mitigation conversations.

It is important to note that soil carbon can hit saturation levels - when no more addition is possible, just like water. And just like water, carbon levels in soil can also fluctuate, based on how the soil is managed, crop uptake and residue left on fields etc. Carbon sequestration, in annual cropping systems in particular, must be understood as an important but limited option for capturing and storing carbon. Long-term carbon sequestration is more suited to perennial cropping systems, bush, forest and riparian areas.

Nevertheless, there is much we can do on farms across the province. As the Ministry of Agriculture's Opportunity Assessment reports identified, there is a lack of accessible data for us to understand the current state and potential for carbon levels in our soils. Outside of the organic farming sector, regular soil tests are not common practice. Yet we know that climate change is throwing increasing challenges at farmers. So understanding better what is



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happening in our soils, from a baseline and over time, will allow farmers to make more informed management decisions and for program and policy development to better align with the demonstrated need.

We are fortunate that through a combination of public investment, sector initiatives, academic programs, and other initiatives, there are a host of interventions that will help to better understand the province's soil needs and potential. The recently launched Living Labs projects, based across the geography of the province and including diverse sectors and academic partners, will help to establish the critical baseline understanding and then monitor changes over the multi-year lifetime of the initiative based on different practices and ecosystems.

Additionally, the Ministry of Agriculture, sector groups like the BC Cattlemen's Association, BC Forage and Grasslands, and Organic BC, the Agricultural Climate Action Research Network, and non-profits like ours are delivering field days and practical information to producers to assist them in management decisions for optimal soil health and climate resilience. I know that you are hearing from many of those involved in these initiatives and am grateful for their technical expertise.

FarmFolk CityFolk is a founding member of Farmers for Climate Solutions. Through that connection we have been part of national work to formulate practical, evidence-based proposals for lowering emission and improving soil health on farms. Because of BC's unique and highly diverse agricultural sector, these national proposals and related costing always need to be adapted in order to fit our particular circumstances. Our recent White Paper, *Innovation and Impact: Achieving Regenerative Climate Action on BC Farms*, provided to members of this committee, conveys how we envision best practices applied in our province.

The three top practices that we identified that are relevant to the mandate of this committee are:

- Reduced nitrogen fertilizer use by best matching crop and soil needs with application rates and timing;
- Expanded use of cover cropping across all relevant sectors to build soil health, provide protection from temperature and precipitation extremes, enhance nutrient availability, and reduce soil erosion;
- And lastly, Increased rotational grazing, which increases soil carbon sequestration and biodiversity, improves animal health, and reduces enteric methane emissions through improved forage quality

While it may not be obvious that reducing **nitrogen fertilizer** use is related to healthy soils and optimal carbon levels, synthetic fertilizers can disrupt the balance in the soils. Reducing ecological stressors contributes to overall resilience, adaptive capacity, and soil health. Another important consideration in soil health related to fertilizer is the increasing use of "controlled release technology". In the context of fertilizers, this technology is based on creating a physical



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barrier that “slows or modulates the release of the coated chemical ingredient(s).” The coating can be a conventional plastic polymer, a natural material, or a biodegradable plastic. The fertilizer is released slowly as the coating breaks down. In the case of plastic coatings, this results in an increase in the levels of microplastics in agricultural soils, which causes environmental harm, compromises soil health and accumulates in all species along the food chain. While plastic-coated fertilizers and agro-chemicals are relatively new products, they are already exacerbating the fact that agricultural soils “are known to contain larger quantities of microplastics than oceans.” As a result, FFCF urges the use of only biodegradable coatings on delayed-release fertilizers adopted as a means to reduce emissions. Exacerbating one environmental harm while seeking to address another is not a luxury we can afford.

Cover cropping is widely used across BC but there is yet much that needs to be done to better understand optimal species selection that best suits the needs of the soil, cash crops, water availability and demand, and function. Shifting land from a cash crop to a cover crop can be a hard trade-off, particularly in BC where our farms are necessarily relatively small due to our topography. For each sector and farm, cover crops are needed that do not compete for nutrients or water and that are complementary for the specific cash crop plant. The needs of perennials such as berries, grapes, and tree fruit will differ from annual vegetable crops. Amongst some perennials and annual plants, the cover crops may be grown contemporaneously; for others, the cover crop will be an early spring plant to be removed prior to cash crop planting, or a fall seeding that succeeds the harvest of the cash crop.

The cost factor in cover cropping will be a consideration for each farmer. There will be seed, planting, and management costs to absorb that may also have to factor in a reduced harvest of cash crops if land has been taken out of production for the cover crop. The FCS recommendations for cash crops include two payment models: a per acre payment for larger expanses; or cost of seeds for smaller farms more common in BC. This is an important program delivery nuance that can also help to ensure that racialized and other minority farmers can fully benefit from both the program support and positive contributions that cover crops can make for their farms.

Intercropping and cover cropping can be adopted to ensure that there is no bare soil, reducing stresses on soil health and biota from extreme heat, increased winds, and heavy rains or flooding. The selection of cover crop varieties will need to draw on the knowledge generated from on-farm trials and other sources of expertise, to ensure an optimal mix of cash and cover / intercrop varieties to achieve climate change, environmental, and farm income goals. BC has a wealth of research and knowledge dissemination platforms on cover crops and intercropping including Organic BC, the University of BC’s Sustainable Agricultural Landscapes Lab, BC Climate Change Adaptation Program, Delta Farmland & Wildlife Trust, BC Forage Council, and Kootenay Boundary Farm Advisors, to name a few. Ensuring that this information gets to the



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farmers who need it is key, using a variety of information delivery models, including virtual seminars, field days, and print media readily accessible to farmers.

Rotational grazing has demonstrated benefits and is already widely practised and promoted by organizations such as BC Cattlemen's Association. Field days and farmer-to-farmer knowledge transfer are amongst the more effective incentives for shifting management practices. Seeing the practice successfully implemented helps to lower risks and fears associated with management changes on farms. There are also related technological supports and costs that, if provided, could increase adoption. The wildfires of the past decade have destroyed endless kilometres of fencing that are very costly to replace. BC Cattlemen's Association has been promoting virtual fences as an opportunity for ranchers in BC to both address the loss of physical fences and effectively manage their herds. Technology that serves needs that farmers have already identified is a win-win for technology entrepreneurs and for agriculture in the province.

Most critically we need to understand that agricultural soil is part of a larger ecosystem. The soil under cultivation is inextricably linked to the soil beyond the edges of the cultivated spaces. Therefore measures to promote healthier soil and carbon sequestration need to include those that promote and maintain the health of those larger and contributing ecosystems, including bushy and riparian areas, and trees. These connected areas provide shade, support biodiversity, and promote moisture retention. When profit margins are so tight for farmers, the temptation to plow over riparian areas or to remove bushy areas is strong - we need to ensure that the ecosystem services that farmers provide by retaining these spaces is compensated. Farmland Advantage is promoting the adoption and compensation for ecosystem services on farms in BC but could be vastly expanded, with sufficient resources, to rapidly increase these kinds of benefits on farms and for our broader communities.

Environmental legal scholar, Robin Kundis Craig, has called for the transformation of regulation and programming related to agriculture to support more effective adaptation to the disruptions that climate change is wreaking on our eco and food systems. She strongly urged the removal of perverse incentives that perpetuate, for example, harmful practices and higher-risk locations. A more sensible approach, from Craig's perspective is to create "agricultural policies that could also promote farms' abilities to provide many ecosystem services that could contribute both to the productivity of the farmland itself and to the resiliency of socio-ecological systems, including water purification, pollination, soil fertility, sequestration of greenhouse gases, flood mitigation, and biodiversity enhancement." (page 51).

Reliable and predictable weather is the ideal condition for a successful farm. More than any other sector, farming relies on that - and yet, with climate change, this is exactly what farmers cannot expect. As Jennifer Critcher of BC Grain Producers Association noted in the June edition



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of Country Life in BC, field conditions between last year's planting season and this year were diametrically opposite in the Peace region - from muddy and too wet last year to dry this year.

Unfortunately, due to anthropogenic climate change, we can no longer draw on precedent to plan for the future. This is why it is so important to enable widespread creation and sharing of soil data. FarmFolk CityFolk supports UBC's proposal that soil tests should be free for farmers - this will be the easiest way to ensure widespread adoption of the practice and of the accumulation of key data. Longtime Environmental Farm Plan advisor and irrigation specialist, Andrew Bennett, also recommended a mobile soil test service that would further enhance the ability of farmers to access reliable soil test data, supported by specialists who understand the complexities of viable, reliable testing protocols. FarmFolk CityFolk has begun convening conversations with key partners in BC to discuss how to make soil data available that will empower farmers, provide direction for the development and evolution of government and sector programs and policies, and enable effective support from agritech companies, while also protecting the privacy and scope of use of the collected data.

Climate change will increasingly impact the ability of our socio-ecological systems to adapt. The more that we can support healthy soils, watersheds and ecosystems in our province, the more we contribute to mitigation and also to the ability to adapt for our human communities and the ecosystems that we rely on.