

# Regenerative Organic Farming

Allison J. Squires

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## WHAT IS REGENERATIVE ORGANIC?

Regenerative farming has started to become a well-used yet undefined term that can encompass anything from conventional no-till practices to holistic whole-farm management.<sup>1</sup> But at the root of the regenerative movement are practices that are used to regenerate or build back something that has been lost or destroyed. Regenerative agriculture's focus on soil quality can help address the soil loss we have seen during the last several decades where conventional farming practices have systematically destroyed much of the fertile soils previous generations of producers enjoyed.<sup>2,3</sup>

Within the regenerative agriculture movement, the term "regenerative organic" has emerged as a way to differentiate between "conventional" (i.e., producers that use pesticides and synthetic fertilizer) appropriation of this term and the original intent of the term. In conventional regenerative agronomic practices, the primary focus is on the reduction of tillage (i.e., "no-till") methods of agriculture. However these practices rely on the use of herbicides, insecticides and even genetically modified seed stock.<sup>14</sup> Regenerative organic farming however, is rooted in the principles of organic agriculture, with a set of practices that seek to mimic nature as much as possible to build and improve soil health to grow better crops, healthier food and communities.<sup>5</sup> These practices can include increasing the diversity of the ecosystem, including perennials, using compost, eliminating chemical disturbance, and incorporating livestock. For many organic producers, these are practices that they have been using successfully for generations and consequently they are not only the origins of this movement but they are also leading the way.<sup>16</sup>

### The Focus on Soil

With the changing climate, the ability to store and move water throughout the soil profile is becoming increasingly important as producers face extreme weather events, such as drought and flood, more often. The best way to do this is to increase the organic matter within the soil. With every 1% increase in soil organic matter (SOM) the available water capacity of the soil increases by a similar percentage.<sup>7</sup> In an annual cropping system, when more carbon is put into the soil than the plants take out, carbon is sequestered and the SOM increases.<sup>8</sup>

There are five well established soil health principles that are the focus of regenerative agriculture. These are to minimize soil disturbance; keep the soil covered; increase diversity; keep a living root in the soil and integrate livestock. The strength of these principles is their adaptability. They can be implemented in almost any type of agriculture production system and tailored to the regional climate. Each principle works to foster the vitality of the biology living within the soil, improving the soil functionality as a living ecosystem that sustains plants, animals and humans.<sup>9</sup> Soils with a healthy, functioning biology are able to produce more SOM which allows for higher nutrient and water supplying capabilities to crops.

### Biodiversity

Increasing the diversity of the plants growing is one of the first principles adopted by many producers. This serves to mimic undisturbed plant diversity landscapes where multiple plant species work together as a plant community to share nutrients and other resources for better plant growth and to build SOM.<sup>19</sup> In an organic system, where green manures are typically part of the crop rotation, this can be simply done by adding one or two additional species to a monoculture green manure. For example, adding oats to forage peas.

When adding additional species, it is recommended to add from different groups: warm and cool season, grasses, and broadleaves.<sup>10</sup> Additional information for producers on the practice of using green manures and other organic crop production practices, can be found at the Pivot and Grow website ([www.pivotandgrow.com/resources/production/](http://www.pivotandgrow.com/resources/production/)).

The next step would be to add different architectures of growth both above and below ground. Adding plants to the mix that have different roots (tap vs fibrous) promotes a more diverse soil microbial community with the benefit of creating soil aggregation and improving infiltration.<sup>10,11</sup> Above the ground your goal should be to try and capture as much sunlight as possible by picking upright plants and creeping plants. Diversity can also be achieved by using plants with diverse types of flowers (e.g. open flowers like a sunflower or more closed flowers like alfalfa). Growing plants with different types of flowers attracts a diverse number of species of pollinators and other beneficial insects. These insects provide ecosystem services such as better pollination rates and increased yield.<sup>12</sup>

Adding diversity can also be achieved in the cropping phase of a rotation by incorporating intercropping and companion cropping as part of annual crop planning. Companion cropping is the practice of under seeding a cash crop with a crop not intended for harvest. This is usually done by under seeding a legume such as clover into a cereal crop which is harvested. This practice not only provides additional fertility to the cereal crop via nitrogen fixation through the legume, but it helps with weed control through competition.<sup>10</sup> Companion cropping also allows the legume to continue to grow and feed the soil microbes all the way to freeze up.

Intercropping is the practice of seeding two or more cash crops together with the intent to harvest and separate them for sale. Some common intercropping combinations used on the Prairies include pairing a legume with either an oil seed (chickpeas and flax, lentils and camelina) or a cereal (oats). Intercropping has been proven to yield higher than seeding monocrops when the Land Equivalency Ratio (LER) calculation is greater than one (e.g., a LER of 1.2, indicates the yield is 20% greater by growing the crops together than growing them each on their own).<sup>13</sup>

### Keep A Living Root in the Soil

Keeping a living root in the soil for as long as possible builds soil aggregates and organic matter, increases nutrient levels, and breaks perennial weed cycles.<sup>9</sup> On the Prairies, where there is a shorter growing season and harsh winter conditions, keeping something green and growing before and/or after the annual cropping window can be quite challenging. There are several ways to address this challenge such as using a combination of companion crops, fall seeded crops, biennials and perennials to have a living root in the soil for as long as possible throughout the year.<sup>10</sup> Adding perennials in rotation with annual crop production is a good way to implement the first four soil health principles and has been shown to accelerate the rate of soil organic carbon building.<sup>14</sup>

## Minimize Soil Disturbance

Minimizing any disturbance to the soil is one of the most talked about principles of soil health, and it is an important step to improving the health and functionality of soil. However, in an annual cropping system, some disturbance (either chemical or physical) is necessary. The chemicals (i.e., pesticides), used in conventional farming systems have been shown to be detrimental to the health of the soil.<sup>15</sup> In order to minimize disturbing the soil in these systems conventional producers must work to reduce the use of chemicals. To minimize disturbance in an organic system, the focus is on reducing both the intensity and frequency of physical soil disturbance in order to improve the health and resilience of the soil. Excessive tillage (physical disturbance) will also decrease soil health by breaking up soil aggregates and volatilizing carbon into the atmosphere.<sup>11</sup> When selecting the tillage operation use the least amount and least intensity to accomplish the operation that needs to be done. Utilizing a roller crimper instead of a

disc to terminate green manures and cover crops will not only reduce soil disturbance but it also leaves a mat of plant material, which keeps the soil covered and protected from wind and water erosion.


## Incorporating Livestock

Incorporating livestock has been shown to accelerate the production of soil organic matter and increase the biology and functionality of soil.<sup>16</sup> Using intensive rotational grazing is a high impact way to do this. By concentrating the animals in a small area and moving them frequently, they eat the leaves of the cover crop and trample the rest to the ground. Incorporating livestock not only reduces soil disturbance, but it allows the nutrients in the cover crops to be recycled through ruminants and to be deposited back onto the soil. Grazing also allows the soil to be covered over the winter which reduces erosion (wind and water), prevents evaporation, allows infiltration, and suppresses weed growth.

## REGENERATIVE ORGANIC CERTIFICATION


In 2017, the Regenerative Organic Alliance (ROA) launched a certification program called the Regenerative Organic Certification (ROC®). This program was developed to build on the USDA National Organic Program (NOP) and requires applicants to hold a valid organic certification recognized by the National Organic Program (NOP). The ROC® program is structured under three pillars - soil health, animal welfare and social fairness. The program is practiced-based, versus outcome-based, and requires certain on-farm regenerative agronomic practices to be used as outlined in these pillars. The goals of the program are to increase soil organic matter and sequester carbon, improve animal welfare, and provide economic stability and fairness.<sup>5</sup>

### The Three Pillars Of Regenerative Organic Certification




**Soil Health**

- Builds Soil Organic Matter
- Conservation Tillage
- Cover Crops
- Crop Rotations
- No GMOs or Gene Editing
- No Soilless Systems
- No Synthetic Inputs
- Promotes Biodiversity
- Rotational Grazing



**Animal Welfare**

- Five Freedoms
  - Freedom from discomfort
  - Freedom from fear & distress
  - Freedom from hunger
  - Freedom from pain, injury or disease
  - Freedom to express normal behaviour
- Grass-Fed / Pasture-Raised
- Limited Transport
- No CAFOs
- Suitable Shelter



**Soil Fairness**

- Capacity Building
- Democratic Organizations
- Fair Payments for Farmers
- Good Working Conditions
- Living Wages
- Long Term Commitments
- No Forced Labour
- Transparency and Accountability

Source: <https://regenorganic.org/our-story>

As part of the framework, specific key performance indicators are tracked and assessed annually by a third-party certification body to allow for benchmarking and continuous improvement within a farming operation. The indicators include: length of crop rotation, amount and type of tillage, productivity (yield) and imported nutrients. Both in-field and laboratory soil testing are done annually and tracked as part of the process. Within the program there are defined measures of progress and achievement which are marked by three different levels of certification: bronze, silver, and gold.

## The Canadian Organic Standards and Regenerative Organic Certification

The Canadian Organic Standards (COS) regulates all types of farming and processing practices used to produce certified organic products.<sup>17</sup> The COS was first published in 2009 and undergoes a revision process every five years.<sup>18</sup> These standards are built on the four general principles of organic production as outlined by IFOAM Organics International (health, ecology, care, and fairness). The goal of organic production is to develop operations that are sustainable and harmonious with the environment. In the United States the ROC® builds on the NOP, in Canada it builds on the Canadian Organic Regime.

Bronze	Silver	Gold
✓ Minimum three crop rotation	✓ Minimum four crop rotation	✓ Minimum seven crop rotation
✓ Minimum 25% of cultivated land has year-round vegetative cover	✓ Minimum 50% of cultivated land has year-round vegetative cover	✓ Minimum 75% of cultivated land has year-round vegetative cover
✓ Minimum three regenerative practices are used	✓ Minimum four regenerative practices are used	✓ Minimum five regenerative practices are used
		✓ No-till system where tillage is only done at time of planting
		✓ Must use computer based GHG modeling tools
		✓ Must attain social certification at one or more major stages of processing/ manufacturing

Source: Adapted from the Regenerative Organic Certified Framework <https://regenorganic.org/wp-content/uploads/2020/06/ROC-Framework-June2020.pdf>

There are some differences between the ROC® and COS. First, the ROC® has a social fairness requirement that is not yet part of the COS (however there are intentions to discuss this as part of the 2025 COS revision).<sup>18</sup> There are also specific timelines for conversion or certification of the entire farm along with an annual soil testing requirement in the ROC® that is not in COS. Both certifications focus on building and maintaining healthy soil and production systems, however the ROC® provides specific requirements (e.g., number of crops in rotation, amount of vegetative cover) that must be met to achieve certification.

## SUMMARY

Implementing the principles of soil health have shown to increase the health and structure of the soil which can contribute to a viable, sustainable, and thriving agriculture system. Production practices such as cover crops, integration of livestock, diverse crop rotations and composting have been used by organic producers for centuries. The ROC® program outlines specific production techniques to be eligible for certification; however, certified organic producers in Canada may achieve the bronze level with their current production practices.

Organic producers have pioneered many of the ideas that are currently being attributed to the larger regenerative agriculture movement. Within this movement, only regenerative organic is rooted in the principles of organic agriculture and uses techniques that mimic nature to build and improve soil

## Allison J. Squires, PhD

Owner, Upland Organics, Wood Mountain, SK

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The Canadian organic label has a high level of trust and recognition with consumers.<sup>19</sup> Consequently, consumers are willing to pay a premium for food that carries this label. Large and highly developed production and supply chains are in place for certified organic food and products that are not currently in place for regenerative organic certified food and products. While there is demonstrated interest from consumers and processors in ROC® products,<sup>20</sup> the market and processing system still needs to be much more developed for producers to see an additional premium for ROC® certified products.

health to grow better crops, healthier food, and communities. Ultimately, the goal for every producer is to ensure the continued future of their farm and using a regenerative organic agriculture system can do just that.

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