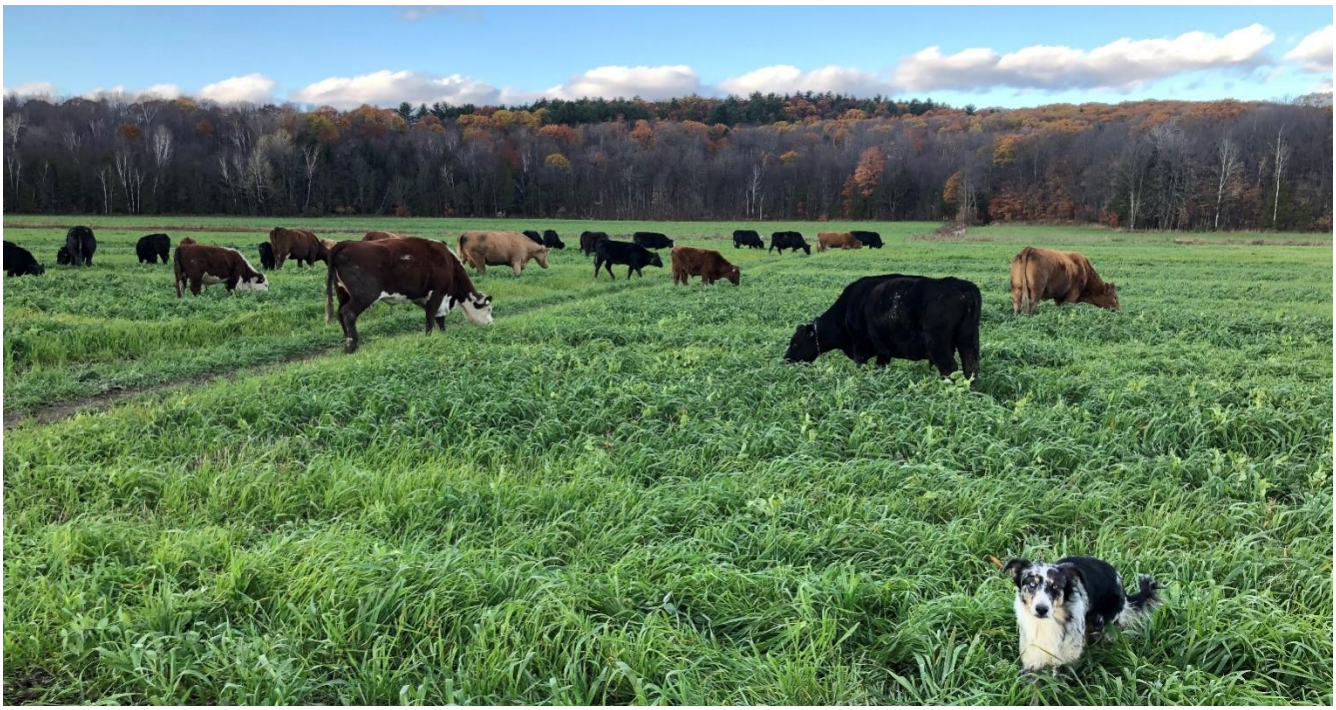


Picture 1: Cow-calf in pasture with the dog

TESA Candidate

Name: Stéphane Guay

Farm name: Ferme Guayclair Inc.

[redacted]

Farm description

A young farm, Ferme Guayclair Inc. has been in business for just seven years. The business has 85.7 hectares of owned farmland and rents another 74.7 hectares. On that land are pastures, a food forest, an orchard, and crops including hay, soybeans, wheat, and corn for both grain and silage.

The farm's owner, Stéphane Guay, used to be a dairy farmer from 2004 to 2018. Health problems pushed him to give up dairy farming, but he realized he still had a deep passion for animals. So he decided to make the switch to beef cattle production.

Having just left a supply-managed sector, Stéphane had no intention of doing things the same way as everyone else. That was when he got the idea to open up a store on the farm where he could sell the meat he produced. In opting for the short supply chain model, he gives customers the power to make choices about where their meat comes from and the story behind it.

This is the story of a third-generation farmer living off the land but seeking another way of doing business. It is the story of a cattle producer who wants to do things differently, to free himself from conventional agriculture and focus on nurturing soil biology. The business is surrounded by conventional farms in a region dominated by agriculture. But thanks to the farm ventures nearby, it is an increasingly dynamic region, so the time was ripe to make a move.

Stéphane is the only full-time farmer at Ferme Guayclair. His son pitches in during the summers and on weekends. The farm also receives help from Stéphane's parents, Marie-Claire and Marcel, and a former employee, Maxime Berthiaume, when it comes time for the hard work of planting, haying, and harvesting. This new direction for the farm is pushing everyone out of their comfort zone, so to speak.

Measures taken to promote environmental stewardship

Since Stéphane wanted to do things differently with his business, he needed to break away from conventional agriculture. This meant allowing his cattle to spend as much time as possible outdoors so they could provide immediate positive impacts on the soil health of the farm.

With this in mind, he decided to incorporate cover crops and green manure into his operations to maintain a consistent cover of healthy vegetation for the soil on his farm. He intercrops plants with his corn in addition to planting other varieties immediately after harvesting his wheat and soybeans. He never tills the soil when planting to maximize carbon sequestration and increase the amount of organic matter.

A crop rotation of corn–soybeans–wheat–soybeans–forage is used to reduce diseases and herbicide resistance. Additionally, earlier-maturity soybean and corn hybrids ensure that cover crops can be planted or intercrops can grow after the harvest. These practices provide more vegetation to cover the soil during the winter, which in turn reduces water and wind erosion.

In 2021, Stéphane instituted intensive grazing on annual seedlings to improve soil fertility in the pastures. Meanwhile, seeds for grazing that were planted that spring are successfully taking root so that cattle can graze on them in spring 2022.

In the fall of 2021, Ferme Guayclair partnered with Développement ornithologique Argenteuil (DOA), a bird conservation organization in his municipality, to install ten (10) birdhouses for swallows and bluebirds in the pastures. The goal of this initiative is to increase these birds' populations in the region. The farm has also stopped using insecticides and cattle dewormers, which will bring back several insects through cow dung and thereby increase the population of one of the birds' food sources.

To protect the health of the area's waterways, the farm maintains a minimum separation distance of three metres from them, thus preventing any indirect contamination. Stéphane also plays an active role in the project to improve the Ruisseau des Vases (Vases stream) watershed. His efforts will help in the creation of grass strips to reduce the impact of runoff and prevent suspended matter and phosphorus from flowing into the stream, which runs across the property.

On top of all this, Stéphane planted a food forest. This forest will serve as, among other things, a nursery for growing woody plants that will be used to establish a windbreak. He has also planted a variety of trees that will promote biodiversity, pollinators, and nut production.

Do the measures taken address all aspects of the environment?

- **Water:** By ensuring the soil is consistently covered, Stéphane has been able to see a reduction in the impact of water erosion on the farm as a whole. Consequently, the soil's water infiltration rate is better, which helps the crops cope with increasingly frequent dry spells. Better infiltration means higher yields.

- **Biodiversity:** Biodiversity has become a top priority for Ferme Guayclair. At a minimum, Stéphane plants over six (6) cover crops at a time, whether in his annual pastures or his wheat fields, to enhance biodiversity. This practice attracts pollinators and insects, which in turn attract birds. Every plant has its own purpose, from fixing nitrogen to out-competing weeds, to improving the nutritional value of forage plants, to capturing phosphorus and potassium from the subsoil to improve their availability, and more. For permanent pastures, Stéphane prefers mixtures of grasses (brome grass, bluegrass, fescue, and orchard grass), legumes (white clover, red clover, alfalfa, bird's-foot trefoil, and sainfoin), composites (chicory), and plantain family members (narrow-leaved plantain).
- **Soil and plant health:** The soil is getting healthier year over year thanks to the practices of introducing cover crops, leaving residue on the soil, and giving up tillage. No-till practices are used for all plantings to help increase organic matter and microbial life in the soil. The cattle also have a very important part to play: they graze on green manure after the harvest. The animals break down the plants, fertilize the soil with their manure and saliva, and feed the organisms in the soil by crushing plant matter into it with their hooves.
- **Fertilizer management:** Inorganic fertilizers are deployed very strategically on the farm. Currently, the only fertilizers Stéphane uses are a corn starter directly on the planter and nitrogen applied to wheat during the flag leaf stage. All other fertilizer sources come from manure, green manure, cover crops, and crop residue left on the soil.
- **Air:** The farm has the good fortune of being surrounded by trees and forests that help filter the air around it. With the planting of the food forest, the trees will take some of the carbon out of the air and purify it as they grow and become established. Stéphane also takes care to spread solid and liquid manure before it rains to reduce odours in the nearby town. In addition, grazing his cattle on an increasingly large land area means he uses tractors less often. This helps keep the farm's fuel consumption down, reducing its greenhouse gas emissions and further improving air quality.

Description of measurable results

The choice of an intensive grazing approach has allowed Stéphane's plants the chance to regrow between grazing periods. In 2021, the grazing season stretched until November 13 without him needing to supplement the cattle's diet with other feed. The goal for 2022 is to put the cattle out to pasture on May 15 and bring them back in at Christmas.

Grain corn yields for 2021 were around 4.8 t/ha with 19% moisture. This corn was planted after wheat to which Stéphane had applied manure in the fall and no chemical fertilizers other than a starter on the planter. No herbicides were used on it, and intercrops were planted three days after the corn was.

Soybean production, meanwhile, reached 3.3 t/ha with a 2550 CHU high-protein variety and no fertilizer. Stéphane chose this hybrid so he could harvest earlier and then plant his cover crops.

The number of birds in the pastures has grown, since some of them have been able to build nests in the grass. This would not be possible in mowed grasslands.

Since the farm has no bare soil at any point in the year, surface water drainage is much slower during snowmelt and major storms. Accordingly, the riverbanks are much more stable, much fewer nutrients are lost, and there is much less erosion (loss of organic matter).

Partners/stakeholders/programs used

In 2021, Stéphane worked with Équiterre on their project “Vitrines en santé et en conservation des sols: s’inspirer des meilleures approches en grandes cultures” (soil health and conservation showcase: learning from best practices for field crops; see link below, in French). He and the organization jointly determine which fields can be studied to explore the use of various types of green manure. In 2022, they will study intercrops planted with grain corn in various ways.

https://www.agrireseau.net/agriculturebiologique/blogue/103095/vitrines-en-sante-et-en-conservation-des-sols-s_inspirer-des-meilleures-approches-en-grandes-cultures

Also in 2021, the Club Conseil Profit-eau-sol (profit-water-soil advisory club) and its agronomist, François Quesnel, came to the farm to perform the “soil your undies” test on the soil in one of Stéphane’s more troublesome fields. They were pleasantly surprised to see generally positive results. The experiment will be repeated in 2022 to see how the soil biology has changed after new regenerative practices were implemented.

The farm is a member of its local stream’s watershed organization, the Organisme du Bassin Versant du Ruisseau des Vases. In conjunction with Abrinord (the North River watershed organization) and other farmers affected by such issues, Stéphane develops strategies to reduce the amount of phosphorus and suspended solids in the stream.

In 2021, he took part in a soil showcase project by Quebec’s agriculture ministry (the Ministère de l’Agriculture, des Pêcheries et de l’Alimentation, or MAPAQ) to evaluate the impact of farm equipment’s tires on the soil during manure spreading. This work helped him develop solutions for reducing soil compaction in his fields. His main strategies involve adding weights to the front of his tractor to improve its weight distribution and reducing the air pressure in his tires.

Ferme Guayclair applied for funding through MAPAQ’s “Productivité végétale” (crop productivity) initiative in order to purchase seed boxes for small forage seeds. These seed boxes could be used on the no-till seeder when planting both pastures and green manures. To Stéphane’s delight, the application was approved. It means he will be able to achieve his goal of reducing tillage and bringing his cattle to the fields, a goal that will generate positive impacts on soil biology.

Working with consulting firm Logiag, Stéphane is currently studying the farm’s greenhouse gas emissions to carry out a detailed assessment of the practices currently in use. He will then be able to take concrete action towards becoming carbon neutral.

Stéphane sits on the city of Brownsburg-Chatham’s development committee, where he serves as a voice for the agricultural sector. He is able to bring to the table a new vision for farming: sustainable agriculture. He is also involved in the Argenteuil Regional County Municipality’s advisory committee on agriculture. In addition, he serves on the board for the Argenteuil syndicate of Quebec’s farmers’ union, the Union des producteurs agricoles (UPA).

Future environmental goals

Without a doubt, the farm's main goal is to improve soil biology. Letting cattle roam both in their pastures and among the cover crops will help boost soil microbial activity. Practising no-till farming will promote more mycorrhiza development in the soil, in turn stimulating nutrient exchange among the plants in the fields.

Planting the food forest will allow the farm to grow its own plants for transplanting into riparian buffers. These trees and shrubs are being exposed to harsher conditions so they will be hardier in their new environment.

The farm wants to become carbon neutral within the next three years, thereby making a difference in the drive towards more sustainable agriculture.

For two years now, Stéphane has been interested in joining the ALUS (formerly Alternative Land Use Services) program, but it is not available in his region. He attended a talk at the neighbouring Outaouais region's ALUS chapter and looks forward to the day this outstanding program expands into his backyard.

Environmental leadership

Last February, Stéphane began giving talks on regenerative agriculture and related concepts in partnership with Quebec agribusiness firms Meuneries Mondou and Semican. During these talks, he shares his experiences and explains how to choose and use cover crops (links in French):

https://www.youtube.com/watch?v=Mb4teB-57Vc

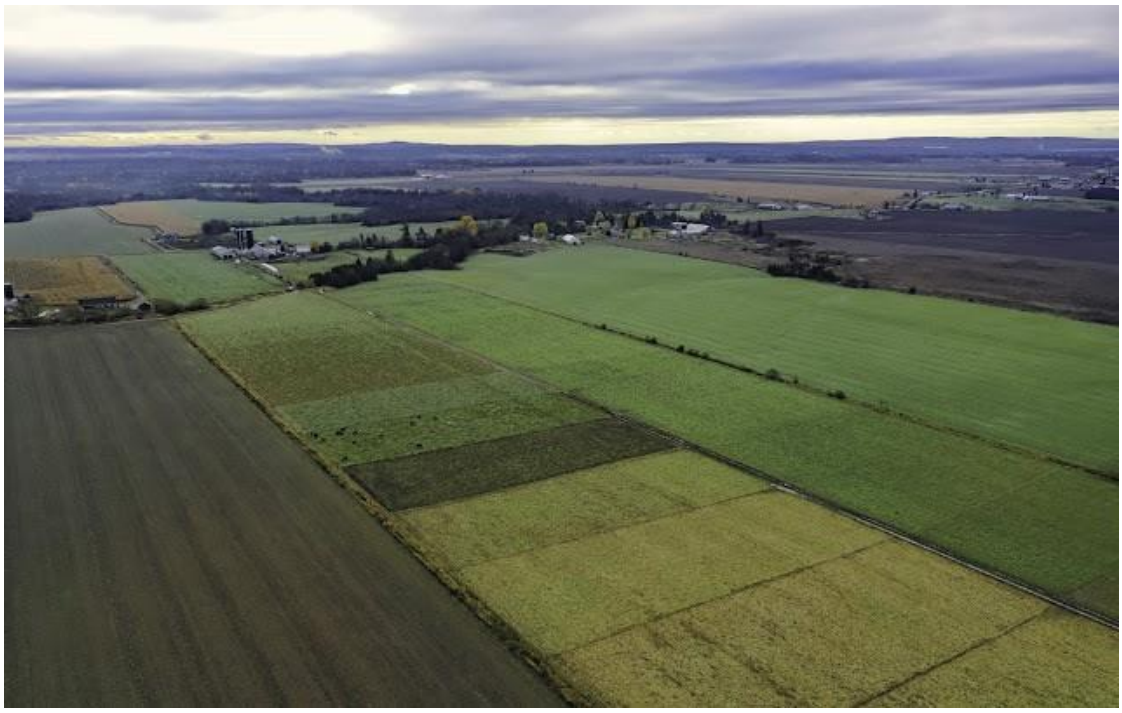
https://letempsdunetraite.podbean.com/e/le-temps-d-une-traite-l-agriculture-regeneratrice-avec-stephane-guay/?fbclid=IwAR2kKY9JnkXWNU-ctnJM88VqgdDkY99X7IjvAEmxJ5fdb_6PGHteQGEWOkA

In the fall of 2021, he had the privilege of meeting with Quebec's minister of agriculture, André Lamontagne, to discuss sustainable agriculture and issues facing beef and other meat production in the province.

In February 2022, Stéphane joined federal agriculture minister Marie-Claude Bibeau for a lunch meeting. During the meeting, he expressed his enthusiastic commitment to adopting a new perspective on today's agriculture and advocated for more regenerative farming practices.

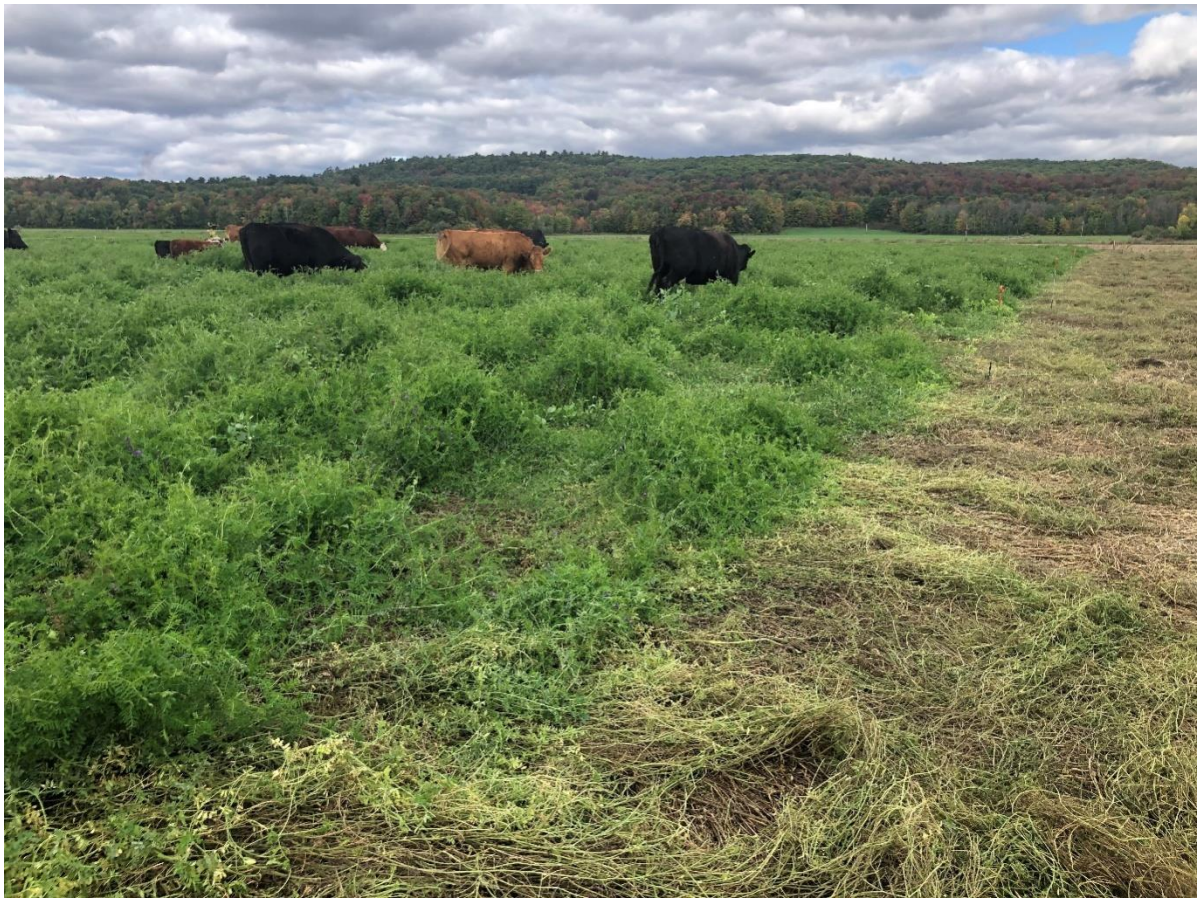
Verified Beef Production Plus (VBP+) certification

Ferme Guayclair chose not to enrol in this certification program. Instead, Stéphane aims to join the Regenified verification program, which promotes regenerative and, thus, sustainable agriculture.

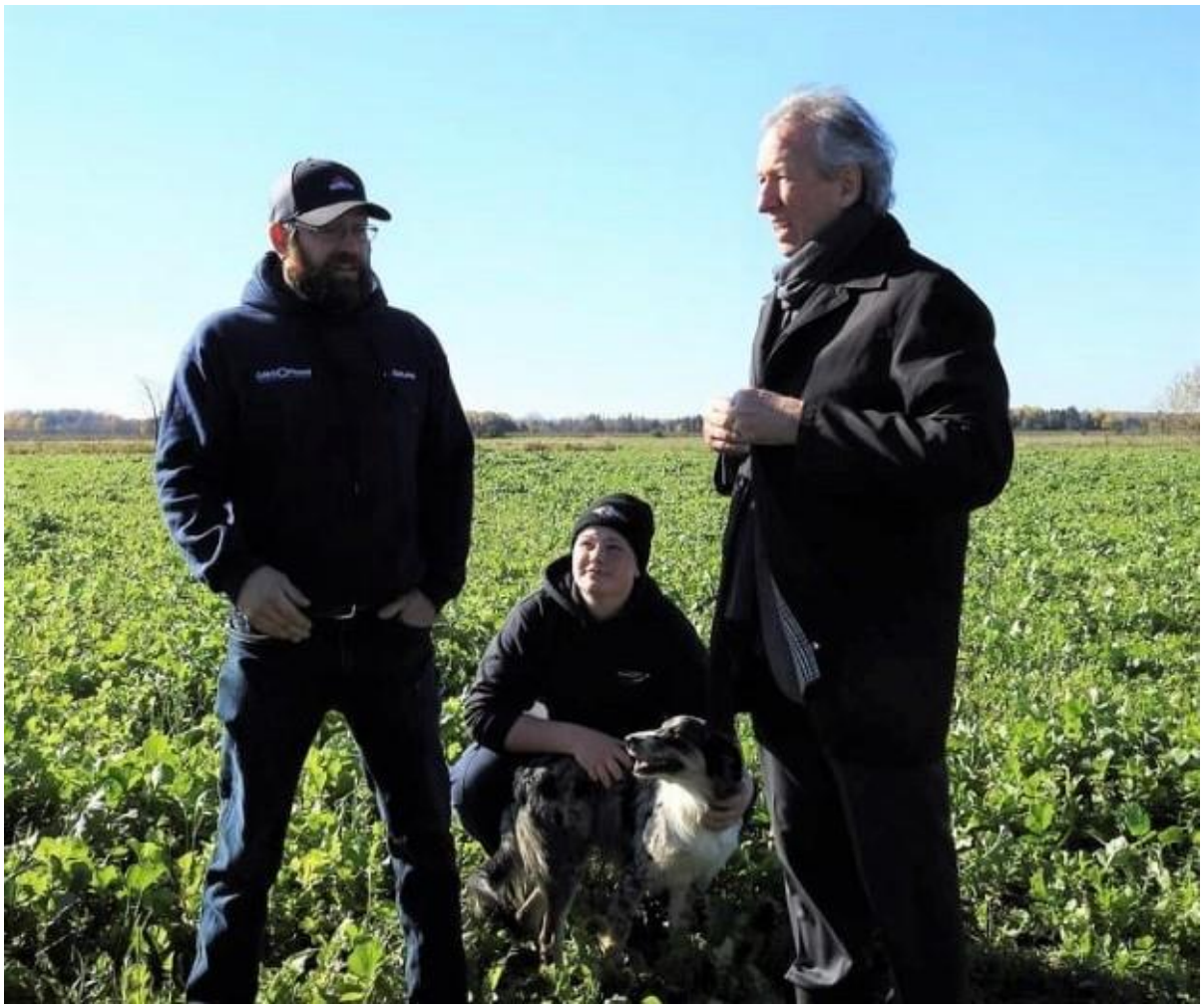


Picture 2 : Aerial vue of the farm

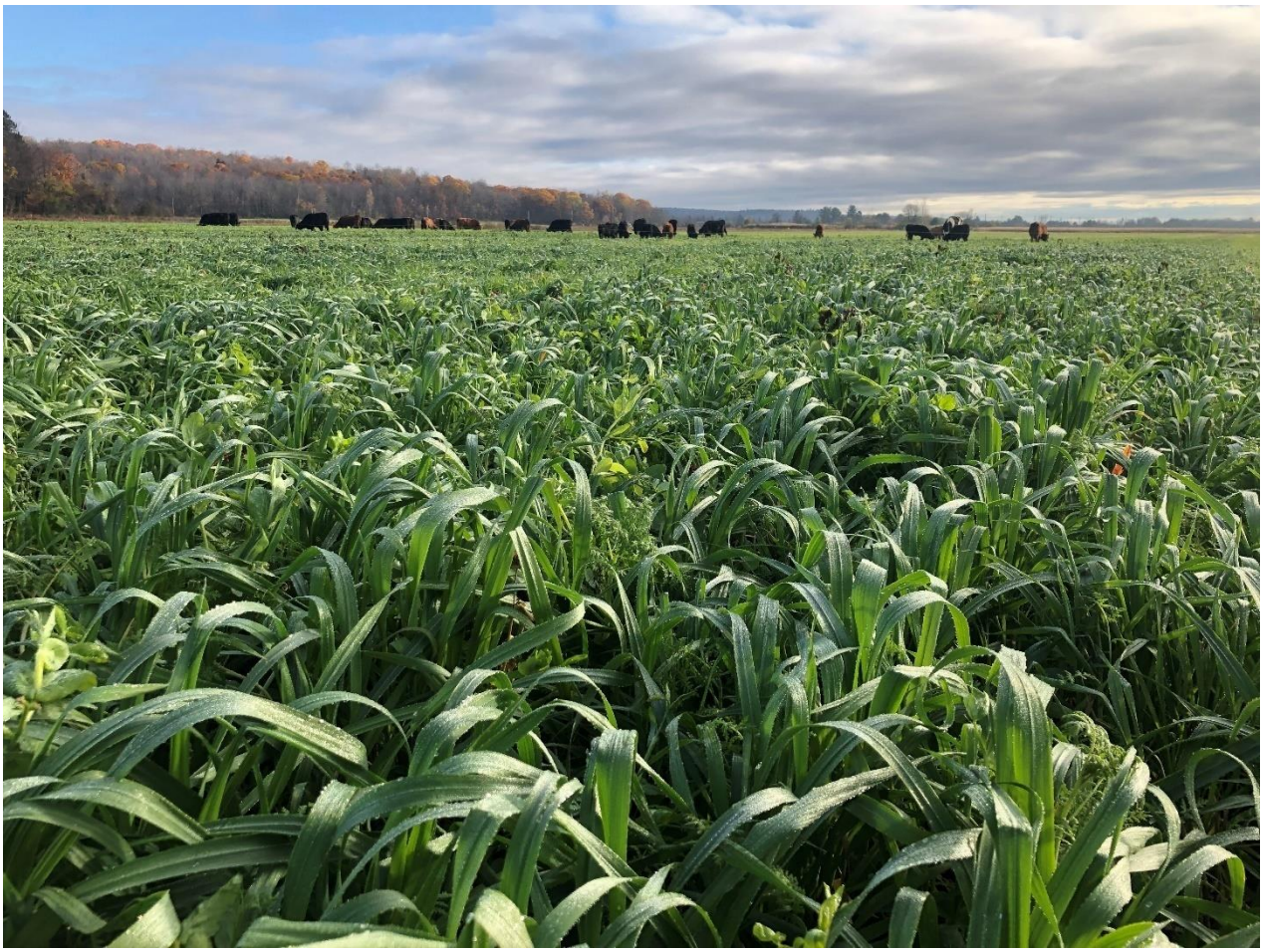
Picture 3: Closer view of the plots



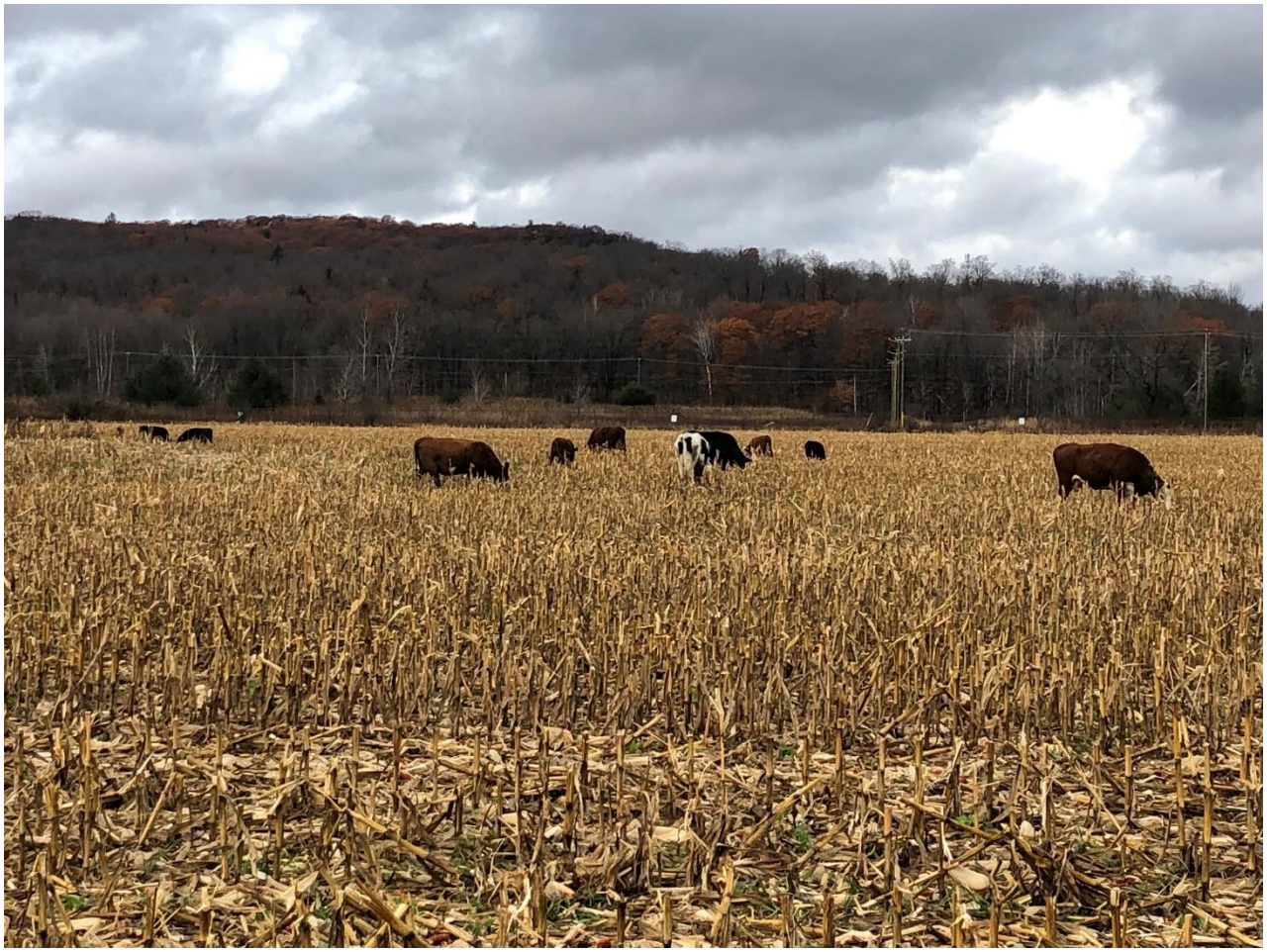
Picture 4: Pasture rotation



Picture5: M. Stéphane Guay with the Québec agriculture ministry M. Lamontagne

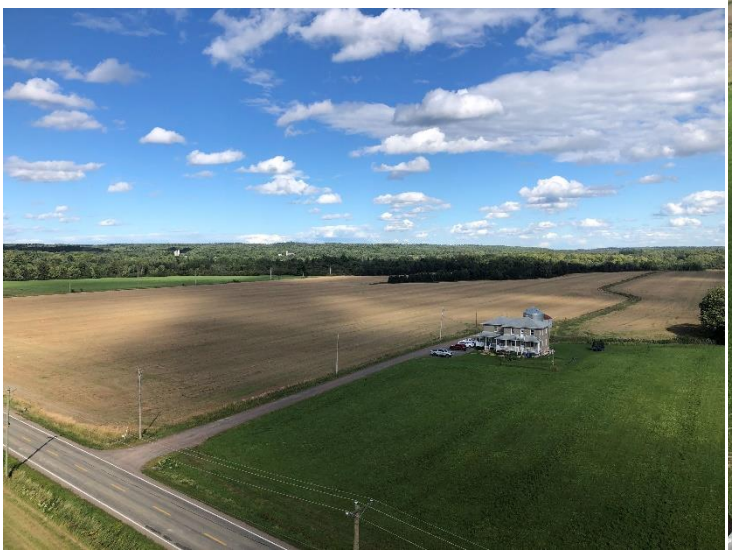


Picture 6: Herd in pasture with a foreground view of the corn field

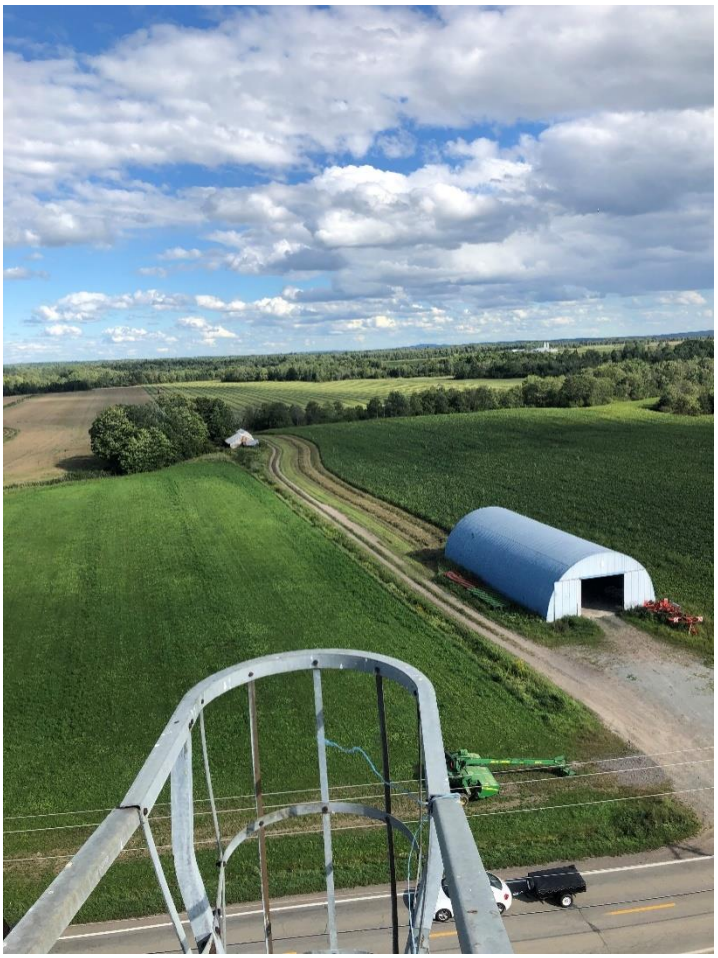


Picture 7 : Cows in corn stalks

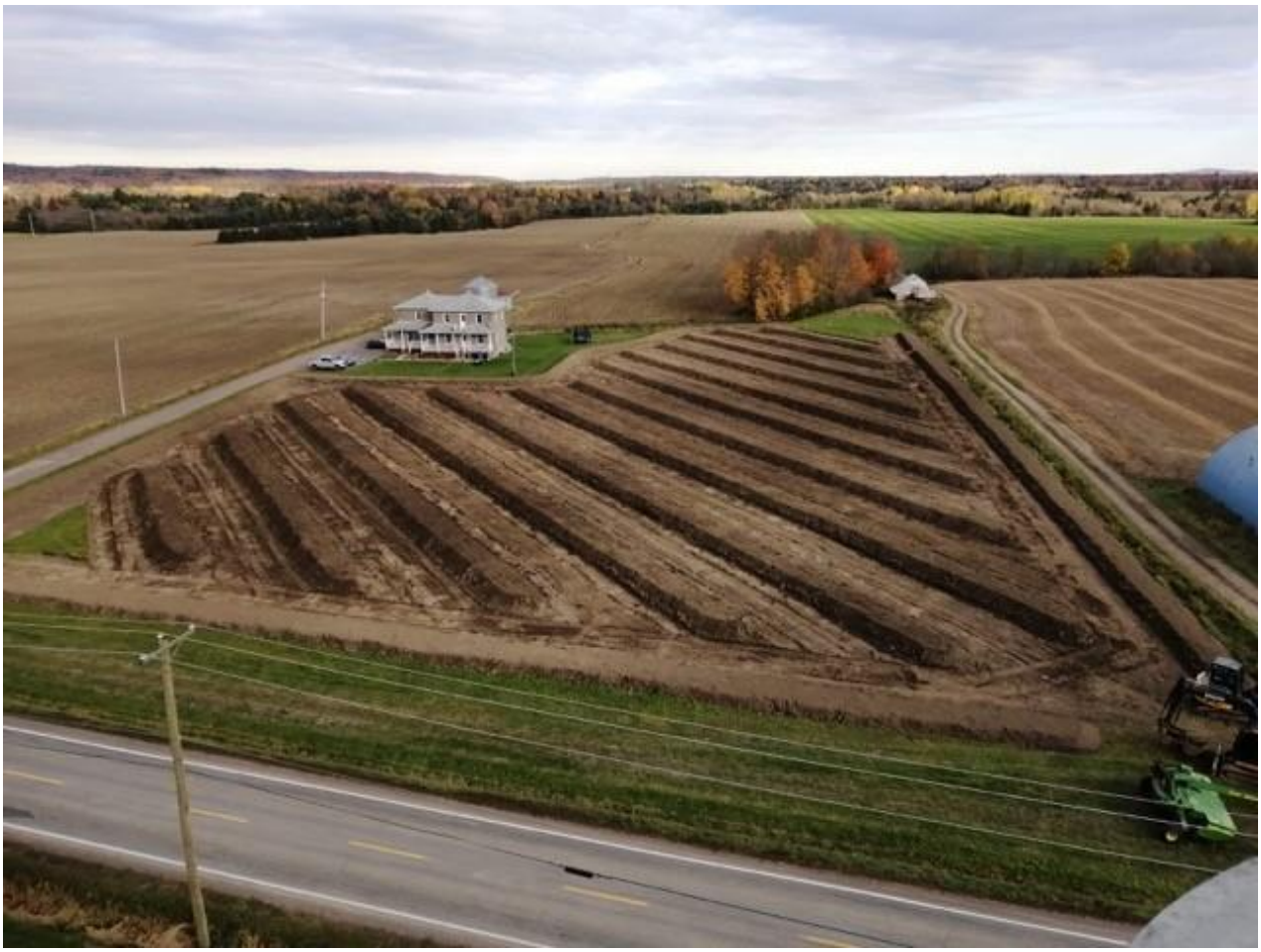
The farm before the food forest was created



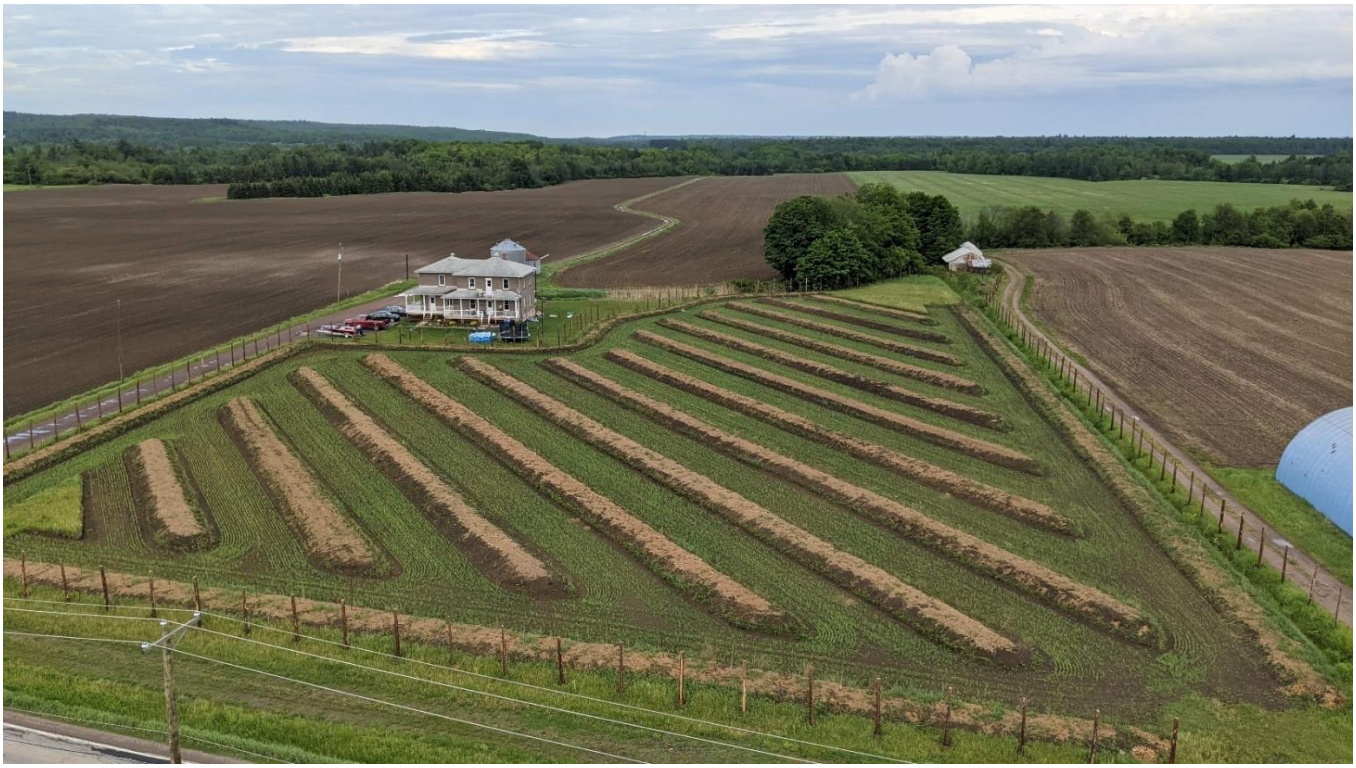
Picture 8 : Farm before work on the food forest



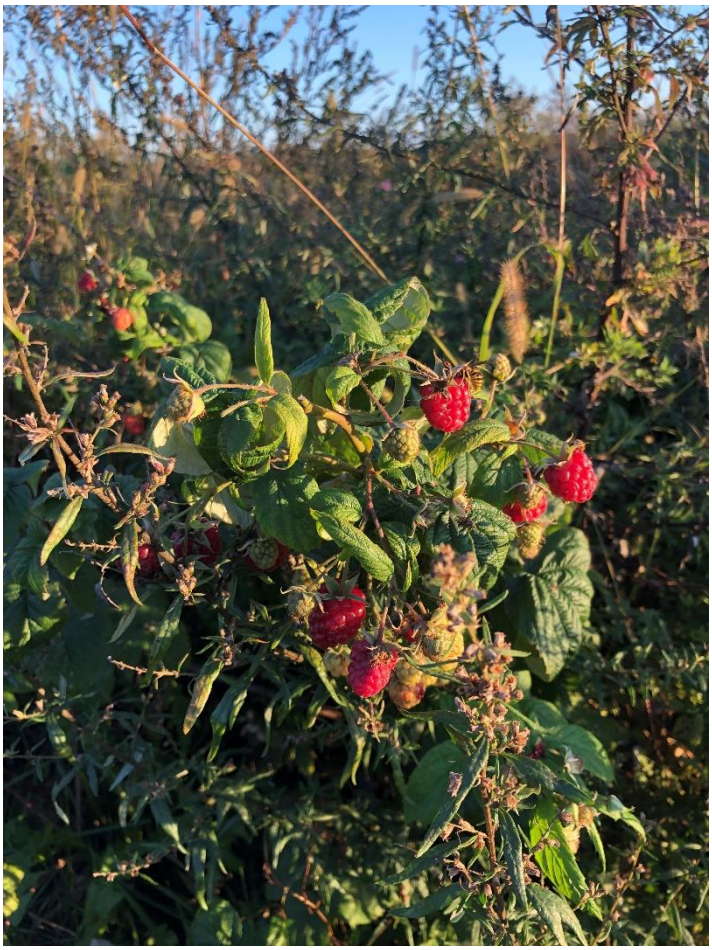
Picture 9: Farm view before work on the food forest



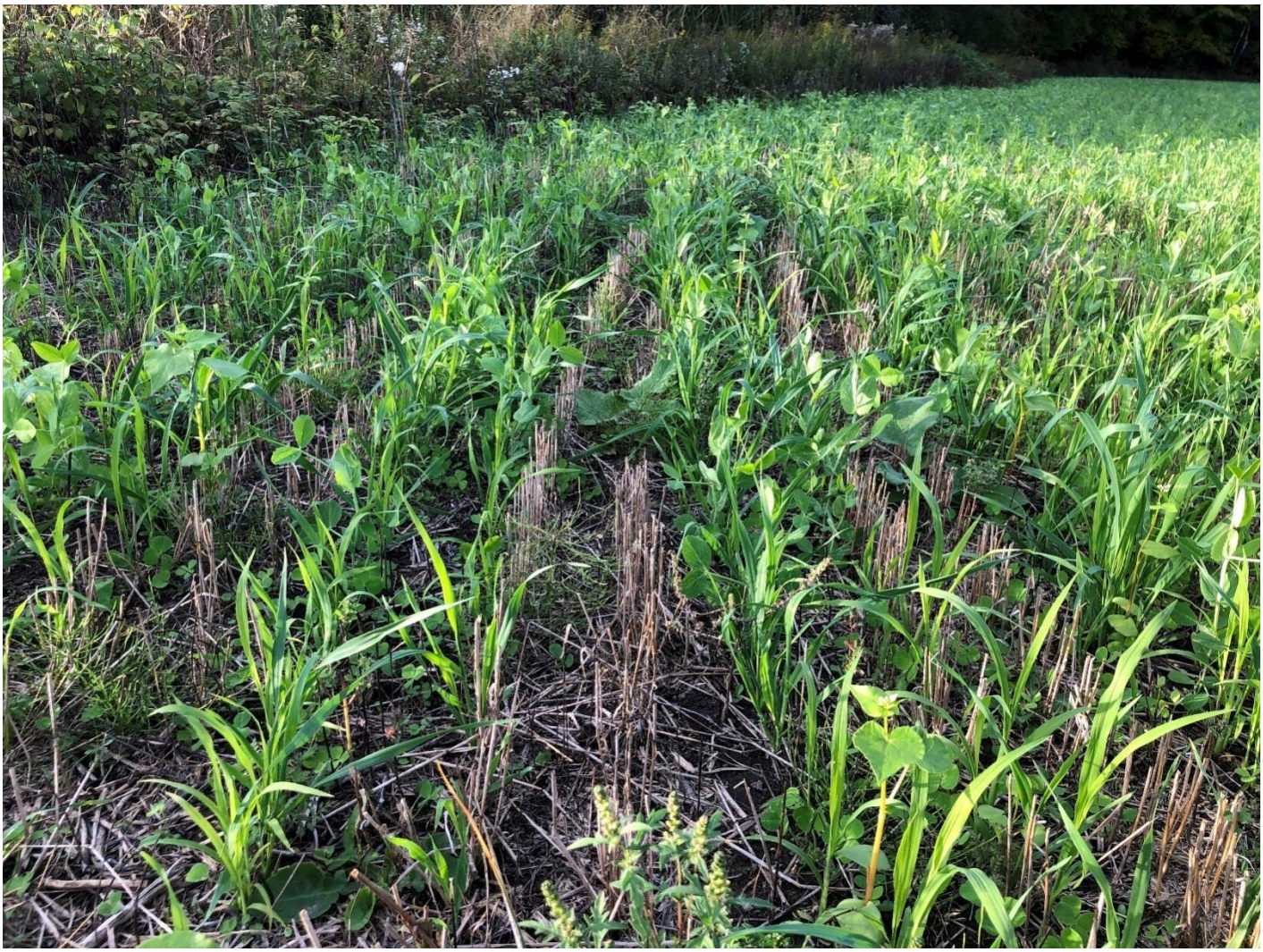
Picture 10 : Establishment of the food forest



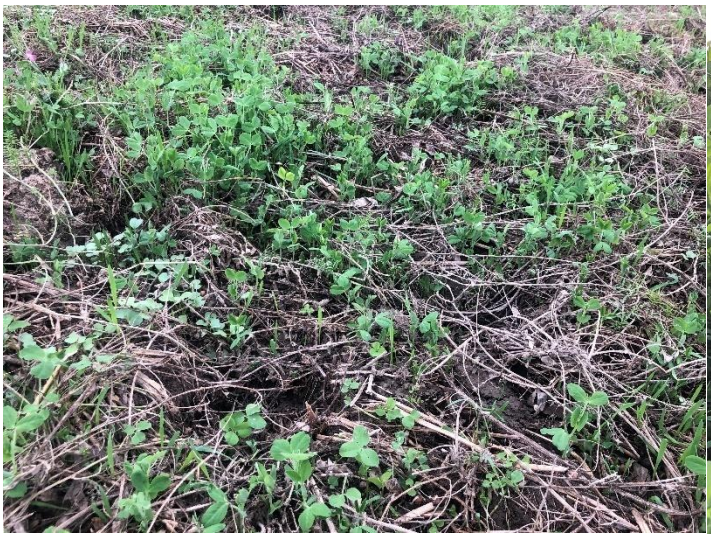
Picture 11: The food forest is planted; seeds are sown between the embankments; the vegetation cover spreads out.



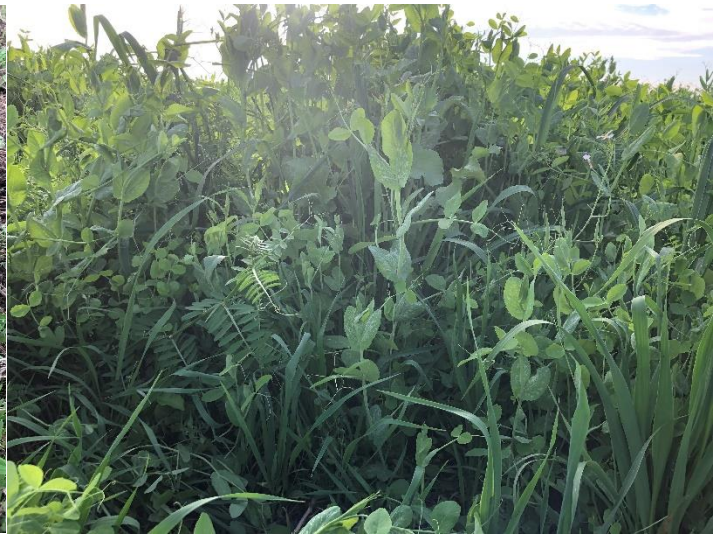
Picture 12 : Raspberries for wildlife



Picture 13: Intercrops and cultivar types in the pastures.



Picture 14 : Clover recovery



Picture 15 : Mix of peas and vescue