

# PERMACULTURE IN THE NORTH

## AN EXPERIMENT IN AGROECOLOGY

By Barbara Otrysko

**In 1997, my partner and I realized a dream and bought an abandoned ranch in the hopes of turning it into a viable organic family farm to supplement our forthcoming retirement incomes.**

Living on the Manicouagan peninsula, a delta on the North Shore of the St. Lawrence jutting 14 km into the “sea” as it’s known here, our farming choices were clearly limited. We finally opted to create a U-pick strawberry farm called Ferme aux Jardins des Prés.

The first year, having no experience with strawberries, we went ‘by the book.’ We added limestone and horse manure. After ploughing and tilling the soil, we planted our strawberries in rows 5 feet (1.5 m) apart with one foot (0.3 m) between the plants.

As I watched the strawberry plants sit there for the first two months surrounded by five feet of bare earth on either side of each row, I felt that something was not right. A little voice inside me would not be stilled. I kept looking around and seeing how bountiful Nature was in the boreal forest and even along the wind-blown coast. In fact, the only bare earth to be seen in Nature was on the beach between the sea and the high tide mark, and even there dune grass and other plants managed to send down their roots and create conditions for other plants to live and prosper.

The next few years involved a lot of

experimentation. In our rotation (a five-year rotation with two years of green manures and two years of strawberry production following the planting year), we experimented with between-row cover crops to cover the bare earth, improve fertility and decrease the weed problem. The challenge was to find a plant aggressive enough to fill in the space between the rows but not encroach on the strawberries. Despite trying a variety of species and planting times, we didn’t have consistent success.

We were still trying various combinations when we took a six-day gardening course called *jardinage auto-fertile*, loosely translated as self-fertile gardening, given

by Réjean Roy, an accredited teacher for the *Regroupement pour le Jardinage Écologique*. The course is based on the principles of permaculture with a focus on the garden and its relationship to its site.

We weren’t even halfway through the course when I had an epiphany. I realized that by applying these principles to our commercial operation I would no longer have to compromise between ecology and economics—between making a living and doing what



*Intercropped vegetables, herbs and flowers with small pond, rock pile and dead tree.*



*Constructing the permanent raised beds. Piles of wood chips and bags of leaves waiting to be placed in the alleys and on the beds, respectively.*



*Permanent raised beds a month after planting strawberries and asparagus. Encircled by raspberries and garlic.*

I felt was right for the Earth.

In 2004, we constructed permanent raised beds in our garden. We hilled and then raked the top to a 3-foot (0.9 m) width letting the sides fall naturally. We added a 4-inch layer of leaves and planted a variety of plants on each hill: perennials, biennials, annuals, flowers, herbs and vegetables.

We created ecosystems with plants to attract pollinators all season long (alyssum, borage,

nasturtium and broccoli left to flower); the parsley family for the parasitic wasps; the bean family for nitrogen fixation; and the onion family for their soil-cleansing attributes and so on. The results were beyond our expectations. I have gardened almost all my life, in southern Ontario, in the Maritimes and around Quebec City, but when I came to the North Shore I thought that I had lost my green

thumb as yields were low and the plants small. And, lo and behold, yields doubled without the addition of any compost or other amendment.

The following year, we established our first commercial plot, 0.4 acres (0.15 ha) with 32 permanent raised beds, 40-feet (12-m) long and 3-feet (0.9-m) wide on the level at the top. The area was encircled by a contour hill planted with raspberries and garlic. No soil amendment was added.

We placed two rows of drip irrigation on each bed and covered all with about 4 inches of leaves as a permanent mulch. The following spring we planted strawberries, a foot apart, as our main crop and asparagus on the north side as a secondary crop. On the south-facing slope, we planted other vegetables and herbs to increase diversity and provide an extra source of revenue. We plan to have a diversity of root systems, plant families and heights. We are striving to create guilds, create biodiversity, and create ecosystems which would become sustainable

### **Ferme aux Jardins des Prés**

An abandoned ranch with 132 acres (53 ha) mostly regrowth forest of birch, trembling aspen, jack pines, with an ericaceous (heath) understory. The front 12 acres (5 ha) were clear-cut and growing over in alder and willow. The back 25 acres (12 ha) are rented to a wild blueberry producer. The rest is left forested. Certified organic since 2002.

**Location:** North Shore of the St. Lawrence, halfway between Quebec City and Labrador.

**Soils:** 85–87% sand, 7–9% clay and 6–13% silt with a generalized cemented horizon (ortstein). The topsoil is only about 3–4 inches deep. The pH is 5.

**Growing season:** Zone 3a, 90-day growing season with cold springs and cool summers generally resembling that of Newfoundland with June-bearing strawberries ripening around July 20th (yes, July)!

**Main crops:** U-pick strawberry and raspberry.



*The first field one year later.*



*The new section with rows of vegetables around the newly planted strawberries.*

(ecologically speaking) and permit us to make a living at the same time.

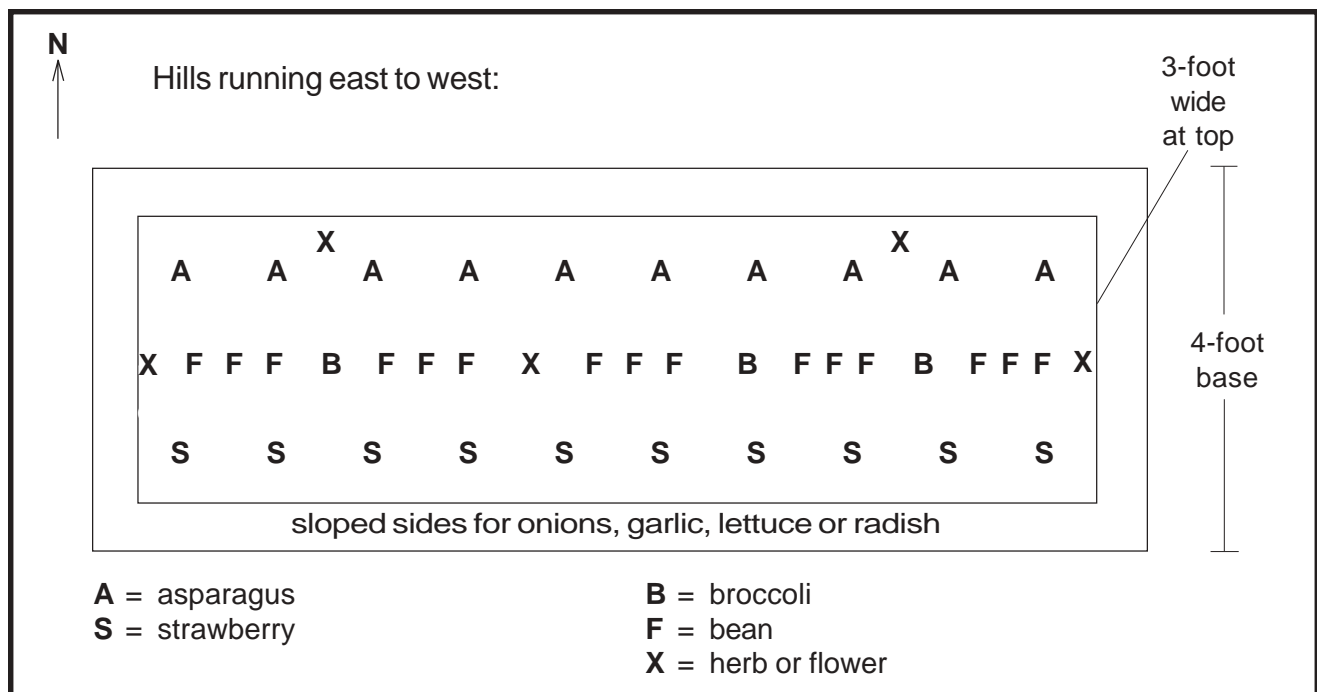
After only one year we were astounded by the results. The soil no longer resembled coarse sand but was dark, friable and sweet smelling. Where I had never even seen an earthworm, there were spiders, carabid beetles, millions of earthworms, millipedes and, yes, slugs. The yields of the annual vegetables were about the same

but I had put in no more than ten hours of weeding over the entire 0.7 acres which, in itself, was miraculous. No weeds, no diseases and no insect damage to speak of.

We are experimenting with using the bucket of the tractor to pre-shape the hills. We had looked at the various hilling machines but none seemed to answer our needs (and being at least 600 km from the nearest ag dealer doesn't help). But I am sure that someone who

is mechanically inclined could find a better way to do this.

In our first year of U-pick, we realized that we would have to adjust our hill width. Although a 3-foot wide raised bed is perfect for the home gardener, it is too large for the U-pick crowd who are often too excited at the sight of beautiful red berries to respect the rules of keeping feet, knees and hands off the hills. So in our new fields, hills are 2-foot wide.



Using self-fertile permanent raised beds, the high cost (which is mostly labour) is in the first year when we construct the beds. The cost of plants and drip irrigation works out about the same. However, in the conventional system the cycle starts anew every five years: the old irrigation lines are ripped out resulting in pollution, new strawberry plants are planted and new drip irrigation installed. With our permanent system, once the plants, hills, irrigation system are put in place, they are there, theoretically, forever. The only additional costs are the seeds for the annuals (and many of these re-seed or seeds can be saved) and the labour to maintain the mulch cover. In addition to the weed protection and fertilizing aspect, another advantage of the mulch is winter protection. Also, the raised beds allow for drainage in the case of winter rains which we have been experiencing for the very first time in the last few years (I suspect climate change).

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### **Yields doubled without the addition of any compost or other amendment.**

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Although we have not completed a full 5-year cycle yet, we do have two years of data. In 2006 and 2007, we compared the yields from our garden plot with the “conventional organic” field which had been planted with the same lot of the same cultivar within a few days of each other. In the first year of harvest, the garden plot yielded 2.5 times the

### **Jardinage auto-fertile**

Based on the principles of permaculture.

The objective is to create favourable conditions to attain equilibrium states of self-fertility and self-maintenance.

**Soil:** Construction of permanent hills which help drainage and create mini micro-climates. Once established, the soil is never again disturbed and there is no compaction. The soil becomes a living entity: resistant, resilient, stable and in equilibrium.

**Plants:** Diversity of plants in time and space: different plant families, heights and root types (living, dead, decomposing), which maintain the soil life.

**Mulch:** This is the workhorse of the system. It protects the soil and all of its creatures. It protects plant roots, maintains humidity and optimum temperatures, and creates shelter for allies (spiders, carabids, etc). On decomposing, it provides nutrients. Mulch greatly diminishes the establishment of annual weeds and the weeds that manage to grow are easily pulled out.

**Harvest:** We only harvest the edible portion of the crop. All the rest is left to decompose where it grew.

**Allies:** Ecosystems are designed to favour our allies (birds, reptiles, insects, etc.) by providing small ponds, dead trees, stumps, branches and rock piles.

yield in the field, and the second year, it had 3 times the yield on a linear foot basis. The strawberries in the field are now turned under whereas in our garden they will continue to produce. The surplus vegetables and herbs are sold to friends and neighbours but production could easily be expanded and the produce sold in a community supported agriculture system or at a farm stand.

We decided to abandon the old way of doing things. We plan to add a field or two every year until we obtain 12 acres (5 ha) of permanent raised beds. Each field is divided into three sections separated by 26-foot (8-m) wide hedgerows for wind control and to increase pollinator and predator activity. These are planted with a variety of trees and shrubs, the latter to provide flowers and fruit

for our winged allies. Although the hedgerows take up space, the increase in yield that we have seen should more than make up for the space taken out of production.

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### **Rather than struggling against the forces of nature, we are at peace.**

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It is less work and more profitable for us to produce strawberries and other small fruit than to switch to market gardening so we have simplified the polyculture. The challenge is going to be preventing the strawberries from taking over and becoming a monoculture. For our future plantings we are going to experiment with dwarf cherry

trees and perhaps Saskatoons and black currants as secondary crops with borage for its beauty, nectar and fungicidal properties to say nothing of its ability to self-seed. We will continue to add small quantities of the other plant families, herbs, flowers and vegetables to maintain diversity.

**We are farming from the heart with all that science can bring to light our path.**

The possibilities offered by this approach are endless with no two gardens, fields or farms ever quite the same. In many ways it is a relief not to try to control everything. We try to imitate what is going on in the natural ecosystem by substituting or inserting the crops we want to eat or to make a profit from. Mother Nature has evolved over millions of years and she knows what she's doing. This may sound anti-scientific but in fact is not.

Life creates life. When you let

plants and soils and insects do what it is their nature to do, the rest flows naturally. The effect on our customers is also remarkable. They are suddenly struck by a sense of awe in the presence of the Sacred. Rather than struggling against the forces of nature (weeds, wind, insects, etc.), we are at peace. We are farming from the heart with all the science that the fields of ecology, systems analysis, soil microbiology, entomology and all the other disciplines can bring to light our path.

*Barbara Otrysko PhD is a retired research plant pathologist. She and her partner are co-owners of the certified organic Ferme Aux Jardins des Prés where they are trying to live by the principles which they cherish. They would love to exchange with all who practice similar methods. Contact: botrysko@globetrotter.net*

*Photo credits: Barbara Otrysko*

For information on the Regroupement pour le Jardinage Écologique, see [www.rje.qc.ca](http://www.rje.qc.ca). Réjean Roy can be contacted at [roylesage@9bit.com](mailto:roylesage@9bit.com).

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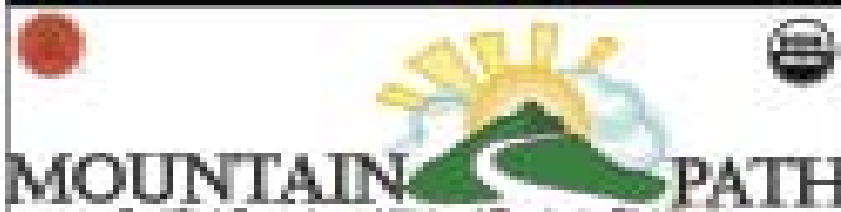
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