

SEVEN RAVENS

By Elizabeth White

Most of the year Michael Nickels can be found at Seven Ravens Farm, which he runs with his wife Heidi Cowan and their two children, Abbie (13) and Quinn (2) on Salt Spring Island, BC. But each winter, Michael visits Kenya to supervise and help the tree nurseries and permaculture gardens he has established over the last seventeen years. This article is about the permaculture operation at Seven Ravens Farm, the Salgaa Community Education Project in Kenya, and the farmer who transforms lives and land through his skill with trees.

Seven Ravens Farm is 38 acres (15 ha) of hilly and mostly forested land. Michael describes the view from the kitchen window in the summer “as a jungle of green that looks out through an edible landscape and collage of sculpted green leaves which filter sun and water to create a bounty of food.” There are fruit trees such as plums, pears, figs, persimmons and kiwis; berries including cranberries, blueberries, loganberries and blackberries; nut trees including heartnuts, butternuts and pecans; and edible bamboo. This diversity is the hallmark of permaculture.

Michael received a diploma in agriculture from the University of Guelph. He didn’t appreciate the conventional agribusiness model taught there and looked for organic approaches. He studied with the

late Henry Kock of the Guelph Arboretum who became his mentor and close friend.

After graduating, Michael worked on organic farms in Ontario and WWOOFed* on permaculture farms in Australia. He was impressed with permaculture’s multi-storied use of trees, rainwater capture and botanical diversity, and determined to establish a permaculture operation in Canada.

Seven Ravens Farm demonstrates that permaculture can provide a viable business model for organic growers in Canada, along with increased crop diversity and soil-building. Michael chooses not to certify the farm because the food crops are sold locally and his customers have confidence in the Seven Ravens’ products.

Off-farm inputs are limited to local reed canarygrass hay (used for mulch in the garden); newspapers, cardboard and horse manure to mulch beds in the tree nursery; and a small amount of bonemeal sometimes used when transplanting trees. No lime, sulphur or seaweed has been used in eighteen years of operation, yet crops are healthy and soil fertility appears to be improving. Michael believes that earthworms are largely responsible for the fertility by bringing up micronutrients from the subsoil.

Water management is important on Salt Spring Island. Precipitation is heavy during the winter and spring, but droughts are common during the summer and early fall. On Seven Ravens Farm, rainwater

* WWOOF: World Wide Opportunities on Organic Farms

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Permaculture, originally developed by Australians Bill Mollison and David Holmgren, is a design system applicable to food production, land use and community design. It seeks to create sustainable human habitats by integrating ecology, landscape, organic gardening, architecture, agroforestry, green economics and social systems.

Michael Nickels applies permaculture design principles to maximize sustainable productivity from a piece of land using its inherent characteristics—physical, biological and climatic—as the starting point. He uses a minimum of off-site inputs including fossil fuels.

catchment and storage includes two small ponds and many swales. Swales are shallow trenches that follow the contours of the land. The soil from the trenches is piled on the downhill side to form a berm. Small swales are dug by hand; larger ones are made with a bobcat. The swales trap water and reduce erosion. Mulch helps to retain water during the growing season; irrigation is used sparingly.

There are no tractors or rototillers on the farm. With the exception of chainsaws, Michael avoids fossil fuel equipment but will hire local contractors when heavy equipment is needed.

Local labour is also hired as needed. Michael takes on one to three apprentices each year who stay for a full growing season, and sometimes WWOOFers.

The farm has three income-producing components: the tree nursery; value-added wood products from the ecoforestry operation; and produce from the orchard and market garden, including fruit, vegetables and eggs.

Orchard and garden

The farmhouse is located in a clearing in the forest. The surrounding acre is an intensively-managed integrated orchard and market garden. Rows of fruit trees are pruned back to north-leaning leaders, leaving a sunny south aisle in front for espaliered rows of plums and pears, and vegetable crops. Grape and kiwi vines ramble along old fence lines. Blueberries grow in wetter areas. Leaf fall from fruit trees is left on the surface. Plant residues, including tree prunings, are composted in small piles at the base of fruit trees and in larger



Three dozen hens transform hard clay soil into healthy black loam.

windrows on swale berms.

When the property was bought in 1988, the soil was mostly clay with hardpan. Now much has been transformed to black loam. The miracle workers are 36 laying hens. They are constantly scratching and turning the soil, churning in the reed canarygrass mulch, adding manure, and eating sowbugs and earwigs. After 12 to 18 months of chicken treatment, the clay is converted to black loam full of earthworms. The chickens are rotated through a series of garden sections, fenced with 4-foot-high stucco wire on moveable metal stakes. The perimeter of the area is fenced with eight feet of the same wire to exclude deer.

The farm sells the fruit, vegetables, nuts and eggs at the roadside farmstand and to a few retailers in town. As the fruit yields increase, Michael is reducing the

amount of labour-intensive salad greens and summer vegetables he grows, and will limit vegetable crops to garlic, potatoes and squash to reduce labour requirements.

Future crops include almonds, persimmons and the nodules of the Japanese raisin tree. This perennial bush develops sweet woody edible nodules on the trunk. The Strawberry tree, also hardy in this area, is a type of arbutus with exceptionally large berries, sweet and white-fleshed with red skin like a swollen strawberry. Goumi is a Russian Olive, an eleagnis, with raisin-sized sweet purple berries. The farm is also growing Mediterranean olive bushes and pine nuts. Citrus crops will grow and produce in an unheated greenhouse, as will Texas avocados, Michael thinks, with a little frost protection.

Tree nursery

The tree nursery is the largest revenue generator and covers about two acres. Michael grows about eighty species including all of the trees indigenous to Salt Spring. He also raises eastern hardwoods for furniture, and many Mediterranean species. Almost everything is grown from seed, most of which he collects in his travels.

Every year Michael brings in a backhoe to scrape the trails which would otherwise become overgrown. This rich organic material is used to create raised beds for tree seedlings. Seeds are broadcast onto the beds. The one-year-old seedlings are pulled, root pruned and replanted. Root pruning encourages 'feathering' root growth, and makes future transplanting easier. When planted in a permanent location, Michael explains, the taproot develops normally, despite previous pruning.

In the heavy winter rains, the low-lying nursery land is flooded. Some drain tile partially drains the area, but the young trees do not mind wet feet. In May and June, a layer of newspapers is put down, covered with wood chips and then horse manure. This mulch retains water through the summer drought. Potted trees, and some of the saplings in raised beds, require irrigation, but the mulch reduces the need for watering. The seedbeds are not irrigated.

The tree nursery supplies edible fruit trees; nut trees; flowering trees; shrubs; medicinals such as linden, yew, ginkgo and black walnut; and a large selection of specimen trees up to 30–40 feet (9–12 m) tall. Michael sells about 2,000 trees a year. Ninety percent

of the nursery stock is sold to Salt Springers with the balance sold across BC.

Ecoforestry

The entire acreage is farmed, including the 30-acre (12-ha) ecoforestry area. All timber trees, hardwoods and softwoods, are pruned to improve timber yields and value. If possible, the limb prunings are used for furniture.

Recent windstorms resulted in blowdown of alder, maple and Douglas fir. Much of this will be used for furniture and architectural finishes. When blowdowns occur, the cleared area is planted with edible species such as edible oak, which produces a large, sweet acorn with low tannic acid. Heartnut is another unusual Carolinian species, named after the shape of its nut. Michael is now collecting seed from the first crops of nuts from the trees he has planted.

Soil fertility is maintained by leaving pruned material on the ground, including that from coppicing. When maple, alder and certain conifer seedlings are about 6 feet (2 m) high, Michael cuts them back to ground level. Five or more shoots result. He allows these to grow to about fifteen feet (4.6 m), and then selects the best shoot as a future timber tree and cuts the rest.

Recently Michael has started to leave more coarse woody debris in the forest. Dead trees are left standing as wildlife trees and left on the ground after they topple. While timber and furniture woods provide the biggest cash crop from the forest: mushrooms—shiitake, lion's mane and reishi—are produced on inoculated alder. Future plans include planting



Michael uses slabs of wood to make furniture such as this bench.

ginseng under the young stands of eastern hardwoods as soon as the canopy provides sufficient shade.

Each year, Michael produces a small pre-cut post and beam structure which he delivers and erects on the customer's site. The forest has enough Douglas fir to sustainably harvest wood for two or three such timberframe buildings. He also crafts magnificent slabs of wood, 2 to 4 inches thick with bark left on, into tables and benches. Breadboards are low-cost items popular with visitors.

African adventure

Shortly after purchasing the Salt Spring farm, Michael travelled to Kenya for a vacation that would change his life. The poverty and denuded landscape demanded help. Visiting a large, European-owned ranch, Michael was struck by the fact that the farm was not producing any vegetables for their own consumption, nor undertaking reforestation. With the cooperation of his hosts, he began to experiment with an African



Michael at work in the tree nursery.

version of the permaculture gardens and tree nurseries he was creating on Salt Spring. The tree seedlings grew rapidly and he initiated tree nursery projects in local schools. The permaculture garden flourished. For the last

seventeen years, Michael has returned to Africa annually to monitor the projects and help establish others. The original permaculture plots soon became demonstration gardens for village homesteads. A homestead is a private farm, usually about one acre in size, that supports a family of six to fifteen people. Most homesteads grow a meagre crop of maize, and not much else. Michael travelled to different rural communities to learn about their needs and struggles to secure enough food. Water was the largest challenge. Unlike the European-owned farms, the villages did not have deep wells, pumps or piped water. Using

permaculture practices, Michael channelled storm runoff into swales to capture the water and release it slowly. Hand-dug ponds held the excess rainwater for months into the long dry season, thereby extending the growing season.

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Salgaa Community Education Project

The Salgaa Community Education Project was Michael's first fully functional permaculture garden established for a village homestead. Michael, with financial support from the Salt Spring Island Rotary Club, provided the labour and materials for fencing, laid out the gardens and helped dig swales and dams.

The one-acre plot contains 20 to 30 varieties of fruit and vegetables. The plot also contains firewood stands that provide fuel for the farm, beehives and forage for livestock.

Creating an African forest

Michael has found that it takes only three to five years to create a forest in areas of Africa, using entirely organic methods. He has helped to establish several tree nurseries, permaculture gardens and dryland restoration projects where annual rainfall is 12 to 28 inches (31–71 cm). He has encouraged the skilled nurserymen to establish their own nurseries and provided them with resource materials.

Most of the projects are in Kenya, with one in Tanzania and one in the South African Townships, spearheaded by another Salt Springer, Gary McNutt, and SOLID**.

**Saltspring Organization for Life Improvement and Development, SOLID (125 McPhillips Ave., Salt Spring Island BC, V8K 2T6 250-537-0863) works in partnership with the Victoria International Development Education Association, www.vida.ca.



Ngare Ndare Drylands Restoration Project: a joint project by Borana, Seven Ravens Ecoforestry, and the Sustainable Agriculture Research Institute.

