Saratoga Apple

Nutrient Dense Farming

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In the roadside farm store, owners Nate Darrow and Marie Christine Gaud sell the apples they grow and their own freshly pressed, additive-free cider year round. In season you'll also find other fruits and vegetables raised on their farm in addition to the other foods they stock, many from local producers. During the fall, the farm becomes a fun destination for pick-your-own excursions.

On the surface, Saratoga Apple seems like a fairly ordinary apple orchard. Actually though, this farm deserves special notice. Nate has been quietly making important changes in his farming practices to improve the quality of his already distinguished fruit. His ambitious aim is to grow the most "nutrient-dense" food possible. Nate has been studying how to do this through a series of intensive workshops, and applying his new knowledge.

What is nutrient-dense all about?

Growing organic apples commercially in the Northeast is considered very difficult because a large complex of serious apple pests and diseases thrive here. The region has only a very few organic apple orchards that sell fresh eating-quality fruit.

Proponents promote nutrient–dense farming as the next frontier after organic. It also garners interest as an effective approach to produce food organically.

This common-sense yet revolutionary approach starts with the premise that a functioning soil ecosystem teaming with life will make more nutrients available to plants. Organisms like bacteria, fungi and earthworms break down organic material and minerals into forms that plants can absorb. Therefore healing the soil is a key to packing more nutrition into fruits, vegetables, and other crops.

"We can assume that most farm soils have been abused," said Nate, who grew up on Green Mountain Orchards in Putney, Vermont, a traditional large apple farm that his brothers now own and manage.

Chemical fertilizers and pesticides are responsible for much of the problem. These fertilizers harm soil microorganisms and destroy organic matter and soil structure. By definition, pesticides are toxins, and many of them are deadly or even deleterious to certain life forms. Nate points out that Roundup, the world's most widely used herbicide, acts as a powerful chelating agent. That means it binds up minerals, making them less available to nourish crop plants, while killing weeds.

Nate has begun thinking of his orchards "as a giant worm farm." That makes his challenge being able to produce good fruit without harming the worms!

"We're trying to learn to grow higher brix apples, by having more microbial activity in soil," Nate said. Brix measures soluble solids in the juice of a fruit or vegetable, or sap of the plant itself. Winemakers measure brix in grapes with an instrument called a refractometer that uses the refraction of light to determine their sugar content. Now nutrient-dense practitioners have picked up this tool to assess how well their farming methods are succeeding.

If you ask Nate, he'll make it absolutely clear that he hasn't yet arrived at his goal. And though we've been acquainted for over a decade, he modestly tried to decline my request for an interview. But despite having a long way to go, there are tangible indications of Nate's progress:

- After progressively weaning the orchard off herbicides, Nate no longer uses herbicides of any kind on the farm.
- He also decided to refrain from all "skull and crossbones" insecticides–ones that are most acutely toxic. He's done so while continuing to produce good crops of unblemished apples.
- He has given up using conventional chemical fertilizers. In their place he has gone to organically acceptable soil amendments such as rock

powders, sea minerals and compost.

- For about eight years, Nate has experimented with organic practices in a small portion of the orchard, and what he learns there is influencing his orchard management practices overall.
- To mark his 60th birthday, Nate invested in new equipment so he can make a more rapid transition to a chemical-free, nutrient dense orchard.

Eventually, Nate thinks he won't need chemical pesticides anymore. According to the theory, once you get the brix in the sap of your crops high enough, the plants become immune to fungal diseases and unappealing to insect pests.

"Insects and disease come in to clean up unhealthy plants. They're nature's garbage disposal," Nate said. As an avid gardener, I observed that plants growing under adverse conditions are often more prone to ravages of hungry bugs and slugs, and the attacks of the various blights, wilts and mildews.

Fallacy of chemical fertilizer

Most apple growers and other farmers use concentrated chemical fertilizers on their land. Nate says that using these quick-acting, water-soluble materials is "almost like feeding rocket fuel." Typically they deliver three nutrients plants need in the greatest quantities–Nitrogen, Phosphorus and Potassium, known in short as "NPK" after their chemical symbols.

Crops fed with such chemical fertilizers tend to grow big and fast, but may lack a balance of essential micro-elements. A typical chemical fertilizer regime doesn't allow crops to attain their potential for vitamin, mineral and beneficial phyto-chemical content.

(Phyto-chemicals are compounds plants produce to deter insects and protect themselves from some diseases. These diverse plant chemicals also give foods their distinct flavors. This category of chemicals includes anti-oxidants, heart-healthy, cancer-fighting compounds, and precursors to vitamins.)

Exploring different ways to nourish crops

Saratoga Apple stores the orchard's apples long-term so customers can buy them year round. Biologically, stretching the apple season that long is "pushing the limit," Nate noted. Over the years, he found that using rock dusts and sea minerals on the orchard land has given his apples better keeping ability. And these soil amendments also make the apples tastier, too.

About eight or nine years ago, Nate started using various rock powders to remineralize his land. These minerals become available to plants extremely slowly, in a timeframe calibrated in years. They also are extremely bulky, and different equipment is required to spread it, which Nate acquired this year.

"We were bringing in finely ground rock dust from the west coast," Nate said, but he had second thoughts about the cost and the environmental impacts of having two tractor-trailers drive "clear across the country." Now that he has the means to spread larger amounts, he can get coarser rock powders more locally. Quarries in the business of selling sized stone "practically give away" their leftover dusts. Trucking remains the main expense.

Besides rock dusts, Nate uses smaller amounts of sea minerals to his soil. This product is sold minus the sodium and chloride, which hardens clay soils.

"The reason we use sea minerals is that there are over 100 elements in the Periodic Table. In our human artifice, we're not smart enough to know what micro and pico nutrients crops need," Nate said. He also suggests other ocean products, such as kelp meal or seaweed.

Even in liming his soil, Nate is unconventional. He selects a lime product for its microelement profile and the proportion of calcium to magnesium.

Most farmers just want lime for its pH effect. Lime is used to reduce acidity in soil, thus raising the pH. "Nutrient dense farming says put on the amount of nutrients you need and the pH will take care if itself," he explains.

This year Nate tried a pelleted organic fertilizer on the entire

orchard, and it worked well. Customers can buy a bag of it at Saratoga Apple.

Take a look at most orchards and you notice a brown strip under each row of trees. That dead zone is a result of an almost ubiquitous practice of spraying herbicides around orchard trees to kill weeds and grass. Such vegetation competes with apple trees for water and nutrients, and it's also a nuisance at harvest and other orchard chores. Only orchards that still have traditional, standard (full-size) apple trees tend not to use herbicides.

When Nate was a boy, his family had "a grassed orchard" where no herbicides were used. Eventually, they started using herbicides. Everywhere these chemical applications had become a normal part of growing fruit.

"When I did the project in South Carolina, we used herbicides on everything," Nate recalled. This project was a thousand-acre Granny Smith orchard that a group of French investors hired him to plant and manage in 1980s.

He told me a story to explain why he quit using herbicides, a major step away from toxic chemicals. Apples are stored in giant wooden bins. Each one is labeled to keep track of which section (or "block") of orchard the apples were picked in.

Nate said they noticed some apples coming out of long-term, controlled atmosphere storage had more decay than others. They had a significant amount of black spots and a lot of fruit was lost to internal decay. He noticed that the affected apples came from the blocks where they used herbicides.

"It made quite an impression on me. I just decided to stop using herbicides," said Nate.

He committed extra labor to mow six times a year rather than spraying with a cocktail of long-lasting herbicides once annually. Every time they mow, they are also mulching and in effect fertilizing the trees.

Rejecting herbicides also has created a need for expensive, specialized equipment that can mow close to the tree trunks. This year Nate purchased a couple of European offset grooming mowers.

These mulching mowers have bumper wheels to allow the operator to mow between trees. "You have to be careful it doesn't eat baby trees," Nate warns.

Nate's organic experiment

Since around 2002 or so, Saratoga Apple has managed five acres of apple trees according to organic principles. This "bio" block, short for "biologique," the French word for organic, is part of a section of the farm where the trees had been abandoned when Nate reduced the size of the orchard. Nate said the fruit quality of the bio apples has been improving, though it still can be better

Given the shift in horticultural practices at Saratoga Apple, there is no difference in the fertility program in the bio block and the rest of the orchard.

Organic does not mean pesticide-free. But in the bio block only pesticides allowed under the National Organic Standards are applied. Nate has used kaolin clay, copper, sulfur, dormant oil and a blend of plant essential oils there to control insects and diseases.

The catalyst for this ongoing experiment has been Christine, Nate's wife of almost 30 years. She's French, though that is not the source of her interest in pure food. She would prefer that the farm used no pesticides of any kind, but she also understands the present realities of growing apples for a living.

This year, Nate attended the first organic apple school for growers in Ballston Spa that Cornell University has held. He said that Michigan State University held its first annual organic apple school three or four years ago.

A foundation of good employees

None of these changes would be possible without a capable, dependable workforce of both local and Caribbean employees. Like most orchards, Saratoga Apple relies on foreign employees for picking and much of the pruning. But here, the Jamaican crew that comes through the federal H2A foreign worker program is "the same six guys every year," Nate said. Joseph, his son Damien, and his half-brother Clive come in the spring and are joined by Austin, Junior and Alvin for harvest. Some of these men have been working at Saratoga Apple for about fourteen years. For a number of years, Nate also traveled to Jamaica for a winter vacation, hosted by Joseph and his family who he compensated.

Growing for their customers

As the farm manager on a huge South Carolina apple plantation, Nate discovered the beauty of direct marketing. "We were in an apple deficit area and people came knocking on the door wanting to buy apples," he said. But despite taking in thousands of dollars a day from on-farm sales, that orchard ultimately failed because the owners had located it in an unsuitably hot climate where many of the apples got sunscald.

When Nate was ready to purchase his own orchard, this experience made him want a retail orchard. In 1994 he found the Schuylerville orchard in the inventory of the federal government. The former owner defaulted on the mortgage, which was held by a branch of the USDA.

When the Darrows purchased the farm and renamed it Saratoga Apple, it had 126 acres of apple trees. Over the years, Nate downsized the orchard plantings to just under forty acres of the best trees and most desirable varieties. This total includes the 6 acres of newer varieties Nate has planted such as Honeycrisp, Gala, Jonagold, Gingergold, Fuji and Braeburn. Having less trees to care for helped him achieve his goal of selling all his fruit direct.

Since then, Saratoga Apple has evolved into more than an apple orchard. They grow sweet cherries, plums, peaches, nectarines and apricots as well as small fruit like raspberries and they have put in blueberry bushes. In the spring they have lots of asparagus and rhubarb, and peonies in June. Besides vegetable crops grown in the field, across the road from the farmstore, Saratoga Apple has put up two high tunnels (greenhouse-like structures) to have more vegetables early and late in the season.

The September and October apple harvest is Saratoga Apple's busiest season. The orchard is open for U Pick apples seven days a week. On weekends they provide live music. Country fiddlers play on Saturdays from 11 to 2, and Robanic, a reggae calypso band from Saratoga Springs, performs on Sundays from 2 to 5. Customers who come to pick on weekdays get a discount.

Saratoga Apple can also be found at a number of area farmers markets. They sell at the Troy, Saratoga Springs, and Glens Falls year round farmers markets, which Nate calls "the gold standard" as "producer-only, grower-administered markets." The orchard also participates in an almost year round farmers market in Dorset, Vermont, as well as others in Queensbury, Cambridge, Warrensburg and Manchester, Vermont, and at Skidmore College.

Saratoga Apple,
1174 Route 29, Schuylerville, NY 12871.
518-695-3131
www.saratogaapple.com
Open year-round: 9am – 6pm
daily hours to 7pm in September and October

To find out more about nutrient-dense farming:
www.realfoodcampaign.org