

FROM THE GOOD EARTH

FRESH AND FULL OF BEANS: VERMONT SOY

BY KATHERINE QUIMBY JOHNSON

The weather outside may be frightful, but Vermont Soy's production room is a delightful place on a chilly day. Warmed by grain-scented steam and gleaming with dairy-grade equipment, some of it purchased from farms leaving the traditional milk business, the room resembles nothing so much as a traditional dairy. However, its products—four flavors of soy milk and a firm tofu—are, of course, dairy-free.

Vermont Soy, which debuted at the Hardwick and Waitsfield farmers' markets in the summer of 2007, grew from co-owner Todd Pinkham's desire to turn the tempeh he made at home into a commercial venture. With a twist that speaks volumes about the changing face of agriculture in Vermont, Pinkham's research on soy processing was the last project run at the research plant in the old Carrigan Dairy Science building at the University of Vermont, before that facility's deconstruction. (The research facility is now housed in a new addition to Marsh Life Sciences.)

"Our goal is to make authentic-tasting tofu and soy milk," says Sophia Smith, product outreach coordinator. One sip of Original flavor Vermont Soy milk or one bite of the smooth tofu and, even if you've never traveled to Asia, you know these products are the real thing. The flavor is clean and simple, a mingling of grain and nut unmarred by preservatives. This is soy milk to savor, tofu to eat unadorned, although both are equally tasty as part of a more complex dish.

In addition to producing authentic products, Pinkham's and partner Andrew Meyer's more ambitious goal is to help maintain Vermont's working landscape and contribute to the diversification of its agriculture. With the incentive of income that is at least twice that of corn per ton, plus support and technical assistance from UVM's Innovative Agricultural Initiative, half a dozen farmers around the state have begun growing organic, food-grade soybeans. In fall 2007, from Alburg and Highgate to Bridport and Orwell, and as close to home as neighboring

Pictured left to right:
James Lewinsky,
Sophia Smith,
Andrew Meyer and
Todd Pinkham



Glover and the next hill in Hardwick, farmers harvested the dimpled pods of soybeans. "All our tofu is made with Vermont beans," Smith says.

"It's all about working together and supporting a community in Vermont," says Meyer. Vermont Soy's community support extends to other facets of production as well. The vanilla that flavors three of the four soy milks is imported by ForeTrade in Brattleboro (before being made into extract in Philadelphia). The recyclable milk bottles are manufactured by Shelburne Plastics. Until Vermont Soy builds an on-site silo, much of the harvest is stored at High Mowing Seeds in Wolcott.

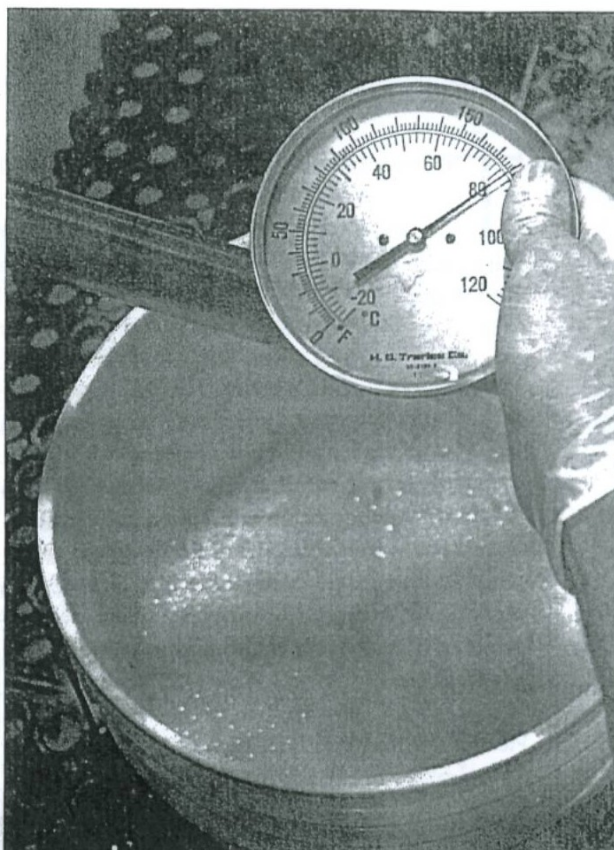
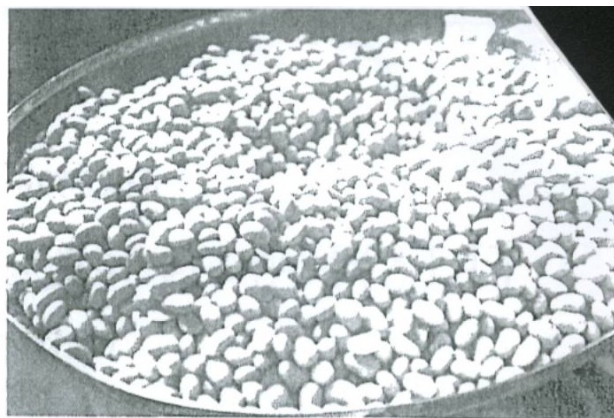
Soy milk and tofu production begin with the same process. Pre-soaked manila-colored whole soybeans are loaded into a soy-milk extractor where they are first pulverized into a slurry. Steam kills any bacteria and makes the proteins digestible. After the volatile gases are sucked off, the slurry splits; the buttery-gold *okara*, the hulls and unincorporated pulp, flies in one direction, while the creamy soy base, the color of the richest Jersey cream, flows in the other.

Okara is traditionally used to make dumplings or veggie burgers. Vermont Soy hasn't reached that point yet, so the *okara* it produces is disposed of—locally. Some goes to a mushroom grower who has found the sterile organic matter to be the ideal medium for mushrooms, some feeds pigs, and the rest goes to High Fields Institute, right down the road, for composting.

When the soy base is being made into milk, it moves to a liquefier, where water and flavorings are added. Vermont Soy milk maintains its fresh flavor by eschewing ultra-pasteurization in favor of high-temperature, short-time pasteurization. "We're unique in New England for having fresh soy products," Smith says. She reports, "Asian visitors tell us our products remind them of home."

Tofu, Vermont Soy's newest product, is more labor-intensive than soy milk. As with so many traditional Asian products, the process of making it is as much art as science. As he slowly stirs the mixture of heated milk and *nigari* (magnesium chloride purified from sea water, the traditional coagulant), Pinkham explains, that in Asia tofu-making was a ritual learned through apprenticeship.

At Vermont Soy, each batch of tofu is made by hand, with care and attention. Ask Pinkham how he knows when the tofu is ready to be



poured into the cloth-lined cheese forms and he replies, "You have to be able to read it." Vermont Soy's extra-firm tofu is the result of slow cooling after pressing. "If you have good beans, you have the flexibility to make the kind of tofu you want," says Pinkham.

Nigari is not the only coagulant that is used to make tofu. During the pause between rounds of careful stirring, Pinkham explains that large producers are much more likely to use calcium sulfate, which yields a softer tofu. "Both do the same thing, in terms of coagulation, but tofu made with *nigari* tastes better," Pinkham says. One bite of Vermont Soy's tofu confirms that statement. The taste is clean, mildly like grain, and there is none of the slight chalky taste that so many mass-produced tofus leave at the back of the tongue.

All Vermont Soy products are made fresh weekly at the Hardwick production facility that adjoins Meyer's other venture, Vermont Natural Coatings. On Mondays all four milk flavors are produced and bottled. "It's a good long day," says James Lewinsky, one of the six full or part-time employees. Tofu day is Thursday.

Because they contain no preservatives, Vermont Soy's products are distributed as fresh produce, and should be treated that way by consumers. The tofu is currently sold in bulk to co-ops like Hardwick's Buffalo Mountain, which goes through 100–150 pounds a week. It is also part of Pete's Greens CSA.

"Buffalo Mountain Co-op was the first to taste our tofu," Smith says. The Hardwick co-op and Sterling College, another tofu customer, provide feedback about the product.

Vermont Soy milk and tofu are worth the effort, and the wait, it may take to find them. While the American Heart Association did reverse its endorsement of soy for heart disease in 2006, it continues to say that because soy contains no cholesterol or saturated fat and is high in fiber, it may be beneficial overall, as part of a healthy diet. But the best reason of all to buy Vermont Soy's milk and tofu is flavor.



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THE JOY OF EATING SOY

Although they are delicious year-round, Vermont Soy's products seem especially winter-friendly. The grain-like elements of Original or Unsweetened soy milk bring out the best in a bowl of hot oatmeal with raisins. The Dutch-processed cocoa powder that flavors Vermont Soy Chocolate yields a perfect mocha when mixed half and half with fresh-brewed coffee and topped with a grating of cinnamon. For a taste of Asian soy tradition, we suggest Chinese Noodle Soup with Cabbage, while soy milk puts a new twist on traditional New England pumpkin pie.

CHINESE NOODLE SOUP WITH CABBAGE

By Andrea Chesman

Nothing takes the chill off winter like a big, steaming bowl of soup.

Serves 4

8 cups chicken broth
Soy sauce to taste (amount depends on saltiness of broth)
1 tablespoon Chinese rice wine or dry sherry
6–12 dried wood ear mushrooms, chopped if large
2 tablespoons minced fresh ginger
3 cloves garlic, minced
3 scallions, finely chopped
Salt and freshly ground black pepper
¾ pound Chinese egg noodles or Japanese udon noodles
1 tablespoon dark sesame oil
1 pound firm or silken tofu, cubed
4–6 cups chopped Chinese cabbage, bok choy or other Chinese greens, or a mix of cabbage and greens
1 carrot, julienned
Chinese chili paste with garlic (optional)

Combine the broth, soy sauce, wine, mushrooms, ginger, garlic and scallions in a large saucepan. Add salt and pepper to taste. Simmer for 25 minutes.

Meanwhile, bring a large pot of salted water to a boil. Add the noodles and sesame oil and cook until just barely tender. Drain well and return the noodles to the pot to keep warm.

Add the tofu, cabbage and carrot to the broth and simmer for another 10 minutes, until the carrots are tender.

To serve, place a nest of noodles in each bowl. Ladle the broth, vegetables and tofu over the noodles and serve hot, passing the chili paste at the table for those who like a little spice in everything they eat.

Recipe adapted from *Serving Up the Harvest*, by Andrea Chesman (Storey Publishing). Copyright 2005, 2007 Andrea Chesman

The other white milk

Highgate farmers join test to see if Vermont can produce milk-quality organic soybeans

By Tim Johnson
Free Press Staff Writer

HIGHGATE — When it comes to diversity of use, few crops can match the soybean. Never mind tofu. Henry Ford even built a car from soy byproducts.

Now it seems that the soy plant's diversity extends to its range of cultivation. Never mind Illinois and East Asia. Why not northern Franklin County?

Bernard Rainville and his son, Louis, have been growing organic soybeans as livestock feed since 2004. This year, through a University of Vermont program called Agricultural Innovations, they took it to another level: a test plot of seed varieties that might help stoke the state's fledgling soy milk industry.

Their farm was one of six sites in northern Vermont with trial plots for five varieties of organic soybeans. High on the list of questions the project seeks to answer: Can organic food-grade soybeans be a lucrative crop for farmers in Vermont who want to diversify? Will any of these test varieties yield quantities and qualities that measure up to the rigorous standards required for human consumption?

Soybeans have been grown in Vermont for years — they fix nitrogen in the soil and are useful in crop rotation — but almost exclusively for cattle feed. For soy milk or tofu, the quality bar is higher: the beans have to be unblemished, with no stain or discoloration. So, when the Rainvilles drove their

combine into their 13-acre test plot a few weeks ago, they wondered how well their harvest would measure up.

Soy, ahoy

National sales of soy foods increased 12-fold from 1992 to 2006, from \$300 million to \$3.9 billion, according to the Soyfoods Association of North America. Sales of soy milk alone grew 7.2 percent from 2005 to 2006.

In Vermont, Todd Pinkham and Andrew Meyer see a niche market for organic soy milk, which they started making at a plant in Hardwick last spring. Vermont Soy's Web site lists 50 retail customers in Vermont and 15 in New Hampshire, Massachusetts and New York. One distinctive feature of Vermont Soy's product is that it comes in recyclable plastic bottles instead of the aseptic containers common in the commercial soy milk market, which usually wind up in the trash.

The company's Web site also features language familiar to Vermont's burgeoning localvore movement. The company says that its mission is "to promote sustainable local economies, organic farming and green business practices" and that "we emphasize the importance of farm production and processing in local communities as much as possible."

For its bean supply, Vermont Soy tries "to stay as close within 100 miles as we can," Meyer said, and a good share of its stock comes from southern Quebec, just across

See SOY, 4E

**Sales of
soy milk
grew 7.2
percent
from
2005 to
2006.**



IAN HARTMAN, for the Free Press
Louis Rainville stands in a field of soybeans ready for harvesting in late October. Rainville and his father, Bernard, are experimenting with high-quality organic soybeans on their farm in Highgate in hopes of selling them for use in the growing soy milk market.

SOY: Highgate farmers hope to produce milk-quality soybeans

Continued from Page 1E

the border. What's missing is an ample supply of food-grade organic soybeans grown in Vermont.

Whether that's a feasible prospect is what the Agricultural Innovations project is designed to explore. Most organic seed development has taken place in the Midwest, soy basket of the nation, where the growing season is a bit longer. Organic farmers in Canada have seen an opportunity in food-grade soy, however, and three of the seed varieties being tested are from Quebec.

Other Agricultural Innovations projects, at various stages of development, focus on phosphorus removal from wastewater, natural pest control, maple-syrup technology and healthy-lifestyle promotion. The goal of the program, which provides modest initial funding for feasibility and market assessments and for business plans, is to capitalize on promising ideas that bubble up from the UVM faculty. For inventions that are patented, the inventor gets 45 percent of licensing fees and UVM, 55 percent.

"The concept is that the faculty are researchers, not business people," said Mike Vayda, associate dean of the College of Agriculture and Life Sciences. "They come up with good ideas, but they may need help, with some phased funding, to promote those ideas." Projects that survive the initial phase might receive further help through the Vermont Center for Emerging Technologies, a UVM affiliate and business incubator that can line up business partners.

The soybean project, Vayda said, aims to help develop a high-value specialty crop for Vermont farmers that will supply the main ingredient for a high-value, niche food product. In the best case scenario, the project will further many of the college's objectives at once: healthy agriculture, good nutrition, stronger communities and sustainable economic development.

This year's crop will be nutritionally analyzed (for protein and oil content, vitamins and antioxidants, among other things) and more test plantings will be done next year, Vayda said. Vermont Soy will likely buy



IAN HARTMAN, for the Free Press

Amanda Gervais of UVM Extension works with Highgate farmer Louis Rainville and his father, Bernard (not pictured), in a test project on using different varieties of soybeans in Vermont.

"The cleaner the beans are, the whiter, the better. People want white soy milk."

Heather Darby,
UVM Extension agronomist

the lion's share of this year's harvest — if the quality is good enough. If it isn't, the crop can still be fed to cows on organic farms.

The early returns

Soybeans are a small fraction of the Rainvilles' portfolio. On their 450 acres, certified organic in 2004, they grow corn and hay and keep 85 dairy cows.

"We sell quite a lot of organic feed," Bernard Rainville said, as Louis adjusted the combine's settings from corn to soybeans.

Soybeans account for 65 of their acres, 13 of which were reserved for the field trial — just down the road from the farmstead. When Louis had the combine ready, Bernard climbed in and drove it over.

To a non-farmer, the field and its crop looked utterly inconspicuous — a sea of brown. The plants were 2½ to 3 feet high, each stalk carrying about 30 beige pods. The most vivid color was inside the pods — three pale yellow balls, the beans.

On hand were two agents

from UVM Extension, Karen Hills and Amanda Gervais. They brought portable scales so they could gauge the yield of each variety; 50-pound samples of each would be reserved for a lab analysis. Gervais took soil samples during down time.

They were looking for high yields combined with high quality. A commercial, food-grade soybean has a "clear" or white, hylum — the part of the bean that that attaches to the pod. Beans with dark hila commonly used for animal feed.

"The beans have to be stain-free," said Heather Darby, an agronomist with the Extension who has coordinated the field trials. "The cleaner the beans are, the whiter, the better. People want white soy milk."

Insects, weeds, soil and other environmental factors can lead to soybean discoloration and staining, Darby said. She listed various methods to keep beans "contaminant free," among them, "weed control," which she said is "essential as many of the weed seeds can stain the beans during harvest."

For farmers accustomed to growing feed-quality soybeans, growing food-grade represents a risk — almost like a new crop. That's where Agricultural Innovations comes in — with advice and free seeds that can induce farmers to give it a try.

Even then, this trial isn't for everyone. A farmer has to be certified organic and have the equipment necessary to handle the soybean harvest — a combine, gravity wagons, steel grain bins for storage.

Food-grade soybeans fetch about 45 cents a pound or \$900 a ton, Louis said, as his father made the first pass in the combine. Feed-grade beans might sell for \$600 a ton.

Louis bent down, plucked off a pod and shook it. The rattle means it's harvest-ready, he said.

Shortly after 3 p.m., Bernard pulled up beside a gravity wagon and the combine spewed out hulled beans by the thousands. Then he drove off for another pass.

Louis climbed up and peered into wagon for a closer look. He liked what he saw: a bed of pale yellow balls.

"Very high quality," he said. "No stain at all."

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Vermont, land of milk and apples, diversifies its agricultural products

BY PATRICK TIMOTHY MULLIKIN

Soy blen

Keeping the land open and productive is also important to Andrew Meyer, 36, co-owner and manager of Hardwick's Vermont Soy, which produces 1,000 gallons of fresh soy milk

each month. The new company is also developing a tofu line and a yogurt drink.

Meyer, who grew up on a dairy farm in Hardwick, spent eight years in Washington, D.C., as an agriculture legislative assistant for former Sen. James Jeffords. Soy beans entered Meyer's life shortly after his family's farm went organic and was searching for feed alternatives.

He says Vermont Soy is committed to using only Vermont-grown soy as the basis for its original, chocolate and vanilla soy milk. Currently only one Vermont farm supplies the company with soybeans, which are grown worldwide. But Meyer is out to change that.

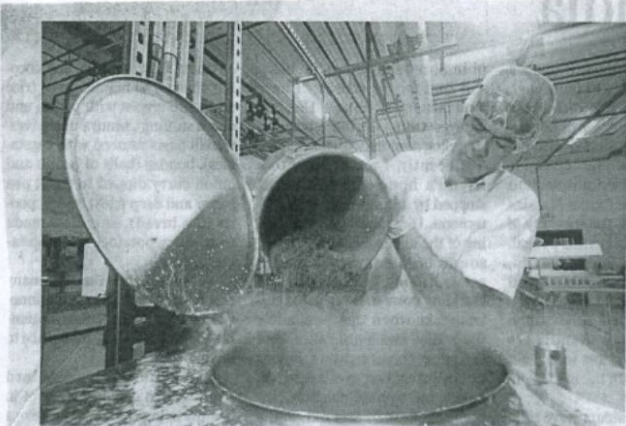
"Our goal is to use all Vermont beans. In an effort to do that we need to work with the farmers to let them know how to grow high-quality soy beans. Last year, in May, Vermont Soy held a forum, and 100 farmers showed up and expressed interest in growing soy beans for Vermont Soy," he says. "The issue (in the past) is that there's never really been a market for them, for farmers to go out and grow a commodity product that's grown all over the world — unless they get a premium for that product."

Meyer says the company is willing to do just that: pay farmers a premium for locally grown soy beans.

"We're working on trying to give the farmers an incentive, and it fulfills our mission as a small business in supporting sustainable diversification with agriculture in the state. We've had interest from dairy farmers, from folks who have had dairy farms and now their land is not being productively cropped or farmed, and they want to maintain the working landscape. They want to create some revenue from their land; they don't want it grow up into goldenrod or brush."

Food & Arts

THE BOSTON GLOBE WEDNESDAY, APRIL 2, 2008 | BOSTON.COM/FOOD



COREY HENDRICKSON FOR THE BOSTON GLOBE

GOT SOY MILK? VERMONT DOES.

A NEW PRODUCER BRINGS IN DAIRY ALTERNATIVES

By Darryl Madden
GLOBE CORRESPONDENT

HARDWICK, Vt. — Here's one timeworn Vermont scene: Holsteins meandering lazily along the hills through twilight.

And here's another, newer scene: A man pedaling a bicycle that powers a blender mixing a smoothie made with fresh soy milk from Vermont.

Yes, soy milk in the Green Mountain State. And while you may think the prospect of producing soy milk in a region famous for its dairy cows may not attract much attention, the year-old Vermont Soy is gaining notice trying to work into the preexisting ecosystem of dairy farmers, Birkenstocked vegetarians, grainaries, and locavores.

At least, that's the idea. Right now, Vermont Soy is busy, busy, busy. They're evaluating the soy beans Vermont farmers tested for them last year; recruiting new farmers to grow them; making their intensely creamy soy milk in regular, vanilla, and chocolate; and launching a line of tofu.

"A lot of people in Ver-

SOY MILK, Page E5

Vermont Soy co-owner Todd Pinkham adds chocolate to the soy milk process.



Soy maker horns in on a dairy state

► SOY MILK

Continued from Page E1

mont were, like, 'I just don't see it. We're in a dairy state,'" says Todd Pinkham, co-owner of Vermont Soy. "But the truth is that people in Vermont are importing literally tons of these products."

So Pinkham, co-owner Andrew Meyer, and a handful of employees are cranking out a ton of tofu and 2,000 gallons of organic soy milk each month in their new Hardwick plant on equipment salvaged from an old Ben & Jerry's factory and Green Mountain Coffee Roasters operation. Hardwick is an out-of-the-way town of 3,000 in north central Vermont.

Vermont is a good incubator for this food venture.

The state has branded itself and its products successfully for years, including maple syrup, cheddar cheese, Ben & Jerry's ice cream, Long Trail Ale, and King Arthur flour.

But the soy enterprise has its eye on the greater New England market, specifically Boston, which Pinkham knows to be one of the biggest tofu-consuming cities in the country. There is another small tofu maker in New England, the Bridge, based in Middletown, Conn., which makes about 1,000 pounds of tofu daily with beans from upstate New York, but they don't sell soy milk. International giant Vitasoy is based in Ayer. Some, but not all, of their production takes place in Massachusetts.

Before it can expand, Vermont Soy needs to determine which soybeans it will use again and convince some farmers to grow them. Last year, six growers harvested about 50 acres of beans for the new company. Pinkham and Meyer are trying to understand their various beany qualities (such as

color, flavor, protein). Meanwhile, agriculture specialists at the University of Vermont have samples of those same beans to learn what it takes to grow them in these northern fields. The company, the farmers, and UVM are piecing the puzzle together so small farmers aren't stuck buying special cleaning and storage devices for the soybeans.

The trick for Vermont Soy is growing at a rate that will support the farmers as they put more acreage into soybeans, and also finding other outlets, like organic grain suppliers, for the surplus beans.

The company also wants to maintain its distinctive style. Pinkham researched soy milk and tofu

production for years before products were launched. Much of the aseptically packaged soy milk on the market is thin. Vermont Soy's is so thick you have to wonder if you can pull it through a straw. Their fresh milk is packaged in recyclable plastic Vermont-made jugs and in pint sizes. Tofu is a firm nagiri style with a strong flavor often described as cereal-like.

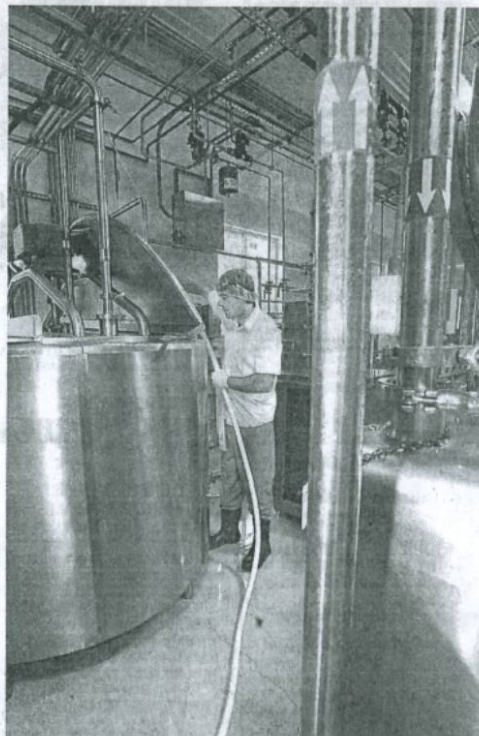
For Ariel Zevon, daughter of 1970s rocker Warren Zevon and owner of the restaurant LACE in Barre, "Vermont Soy has been a godsend," she says. "I only serve locally produced foods to my clientele, and many of them are vegan."

"For so many years, this state was wool, wool, wool, then milk, milk, milk" says Meyer, of Vermont Soy.

His vision? It's not "soy, soy, soy" exactly.

But a bean can dream.

Vermont Soy soy milk and tofu are available at A. Russo and Sons, 560 Pleasant St., Watertown, 617-923-1500.



PHOTOS BY COREY HENDRICKSON FOR THE BOSTON GLOBE



Clockwise from above: Allen Van Anda, Todd Pinkham, and Violet Walbridge and James Lovinsky work to produce Vermont Soy organic soy milk.

