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The Planet, 2002, Spring

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the planet [spring 2002]
The Food Issue



DEAR READER,

Today's consumer knows less about the food he or she buys and eats than ever before. Unless they subsist entirely on organic foods, American consumers have no assurance that the food they're eating hasn't been genetically modified, chemically treated or grown in a manner detrimental to the environment. If not for recent legislation, consumers in Washington would not even know if their produce was grown in the state.

Without knowing, consumers are supporting practices they might condemn if given more information. Money consumers spend on salmon, for instance, may go to fish farmers whose trade puts native stocks at risk — to buy a product that was fed dye to make its flesh pink and appealing. Even milk is often produced using a hormone illegal in most of the world because it endangers cows, farmers and milk drinkers.

There are, of course, solutions. Consumers can protect themselves and the environment by buying local or organic produce. They can frequent restaurants that serve food grown or raised in a humane and environmentally sustainable manner. They can spend more on meat, fish and milk to ensure it is free of antibiotics and hormones.

These solutions have one thing in common: increased cost. It's a financial burden that some Americans are unable to shoulder.

For many, however, it's a question of priority, a choice between convenience and their health. It's a choice most are too poorly informed to make wisely, because the government — the same one that requires warnings on cigarette packs because its citizens have a right to know what's killing them — has not forced producers to label the products they sell. Though few would argue that an ear of corn is as dangerous as a Camel, the point stands: consumers deserve to know what risks they are taking.

Consumers have the right to know if their food has been genetically altered, irradiated or sprayed with chemicals long illegal in the United States. Mothers and fathers have the right to know if the milk they give their children comes from a cow pumped full of hormones and antibiotics. Americans have the right to express their opinions in the checkout line as well as the ballot box.

Though there are a number of great philosophical reasons to believe in the right to be informed, in this case there is also a simple economic one; the U.S. Department of Agriculture gives agribusiness a lot of money in subsidies — almost \$21 billion in 2001. It does so to guarantee America's food security, a goal that would be furthered by required disclosure.

By requiring subsidy recipients to provide consumers with information on how they treat their product, the USDA would allow citizens to make informed decisions about the future of American agriculture while protecting themselves and the environment. In doing so, the USDA would give farmers unwilling to use potentially dangerous technologies a fighting chance against industry trends toward more-intensive farming practices.

- Levi Pulkkinen

CORRECTIONS & CLARIFICATIONS

Retired engineer and citizen activist Marian Beddill was misidentified on pages 14 and 17 of the winter issue. Beddill is not and has never been a member of the Clean Water Alliance.

The Planet staff sincerely regrets this mistake and any trouble caused by our folly.

The Planet staff thanks the following people for their support and assistance: Karen Morse; Andrew Bodman; Keith Seinfeld; Robert Galbraith; Alethea Maccomber; Carol Brach; Cristina de Almeida; Gunther José Frank; Duff Wilson; Dave Knutson and the rest at ATUS; Laurie, Dave, Margaret, Melissa and the rest of the publishing services staff; and the faculties and staffs of Huxley College and the journalism department.

Additionally, we'd like to thank all the readers who love or hate us, and everyone who looks to coexist peacefully in this world. You make this all worth doing.

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COVER: The Evergreen Station's turnip plants flower in the springtime.

BACK: Workers use a tractor at The Evergreen Station to bring cabbage and other starts to the fields for planting.
(Photos by Sarah Galbraith)

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Cash Crop

by Jessi Loerch

2

Raspberries, the major cash crop for Whatcom County, may appear picture perfect in the store, but the chemicals used to grow the berries may be making local residents ill.

Concrete Farming

by Michael Hatfield

7

Dairy farms are disappearing in Whatcom County, yet milk production is increasing. To keep up with demand, farmers are using growth hormones, eliminating grazing time for cattle and building bigger herds.

The Legislative Route

by Alyson Chapin

11

Agriculture is the staple of Washington state's economy and a new federal farm bill may bring it more money. Some, however, question the bill's environmental standards and subsidies.

Beyond Mendel

by Brendan McLaughlin

12

Genetically modified foods are now commonplace in grocery stores. They make farming easier and more profitable, but critics say they put the public and the environment at risk.

Origins

by Shara B. Smith

16

An informed shopper can be a dangerous thing, at least that's what state lawmakers are hoping by introducing a new law that will force store owners to mark produce from the United States and Washington.

A Dying Breed

by Tam Huynh

18

Farmed fish were a novelty in the early 1990s, now they dominate the market. Because they are cheaper and grow faster, these fish are driving commercial fishermen out of business while endangering the environment.

Growing Green

by Amy Kuhta

21

Faced with competition from large-scale farming, organic farmers like Loren Bailey are struggling to create a livelihood for themselves while remaining true to the model of sustainable agriculture they follow.

Regulating the Revolution

by Cate Weisweaver

25

This summer, organic farmers across the nation are preparing for new organic standards to take effect. The U.S. Department of Agriculture's new rules are designed to inform consumers, but they may drown small farmers with paperwork.

Living Wage

by Ivory Firsching

26

Coffee is the second-most-traded commodity in the world, next to oil, but the money farmers receive for their beans is at an all-time low. Fair-trade coffee could be an answer to the social and environmental problems caused by conventional growing methods.

Slaughterhouse Rules

by Torhil Dunham

28

When Northwest newscasters aired a video showing Iowa Beef Processors, Inc. employees mistreating cattle, state investigators leapt into action. They came up empty, but activists continue to seek justice.

Supersizing America

by Jackson Long

31

Obesity rates in America have skyrocketed in recent years, and the condition may soon kill more Americans than smoking. Some researchers blame the prevalence of fast food in our diets for this obesity epidemic.

Sustainable Diet

by Helen Hollister

35

Why eat vegetarian? According to vegetarians, meat is not only a healthy alternative diet — it's a way individuals can help the environment while helping themselves.

The Planet is an environmental magazine published three times yearly. It is dedicated to environmental advocacy and awareness through responsible journalism. It is written, designed and edited by students through Huxley College of the Environment.

contents



CASH CROP BY JESSI LOERCH PHOTOS BY SARAH GALBRAITH



Brian Cieslar, agronomist at Maberry Farms, inspects this season's raspberry growth. Maberry Farms grows more than 500-acres of raspberries.

AFTER STEVEN AND SHANNON Martin moved into a house on Beard Grove Road near a raspberry field, Shannon began having frequent headaches. Soon her kidneys began to hurt. After awhile, the rest of the family began having health problems. Steven also started having headaches and kidney pain. The couple and their 4-year-old son, William, developed a rash. Steven and Shannon were frequently nauseous.

Then, one morning in July 2001, the whole family got sick at the same time, Steven said.

"I woke up one morning, about 1 a.m., sick," he said. "I walked in the kitchen to get a drink of water, and I looked out the window and there's this giant cloud over the whole area.

"They were spraying."

The Martins said that at the time they weren't sure of the cause of their ailments. But, as they spent more time in the house near the fields, they began to suspect the chemicals used on the raspberries were causing their troubles.

This March, the Martins became so ill they went to the emergency room.

Steven said they became sick during a heavy windstorm. The winds were blowing from the north, across the fields and their home, he said. A few days before he had seen workers pouring something on the raspberries. He said it didn't rain after that. Steven said he suspects the wind brought chemicals into their home and made them sick.

"We woke up about 3 a.m. We woke up sick. We went to the ER, we were so sick," he said. "(The doctors said) there was more than a 50-percent chance that it was pesticide exposure."



Pesticides and other chemicals are a major part of most modern farming and raspberries are no exception.

From pesticides to herbicides to fertilizers, raspberry farmers barrage their fields with chemicals to produce a better product.

In Whatcom County, farmers grow raspberries on approximately 6,500 acres, said Henry Bierlink, executive director of the Washington Red Raspberry Commission. Raspberries are a major cash crop for many Whatcom County farmers. In 2001, Whatcom County produced nearly 57.5 million pounds of red raspberries, according to the commission. More than 65 percent of America's raspberries are grown in the county.

Raspberries can be profitable but require a lot of chemical attention. In order to get the best possible harvest, farmers use chemicals to fertilize the plants and reduce weeds and predators.

"It's impossible to grow perfect fruit without pesticides," Bierlink said.

Chemical pesticides and herbicides can produce a variety of negative health effects, including cancer. In Whatcom County, state environmental workers discovered some of those toxic chemicals in the groundwater.

Before 1983, many raspberry, strawberry and seed potato farmers used a soil fumigant – a chemical injected into the soil before a crop is planted to kill pests – called ethylene dibromide. Soil fumigants like EDB kill microscopic rootworms that could destroy a crop.

In September 1983, the Environmental Protection Agency ordered an emergency suspension on the sale and distribution of EDB as a soil fumigant because of the chemical's carcinogenic effects and its tendency to leach into groundwater.



I woke up one morning, about 1 a.m., sick ... I looked out the window and there's this giant cloud over the whole area. They were spraying.

*Steven Martin
Whatcom County resident*

The concerns about EDB prompted investigations in Washington state. In 1984, the Washington state Health and Agriculture departments began looking at drinking water in areas where farmers used EDB to determine if it had contaminated the wells.

They found four areas in the state contaminated with EDB, Department of Ecology environmental specialist Mary O'Herron said. Two of these are in Whatcom County.

Areas northeast and west of Lynden showed levels of contamination above the drinking water standards. Ecology paid to connect the area to the northeast to public water so residents

would have a clean source of water. But, because of the distance from the city, the area west of Lynden was not connected to public water, O'Herron said.

Mary Downing has lived on Birch Bay-Lynden Road all her life. From her back porch she can see acres of raspberries. Enfield Farms touches her backyard. Her father used to farm the area that Enfield Farms now uses for raspberries.

Downing said most of the people in the area have a long history there. The community is tightly knit and very supportive of each other.

But Ecology found that many wells in the area — including Downing's well — are contaminated with EDB and provided residents with drinking water.

While she worried about possible health effects when she found out about the chemicals, she said it didn't do any good to point fingers.

"We weren't very happy (about the chemicals) but nobody could tell us where they came from," Downing said.

Downing said no one knows for sure when EDB was applied in the area. But, even if she did know, she said she wouldn't tell. Growing up in a farming community, Downing said she

Boxx Berry Farms co-owner Mike Boxx inspects recently sprayed raspberry shoots to ensure their demise. Raspberry growers often spray new shoots in the springtime to keep them from overgrowing productive plants.

Maberry Farms grows more than 500-acres of raspberries, which it sells across the United States.



believes farmers try to do the right thing. She said she doesn't know where the chemicals came from and she doesn't blame anyone.

"We were raised as farmers and we understand that farmers aren't going to go out and risk their livelihood to get rid of a bug. That's just silly," she said.

In the fall of 1997, Ecology decided to collect more information about the drinking water in the affected area, as well as the chemicals.

The studies found another chemical, 1,2-dichloropropane, in some wells. The chemical was also used as a soil fumigant.

Ecology requested information about the chemicals from the Agency for Toxic Disease and Disease Registry. At the same time, residents petitioned the EPA to find out more about the chemicals.

The research showed that water tainted with 1,2-DCP could be hazardous even if residents didn't drink it. O'Herron said that skin contact or inhalation can expose a person to the toxin just like drinking the water. She said shower filters were offered to homes with 1,2-DCP contamination.

The tests didn't show if people could be exposed to EDB through inhalation and skin contact, as they can with 1,2-DCP.

"The implication was that both chemicals probably performed the same way," O'Herron said.

In the late 1990s, tests showed that the level of contamination had dropped. The levels of EDB were nearly 10-times lower than the levels of the 1980s tests, O'Herron said. But some homes were still above the 0.05-parts-per-billion drinking water standard for EDB.

Last year, nearly 18 years after the contamination was identified, the City of Lynden used Ecology money to extend water lines to homes with contaminated drinking water.

For now, the furor over pesticides in the water has quieted. But farmers are still using chemicals to produce a perfect, plentiful crop.

Brian Cieslar, agronomist for Curt Maberry Farms in Lynden, said consumer demand drives a lot of the farmers' pesticide use.

"The food in the grocery store is driven by consumer demand," he said. "Right now the food has to be too perfect. You go in the store and you don't see any blemishes on the fruit or vegetables. If people were willing to eat a few bugs we wouldn't have to spray so much."

As a solution to pesticide overuse, many farmers have adopt-

ed an approach called integrated pest management. IPM uses smaller amounts of chemicals to produce insect-free crops.

Using IPM, farmers monitor their fields to determine what pests are problematic. Then they can determine what chemicals to use to control those pests.

For example, Cieslar said that black root weevils frequently cause a problem in the raspberry fields. The young can eat the roots and the adults can end up in the fruit.

Cieslar uses long, triangular pheromone traps to determine how many beetles are in the field. He hangs the traps in the field and checks them several times a week.

When pests start to build up in the traps, Cieslar knows he needs to spray for them. He uses a formula to determine when there are more pests than purchasers will accept in the fruit.

Moths called leaf rollers can also damage the raspberries. The young moths damage the plant by eating the leaves, causing them to roll up, and the insects can end up in the fruit.

When Cieslar finds more than 25 moths in a trap during a week, he sprays for them. He found the most effective way to deal with the moths is to spray 10-12 days after they exceed 25 per trap, per week. At that time, the vulnerable larvae will be hatching. When he sprays the leaves with a naturally occurring bacteria, the young eat it and die. By timing the spray for when the moths are most vulnerable, he reduces the amount of spray he needs to use.

Todd Murray, IPM project manager for the WSU extension office in Bellingham, said IPM helps farmers adapt to pest problems, rather than just spraying blindly.

"Before, lots of people just relied on the calendar," he said. "Now they can go out there and look and see if that pesticide is necessary."

Murray said education is the key to making IPM work. He said teaching farmers about pests has helped reduce the problems with some insects like root weevils.

"(Farmers) understand the biology better and then they can make one application instead of five," Murray said.

Cieslar said that, although using IPM reduces pesticide use, farmers still need pesticides and herbicides to make money.

"With the amount of acreage we have we wouldn't be able to (farm it without pesticides)," he said. "There wouldn't be enough people to do the hand weeding."

But Cieslar said he is interested in any method that will reduce the amount of pesticide use.



Raspberry farmer Mike Boxx examines raspberries for slow growth after a cold spring.

"It would make our day if we didn't have to apply pesticides because they're expensive, some of them are persistent, and some of them are relatively toxic," he said.

Persistent chemicals are ones that breakdown slowly when released into the environment.

Though Boxx Berry Farms, at 10 acres, is much smaller than Maberry's 500 acres, owner Mike Boxx also worries about the pesticides' effects. But he said he believes with methods like IPM, farmers have become more careful with pesticides and herbicides.

And while Boxx worries about health effects, he admits the chemicals are necessary.

"I certainly couldn't be farming on the level that I am without them," he said.

Boxx demonstrated the value of herbicides by kneeling between the rows of raspberries. He pulled a handful of common chickweed from the moist dirt. The plant is dark green with tiny white flowers. In some areas, it completely covers the ground between the raspberry rows. If the weed is not sprayed or tilled, Boxx said, it takes over the area.

Several rows away the chickweed is pale, lime-green and thinner. Boxx sprayed those rows with an herbicide called Gramoxone to control the weeds. Boxx said pesticides and herbicides make farming his 10 acres possible and profitable.



The Martins haven't been able to prove that pesticides made them sick but Steven and Shannon said their health problems disappeared after moving to Maple Falls,

We'd go back there and get sick again, just from being there a short time. Maybe it's in our heads but I don't think so.


*Steven Martin
Whatcom County resident*

Wash. Shannon said she still has some kidney pain but her headaches are gone. Steven said nausea is also no longer a concern and the rashes have disappeared.

"We'd go back there and get sick again, just from being there a short time," Steven said. "Maybe it's in our heads but I don't think so."

Shannon has an appointment with a specialist in Seattle to discuss her lingering health concerns. The Martins said moving into the new house made a dramatic difference in their lives, but they still wonder what made them so sick.

They haven't received the results from the water tests conducted on their former home. They still want to know if chemicals were in the water they were drinking.

"The thing is that we can't prove that anything happened to us, yet we were sick all the time," Steven said. "We're just now getting over it." 

Junior Jessi Loerch studies environmental journalism at Western. She has previously been published in *Arbiter*, Boise State University's student paper, the *Idaho Statesman* and *Ecotones*.

A two-day-old calf at Edaleen Dairy greets visitors in its new world. The dairy breeds its own calves to raise for future milk production.



Concrete Farming

BY MICHAEL HATFIELD PHOTOS BY KATIE KULLA

IN SPRING Lynden smells like a dairy farm. It is not pleasant. When the wind is right, the piercing aroma of manure envelops the town in an invisible, insidious haze. The fumes occupy every open space, invading parks, shaded walks and back porches with impunity.

Twenty or 30 years ago it was different. Dairy farms were smaller, widely disbursed and not nearly as industrialized. The byproducts of dairy farming weren't so palpable and there were fewer cows per acre and more farmers per cow.

Now it takes hundreds, sometimes thousands of cows to make one dairy farm profitable. The price of milk paid to the farmer has not changed significantly in decades. As a result herds have grown in size while dairy farms have dwindled in number.

Since 1981 the number of dairies in Washington state has declined more than 50 percent, yet total milk production has risen by 45 percent. The increase in production is explained in part by more cows, but it is also due to increased production per cow.

To achieve this, dairy operation intensity has multiplied several times over. In order to remain in business, dairy farmers must produce more milk at a lower cost. But it hasn't come cheap for anybody – not the cows or the farmers.

For many the costs outran the benefits long ago.

In 1979 Andy Bergsma and his wife Rhonda bought a run-down farm in Lynden. At 22, Bergsma brought 50 cows and three children to the 45-acre spread. He rented another 40 acres and used his experience as a breeder to build his herd up to 125 cattle. He cleaned up the house, built a new barn, planted trees and transformed the farm into a respectable dairy.

In 1999 he quit.

"It was just hard to make it," Bergsma said.

He is now a member of a swiftly growing group of former dairy farmers. Since July 1999, Whatcom County has lost 35 of 240 dairies.

"There are probably 500 to 1,000 (dairy farmers) on this side of the mountains that would love to be in it still because it's a wonderful way of life as long as you can make some money at it," said Ned Zaugg, the area dairy educator for Washington State University.

When Zaugg moved to Whatcom County from Arizona in the early 1990s there were nearly 1,000 dairies in the county. Since then he's watched countless farms go under. Small dairies just don't make it any more, he said.

"I was considered a small dairy," Bergsma said. "One-hundred cows nowadays is very, very small."

He estimates that 70 cattle is the minimum number on any operating dairy today. He said the only way such an operation could stay in business is if they already had everything paid for, with little or no mechanization and low fixed costs.

Larger herd size was one of the first efforts made by dairies to become more profitable. By increasing the density of cows on a farm, the farmer can produce more milk without proportionally raising costs.

Edaleen Dairy in Lynden runs 1,000 cows but is not the biggest in Whatcom County. De Groats Dairy, where Bergsma's son works, operates two farms, each with 600 cows. In Idaho and California, herds are even larger and a farm under construction in Oregon is set up for 7,000 cows, Bergsma said.

The farmer still has to pay more for labor, feed and other maintenance, but saves by avoiding the expense of building bigger barns or newer facilities.

"The price of milk hasn't really increased much," Zaugg said. "All the other expenses are going up, especially now with the new dairy nutrient management laws."

Bergsma said that he didn't want to expand his operation in response to these pressures.

"I didn't want to get big," he said. "I didn't want 200, 300, 400 cows — I didn't want that. I grew up on a family farm so that's what I was used to."

Zaugg said the farmers who's herds did grow discovered there is a limit to the number of cows that you can put on a farm. Eventually something has to give, he said.

Dairy farmers learned to specialize. Instead of breeding their own herds, as Bergsma did, they contracted out the calving. Dairy cows must be impregnated almost every year, or they stop producing. But now, instead of raising the calves themselves, many dairies sell them or pay someone else to raise them.

They streamline tasks within the operation too, Zaugg said. In the past a farm employed general labor. The milkers would milk part of the day then go out on the farm to clean and repair equipment and facilities. Farmers discovered that general labor is not very efficient, so they specialized their workforce. Now the milkers just milk and the farmer hires people to do cleaning and maintenance. By focusing the operation in this way dairy farmers are able to produce milk more efficiently, Zaugg said.

Technology also contributed to this drive towards efficiency. "One of the things that happened along the way, during the 1980s and 1990s, is science really developed a database that helped them understand how digestion happens within a cow," Zaugg said.

I wasn't a real mechanized farmer. Maybe that's why I'm out now, I don't know.

*Andy Bergsma
former dairy farmer*

Research and new information helped farmers get more milk out of cows by feeding the cattle different types of food. Certain feeds digest better and the cow is able to convert more of the energy from the food to milk.

"They learned how to feed cows to maximize production," Zaugg said.

But many people, both inside and outside the dairy industry, argue this comes at a cost to the cow. Higher rates of digestion are harder on animals because producing milk requires a great deal of energy.

Science also produced the Bovine Growth Hormone, a drug that increases milk production per cow by as much as 20 percent, Zaugg said.

During their study of digestion, researchers discovered cows with higher levels of Bovine Somatotropin, or BST, produced more milk.

Though scientists have known of BST's benefits for some time, the hormone was difficult to extract, and such high production costs rendered it useless.

Edaleen Dairy houses its dry cows in one barn.





ABOVE: Within the confines of their permanent barn-home, two of the dairy's cows stretch their head through bars to eat feed.

BELOW: Edaleen workers milk the cows three times each day in the dairy's milking parlor.





Machinery fills milk jugs for distribution at Edaleen Dairy.

It was not until the 1980s that geneticists could produce BST less expensively by breeding special bacteria to produce the hormone. BST created in this way becomes recombinant Bovine Somatotropin, or rBST.

When scientists first introduced rBST it caused a split in the dairy industry. Some dairy farmers adopted it while others were against it, Zaugg said. Even today, differences of opinion on rBST exist.

Though the U.S. Food and Drug Administration approved the hormone for use in 1993, other nations have not followed. The European Commission imposed a five-year ban on rBST in 1994, then extended that ban in 1999.

After more than nine years of comprehensive review, Health Canada rejected the drug in January 1999. It cited animal health risks as its primary reason for doing so. Other nations have rejected the drug based on social, economic and human-health threats. The hormone has been the subject of several international disputes, with the United States as the hormone's primary supporter.

In the FDA's studies, cows injected with rBST showed a 25 percent increase in incidences of udder infections. This has led many in the medical community to suggest that milk from treated cows is more likely to be contaminated with the antibiotics used to treat such infections.

According to Canadian studies, rBST injections led to an 18 percent increase in infertility and a 50 percent higher risk of lameness. Even this draws disagreement from the agricultural community.

"We haven't seen any negative effects on cattle through the BST usage," said Jordan Vander Veen, spokesman for Vander Huizen Farms.

Vander Huizen farms milk about 670 cows. Vander Veen doesn't believe rBST poses a risk to animal health.

But, cows don't last as long as they used to, Bergsma said. "I had cows that would have up to 10 calves, sometimes 12 calves," Bergsma said. "Now you're lucky if they have four or five."

Vander Veen said they do have some cows as old as 14 years, but the average age that cows are retired on their farm is a lit-

tle over 5-years old. Usually 5-year-old cows have delivered three calves.

This shortened working life cannot be solely attributed to rBST. It is also because of the way the cows live, Bergsma said. Whereas Bergsma, his father and grandfather would have turned their cows out in the spring to graze until October, many dairies keep their cows inside year-round.

"There's probably a handful of guys that put their cows out now," Bergsma said. "Most (cows) are all locked up."

Keeping the cows inside all the time reduces the amount of energy the animals expend walking, which leaves more energy for producing milk. But being on cement all day destroys the animal's legs and feet, Bergsma said. It would be comparable to forcing a person to stand on the floor of a supermarket all day and night.

But, Vander Veen said that dairy farmers aren't particularly hard on cows, because cows don't produce as much milk when they are uncomfortable.

"It's in the farmer's best interest to keep cows as comfortable as possible," he said.

Vander Veen said the dairy industry has advanced as far as it can with herd size and mechanization. He said farmers are moving to less-animal-intensive operations, but herd sizes will continue to grow for a short time before the industry reaches a stopping point.

"There's a certain size at which the agriculturalists aren't going to give in to the competition," he said.

That sort of outlook sounds like wishful thinking to Bergsma. He never used rBST and he didn't want his herd to grow. Instead he tried to build the sort of farm that his father and grandfather built.

The Bergsmas will soon sell the farm they bought in 1979, along with the 1/3-acre they retained from their original 40. The farmer that bought the farm from them in 1999 now keeps his dry cows in their old barn.

"I wasn't a real mechanized farmer," he said. "Maybe that's why I'm out now, I don't know."



Junior Michael Hatfield studies environmental education and mass communications. This is his first published piece.

I had cows that would have up to 10 calves, sometimes 12 calves. Now you're lucky if they have four or five.

Andy Bergsma
former dairy farmer

The new farm bill provisions increase conservation program budgets by 80 percent, but the previous budget was close to nothing so that's not very much.

*Jon Corsiglia
Environmental Working Group*

THE LEGISLATIVE ROUTE BY ALYSON CHAPIN

IN 1977, the U.S. government implemented the Soil and Water Resources Conservation Act. The act requires an assessment of agricultural lands every 10 years and established the Natural Resource Conservation Service within the U.S. Department of Agriculture to carry out the assessment.

NRCS workers found alarming results when they assessed agricultural lands across the United States — topsoil was eroding at astronomical rates and wetlands were disappearing.

"This was the basis for congress to act for conservation rather than just production," said John Gillies, a district conservationist for NRCS.

Western Washington University professor Lynn Robbins said two major provisions in the 1985 farm bill came from the NRCS studies; the sodbuster provision, which states a producer can't plow highly erodible land without a plan, and the swampbuster provision, which states a producer can't drain a wetland to plant commodity crops.

Robbins said more than 35 million acres of land were set aside for conservation in 1985 because of these provisions.

Gillies said the NRCS in Whatcom County deals mainly with swampbuster provisions because land erosion is not a major problem in Western Washington.

Meanwhile, the 1996 farm bill expires in October 2002. In response to this, the Bush administration recently negotiated policies and funding changes for a wide range of issues from nutrition to agriculture that will determine policies and procedures for farmers until 2011.

Vermont Sen. Patrick Leahy is at the forefront of current farm bill reform.

"There are some provisions in the new farm bill that are intended to help address environmental concerns," said John Winsky, a press representative for Sen. Leahy.

Winsky said the Environmental Quality Incentives Program, a cost-sharing program, will receive \$9 billion over the next six years to help farmers adapt to new regulations. EQIP will provide 75 percent of the money for adopting new measures addressing regulatory concerns. Overall, the new farm bill will add \$17.1 billion to the USDA budget.

However, the Environmental Working Group — a non-profit, Washington, D.C.-based environmental organization — questions whether the new bill finds a balance between the economy and the environment.

EWG press secretary Jon Corsiglia said his organization wants to see a farm bill with meaningful payment limits and effective program funds. His greatest concern is not having enough federal money for the farms that actually need it, Corsiglia said.

"The new farm bill provisions increase conservation program budgets by 80 percent, but the previous budget was close to nothing so that's not very much," Corsiglia said.

Part of the new bill establishes the Conservation Security Program. It sets aside \$2 billion for CSP, which makes more farmers eligible for conservation funding. According to the provisions of CSP, farmers can be compensated for projects they completed up to 10 years ago, which worries EWG.

"It will suck money right out of the budget," Corsiglia said.


The new farm bill has many problems, he said, including the lack of meaningful limits when it comes to subsidies.

"Primarily big agribusiness will receive (subsidies) and there are loopholes in programs which make payment limits meaningless for larger farmers and agribusiness," Corsiglia said.

The bill also puts fewer caps on subsidies and the money for conservation programs is in savings — meaning money shortages, he said.

"We're going to continue to see farmers lining up because there's no money for them," Corsiglia said. "It has always been the case and will continue to be the case."

Although the farm bill's critics wonder where money for the farmers will come from, the bill promotes agricultural conservation on farmlands throughout the United States.

"This farm bill is unique, because there's a lot of funding authority given to (agricultural) conservation provisions," Gillies said. "There's a lot of emphasis placed on conservation." 

Senior Alyson Chapin studies environmental education and mass communications at Western. This is her first published piece.

In 1996 there were 500,000 acres (of GM crops) being planted in the United States. Now there are over 100 million global acres committed to genetically engineered seeds.

*Britt Bailey
The Center for Ethics and Toxics*



Beyond Mendel

BY BRENDAN McLAUGHLIN PHOTO BY KATIE KULLA

OVERHEAD LIGHTS ILLUMINATE

the cramped walkway of the produce section at Haggen, while secondary fluorescents light the more perishable goods lining the aisle. Nestled between the bok choy and green beans, a corn display lures consumers with crisp and healthy looking additions to dinner. In all likelihood, however, these delicious-looking ears are the product of a genetics experiment.

Since 1994, genetic engineers have created a number of genetically modified commercial food products. The Monsanto Company and its patented plants are now a ubiquitous part of the agricultural world. Monsanto and other biotechnology companies are subject to both praise and criticism.

Humans have selectively bred plants for thousands of years, making them bigger, faster growing and better tasting. In 1866, Gregor Mendel published his research on peas' inherited characteristics, describing the biological process through which parents pass traits to their offspring. Scientists would eventually use that research to explain how selective breeding allows farmers to farm more efficiently.

Selective breeding requires careful monitoring of several plant generations to produce the desired result. Biotechnology, however, lets scientists cut and splice DNA strands to change a plant's genetic composition by inserting single genes from other species, giving it the desired trait and providing more immediate results. Since DNA codes are based on the same four proteins, segments of DNA can be inserted from other species, allowing exchanges between gene species as dissimilar as fish and raspberries. This could never be achieved through selective breeding, which cannot instantly disrupt the plant's genetic composition.

"When you put a gene into a plant," said Jeff Young, a plant physiologist at Western Washington University, "you make a new or different enzyme, or up the expression of an existing enzyme."

Scientists' knowledge is still limited. Geneticists have confirmed that, while there are relatively few genes, the interactions between them alter their expression, potentially resulting in unknown consequences.

"We know that genes are responsible for more than just one thing," said Britt Bailey of The Center for Ethics and Toxics, a non-profit environmental group in California, and author of "Against the Grain", a book on the biotechnology industry.

"The agriculture industry has this idea that they can insert a gene into a plant and it's just going to do this one thing. We have no idea what else it's doing."

Biotechnology is still a fledgling industry. In 1990, commercial GM crops did not exist. Today, once a GM product receives federal approval, any product not labeled organic is potentially modified. Unless they've been certified organic, the crisp, luscious ears of corn purchased at the grocery store are potentially GM.

Companies like Dow, DuPont, Novartis and Monsanto have been developing their products since the early 1980s. St. Louis-based Monsanto engineered an entire line of products to resist their commercial herbicide Roundup thanks to a gene taken from the common petunia. Soybeans, cotton, corn and canola have all been engineered as Roundup Ready.

One appealing aspect of using Roundup Ready varieties is the ease with which troublesome weeds can be eradicated. For the first time, herbicides can be applied directly to the crops themselves.

"They can spray (Roundup) over the top of the crop," said Martin Lemon, Environmental Operations manager for Monsanto. "It doesn't have an adverse effect on the crop, but it does kill the weeds."

Spraying from airplanes significantly reduces the amount of time required for weed control.

"They've been able to improve the convenience of their agricultural life, their work," Lemon said. "Whereas before they'd use two, three, maybe four different herbicides on a crop, they can use one now."

Farmers must purchase both the Roundup Ready-crop seeds and the herbicide from Monsanto, because the company owns patents on both products.

To bring its technology to the farmer's fields, Monsanto formed contracts with numerous seed companies or bought them outright.

GREGOR MENDEL

Gregor Mendel, an Augustinian monk born in 1823, first theorized on inherited characteristics after experimenting with plants growing near his monastery. Soon he began experimenting with mice and pea plants, finding that parents passed traits onto their progeny intact. The scientific community didn't accept Mendel's theories until the following century, when scientists confirmed his findings. This allowed farmers to control their selective breeding process with greater precision.

Today, genetic engineers use recombinant DNA technologies to change plants and animals' genetic structures in ways that selective breeding never could. Scientists re-engineer crops for a number of reasons; to allow them to grow on marginal farmlands, to improve their taste or appearance, or improve their resistance to herbicides and pesticides. Whatever the benefits, the sort of genetic modification happening today goes beyond what the monk imagined during his experiments inside a monastery.

Monsanto targeted Midwestern soybean-seed producers, purchasing the two largest companies, Asgrow and Hartz. Monsanto spent \$8.3 billion acquiring seed producers, but fell short on its goal of transforming the entire United States harvest of soybeans into GM seeds by 2000, Bailey said.

Even so, 57 million of the total 80 million acres of soybeans on United States soil were Roundup Ready at the end of 2001.

"In 1996 there were 500,000 acres (of GM crops) being planted in the United States," Bailey said. "Now there are over 100 million global acres committed to genetically engineered seeds."

Most farmers use the patented seeds for economic reasons, Lemon said.

"Run the numbers from an economic standpoint," Lemon said. "If they take economics, convenience and the environment into account, the decision will be an easy one to make."

Farmers growing Monsanto's engineered crops have to sign a Technology Agreement when they buy the seeds.

"(The Technology Agreement) asks that the growers do not collect and save seed from this year's harvest and replant," Lemon said. "There's no company that, if they only sell their product once or twice, can afford to advance."

Every time a grower sows a crop of Monsanto GM seeds, they are required to pay for them.

"It's important to us, it's important to everybody that likes this technology, that everybody play by the rules," Lemon said.

The contracts also allow field representatives access to the farm for monitoring illegal seed use. Monsanto even established hotlines where farmers are encouraged to turn each other in for illegal replanting, Bailey said.

Monsanto has successfully sued Canadian canola farmers for patent infringement. In the legal sense, infringement is any act that interferes with a patentee enjoying their monopoly rights.

In the most highly publicized case, Percy Schmeiser, a 68-year-old farmer in Saskatchewan, was convicted of patent infringement even though he never signed contracts with Monsanto. In his judgment, Justice Andrew McKay stated it didn't matter if Schmeiser knew his fields were contaminated to constitute infringement.

Schmeiser claimed that genetic pollution, a process where GM plants pass an introduced gene to conventional varieties or related species, brought Monsanto's product to him.

"His claim was that he believed some pollen had drifted into his fields, or some seeds had fallen off a truck and quote 'contaminated his fields,'" Lemon said. "We know a lot about pollen. It just doesn't travel that far and seeds don't bounce that far off the road."

Many growers like Michael Neuroth, co-owner and operator of Coast Alpine Nursery on Lummi Island, are concerned about these rulings long-term effects.

"It's almost a form of eminent domain," Neuroth said. "The corporate seed producer comes in, and since they have the intellectual property rights, if the modified strains contaminate your field you're accused of stealing."

"You cannot fence this stuff off. Nature just doesn't work that way."

Despite the increasing number of legal disputes, regulatory standards remain unchanged by the three federal agencies responsible for the regulation of GM foods – the U.S. Department of Agriculture, the Environmental Protection Agency and the Food and Drug Administration.

In 1992, the FDA announced that as long as the modified food is not more toxic or allergenic, or any less "substantially equivalent" than the standard variety, it doesn't need to be labeled differently.

Many people believe, however, more safety tests need to be performed on GM foods.

"Genetically engineered organisms were introduced with very few scientific or ecological safety nets," Bailey said. "All of the pre-marketing tests are performed on very small areas by the companies that produce them. They're literally two-to-three-acre plots."

Lemon, however, said sufficient toxicity tests are performed on lab animals to ensure they don't cause adverse health effects.

"We need to do the kinds of tests that will give us the answer as to whether this protein is toxic at any level, and secondly does it cause an allergic reaction in human beings," Lemon said. "Those studies are definitely done."


The tests, however, do not satisfy everyone and some farmers worry that yields may be suffering.

"There's not a shred of evidence that any of these GM crops are any more productive than conventional ones," Neuroth said. "If anything, they might be even less productive."

A study by the University of Nebraska's Institute of Agriculture and Natural Resources stated that Roundup Ready soybeans yield 6 to 11 percent less than conventional varieties.

"When they do the economics on the overall cost, even if you get a small yield sacrifice, the grower is still making or saving more money on the technology crop than he was on the conventional crop," Lemon said.

Thus far, the biotechnology companies have only marketed products that are herbicide-resistant or contain a pesticide. Manipulations to increase yields have failed, which casts doubt on the integrity of the forces driving the industry.

Whether viewed as gift or curse, Monsanto and the agriculture industry have opened the door to a seemingly limitless amount of genetic experimentation with America's food supply. 

Junior Brendan McLaughlin studies environmental journalism at Huxley College. This is his first published piece.



Dr. Gerry Prody, a Western Washington University chemistry professor, spent a sabbatical at University of California-Davis researching methods of modifying tomato plants to be pest resistant.

There's not a shred of evidence that any of these GM crops are any more productive than conventional ones. If anything, they might be even less productive.

*Michael Neuroth
Coast Alpine Nursery*

ORIGINS



BY SHARA B. SMITH
PHOTOS BY KATIE KULLA AND SHARA B. SMITH



I am hoping that the farmers will increase their returns as a benefit of the labeling. I hope it creates a demand for Washington grown fruits and vegetables.

*Washington state Sen. Jim Honeyford
Washington state Senate Bill 6471 co-sponsor*

CHOOSING BETWEEN Washington apples or those grown abroad will be easier when Washington state Senate Bill 6471 becomes law this June, requiring that all stores in the state mark produce from the United States or Washington as U.S. or Washington grown.

"There are different growing standards in different countries," said Steven Trinkaus, co-owner of Terra Organica, a Bellingham organic-food store. "Some have stricter standards than the United States; some have less strict standards."

Placards let consumers choose where their food comes from.

"We get questions about our produce on many different levels from our customers," Trinkaus said. "Some people want to know if something is from Mexico or not, because they will only buy fruits and vegetables grown on the West Coast or locally. I would like customers to understand why it is important to buy local and regionally grown produce."

"The food choices we make have a huge impact on the environment and the economy."

Buying local products helps minimize the amount of fuel used transporting the food — and foods retain more of their nutrients.

"There is more nutrient value to eating produce within a day or two after it has been picked," said Kristine Duncan, a registered dietitian from the St. Joseph Hospital Nutrition and Diabetes Education Clinic in Bellingham. "Once a fruit or vegetable has been picked, there is no longer a source of water or energy for it. Changes in temperature cause it to decompose and water soluble vitamins like B and C are lost."

Though local produce is available at farmers' markets and specialty stores like Terra Organica, some supermarkets also carry locally grown fruits and vegetables. During harvest season, Haggen sells lettuce, corn, berries, herbs and other pro-

duce from Whatcom County farms.

"If it is local and accessible, we will carry it," said Steven Sperry, produce manager at the Sehome Village Haggen. "It is better to be supplied by local vendors because it is fresher and of better quality. We can get produce from Joe's Garden within hours of when it was harvested."

Proponents hope the bill will inform consumers so they can choose who and what they are supporting in the checkout line.

"I am hoping that the farmers will increase their returns as a benefit of the labeling," said Washington state Sen. Jim Honeyford, the bill's co-sponsor. "I hope it creates a demand for Washington grown fruits and vegetables. The consumer also benefits from the labels so they will know where their food is coming from."

"I was thinking of a simple, easy to comply with bill that would identify where the food comes from."

Trinkaus said he would like to see more labeling laws in the future.

"I think the new bill is great," he said. "I would like to see labels on produce listing all the chemicals used to grow them."

The labels will take away the mystery of where fruits and vegetables come from. Whether the produce is organic or conventional, consumers will have an easier time supporting local farmers, improving their diets and reducing their impact on the environment.



Sophomore Shara B. Smith plans to study photojournalism at Western. She has previously been published in the Yakima Herald-Republic, the Wapato Independent and the A.S. Review.

OPPOSITE ABOVE: Bellingham's Community Food Co-op already labels its produce when possible, including its Washington-grown organic apples. (Photo by Katie Kulla)

OPPOSITE LEFT: Washington-grown organic apples glow under the lights in Terra Organica's produce display case. (Photo by Shara B. Smith)

BELOW FROM LEFT TO RIGHT: Produce Manager Steven Sperry arranges fresh vegetables for a display at the Sehome Village Haggen. Haggen supermarkets in Whatcom County carry produce from local growers. (Photo by Shara B. Smith) Organic tomatoes sold at Bellingham's Food Co-op are already labeled. (Photo by Katie Kulla) Organically grown lettuce is nestled between other organic fruits and vegetables at the Sehome Village Haggen. (Photo illustration by Shara B. Smith)



A Dying Breed

BY TAM HUYNH PHOTOS BY SARAH GALBRAITH

THERE ARE MORE FISH than ever in the fish market, but more and more commercial fishermen are going out of business.

In the 1990s, farmed fish started commanding more of the fish market and wholesale fish prices fell. Farmed fish are cheaper to harvest than wild fish, which means fresh fish at lower prices for consumers. It also means fewer jobs in the commercial fishing industry and unforeseen environmental effects.

Shannon Moore began fishing on Lummi Island in the early 1970s. He attended Washington State University and later Western Washington University before finding his calling on the open waters. He purchased his own business in the late 1980s, but was forced to quit when it could no longer support him.

Fishing was more than just a job to Moore — it was a way of life. The work was intense, but after just two seasons he earned enough income to support himself through the off-season. The price of fish was good in the late 1980s; Moore was able to sell his sockeye for \$4 per pound in 1988.

Then, during the 1990s, the price of fish started declining.

“The price really went to hell in about 1997 — it started doing a spiral,” Moore said. “What was happening was the farmed fish had finally found a foothold and they were able to take over the world market share. They did that overnight. In a matter of 10 years they went from a world market share of maybe 15 percent to 60 percent or more today.”

The drop in prices forced fishermen either to diversify their catch or quit. Foreign countries, such as Norway and Chile, flooded the market with farmed fish, driving down the price even more.



Photo courtesy of Cypress Island Inc.



Photo courtesy of Cypress Island Inc.



Rainbow trout swim freely in t

"Prices are lower than they have ever been," said Pete Granger, program leader for Marine Advisory Services. "Anybody can buy salmon now. It used to be a luxury item."

For example, Bristol Bay fishermen sold sockeye for only 40 cents a pound last year, Granger said, one-tenth of what Moore received a decade earlier.

Granger, a Bellingham resident and aquaculture advocate, supports fish farming because it provides fish to consumers at lower prices. Competition with imported farmed fish drives costs down even lower.

In Washington state there are two types of fish farm: salt water net pens that raise Atlantic salmon, and upland facilities, that usually grow trout in pond-like enclosures.

Atlantic salmon start their lives at hatcheries before getting transferred to net pens. They are harvested once they reach 6 to 10 pounds, depending on market demand. By feeding the fish a high protein diet of open-ocean fish, farmed fish grow twice as fast as wild fish.

"A lot of environmentalists say we're killing all these fish in the food chain to feed fish higher in the food chain, but we're using fish that people wouldn't eat otherwise," Granger said. "They're in a regulated fishery, so we're not using up the entire resource."

The industry is currently studying alternative feed options to animal proteins, which would eliminate the need for feed fish and reduce costs.

"It could be within the next five years that fish feed is primarily vegetable protein rather than animal protein," Granger said. "We're getting slowly away from dependency on fish meal, which would be good."

Wild salmon are pink due to the foods they eat in the ocean, such as krill and shrimp. Farmed salmon do not have pink flesh because they are only given fish meal. A pigment is

added to their feed to give them a more natural looking pink color, which appeals to consumers.

"There are two of them we can use legally, and the FDA approves them," Granger said. "So the fish will ingest it and the flesh becomes red just like it would have if it was eating natural food."

The fish may also be given antibiotics, which are regulated by the Food and Drug Administration.

When an Atlantic salmon gets into a stream even as little as one day before a wild fish, the wild fish won't stay in the stream because it senses an alien.

Anne Mosness

Go Wild Consumer Education Campaign founder

"There's an old misnomer that farmed fish have antibiotics in their flesh when they're pulled out, and we can't do that," Granger said. "It's against the law to do that. Once we have fed them some feed that has antibiotics we have to take them off that feed for 180 days to purge the flesh of any residual antibiotic."

Despite the artificial enhancements people can't get enough of farmed fish.

"You can see why consumption is going up in the country – the fish is good and it is cheap," Granger said. "The restaurants and grocers just love it because it's much better quality, much more uniform quality. Every fish is the same, which can't be said for the wild fish."

The only type of salmon raised in Washington's net pens are Atlantics because they grow faster and are more resistant to stress, Granger said. The Atlantic salmon's flavor is mild and the flesh is soft, but that may be due to the fish not swimming as much, Granger said.

The flesh is oilier, but humans benefit from the consumption of omega-3 fatty acids, which are good for the heart. Fatty acids lower the risk of heart disease by discouraging plaque build-up on arterial walls, preventing platelets in the blood from clumping together, and driving down blood thickening triglycerides.

"A lot of wild fishermen will tell you that wild fish have higher omega-3 fatty acids than farm fish because it doesn't eat natural



Gold Creek Trout Farm's breeding pool.



Photo courtesy of Cypress Island Inc.



Bill Fulson stands above trout pools at Gold Creek Trout Farm. The farm is located in Woodinville, Wash.



Gold Creek Trout Farm breeds rainbow trout for recreational fishing or sale to private owners.

fish," he said. "That's not true because our fish feed has fish oil and fish meal from real fish, and it is very high in omega-3."

Fish feces, however, is a problem in net pen operations. The feces accumulates around the pens, killing normal sealife beneath them.

"There's no way to describe it, it's just a dead zone," Granger said. "There are millions of acres in the Puget Sound. We don't have a heavy concentration of pens; I think we can live with 40 acres of (dead zone) right below our pens."

Despite farmed fish's growing popularity, it's unlikely that more fish farms will be built because of high permit costs.

While no new sites are currently planned, Granger said he hopes the industry will continue to grow.

"West of Port Angeles, (next) to the entrance of the Straight of Juan de Fuca, there's a stretch of land where there's very few people," he said. "It's potentially good for aquaculture. If any new production might come, it might be out there."

Granger's vision is exactly what Anne Mosness is fighting against.

Mosness fished with her father in Alaska after graduating from Western with a degree in sociology and psychology. She is the founder of the Go Wild Consumer Education Campaign, which provides consumers with information about the danger farmed fish pose to wild stocks.

Mosness said hundreds of thousands of Atlantic salmon have escaped from their net pens in the last few years. Farmed salmon that escape from their net pens can wipe out native salmon stocks by feeding on the eggs of native salmon. Their presence alone may deter Pacific salmon from spawning, she said.

"When an Atlantic salmon gets into a stream even as little as one day before a wild fish, the wild fish won't stay in the stream because it senses an alien," she said.

For years people thought Atlantic salmon were not hardy enough to survive in the Pacific, but the fish have been found in local waters, Mosness said.

Atlantic salmon may further harm native fish with the diseases they carry, she said.

"No organism is disease free and when they're in crowded conditions the weak fish can catch (them more easily)," Mosness said. "There's nothing about it that is good."

"There are voluminous amounts of feces, ever increasing amounts of antibiotics, pesticides that are rampant and killing the wild salmon that migrate past."

Alaska has permanently banned all net-pen operations on its shorelines because of the potential danger they pose to fish and the environment. In 1995, British Columbia established a similar ban on new net-pen operations along their coastline, but decided to lift the moratorium early in 2002. The number of fish farms is expected to increase despite the excess of fish on the market.

"(Fish farming is) known to be detrimental — it's just driven by profits," Mosness said. "There's no need for these fish."

Mosness said she is also concerned about the antibiotics and pigments fed to fish, even though they are both approved by the FDA.

"We also allowed DDT for decades," Mosness said. "If there are emerging risks, then we can't wait until there is a catastrophe to rectify a grave error."

The FDA identifies the dyes, astaxanthin and canthaxanthin, as safe for human consumption, but requires food products to be labeled to inform consumers of the additive.

The flesh is flaccid, there is no firmness to it. It's like putting your finger into margarine or lard.

Anne Mosness

Go Wild Consumer Education Campaign founder

County health departments oversee food labels in Washington, but do not regulate dyed salmon because the pigments are added to the feed and not the harvested

fish, environmental health specialist Tom Kunesh said.

A farmed salmon fillet sitting next to a wild salmon fillet shows more than just a color difference. The lack of exercise and years of confinement produce a fattier fish with wider muscle grain.

"The flesh is flaccid, there is no firmness to it," Mosness said. "It's like putting your finger into margarine or lard."

Mosness worries about research to incorporate more vegetable protein and less animal protein into fish feed. The fish will grow at the same rate but its fatty acid composition will change. Consumers looking for a high omega-3 and low omega-6 fatty acid meal will be getting just the opposite.

Moore can only watch his industry die off slowly. Fishing has become a hobby — something he does occasionally for fun.

"It's exciting watching the fish come aboard, picking them out one by one," Moore said. "So you're having this connection with this fish, one at a time, getting them out of the net. You get to see them, see what they really look like. They all have their own features."

Moore said he doesn't see the situation for fishermen getting any better.

"You can't rely on it as a source of income," Moore said.

He said he hopes one day net pens will be banned. He believes fish farming and wild fishing can coexist if farms are located inland. This would eliminate the risk of non-native fish escaping, protecting native fish, while the higher costs to run an inland operation would give commercial fishermen a fair price in the fish market. Unfortunately for Moore and fishermen worldwide, this solution may never come.



Junior Tam Huynh studies biology at Western. She has previously been published in *The Current*, Green River Community College's student newspaper and the *Planet Magazine*.



The Evergreen Station employee Jed Bailey checks in on the bok choy plants. Bailey spends his summers working on the farm and his winters in Florida.

Growing Green BY AMY KUHTA PHOTOS BY SARAH GALBRAITH

LOREN BAILEY'S GREENHOUSE is alive and flourishing while Bellingham raindrops form puddles in the surrounding yard. Bushels of lavender spill into the doorway, where trays of nursling herbs and starter plants stretch and grow to the sound of classical music from the radio in the corner. The sticky air smells like fertile soil, oregano and rosemary.

Loren Bailey rises at 6 a.m. to gather mixed greens, kale, onions, beets, radishes, stinging nettle and herbs from the greenhouse and field so his son Jed can get to the Saturday Farmers Market by 9 a.m. The Baileys have worked on Loren's farm, The Evergreen Station in Ferndale, Wash., for three generations. He became the certified-organic farm's primary operator in 1971.

Few consumers can buy produce the way the Baileys sell it — fresh from the earth. According to the University of Massachusetts's agricultural extension office, food in the United States travels an average of 1,300 miles before it reaches the consumer.



Arugula plants not harvested are left to bloom in the fields of The Evergreen Station to preserve soil integrity.

We have to stop shipping our food all over the world. We need to work within our own regions to produce our own food. We don't produce nearly what we can.

*Steve Power
Skagit County organic farmer*

"What's wrong is that the public doesn't support local production," Loren said. "We're paying the same price for two-week-old Californian produce as we are for the freshness of a local product."

Loren's wife, Marti Bailey, shares Loren's love for the land and the long, strenuous hours spent cultivating the harvest.

"You have to really be in love with it to put up with the long days, the seasonal needs and the weather," she said. "Loren works any time there is daylight."

The Baileys were ahead of their time when they rejected chemically intensive farming trends in the early 1970s. Because of that commitment, The Evergreen Station has remained as it was when Loren's grandfather and grandmother bought the property years ago — a model organic farm.

In 1940, Lord Northbourne first used the term "organic farming" in his book, "Look to the Land". Northbourne had a "vision of the farm as a sustainable, ecologically stable, self-contained unit, biologically complete and balanced — a dynamic living organic whole." Sixty-years later, organic is shorthand for chemical-free farming.

According to a 2000 U.S. Geological Survey report on pesticides in stream sediment and aquatic biota, approximately 1 billion pounds of pesticides are used each year in the United States to control weeds, insects and other organisms. Agriculture accounts for about 80 percent of that total.

The USGS report indicated that pesticides' greatest unintended effect is the contamination of the hydrologic system. In recent studies, the agency detected organochlorine insecticides DDT, chlordane and dieldrin in water systems, even though the chemicals haven't



Jed Bailey and Alexa Smith plant rows of romaine lettuce that will later be sold at local markets.

been used in the United States since the 1970s. Field studies indicate that the half-life of DDT in soil is 15 years or more.

Loren and other Whatcom County organic farmers are trying to minimize the amount of new pollution. Organic farmers, however, have had to deal with the public's misconceptions about their trade.

"At first people thought our produce should be cheaper; what they didn't understand is that there is still a ton of manual labor involved," Marti said.

Loren said small-scale organic farming is unprofitable because the consumer who consistently demands cheap food establishes the price. If Loren can't provide a cheap head of lettuce, other food producers can. For example, large grocery stores buy their produce from large farms in California, driving the product's price down.

Marti said consumers would not buy his produce if he sold it at a price high enough for him to profit.

Steve Power, an organic farmer in Skagit County, said he recognizes that people on the West Coast are accustomed to cheap food. Power has worked his 10 acres for 10 years, and, because his profits are so small, he hasn't been able to purchase the land he tills.

This growing season, Power has four acres under cultivation with annual vegetables and herbs. He sells his crops at a seasonal produce stand and through subscriptions to Community Supported Agriculture, a produce delivery service.

Sitting on an old milk crate in one of his greenhouses, Power recalled the past 10 years he's dedicated to organic farming.

"I didn't get in this to make money, but I have to feed my family," Power said.



LEFT: Workers at The Evergreen Station use tractors to haul lettuce starts for planting. RIGHT: Bok choy from The Evergreen Station is sold at many local markets and a stand on Grandview Road.

He came to organic farming after traveling in his younger days.

"I started to recognize how tenuous the food system was and that food is not distributed equitably," he said. "We have to stop shipping our food all over the world. We need to work within our own regions to produce our own food. We don't produce nearly what we can."

Power said he believes global companies are seeking more control of today's organic market.

"If there is going to be any recognition of local farmers the public needs to demand it," he said.

Bellingham resident Susan Dufner has responded to this pivotal time for organic farming by subscribing to Power's CSA. From May to November, she receives a box stuffed full of locally grown fruits and vegetables every week. Dufner's home is one of the drop sites where other CSA members come to collect their fresh produce.

"It kind of marks time for us in the summers," Dufner said. "My kids know that deliveries come on Wednesdays and that we will lay all the produce out on the kitchen table, look over some recipes and decide what to cook."

Dufner said buying and consuming organic produce is a priority for her and her family.


"It's such a wonderful thing," Dufner said. "I open my box and see a head of lettuce as big as a watermelon. It's a great feeling to know where your food comes from."

Jill Brubaker, the local produce buyer at the Community Food Co-op, said she has witnessed organics join the mainstream market in the past 12 years.

"It's good there is more national demand for organic foods," she said. "It used to be the only thing we knew about our carrots was what kind of a bag they came in. Not knowing where our food comes from has eroded our values, it's established more anonymity. We are less responsible to our neighbors as a result of all this."

Part of the Co-op's mission is to buy and support local organic agriculture. Seventy-five percent of the vegetables sold at the Co-op in the summer are locally grown. Employees always hang a sign above local items, indicating the crop's origin.

Brubaker said the local organic scene is having growing pains right now. She said meeting the mass market's needs is a complicated undertaking, one that some small family farmers are unable to endure.

"We are at a point where things could get a whole lot better or a whole lot worse," Brubaker said. "Collective need for local organic production is what will make it happen." 

Junior Amy Kuhta studies English and environmental studies at Western. This is her first published piece.

In a lot of ways Washington state standards have been used as a model for the national standards. For the most part the standards are identical.

Miles McEvoy
Organic Program of Washington state director

Regulating the Revolution

BY CATE WEISWEAVER PHOTOS BY KATIE KULLA

CLEAR SKIES ALLOW the warm spring sun to pull young plants up through dark rich soil. Soft breezes mix the smell of warm earth and tender tomato-plant shoots. People bustle from the farm store to the greenhouse to answer a ringing phone to take another order for a local market.

For organic farmers, this spring is a time to plant and harvest — and prepare for new standards. The federal government initiated new organic-certification regulations on April 21, 2001, which organic farmers must fully comply with by Oct. 21, 2002.

The U.S. Department of Agriculture's National Organic Program created an organic certification standard for the entire nation. The new regulations require that a third party, either a Washington state agency or private certifier, prove that the farmer did not use synthetic chemicals while growing, handling or processing the food before it is certified organic.

For Washington state these changes are not drastic.

"In a lot of ways Washington state standards have been used as a model for the national standards," said Miles McEvoy, director of the Organic Program of Washington state. "For the most part the standards are identical."

While the standards are almost identical, the quantity of paperwork increased.

"The amount of documentation is a disservice to small growers," said Mike Finger, an organic farmer.

McEvoy said he wants to find a way to make the process less difficult for local farmers who sell to local markets.

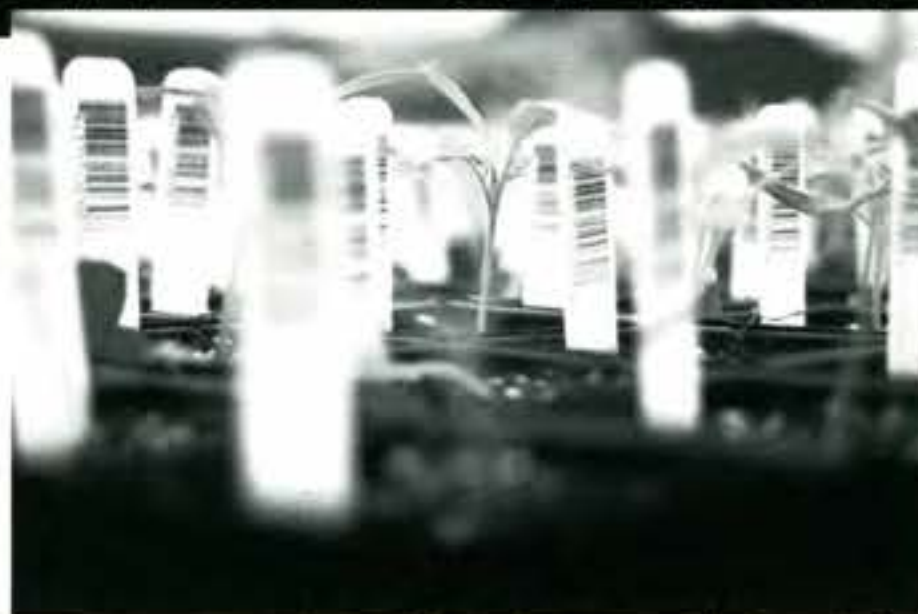
The new regulation allows farmers who sell less than \$5,000 worth of organic goods each year, to label their food organic without going through certification, helping new organic farms get started. Small farmers, however, often sell much more than \$5,000 worth of produce each year, and the certification process has some worried.

Farmers must submit a lengthy Organic Systems Plan, which details everything from soil conditions to compost application schedules. While the extra paperwork is easy for larger farms to handle, smaller farms often don't have the spare time.

Finger said he only went through the process this year because he wanted his produce to carry the organic label for economic reasons. He said his success or failure this year will determine if he renews his certification in 2003.

"I don't feel a great need for certification," Finger said. "I feel the relationship I have with my customers is better than any certification. It's called trust."

Many small farmers around Bellingham already make their methods known to their customers but, because the new regulation gives power to the federal government, some farmers worry they won't be able to have a say in new regulations.



Tomato plants sprout in Joe's Garden's, an uncertified organic farm.

"The national standardizing of organic produce seems like a good idea," Finger said, "but it weakens the voice of smaller farms which once had a stronger say at the state level."

Agribusiness tried to make irradiation, genetically modified seeds and sludge acceptable in organic farming four years ago, he said. With federalization, another push for these types of policies may have more of a chance because of big business' influence.

Some of his fears may never be realized, but farmers have more immediate concerns this season. Issues such as cover crops, seeds, composted manure and pests consume the daily thoughts of the average farmer. For each issue, organic farmers must consider every choice's consequence.


Some policies are harder to comply with than others. Since organic seed supply is a small industry, there is not enough certified seed for every organic farmer, Finger said.

Under the new regulations, farmers can use some non-organic seed, but only after showing they attempted to obtain organic-certified seed. The seed, however, cannot be exposed to anti-fungal chemicals or hormones.

A farmer's cover crops, which maintain the soil's nutrients and level of organic matter when the land is not in use, must also come from untreated seed.

The new standards also heavily regulate fertilizer. Farmers often have a compost pile of dairy manure they allow to decompose over a year or so. Professional compost suppliers use equipment to measure carbon-to-nitrogen ratios, temperature and bacterial levels in compost.

Now, an organic farm's composted fertilizer must have a carbon and nitrogen ratio between 20-parts carbon to one-part nitrogen and 40-parts carbon to one-part nitrogen. This balance of carbon ensures enough heat in the pile to kill the bacteria and the low nitrogen level is to prevent evaporation. Unless farmers meet these standards, they may not be able to fertilize their crops for as long as three months before harvest.

"The required process verges on farmers being professional compost makers," Finger said. "This just means I will not be using fertilizer this year. I've been using composted manure for years and never had a problem." 

Junior Cate Weisweaver studies journalism at Western. This is her first published piece.



ABOVE: Kristin Stoddard makes espressos in Western Washington University's Miller Hall Coffee Shop with Starbucks espresso beans. Though all of the drip coffee served at Western is fair-trade certified, the decaf and espresso beans are not because Starbucks does not carry these in fair-trade-certified blends.

LEFT: Moka Joe owner, Trudy Scherting stores raw coffee beans in the converted garage until roasting time.

LIVING *wage*

“THIS IS AN ECOLOGICAL DISASTER for every part — soil, water, the longevity of the farmers themselves,” Jeremy Simer said.

The disaster that has Simer so incensed isn't an oil spill on a pristine coast or a toxic release into a major river. This disaster is more insidious and, though it is happening a world away from Western Washington University, Western students are partly responsible.

Simer is upset because, for all of their environmentalist trimmings, students at schools like Western don't demand fair-trade coffee.

“Fair-trade coffee supports small, family-run farms, which in turn sustains the environment by keeping the soil rich with nutrients and supplying habitat for birds,” he said.

Simer worked for TransFair USA, which certifies coffee distributors that buy coffee directly from farmers — and pay them a living wage for their beans — as fair-trade.

According to TransFair, conventional-trade farmers only receive a daily wage of \$1 to \$3. The difference between fair-trade coffee and conventional-trade coffee is fair-trade farmers are guaranteed the minimum market price of \$1.26 or higher for each pound of coffee they sell.

Western student Colin McDonald, of Students for Fair Trade, said he believes fair-trade coffee is an important issue at the university, which purchases more than 10,000 pounds of coffee each year.

Students for Fair Trade wants Western to serve only fair-trade-certified coffee, which, McDonald said, is better for the environment and the farmers who grow the coffee.

“Most of the coffee we consume is coming from deplorable conditions both from an environmental and social standpoint,” he said. “If we could have great coffee on campus that is grown by people who are earning a living wage, that is grown under sustainable conditions, that comes with great service and that we don't have to pay more for, why would we not want to switch?”

My gut feeling is students like Starbucks. It's hard trying to satisfy everyone.

Nori Yamashita
Food Services Director at Western Washington University

Students for Fair Trade is part of a nationwide movement promoting environmentally sustainable coffee. In many ways, the changes these students want are a step backward in agricultural evolution.

"(Farming) was originally all organic," McDonald said. "Then large corporations came in and created new growing conditions that need fertilizer. Large plantations have to apply artificial fertilizers to keep the nutrients in the soil. The plantations may get more per acre and get more cash, but they destroy and use up the land."

Coffee plantation owners often log forests and farm in open fields, reducing the quality of the bean, McDonald said. Because intense farming depletes the soil's nutrients, farmers must move the plantation to a new location — only to start the process again. Small farms don't rob the land of nutrients the way larger farms do because they use more-sustainable farming methods, he said.

"(Small) farmers don't have the funds to cut down trees," McDonald said. "So (their coffee) automatically becomes shade grown and bird friendly."

Shade-grown coffee is cultivated under the canopy of taller trees and plants growing in the surrounding area.

"Shade-grown-coffee farms can keep nutrients in the environment," Simer said. "It protects habitat for birds, especially migratory songbirds in Latin America. Insects and other plants are also involved. Leaves that fall to the ground enrich the soil. It maintains the biodiversity of the ecosystem."

Because they don't have easy access to pesticides, small farms rely on natural pest control and organic fertilizer, McDonald said. The pesticides used by large plantations are hazardous to the health of workers and pollute water supplies, he said.

McDonald said fair-trade certification lets consumers know they aren't supporting this cycle of pollution.

While Western's drip coffee is fair-trade certified, its decaffeinated and espresso coffees are not because Starbucks — the university's sole coffee supplier — only carries one type of fair-trade coffee.



Moka Joe's Sumatra blend takes about 20 minutes to roast in a one-pound roaster.

"(Students for Fair Trade's) goal is to have the best coffee for people and the environment," McDonald said. "Those people include the consumers and the producers. This means the coffee has to taste good and not be expensive."

McDonald said Western has fair-trade alternatives comparable in taste and price to Starbucks fair-trade coffee.

"Thanksgiving and Equal Exchange are two of the largest fair-trade-coffee suppliers in the United States," McDonald said. "Both carry large university accounts and both have pricing and service that is competitive with Starbucks."

Thanksgiving and Equal Exchange provide more fair-trade types and flavors of coffee than Starbucks, he said.

Nori Yamashita, Western's food services director, said 75 percent of coffee the university buys is fair-trade certified. He said he doesn't want to force students and faculty to drink fair-trade coffee, and that options should be provided to them.

"My gut feeling is students like Starbucks," Yamashita said. "It's hard trying to satisfy everyone. This is a college campus and you should have a choice."

While coffee drinkers' only on-campus option is Starbucks, real choices abound in Bellingham.

Moka Joe, a Bellingham coffee roaster, has tapped into the community's demand for fair-trade coffee. Trudy Scherting and her husband Joe own and run the business. Scherting said they have always used fair-trade coffee in their blends and are in the process of becoming fair-trade certified.

"TransFair states that 5 percent of coffee you sell has to be fair-trade to become licensed," Scherting said.

She said that eight out of the nine kinds of coffee beans they purchase are certified fair-trade, exceeding TransFair's 5-percent requirement. Their other beans are certified organic.

"We are contributing to the fair trade issue," Scherting said. "It brings notice to farmers who deserve the right amount (of money) for their coffee. It's like bringing notice to sweatshops in China."



Junior Ivory Firsching studies public relations at Western. She has previously been published in *The Western Front*.

Violations occurred. The company and supervisors should have been prosecuted.

*Gail Eisnitz
The Humane Farming Association's chief investigator*

Slaughterhouse Rules

BY TORHIL DUNHAM
PHOTOS BY KATIE KULLA

A SHOT IS FIRED in the center of her forehead. As her legs kick out, the cow falls on her side. A knife slices her throat. Blood pours onto the barn floor.

The cow is dead, yet her legs continue to kick as her body groans reflexively.

Brett Biesheuvel makes his living slaughtering cattle for farmers around Whatcom County. His father also slaughtered cattle and Biesheuvel began helping before he was in kindergarten and continued the work through high school. It's what he grew up doing.

"It's the only thing I know how to do," Biesheuvel said.

He said he enjoys his job. He likes being outdoors and meeting new people.

While Biesheuvel slaughters animals one or two at a time, slaughterhouse workers butcher hundreds of cattle in a matter of minutes. Although the job he does is similar to the one workers do at large slaughterhouses, Biesheuvel has the time to do it correctly while slaughterhouse workers rush to keep up with the line.

On May 31, 2000, evening newscasts across the Northwest showed disturbing footage taken inside Iowa Beef Processors, Inc.'s slaughterhouse in Wallula, Wash. The video showed cattle being struck on the head with an air gate, electrically prodded in the mouth and hoisted in the air as they moved down the slaughtering line, kicking and blinking.

Washington state law defines a humane slaughtering method as one "whereby the animal is rendered insensible to pain by mechanical, electrical, chemical or other means that is rapid and effective before being shackled, hoisted, thrown, cast or cut."

As a slaughtering guideline, if an animal is stunned electrically, slaughterhouse workers must render it unconscious with the first shock. The video at the IBP plant shows cattle being stunned several times before losing consciousness.

Biesheuvel said cattle spasm reflexively long after they die.

He usually removes a cow or steer's head and feet while its muscles are still twitching; bovine muscles continue to twitch for about 45 minutes after death.

But Biesheuvel knows the cattle he slaughters are dead. He can see its eyes are not blinking or rolling around. If they were, he said, the animal wouldn't be dead.

The video from the IBP plant shows cattle blinking as they move down the line.

After obtaining the video, the Humane Farming Association and 11 other groups petitioned Governor Locke's office, asking him to investigate IBP's inhumane slaughtering practices.

Locke formed a taskforce to look into the situation; by April 2001, it completed its investigation without gathering enough evidence to charge IBP.

Walla Walla County Prosecuting Attorney Jim Nagle determined there was insufficient evidence to bring criminal charges against the company.

"The biggest problem I had with this investigation was the concept of corporate criminal liability," Nagle said. "Proving corporate criminal liability isn't as easy as people think."

In other words, IBP was not telling workers to slaughter the cattle incorrectly or illegally, so they are not criminally liable.

"I think (the workers) were not trained enough," Nagle said.

Nagle said IBP supervisors may have put untrained workers on the line, but he couldn't hold the corporation liable for the supervisors' mistakes.

While the five minutes of the video showing IBP employees mistreating cattle that appeared on television caused problems for the corporation, the remaining 3-and-a-half hours of original footage frustrated prosecutors because it showed workers trying to fix the problems.

Still, the abuses documented on the tape are compelling. Temple Grandin, an assistant professor at Colorado State University's animal science department, said she can't defend the way IBP employees were handling the cattle.



From cow to meat: **TOP ROW PHOTOS, LEFT TO RIGHT:** Brett Bieshevel, a custom slaughterer, shoots the animals to kill them. After the animals are dead, Bieshevel slits the animals' throats draining their blood. Bieshevel and his assistant then clean and skin the animal, removing its head. **CENTER PHOTO:** Before hoisting the animal for gutting, Bieshevel opens the chest cavity with an electric saw. **BOTTOM ROW PHOTOS, LEFT TO RIGHT:** After they skin and gut the cow, the men split the carcass in half for transportation back to the plant. In the butchering room at the plant, other men cut the flesh down into the final product – meat.

The biggest problem I had with this investigation was the concept of corporate criminal liability. Proving corporate criminal liability isn't as easy as people think.

Jim Nagle

Walla Walla County prosecuting attorney

Grandin designs livestock handling facilities. Almost half of the cattle slaughtered in the United States are put through a center-track restrainer system that she designed. Her system holds the animal in place while it is stunned, allowing slaughterhouse workers to move cattle without excessive prodding, Grandin said.

She said the cattle were refusing to enter the stun box at IBP, which does not use her system, causing workers to stun the animals repeatedly.

"Ninety-five percent of cows will enter the stun box without being prodded," Grandin said.

The state's failure to file criminal charges against IBP disturbs Humane Farming Association members, said Gail Eisnitz, HFA's chief investigator. She said state investigators had evidence of IBP's violations — they were just looking for a way to not prosecute the corporation.

The state claimed the HFA provided "manufactured evidence" to the media. Eisnitz says that simply is not true.

"Violations occurred. The company and supervisors should have been prosecuted," Eisnitz said. "The supervisors are management. They are the corporation."

Eisnitz said that workers went to their supervisors time and time again asking them to slow the line down. Nagle said IBP is a difficult corporation to work with, and that it intimidates its employees.

Workers' affidavits of IBP's wrongdoing and HFA's petition did not establish corporate liability, Nagle said. He said HFA ruined the state's chances to do an undercover investigation by going to the media with the tape, essentially warning IBP an investigation was going to take place.

"HFA's just mad that I didn't do what they wanted me to do," Nagle said. "I don't like IBP any more than they do."

Grandin inspected the IBP plant after the video aired, checking its stunning equipment, its ability to render cattle insensible to pain, and its handling of the cattle. Grandin passed the plant on stunning and insensibility. She failed them on handling.

But Gary Mickelson, the spokesman for IBP told *The Seattle Times* the inspector found nothing wrong in the plant. Mickelson declined to comment, and would not allow a tour of the plant.

"We take the issue of proper livestock handling very seriously," stated Dean Danilson, IBP vice president of quality control

in an April 18, 2001 press release. "It is not only a moral and ethical obligation, it is also important from an employee safety and product quality standpoint."

However, the Washington state Department of Agriculture and IBP reached an agreement on April 10, 2001 allowing surprise inspections at the plant, and making

provisions for employee training to improve livestock handling. The agreement will last through September 2002, and may be extended.

IBP installed cameras in the plant two years ago to monitor the slaughtering process. Under new management, the plant implemented a better self-auditing system to clear up problems, Grandin said.

These changes, however, are not enough to appease some people, including HFA, which still wants to see IBP prosecuted for inhumane treatment of animals. Meanwhile, one-man butchers like Brett Bieshevel will continue to slaughter cattle the way their fathers taught them, and slaughterhouses like IBP's will try harder next time.



Sophomore Torhil Dunham studies journalism at Western. This is her first published piece.

IBP, Inc.

Iowa Beef Processors, Inc. is the largest beef and pork producer in the world. Acquired by Tyson Foods, Inc. in 2001, the Dakota Dunes, S.D.-based corporation employs 52,000 people in more than 60 sites scattered around North America. Though its primary business is in fresh meat sales, IBP is also the nation's largest tanned-hide producer and a leading supplier of gelatin bone for photographic film.

Supersizing America

BY JACKSON LONG

PHOTO ILLUSTRATIONS BY KATIE KULLA

DURING LUNCH at Bellingham's Sehome High School, students race off campus for a meal during their 35-minute break. They have quick access to Burger King, Arby's or McDonald's down the hill on Samish Way.

"It's cheap and it's fast," Sehome junior Caitlin said. "Wednesdays are the big days (at McDonald's) because of the 49-cent cheeseburgers."

On this sunny Wednesday lunch hour, truckfuls of students swarm the parking lot, some stopping to socialize before getting lunch. It's a ritual for many high school students in the United States.

"The places where you get the food the fastest are better," Caitlin said. "On the days when we have longer lunches, my friends and I will go to Subway. Subway takes longer."

Each year, the average American consumes 28 pounds of french fries, according to Eric Schlosser, author of "Fast Food Nation: The Dark Side of the All-American Meal". Schlosser argues that cheap, convenient, tasty fast food is a danger in disguise.

"I am concerned about (fast food's) impact on the nation's children," Schlosser states. "Fast food is heavily marketed to children and prepared by people who are barely older than children."

Fast food has become a staple of the American diet — especially among adolescents. Eating too much fast food and too many unhealthy meals on the go has led to an obesity epidemic which may soon kill more people each year than smoking.

Trips to fast food restaurants are characterized by free refills, super-sized meals and overeating, said dietician Cheryl Bittner of Apple A Day medical nutrition therapy.

A McDonald's Quarter-Pounder meal — quarter-pound hamburger with cheese, large order of french fries and a 16-ounce drink — contains 1,166 calories or 58.3 percent of the recommended daily intake on a 2,000 calorie diet. Its 51 grams of fat account for more than 78 percent of a day's recommended 65 grams.



A Big Mac® Extra-Value Meal®, Super Sized®. Calorie count: Super Size® Coca-Cola Classic® (42 fl-oz) = 410 calories; Big Mac® = 590 calories; Super Size® fries = 610 calories; total = 1,610 calories. In addition, between the burger and the fries, the meal contains 63g of fat, almost 100% of the daily recommended 65g (based on a 2,000 calorie diet).

Photo Illustration



Fast food is heavily marketed to children and prepared by people who are barely older than children.

Eric Schlosser

"Fast Food Nation: The Dark Side of the All American Meal" author



Photo Illustration

"There are healthy meals to be had at McDonald's," said Janis Harsila, project development coordinator for the Seattle Nutrition Action Consortium. "But people have a tendency to get everything and then supersize it."

While an occasional fast food meal isn't inherently bad, a diet based on high-fat fast food lacks elements of nutrition the human body needs. Dieticians warn that Americans eat too many "top of the pyramid" foods, such as fats, oils and sweets, and not enough fruits and vegetables, of which the U.S. Department of Agriculture recommends five servings daily. In 1999, only 3 percent of Americans met four or five of the federal Food Guide Pyramid categories for grains, fruits, vegetables, dairy products and meats.

The terms "overweight" and "obese" have precise meanings within medicine; they are tied to a person's Body Mass Index score. The score is determined by dividing a person's weight by the square of his or her height, then multiplying that number by 703. According to this measure, people with scores between 25 and 29 are "overweight," while those with scores 30 and above are "obese."

Sixty-one percent of American adults and 13 percent of U.S. children are obese or overweight. In December 2001, outgoing Surgeon General David Satcher reported that 300,000 Americans die each year from obesity-related ailments such as heart disease, type-II diabetes and some types of cancer.

Some people are genetically predisposed to obesity, but for most the cause is rooted in sedentary lifestyle. Many dieticians, public health officials and college professors believe that fast food is linked to America's obesity epidemic.

"We're getting heavier and life's getting easier," Harsila said. "We drive cars everywhere and do less walking."

While health professionals educate Americans about finding balance in their diet, Americans spend \$10 billion on fast food each year, exercise less and are becoming more obese.

"When you compare statistics from the 1970s and the 1990s, we're seeing big increases (in obesity)," said Adrienne Dorf, a King County Public Health dietician. "It's pretty dramatic, the number of children and adults who are overweight."

"You can be obese and be healthy," Bittner said. "But most people aren't. Most obese people aren't happy, because they can't move around. If you develop joint disease, you can't exercise like you used to and your size increases geometrically every year."

Obesity and poor diet can also lead to type-II diabetes, Dorf said.

While not strictly a result of excessive weight, diabetes is a contributing factor in about 450,000 deaths each year. Diabetics are twice as likely to die prematurely, according to the National Center for Disease Prevention.

Diabetes belongs to a group of diseases causing high levels of blood glucose resulting from defects in insulin production.

Type-I diabetes, also known as juvenile diabetes, usually develops during childhood and is caused by genetics and other non-dietary factors including viral infections. Type-II diabetes, or adult-onset diabetes, is the result of a person's genetic predisposition and obesity, Dorf said.

"The public thinks that type I is what happens to children and type II is what happens to adults because most people that develop type-II diabetes are overweight," she said. "However, we're now seeing type II in children. We've rarely even seen that before."

Type-II diabetes's emergence in children is one of the obesity epidemic's most eye-opening symptoms. Dorf sees many preschool-age children in Washington's Early Childhood Education Assistance Program with weight issues.

"There's a young boy I work with who, at age 4, weighs 120 pounds," she said. "He doesn't



products in schools. Many public schools offer brand-name fast food a la carte as an alternative to cafeteria meals.

"It is not unusual for schools to outsource for some of those items that kids are used to eating," Finch said.

Kelly Brownell, a Yale University psychology professor and director of the Yale Center for Eating and Weight Disorders said he would like to see soft-drinks and fast food banned from schools. He also suggests schools restructure lunch, turning meal time into an educational activity.

"If food service becomes education, the entire context changes," Brownell states in his new book "Eating Disorders and Obesity: A Comprehensive Handbook".

For a number of reasons, lower-income children seem to be disproportionately affected by the obesity trend.

"We find that the lower-income kids are heavier," Harsila said.

WHAT IS OBESE?

Medical science provides a simple formula to determine a person's Body Mass Index score. A person whose BMI score is between 25 and 29 is considered overweight; a person whose score is greater than 29 is considered obese. Here's the formula:

$$(\text{Weight-in-pounds}/\text{height-in-inches}^2) 703 = \text{BMI score}$$

have diabetes, but he would be a prime candidate if he has the genetics for it."

Adolescents now have unprecedented access to cheap, high-fat foods at home and at school. Anita Finch, administrative dietitian for Seattle Public Schools, said her biggest challenge is getting students to eat foods at school they wouldn't normally eat at home.

"If a child is used to eating foods that are fairly quickly prepared, then come into school and see a dish like turkey tetrazzini, they don't have these at home, so their choices reflect that," Finch said.

Seattle Public Schools, like most school districts, takes part in the U.S. Department of Agriculture's National School Lunch Program. The NSLP feeds 27 million students each school day, providing free meals to children whose families earn less than \$22,945 each year. The USDA, however, only helps fund lunch programs that meet its nutritional requirements.

Despite USDA regulations, however, children may be developing unhealthy diets during the school day. Vending and soft-drink machines paved the way for fast food companies such as Pizza Hut and Taco Bell to sell their familiar



As development coordinator for Seattle Nutrition Action Consortium, a publicly funded organization dedicated to helping lower-income families live healthier, Harsila assists schools where 15 percent or more of the students qualify for free or reduced meals under the NSLP. Harsila said low-income children may be more at risk because they are left unsupervised after school while parents work.

"Moms and Dads don't always have time to prepare healthy food for kids," Harsila said. "Coke and pizza companies are on-hand in cafeterias. Fast food has become easier to access."

Dorf points out that low-income families may be more likely to use food as a reward.

"Middle income parents can indulge their children by taking them to an amusement park or buying them video games," she said. "A low-income family may only be able to indulge their children with food."

Dorf said children as young as 5-years old are targeted by advertisers. Dorf studied the effects of television food advertisements on children's choices and believes that eating and entertainment have become powerfully linked.

There are healthy meals to be had at McDonald's, but people have a tendency to get everything and then supersize it.

*Janis Harsila
Seattle Nutrition Action Consortium,
project development coordinator*



"Food has become entertainment," Dorf said. "How do you deal with your children when they recognize the picture of their favorite character on their food?"

Brownell suggests that government should regulate the more than 10,000 television food advertisements children see each year and mandate equal time for nutrition messages.

"Considering public policy as a means for reducing the number of people affected by obesity may be the bold action necessary to have an impact on rising its prevalence," he stated.

Like Brownell, the California Food Policy Advocates feel legislation is the answer. The CFPA championed a California state Senate bill that would ban schools from selling soft drinks. However, Brownell feels America is losing its war on obesity.

"In all likelihood, prevalence will continue to increase," Brownell stated.

Harsila said children are the most susceptible to fast food's influence in their lives.

"Kids aren't worried about the long term," Harsila said. "It's not until later in life when you realize you are 15, 20 or 50 pounds overweight."

Dieticians suggest that the social nature of eating — when people eat and who they eat with — may be as important as what is eaten.

"Feeding behaviors, as well as what food is offered, is directly related to the issue of obesity," Dorf said.

Harsila encourages families who don't regularly eat together to start sharing at least one dinner each week. In a similar vein, children in King County ECAP programs learn to eat together in a communal environment.

"The kids all sit together and share the same food with teachers, who sit at the same table with them," Dorf said. "This might be the only chance children get to have a well-balanced meal in their day."

In 50 years, fast food has changed what, when and where Americans eat. The

American diet includes more calories than ever before; it includes processed fast food, bags of chips and 20-ounce bottles of pop. Americans dine out more, eating at home less often.

Fast food, however, has not changed why people eat.

"Food has a lot of emotional context," Dorf said. "Many people associate food with comfort and good feelings."

For Caitlin, that feeling may be the freedom outside her school's walls; for millions of low-income American children, it may be the joy only their favorite breakfast cereal can bring. Later, it may turn to diabetic numbness or chest pains brought on by heart disease.



Junior Jackson Long plans to enter Fairhaven College. He has previously been published in *The Western Front*.



ABOVE: Sea Ganschow chops onion with her two-year-old daughter, Sophia.

RIGHT: Ganschow grates vegetables to include in the dinner salad.

BY HELEN HOLLISTER PHOTOS BY SARAH GALBRAITH

SCENTS OF OREGANO, thyme and cumin wafted lazily through the air. Meanwhile, two pots sizzled and snapped, laden with colorful, aromatic tofu entrees. Bellingham resident Sea Ganschow squeezed a block of tofu between her fingers, forming small crumbs for tofu salad.

"This is my favorite part," Ganschow said as the tofu fell from her hand.

She's taught tofu-cooking classes for nearly four years through the Bellingham Community Food Co-op's Healthy Connections series.

Ganschow is married and has three children, aged 17, 4 and 2. Her entire household is vegetarian.

A 2000 National Zogby Poll sponsored by the Vegetarian Resource Group found 2.5 percent of the population is vegetarian, meaning approximately 4 million adults in the United States are vegetarian.

While the reasons for adopting a vegetarian diet vary, one of the most compelling involves meat consumptions' negative environmental impacts.

Ganschow maintains a vegetarian diet in part because of her concern for the environment. She said vegetarianism's impacts can go a long way.

"(A vegetarian) uses fewer resources of the planet to produce food," Ganschow said.

Many vegetarians believe an undeniable link exists between vegetarianism, the environment and the meat industry.

Vegetarians of Washington President, Amanda Strombom, said using fewer resources is the primary benefit of eating vegetarian. The extensive role water plays in cattle production also has an enormous impact on the environment, she said.

"It takes roughly 12-times the amount of land to grow enough grain to feed a cow to get one pound of meat, compared to the land required to grow wheat for a pound of flour," Strombom said. "More than half the total amount of water consumed in the United States goes to irrigate land for growing feed and fodder for livestock."

Producing a pound of beef often requires up to 15-times the amount of water required to produce the equivalent amount of plant protein.

You go to Denny's or Shari's and they have a breakfast steak. What the hell is a breakfast steak?

*Matt Russell
Western student*



Zeke, Sea Ganschow's son, eats his tofu dog at the dinner table, while her daughter, Sophia, waits for her's to finish cooking. All Ganschow's children are vegetarian.



More than half the total amount of water consumed in the United States goes to irrigate land for growing feed and fodder for livestock.

*Amanda Strombom
President of Vegetarians of Washington*

Also, pollution from animal manure has a major impact on the environment, Strombom said.

"While we humans use bathrooms linked to carefully controlled sewage systems, animals have no such constraints," she said.

While the North Cascades Audubon Society has made no official statement regarding the impact of livestock on the environment, President Debbie Craig said the large amount of land dedicated to livestock and the pollution caused by livestock feces have incredible impacts on the environment.

THE CONSCIOUS CONSUMER

Clad in nothing but blue corduroy pants and a hemp shoulder bag, Western Washington University student Michael Shepard strutted his environmentally friendly stuff during the Vegan Fest fashion show in Western's Viking Union in April.

As a member of the Western Animal Rights Network, Shepard said it is an environmentalist's obligation to be vegetarian.

He said he believes that by eating meat, a person is harming the environment.

"In this country the negative environmental impacts include enormous amounts of land used for cow grazing or food production for livestock," Shepard said. "Byproducts of animal agriculture are often dumped into streams — byproducts like manure, antibiotics and steroids."

Shepard, a vegetarian for 10 years and a vegan for five years, said the collective mentality must change before society can.

"That mentality (dictates) what we buy, why we buy and what we support with our money," Shepard said. "As consumers, that is our most powerful form of activism. Going vegetarian is a really easy way to incorporate activism into your life."

While Western student Matt Russell, 22, is a vegetarian primarily for health reasons, he said he doesn't think people realize the strain eating meat puts on the earth's resources. Russell said meat is such a part of American culture that eating it with every meal has become tradition.

"It's an institution," Russell said. "You can try to explain these things to people. They don't really care because they need their meat."

"You go to Denny's or Shari's and they have a breakfast steak. What the hell is a breakfast steak?"

THE NUTRITIONAL TRUTH

Kristine Duncan, a registered dietitian from the St. Joseph Hospital Nutrition and Diabetes Education Clinic, said that, although people can get all the nutrients they require from plant-based foods, most people don't think about that possibility.

"There is a plant source for every nutrient except vitamin B-12," Duncan said. "This is only a concern for vegans, as they consume no animal foods. But many common foods are fortified with B-12 that a vegan could include, like fortified soy or rice milk and many breakfast cereals."

She said that vegetarians who eat eggs and dairy products can get adequate amounts of B-12 from dairy foods and eggs.

"We get calcium, protein and iron from animal foods but we can get calcium from broccoli, leafy greens, almonds, oranges, black beans, fortified orange juice and some soy products," Duncan said. "We can get protein from nuts, seeds, legumes and soy. We can get iron from whole grains, breakfast cereals, legumes, etc."

Duncan said the way to maintain a nutritional balance is replacing each animal food with an alternate instead of just removing it.

"If you would normally have a turkey sandwich at lunch with fruit and a glass of milk, then be sure to have a peanut butter or humus sandwich, or a sandwich with a soy lunch meat or a slice of cheese with your fruit and milk," Duncan said.

She said a vegetarian can achieve a balanced diet easily by varying their diet and eating from each food group.

"The most important thing to remember when following a vegetarian diet is adequacy, balance and variety," Duncan said. "Vegetarian diets are often higher in fiber and vitamin C and lower in cholesterol, saturated fats and calories. Vegetarians are at lower risk for many chronic diseases that affect our population, including heart disease, obesity and cancer."

Strombom said the number of environmental reasons for vegetarianism combined with the personal health benefits are overwhelming and that reducing dependence on meat will lower a person's fat intake, cholesterol level and the amount of toxins they consume.

ADOPTING THE ALTERNATIVE

Craig advised people to educate themselves and reduce the amount of beef they consume, especially fast food beef. She said if everyone simply reduced their beef consumption by one meal per week it would make a difference.

Strombom suggested that people recognize eliminating meat from one's diet is a long-term goal. She said people should take it one step at a time.

"These steps could include eating one vegetarian meal a week, trying out some of the fake-meat products which are readily available in grocery stores, or choosing a bean burrito, a veggie burger or a veggie pizza the next time you eat out," Strombom said.

She said that people who still want meat in their diet should buy organic meats raised in a more environmentally conscious way.

"Every step you take, however small, will have a beneficial impact on the environment," Strombom said.



Senior Helen Hollister is pursuing a double major in journalism and Spanish at Western. She has previously been published in the Western Front and Seattle Central Community College's newspaper, the City Collegian.



Ganshow fixes a tofu dog for her husband, Will.

