



# Farming in Nature's Image

## Overview

Using a case study of a Nebraska farmer using practices that work with nature, students will explore many ways to “farm in nature’s image.” Discussion focuses on profitable agricultural practices that also are beneficial to the natural environment.

## Suggested Grade Level

9 - 12

## Estimated Time

45 minutes and/or option for homework assignment

## Objectives

Students will be able to:

1. identify the farming practices that work with nature.
2. analyze a case study and exercise critical thinking skills.

## Background

See “Case Study – Farming in Nature’s Image: The Larson Farm.”

## Materials

1. “Case Study – Farming in Nature’s Image: the Larson Farm”
2. Activity Sheet: Case Study Questions

## Activity

1. Distribute the case study and the case study questions to students.
2. Have students read the case study individually or as a class.
3. Clarify any information in the case study.
4. Have students answer the case study questions.
5. Discuss students’ answers as a class.

## Extensions

1. Visit the “Listening to the Prairie” exhibition; see images of the Larson farm.
2. Find out information about organic agriculture certification in their state.
3. Have students interview local farmers about agricultural practices that the farmers feel work well with the regional ecology.

## **Case Study**

### **Farming in Nature's Image: The Larson Farm**

Tom Larson's father, Glen, began raising corn and alfalfa as feed for beef cattle and hogs on a Nebraska farm after World War II. His farm, described by his son as "very traditional," followed a monoculture system, which involved growing a single crop in each field. Glen Larson plowed, disked and harrowed to get straight crop rows with no weeds. Just preparing the field required up to four tractor passes, with another two to three for cultivation. The laborious work kept Glen busy from sunup to sundown for much of the season.

By the mid-1980's, Tom Larson took stock of the operation, its size and the amount of labor needed, and was dissatisfied. The 156-acre farm was reliant on just a few agricultural commodities (cattle, hogs, corn and alfalfa), and was too small in the prevailing "get big or get out" environment to make money. Meanwhile, he spent hours and hours on a tractor to produce feed for livestock.

Tom decided to make some adjustments and strive for maximum economic returns rather than maximum crop yields. He became certified organic, a method of farming that does not use synthetic chemicals, began a 90 – 100 cattle stocker operation in a unique grazing system, and he raised poultry outdoors on pasture. He diversified and grew many crops; organic grains, including popcorn, soybeans for tofu, barley for birdseed, and forage turnips. His profitability goals went hand-in-hand with soil improvement. "There are crops that deplete the soil and there are crops that build up the soil and we try to have a mix of those," he said. "We grow whatever mix it takes to be profitable in a very long-range outlook."

The old farm system of growing and harvesting grain as cattle feed helped raise fat cattle, but the cost didn't justify the return. These days, the cows are gaining weight just as fast from eating forage turnips and the stubble after grain harvest. Tom now receives premium prices for selling the feeder cattle because they are in such good condition for the finishing lot. Forage turnips, seemingly an unusual feed for cattle, provide as much nutrition as high-quality alfalfa.

To diversify in a way that would help the soil as well as be profitable, Tom introduced a small grain, a coarse grain and a legume that he plants in narrow strips for weed control. Those products are produced organically for human consumption, not for animal feed. "Being on limited acres, we looked at crops that would net more dollars per acre, which is a long-standing value with me," he said. "I'm not really interested in production per acre. It's the net dollars per acre that I can generate."

Once Tom decided to diversify, his path was set. Over the next decade and a half, he would try new ventures, focusing both on their outcome in the marketplace and their place in his rotation in the fields. His new motto is spread the economic risk through diversification. A major change came when Larson began raising pasture and forage

crops for grazing animals rather than harvesting grain and feeding it to confined livestock. Tom “double-dips” wherever possible, selling organic grains in the marketplace but also sending his cattle into the crop fields to graze grain stubble in conditions carefully controlled to maintain a steady diet. “We’re turning sunlight into dollars through grass and alfalfa,” Tom said.

Tom constantly reassesses his rotation, choosing crops that “we’re able to sell without a lot of hassle or effort.” He grows organic soybeans for the tofu market as well as organic popcorn. He used to raise oats, but low market prices prompted him to try Ethiopian barley, which he sells to a birdseed processor at about twice the price of oats. He had seen that type of barley grown in the neighboring Dakotas, and found it also grew well farther south.

The farm is configured in narrow, 12.5 foot-wide strips arranged in a pinwheel pattern across the landscape. As such, Larson’s grains and forages grow side by side in a rotation orchestrated for environmental benefits as well as profits. He plants small grains in the spring, then harvests them in July in time to plant forage turnips for his livestock operation.

Cattle graze within 32 paddocks. When his stocker operation, which centered on raising 100 heifers from early spring into late fall before selling, lost money in the mid 1990s, Tom began renting his pasture to a neighbor for several months a year. Key to the heifers’ diet is the forage turnips he plants in mid-summer but never harvests with a machine. “The turnips walk off the farm on the hoof,” he said. “The cows get a nice salad every day between grain stubble and turnip greens.” Tom sells his crops through a variety of organic marketing channels. He uses local processors and the National Organic Directory from the California Alliance with Family Farmers as main sources of buyers for his crops.

A survey of farm and ranch budgets for 95 area families showed that the average net return on irrigated corn came to \$22 an acre. That might have been a livable income for most of his neighbors, with an average farm size of 800 acres, but to Tom, at one-third the size, those returns spelled economic disaster and foreclosure. Realizing he needed to earn three to five times more value per acre, Tom decided to raise food crops. “Having a small operation, \$22 an acre does not cut it,” he said. “We just can’t survive on that. Being certified organic has given us access to different markets than we traditionally had, and it’s much more profitable.”

According to a state extension educator, Tom brings in between \$150 and \$200 per acre, while his neighbors earn just \$20 to \$50 per acre. With their larger land base, he figures their standards of living are about equal, although he works fewer hours. Experimenting with new crops often brings good rewards. Switching to Ethiopian barley was a better investment than oats, which brought just \$2.40 per bushel. By comparison, he receives about \$8.40 per bushel for organic barley, although he gets lower yields. In real numbers, the barley is about twice as profitable.

Tom continues to nurture a hobby that helps keep the operation in the black: retrofitting farm equipment for his unique needs. Much of the equipment on today's market is built for larger farms, so he continually reconfigures old equipment. He has modified planters, cultivators and harvest equipment. Rather than buying a new tractor outright, he lowers the out-of-pocket expense by trading in an old one he's fixed up.

Tom's crop strips and rotations in his organic system allow him to eliminate purchased chemicals without a noticeable increase in insect and disease problems. After a heavy rain, Larson sees little water pooling or running off his farm, which he attributes to improved soil structure with better water infiltration. "If we have a significant rain event, I can go across the road and look at the neighbor's field and see quite a lot of standing water," he said. "I think we have a soil structure now with good infiltration capacity, and we're building our organic matter slowly."

To control weeds, Tom tries to plant with minimal soil disturbance and seeds at twice the recommended rate. The dense cover of small grains early in the season helps crowd out weeds. He also retains crop residue on the soil surface not only to deter weeds, but also to help water infiltration and slow soil erosion. The system also seems to attract more wildlife, particularly songbirds, as well as deer, raccoons and opossums. "We have all sorts of these creatures running around, and I think they're an indicator of the health of the ecosystem," he said.

Tom has time for his family. When he raised a corn crop, he spent intense, busy weeks throughout the year doing field preparation, planting, cultivating and harvesting. By raising four crops, he has spread his work across the calendar, planting about one-third of his acreage at one time. "I do the same amount, or maybe a little bit more, but it is spread more evenly through the year," he said. He found a neighbor with whom he exchanges farm chores so they can both travel. "If you walk in a graveyard and look at the headstones, you see names, but I don't think you see any of them that say: 'He worked every day of his life and that was it.' To me, the events that make up quality of life are the little trips you take and the good times you have together."

"Farmers should not be afraid to try new things," Tom said, "but they should do so on a small scale." Networking with other farmers is key to success, especially because beginning farmers can learn from the mistakes of others – although they should expect to make plenty of their own. "If you don't make mistakes, you're not trying hard enough," he said. "In the realm of mistakes, I just don't like to make big, ugly, expensive ones. We take the tactic of trying very small-scale experiments on a little part of the acreage and keeping track of the results."

Tom plans to continue tweaking his farming system year-by-year, seeking not only better profits, but also new challenges. "I would be very frustrated if I was in a job where I did the same thing, day in and day out," he said. "Some say they've been in farming for 35 years. Does that mean they have 35 years' experience, or do they have one year of experience 35 times? I like the challenge of having a little variation from year to year."

To Tom, good stewardship means measuring his impact on natural resources against the desires of future residents of the land. “If, 200 years down the road, an anthropologist would look at this particular farm and find no evidence of whoever was here, then I’ve been a good steward with a vision beyond my life span,” he said. “Some of the Native American religions center around doing nothing that will adversely affect the next seven generations. I think that’s a realistic goal to strive for.”

*Adapted from U.S.D.A.- S.A.R.E. program case studies.*

### **Case Study – Farming in Nature’s Image: The Larson Farm**

*Read “Farming in Nature’s Image: The Larson Farm.” Answer the following questions.*

1. Why did Tom Larson change the way he was farming?
2. Name and explain three practices that add profitability on the Larson farm.
3. What are some practices on the Larson farm that benefit the environment?
4. How did Tom Larson change the labor needs on his family farm?
5. What are two benefits of reducing the use of heavy equipment on the Larson fields?
6. If you were Tom Larson, what other things would you do on the farm to increase profitability and farm in nature’s image?