Four Areas of Agriculture That Can Help Solve Many Environmental Problems and Improve Human Health

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Agriculture has a significant impact on life on Earth. It provides food, sure, but it's also an integral part of the ecosystem as a whole. Done correctly, it supports and nourishes all life.

When abused — as it's been done since the "green revolution" in the 1930s — agriculture contaminates and destroys soil, air and water, reducing biodiversity and threatening wildlife and humans alike, thanks to toxic chemicals and destructive farming methods.

The featured short film, "Unbroken Ground," explores four areas of agriculture, featuring pioneers in each field, that can help solve many of the environmental crises' currently facing us:

- Regenerative agriculture
- Regenerative grazing
- Diversified crop development
- Restorative fishing

Reinventing Food

As noted in the film, there's a growing movement toward more sustainable agriculture; a shift so great that it's almost like we're reinventing the food system all over again.

However, rather than focusing on more and newer technologies, this shift involves a return to basics — a going backward, if you will — which is really the only way to make progress at this point.

Continuing to destroy the soil, air and water we need to sustain life simply isn't a viable option anymore. Patagonia founder Yvon Chouinard says:

> *"I've always thought of my company, Patagonia, a clothing company, as an experiment; making decisions based on quality and responsibility. And I can tell you, it's not an experiment anymore.*
>
> *I've proven to myself, it works! Applying that to food — this is another experiment. But I think it's the most important experiment we've ever tried."*

The Land Institute — Regenerative Farming

According to Wes Jackson, Ph.D., founder of the Land Institute, grains account for about 70 percent of our daily calories, and grains are grown on about 70 percent of acreage worldwide.

The continuous replanting of grain crops each year leads to soil degradation, as land is tilled and sprayed each year, disrupting the balance of microbes in the soil. Top soil is also lost each year, which means that eventually, our current modes of operation simply will no longer work.

We will not have any usable topsoil left, and this may actually occur far sooner than most people realize. Soil erosion and degradation rates suggest we have less than 60 remaining years of topsoil.[1]

Forty percent of the world's agricultural soil is now classified as either degraded or seriously degraded; the latter means that 70 percent of the topsoil is gone.

Agriculture also accounts for 70 percent of our fresh water use. When the soil is unfit, water is wasted. It simply washes right through the soil and past the plant's root system.

We already have a global water shortage that's projected to worsen over the coming two or three decades, so this is the last thing we need to compound it.

Soil degradation is projected to cause 30 percent loss in food production over the next 20 to 50 years. Meanwhile, our global food demands are expected to increase by 50 percent over this span of time.

> *"Regenerative agriculture actually BUILDS topsoil,"* Chouinard says. *"Wes is doing the most important thing in agriculture in the last 10,000 years."*

Creating Perennial Grains

One of the innovative aspects the Land Institute is involved in is the creation of perennial wheat by crossbreeding conventional wheat with perennial grasses.

Aside from surviving for several seasons, eliminating the annual cycle of tilling, sowing and harvesting, perennial crops also have deeper root systems, which helps maintain soil health.,

This draws carbon dioxide from the atmosphere into the soil (where it is of significant benefit) and sequesters it there, and slows down the rate of soil erosion. At the Land Institute in Salina, Kansas, perennial crops have been actively bred since 2000.[2] There are two main approaches to creating perennial grains:

•**Domestication** — Wild perennial plants are selected for their characteristics and then crossbred in an attempt to create a plant with most or all of these individual characteristics. It's an exceedingly slow and arduous process.

•**Hybridization** — A traditional annual crop is crossbred with a wild perennial of the same plant family, in the hopes of creating a perennial crop. Annuals contain the genes for high yields and large seeds, while the wild perennials have the genes for longevity.

Using modern gene technology, researchers can now look at DNA markers in the plants, which allows them to quickly identify the genetic information they're looking for. This significantly speeds up the process.

The problem is that hybrid plants have a high rate of sterility. Offspring also tend to be more fragile than either of the parents (the perennial and the annual). Once an offspring with suitable characteristics is achieved, further crossbreeding is typically required to make it stronger.

The Cheyenne River Ranch — Regenerative Grazing

Dan and Jill O'Brien own the Cheyenne River Ranch in Western South Dakota. Dan bought his first cattle in the 1970s, but took issue with many of the ways ranching was done. Feeling like his business was being run by the cattle, chemical and feed industries, he decided to try something different.

> *"It dawned on me that what really needs to be out here on these great plains is indigenous animals. And so it didn't take me long to figure out that I needed to go to buffalo,"* O'Brien says.

The buffalo are raised on the plains from start to finish, feeding on nothing but grasses their entire lives. They're even slaughtered in the field according to old native customs that honor the animals' spirit.

The climate and conditions on the plains are perfectly suited for buffalo, which means they require far less maintenance and care than cattle, which need shelter and plenty of water.

Also, while cattle will tend to gnaw grasses down to the bare dirt, buffalo do not do this, which helps regenerate the land faster and better. The O'Briens view themselves as grass farmers first and foremost, and the buffalo help them do that. "The meat is a byproduct of that [process]," Jill says. As noted in the film, by returning buffalo to their native land, the O'Briens not only help preserve the Great Plains, but also offer an alternative to the industrialized food system.

The Bread Lab — Diversifying Wheat

Nature is naturally bountiful, and diversification is a key strategy by which this is accomplished. Meanwhile, modern food production has led us in the opposite direction, creating massive fields where only one thing grows and everything else is killed off with herbicides. While efficient, it decimates biodiversity and produces many adverse effects in the soil.

Different plants draw specific nutrients from the soil in varying amounts, and planting the same crop over and over is a surefire way to denature the soil; emptying it of certain nutrients, which in turn shifts the balance of the soil microbiome and affects plant growth. Fertilizers must be applied to keep plants growing as the soil gets increasingly barren of nutrients.

According to Stephen Jones, Ph.D., director of the Bread Lab at Washington State University, wheat is grown on 60 million acres in the United States. Wheat has been "defined by a commodity system," he says. "But what if you go outside of that and pull in what COULD be there [in the wheat]?" Jones is on a mission to change the way we look at wheat by bringing back lost varieties and regional specialties.

Just like fine wine is influenced by environmental factors such as soil quality, climate and sunlight, Jones believes wheat can be influenced in the same way.[3] This is why the Bread Lab focuses on breeding wheat plants specifically aimed at organic growers — something that has never actually been done before.

> *"Our main goal is to first make what we do work for the farmer,"* Jones says. *"Plant breeders that don't do GMO or genetically modified anything, make a crop that can yield a little more for the farmer and have the right functionality and flavor and nutritional value in the end."*

In addition to developing and introducing a wider variety of grains for organic growers, the Bread Lab also conducts tests and trials to determine which breeds are "most suitable for craft baking, malting, brewing and distilling" — a task that helps improve and expand the artisanal and locally-produced food market.

Lummi Island Wild Cooperative — Restorative Fishing in Action

"Salmon are amazing creatures, indicators of the environment, as close to medicine as food gets," says Ian Kirouac, a Lummi Island Wild partner. As noted by Keith Carpenter, president of the cooperative, salmon are the buffalo of the Northwest. They're part of the local identity of the land and the people. As the salmon move up the rivers, they help fertilize the trees and feed wildlife like wolves, bears and eagles.

One of the major challenges and changes in the fishing industry that has emerged over the past two decades is more targeted fishing. Gear needs to be designed to ensure the fisherman catches the targeted fish species without harming others. In the past, fishermen would simply cast a wide net, as it were, and pull up a wide array of species. We can no longer afford this kind of wastefulness, as many species are becoming increasingly threatened from overfishing.

In the case of salmon fishing, the solution is not new; rather, it's an ancient tool that is now being brought back, namely reef nets. Reef net fishing has been done for thousands of years. "It encourages the fish by the observation of what they think may be a reef, which is actually developed by ropes with small pieces of plastic hanging down from them in the water," Kurt Beardslee with the Wild Fish Conservancy explains.

As the fish approaches, it thinks it's hitting a reef, which makes it swim up closer to the surface. Onboard each boat, a person stands on top of a tall tower, observing the water, with the sole mission of spotting the fish. Once a school is spotted inside the netted area, the net is drawn and wound onboard. The salmon are first gently slid directly into a live trap well. Any nontarget fish are immediately sorted out and cast back into the water unharmed.

The salmon are then individually bled, one-by-one, and immediately placed on ice. According to Beardslee, this is the most selective type of fishery currently known, producing zero bycatch.

According to the owners and employees of Lummi Island Wild, it's not just about catching salmon; they're passionate about protecting the environment, promoting "respectful and responsible harvesting of salmon" and increasing the spiritual value of the salmon as well, all of which makes HOW they fish an important aspect of their business.

Leave the Earth Better Than You Found It

As noted in the film, we all have a responsibility to leave the land better than we found it. In many areas around the world, this simply isn't happening. But the companies and farmers featured in this film are not alone in their efforts. All around the globe, people are starting to recognize that we are onboard a speeding bullet train headed toward a cliff wall. The sheer unsustainability of the current model has become plain for all to see.

I've interviewed many progressive regenerative agriculture pioneers for this newsletter — enough to say the agricultural landscape IS changing for the better in many places. We just need to maintain the momentum, and non-farmers have a crucial role to play, as consumer demand can either make or break these new emerging systems.

So please, do not underestimate the power and importance of your purchasing choices. Because you're voting for a system — either the old degenerative one, or a newer, more regenerative one — with each dollar you spend.

Where to Find Healthy Food

You can help steer the agricultural industry toward safer, more sustainable systems by supporting your local farmers and choosing fresh, local produce over "cheap" conventional varieties commonly sold in larger grocery chains. You can also slash your food bill by focusing on locally grown foods that are in season, typically a bargain at that time of year, or by growing some of your own. Remember to choose organic, grass-fed/pasture-raised beef, poultry and dairy, in addition to organic produce.

While many grocery stores now carry organic foods, it's preferable to source yours from local growers whenever possible, as much of the organic food sold in grocery stores is imported. If you live in the U.S., the following organizations can help you locate farm-fresh foods:

EatWild.com

EatWild.com provides lists of farmers known to produce raw dairy products, grass-fed beef and other farm-fresh produce. Here you can also find information about local farmers markets, as well as local stores and restaurants that sell grass-fed products.

Weston A. Price Foundation

Weston A Price has local chapters in most states, and many of them are connected with buying clubs in which you can easily purchase organic foods, including grass fed raw dairy products like milk and butter.

Grassfed Exchange

The Grassfed Exchange has a listing of producers selling organic and grass-fed meats across the U.S.

Local Harvest

This website will help you find farmers markets, family farms, and other sources of sustainably grown food in your area where you can buy produce, grass-fed meats, and many other goodies.

Farmers Markets

A national listing of farmers markets.

Eat Well Guide: Wholesome Food from Healthy Animals

The Eat Well Guide is a free online directory of sustainably raised meat, poultry, dairy, and eggs from farms, stores, restaurants, inns, and hotels, and online outlets in the United States and Canada.

Community Involved in Sustaining Agriculture (CISA)

CISA is dedicated to sustaining agriculture and promoting the products of small farms.

FoodRoutes

The FoodRoutes “Find Good Food” map can help you connect with local farmers to find the freshest, tastiest food possible. On their interactive map, you can find a listing for local farmers, CSAs, and markets near you.

The Cornucopia Institute

The Cornucopia Institute maintains web-based tools rating all certified organic brands of eggs, dairy products, and other commodities, based on their ethical sourcing and authentic farming practices separating CAFO "organic" production from authentic organic practices.

RealMilk.com

If you're still unsure of where to find raw milk, check out Raw-Milk-Facts.com and RealMilk.com. They can tell you what the status is for legality in your state, and provide a listing of raw dairy farms in your area.

The Farm to Consumer Legal Defense Fund[4] also provides a state-by-state review of raw milk laws.[5] California residents can also find raw milk retailers using the store locator available at www.OrganicPastures.com.

If you are fortunate enough to have your own home and some land, you can start to rebuild your own topsoil. Simply applying biomass will convert to soil in a few years. I put around half a million pounds of woodchips around my home about two years ago and now have really healthy black topsoil to grow food in. You can read my interview with Paul Gautschi, which goes into more details.

If you're looking for a powerful way to significantly boost your health, look no further than your own backyard. Growing your own fruits, vegetables and herbs may sound like a thing of the past, but it's more important now than ever to ensure that the food you eat is free of harmful chemical substances.

My Ultimate Guide to Gardening can help you gain more insights on the proper ways to grow and maintain your plants, the ideal time to harvest crops and how to use them properly in your favorite dishes. In no time, you'll be able to grow a bounty of produce that your body — and the environment — will be thanking you for.