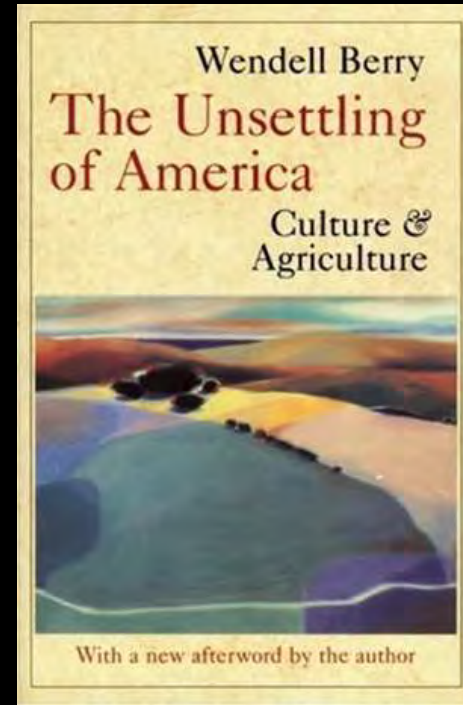
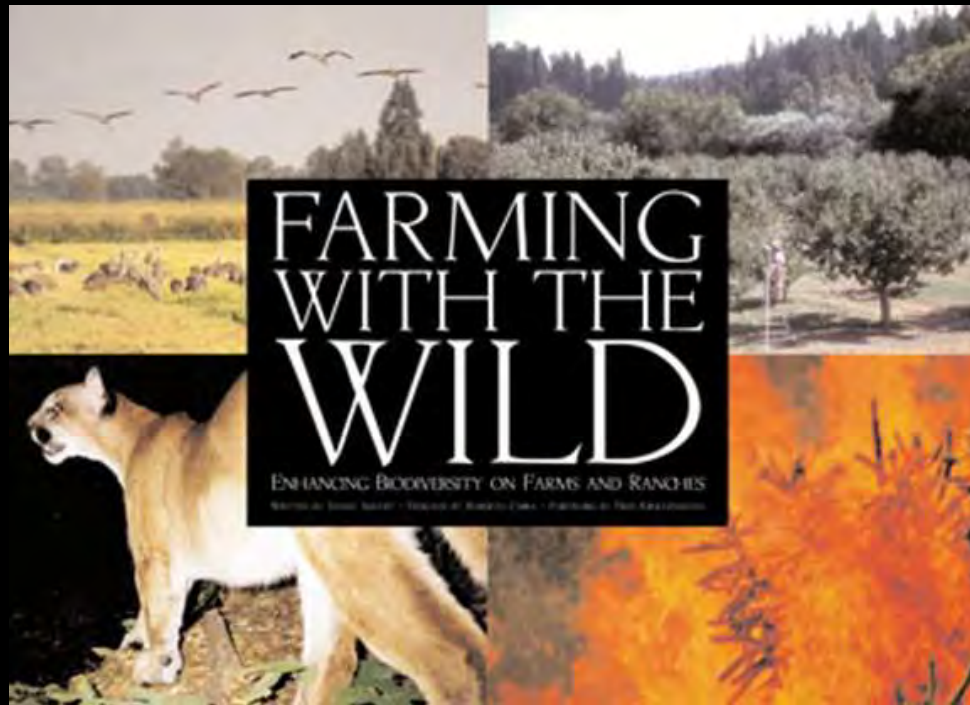
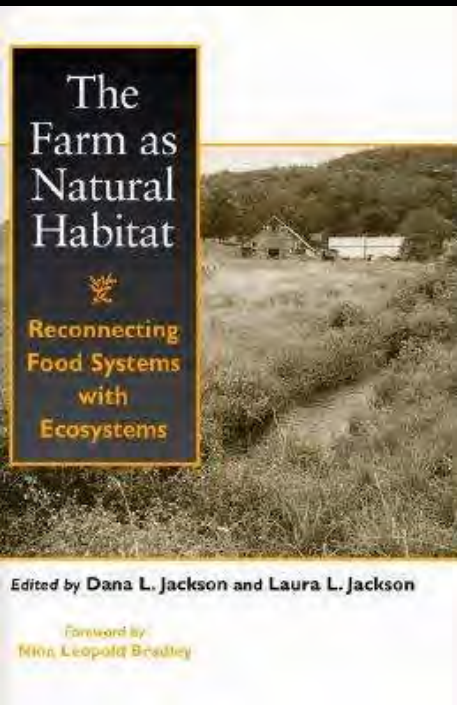
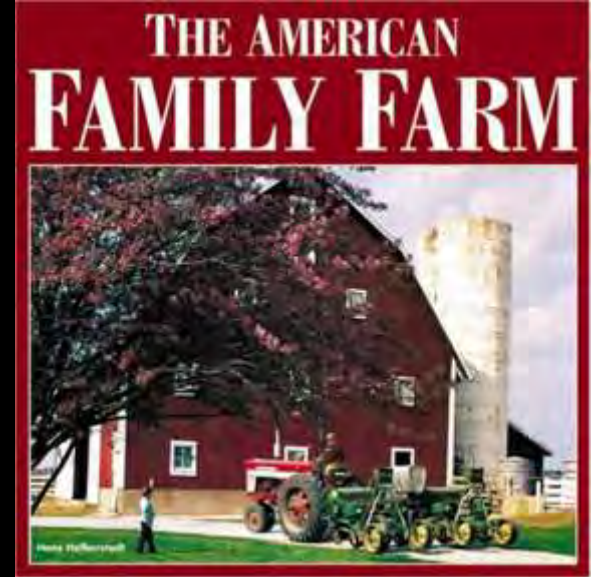




Farming with Nature: Sustainable Agriculture and the Pastoral Ideal

Kevin M. Anderson Ph.D.
Austin Water Center for Environmental Research

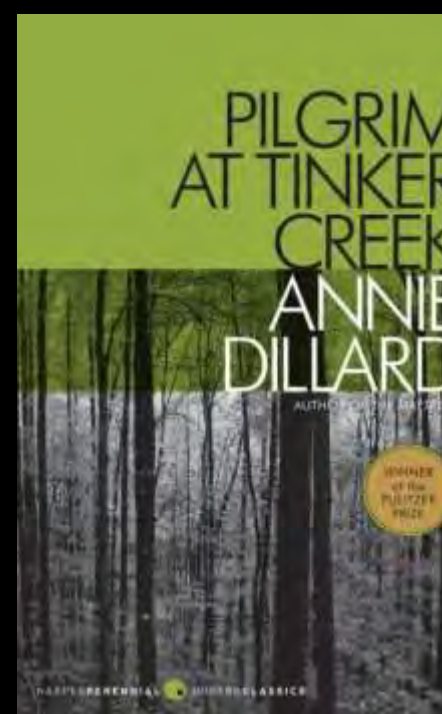
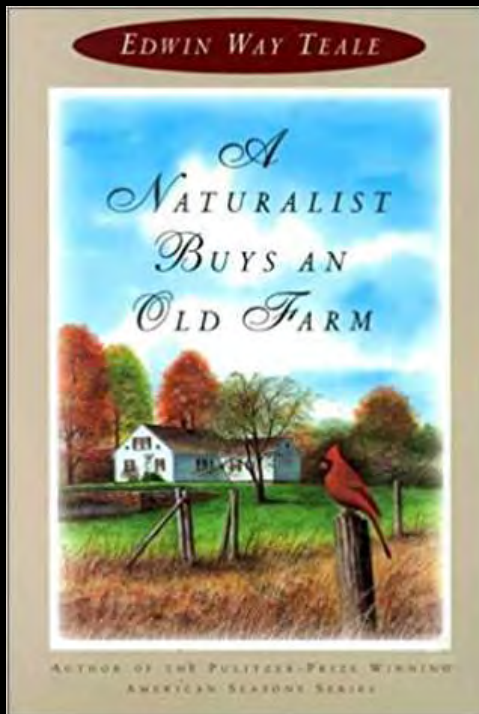
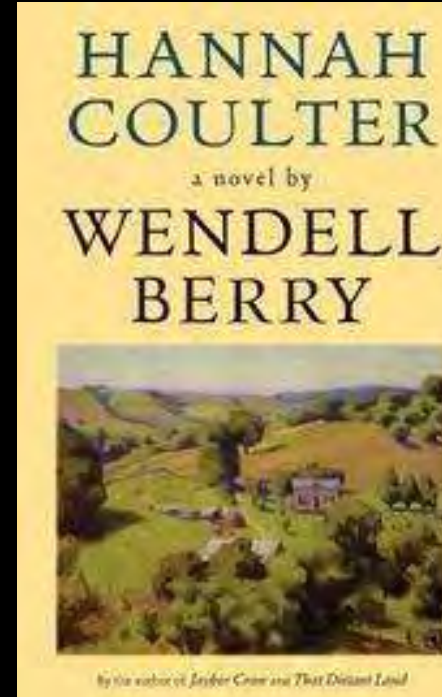
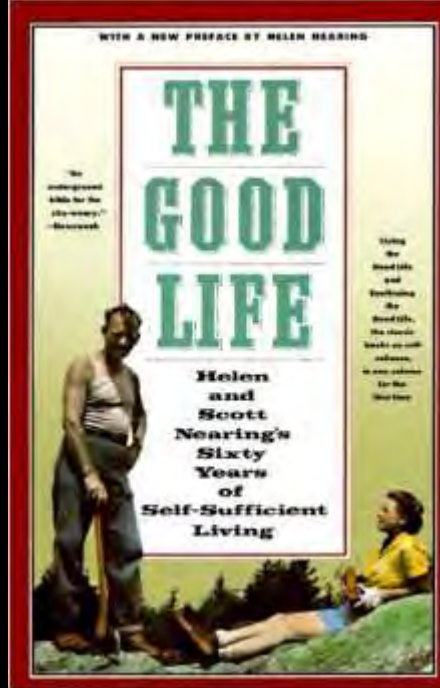
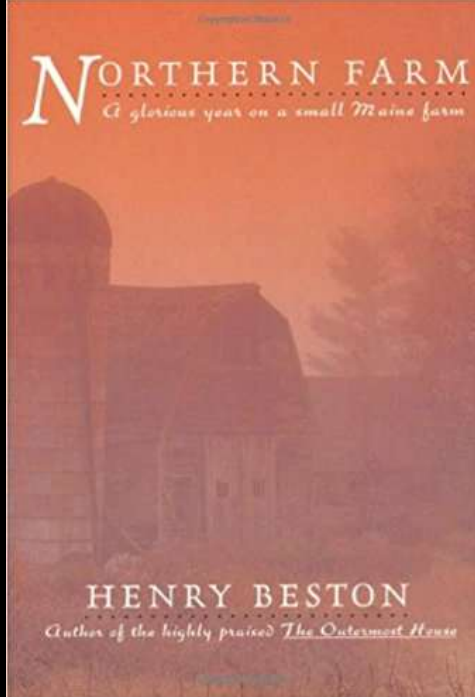
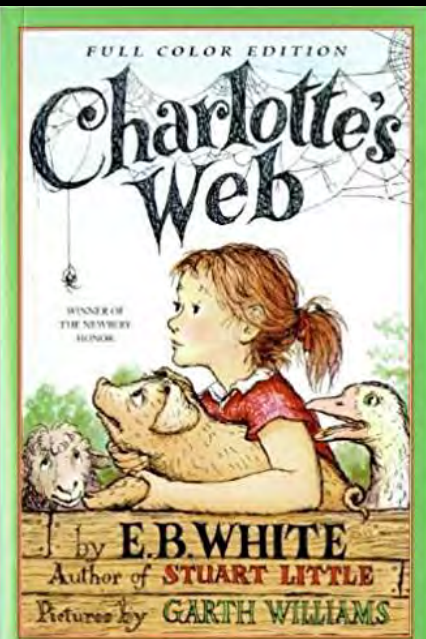




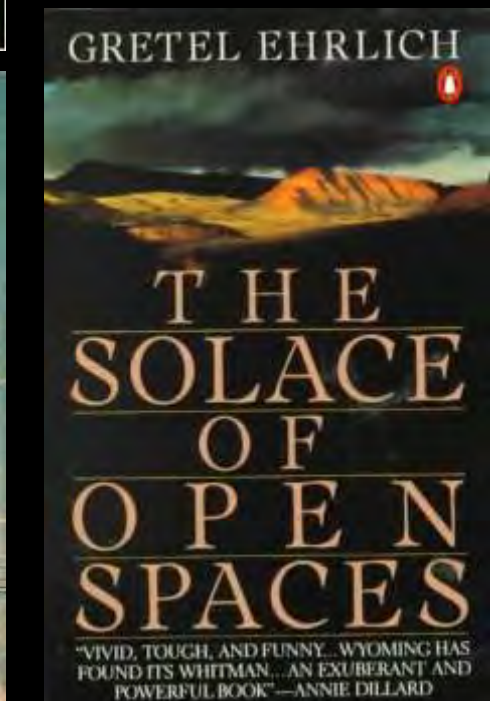
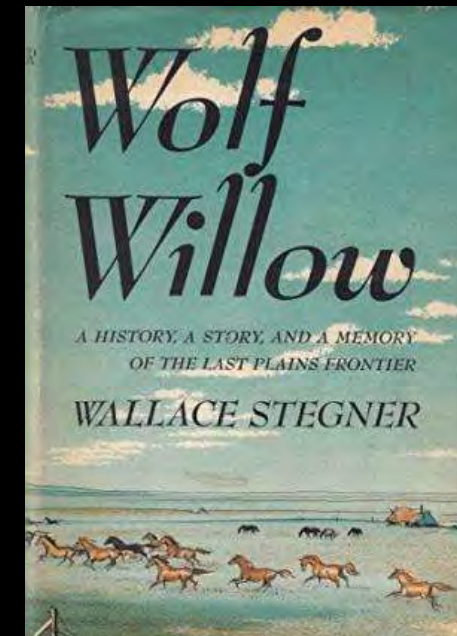
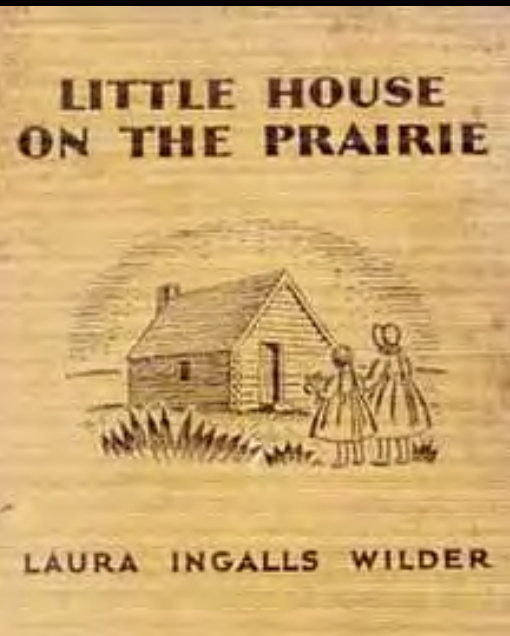
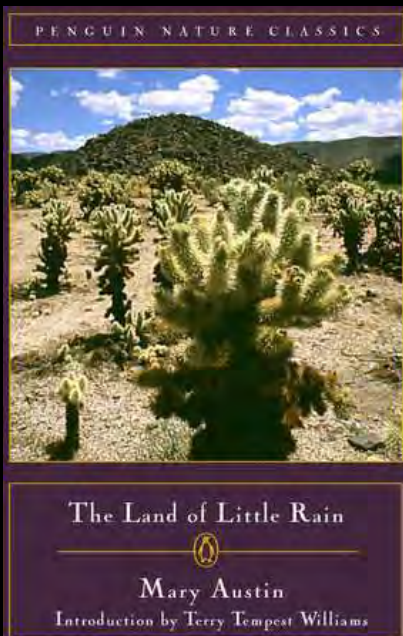
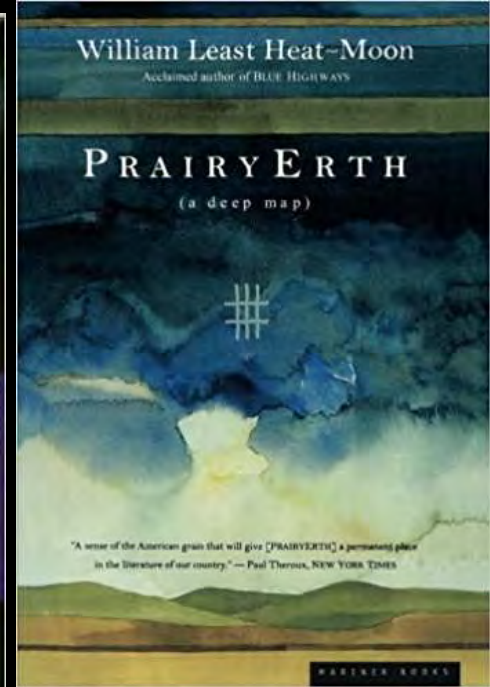
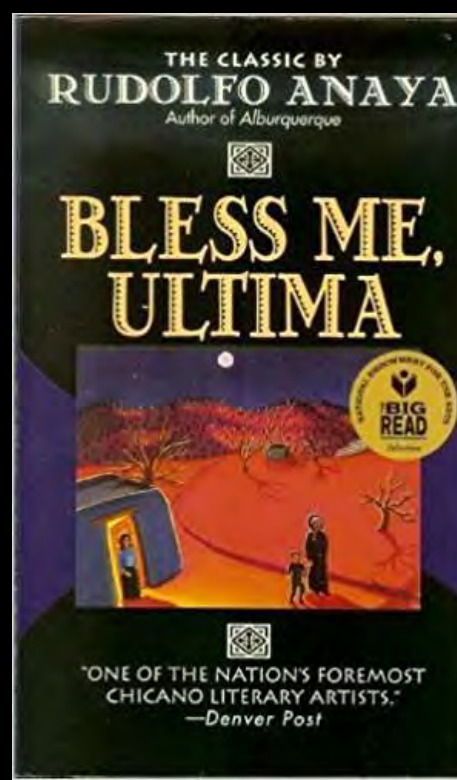
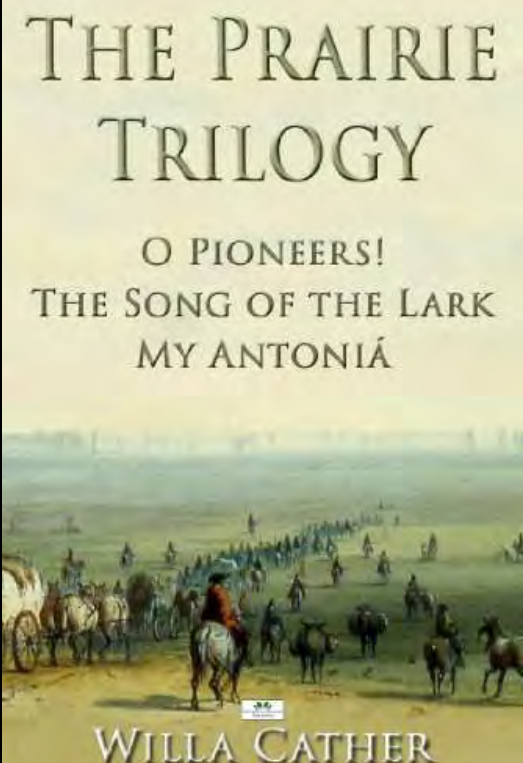
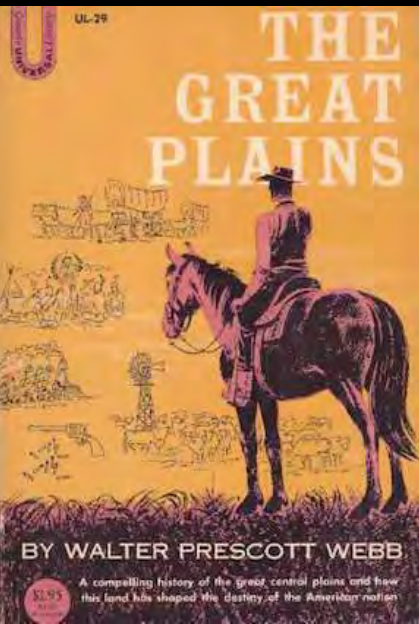
Pastoral nature is, also, a matter of perception and part of the geography of the American mind



Pastoral East



Pastoral West

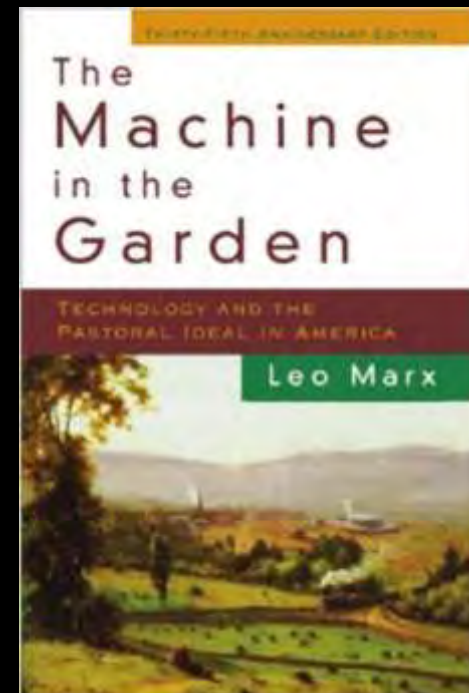
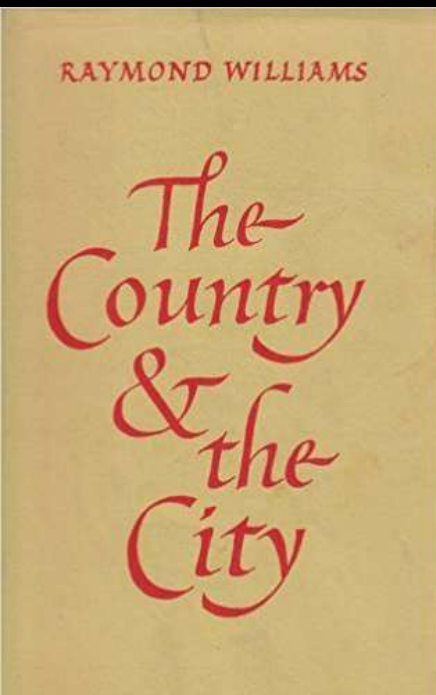


The Pastoral Impulse and Pastoral Place

- To escape the dominant culture and to live a simpler, harmonious life closer to nature
- Pastoral Place - The Countryside - Rural America
- Tension between the impulse (sentimental pastoral arcadia) and rural agrarian life
- Pastoral Nature – Combines human and nonhuman
- The Cultivation of Nature

Jean-Honoré Fragonard

Pastoral Landscape with a Shepherd and Shepherdess at Rest 1761



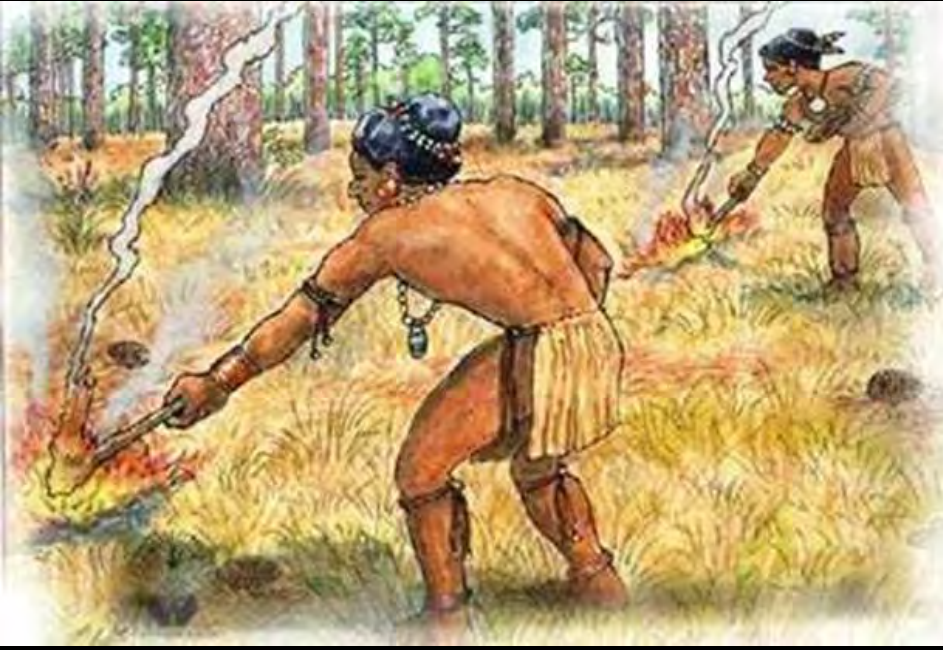
INDIGENOUS PEOPLES OF THE NORTH AMERICAN PLAINS



Native American Pastoral?

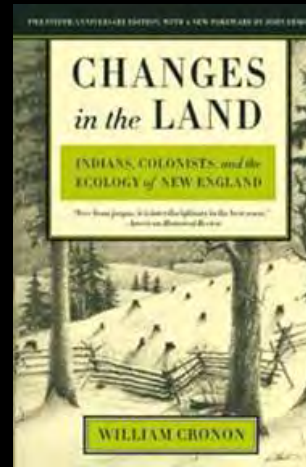
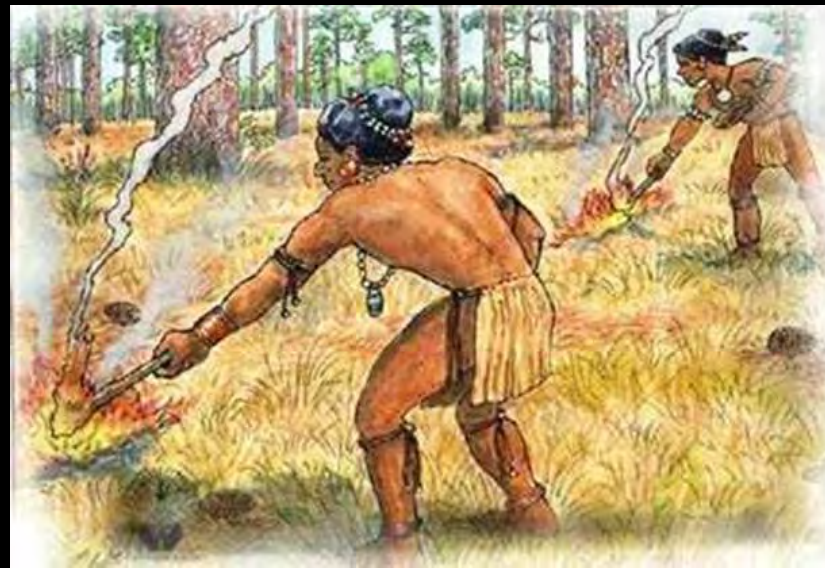
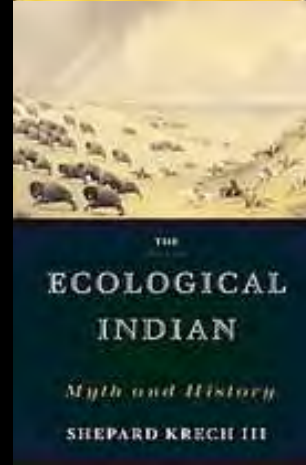


Native American Pastoral The Cultivation of Nature



Native American Cultivation

“In the first millennium A.D., the Indians who had burned undergrowth to facilitate grazing began systematically replanting large belts of woodland, transforming them into orchards for fruit and mast (the general name for hickory nuts, bechnuts, acorns, butternuts, hazelnuts, pecans, walnuts, and chestnuts)...In Colonial times, one out of every four trees in between southeastern Canada and Georgia was a chestnut...Within a few centuries, the Indians of the eastern forest reconfigured much of their landscape from a patchwork game park to a mix of farmland and orchards. Enough forest was left to allow for hunting, but agriculture was an increasing presence. The result was a new balance of nature.” Mann, 1491



Eastern Agricultural Landscapes

Three Sisters Agriculture - Indian Corn-Hills in Massachusetts

"The next day [July 9, 1605] Sieur de Monts and I landed to observe their tillage on the bank of the river [Saco River]. We saw their **Indian corn, which they raise in gardens.**

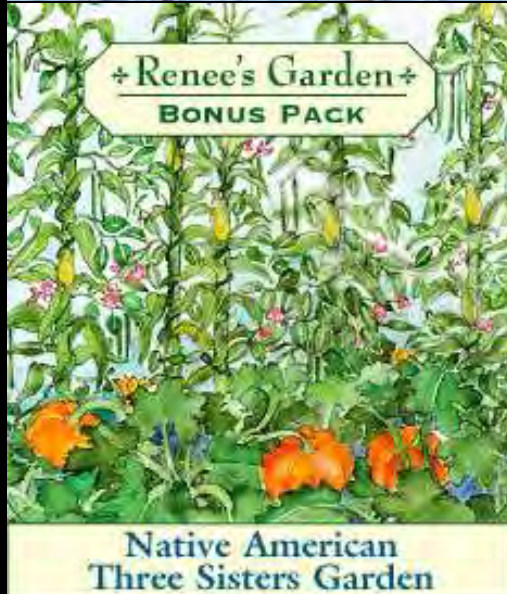
Planting three or four kernels in one place, they then heap about it a quantity of earth with shells of the horseshoe crab.

Then three feet distant they plant as much more, and thus in succession. **With this corn they put in each hill three or four the kidney beans, which are of different colors.**

When they grow up, they interlace with the corn, which reaches to the height of from five to six feet; and they keep the ground very free from weeds. **We saw there many squashes, and pumpkins, and tobacco, which they likewise cultivate.**

The Indian corn which we saw was at that time about two feet high, some of it as high as three. **The beans were beginning to flower, as also the pumpkins and squashes.** They plant their corn in May, and gather it in September."

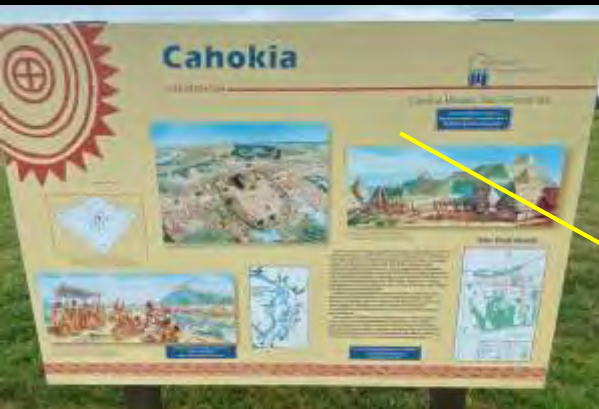
From *American Anthropologist* "Indian Corn-Hills in Massachusetts,"
Delabarre and Wilder, July 1920.



Grow a living history garden: gorgeous multicolored Indian Corn, bright Scarlet Runner Beans to twine up the corn stalks and sweet Sugar Pie Pumpkins to cover the ground. Not set. \$9.99

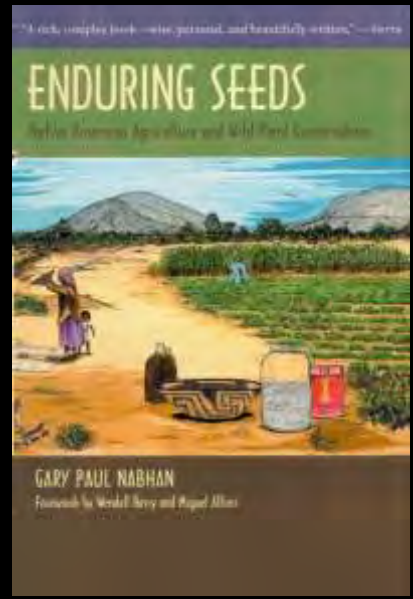
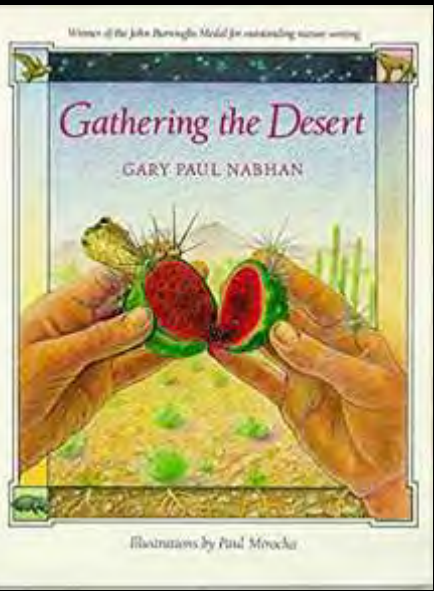
Eastern Agricultural Complex

The Mississippian Culture reached its climax about 1500 A.D.

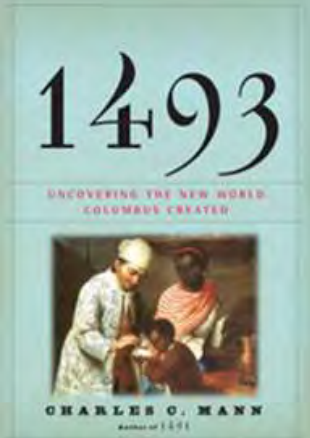
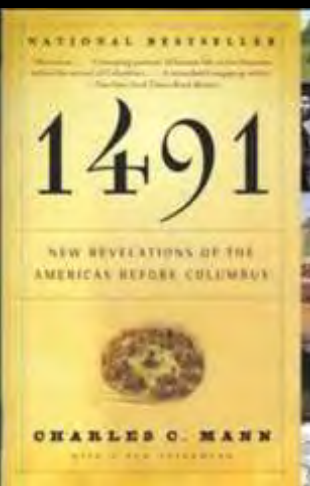
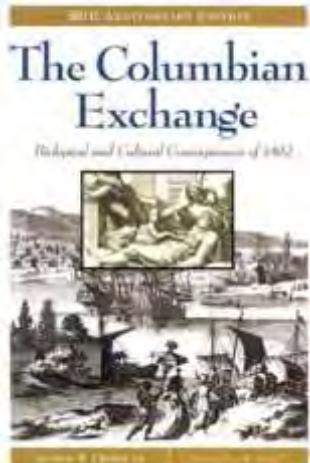


Western Agricultural Landscapes

Irrigation



The Cultivation of Nature – Agricultural Exchange

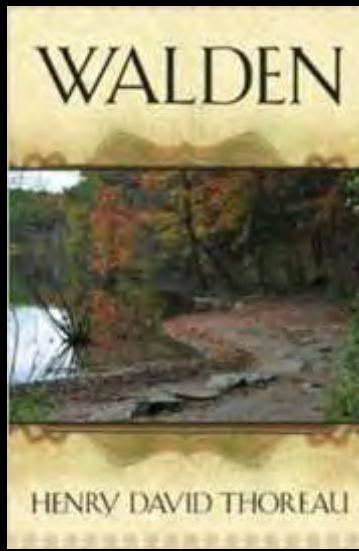


Columbian Exchange
1492–1650

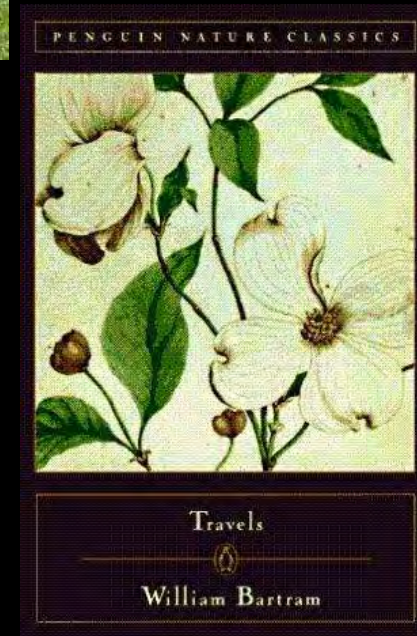
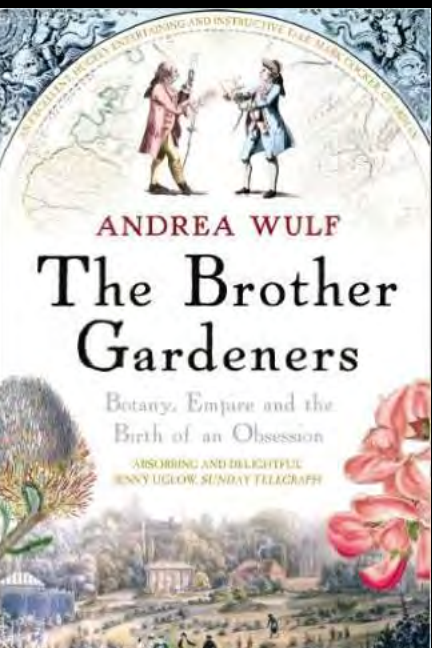
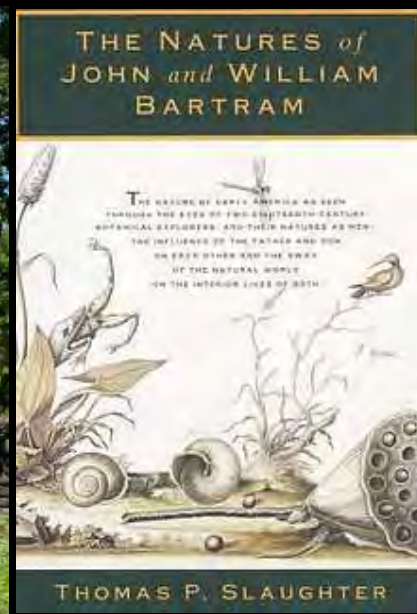
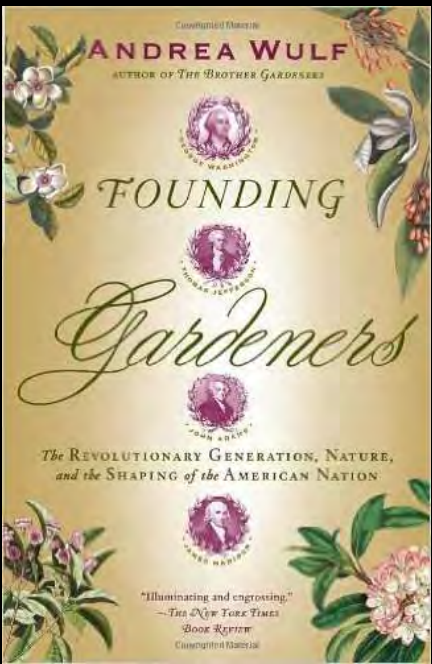
- Fruits and vegetables
- Beans, nuts, and grains
- Flowers
- Other plant products
- Animals
- Insects
- Diseases

Colors show hemisphere of origin.

A New American Pastoral Nature



The Cultivation of American Nature – The Founding Gardeners



American Agrarianism vs. the City

Agrarianism refers to a social philosophy or political philosophy which values rural society as superior to urban society, the independent farmer as superior to the paid worker, and sees farming as a way of life that can shape the ideal social values.

American Agrarianism stresses the superiority of a simpler rural life as opposed to the complexity of city life, with its banks and factories.



The Cultivation of the American Agrarian Myth

Thomas Jefferson 1743-1826

“Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country & wedded to its liberty and interests by the most lasting bands.”

1785 Letter to John Jay

The yeoman farmer was portrayed as **a self-reliant individual, the bedrock of democracy.**

He owned a small farm and worked it with the help of his family and was seen as simple, honest, healthy because he lived close to nature.



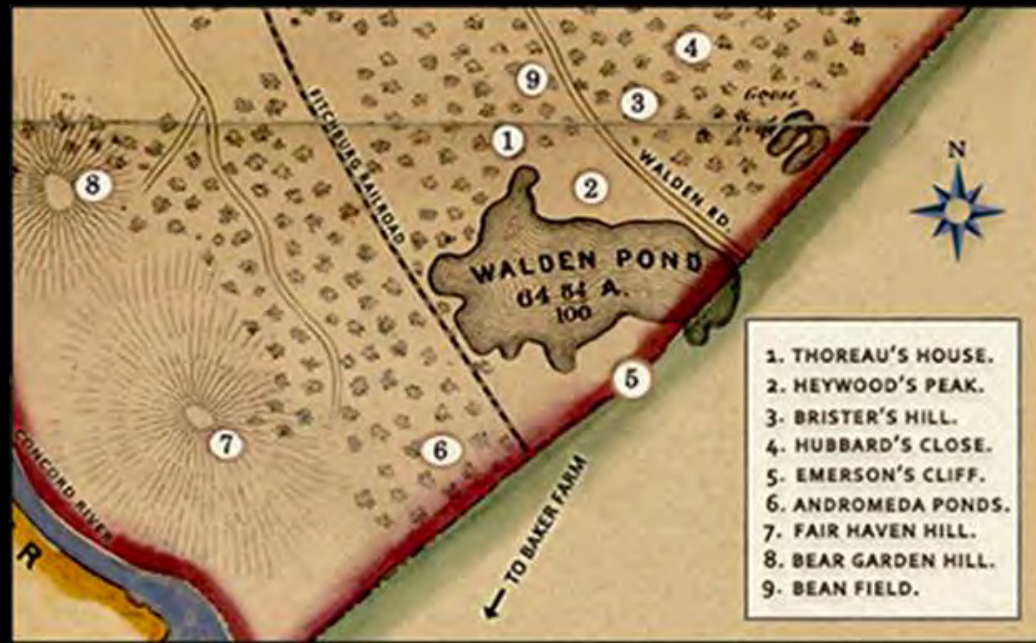
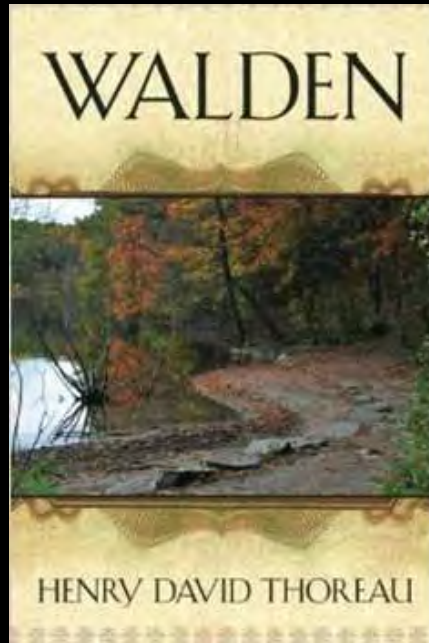
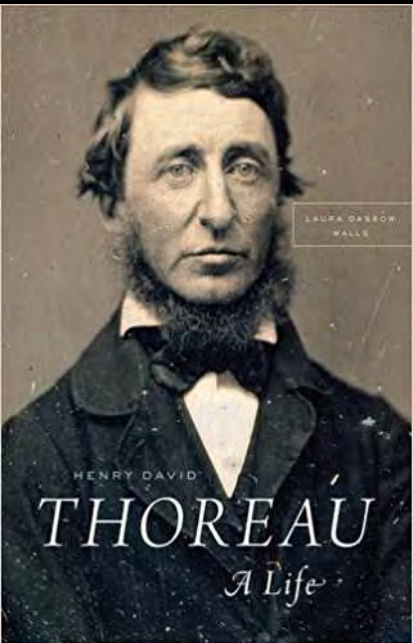
Henry David Thoreau - Wildness and Cultivation (The Bean Field)

Trying to find a balance between culture and nature

"I would not have every man nor every part of a man cultivated, any more than I would have every acre of earth cultivated: part will be tillage, but the greater part will be meadow and forest"

The Wild and The Cultivated Connected

"We are wont to forget that the sun looks on our cultivated fields and on the prairies and forests without distinction. They all reflect and absorb his rays alike, and the former make but a small part of the glorious picture which he beholds in his daily course. In his view ***the earth is all equally cultivated like a garden.***"



Pastoral Realism - Thoreau and American Pastoral Nature

Henry David Thoreau and the Bean Field

“Meanwhile my beans, the length of whose rows, added together, was seven miles already planted, were impatient to be hoed, for the earliest had grown considerably before the latest were in the ground; indeed they were not easily to be put off. **What was the meaning of this so steady and self-respecting, this small Herculean labor, I knew not.**

I came to love my rows, my beans, though so many more than I wanted. They attached me to the earth, and so I got strength like Antæus.

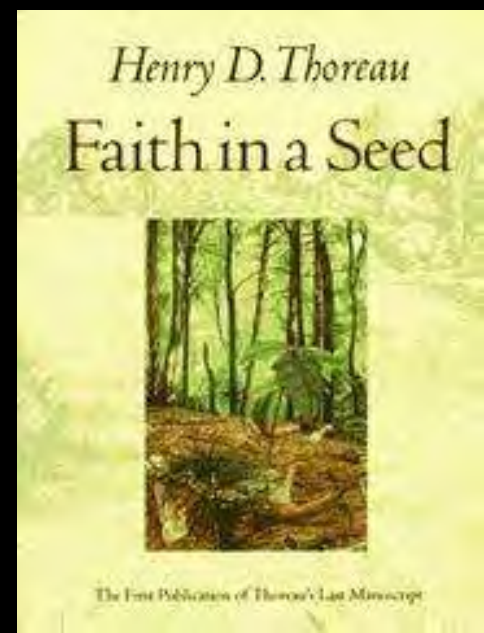
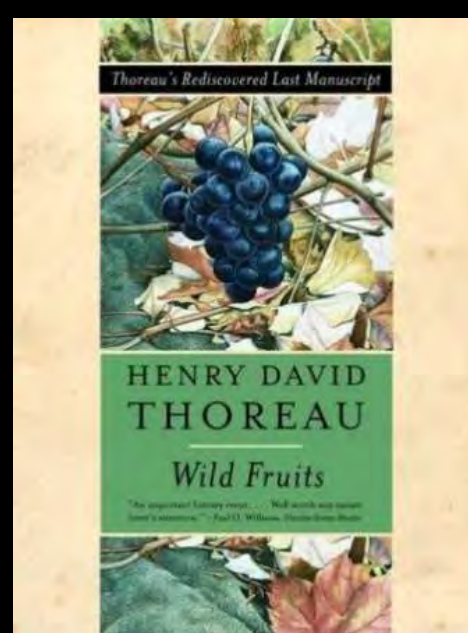
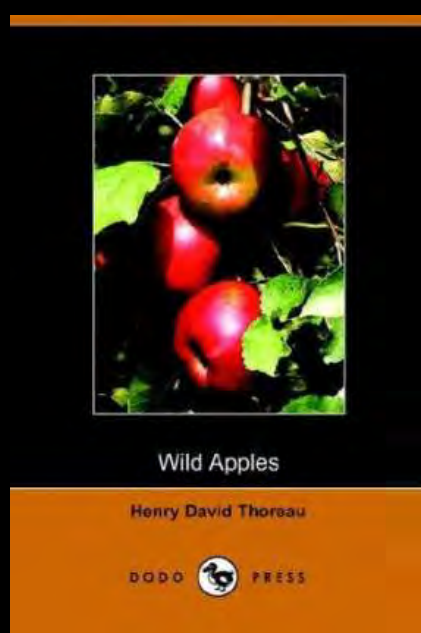
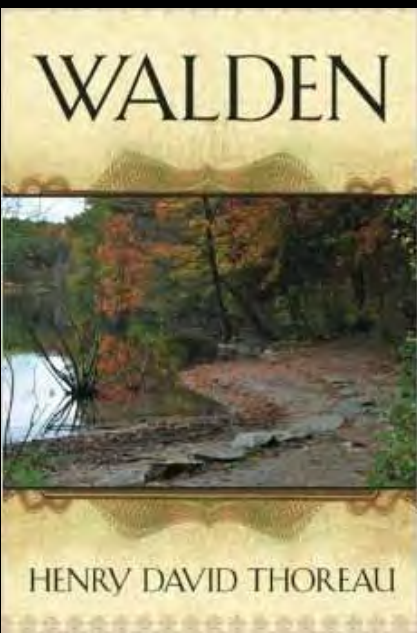
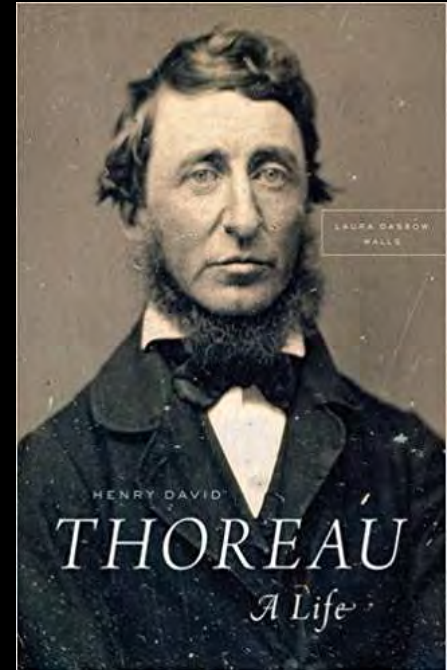
But why should I raise them? Only Heaven knows. This was my curious labor all summer — to make this portion of the earth's surface, which had yielded only cinquefoil, blackberries, johnswort, and the like, before, sweet wild fruits and pleasant flowers, **produce instead this pulse.**”



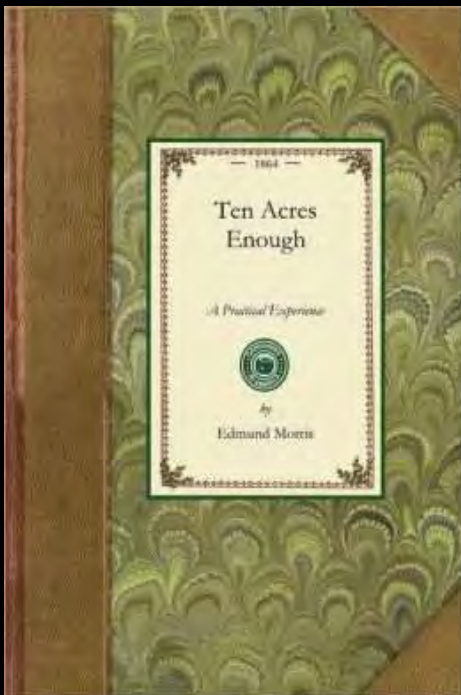
Rural Life and Agricultural Knowledge

"I was determined to know beans. When they were growing, I used to hoe from five o'clock in the morning till noon, and commonly spent the rest of the day about other affairs.

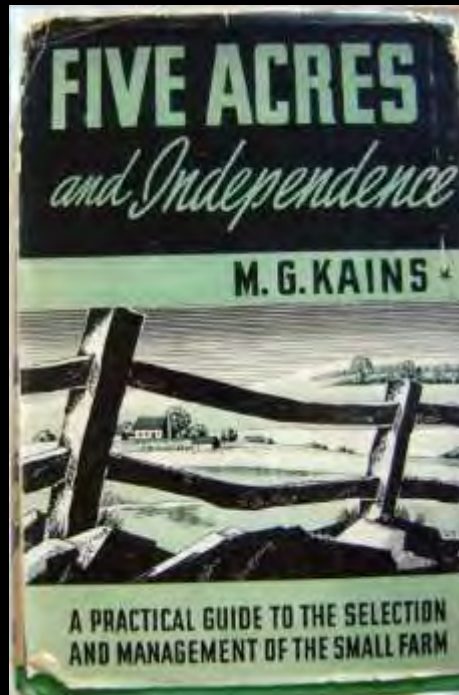
Consider the intimate and curious acquaintance one makes with *various kinds of weeds* — it will bear some iteration in the account, for there was no little iteration in the labor — disturbing their delicate organizations so ruthlessly, and *making such invidious distinctions with his hoe, levelling whole ranks of one species, and sedulously cultivating another.*"



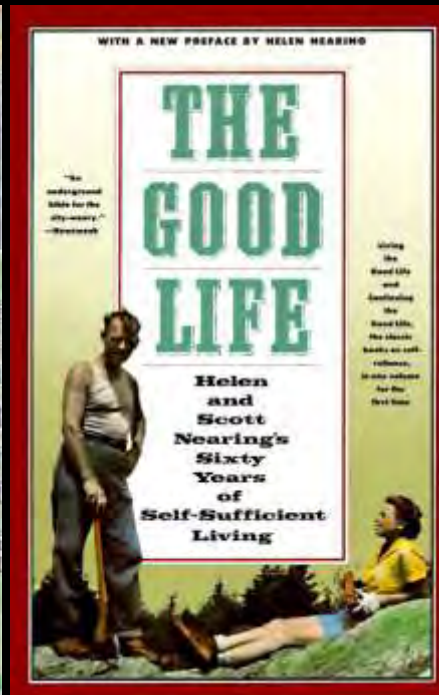
The Pastoral Impulse and American Back-to-the-land movements



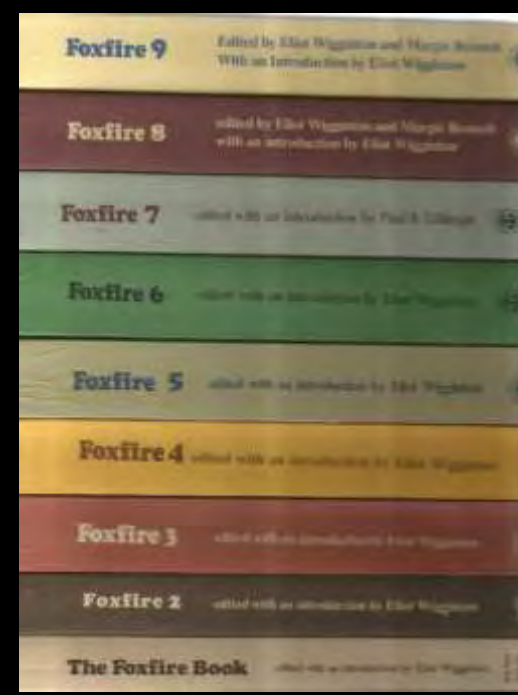
1864



1935



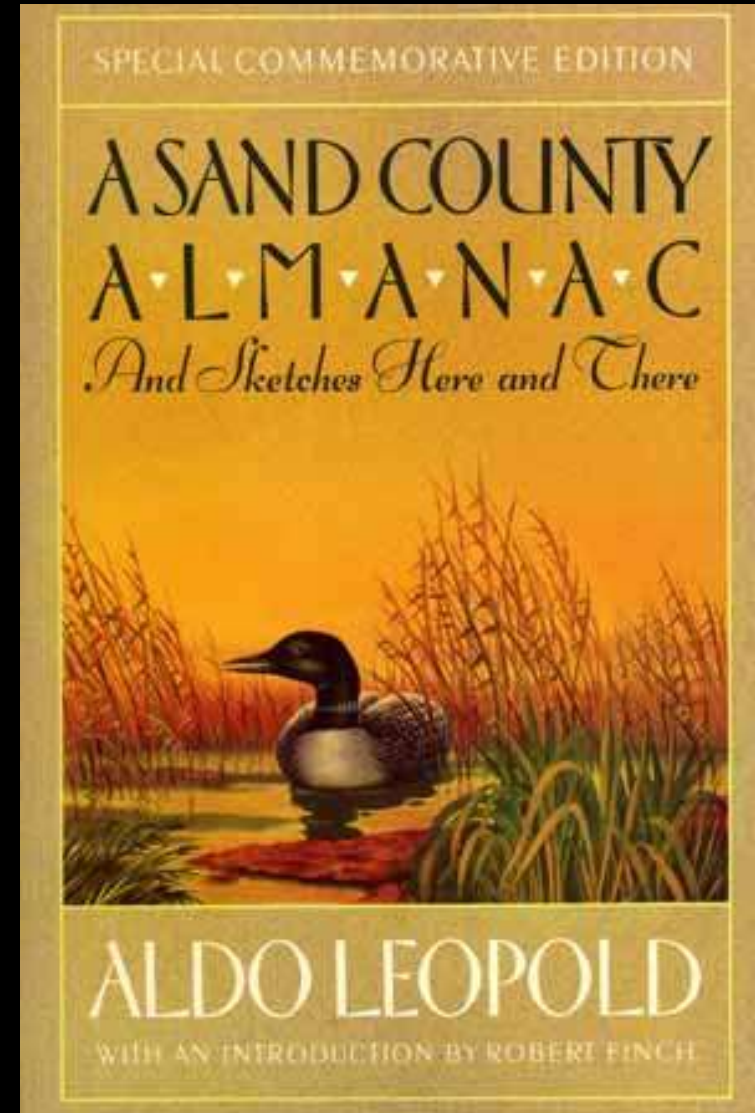
1954



1972-2004

The Cultivation of Nature – Ecology, Conservation, Restoring Rural Land

A Sand County Almanac (1949) – Aldo Leopold 1887-1948

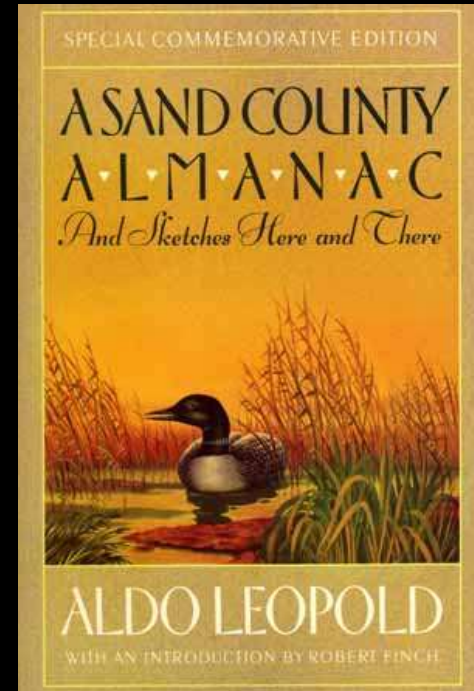


A Sand County Almanac (1949) – Aldo Leopold 1887-1948

“What more delightful avocation than to take a piece of land and by cautious experimentation to prove how it works. What more substantial service to conservation than to practice it on one's own land?”



Aldo Leopold 1887-1948

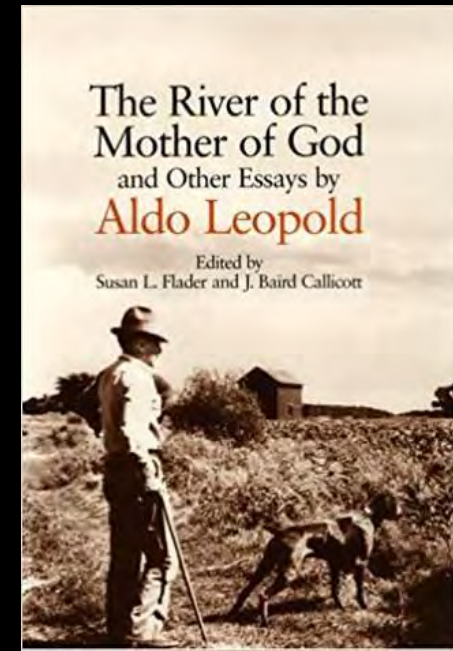
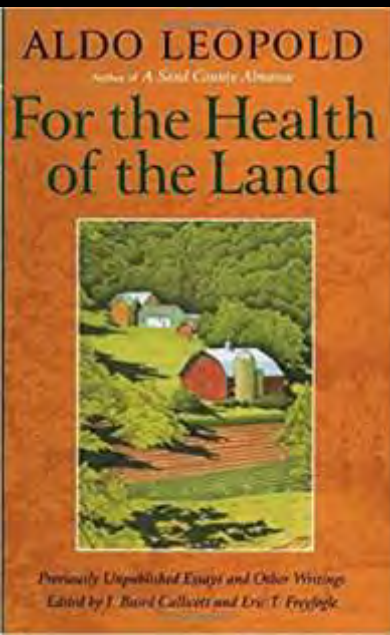


Cultivation as Conservation “*making such invidious distinctions with his hoe*”

“I have read many definitions of what is a conservationist, and written not a few myself, but I suspect that the best one is written not with a pen, but with an axe. ***It is a matter of what a man thinks about while chopping, or while deciding what to chop.*** A conservationist is one who is humbly aware that with each stroke he is writing his signature on the face of his land.”

The Farmer as a Conservationist

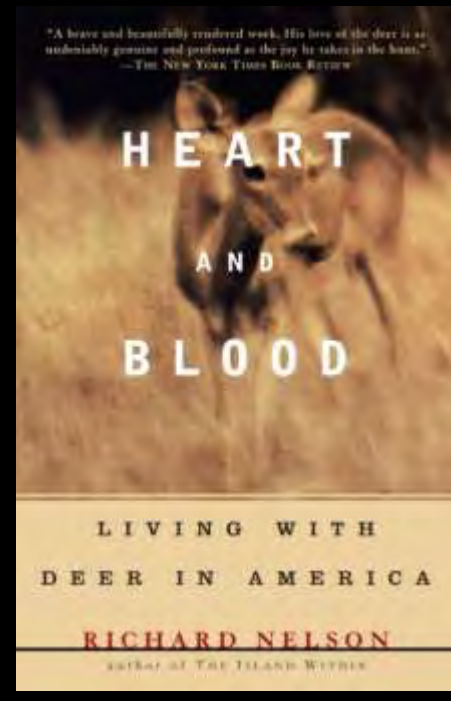
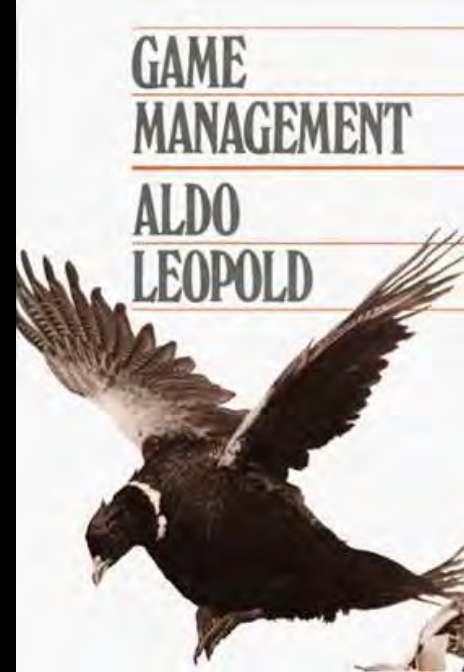
“Conservation means harmony between men and land. When land does well for its owner, and the owner does well by his land; when both end up better by reason of their partnership, we have conservation. When one or the other grows poorer, we do not.”



Pastoral Life - Sportsmanship – Hunting and Fishing

“There is value in any experience that exercises those ethical restraints collectively called “sportsmanship.” **Voluntary adherence to an ethical code elevates the self-respect of the sportsman**, but it should not be forgotten that voluntary disregard of the code degenerates and depraves him.”

Aldo Leopold 1887-1948



Rural Life – Chores and Pastoral Culture

The Spiritual Dangers of Not Owning a Farm

“There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace.”

To avoid the first danger, one should plant a garden, preferably where there is no grocer to confuse the issue.

To avoid the second, he should lay a split of good oak on the andirons, preferably where there is no furnace, and let it warm his shins while a February blizzard tosses the trees outside. If one has cut, split, hauled, and piled his own good oak and let his mind work the while, he will remember much about where the heat comes from, and with a wealth of detail denied to those who spend the week end in town astride a radiator.”

Aldo Leopold 1887-1948



Early 20th Century Pastoral Nonfiction Sustainable Agriculture

Farmers of Forty
Centuries or Permanent
Agriculture in China,
Korea, and Japan

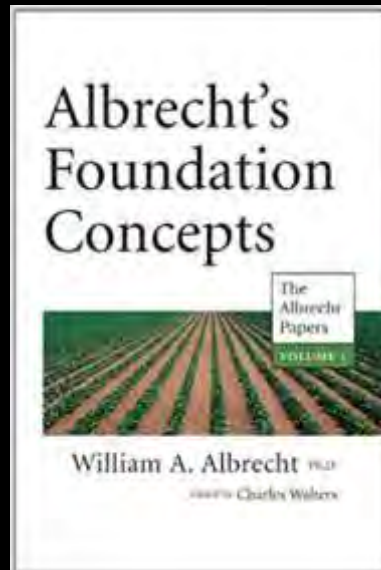
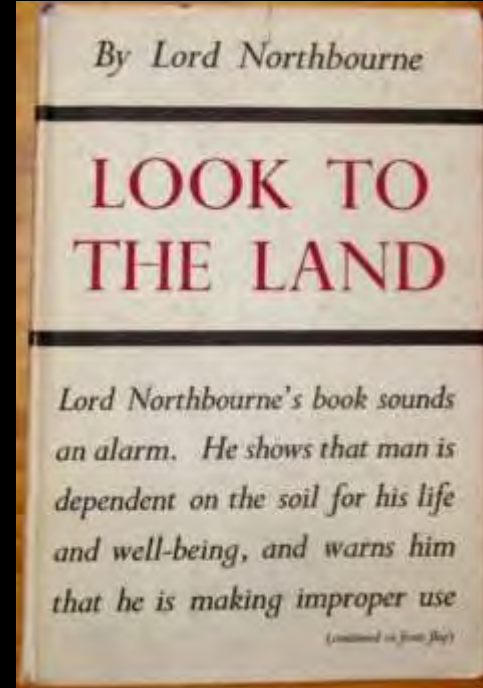
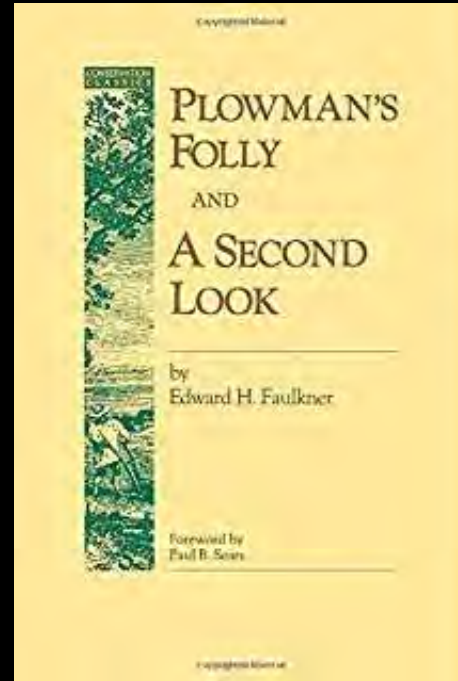
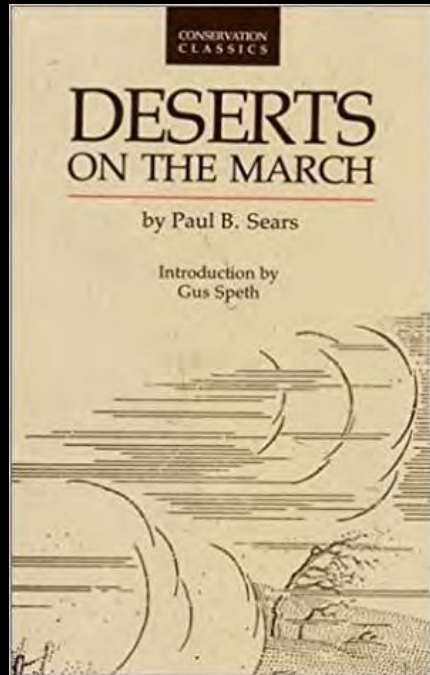
F.H. King



AN
AGRICULTURAL
TESTAMENT



Sir Albert Howard

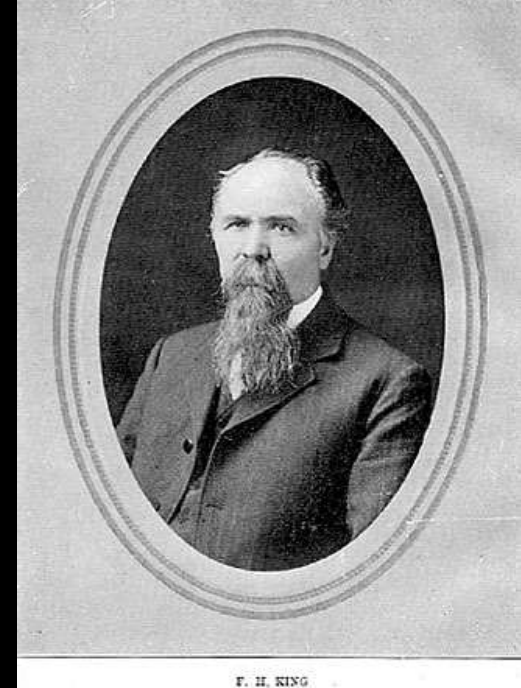


Permanent Agriculture - F.H. King 1848 – 1911

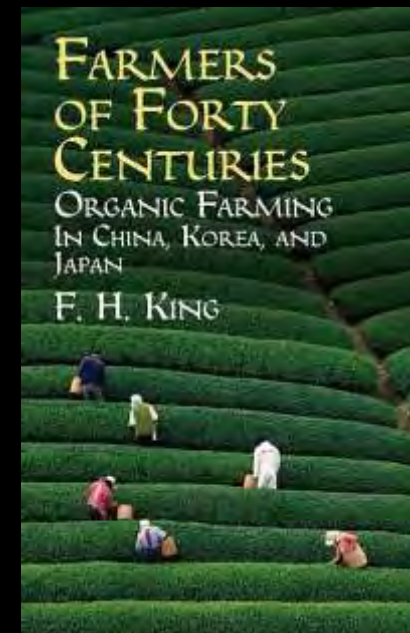
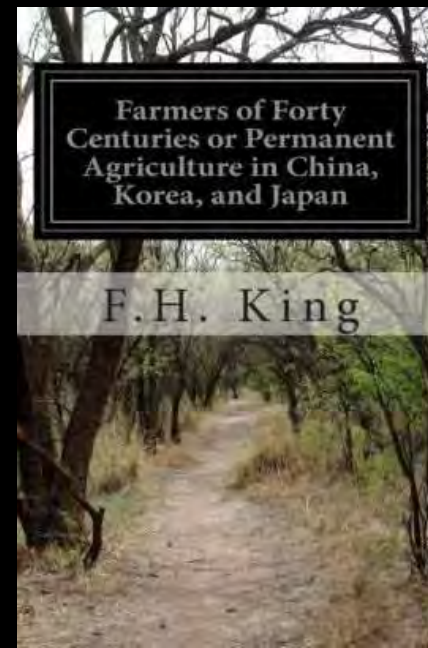
King served as a professor of agricultural physics at the University of Wisconsin–Madison from 1888 until 1902.

Most attention was given to soil physics, for example, water-holding capacities of soils, moisture requirements of plants, aeration, movement of water in soils, movement of groundwater, the drafts of plows, and the lifting power of windmills; he also began studies of soil fertility.

He is designed the *cylindrical storage silo*.



King toured Asia in 1909, studying traditional fertilization, tillage, and general farming practices. He published his findings in *Farmers of Forty Centuries or Permanent Agriculture in China, Korea, and Japan* (1911).



Nature's Farming - Sir Albert Howard 1873-1947

- From 1905 to 1924, he and his wife Gabrielle, a plant physiologist, worked as agricultural advisers in Pusa, Bengal, where they documented traditional Indian farming practices
- Howard promoted the 'Indore Method' of composting that focused on returning nutrients to the soil and creating quality 'humus' (**organic matter – organic agriculture**).
- ***An Agricultural Testament***, which influenced many scientists and farmers – especially Wendell Berry.



“The main characteristic of Nature's farming can therefore be summed up in a few words. Mother Earth never attempts to farm without live stock; she always raises mixed crops; great pains are taken to preserve the soil and to prevent erosion; the mixed vegetable and animal wastes are converted into humus;

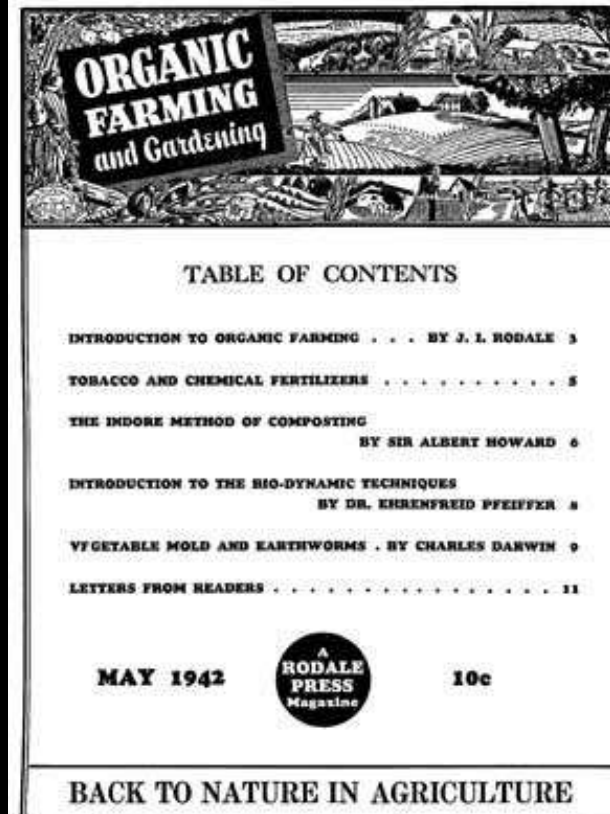
there is no waste; the processes of growth and the processes of decay balance one another; ample provision is made to maintain large reserves of fertility; the greatest care is taken to store the rainfall; both plants and animals are left to protect themselves against disease.”



The Rodale Institute and Organic Farming

Jerome Irving Rodale 1898-1971

- In 1941, Rodale reads Howard
- Buys a 60-acre farm near Emmaus PA to test Howard's ideas and began a life-long correspondence with him on organic farming.
- In 1942 the first edition of *Organic Farming and Gardening* was published by Rodale Press, Inc., with Sir Albert as an associate editor, to promote organic approaches to agriculture.
- Rodale advocated the concept that the long-term health of the soil is enhanced by **high levels of organic matter which improves the ability of soil to hold moisture and its tillability.**



RESEARCH. EDUCATION. OUTREACH.
ORGANIC PIONEERS SINCE 1947





Robert Rodale 1930 - 1990

He joined his father at the Rodale Press in 1951 as an editor. After his father died, he took over direction of Rodale Press.

Rodale Institute is a nonprofit that supports research into organic farming. Rodale Institute was founded in 1947 by J.I. Rodale in Emmaus, Pennsylvania.

When J.I. Rodale died in 1971, his son Robert purchased 333 acres and moved the farm to its current site in Kutztown, Pennsylvania.

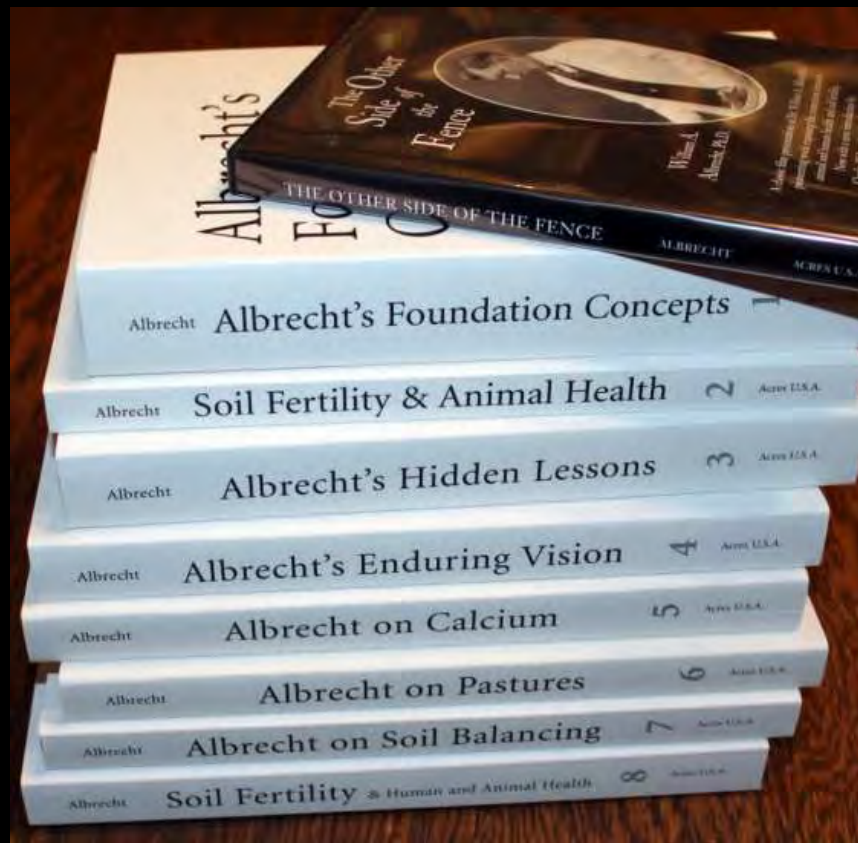
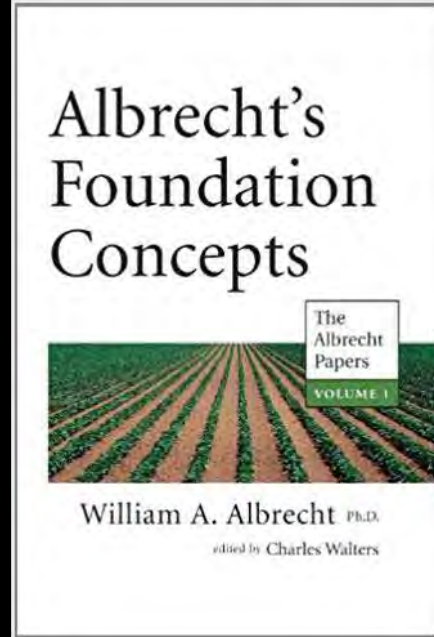
A hallmark of Rodale Institute's research has been the ongoing Farming Systems Trial (FST). Begun in 1981, the FST compares two organic farming systems—manure-based and legume-based approaches—to conventional farming methods.



The Ideal Soil

Dr. William A. Albrecht (1888–1974)

Albrecht was outspoken on matters of declining soil fertility, having identified that it was due to a lack of organic material, major elements, and trace minerals, and was thus responsible for poor crops and in turn for pathological conditions in animals fed deficient foods from such soils.

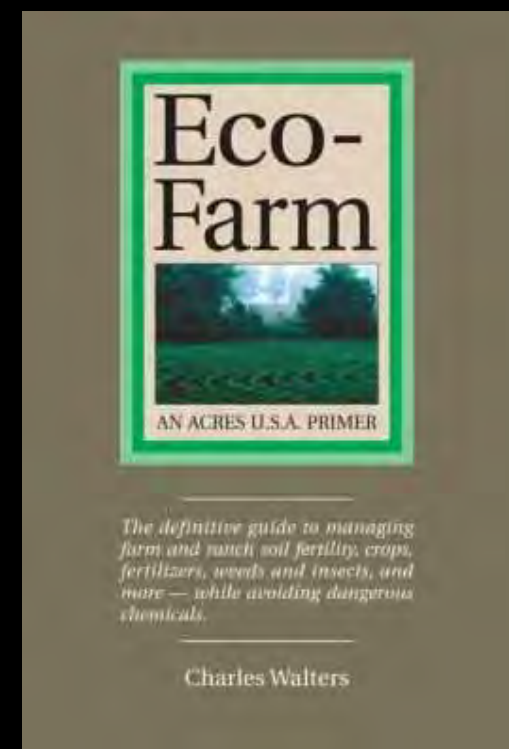
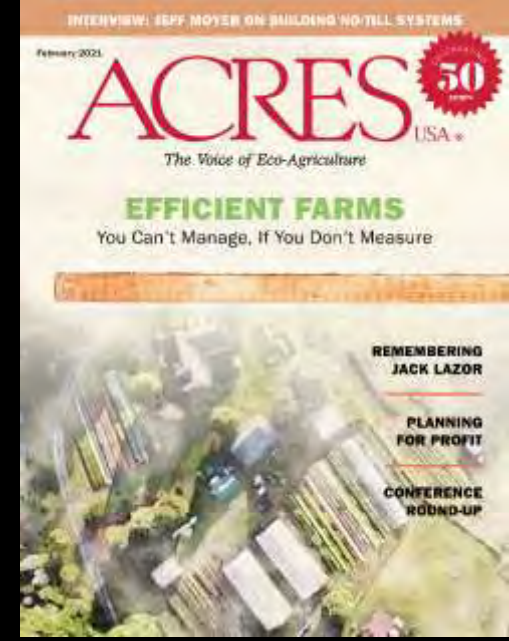




Albrecht's Legacy

Founded in 1970
Charles Walters (1926 -2009)
Published in Austin until 2016

“Simplistic nitrogen, phosphorus and potassium (N, P and K) fertilization means malnutrition for plants, animals and people because either a shortage or marked imbalance of plant nutrients prevent balanced plant health and therefore animal and human health.”



The Pastoral Ideal - Nature, Culture and Agriculture

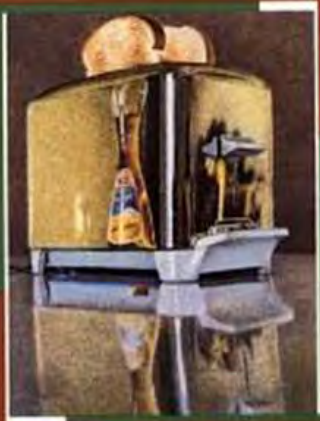
Wendell Berry (b. 1938)

“The soil is the great connector of lives, the source and destination of all. It is the healer and restorer and resurrector, by which disease passes into health, age into youth, death into life. Without proper care for it we can have no community, because without proper care for it we can have no life.”



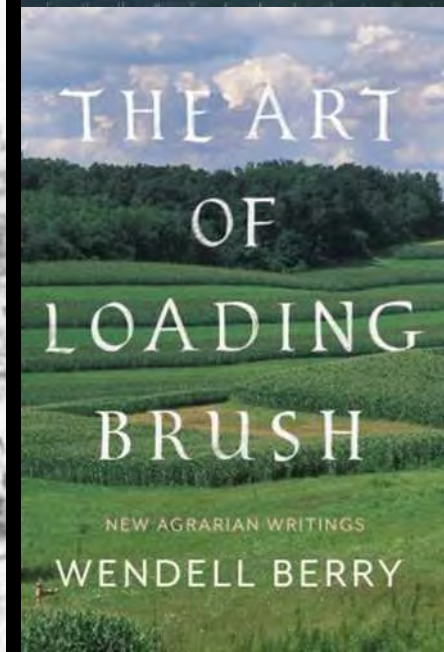
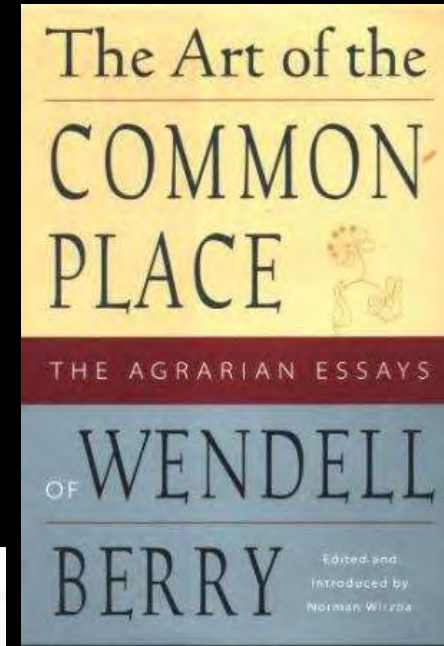
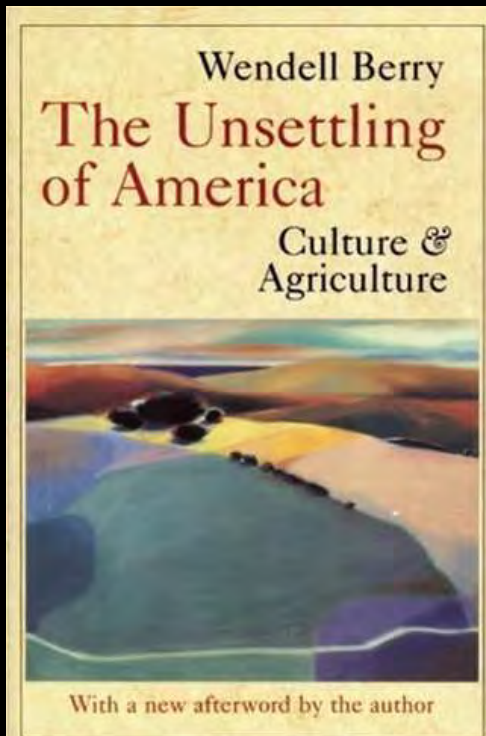
Further Essays Cultural and Agricultural by
WENDELL BERRY

Home Economics



FOURTEEN ESSAYS BY

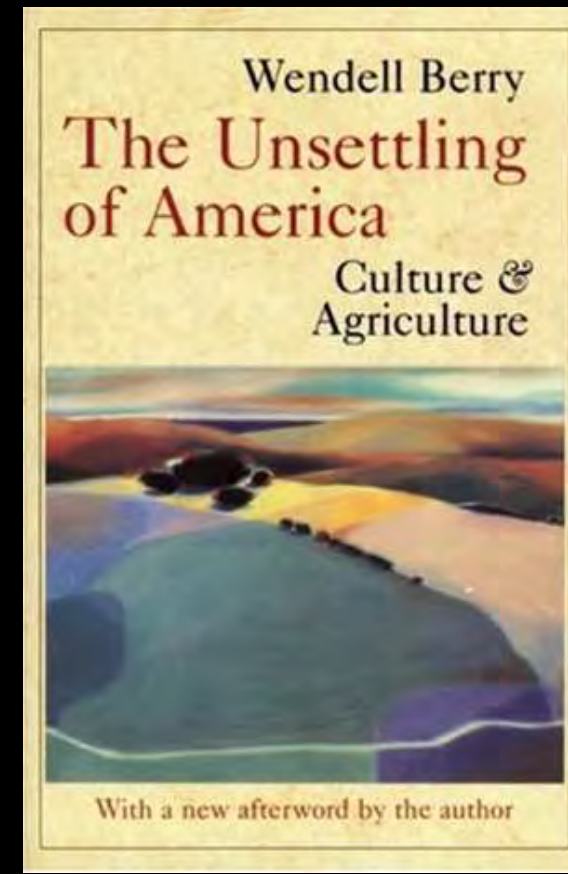
Wendell Berry



The Unsettling of America: Culture and Agriculture 1977

“In *The Unsettling of America* I argue that industrial agriculture and the assumptions on which it rests are wrong, root and branch; I argue that this kind of agriculture grows out of the worst of human history and the worst of human nature.

The apologists for the ruin of agricultural lands, economies, and communities have shown always that they did nothing to stop it because there was nothing they could have done to stop it. (It’s just progress, folks. Be glad your children won’t suffer the drudgery and degradation of farm ownership.)”



The Pastoral Place - Culture and Agriculture

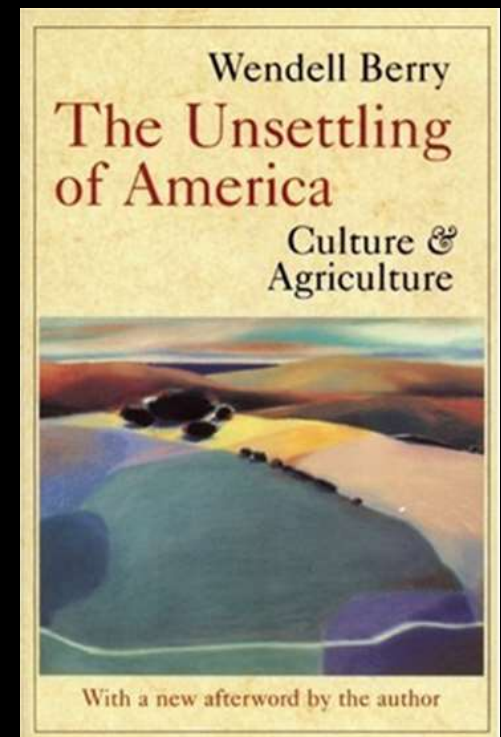
“The concept of country, homeland, dwelling place becomes simplified as "the environment" -- that is, what surrounds us, we have already made a profound division between it and ourselves.

We have given up the understanding -- dropped it out of our language and so out of our thought -- that we and our country create one another, depend on one another, are literally part of one another;

that our land passes in and out of our bodies just as our bodies pass in and out of our land;

that as we and our land are part of one another, so all who are living as neighbors here, human and plant and animal, are part of one another, and so cannot possibly flourish alone;

that, therefore, our culture must be our response to our place, our culture and our place are images of each other and inseparable from each other, and so neither can be better than the other.”



Sustainable Agriculture and Kindly Use

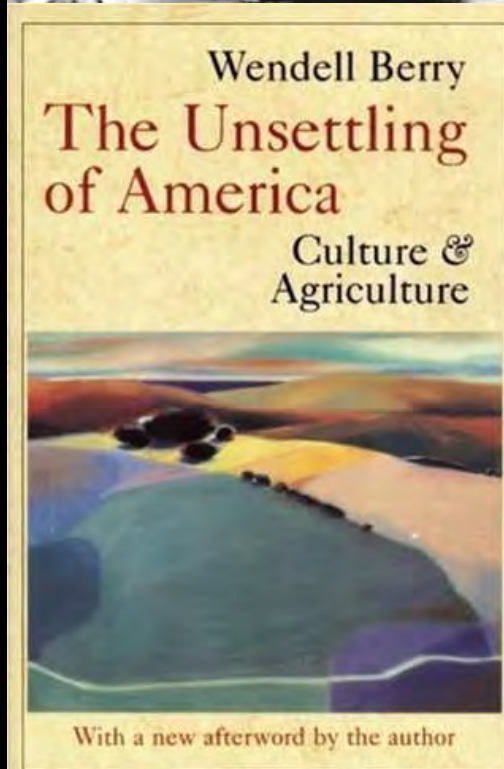
“But we cannot hope – for reasons practical and humane, we cannot even wish – to preserve more than a small portion of the land in wilderness. Most of it we will have to use.

The conservation movement swings from self-righteous outrage to self-deprecation because it has neglected this issue. Its self-contradictions can only be reconciled – and the conservation impulse made to function as ubiquitously and variously as it needs to – by understanding, imagining, and living out the possibility of ‘kindly use’...”

New Land Ethic – Kindly Use

“Kindly use depends upon intimate knowledge, the most sensitive responsiveness and responsibility...the understanding of kindly use in agriculture must encompass both farm and household...”

“For the true measure of agriculture is not the sophistication of its equipment the size of its income or even the statistics of its productivity but the good health of the land.”



Farming with Nature

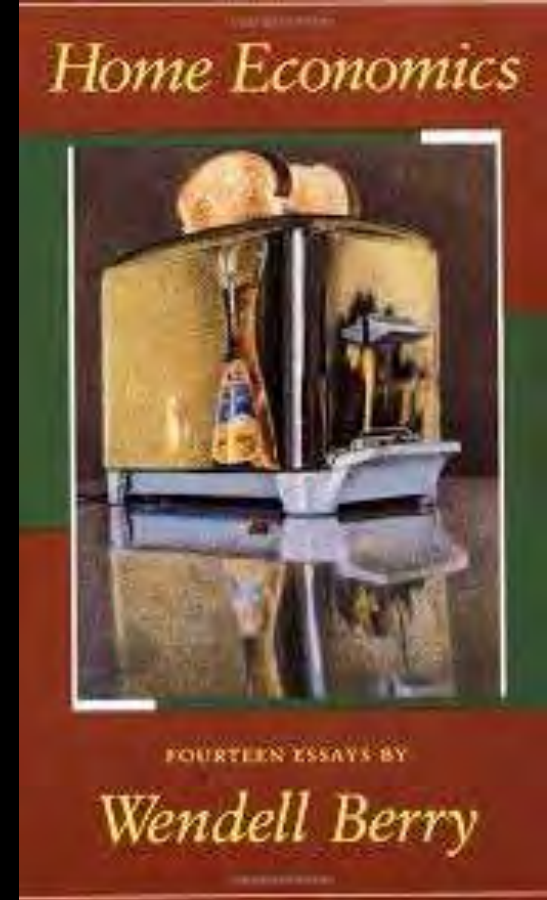
The Wild and the Cultivated Connected

“Getting Along with Nature” *Home Economics* 1987

“I would argue that we do not need just the great public wildernesses, but millions of small private or semiprivate ones. Every farm should have one; wildernesses can occupy corners of factory grounds and city lots – places where nature is given a free hand, where no human work is done, where people go only as guests.

What I am aiming at – because a lot of evidence seems to point this way – is the probability that **nature and human culture, wildness and domesticity, are not opposed but are interdependent.**

Authentic experience of either will reveal the need of one for the other. In fact, examples from both past and present prove that a human economy and wildness can exist together not only in compatibility but to their mutual benefit.”



The Impartial Mother of All Creatures

Wendell Berry

2010 National Humanities Medalist Lecture

“As many hunters, farmers, ecologists, and poets have understood, *Nature (and here we capitalize her name) is the impartial mother of all creatures*, unpredictable, never entirely revealed, not my mother or your mother, but nonetheless our mother.

If we are observant and respectful of her, she gives good instruction.

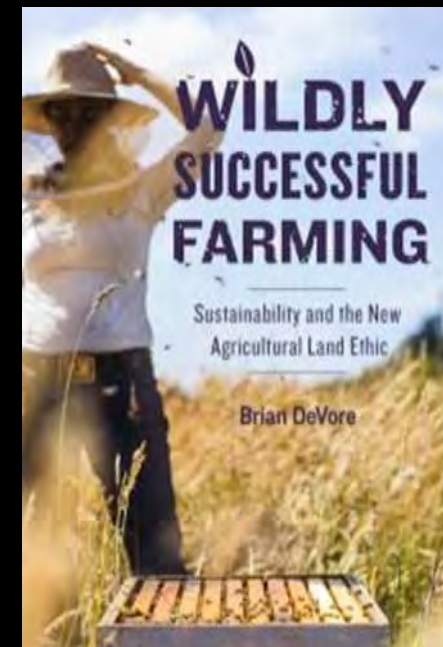
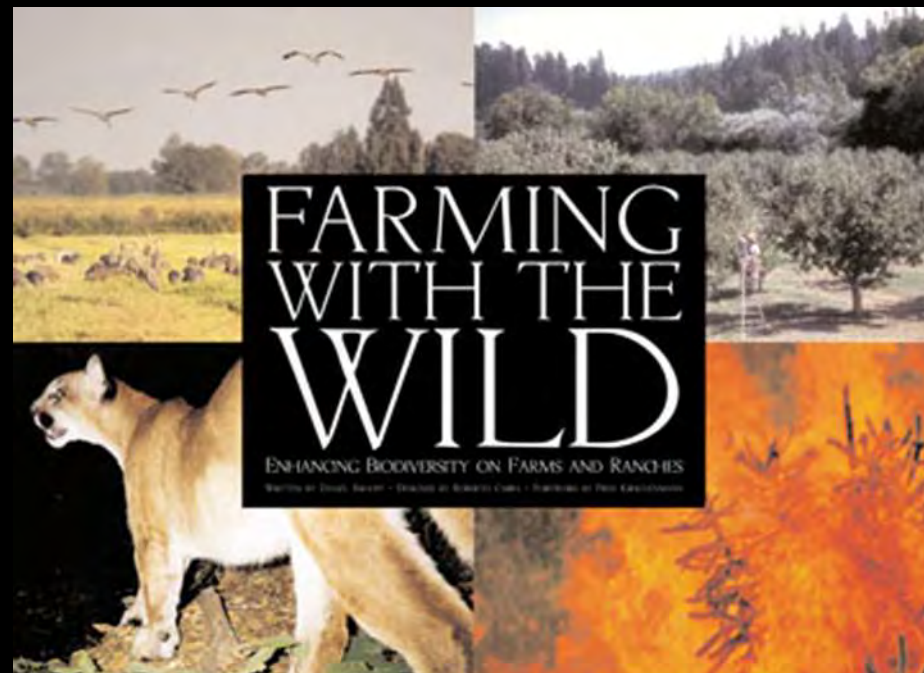
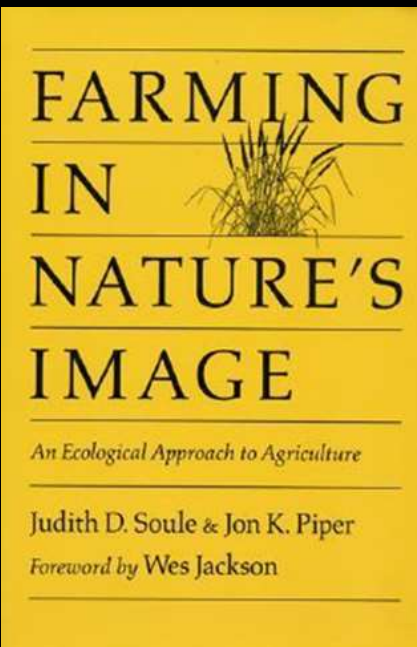
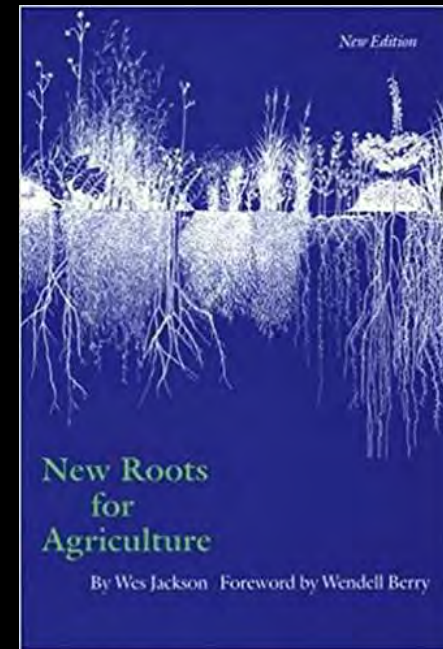
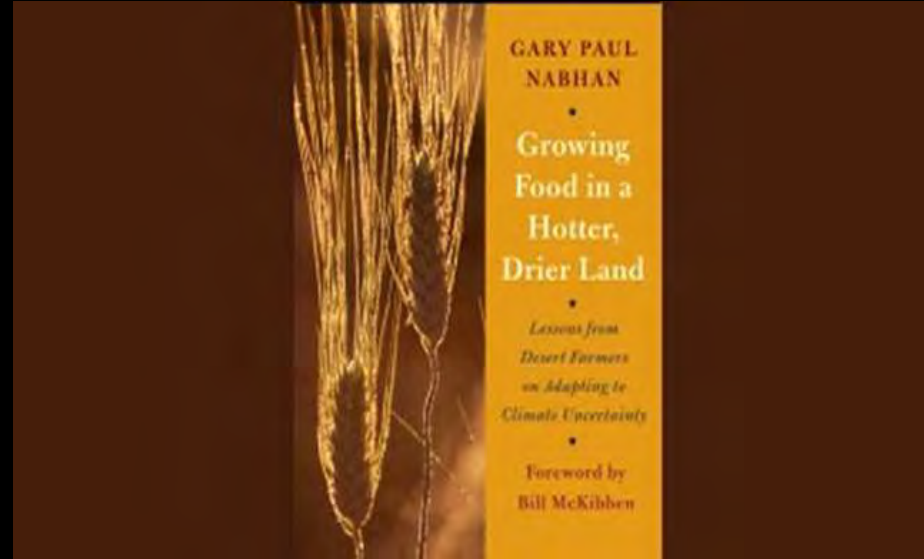
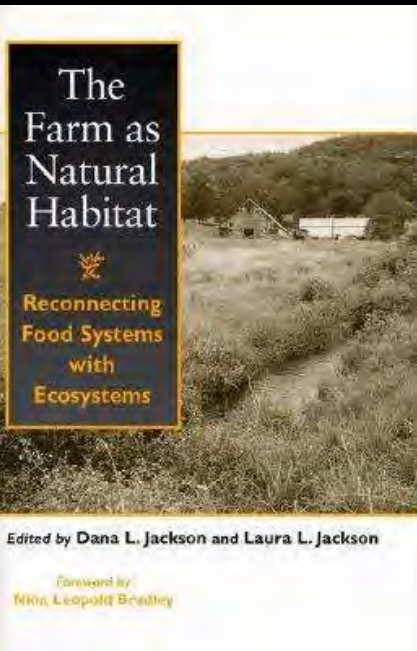
As Albert Howard, Wes Jackson, and others have carefully understood, she can give us the right patterns and standards for agriculture. If we ignore or offend her, she enforces her will with punishment.

She is always trying to tell us that we are not so superior or independent or alone or autonomous as we may think.”



Contemporary Farming with Nature

Patterns and Standards for Agriculture



Wes Jackson, Dana Jackson

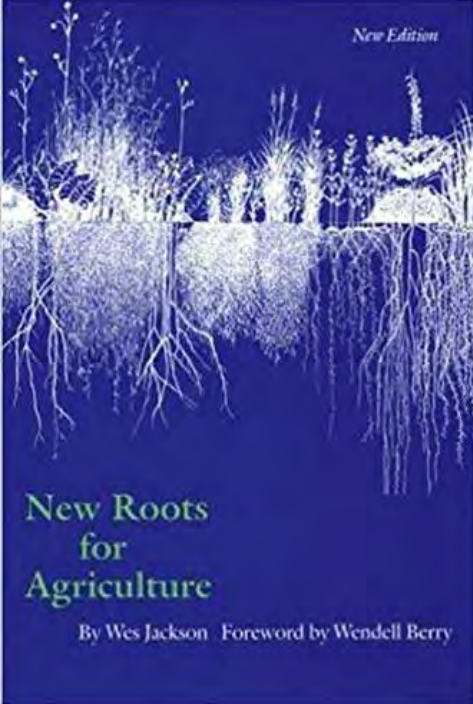
The Land Institute
Salina, Kansas
1976



Mission Statement:

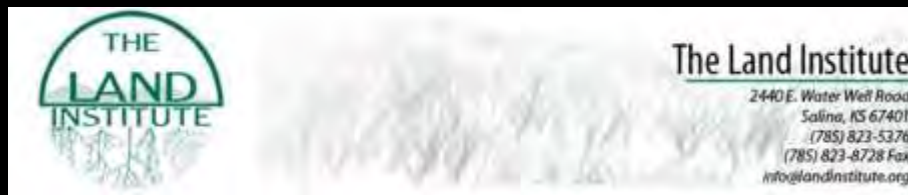
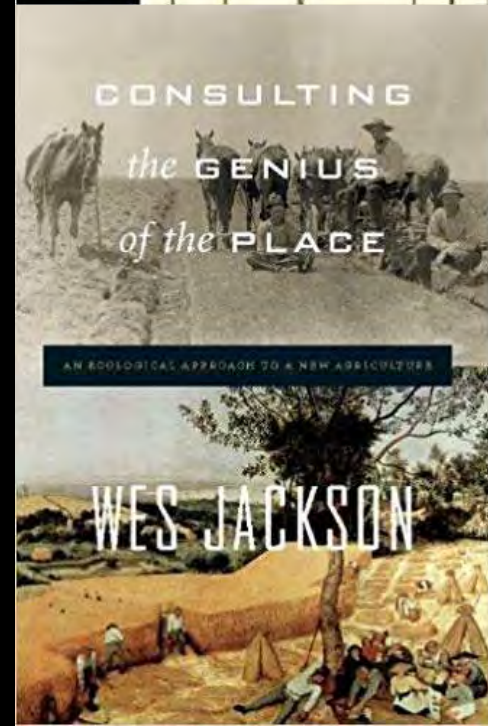
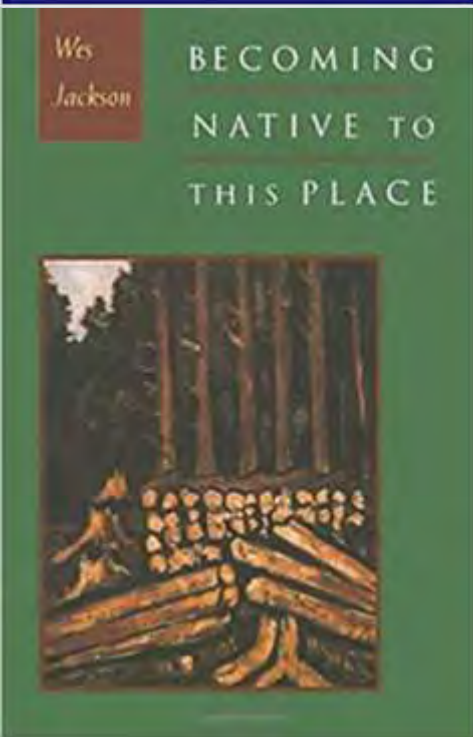
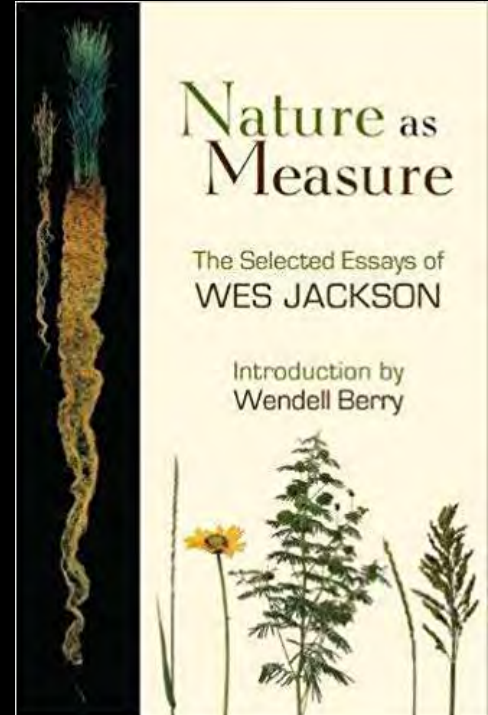
When people, land, and community are as one,
all three members prosper;
when they relate not as members
but as competing interests,
all three are exploited.
By consulting Nature as the source
and measure of that membership,
The Land Institute seeks to develop an agriculture
that will save soil from being lost or poisoned
while promoting a community life at once
prosperous and enduring.





Natural Systems Agriculture

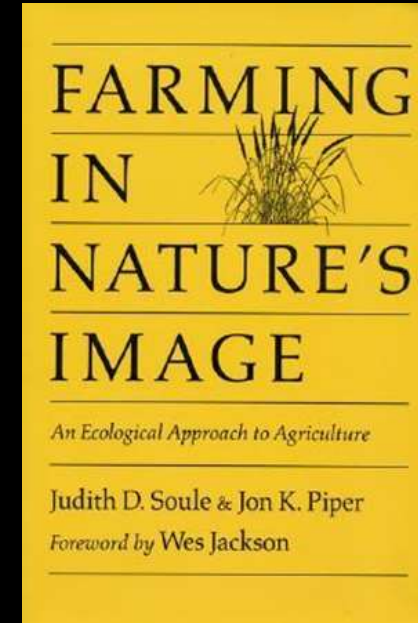
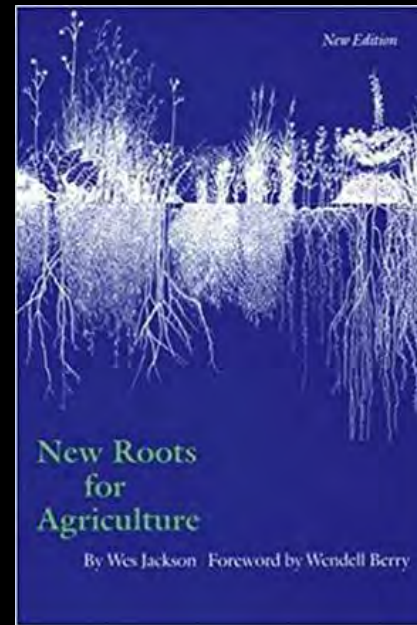
Wes Jackson (b. 1936)





The Land Institute

2440 E. Water Well Road
Salina, KS 67401
(785) 823-5376
(785) 823-8728 Fax
info@landinstitute.org



Natural Systems Agriculture - Our purpose is to develop an agricultural system with the ecological stability of the prairie and a grain yield comparable to that from annual crops.

Perennial Polycultures - Land Institute scientists are breeding the annual crop plants wheat, sorghum and sunflower with wild, perennial relatives, thus creating **perennial wheat, perennial sorghum and perennial sunflower.**

Natural Systems Agriculture

“The tendency of all natural ecosystems is to increase their ecological wealth. For instance, all prairie, left alone, recycles materials, sponsors its own fertility, runs on contemporary sunlight, and increases biodiversity.

Agricultural systems tend otherwise. They erode and degrade ecological capital as they provide for human needs. We call this the "problem of agriculture, introduced when our ancestors made the transition to agriculture millennia ago.”



Annual wheat (on left in each panel) and Perennial wheatgrass



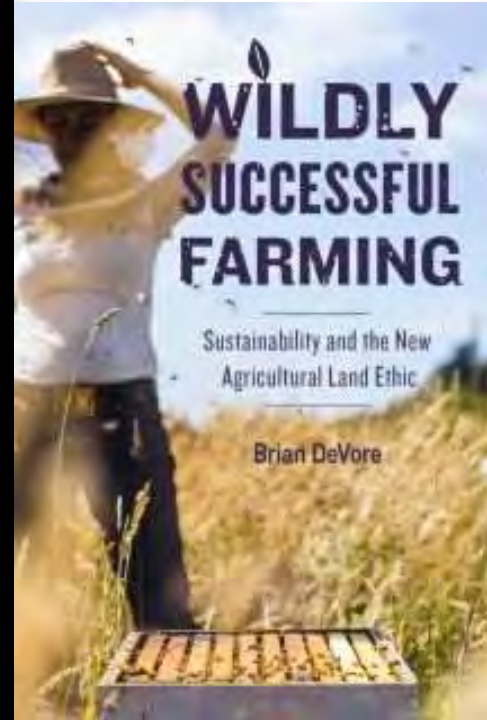
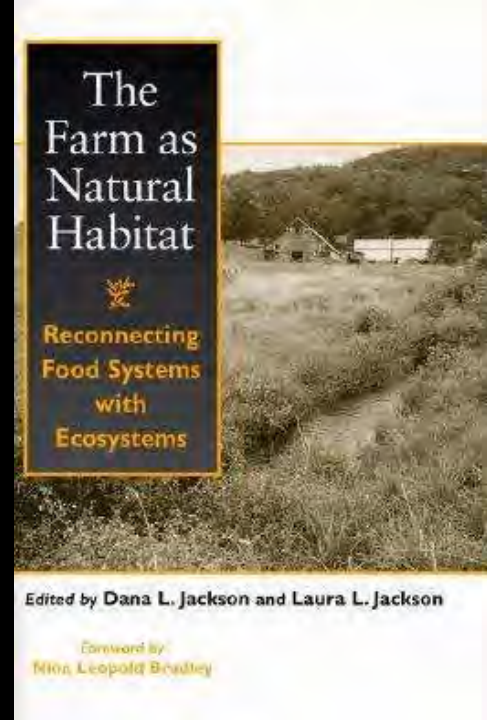


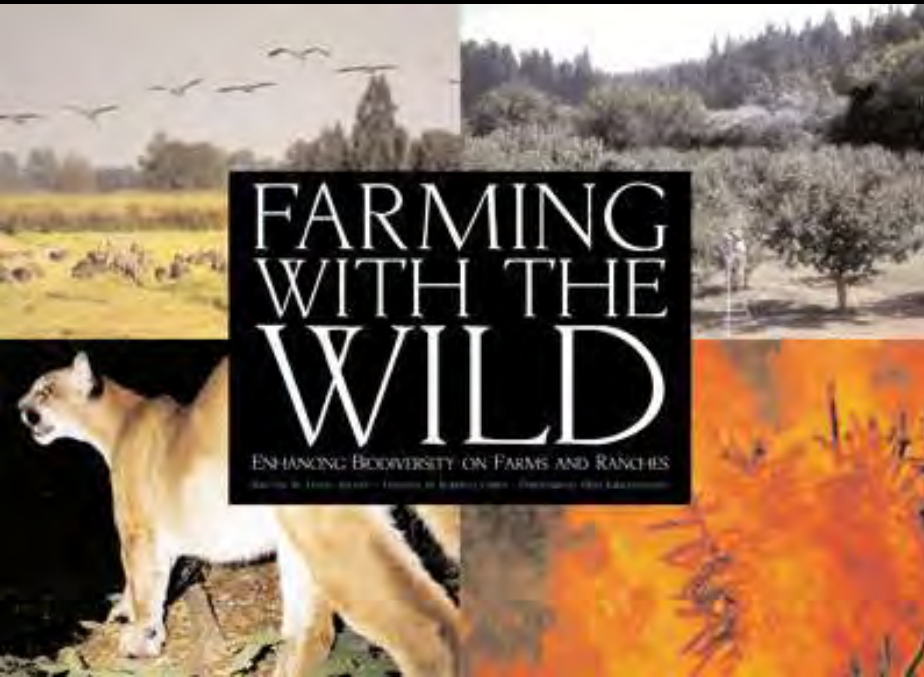
LAND STEWARDSHIP PROJECT

The Land Stewardship Project Minnesota

Dana Jackson

The Land Stewardship Project is a Minnesota organization founded in 1982 to foster an ethic of stewardship for farmland, to promote sustainable agriculture and to develop sustainable communities.





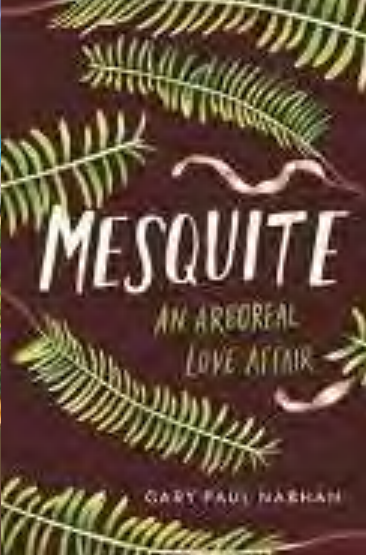
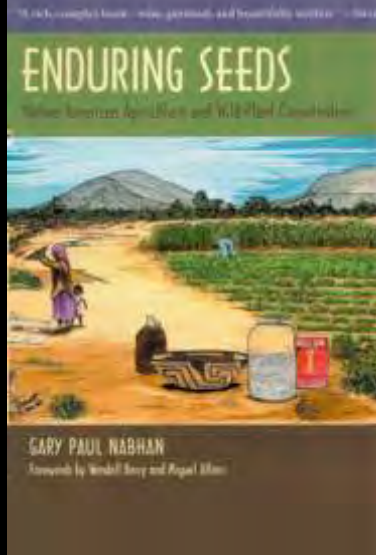
The Wild Farm Alliance California

Dan Imhoff - *Farming with the Wild*, a book identifying models and resources to help farmers incorporate conservation practices in their farms and watersheds.

Along with Dana Jackson, Dan is one of the founders of the Wild Farm Alliance, formed in 2000.

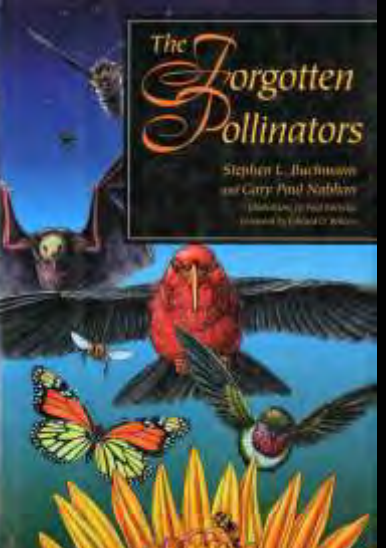
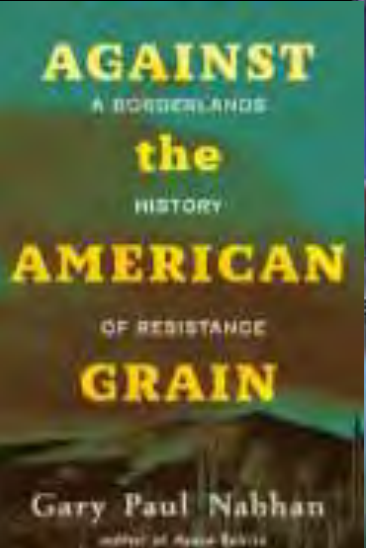
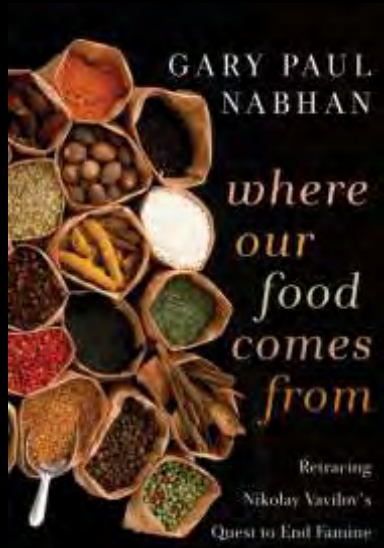


Native American Agriculture Sonoran Desert



Gary Paul Nabhan is the W.K. Kellogg Endowed Chair in Sustainable Food Systems at the University of Arizona Southwest Center.

Co-founder and researcher with Native Seeds/SEARCH.



Native Seeds/SEARCH - Tucson, Arizona

Conserves, distributes and documents the adapted and diverse varieties of agricultural seeds, their wild relatives and the role these seeds play in cultures of the American Southwest and northwest Mexico.

Promotes the use of ancient crops and their wild relatives by gathering, safeguarding, and distributing their seeds to farming and gardening communities.





The Quivira Coalition fosters resilience on *arid working lands*.

To create a culture of land stewardship that integrates ecological, economic, and social health, we work in coalition with ranchers and farmers, landowners and managers, public agencies, conservationists, students and educators, and the general public.



The American Grassfed Association is a national multi-species organization dedicated to protecting and promoting grassfed producers and grassfed products

Regenerate Annual Conference



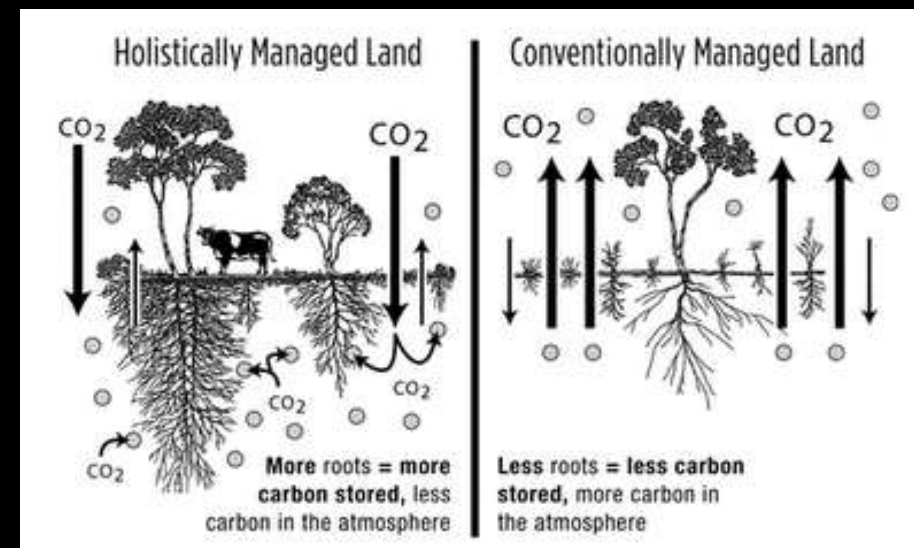
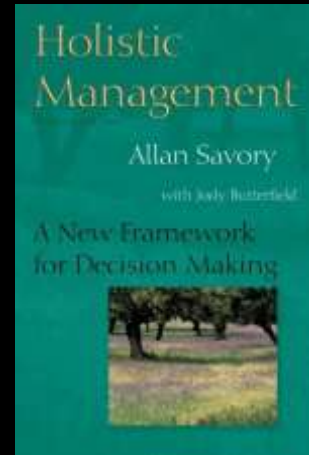
healthy land.
sustainable future.



healthy land.
sustainable future.

Holistic Management International

Founded by Alan Savory (b. 1935)

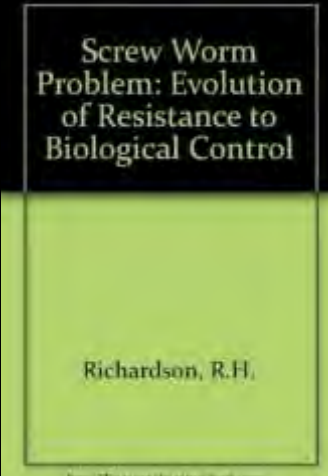


University of Texas and Sustainable Agriculture The Richardsons

Dr. Pat Richardson (the Dung Beetle Lady) and her husband Dr. Dick Richardson (the University of Texas at Austin, Department of Integrative Biology)

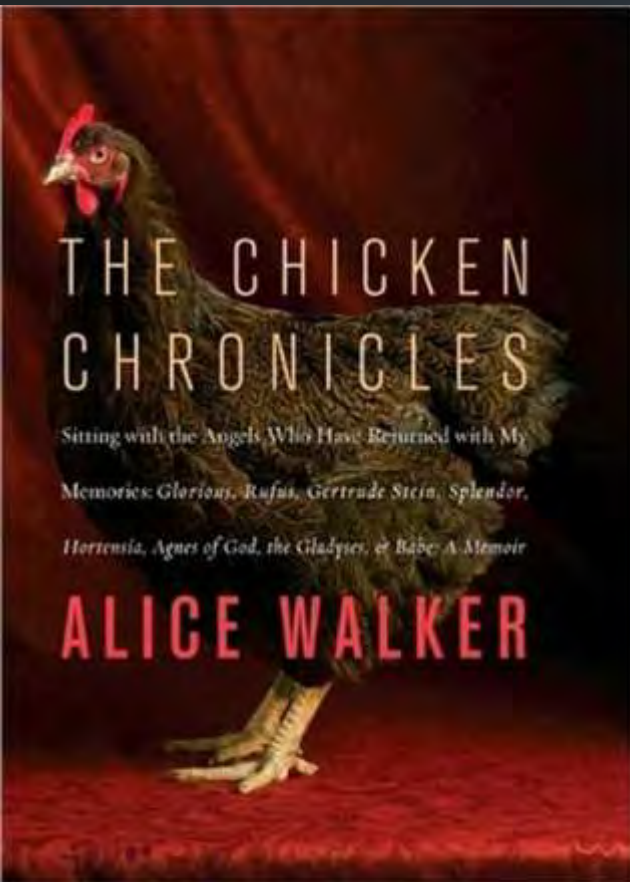
The Poop Cycle - YouTube
Pat uses a video camera that can capture the microscopic critters in the soil and show their important work of cycling minerals in the soil.

Dr. Dick Richardson grew up on a ranch in Mexia, Texas. He completed a BS in Plant and Soil Science from Texas A&M University in 1959. Graduate studies were completed at North Carolina State University where he received an MS in Plant Breeding (1962) and a PhD in Genetics (1965).



Nonhuman Pastoralists

Domesticated Animals





Nonhuman Pastoralists - Domesticated Animals





Dark Pastoral – Death on the Farm

Murder In The Red Barn – Tom Waits

There was a murder in the red barn

Murder in the red barn

'Cause there's nothin' strange

About an axe with bloodstains in the barn

There's always some killin'

You got to do around the farm

A murder in the red barn

Murder in the red barn...



Birth on the Farm

Calving Season





Nonhuman Pastoralists

*I think I could turn and live with animals, they are so placid and self-contain'd;
I stand and look at them long and long.*

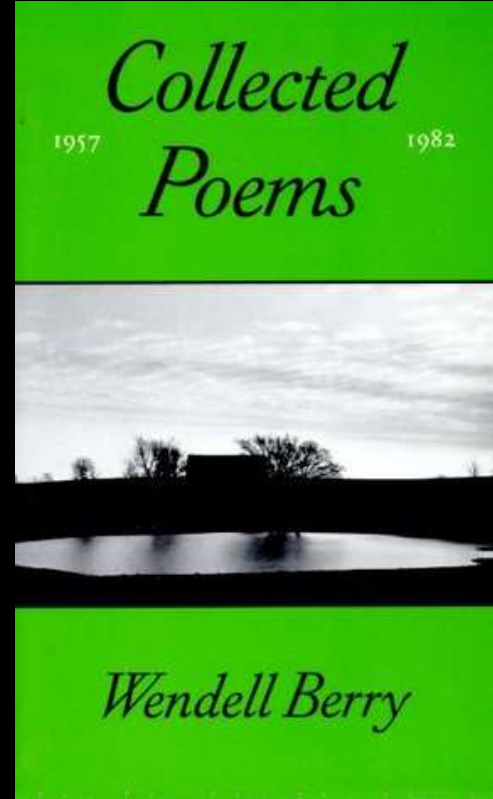
*They do not sweat and whine about their condition;
They do not lie awake in the dark and weep for their sins;
They do not make me sick discussing their duty to God;
Not one is dissatisfied—not one is demented with the mania of owning things;
Not one kneels to another, nor to his kind that lived thousands of years ago;
Not one is respectable or industrious over the whole earth.*

Walt Whitman

The Pastoral Impulse – Wendell Berry

“The Man Born to Farming”

The grower of trees, the gardener, the man born to farming, whose hands reach into the ground and sprout, to him the soil is a divine drug. He enters into death yearly, and comes back rejoicing. He has seen the light lie down in the dung heap, and rise again in the corn. His thought passes along the row ends like a mole. What miraculous seed has he swallowed that the unending sentence of his love flows out of his mouth like a vine clinging in the sunlight, and like water descending in the dark?



Pastoral Nature



Applause



Questions?

