Chronological List of Books, Book Chapters and Reports

References through 1799

Note about early works

The environmental impacts of early agriculture remain undocumented, at least in terms of written records. Archaeological discoveries provide clues. For instance, rock paintings found in the Tibesti Mountains of North Africa dating to 3,500 BCE indicate that overgrazing and desertification were phenomena even in ancient times. The pictures show that areas of the Sahara described as barren in the first century A.D. were once fertile fields.

On varying timetables, people in Europe, Asia, Africa and the Americas developed agricultural systems, many incorporating land stewardship practices. Examples include: the Chinese adoption of composting and mulching (ca. 2000 BCE); Sumerian irrigation and windbreak techniques evidenced in document tablets from circa 1500 BCE; and the Aztec Chinampas (floating garden) system utilized since the 1100s that produces several corn crops per year. (From: *The People's Chronology: A Year-by Year Record of Human Events from Prehistory to the Present*, by James Trager, New York: Henry Holt, 1994) Several works written during the 19th and 20th centuries that document these and other ancient systems are cited in this bibliography. See: Dickson, 1788; King, 1911; Wrench, 1946; Lowdermilk, 1948; Osborn, 1948; Hyams, 1952; and Diamond, 2005.

0050

Columella, Lucius Junius Moderatus, 6-70

De Re Rustica

Cambridge MA: Harvard University Press, 1941 (oldest edition held by the National Agricultural Library). 3 vols. Loeb Classical Library edition. Translated title: *On Agriculture*. Recension of the text and an English translation by Harrison Boyd Ash. Bibliography, v. 1, p. xxiii-xxvii. Other editions: The National Agricultural Library holds various editions of this work, published in Italy, England and Germany, dating from the 1500s.
NAL Call no: 30.8 C72Ag
Full-text: Columella: Extant Works (*De Re Rustica* and *De Arboribus*), Bill Thayer's Web Site, http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Columella/home.html (accessed Jan. 1, 2007)

> In the first century, Columella wrote, "The earth neither grows old, nor wears out, if it be dunged." He also recommended grains in rotation with legumes and fallow. Cato, Varro, Palladius, Vegetius and Pliny the Elder also wrote about soil building and conservation techniques. MVG

1580

Tusser, Thomas, 1524?-1580

Five Hundred Points of Good Husbandry

London: H. Denham, 1580. 4p., 289 numbered leaves, 2p. Complete title: *Fiue hundred pointes of good husbandrie, as well for the champion, or open countrie, as also for the woodland, or seuerall, mixed in eurie month with huswiferie, ouer and besides the booke of huswiferie, corrected, better ordered, and newly augmented to a fourth part more, with diuers other lessons, as a diet for the farmer, or the properties of winds, planets, hope, herbes, bees, and approoued remedies for sheepe and cattle, with many other matters both profitable and not vnpleasant for the reader: also a table of husbandrie at the beginning of this book: and another of huswiforie at the*

end: for the better and easier finding of any matter contained in the same. In verse.
NAL Call no: 30.8 T87 1580

This classic has been reprinted almost every century since its original publication. Tusser's maxims include observations of human behavior: "Still crop' upon crop many farmers do take and reap little profit, for greediness sake…," observations concerning the land: "and land (overburdened) is clean out of heart," or "if land be unlusty, the crop is not great." He also gives advice by the month, frequently in rhyme. "Octobers Abstract" is about the rotation of crops: "Where barlie did growe, laie wheat to sowe, yet better I thinke, sowe pease, after drinke. And then if ye please, sowe wheat after pease." JPG
Cited in: Bailey (1915)

1748

Eliot, Jared, 1685-1763
Essays Upon Field-husbandry in New-England, as It is or May be Ordered
Boston: Edes and Gill, 1760. 166p. "The foregoing essays were first printed in New-London and in New-York; the 1st in 1748, 2d in 1749, 3d in 1751, 4th in 1753, 5th in 1754, 6th in 1759." p. 158. Appendix dated June, 1761. Other editions: *Essays upon Field Husbandry in New England, and Other Papers*, 1748-1762, edited by Harry J. Carman and Rexford G. Tugwell, with a biographical sketch by Rodney H. True (Columbia University Press, 1934).
NAL Call no: 31.3 El4E R

Eliot was a minister, doctor, philosopher, author and scientist-farmer. His six essays, based on observations and experiments made at his farm in Connecticut, were the first American publications devoted to agriculture. He adapted English practices, recommending legume/grain rotations and control of erosion on hillsides including his own brand of conservation tillage. "When our fore-Fathers settled here, they entered a Land which probably never had been Ploughed since the Creation; the Land being new they depended upon the natural Fertility of the Ground, which served their purpose very well and when they had worn out one piece they cleared another, without any concern to amend their Land, except a little helped by the Fold and Cart-dung, whereas in England they would think a Man a bad Husband, if he should pretend to sow Wheat on Land without any Dressing." MVG
Cited in: McDonald (1941)

1788

Dickson, Adam, 1721-1776
The Husbandry of the Ancients
Edinburgh: Dickson and Creeca, 1788. 2 vols.: 527p. and 494p.
NAL Call no: R30.9 D56
Other works by this author: *A Treatise on Agriculture* (1762, later editions, 1765, 1785); *Small Harms Destructive to the Country in its Present Situation* (1764); *Essay on Manures* (1772).

Dickson quotes Columella, Palladius, Cato, Virgil, Pliny, et. al., regarding the knowledge and practice of husbandry and confesses in the preface to be "agreeably surprised to find, that, not-withstanding the great differences in climate, the maxims of the ancient Roman farmers are the same with those of the best modern farmers in Britain..." JPG
Cited in: Pieters (1927)

1790

Deane, Samuel, 1733-1814

The New-England Farmer, or, Georgical Dictionary: Containing a Compendious Account of the Ways and Methods in Which the Important Art of Husbandry, in All its Various Branches, is, or May be Practised, to the Greatest Advantage, in this Country

Worcester MA: Isaiah Thomas, 1790. 335p.

NAL Call no: 30.1 D34 Ed.1

Full-text (1797 edition): Internet Archive, http://www.archive.org/details/newenglandfarmer00deanrich (accessed Jan. 1, 2007)

Deane was the first American to document the problem of wind erosion. Along with other soil-conserving practices such as green manuring and contour plowing, he recommended windbreaks and hedgerows to prevent "sand-floods." His original 1790 book was updated several times and was reportedly a mainstay of New England farmers until the Civil War. MVG

Cited in: McDonald (1941)

1800-1899

The Age of Discovery's agricultural legacy

Scientific and geographical discoveries of the 1500s, 1600s and 1700s had great impact on agriculture and on the use of natural resources worldwide. Significant changes included: accelerated "globalization" of plant and animal species; unprecedented advances in scientific knowledge and research techniques; access to new markets and trading partners; and social revolutions that redefined labor and land ownership.

For the Europeans, undeveloped continents seemed to offer a never-ending supply of arable land and cheap labor. This had special significance for the Americas. "The felling of the first tree by colonists in the New World, though never mentioned by historians, was an act of great significance. It marked the beginning of the era of the most rapid rate of wasteful land use in the history of the world." *Early American Soil Conservationists*, by Angus McDonald. Washington DC: United States Department of Agriculture, 1941.

1804

Saussure, Nicolas-Théodore de, 1767-1845

Récherches Chimiques sur la Végétation

Paris: Chez la Ve. Nyon, 1804. viii, 327p. In French. Translated title: *Chemical Research on Vegetation.*

NAL Call no: 463.2 .S285R

The majority of this Swiss scientist's papers deal with the chemistry and physiology of plants and plant interactions with soils. His work clarified many previously misunderstood soil-plant relationships including plant respiration and the soil's role as supplier of nitrogen. These findings set the scene for modern soil science and humus-oriented theory. MVG

Cited in: Korcak (1992)

1813

Taylor, John, 1753-1824

Arator: Being a Series of Agricultural Essays, Practical and Political, in Sixty-one Numbers, by a Citizen of Virginia

Georgetown, DC: J.M. and J.B. Carter, 1813. 296p. Other editions: Several later editions of this work appeared in the early 1800s; a recent volume, edited and with an introduction by M.E. Bradford was published in 1977.

NAL Call no: 30 T21

Other works by this author: *An Inquiry into the Principles and Policy of the Government of the United States* (1814).

Taylor was a statesman, author, Virginia plantation owner and close friend of Thomas Jefferson. His observations of soil depletion led to his investigation and advocacy of soil restorative practices. His widely read essays and newspaper articles recommended the following: protect the soil from grazing during the rest period, and thus raise a large crop of vegetable matter; make use of vegetable manures of all kinds; sow clover and grass seed with the grain crop to serve as pasturage or green-manure; practice horizontal plowing as a preventative of gullies and washes; and establish artificial meadows and a crop rotation with grass. MVG

1832

Ruffin, Edmund, 1794-1865

An Essay on Calcareous Manures

Petersburg VA: J. W. Campbell, 1832. xii, 13, 242p. Other editions: Several subsequent editions published through 1852.

NAL Call no: 57.1 R83 R

Other works by this author: *An Address on the Opposite Results of Exhausting and Fertilizing Systems of Agriculture: Read before the South-Carolina Institute, at its Fourth Annual Fair, November 18th, 1852* (1853); *Agricultural, Geological, and Descriptive Sketches of Lower North Carolina, and the Similar Adjacent Lands* (1861); *Agriculture, Geology, and Society in Antebellum South Carolina: The Private Diary of Edmund Ruffin, 1843*, edited by William M. Mathew (1992).

Ruffin's work and writings cover many topics related to sustaining farm production in Virginia and North Carolina, including lime-soil interactions (especially "marling"), flood and sedimentation control, cover crops, soil exhaustion and wind erosion. "Edmund Ruffin's efforts ended the pioneer state of the erosion-control movement in America. His work was equal to that of all his predecessors combined. The knowledge of the soil which he gained from his experiments, his theories and speculations regarding the action of water on soil and his erosion-control practices provided a foundation for later developments." A. McDonald, *Early American Soil Conservationists* (1941), p. 58. MVG

Cited in: McDonald (1941)

1840

Liebig, Justus Freiherr von, 1803-1873

Organic Chemistry and its Application to Agriculture and Physiology

London: Taylor and Walton, 1840. 407p. Edited from the manuscript of the author by Lyon Playfair. Translated from the German, *Organische Chemie in ihrer Anwendung auf Agricultur und Physiologie*. Includes bibliographical references.

NAL Call no: 395 L62O

Other works by this author: *Chemical Letters* (2nd corrected edition) (full-text: Soil and Health Library, Steve Solomon, http://www.soilandhealth.org/01aglibrary/01principles.html) (accessed Apr. 23, 2007).

Liebig's work established basic chemical requirements for agricultural production and plant nutrition. His discoveries, coupled with those of Sir Humphrey Davy (*Elements of Agricultural Chemistry*, 1813) reduced the soil-plant relationship to chemical reactions and an agricultural "revolution" was begun. By the 1940s, large-scale use of synthetic chemical fertilizers had become mainstream. Liebig's legacy marks the divergent paths of "conventional" and organic agriculture. MVG
Cited in: Conford (2001); Kirschenmann (2004); Korcak (1992)

1842

Dana, Samuel Luther, 1795-1868
A Muck Manual for Farmers
Lowell MA: Daniel Bixby, 1842. 242p.
NAL Call no: 56 D19 1842
Other works by this author: *Manures: A Prize Essay* (1844); *Essay on Manures* (1850).

"A treatise on the physical and chemical properties of soils; the chemistry of manures; including also the subjects of composts, artificial manures and irrigation." (From the title of the 5th edition of this work, published 1855.) One of the first American-published books to elaborate on the science of soil improvement, this work includes information about the use of city-generated organic wastes and industrial by-products as agricultural soil amendments. MVG
Cited in: Blum (1993)

1846

Allen, Richard Lamb, 1803-1869
A Brief Compend of American Agriculture
New York: Saxon and Miles, 1846. 437p. Includes index.
NAL Call no: 31.3 AL5 1846
Other works by this author: *Domestic Animals. History and Description of the Horse, Mule, Cattle, Sheep, Swine, Poultry, and Farm Dogs. With Directions for their Management, Breeding, Crossing, Rearing, Feeding, and Preparation for a Profitable Market. Also, their Diseases and Remedies Together with Full Directions for the Management of the Dairy* (1847) (full-text: Core Historical Literature of Agriculture; http://chla.library.cornell.edu/cgi/t/text/text-idx?c=chla;idno=3058099) (accessed Apr. 23, 2007); *New American Farm Book*, with Lewis F. Allen (1858) (full-text: Making of America Books, http://quod.lib.umich.edu/cgi/t/text/text-idx?c=moa;idno=AJR0646.0001.001) (accessed Apr. 23, 2007).

The introduction contains a proposal for establishment of a "National Board of Agriculture," plus recommendations for States' actions, particularly regarding education. JPG
Cited in: Pieters (1927)

1853

Browne, Daniel Jay, 1804-1867?
The Field Book of Manures, or, the American Muck Book: Treating of the Nature, Properties, Sources, History, and Operations of All the Principal Fertilisers and Manures in Common Use, with Specific Directions for Their Preparation, Preservation, and Application to the Soil and to Crops; as Combined with the Leading Principles of Practical and Scientific

Agriculture; Drawn from Authentic Sources, Actual Experience, and Personal Observation
New York: C.M. Saxton and Company, Agricultural Book Publishers, 1855 (oldest edition held by the National Agricultural Library). xii, 5, 422p. Illustrated with engravings.
NAL Call no: 57 B81
Full-text: Internet Archive, http://www.archive.org/details/fieldbookofmanur00browuoft (accessed Jan. 1, 2007)
Other works by this author: *Sylva Americana or a Description of the Forest Trees Indigenous to the United States* (1832); *The American Poultry Yard; Comprising the Origin, History, and Description of the Different Breeds of Domestic Poultry*, with Samuel Allen (1850) (full-text: Internet Archive, http://www.archive.org/details/americanpoultryy00browrich) (accessed Apr. 23, 2007).

As the book title indicates, Browne presents information pertaining to soil productivity through incorporation of organic matter. He served as head of the agricultural division of the Patent Office from June 9, 1853, through 1859. He also published a book (cited above) calling for native tree planting directed especially at farmers. MVG
Cited in: Harwood (1983); Harwood (1990); Kirschenmann (2004)

1854

Thoreau, Henry David, 1817-1862
Walden; or, Life in the Woods
Garden City NY: Doubleday, 1960. 280p. Reprint of the first edition of *Walden*, published in Boston by Ticknor and Fields in 1854.
NAL Call no: 145 T39
Full-text: The Thoreau Reader, Iowa State University and the Thoreau Society, http://thoreau.eserver.org/walden00.html (accessed Jan. 1, 2007)

Thoreau's advocacy for living simply, in accordance with nature, included a strong conservation message for agriculture. "By avarice and selfishness and a grovelling habit, from which none of us is free, of regarding the soil as property, or the means of acquiring property chiefly, the landscape is deformed, husbandry is degraded with us and the farmer leads the meanest of lives. He knows Nature but as a robber." Chapter 7. MVG
Cited in: Esbjornson (1992)

1860

Sorsby, Nicholas T.
Horizontal Plowing and Hill-side Ditching
Mobile: S.H. Goetzel, 1860. 45p.
NAL Call no: n.a.

Sorsby was a Southern planter who farmed in Mississippi and Alabama. His book on tillage and erosion management for farmers advocates a system of level, contour tillage patterns; ridge and furrow plowing; exact grading methods; gully rehabilitation and drainage ditches. His system was complicated and ahead of its time, but its principles were often cited in soil conservation efforts of later decades. MVG
Cited in: McDonald (1941)

1864

Marsh, George Perkins, 1801-1882
Man and Nature, or, Physical Geography as Modified by Human Action
New York: C. Scribner, 1869 (oldest edition held by the National Agricultural Library). xix, 577p.

"Bibliographical list of works consulted" p. vii-xv. Other editions: *The Earth as Modified by Human Action: A Last Revision of "Man and Nature,"* 1907; John Harvard Library edition, 1965.
NAL Call no: 331 M35E 1869
Full-text: Making of America Books, http://www.hti.umich.edu/cgi/t/text/text-idx?c=moa;idno=AJA7231.0001.001 (accessed Jan. 1, 2007)
Other works by this author: *Irrigation: Its Evils, the Remedies, and the Compensations* (1873); *So Great a Vision: The Conservation Writings of George Perkins Marsh*, edited by Stephen C. Trombulak (2001).

Influential lawyer, diplomat and scholar, Marsh, was one of the first to recognize and describe in detail the significance of human action in transforming the natural world and to advocate society's responsibility in addressing it. Piqued by the damage farmers in his native Vermont did by clear-cutting their land, he broadened his scope to study and discuss ecological problems on an international scale. This book, first published in 1864, has become a classic of environmental literature. MVG

1865

Wolfinger, John F.
Green Manuring and Manures
In *Report of the U.S. Commissioner of Agriculture for the Year 1864.* Washington DC: Government Printing Office, 1865, p. 299-328.
NAL Call no: 1 Ag84 1864
Full-text: National Agricultural Library Digital Repository (NALDR), http://naldr.nal.usda.gov/NALWeb/Search.aspx (search on "green manuring" and scroll to "Report of the U.S. Commissioner of Agriculture for the Year 1864;" click on page numbers 223-270 in table) (accessed Jan. 1, 2007)

Lincoln was President when this report was published. Wolfinger defines his subject, tracing its history in Flanders (now Belgium) and listing the benefits of and objections to, the practice of green manuring. He also quotes what "the best agricultural writers say of green manures." JPG
Cited in: Pieters (1927)

1878

Riley, Charles Valentine, 1843-1895
The Rocky Mountain Locust: Its Metamorphoses and Natural Enemies
Publisher unknown, 1878. 1 vol.
NAL Call no: 429 R45Ro

Riley was a scientist, artist and prolific writer who is credited with helping establish the field of modern entomology. "One of Riley's greatest triumphs while Chief of the Federal Entomological Service (1881-1894) was his initiation of efforts to collect parasites and predators of the cottony cushion scale, which was destroying the citrus industry in California. In 1888, he sent Albert Koebele to Australia to collect natural enemies of the scale. A beetle, *Vedalia cardinalis*, now *Rodolia cardinalis*, was introduced into California and significantly reduced populations of the cottony cushion scale. This effort gave great impetus to the study of biological control for the reduction of injurious pests and established Charles Valentine Riley as the 'Father of the Biological Control.'" *Charles Valentine Riley Collection, Biographical Notes*, National Agricultural Library: (http://www.nal.usda.gov/speccoll/findaids/riley/biogrph.html) (accessed Apr. 23, 2005). MVG

1881

Darwin, Charles Robert, 1809-1882

The Formation of Vegetable Mould Through the Action of Worms with Observations on their Habits

London: Murray, 1945. Reprint of the 1881 publication.
NAL Call no: 56.12 D45
Full-text: Soil and Health Library, Steve Solomon,
http://www.soilandhealth.org/01aglibrary/01principles.html (accessed Jan. 1, 2007)

The real foundation for "the study of the principles underlying farming and gardening." JPG
Cited in: Coleman (1976); Harwood (1983); Harwood (1990); Kirschenmann (2004); Korcak (1992); Merrill (1983)

1894

Hensel, Julius

Bread from Stones. A New and Rational System of Land Fertilization and Physical Regeneration

Philadelphia PA: A. J. Tafel, 1894. 140p. Translated from the German. Other editions: 2nd edition, 1911; 3rd edition, 1913. Reissued, Acres U.S.A., 1991.
NAL Call no: 57.6 B74

Using his understanding of the role of earth minerals in the production of food crops, Hensel championed the use of "stonemeal," as natural fertilizer and recommended excluding animal manures and commercial fertilizers from farming. J.I. Rodale, in his book, *Pay Dirt*, notes that this theory was first offered by Hensel in Norway in 1885. Although few growers today espouse excluding organic soil amendments, rock dust and rock minerals are recognized as essential ingredients in soil building practices. MVG

1897

Roberts, Isaac Phillips, 1833-1928

The Fertility of the Land: A Summary Sketch of the Relationship of Farm-practice to the Maintaining and Increasing of the Productivity of the Soil

New York: Macmillan, 1897. xvii, 415p. Preface by L. H. Bailey. Other editions: Several revised versions published through 1909. (Rural Science Series)
NAL Call no: 57 R54
Full-text: Core Historical Literature of Agriculture, Cornell University,
http://chla.library.cornell.edu/cgi/t/text/text-idx?c=chla;idno=2846741 (accessed Jan. 1, 2007)
Other works by this author: *The Production and Care of Farm Manures* (1891); *Soil Depletion in Respect to the Care of Fruit Trees* (1895); *Ten Acres Enough; A Practical Experience Showing How a Very Small Farm May be Made to Keep a Very Large Family*, with Edmund Morris (1905); *Autobiography of a Farm Boy* (1946).

Roberts was both a farmer and an agricultural educator. His observation that, "If land contains a reasonable amount of potential plant-food and fails to give satisfactory results, it would appear to be both unbusinesslike and unscientific to add plant-food rather than to use that already in possession," was fundamental to his philosophy and understanding of land productivity. MVG
Cited in: Harwood (1983); Harwood (1990)

1898

Bentley, Henry Lewis
Cattle Ranges of the Southwest: A History of the Exhaustion of the Pasturage and Suggestions for its Restoration
Washington DC: U.S. Dept. of Agriculture, 1898. 32p. (Farmers' Bulletin, No. 72)
NAL Call no: 1 Ag84F no.72
Full-text: Organic Roots, Organic Agriculture Information Access, http://quod.lib.umich.edu/n/nal/ (to be added June, 2007)
Other works by this author: *A Report upon the Grasses and Forage Plants of Central Texas* (1898); *Experiments in Range Improvement in Central Texas* (1902).

Bentley describes the early condition of central Texas ranges and the factors that contributed to their deterioration during the late 1800s. His recommendations on how the value of the stock ranges could be renewed through appropriate stocking rates, water conservation practices, hay production and the use of native grasses and forage plants seem remarkably contemporary. MVG

1898

Frank, Albert Bernhard, 1839-1900
A Manual of Agricultural Botany
Edinburgh; London: W. Blackwood and Sons, 1898. x, 199p. Translated from the German, *Pflanzenkunde für Mittlere und Niedere Landwirthschaftschülen* (1894), by John Waugh Paterson. Illustrated with 133 woodcuts.
NAL Call no: 64 F85

Frank is best known for his research on plant-fungi symbiosis related to truffle production. He is credited with inventing the term, "mycorrhiza," in the paper, "On the Nourishment of Trees through a Root Symbiosis with Underground Fungi" (1885), *Proceedings of the German Botanical Association* (full-text in German: http://www.biologie.uni-hamburg.de/b-online/fo33/frank/frank.htm) (accessed Apr. 23, 2007). MVG
Cited in: Merrill (1983)

1900-1944

The rise of "scientific agriculture" and adoption of manufactured chemical fertilizers and pesticides

In the years after Liebig's revelations about soil chemistry and plant nutrition (see: Liebig, 1840), most farmers and agricultural researchers adopted chemically-oriented soil and crop management techniques that they saw as more scientific than traditional practices. The large-scale use of synthetic fertilizers came slowly, but surely. It was coupled, in the years following World War I and World War II, with the use of newly developed chemicals that were used to control insect pests and weeds.

Simultaneously, this shift to chemically- and technologically-intensive farming was accompanied by attitudinal and scientific changes that helped shape modern organic and sustainable agriculture. These included: the study and acceptance of "biological control" techniques; renewed interest in the role of humus and soil microorganisms in plant production; and innovative approaches to composting. There were also many scientific discoveries concerning human nutrition and the relationship among agricultural practices, food and human diseases.