



Soil Education Course Additional Resources & Readings

All Chapters – Resources

Natural Disaster Relief/Recovery Assistance and Information

“Natural Resources Conservation Service.” *Fire Recovery Assistance from the U.S. Department of Agriculture | NRCS California*, 4 Nov. 2019, www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/newsroom/features/?cid=nrcseprd407898.

“Resources for Farmers Affected by the Midwest Floods.” *Farm Aid*, 9 June 2020, www.farmaid.org/blog/resources-for-farmers-affected-by-the-midwest-floods/.

“Top Five Tips to Help Farmers Prepare for a Natural Disaster.” *AgAmerica*, 26 Aug. 2019, www.agamerica.com/tips-to-prepare-farm-for-natural-disaster/.

Scientific Research Journals and Studies

Williams, Joshua E., and Stanley V. Gregory. “Fish Occurrence in a Seasonally Inundated Floodplain of the Willamette River, Oregon.” *Northwest Science*, Northwest Scientific Association, 2018, bioone.org/journals/northwest-science/volume-92/issue-3/046.092.0306/Fish-Occurrence-in-a-Seasonally-Inundated-Floodplain-of-the-Willamette/10.3955/046.092.0306.short.

“Oregon Farmers Surprised to Find Fish in Fields.” *PBS*, Public Broadcasting Service, 8 Mar. 2012, www.pbs.org/newshour/show/oregon-farmers-surprised-to-find-fish-in-fields.

Smith, Ford. “Balancing Biology to Avoid Promoting Weeds.” *Regenerative Land Solutions*, Home, 8 Aug. 2020, www.regenerativelandsolutions.com/blog/2020/8/8/balancing-biology-to-avoid-promoting-weeds.

Penn State. "Cover crop roots are an essential key to understanding ecosystem services." *ScienceDaily*. ScienceDaily, 13 August 2020.
<www.sciencedaily.com/releases/2020/08/200813155823.htm>.

Composting

Recommended Compost Thermometer website. <https://reotemp.com/compost/>

US Composting Consult Council. They offer organic growing parameters. This is typically for large-scale regulations, and may not be necessarily useful for smaller, backyard operations. "Get Certified as a Compost Professional." *US Composting Council*, 2020, www.compostingcouncil.org/.

Basic, simple backyard composting tips. This site includes Carbon to nitrogen ratios, general tips and definitions, and good practice ideas.

"Composting 101: All About Composting for Beginners." *Gardening Channel*, 27 May 2020, www.gardeningchannel.com/composting-101/.

Compost Wikipedia Page, great for general education.

"Compost." *Wikipedia*, Wikimedia Foundation, 26 Aug. 2020, <https://en.wikipedia.org/wiki/Compost>

Testing Resources

BioMarkers Genomic Research in Spain

"Functional Soil Analysis." *Biome Makers*, 26 Aug. 2020, www.biomemakers.com/.

Microbiometer Testing Website

Fitzpatrick, Judith. "Performing The MicroBIOMETER® Soil Test." *Welcome to MicroBIOMETER®*, 2020, www.microbiometer.com/.

Protozoa

Short Videos used in the Protozoa Presentation:

Porter, Bill. "Stentor Eats Arcella." *Youtube*, 14 Apr. 2016, www.youtube.com/watch?v=Z65rBu2nesg.

Moore, Nick. "Vorticella - Under the Microscope." *Youtube*, 7 Sept. 2016, www.youtube.com/watch?v=VOH2qOFoLto.

Short article on what Protozoa is & all of its functions in the soil.

"Protozoa: What Is Microbiology?" *What Is Microbiology? | Microbiology Society*, 2020, www.microbiologysociety.org/why-microbiology-matters/what-is-microbiology/protozoa.html.

Fungi

Calcium-Storing Fungi Research.

Cromack, Kermit, et al. "Calcium Oxalate Accumulation and Soil Weathering in Mats of the Hypogeous Fungus *Hysterangium Crassum*." *Soil Biology and Biochemistry*, Pergamon, 12 Nov. 2002, www.sciencedirect.com/science/article/abs/pii/0038071779900038.

New York Botanical Garden - Short Read on Mycorrhizal Fungi

"Hidden Partners: Mycorrhizal Fungi and Plants." *NYBG.org*, 2003, www.sciweb.nybg.org/science2/hcol/mycorrhizae.asp.html.

Quick read on Mycorrhizal Fungi

"Why and How to Improve Grass Roots with Mycorrhizal Fungi." *Pennington Seed, Inc.*, 2019, www.pennington.com/all-products/fertilizer/resources/mycorrhizal-fungi-creates-healthy-lawns.

A quick read on Fungi and its Importance in Soil Microbiology.

"Fungi: What Is Microbiology?" *What Is Microbiology? | Microbiology Society*, 2020, www.microbiologysociety.org/why-microbiology-matters/what-is-microbiology/fungi.html.

General Mold Information

"Is It Safe to Eat That Moldy Bread?" *Imagination Station Studio*, 2020, www.imaginationstationtoledo.org/educator/activities/is-it-safe-to-eat-that-moldy-bread.

A quick read on symbiotic and mutualistic relationships:

"Fungi Symbiosis." *CK-12 Biology For High School*, 2020, www.flexbooks.ck12.org/cbook/ck-12-biology-flexbook-2.0/section/8.14/primary/lesson/symbiotic-relationships-of-fungi-bio.

Other Mentioned & Interesting Resources

IMO Concoction Instructions Image (from Biological Inoculants: Week #20)

"IMO: Indigenous MicroOrganisms." *SQWorms*, <http://sqworms.tugae.org.za/nf/nfi/imo/>.

Humic Acid Article (Mentioned in Compost Tea & Extracts Session: Week #19)

Alexander, Ron. "Compost And Humic Substances." *BioCycle*, 9 Sept. 2020, www.biocycle.net/compost-and-humic-substances/.

Video

"Dirt Simple Brewer." *Youtube*, Earthfort, LLC. 7 February 2018, https://youtu.be/9Ee_me4C_p4.

Beneficial Insectary Inc., 3 Oct. 2017, www.insectary.com/.

We worked directly with the OSU Radiation Center during our Fukushima project.
“OSU Radiation Center.” *Radiation Center | Oregon State University*, 2020,
www.radiationcenter.oregonstate.edu/.

Video

“SNOTTITES, SNOTICLES in Welsh Mine U.K.” *Youtube*, Underground Explorers C9C, 9 June 2019, www.youtube.com/watch?v=UmDWkDoORr0.

Bacteria: NASA Mars Rover Clean Room Article

“Planetary Protection Technologies.” *NASA*, NASA, 2020,
www.mars.nasa.gov/mer/mission/technology/planetary-protection/.

Fertilizer Research and Data Resource

Roser, Max, and Hannah Ritchie. “Fertilizers.” *Our World in Data*, 26 Oct. 2013,
www.ourworldindata.org/fertilizers.

Interactive Soil Degradation Map, where you can toggle individual map pieces and layers, specifically in your area of the world.

“Global Soil Degradation Severity: Maps: Data Basin.” *Global Soil Degradation Severity | Maps | Data Basin*, 2020,
www.databasin.org/maps/58940a97a23341db8233844a2be14319/active.

Recommended Short Article on *Education and the Social Distancing of Agriculture* written by Ray Archuleta from Understanding Ag, LLC

Richburg, Kathy, and Ray Archuleta. “Education and the ‘Social Distancing’ of Agriculture.” *Understanding Ag, LLC*, 2020,
www.understandingag.com/blog/education-and-the-social-distancing-of-agriculture?fbclid=IwAR0NNg_pPqJzPt06T1u_4UhDncBSmZUnDFH3f0O7ngCGDRzVDuNhrixkoNQ.

Recommended Short Article that details how a newly discovered microbe could uncover how soil absorbs carbon and promotes growth.

Dykes, Jacob. “Secrets of the Soil: A Newly Discovered Microbe Builds Understanding of Soil Ecosystems.” *Geographical Magazine*, 28 May 2020,
www.geographical.co.uk/people/development/item/3712-secrets-of-the-soil-a-newly-discovered-microbe-builds-understanding-of-soil-ecosystems?fbclid=IwAR04koeDgKWt3pTFk-ljXNLxB17cwMxLbBDdcnBWef3rAYxEVeuT7oz9BI.

Regenerative Land Solutions Website

Smith, Ford. “Agriculture.” *Regenerative Land Solutions*, Regenerative Land Solutions, 2020,
www.regenerativelandsolutions.com/agriculture.

Humic Acid Information, Research, and Opinions

“What Are Humic Substances?” Natural Organic Matter Research, IHSS, 2019,
www.humic-substances.org/.

Biochar Information/definition.

<https://en.wikipedia.org/wiki/Biochar>

Woodland Park Zoo Site <https://www.zoo.org/>

All Chapters – Recommended Reading

Recommendations for Week #21 Soil Amendments:

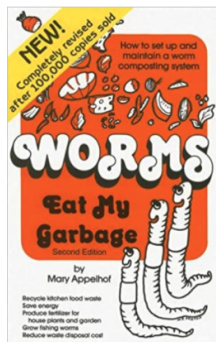
Dirt: The Erosion of Civilizations

<https://www.amazon.com/Dirt-Civilizations-David-R-Montgomery/dp/0520248708>

Recommended in Previous Weeks:

Book - Soil Science for Gardeners: Working with Nature to Build Soil Health (Mother Earth News Wiser Living Series)

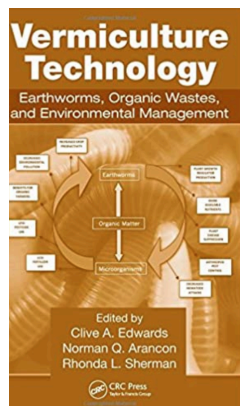
<https://www.amazon.com/Soil-Science-Gardeners-Working-Nature/dp/0865719306>



Worms Ate My Garbage

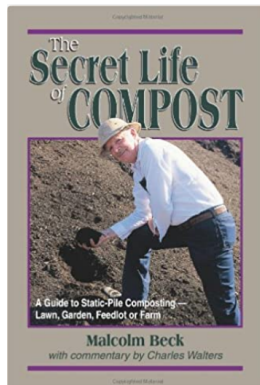
<https://www.amazon.com/Worms-Eat-My-Garbage-Composting/dp/0977804518>

Appelhof, Mary, and Joanne Olszewski. *Worms Eat My Garbage: How to Set up and Maintain a Worm Composting System*. Storey, 2018.



Vermiculture Technology: Earthworms, Organic Wastes, and Environmental Management
<https://www.amazon.com/Vermiculture-Technology-Earthworms-Environmental-Management/dp/1439809879>

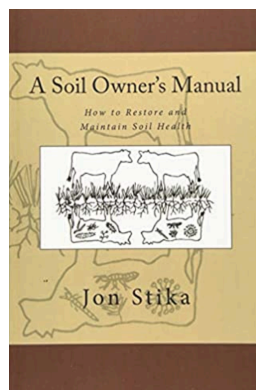
Edwards, Clive Arthur. *Vermiculture Technology: Earthworms, Organic Wastes, and Environmental Management*. CRC Press, 2011.



The Secret Life of Compost - Malcolm Beck

<https://www.amazon.com/Secret-Life-Compost-Static-Pile-Composting/dp/0911311521>

Beck, Malcolm, and Charles Walters. *The Secret Life of Compost: a Guide to Static-Pile Composting -- Lawn, Garden, Feedlot or Farm*. Acres U.S.A., 2008.



A Soil Owner's Manual by Jon Stika

https://www.amazon.com/Soil-Owners-Manual-Restore-Maintain/dp/1530431263/ref=sr_1_1?dchild=1&keywords=Jon+Stika%3A+A+Soil+Owner%27s+Manual&qid=1597260409&sr=8-1
Stika, Jon. *A Soil Owner's Manual: How to Restore and Maintain Soil Health*. Jon Stika, 2016.

Soil Microbiology, Ecology, and Biochemistry Edited by Eldor Paul. A scientific journal based textbook, great for referencing as you work on your soil projects. (The “Bible” for this course.)

https://www.amazon.com/Soil-Microbiology-Ecology-Biochemistry-Eldor-ebook/dp/B00Q6GP2B4/ref=sr_1_1?dchild=1&keywords=Soil+Microbiology%2C+Ecology%2C+and+Biochemistry&qid=1588791840&sr=8-1

PAUL, ELDOR A. *Soil Microbiology, Ecology and Biochemistry*. ELSEVIER ACADEMIC Press, 2017.

The Nature and Properties of Soils (15th Edition) by Ray Weil, Nyle Brady

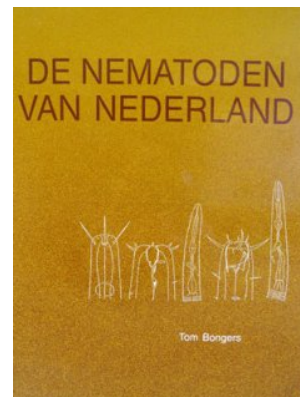
https://www.amazon.com/Nature-Properties-Soils-15th/dp/0133254488/ref=sr_1_1?crid=3AM3US2KN5B1V&dchild=1&keywords=the+nature+and+properties+of+soils+15th+edition&qid=1592252297&srefix=the+nature+%2B+prop%2Caps%2C246&sr=8-1

Brady, Nyle C., and Ray R. Weil. *The Nature and Properties of Soils*. Pearson, 2017.

Nematodes of the Netherlands by Tom Bongers. Hardcover textbook, mostly used for reference and identification of nematodes. We use this book in our lab at Earthfort!

<https://www.cabdirect.org/cabdirect/abstract/19881113622>

Bongers, Tom. *De Nematoden Van Nederland: Een Identificatietabel Voor De in Nederland Aangetroffen Zoetwater- En Bodembewonende Nematoden*. Stichting Uitg. KNNV, 1994.



Illustrated Guide to the Protozoa. Society of Protozoologists.

Edited by John J. Lee, Seymour H Hutner, Eugene C. Bovee.

Hardcover textbook, mostly used for reference.

https://www.amazon.com/Illustrated-Guide-Protozoa-John-Lee/dp/0935868135/ref=sr_1_2?dchild=1&keywords=Illustrated+Guide+to+the+Protozoa.+Society+of+Protozoologists&qid=1595284616&s=books&sr=1-2

Lee, John J., et al. *An Illustrated Guide to the Protozoa*. Society of Protozoologists, 1985.

How to Know the Protozoa (The Pictured Key Nature Series) 2nd Edition

by Theodore Louis Jahn (Author), Eugene Cleveland Bovee (Author), Frances Floed Jahn (Author). \$59 option -- good short reference book, that is spiral bound!

https://www.amazon.com/How-Know-Protozoa-Pictured-Nature/dp/0697047598/ref=pd_sbs_14_4/145-6824139-2213247?encoding=UTF8&pd_rd_i=0697047598&pd_rd_r=e0936c07-af87-4190-8488-fabf9f867821&pd_rd_w=phaDA&pd_rd_wg=Kj1fQ&pf_rd_p=bdc67ba8-ab69-42ee-b8d8-8f5336b36a83&pf_rd_r=XHEVGMFH27V0HXX3M9HK&psc=1&refRID=XHEVGMFH27V0HXX3M9HK

Jahn, Theodore Louis, and Frances Floed. Jahn. *How to Know the Protozoa: a Pictured-Key for Identifying the More Common Fresh Water, Marine, and Parasitic Protozoa, with Elementary Discussions of the Importance of Each Group and of Interesting Facts Concerning Them*. W.C. Brown, 1976.

Mycorrhizal Functioning: An Integrative Plant-Fungal Process, Michael F. Allen, editor.

<https://www.amazon.com/Mycorrhizal-Functioning-Integrative-Plant-Fungal-Process/dp/0412018918>

Allen, Michael F. *Mycorrhizal Functioning: an Integrative Plant-Fungal Process*. Chapman and Hall, 1992.

Mycorrhiza Manual A. Varma Edition, Springer Lab Manual

<https://www.amazon.com/Mycorrhiza-Manual-Springer-Lab-Manuals/dp/3540624376>

Varma, Ajit. *Mycorrhiza Manual*. Springer, 1998.

Introduction to Fungi, 2nd Edition, John Webster

https://www.abebooks.com/servlet/BookDetailsPL?bi=30223934990&cm_mmc=ggl--COM_Shopp_Rare--naa--naa&gclid=EALalQobChMlioqJta3O6glVOyCtBh01bglqEAQYBCABEgJs-PD_BwE

Webster, John, and Roland Weber. *Introduction to Fungi*. Cambridge University Press, 2007.

Metal Ions in Fungi by Wikeminn & Winge, a great reference textbook.

https://www.amazon.com/Metal-Fungi-Mycology-Gunther-Winkelmann/dp/082479172X/ref=sr_1_1?dchild=1&keywords=Metal+Ions+in+Fungi&qid=1594061556&sr=8-1

Winkelmann Günther, and Dennis R. Winge. *Metal Ions in Fungi*. Marcel Dekker, 1994.

Microbiology in Action

https://www.amazon.com/Microbiology-Action-Studies-Biology-Heritage/dp/0521629128/ref=sr_1_1?keywords=microbiology+in+action+heritage&qid=1593626658&sr=8-1

Heritage, J., et al. *Microbiology in Action*. Cambridge Univ. Press, 2000.

Biology of the Prokaryotes. Recommended Reference Textbook.

https://www.amazon.com/Biology-Prokaryotes-1998-12-22-author/dp/B01K0PPOPU/ref=sr_1_1?dchild=1&keywords=biology+of+the+prokaryotes&qid=1593626776&sr=8-1

Lengeler, Joseph W. *Biology of the Prokaryotes 150 Tables*. Thieme, 1999.

Thinking Like A Plant by Craig Holdridge. When we slow down, turn our attention to plants, study them carefully, and consciously internalize the way they live, a transformation begins. Our thinking becomes more fluid and dynamic; we realize how we are embedded in the world; we become sensitive and responsive to the contexts we meet; and we learn to thrive within a changing world. These are the qualities our culture needs in order to develop a more sustainable, life-supporting relation to our environment.

https://www.amazon.com/Thinking-Like-Plant-Living-Science/dp/1584201436/ref=sr_1_1?dc_hild=1&keywords=Thinking+Like+A+Plant+by+Craig+Holdridge&qid=1592251854&sr=8-
Holdrege, Craig. *Thinking Like a Plant: a Living Science for Life*. Lindisfarne Books, 2013.

Edible Forest Gardens, Volumes 1+2 by Dave Jacke and Eric Toensmeier. A more “hardcover textbook” resource, full of detailed information that spells out and explores the key concepts of forest ecology and applies them to the needs of natural gardeners in temperate climates.

https://www.amazon.com/Edible-Forest-Gardens-2-set/dp/1890132608/ref=sr_1_1?crid=1UVEA7YA3JD9&dchild=1&keywords=edible+forest+gardens+2+volume+set&qid=1592252058&s_prefix=edible+forest+gardens%2Caps%2C231&sr=8-

Jacke, Dave, and Eric Toensmeier. *Edible Forest Gardens*. Vol. 1, 2, Chelsea Green, 2008.

Ecology: Concepts and Applications 8th Edition by Manuel Molles

https://www.amazon.com/Ecology-Concepts-and-Applications-Manuel-Molles-ebook/dp/B078STVBQF/ref=sr_1_2?crid=25CUAPO88U86l&dchild=1&keywords=ecology+concepts+and+applications+8th+edition&qid=1592252216&s_prefix=ecology%3A+con%2Caps%2C386&sr=8-2

Molles, Manuel C., and Anna Sher. *Ecology: Concepts and Applications*. 8th ed., McGraw-Hill Education, 2019.

The Nature and Properties of Soils (15th Edition) by Ray Weil, Nyle Brady

https://www.amazon.com/Nature-Properties-Soils-15th/dp/0133254488/ref=sr_1_1?crid=3AM3US2KN5B1V&dchild=1&keywords=the+nature+and+properties+of+soils+15th+edition&qid=1592252297&s_prefix=the+nature+%2B+prop%2Caps%2C246&sr=8-1

Weil, Ray R., and Nyle C. Brady. *The Nature and Properties of Soils*. 15th ed., Pearson, 2017.

Elements of the Nature and Properties of Soils (3rd Edition) by Nyle Brady, Ray Weil

https://www.amazon.com/Elements-Nature-Properties-Soils-3rd/dp/0135014336/ref=sr_1_2?dchild=1&keywords=elements+of+the+nature+and+properties+of+soils+15th+edition&qid=1592252372&sr=8-2

Brady, Nyle C., and Ray R. Weil. *Elements of the Nature and Properties of Soils*. 3rd ed., Pearson, 2019.

Weeds of the West by Tom D. Whitson. Weeds of the West is the foremost guide to identifying weeds in Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. This guide contains over 900 color photographs showing the early growth stages, mature plants and features for positive identification of each weed. This newly revised edition is expanded with 300 new photos.

<https://www.amazon.com/Weeds-West-Larry-C-Burrill/dp/0941570134>

Whitson, Tom D. *Weeds of the West*. Western Society of Weed Science in Cooperation with the Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming, 2012.

Life in the Soil, by James B. Nardi. Great Illustrations of insects, animals, and microbiology by the author. Knowledge is offered from a different perspective, as it is written with a more naturalistic approach, making it an easier read.

https://www.amazon.com/Life-Soil-Guide-Naturalists-Gardeners-ebook/dp/B002R0DR2O/ref=sr_1_1?dchild=1&keywords=life+in+the+soil&qid=1588791726&sr=8-1

Nardi, James B. *Life in the Soil: A Guide for Naturalists and Gardeners*. Univ. of Chicago Press, 2007.

Soil Biology Primer, published by the USDA and is easily accessible. It outlines soil science concepts in a very succinct way.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/biology/>

Ingham, Elaine, et al. *Soil Biology Primer*. Soil and Water Conservation Society, in Cooperation with the USDA Natural Resources Conservation Service, 2000.

Earthfort Resources

Our Available Testing Kits & Pricing Information:

<https://www.earthfort.com/services-4>

Additional Resources:

<https://www.earthfort.com/s-projects-basic>

Earthfort Products:

<https://shop.earthfort.com/>

Visit Us on Social Media:

<https://www.facebook.com/earthfort/>

<https://www.instagram.com/earthfortllc/?hl=en>

<https://www.linkedin.com/company/earth-fortification-supplies-company>