It’s under our feet and under our fingernails, but what is it? And how did it get there?
Inspired by William Bryant Logan’s acclaimed book *Dirt: The Ecstatic Skin of the Earth*, find out how industrial farming, mining and urban development have led us toward cataclysmic droughts, starvation, floods and climate change. Dirt is a part of everything we eat, drink and breathe. Which is why we should stop treating it like, well…dirt.
FROM THE FILMMAKERS

Hi Dirt! viewer…

We are delighted that have watched (or that you will watch) our film.

After reading Bill Logan’s book *Dirt: The Ecstatic Skin of the Earth* we were inspired to make a film with a fresh look at the environment: dramatic, funny, scary, and hopeful in a practical way. To show that another world is possible from the ground up.

We hope that people will see the film and be inspired to take action to help preserve and protect soils. We set out to make *Dirt! The Movie* as part of an overall media project designed to educate and motivate people regarding what we have come to believe is a fundamental issue in preserving our planet. We are in the midst of a major shift in perspective in how we use film/media to promote positive change. *Dirt! The Movie* is a modest beginning for the media project for which we have much broader hopes. It’s a digital tail that wags a media dog of educational and public engagement projects devoted to imagining a sustainable future.

Above all, we hope that people take away the same feeling of wonder and sense of responsibility that we had after reading the book: the idea that dirt is alive, that how we treat dirt is how we treat ourselves; and that people should be inspired to reconnect to the ground beneath our feet in every way possible. We think this is central to our survival as a species and to our quality of life.

We are honored and happy to present this film to you as part of Community Cinema and the *Independent Lens* broadcast.

Gene Rosow and Bill Benenson
THE FILM

Of all the planets in the known universe, only Earth has a living, breathing “skin,” formed over the course of countless millennia and made up of the elements released in the Big Bang. Dirt! The Movie explores this outermost layer of our planet and the intimate, organic connection between dirt and all living things, including humans. Using a combination of live footage, animation, and on-camera statements from a variety of experts and amateurs, the film explains how dirt is the foundation of biological life and how it figures in many cultural and religious beliefs and practices.

Dirt is our planet’s life-giving mantle; as it nourishes all forms of life, it is also full of life, a handful containing billions of microorganisms. The central question of the film is: How are we caring for this precious living resource? Experts point out that, as we draw upon the soil for our needs, we must also replenish what we take. Yet, there are numerous examples of our mistreatment of the soil: the blasting away of mountain tops in our search for coal, cutting down the rainforest to clear land for planting, using chemical fertilizers and pesticides in growing crops, and paving over large areas of our cities and suburbs, to name just a few. All of these human activities are detrimental to maintaining healthy, living soil, and have led to serious environmental degradation, including climate change.

With environmental decline comes human misery, especially in developing countries. Deforestation and soil erosion have led to desertification in some parts of the world, resulting in often violent competition for arable land, or mass migration to cities, where jobs are scarce and large slums spring up, with all their associated social and physical ills. In addition, globalization has changed the economic equation for farmers worldwide, encouraging them to move toward larger-scale farming using heavy machinery that they can ill afford. Farm failure in India alone has resulted in its own grim statistic — 200,000 suicides by farmers in the last decade.

The film presents inspiring examples of individuals “doing the best they can” to remedy the problems brought on by humanity’s mistreatment of the soil. Pierre Rabhi of France has taught farmers in Mali the principles of agroecology to help them reclaim the desert; in California, Alice Waters started the Edible Schoolyard project to help children learn the joys and responsibilities of growing their own food; Wes Jackson and the staff of the Land Institute in Kansas are working to breed perennialism back into certain crops as a way of keeping the soil productive and healthy; and young former urbanites in New York State created the Hardy Roots Farm to supply organically grown food to city dwellers who pay for this service.

There is much more to be done, but it will take a concerted effort by everyone to change their behavior, to stop ravaging the landscape in search of cheap fuel and other products, to insist that our food be safe and grown in accordance with natural principles, and to join in the work of reclaiming and restoring degraded soils. In short, we need to not only recognize and appreciate, but also embrace our relationship with the living skin of the earth known as dirt.
INDIVIDUALS FEATURED IN DIRT! THE MOVIE

Activists/Farmers

Wangari Maathai is a Nobel Laureate and founder of the Green Belt Movement.
Vandana Shiva is a physicist, farmer, and activist.
Pierre Rabhi is a farmer and environmental activist.
Benjamin Shute is co-owner of Hardy Roots Farm.
Miriam Latzer is co-owner of Hardy Roots Farm.
Danny Percich is a farmer for Hardy Roots Farm.

Scientists/Academics

Jeremy Narby is an anthropologist and author.
William Bryant Logan is an urban arborist and author.
Peter Girguis is a biologist at Harvard University.
Paul Stamets is a mycologist and author.
John Todd is a biologist and eco-designer.
David Orr is a professor of environmental studies at Oberlin College.
Miguel Altieri is an entomologist at UC Berkeley.
Juan Vicente Sanchez is a professor of agriculture in Argentina.
Jerry Glover is a soil scientist at The Land Institute.
Will Brinton is founder of Woods End Laboratory in Mt. Vernon, ME.

Designers/Builders

Kevin Rowell is a natural builder.
Marisha Farnsworth is a natural builder.
Richard Register is an eco-designer.
Barbara Damrosch is a journalist and garden designer.
Majora Carter is a founder of Sustainable South Bronx.

Directors of Environmental Programs & Nonprofits

Andy Lipkis is a founder and president of Tree People.
Janine Benyus is a founder of The Biomimicry Institute.
Wes Jackson is a founder of The Land Institute.
James Jiler is director of The Greenhouse Program.
John Cannizzo is director of The Green Team.

Others

Gary Vaynerchuk is host of Wine Library TV.
Jeanette Armstrong is an Okanagan Indian Land Speaker.

Alice Waters is chef/owner of Chez Panisse, and founder of The Edible Schoolyard.
Hilda Krus is a horticultural therapist.
Katrina Dawkins, Lottie Manuel, and Pablo Rolon are Rikers Island inmates.
Juan Mighty, Hugh Cherrington, and Sharon Jackson are members of the Green Team.

BACKGROUND INFORMATION

What is dirt?
Dirt, or soil, is the loose top layer of Earth’s crust, a mixture of mineral and organic materials, plus air and water. Soil is formed slowly as rock (the parent material) erodes into tiny pieces near the Earth’s surface. As organic matter decays, it mixes with inorganic material such as rock particles, minerals, and water to form soil. It can take more than 500 years to form one inch of topsoil via natural processes. Soil is made up of distinct horizontal layers called horizons. They range from rich, organic upper layers (humus and topsoil) to underlying rocky layers (subsoil, regolith and bedrock).

See an illustration and more detail at http://www.enchantedlearning.com/geology/soil

The contents of soil vary in different locations and are constantly changing. There are many different kinds and types of soils, but these are the basic ones:

- Sandy soil is usually made up of granules of mineral and rock, and is quite gritty, with large spaces between particles, allowing for easy flow of water and minerals.
- Clay soil has extremely small particles with little space between individual particles, allowing for virtually no drainage. Clay soil is not a good growing medium, because it is hard for water to escape, and it’s difficult for root systems to break through the clay layer. Clay soils tend to be much older than sandy soils, because it takes many, many years for rock particles to break down into small enough pieces to form clay.
- Silty soil is one of the most fertile types of soil, with rich nutrients and good drainage. Silty soil is very similar in composition to sandy soil, albeit with more nutrients and minerals. It is generally quite dark and pungent, and is excellent for planting almost anything.
- Loamy soil is made up of a few different types of soil, with varying amounts of clay, silt, and sand mixed together. Loamy soil holds water well, because of the heavy grittiness provided by the sand; has exceptional drainage so that the
water doesn’t build up too much and rot plant roots; and is nutrient rich. Loamy soil is the ideal soil for gardening.

Source: http://www.wisegeek.com/what-are-the-different-types-of-soil.htm

Nature’s All-Purpose Material

Soil is the foundation of life. It is the starting point for countless things we see in our environment and use in our daily life. Here is just a small list of the many uses and functions of soil:

- It supports the growth of plants, which can be used for clothing, shelter, and food for humans and animals.
- Pottery and dishes are made from clay soil.
- Bricks and other building material are made from mixtures of soil and animal excrement.
- It is a cooling medium (mud) for animals, especially pigs.
- It can provide protection from insects (e.g. dirt “showers” used by elephants).
- It is used in facials and mud pack treatments in spas.
- Pigments derived from certain types of soil can be used for painting and body decoration.
- It’s in development as a source of energy for operating lights and other equipment, created by microscopic organisms in soil.
- It’s a source of medicinal compounds in plants and soil itself.

Soil and the Cycles of Life

The soil is intimately tied to two processes that are essential for life on Earth:

The water cycle (or hydrologic cycle) describes the circulation of water from the land, to the sky, and back again. The sun’s heat causes water to evaporate from the Earth’s land masses and bodies of water. Plants also lose water through transpiration. The water vapor forms clouds, and when the clouds meet cool air over land, the water vapor condenses, resulting in precipitation. Of the water that falls, some soaks into the ground, and some of that gets trapped between rock or clay layers, forming groundwater. But, most of the water flows downhill into streams and rivers, eventually returning to the seas as slightly salty water.

Problems for the environment occur because runoff from precipitation will carry away whatever might be on top of the soil, such as fertilizer, and wash it into nearby rivers and streams, eventually reaching the ocean. Other substances contaminating the soil can get pushed down into the groundwater. And, if there are no trees or other vegetation to hold the soil, runoff will wash away the topsoil.

See a graphic of the water cycle at http://www.enchantedlearning.com/subjects/astronomy/planets/earth/Watercycle.shtml

The carbon cycle is more complicated. Carbon exists in the nonliving environment as:

- carbon dioxide (CO2), both in the atmosphere and dissolved in water
- carbonate rocks, such as limestone and coral
- deposits of coal, petroleum, and natural gas derived from once-living things
- dead organic matter, e.g., humus in the soil

Carbon enters the biotic, or “living” world, when plants and algae use the energy of light to convert carbon dioxide to organic matter. Carbon returns to the atmosphere and water by:

- respiration (as CO2) by humans and animals
- burning
- decay, producing CO2 if oxygen is present; methane (CH4) if it is not.

Problems for the environment occur if the uptake and return of CO2 are not in balance, causing the carbon dioxide content of the atmosphere to gradually and steadily increase. This is currently happening due to two human activities:

- burning fossil fuels (coal, oil, natural gas), which returns carbon that has been locked within the earth for millions of years to the atmosphere
- clearing and burning of forests, especially in the tropics

For a graphic of the carbon cycle and information about other greenhouse gases, see http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/C/CarbonCycle.html

Definitions of Terms in the Film:

Agroecology can refer to a science, a movement, or practice. Interdisciplinary in nature, agroecology uses and promotes farming methods that encourage organic practices suitable within a specific context. Agroecology emphasizes a partnership between scientific knowledge and traditional farming practices.

Biomimicry is an emerging discipline that examines nature — its models, systems, processes, and elements — and emulates or takes inspiration from them to solve human problems sustainably. Monoculture is the agricultural practice of producing or growing one single crop over a wide area.

Mycelium is the vegetative part of a fungus, consisting of a mass of branching, threadlike filaments. Mycelium plays a vital role in the decomposition of plant material on land and in water. Mycology is the branch of biology concerned with the study of fungi.

VOCs or volatile organic compounds are organic chemical
compounds that have high enough vapor pressures to allow them to evaporate or vaporize readily under normal conditions and enter the atmosphere. VOCs are a very broad set of chemicals and are used in such things as carpet adhesives, paint, and furniture coatings. VOCs may affect the environment or human health.

**Food sovereignty** refers to the right to produce food on one’s own territory. It is a policy framework advocating the right of peoples to define their own food, agriculture, livestock, and fisheries systems, in contrast to having food largely subject to international market forces.

**Government Policy, Globalization and the Soil**

U.S. agricultural policy has a tremendous impact on farming livelihoods, how food is grown, and what kinds of foods are grown. The Farm Bill is the omnibus package of federal farm and food legislation, and represents billions of dollars in government expenditures that set the farm, food, and rural policy goals and priorities for the United States. Congress passed the most recent version of the Farm Bill, the Food, Conservation, and Energy Act (H.R. 2419), on May 22, 2008, authorizing $289 billion over the next five years. As its name suggests, the bill addresses more than just farming. About two-thirds of Farm Bill spending goes towards nutrition programs — the federal safety net for lower-income families — which includes food stamps and the school lunch program.

The other major piece of the Farm Bill establishes federal government payment programs for specific crops: the “commodity crops,” including corn, wheat, sorghum, barley, oats, rice, cotton, and soybeans. For the most part, the 2008 Farm Bill renews existing policy encouraging the overproduction of these crops. Farmers who grow “specialty crops,” such as fruits and vegetables, are not eligible for these loans and payments. The policy indirectly encourages the practice of large-scale farming, characterized by monoculture and the use of chemical fertilizers and pesticides, and industrial animal production — practices that have harmful effects on the soil and waterways.

Trade liberalization, which is central to globalization, means that a country’s own farm products may be more expensive than those imported from another country, undermining the domestic farm economy. As smaller farms fail, particularly in developing countries, they are taken over by large, multinational agribusinesses that use industrial farming methods. In the U.S., family farms are often sold to developers. In either case, the environment suffers.

Portions adapted from [http://www.foodandwaterwatch.org/food/agricultural-policy/us-farmbill](http://www.foodandwaterwatch.org/food/agricultural-policy/us-farmbill) and [http://sustainableagriculture.net](http://sustainableagriculture.net)

**TOPICS AND ISSUES RELEVANT TO DIRT! THE MOVIE**

A screening of *Dirt! The Movie* can be used to spark interest in any of the following topics and inspire both individual and community action. In planning a screening, consider finding speakers, panelists, or discussion leaders who have expertise in one or more of the following areas:

- Soil conservation
- Organic farming/gardening
- Environmental policy
- Urban gardening
- Environmental education
- Agricultural policy
- Ecological restoration
- Urban planning & design
- Social justice
- Globalization
- International development
THINKING MORE DEEPLY

1. How do most Americans react to the idea of children playing in dirt? Why do you think they react that way?

2. Several people in the film indicate that working in dirt is calming or satisfying. In your experience, is this true? If so, why?

3. What is your reaction to hearing about the number of farmer suicides in rural India over the past decade? (The film reports there were 200,000.) If such a thing occurred in this country, what do you think would happen?

4. Is it possible to reconcile food sovereignty and globalization? In other words, how can people retain and exercise their right to produce and control their own food resources in the face of international market forces?

5. In the film, mycologist Paul Stamets characterizes the human species as a virus because of the harmful effects our activities have had on the land. Do you accept his analogy? Why or why not?

6. How can humans “listen to nature” and bring their needs and activities into alignment with those of nature? Are there ways you can be more attentive to the natural world in your daily life? How?

7. Keeping in mind the hummingbird story told in the film, do you think doing the best you can is enough to preserve the health of the planet, even if millions of people do their best? What responsibility do governments have to help maintain a healthy planet for future generations?

8. What about business and industry? What power do people have to get businesses to make changes that would be less harmful to nature while still meeting human needs?

9. What feelings are you left with after seeing this film? Do you feel motivated or empowered to make changes — either personally or as part of a group effort — to keep Earth’s soil healthy? What part(s) of the film especially resonated with you?
SUGGESTIONS FOR ACTION

Together with other audience members, brainstorm actions that you might take as an individual and that people might do as a group. Here are some ideas to get you started:

1. Support your community or urban garden. If your city does not have one, explore the possibility of your city joining the Urban Farming network. See http://www.urbanfarming.org for details. As an alternative, identify a vacant lot in your community and obtain permission to turn it into a garden. Enlist the support of students and other local citizens to prepare the lot, and help with planting and harvesting. Consider donating the produce you grow to a local food bank.

2. How well do you care for the soil in your own yard or garden? Use vegetable and other foods scraps from your kitchen to improve your soil by turning them into compost. Two websites that offer clear instructions on different ways to compost are http://www.wikihow.com/Compost and http://www.eartheasy.com/grow_compost.html. Other ways to keep your soil and the surrounding environment in good condition are to plant trees and native plants appropriate to your region, and refrain from using chemical fertilizers that can run off into nearby waterways or leach into groundwater.

3. Learn more about local, low-impact agriculture. Community Supported Agriculture (CSA) delivers fresh, local produce. Go to http://www.localharvest.org/csa to find a CSA in your area. Ask supermarkets and restaurants in your community to offer local produce on their shelves and in their menus.

4. If you are an avid gardener, share your passion with a group of young people. Find out if you can plant a garden with students at a local school. Other community facilities, such as churches, Boys & Girls Clubs, or nursing homes might also be open to sponsoring a youth garden.

5. Learn about U.S. agriculture policy and how it affects your food choices and the quality of the food you eat. Visit the website of the National Campaign for Sustainable Agriculture http://sustainableagriculture.net and read about their Grassroots Guide to the 2008 Farm Bill, the Senate Food Safety Bill (S510), and other food-related legislation.

6. Help to heal the Earth. Consult your local nature center or agricultural extension service about tree-planting activities or wetlands restoration efforts in your area and volunteer to take part in one of these activities. Educate your Congressional representatives about the Best Management Practice initiative, which helps farmers reduce the use of nitrogen fertilizers that create dead zones in oceans and rivers. Go to the American Farmland Trust’s Action Center (www.farmland.org) for more information.

For additional outreach ideas, visit www.communitycinema.org. For local information, check your local PBS station’s website.

RESOURCES

*Resources marked with an asterisk are partnered with, or featured in, the film.


Basic Soil Information

http://42explore.com/dirt.htm - Peruse lists of dozens of educational soil websites.

http://soil.gsfc.nasa.gov –Read information in a number of basic categories on this soil science education site.

http://forces.si.edu/soils - Check out the website for the Smithsonian exhibit, “Dig It! The Secrets of Soil.” It contains a wide range of information on soil, and includes videos and interactive features.

http://www.doctordirt.com/soilfact.htm - Take a look at this webpage, which contains an informative list of soil facts.

http://www.rain.org/global-garden/soil-types-and-testing.htm - Learn some simple ways to analyze your soil on this website.

Farming/Gardening/Land Use

http://www.urbanfarming.org - Learn about Urban Farming, an international nonprofit organization headquartered in Detroit, Michigan that plants food on unused land, and gives it to the needy.

http://www.verticalfarm.com – Explore the Vertical Farm Project, which describes a method of farming in urban centers where land is in short supply.

*http://www.landinstitute.org/vnews/display_v - Check out The Land Institute, which works to promote the practice of – and research on – Natural Systems Agriculture, in order to develop an agriculture that will save soil from being lost or poisoned.

http://www.farmland.org - Read about the American Farmland Trust, the leading national organization dedicated to saving America’s farm and ranch land, promoting healthy farming
practices, and supporting farms and farmers. The site contains suggestions for citizen action.

http://www.landstewardshipproject.org/index.html - Explore the Land Stewardship Project, a nonprofit grassroots membership organization that fosters an ethic of stewardship for farmland and works to promote sustainable agriculture and to develop sustainable communities. Contains suggestions for citizen action.

*http://sustainableagriculture.net - Learn about the National Sustainable Agriculture Coalition, an alliance of family farm, food, conservation, rural, and urban organizations that take common positions on federal agriculture and food policies, and engage and support the broad and vital grassroots efforts across the country to win long-term policy change. The site also contains a section of information on the Farm Bill.

http://communitygarden.org - The American Community Garden Association supports community gardening by facilitating the formation and expansion of state and regional community gardening networks; developing resources in support of community gardening; and, encouraging research and conducting educational programs.

http://assoc.garden.org - The National Gardening Association (NGA) provides programs and initiatives to highlight the opportunities for plant-based education in schools, communities, and backyards across the country. The NGA serves as a bridge to connect people to gardening in five core fields: plant-based education, health and wellness, environmental stewardship, community development, and responsible home gardening.

Food Supply and Food Safety

http://www.foodandwaterwatch.org/food/agricultural-policy/us-farmbill - Delve into Food and Water Watch, a nonprofit organization using research, public and policymaker education, media, and lobbying to work with grassroots organizations around the world in creating an economically and environmentally viable future. Click on Farm Bill 101 for an overview of US agricultural policy and its effects.

http://www.ams.usda.gov/AMSv1.0/farmersmarkets - Study this USDA site, which contains information on farmer’s markets as well as other food marketing done by the Department of Agriculture, including the National School Lunch Program (NSLP).

*http://www.foodsafetynow.org - Investigate the Center for Food Safety (CFS), which is a public interest and environmental advocacy organization challenging harmful food production technologies and promoting sustainable alternatives. It uses litigation and other legal actions, as well as public education, grassroots organizing, and media outreach.

*http://www/organicconsumers.org - Learn about the Organic Consumers Association (OCA), which is an online grassroots public interest organization dealing with crucial issues of food safety, industrial agriculture, genetic engineering, children’s health, corporate accountability, fair trade, environmental sustainability, and other key topics. Their website lists a plethora of actionable issues for concerned citizens.

Environmental Activism

http://www.nrcs.usda.gov – Explore the Department of Agriculture’s Natural Resources Conservation Service, which also has a link to the conservation provisions of the Farm Bill.

*http://www/treepeople.org — Learn about the TreePeople, an environmental nonprofit working in Los Angeles to inspire, engage, and support people in taking personal responsibility for the urban environment. The goal is to make it safe, healthy, fun, and sustainable – and to share the process as a model for the world.

*http://www.ran.org – Investigate the Rainforest Action Network, an international grassroots organization using hard-hitting market campaigns to align the policies of multinational corporations with widespread public support for environmental protection.

*http://www.conservation.org - Explore Conservation International, which helps societies adopt sustainable approaches to development in order to ensure a stable climate, clean air, fresh water, abundant food, cultural resources, and biodiversity.

*http://www.bioneers.org – Peruse Bioneers, a nonprofit organization of engaged citizens from all backgrounds and fields, who work to solve environmental problems using methods that mimic natural processes.

*http://www.nrdc.org – Examine the Natural Resources Defense Council, an environmental action organization combining grassroots power with legal action to protect the planet’s wildlife and wild places, and to ensure a safe and healthy environment for all living things.

*http://www.biomimicryinstitute.org/- Learn about the Biomimicry Institute, which promotes learning from and then emulating natural forms, processes, and ecosystems to create more sustainable and healthier human technologies and designs.
Environmental Work and The Faith Community

Here is a list of faith organizations doing work on environmental issues.

American Values Network: http://americanvaluesnetwork.org/
Evangelical Environmental Network:
http://www.creationcare.org/
GreenFaith: http://www.greenfaith.org/
National Religious Partnership for the Environment:
http://www.nrpe.org/
Progressive Christians Uniting:
http://www.progressivechristiansuniting.org/
Faith in Public Life: http://www.faithinpubliclife.org/

Educational Resources for Teachers

http://soils.usda.gov/education - The United States Department of Agriculture site contains definitions of soil and soil survey, information on careers, some basics on soil formation and classification, soil science glossary, and regulations for moving soils. Also includes resources for educators teaching at the elementary, high school and college level.

http://forces.si.edu/soils/ - Discover the amazing world of soils with images and information from the Dig It! The Secrets of Soil exhibit on display at the Smithsonian’s National Museum of Natural History.

http://www.nacdnet.org/education/resources/soils/ - Visit the website of The National Association of Conservation Districts to learn about their stewardship program, educational resources and student contests.

http://www.classroomearth.org/ - Classroom Earth is an online resource designed to help high school teachers include environmental content in their daily lesson plans.

http://www.sustainabilityed.org/ - The Cloud Institute equips school systems K-12 and their communities with the core content, competencies and habits of mind that characterize education for a sustainable future.

DIRT! THE MOVIE WILL AIR NATIONALLY ON THE EMMY AWARD-WINNING PBS SERIES INDEPENDENT LENS IN APRIL 2010. CHECK LOCAL LISTINGS.

DIRT! The Movie was produced by Gene Rosow and Bill Benenson. The Emmy Award-winning series Independent Lens is jointly curated by ITVS and PBS and is funded by the Corporation for Public Broadcasting (CPB) with additional funding provided by PBS and the National Endowment for the Arts.

ITVS COMMUNITY is the national community engagement program of the Independent Television Service. ITVS COMMUNITY works to leverage the unique and timely content of the Emmy Award-winning PBS series Independent Lens to build stronger connections among leading organizations, local communities and public television stations around key social issues and create more opportunities for civic engagement and positive social change. To find out more about ITVS COMMUNITY, visit www.pbs.org/independentlens/communitycinema.

All Photos: Common Ground Media