Organic Instead

Soil Conservation:

An Organic Farming Practice With Environmental Benefits

In this FREE e-book, offered by *organicinstead.com* you will find:

What Soil Conservation is and Why it Matters

Soil conservation is the use of farming techniques that help soil maintain its capacity to support the growth of crops.

Conservation practices *prevent* **soil degradation**, an agricultural problem that renders soil unable to sustain crop growth.

The potential environmental consequences associated with soil degradation could adversely impact the sustenance of life!

(These risks span from famine and water pollution to decreases in ecosystem efficiency and biodiversity).

Therefore, soil conservation is crucial because this agricultural practice protects:

- Our soil from becoming degraded so that it can produce successful crops.
- Us from the adverse impact that soil degradation has on the environment.

What Conserves Soil and How You Can Be Involved

Organic Farming Techniques Conserve Soil

The organic production of agricultural goods (food, clothing, etc.) conserves soil.

Why?

Because organic farmers use soil conservation techniques that prevent soil degradation when they produce those goods.

Conventional Farming Methods Degrade Soil

The conventional production of agricultural goods degrades soil.

Why?

Because conventional farmers utilize agricultural methods to produce those goods that trigger soil degradation.

How *You* Can Get Involved with Soil Conservation:

- ***Choose organic instead of conventional products.*** When you make this choice, you support an industry that practices soil conservation. You help to reduce the amount of soil degradation in the world (and the environmental consequences that result from it) by abstaining from conventional products.
- ***Produce your own organic goods.*** You can also do your part by making your own organic products since this action requires that you practice soil conservation techniques.

Organic Farming Techniques that Conserve Soil

vs.

Conventional Farming Methods that Degrade Soil

I want you to have a deeper understanding of why you should choose organic instead of conventional products...

…in regard to how the agricultural production of each impacts soil differently.

Therefore, in the rest of this e-book you will find an explanation of how:

- Specific organic farming techniques conserve soil by preventing various causes of soil degradation.
- Specific conventional agricultural methods degrade soil.
- The Organic farming techniques that conserve soil benefit the environment.
- The Conventional agricultural methods that degrade soil harm the environment.

I will begin by explaining how the contrasting cropping methods used on organic and conventional farms impact soil differently…

Organic vs. Conventional Cropping Methods

Cropping Methods Impact Soil for Better or for Worse

It may not seem obvious, but the way that farmers conceptualize their method of crop production has the power to impact soil (and the environment) for better or for worse.

This power is easier to understand when a cropping method is viewed as the blueprint of a farm.

Like a blueprint that conceives of what a building will look like and how to construct it…

…a cropping method determines which and how many crops a farm will produce and how those crops will be produced (according to timing, sequence, and other factors).

So, the selection of a cropping method is a significant decision, since it establishes the foundation of a farm.

It is no wonder that the chosen cropping method plays a key role in whether soil is conserved or degraded on a farm.

What are the cropping methods that organic and conventional farmers decide to use?...

Crop Rotations with Cover Crops vs. Monocropping

The cropping method that organic farmers choose conserves soil, while the cropping technique that conventional farmers select degrades soil.

Crop Rotations with Cover Crops

The organic farming cropping method includes the use crop rotations with cover crops.

Crop rotations are the growth of different kinds of crops on the same plot of land according to a sequence.

This sequence oftentimes involves alternating the cultivation of cover crops (legume plants such as alfalfa, clover lentils, peas and soybeans) with main food crops.

Monocropping

Conventional farmers utilize monocropping on their farms.

Monocropping is the continuous growth of a crop in the same location over a long period of time.

Conserving vs. Degrading Soil

Organic farmers' use of crop rotations with cover crops *conserves soil* by preventing the following factors that cause soil degradation:

- Soil infertility
- Vulnerability to pest attacks

Contrarily, conventional farmers' use of monocropping *degrades soil* by decreasing soil fertility and pest-control on their crops.

Now let me explain how this all works…

Contrasting Impacts of Organic and Conventional Cropping Methods on Soil Fertility

Monocropping Depletes Soil of Nutrients

The repetitive nature of monocropping on conventional farms adversely affects soil.

When one type of crop is planted in the same location year after year, that crop gradually exhausts soil of the particular nutrients that it requires for growth.

By repeatedly stripping soil of nutrients, monocropping renders soil infertile.

Crop Rotations with Cover Crops Replenish Soil Nutrients

When organic farmers use crop rotations with cover crops, they work with, instead of against nature to naturally increase soil fertility.

One crop differs from another regarding the nutrients that it needs to take up from the soil in order to grow and survive.

A crop planted during one season absorbs the particular nutrients it needs, leaving other nutrients available in soil that a different type of crop will require for growth the next season.

With this knowledge in mind, organic farmers alternate the types of crops planted in a location when they rotate main food crops with cover crops.

They know that switching up the kinds of crops grown on their land enables soil to recover the different nutrients required for different crops to grow…which increases soil fertility.

This alternation of the types of crops planted in one location also promotes soil fertility by adding organic matter into soil.

Organic farmers rotate main food crops with legume cover crops.

They plant the cover crops during the fall when the ground is fallow after the main food crops have been harvested.

By the spring time, they plow the cover crops, imbedding legume plant materials into soil.

These plant materials become decayed organic matter that replenishes soil with the nutrients that main food crops had exhausted from it.

This restoration of soil nutrients promotes soil fertility…

…Since when organic farmers sow the main food crops again, these crops can absorb the nutrients that organic matter from cover crops had restored into soil.

How Soil Fertility is a Factor that Determines Whether Soil is Conserved or Degraded

Now you know that the cropping method (crop rotations with cover crops) used by organic farmers increases soil fertility.

You also know that the cropping technique (monocropping) used by conventional farmers decreases soil fertility.

But how is soil fertility a factor that determines whether soil is conserved or degraded?

Conserved soil can sustain the growth of crops. Degraded soil cannot support crop growth.

When soil is infertile (resulting from conventional farmers' use of monocropping), it is degraded because it cannot provide the nutrients that crops need to grow.

When soil is fertile (resulting from organic farmers' use of crop rotations with cover crops), it is conserved because it can provide the nutrients that crops need to grow.

The Impact of Soil Fertility (or a lack of it) on the Environment

So now you know how organic farmers conserve soil when they increase soil fertility. You also know how conventional farmers degrade soil when they decrease soil fertility.

Here are the additional benefits that occur when soil fertility increases *instead of* decreases:

- ***An abundance of food instead of famine.*** Monocropping is a conventional farming technique that decreases the soil fertility that crops need for growth.

  Consequently, crop yields decrease while the risk of famine increases on conventional farms.

  On the other hand, the use of crop rotations with cover crops is an organic farming technique that increases the soil fertility that crops depend on for survival.

  The resulting environmental benefit is that crop yields increase while the risk of famine decreases on organic farms.

  Learn in detail about the vital connection between soil fertility and our food supplies here.

- ***A reliance on natural instead of synthetic fertilization.*** Conventional farmers' use of monocropping requires that they plant the same crop over and over again, which exhausts soil of the nutrients that that crop requires.

  This repetitive technique works against nature, since it depletes the soil fertility that could have been naturally replenished if they had used the organic farming practice of crop rotations with cover crops.

  It is not surprising then, that conventional farmers rely on synthetic instead of natural means of fertilization in hopes to remedy the soil infertility on their crops.

  However, synthetic fertilizers are *forbidden* in organic farming.

  Why can organic farmers go without synthetic means of fertilization?

  Because their use of crop rotations with cover crops and other techniques enables nature to do its work to fertilize soil.

  Organic farmers' reliance on natural instead of synthetic means of fertilization positively impacts the environment by:

- ***Protecting living things.*** Synthetic fertilizers are toxic and may harm living things, including humans. These conventional products also can harm soil organisms.

- ***Preventing soil degradation (conserving soil).*** Many soil organisms naturally increase soil fertility. Learn how here.

  When conventional farmers try to remedy soil infertility with synthetic fertilizers, they actually worsen the problem…

  …since these products harm the soil organisms that could have naturally increased soil fertility.

  Harm to soil organisms is a major factor that causes soil degradation. Without their help, soil is less able to provide crops with the nutrients they need to grow.

  Since organic farmers abstain from the use of synthetic fertilizers, they preserve these important soil organisms.

  The preservation of soil organisms is a major way that organic farmers conserve soil.

  Besides from aiding soil fertility, soil organisms do much more to help soil maintain its capacity to support crop growth. Learn more about the beneficial inhabitants of soil on pages 17-22.

Contrasting Impacts of Organic and Conventional Cropping Methods on Pest Control

Ok, I wrote a lot about soil fertility. Now I must return to pest control, the other factor that plays a role in determining whether soil is conserved or degraded…

But first I will explain the different ways that conventional and organic farmers' disparate cropping methods impact pest-susceptibility.

Monocropping Decreases Pest Control

As you know, conventional farmers practice monocropping, a redundant agricultural method.

This technique involves sowing the same crop continuously in one location for a long duration of time.

The result? The pest-susceptibility of crops increases.

Why? Because the specific type of pest that is drawn to a particular crop knows where to find its crop of choice.

The pest will repeatedly return to wreak havoc upon the crop that it is attracted to.

Crop Rotations with Cover Crops Increase Pest Control

But this pest-susceptibility does not occur on organic farms. Why?

Because organic farmers rotate main food crops with cover crops, a technique that involves switching the types of crops grown in the same location.

The alternation of the kinds of crops grown in one place deceives pests…

…that would hope to return to that location, only to find a crop that differs from the type that it instinctively preys upon.

Growing one type of crop one season and another crop the next may still lure the particular pests that those different crops attract during the season each is grown.

However crop rotations prevent the long-term consequences that result from monocropping.

If just one kind of crop is grown in the same location season after season, then management of this pest would become increasingly difficult. Large numbers of that pest would know where to find that crop and repeatedly attack it over time.

How Pest Control is a Factor that Determines Whether Soil is Conserved or Degraded

Now you know that organic farmers' use of crop rotations with cover crops increases pest control.

You also know that conventional farmers' utilization of monocropping decreases pest management.

But how is pest control a factor that determines whether soil is conserved or degraded?

The management of pests does not seem to have an obvious impact on the ability of soil to sustain crop growth.

However…

The type of cropping method used on a farm determines the initial level of pest control on crops and which other pest management techniques will be required.

These additional types of pest control directly conserve or degrade soil…

The Impact of Pest Control (or a lack of it) on Soil and the Environment

So, a preliminary amount of pest control (or lack of it) can be established by the cropping method that farmers use.

Organic farmers' use of crop rotations with cover crops provides an initial level of crop pest control that makes way for the practice of additional pest management techniques that conserve soil.

Conversely, conventional farmers' utilization of monocropping increases pest-susceptibility, leading to the demand for pest control techniques that degrade soil.

Here is the difference between Organic and conventional pest management methods and their impact on soil and the environment in general…

Reliance on Synthetic vs. Natural Pest Management

The monocropping used on conventional farms increases the vulnerability of crops to insect, weed and other pest attacks.

As a result, conventional farmers rely on synthetic pesticides to control pests.

However, synthetic pesticides are *forbidden* in organic farming.

Organic farmers can afford to go without synthetic pesticides…

…Since they use their knowledge of nature—specifically of how pests think— to arm their crops.

When they rotate their main food crops with cover crops, organic farmers discourage the repeated pest attacks that would occur if one crop had been continuously grown in a given location (monocropping).

Their cropping method is only one example of many organic farming techniques that provide natural pest control.

Organic farmers' reliance on natural *instead of* synthetic pest management positively impacts the environment by:

- ***Protecting living things.*** Like synthetic fertilizers, pesticides may harm living things, including humans. These conventional products also may kill beneficial soil organisms.

- ***Preventing soil degradation (conserve soil).*** Soil organisms promote soil fertility and structure. (Learn how here).

These activities help soil to maintain its capacity to support crop growth. Therefore, soil organisms play a major role in the prevention of soil degradation (or in other words, in the conservation of soil).

So…

When conventional farmers use synthetic pesticides that harm soil organisms, they trigger soil degradation.

Since organic farmers incorporate natural forms of pest control in their farming practices that do not harm soil organisms, they conserve soil.

The preservation of soil organisms is a key soil conservation practice in organic farming. Learn more on pages 17-22.

Dependence on Intensive vs. Conservation Tillage

Conventional farmers not only rely on synthetic pesticides but also intensive tillage techniques to control the prevalence of pests that result from monocropping.

Tillage is the mechanical manipulation of soil with different tools such as hoes and plows in order to prepare crops.

Intensive tillage in particular is often used to control pests, especially weeds.

As its name implies, intensive tillage is rough on soil and may incite soil degradation.

On the other hand, organic farmers' cropping method establishes natural pest-protection for crops from the start.

This protective groundwork enables organic farmers the option of practicing conservation tillage, a less intensive means to further guard their crops against pests.

Conservation tillage includes hand weeding, mulching and various other techniques that are kinder to soil.

As opposed to intensive tillage, this gentler method of pest control helps to conserve soil by preventing the following causes of soil degradation:

- ***Soil erosion.*** Soil erosion—a loss of soil—is one the most significant factors that renders soil incapable of supporting crop growth.

  The heavy machinery that conventional farmers use to till the ground adversely impacts soil structure, leading to soil erosion.

This damage to soil structure that triggers erosion is prevented by the gentler, hands-on approach of conservation tillage. By preventing soil erosion, organic farmers' utilization of conservation tillage helps to conserve soil.

Learn more about the association between these contrasting tillage techniques and soil erosion on page 25.

- ***Harm to beneficial soil organisms.*** These organisms are beneficial since their activities conserve soil.

  However, they may be harmed or killed when conventional farmers till the ground with heavy machines like plows.

  As a result, soil is more likely to become degraded without the benefits of their work.

  In contrast, the gentler approach of organic farmers' conservation tillage does not harm these organisms.

  The consequential preservation of soil organisms enables them to keep doing their work to conserve soil.

Organic vs. Conventional Treatment of Soil Organisms

Treatment of Soil Organisms Impacts Soil for Better or for Worse

Besides for humane reasons, we should care about how farming techniques impact soil organisms.

The treatment of beneficial soil organisms is a major factor that determines whether soil is conserved or degraded.

Why? Because their activities help to ensure that soil maintains its capacity to support crop growth.

So, when organic farmers preserve these organisms, their abundant presence helps to conserve soil.

Conversely, conventional farmers incite soil degradation when they harm or kill the organisms whose presence is crucial for soil health.

Now I will summarize the organic farming techniques that preserve soil organisms and the conventional agricultural practices that harm them…

Organic Farming Techniques that Preserve Soil Organisms

vs.

Conventional Agricultural Methods that Destroy Soil Organisms

Here is a summary of the contrasting organic and conventional agricultural techniques that impact soil organisms differently:

	Organic Farming Practices **that preserve beneficial soil organisms**	**Conventional Farming Practices** **that harm or kill beneficial soil organisms**
Fertilization Methods	• Natural means of fertilization (Using crop rotations with cover crops, adding organic matter to crops, etc.)	• Synthetic means of fertilization (Using toxic conventional products such as synthetic fertilizers.)
Pest Control Methods	• Natural forms of pest management (Crop rotations with cover crops, etc.) • Conservation tillage	• Synthetic forms of pest management (Toxic conventional products such as synthetic pesticides.) • Intensive tillage

So how does the preservation (or destruction) of soil organisms affect soil and the earth in general?

How the Absence or Presence of Soil Organisms Impacts Soil and the Environment

The absence of soil organisms occurs on conventional farms where harmful agricultural techniques wipe them out.

On the other hand, since organic farmers use agricultural techniques that *preserve* soil organisms, they ensure a plentiful amount of these beneficial living things on their farms.

They also *encourage an abundant presence* of these organisms by adding organic matter into soil. This technique attracts soil organisms to crops, since they feed on organic matter.

The difference between the absence and the presence of soil organisms matters. This disparity impacts:

- ***Soil fertility.*** Soil organisms promote soil fertility.

  For example:

  Organic farmers plant legume cover crops. Later they plow these crops and legume plant materials decay in soil.

  Soil organisms such as earthworms feed on these decayed organic remnants of cover crops. Their digestion breaks organic matter down so that smaller decomposer bacteria are able to convert it further— into inorganic nutrients that plants can absorb from soil as food. Plants depend on this food for growth and survival.

  Therefore, soil organisms increase soil fertility by making nutrients available in soil for plants to absorb for life-supporting food.

  Learn more about how soil organisms promote fertility here. Also, discover the importance of soil fertility here.

  Potential environmental impacts that occur when soil organisms are *or* are not present to promote soil fertility:

  - ***Soil conservation vs. soil degradation.*** As discussed on page 9, soil fertility is a major factor that determines whether soil is conserved or degraded.

    Conserved soil supports the growth of crops. Degraded soil does not sustain crop growth.

An abundant presence of soil organisms on organic farms increases soil fertility. Their help conserves soil, because it ensures that crops are provided with the nutrients that they need to grow.

The absence of soil organisms on conventional farms decreases soil fertility. Without their help, soil is more likely to become degraded, since it cannot provide the nutrients that crops need for growth.

- ***Abundance of food vs. famine.*** A large population of soil organisms on organic farms increases the soil fertility that crops depend on for growth.

  Consequently, crop yields increase.

  On the other hand, when conventional farmers harm or kill soil organisms, they interfere with their ability to increase soil fertility.

  Therefore, their absence leads to a decrease in crop yields that raises the risk of famine.

- ***Reliance on natural vs. synthetic fertilization.*** Preserving and encouraging an abundance of soil organisms on their farms is one of many techniques that enable organic farmers to rely on natural crop fertilization.

  Alternately, the harm caused to soil organisms on conventional farms is one of many ways that conventional farmers destroy opportunities for natural fertilization of their crops. As a result, they are forced to rely on the synthetic fertilizers generated outside of nature.

  The difference: Organic farmers' natural means of fertilization does not harm living things (including soil organisms that help conserve soil). Conventional farmers' use of toxic synthetic fertilizers may harm living things (including soil organisms that could have naturally fertilized soil…harming these organisms also degrades soil).

- ***Ecosystem efficiency.*** Soil organisms promote ecosystem efficiency, which supports life.

  I will reword an example I have used before to describe the interconnected nature of an ecosystem…

  Small decomposer bacteria depend on larger organisms such as earthworms to break down organic matter so that it is digestible for them. The bacteria convert their food into inorganic nutrients that plants can then absorb from air, water, and soil for food.

  This example briefly explains that the sustenance of life depends on a constant interactivity between the living (earthworms, bacteria, plants, etc.) and nonliving (inorganic nutrients, air, water, etc.) parts of an ecosystem.

  The more efficiently the parts of an ecosystem work together, the better they are able to support life.

Potential environmental impacts that occur when soil organisms are *or* are not present to promote ecosystem efficiency:

- ***Decrease vs. increase in ecosystem efficiency.*** When conventional farmers harm or kill soil organisms, they disrupt their interdependent activities. Consequently, the ecosystem efficiency that we need to support life decreases.

  In contrast, organic farmers promote the life-supporting activities of the living things in soil by preserving such organisms and encouraging an abundance of their presence.

  Free from harm and interference, they can do their interdependent work. As a result, the ecosystem efficiency that we need to sustain life increases.

- ***Biodiversity.*** Biodiversity—the large assortment of living things on the planet—is crucial for our sustenance…

  Why? A vast array of life presents us with more opportunities to support life. Here are only a few of many examples…
  …Without the work of a variety of decomposer bacteria and fungi, the environment would be enveloped with solid waste…
  …Without a wide selection of bacteria, fungi, plants and animals from which medicines are created, we would not have as many options to care for our health...
  …Without biodiversity, we would not have a guaranteed supply of goods at our disposal that ensure our well-being.

  Potential environmental impacts of the presence *or* absence of soil organisms on biodiversity:

  - ***Decrease vs. increase in biodiversity.*** When conventional farmers kill soil organisms, they decrease the diversity of living things on their crops and in the environment. This reduction in turn lessens the amount of life-supporting options that biodiversity makes available to us.

    Alternately, organic farmers promote biodiversity in the environment by preserving soil organisms. They also encourage a wide array of soil inhabitants on their farms. As a result, organic farmers increase the number of opportunities provided by biodiversity to not only sustain life, but also improve the quality of it.

- ***Soil erosion.*** Soil organisms promote soil structure.

  Their activities increase the stability of soil. Learn how here.

This stability is crucial for preventing soil from being carried away (eroding).

Potential environmental impacts that occur when soil organisms are *or* are not present to prevent soil erosion:

- ***Soil conservation vs. soil degradation.*** When organic farmers preserve soil organisms, they help to prevent soil erosion in the environment in general. Attracting an abundance of these beneficial organisms to their crops also reduces erosion on organic farms.

  However, conventional farmers trigger soil erosion when they harm or kill the soil organisms that aid soil structure.

  The difference: Soil erosion is a significant cause of soil degradation. When organic farmers prevent soil erosion by preserving soil organisms, they conserve soil.

  In contrast, conventional farmers trigger soil degradation when they harm the soil organisms whose activities guard against erosion.

  Soil erosion is the most significant factor that degrades soil. Therefore, I have set aside the next section of this e-book to explain more about it…

Organic vs. Conventional Treatment of Soil Erosion

Whether Soil Erosion Occurs will Impact Soil for Better or for Worse

Topsoil—the uppermost layer of soil—is crucial for crop growth.

But soil erosion results in a loss of this precious soil. (Learn just how valuable topsoil is here).

It is no wonder that soil erosion is the most noted cause of soil degradation.

How can conventional farmers, who trigger this agricultural problem, expect their crops to grow without soil?

On the other hand, organic farmers' soil conservation techniques do much more than simply maintaining and improving soil quality…

When their methods guard against soil erosion, organic farmers ensure that soil is present to support the growth of crops in the first place!

Now I will explain the organic farming techniques that prevent soil erosion and the conventional agricultural methods that trigger this agricultural problem.

Organic Farming Techniques that Prevent Soil Erosion

vs.

Conventional Agricultural Methods that Trigger Soil Erosion

Direct Preventions and Triggers

On pages 21-22, I discussed that soil organisms help soil to develop a stable structure that safeguards it from erosion.

Therefore, the treatment of soil organisms has a direct impact upon whether soil erodes or not.

Organic farmers *directly prevent* soil erosion by preserving the soil organisms that work to keep soil in place.

Conversely, conventional farmers *directly trigger* soil erosion by harming and killing these beneficial soil inhabitants.

Indirect Preventions and Triggers

So the preservation or destruction of soil organisms in itself has a direct impact on soil erosion.

Furthermore, the fertilization and pest control methods that I listed on page 18 *indirectly* determine whether soil erodes or not.

Why? These agricultural techniques either protect or harm the soil organisms that have a direct impact on the capacity of soil to remain in place.

The fertilization and pest control methods used by:

- Organic farmers *indirectly prevent* soil erosion by conserving the beneficial living things in soil.

- Conventional farmers *indirectly trigger* soil erosion by harming or killing soil organisms.

More Direct Preventions and Triggers

Additional techniques have a direct influence on whether soil erosion occurs by impacting the stability of soil structure differently.

By now you know that if its structure is unstable, soil erodes. If its structure is stable, soil stays in place.

A particular condition that affects the stability of soil is soil compaction. *Soil compaction* occurs when soil loses its ability to absorb water. This reduced capacity to retain water results in an unstable soil structure, which increases the chances that soil will be carried away (erode).

Conventional farmers trigger soil compaction when they practice intensive tillage techniques that involve heavy machinery such as plows. In turn, soil is likely to erode on conventional farms.

On the other hand, organic farmers guard against soil erosion by using techniques that assist the formation and maintenance of a stable soil structure.

Organic farmers help soil to:

- ***Form a stable soil structure*** by implementing organic matter into soil (when they plant cover crops, use mulch, etc.).

  Organic matter attracts soil organisms to crops that help soil to develop pores on its surface. Learn how here. These openings enable soil to soak up water. This capacity to hold water results in a stable soil structure that remains in place (and does not erode).

- ***Maintain a stable soil structure*** by using conservation tillage techniques (such as hand weeding and mulching). These gentle tillage methods protect soil from compaction. As a result, soil retains a stable structure that guards against erosion.

  Additionally, the presence of plants impacts the stability of soil structure. Plants provide a "cover" for soil that enables it to stay put, since the roots of plants hold soil in place. Without the presence of plants, soil erodes.

  Accordingly, organic farmers "cover" soil in various ways to safeguard it from erosion year-round. For example, during the fall, organic farmers plant legume cover crops. These crops provide a vegetative cover that keeps soil in place at a time when soil would otherwise be bare and vulnerable to erosion.

Whether Soil Erodes or Not Will Impact the Environment

Now you know the various ways that organic farmers prevent soil erosion. You also know the conventional farming techniques that trigger soil erosion.

Here are the environmental benefits that occur when soil stays put instead of abandoning a crop:

- ***The risk of famine decreases instead of increases.*** Soil needs plants to hold it in place. Plants also depend on soil to hold them in place and to provide them with nutrients that they need for growth.

  Therefore, when organic farmers help soil to stay in place, it is able to support crop growth. As a result, crop yields increase, while the risk of famine decreases.

  On the other hand, conventional farmers lose soil that is vital for crop growth when their techniques trigger erosion. As their crops yields consequently decrease, the risk of famine increases.

- ***Water pollution decreases instead of increases.*** When conventional farmers prompt soil erosion, where does the eroded soil go?

  Oftentimes eroded soil ends up in our fresh surface water—where it throws aquatic ecosystems off balance and contaminates our drinking water.

  Even worse, the soil that erodes off of conventional farms also pollutes our drinking water with toxic synthetic fertilizers and pesticides.

  However, organic farmers do not use these synthetic petrochemical products. And, as you know, they also prevent soil erosion.

  When soil stays in place and is uncontaminated by petrochemicals, it *does not* pollute our water.

What else does water have to do with soil?

Organic vs. Conventional Treatment of Water

The Treatment of Water Impacts Soil for Better or for Worse

Agricultural techniques that impact and use water play a major role in determining whether soil is conserved or degraded.

In the next section of this e-book, I will explain how different farming methods that:

- ***Impact water quality*** may hinder or promote the ability of soil to sustain crop growth.

- ***Use water*** not only affect water for better or for worse, but also decrease or increase the capacity of soil to support crops.

Farming Techniques that Impact Water Quality Also Affect Soil

Water and soil work closely together to support crop growth on a farm.

Crops depend on an adequate amount of unpolluted water to fuel their vitality. They absorb this water from soil.

Farming techniques that impact water hinder or promote the ability of soil to sustain crops by providing them with quality water.

Agricultural methods related to soil erosion, pest control and fertilization affect water quality.

Conventional farming techniques:

- Trigger soil erosion. (Find these techniques on pages 15, 16, 21, 22, 24, 25, & 30).
- Involve the use of toxic petrochemical products including:
    - Synthetic pesticides for pest control (see pages 14 & 18).
    - Synthetic fertilizers to fertilize crops (see pages 10, 18 & 20).

What is the *consequence* of these methods?

Accelerated amounts of eroded soil (soaked in toxic petrochemicals) end up in our water.

What could have been clean water has been polluted by soil and synthetic products.

This waste of water in turn degrades soil, since it adversely affects the ability of soil to supply crops with quality water.

Organic farming techniques:

- Prevent soil erosion. (Find these techniques on pages 15, 16, 21, 22, 24, 25, & 30).
- Do not involve the use of toxic petrochemical products.

  Instead, their techniques include safe, natural forms of:
    - Pest control (see pages 14 & 18)
    - Fertilization (see pages 10, 18, & 20).

What is the *benefit* of these methods?

Water is conserved, since it is protected from pollution caused by soil erosion and petrochemical products.

This conservation of water in turn conserves soil, because it enables soil to supply crops with quality, unpolluted water.

Now I will move onto the farming techniques that use water...

The Agricultural Use of Water Impacts not only Water but also Soil

Crops depend on soil to supply them with not only unpolluted water, but also an adequate amount of water to fuel their vitality.

The agricultural use of water impacts:

- ***Water.*** Farming practices may conserve or waste this natural resource.

- ***Soil.*** Farming techniques that conserve water also conserve soil, by ensuring that soil is capable of providing crops with an adequate amount of unpolluted water.

  Agricultural methods that waste this natural resource also degrade soil by decreasing soil's ability to supply crops with an appropriate serving of quality water.

Organic farmers conserve water by using terracing and other techniques that ensure an adequate amount of unpolluted water is used to irrigate crops.

In contrast, conventional farmers not only waste water by polluting it, but also by frequently over-irrigating their crops.

Now, I will contrast terracing with over-irrigation to exemplify how:

- Organic farmers conserve water and consequently conserve soil.

- Conventional farmers waste water and consequently degrade soil.

The use of terracing *instead* of over-irrigation:

- ***Saves instead of wastes water.*** Terracing is the transformation of a sloping landscape into succeeding flat steps. Imagine a staircase built into the earth.

Water on a terrace gradually reaches one plant to the next as it moves from higher to lower steps. Soil has the time to absorb the amount of water it needs to support plant growth as it moves from one step to the next. Therefore, this organic farming practice ensures that no water is wasted.

However, the conventional practice of over-irrigation inundates crops with more than enough water required for crop growth. Soil does not have time to absorb the excess water. Consequently, water is wasted.

- ***Prevents instead of triggers soil erosion.*** What happens to the unabsorbed excess water that results from over-irrigation?

  It runs off the crop surface, carrying soil with it. Therefore the over-use of water on conventional farms prompts soil erosion, a major cause of soil degradation that is mentioned in detail on pages 23-26.

  On the other hand, this type of soil erosion does not occur on organic farms, since terracing and other water conservation techniques prevent water and soil run-off.

- ***Decreases instead of increases water pollution.*** By prompting soil erosion with the use of over-irrigation, conventional farmers increase the risk of eroded soil (contaminated with petrochemicals) entering our water supplies.

  This pollution of water also decreases the capacity of soil to supply crops with quality water. Additionally, triggering soil erosion raises the risk of famine. (See page 26).

  Conversely, by preventing soil erosion with terracing and other water conservation techniques, organic farmers reduce the risk of eroded soil polluting our water supplies.

  Conserving water also increases the capacity of soil to provide crops with quality water. Additionally, the prevention of soil erosion reduces the risk of famine. (Refer to page 26).

- ***Prevents instead of triggers soil pollution.*** When conventional farmers over-irrigate their crops, the oversupply of water causes salinization (an overabundance of salt) to occur in soil.

  This surplus of salt is a chemical pollution of soil that leads to soil infertility, a major factor that degrades soil.

  I mentioned on pages 10-11 that the potential risks of soil infertility include not only famine but also a reliance on toxic synthetic fertilizers that may adversely impact water, soil and living things.

  On the other hand, terracing and other water conservation techniques utilized by organic farmers ensure that crops receive enough, but not too much water.

  This measured use of water conserves soil by protecting it from pollution and infertility. As I stated on pages 10-11, promoting soil fertility enables organic farmers to guard against famine and to rely on natural fertilizers that do not adversely impact water, soil and living things.

Reminder: You Can Help Conserve Soil!

Now you know an advantage that organic goods have over conventional products…

During the agricultural production of their goods, organic farmers practice soil conservation techniques…

…which help to prevent soil degradation and the consequences it has on the environment.

And, the same type of good may be produced on a conventional farm…

…but its production involves conventional farming methods that trigger soil degradation and the risks it poses for the environment.

Therefore, you can help to conserve soil by:

Choosing organic instead of conventional products. This decision enables you to support an industry that utilizes soil conservation in the production of its goods (and that thus, helps to prevent soil degradation and its environmental consequences).

Making your own organic goods. You practice soil conservation techniques if you produce your own organic goods. By abstaining from conventional goods, you also help to reduce the amount of soil degradation (and environmental risks that result from it) in the world.