

The Soil Health Effect on your Garden's Sustainability

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Content

Sustainability and Sustainable Gardens Concept Soil Health Concept Foundation of a Sustainable Garden = Healthy Soil Sustainable Gardens and the Environment

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Sustainability Concept

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Sustainability/ Sustainable Agriculture

Sustainability consists of fulfilling the needs of current generations without compromising the needs of future generations while ensuring a balance between <u>economic growth</u>, environmental care and social well-being.

Sustainable agriculture: meet society's food and textile needs in the present without compromising the ability of future generations to meet their own needs.



Sustainable Gardens

- Maintain productivity in time!
- Foster the environment!
- Economic household support.

Goal

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Producing for the future!!

How to achieve this? Knowledge and management





Consequences of sustainability

- Sustainable practices will protect natural resources, prevent environmental degradation, and reduce our carbon footprint.
- Sustainability can increase efficiency, reduce costs, and enhance profitability.
- Sustainability can help to improve the quality of life for individuals and communities by ensuring access to basic needs like clean water, food, and shelter.
- Sustainability can help to ensure the long-term viability of gardens.
- Addressing sustainability issues requires global cooperation and collaboration, leading to a shared commitment to a sustainable future.













The Soli Health Concept is Integrated

Soil Health is more than the simple sum of the contributions from a set of specific components.

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Soil is complex

• Soil contains solid minerals, air, water, dead organic matter, and various types of living organisms.

50% of soil is its physical structure. It is time well

spent to feel your garden

soil with your hands. These observations can help to determine the soil's texture, structure, and

workability.



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The Soll Health Concept is Integrated

Soil Health is more than the simple sum of the contributions from a set of specific components.

Soil is a very complex system: Multicomponent and Multifunctional

Properties are both inherited and determined by management and environment.







Sustainability of the system

- The design, construction, development, and maintenance of gardens, lawns, and green belts all depend on soil properties, their spatial distribution, and their management.
- Understanding soil health means <u>assessing and</u> <u>managing</u> soil so that it functions optimally now and is not degraded for future use.

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Six areas in which Soil Health influences garden sustainability

- 1. Water balance (conservation and runoff)
- 2. Plant Selection
- 3. Garden Design
- 4. Plant Maintenance
- 5. Reduce fossil-fuel energy use
- 6. Deal with yard and garden "waste" in a sound way

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Water in your garden

- Quantity How much
- Time When and
- Health Soil:
 - Structure
 Porosity



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Water in your garden

- Quantity How much
- Time When and
- Health Soil:
 - Structure
 Porosity
- Defines functions of the soil and life in the soil!



Arteries are blood vessels that takes blood away from the heart to all parts of the body.

William Harvey described and popularized the modern concept of the circulatory system and the roles of arteries and veins in the 17th century.



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If you build it, they will come!



lf you build a good habitat, soil microbes will flourish.

Create a healthy soil habitat (pH, soil structure, organic matter) to promote beneficial soil microbes.

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If you build it, they will come!

- Biology/organisms and soil chemical and physical factors drive the breakdown of organic matter and release of plant-available nutrients.
- Although biology is critical to plant health, soil pH, organic matter, nutrients, temperature and moisture control their activity.
- Microbes are a lot like us, they need air and water and a diversity of foods. A well-structured soil with lots of organic matter provides these essentials.





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Plant Selection

Are the soil properties favorable for establishing and maintaining lawns, shrubs, trees and gardens without extensive and expensive soil modifications

SOIL CONDITIONS for Growing Plants

- Soil properties impact a plant's ability to survive. Individual plant species/varieties can require different soil conditions to do well.
- Soils vary considerably, especially those that have been disturbed by human intervention.

Or:

Important consideration:

selected?



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Soil Health Assessment is required

The ultimate purpose of assessing soil health is to provide the information necessary to protect and improve long-term water quality, habitats for people and other organisms; foster land uses such as recreational areas (sport fields, parks), urban agriculture or landscaping, buildings, even roads.

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Is your Soil Healthy?

- Some factors to consider:
 - a near-neutral pH (not too acid or alkaline)
 - good soil structure
 - · ability to hold and release nutrients to plants
 - · appropriate level of organic matter
 - · biodiversity of soil life



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Maintenance will be related to design:

• Management includes:

• overcoming physical and chemical root restrictions

- providing nutrients by managing soil fertility and acidity/alkalinity (pH)
- reducing the likelihood of contamination or disease problems
- In areas where the climate is dry, a water supply for the site may be needed (modify plant selection?).

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Sustainable designs will affect garden maintenance

 Garden design will include the selection of crops based on their adaptability to the potential productivity of soils, weather, and additional resources.

- Consequences of a sustainable design:
 - Less maintenance is needed.
 - Crops adapted to indigenous soil fertility will require less fertilizer.
 Crops adapted to climate-soil water availability less added water use.
- Less maintenance means less soil and garden intervention.
 Adapted garden design will affect maintenance requirements and will increase the length of a "productive" system.

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Gardens may be a solution to climate

With correct management gardens may help to reduce carbon emissions, and store carbon in soils and plants!





Better garden starts with having healthy soil.

Adding compost:

•Will provide nutrients for your garden's soil microbes and plants. •Not all composts are

 And.. Can there be too much of a good

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POLLUTION: Too much of a good thing?

- Most of the N in soil organic matter is in an organic chemical form, meaning it's bound to carbon in large molecules that plants generally can't use.





