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Soil Health Based
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*Soil Health
Based On
Organic
Matter*

**This book is a printed
edition of the Special
Issue "Enhancing Soil
Health to Mitigate Soil
Degradation" that was
published in
Sustainability**

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We are told that 'work is good for us' and that ill health is caused by 'individual lifestyles'. Drawing on research from public health, social policy, epidemiology, geography and political science, this evidence-based interdisciplinary book firmly challenges these contemporary

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orthodoxies. It systematically demonstrates that work - or lack of it - is central to our health and wellbeing and is the underlying determinant of health inequalities. Work is the cornerstone of modern society and dominates adult life with around a third of our time spent

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working. It is a vital part of self-identity and for most of us it is the foundation of economic and social status. As such, the material and psychosocial conditions in which we work have immense consequences for our physical and mental wellbeing, as well as the distribution of

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**health across the
population.**

**Recessions, job-loss,
insecurity and
unemployment also
have important
ramifications for the
health and wellbeing
of individuals, families
and communities.**

**Chronic illness is itself
a significant cause of
worklessness and low
pay. Drawing on**

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**examples from
different countries,
this book shows that
the relationship
between work,
worklessness and
health varies by
country. Countries
with a more regulated
work environment and
a more interventionist
and supportive welfare
system have better
health and smaller**

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work-related health inequalities. The book provides examples of specific policies and interventions that mitigate the ill-health effects of work and worklessness. It concludes by asserting the importance of politics and policy choices in the aetiology of health and health inequalities.

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**The Soil and Health
A Distant Mirror**

The purpose of this book is to draw attention to the ill-health of the soil; to indicate some of the consequences of this; to suggest method by which the lost fertility could be restored and to enlist research findings to utilize in making farm products

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**as well as farm
resources free from
chemical pollution.
This book provides an
overall review of
different tools for
organic agriculture
followed by
discussions on
sustainability.
Training Manual for
Organic Agriculture
Soil Health and
Climate Change**

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**Farmers of Forty
Centuries; Or,
Permanent
Agriculture in China,
Korea and Japan
Work, Worklessness,
and the Political
Economy of Health
Soil Fertility
Management for
Sustainable
Development
Sustainable
agriculture is a**

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rapidly-growing field aiming at producing food and energy in a sustainable way for our children. This discipline addresses current issues such as climate change, increasing food and fuel prices, starvation, obesity, water pollution, soil erosion, fertility loss,

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pest control and biodiversity depletion. Novel solutions are proposed based on integrated knowledge from agronomy, soil science, molecular biology, chemistry, toxicology, ecology, economy, philosophy and

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social sciences. As actual society issues are now intertwined, sustainable agriculture will bring solutions to build a safer world. This book series analyzes current agricultural issues and proposes alternative solutions,

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consequently
helping all
scientists, decision-
makers, professors,
farmers and
politicians wishing to
build safe
agriculture, energy
and food systems
for future
generations.

Finalist for the
PEN/E. O. Wilson

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Literary Science
Writing Award – A
call to action that
underscores a
common goal: to
change the world
from the ground
up. – Dan Barber,
author of *The Third
Plate* For centuries,
agricultural
practices have
eroded the soil that

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farming depends on, stripping it of the organic matter vital to its productivity. Now conventional agriculture is threatening disaster for the world's growing population. In *Growing a Revolution*, geologist David R. Montgomery travels

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the world, meeting farmers at the forefront of an agricultural movement to restore soil health. From Kansas to Ghana, he sees why adopting the three tenets of conservation agriculture—ditching the plow, planting

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cover crops, and growing a diversity of crops—is the solution. When farmers restore fertility to the land, this helps feed the world, cool the planet, reduce pollution, and return profitability to family farms.

Sustainable

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management of soils is an important global issue of the 21st century. Feeding roughly 8 billion people with an environmentally sustainable production system is a major challenge, especially considering the fact that 10% of the

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world's population
at risk of hunger and
25% at risk of
malnutrition.

Accordingly, the
68th United Nations
(UN) general
assembly declared
2016 the
International Year
of Pulses to raise
awareness and to
celebrate the role of

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pulses in human nutrition and welfare. Likewise, the assembly declared the year 2015 as the [International Year of Soils] to promote awareness of the role of [healthy soils for a healthy life] and the International Union of Soil

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Science (IUSS) has declared 2015-2024 as the International Decade of Soils. Including legumes in cropping systems is an important toward advancing soil sustainability, food and nutritional security without compromising soil quality or its

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production potential. Several textbooks and edited volumes are currently available on general soil fertility or on legumes but to date none have been dedicated to the study of

□ Legumes for Soil Health and Sustainable

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Management. This is important aspect, as the soil, the epidermis of the Earth (geoderma) is the major component of the terrestrial biosphere. This book explores the impacts of legumes on soil health and sustainability,

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structure and
functioning of agro-
ecosystems,
agronomic
productivity and
food security, BNF,
microbial
transformation of
soil N and P, plant-
growth-promoting
rhizobacteria,
biofertilizers, etc.
With the advent of

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fertilizers, legumes have been sidelined since World War II, which has produced serious consequences for soils and the environment alike. Therefore, legume-based rational cropping/soil management practices must

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support

environmentally and
economically

sustainable

agroecosystems

based on

(sequential) rotation

and intercropping

considerations to

restore soil health

and sustainability.

All chapters are

amply illustrated

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with appropriately placed data, tables, figures, and photographs, and supported with extensive and cutting-edge references. The editors have provided a roadmap for the sustainable development of legumes for food

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and nutritional security and soil sustainability in agricultural systems, offering a unique resource for teachers, researchers, and policymakers, as well as undergraduate and graduate students of soil science,

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agronomy, ecology,
and the
environmental
sciences.

We are told that in a
teaspoon of soil
there may be more
organisms than the
total number of
people on the
planet. Who is
conducting the
count? And what

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does it mean? To be brutal about it: So what? We now know that just as biodiversity and balance is important in our agricultural and natural systems and landscapes to keep them healthy and robust, the same processes are vital for our soils.

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There's a lot going on down there that deserves a closer look. And even if we can't see it, a healthy, living soil will grow better plants, be more resilient and improve our agricultural productivity. So this book is designed to

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for a twin purpose: •
to make up for the
mechanistic
approach of 40
years ago—to
present a clearer
picture of what
remained a secret to
the uninitiated for so
long—to reveal the
living, pulsing,
teeming world
beneath our feet,

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and to help manage our soil resource by understanding that any actions we take will have an impact on soil health.

Managing for Healthy Soils is a must for any farmer, horticulturalist or home gardener. It explains how to

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class your type of soil, understand the limitations and potential, and manage it sustainably. Soil tests for moisture, water infiltration, pH, soil nutrients, soil texture, soil compaction, structural stability and more will help

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you understand your
soil context.

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Management

Managing for

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Approaches to Soil

Health Analysis,

Volume 1

Soil Organic Matter

in Sustainable

Agriculture

Soil organic matter

(SOM) is the

primary

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determinant of soil functionality. Soil organic carbon (SOC) accounts for 50% of the SOM content, accompanied by nitrogen, phosphorus, and a range of macro and micro elements. As a

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dynamic

component, SOM

is a source of

numerous

ecosystem

services critical to

human well-being

and nature

conservancy.

Important among

these goods and

services generated

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by SOM include moderation of climate as a source or sink of atmospheric CO₂ and other greenhouse gases, storage and purification of water, a source of energy and habitat for biota (macro,

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meso, and micro-organisms), a medium for plant growth, cycling of elements (N, P, S, etc.), and generation of net primary productivity (NPP). The quality and quantity of NPP has direct impacts

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on the food and nutritional security of the growing and increasingly affluent human population. Soils of agroecosystems are depleted of their SOC reserves in comparison with those of natural ecosystems. The

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magnitude of depletion depends on land use and the type and severity of degradation. Soils prone to accelerated erosion can be strongly depleted of their SOC reserves,

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especially those in
the surface layer.

Therefore,
conservation
through restorative
land use and
adoption of
recommended
management
practices to create
a positive soil-
ecosystem carbon

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budget can increase carbon stock and soil health. This volume of *Advances in Soil Sciences* aims to accomplish the following: Present impacts of land use and soil management on

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SOC dynamics
Discuss effects of
SOC levels on
agronomic
productivity and
use efficiency of
inputs Detail
potential of soil
management on
the rate and
cumulative amount
of carbon

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sequestration in
relation to land use
and soil/crop
management
Deliberate the
cause-effect
relationship
between SOC
content and
provisioning of
some ecosystem
services Relate

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soil organic carbon
stock to soil
properties and
processes
Establish the
relationship
between soil
organic carbon
stock with land
and climate
Identify controls of
making soil

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organic carbon
stock as a source
or sink of CO₂
Connect soil
organic carbon
and carbon
sequestration for
climate mitigation
and adaptation
“Soil Health and
Climate Change”
presents a

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comprehensive
overview of the
concept of soil
health, including
the significance of
key soil attributes
and management
of soil health in
conventional and
emerging land use
systems in the
context of climate

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change. Starting with a review of the physical, chemical and biological indicators of soil health and their significance for monitoring the impacts of climate change, this book then focuses on

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describing the role of soil structure, pH, organic matter, nitrogen, respiration and biota in sustaining the basic functions of soil ecosystems, and their anticipated responses to climate change.

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Further topics include the management of cropping, pastoral, and forestry systems, and rehabilitated mine sites, with a focus on mitigation of and adaptation to climate change impacts. Finally,

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the opportunities and potential risks of organic farming, biochar and bioenergy systems, and their ability to sustain and even enhance soil health, are discussed.

This book, Organic Fertilizers - From

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Basic Concepts to Applied Outcomes, is intended to provide an overview of emerging researchable issues related to the use of organic fertilizers that highlight recent research activities

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in applied organic fertilizers toward a sustainable agriculture and environment. We aimed to compile information from a diversity of sources into a single volume to give some real examples

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extending the
concepts in
organic fertilizers
that may stimulate
new research
ideas and trends in
the relevant fields.
Soil organic matter
(SOM) is a highly
reactive
constituent of the
soil matrix

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because of its large surface area, high ion exchange capacity, enormous affinity for water due to hygroscopicity, and capacity to form organo-mineral complexes. It is an important source

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and sink of
atmospheric CO₂
and other
greenhouse gases
depending on
climate, land use,
soil and crop
management, and
a wide range of
abiotic and biotic
factors, including
the human

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dimensions of
socioeconomic
and political
factors.

Agroecosystems
are among
important controls
of the global
carbon cycle with a
strong impact on
anthropogenic or
abrupt climate

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change. This volume of Advances in Soil Sciences explains pedological processes set-in-motion by increases in SOM content of depleted and degraded soils. It discusses the

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relationship
between SOM
content and critical
soil quality
parameters
including
aggregation, water
retention and
transport, aeration
and gaseous
exchange, and
chemical

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composition of soil
air. The book
identifies policy
options needed to
translate science
into action for
making
sustainable
management of
SOM as a strategy
for adaptation to
and mitigation of

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climate change.

Features: Relates
soil organic matter
stock to soil
processes, climate
parameters,
vegetation,
landscape
attributes
Establishes
relationships
between soil

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organic matter and
land use, species,
and climate

Identifies land use
systems for

protecting and
restoring soil

organic matter

stock Links soil

organic matter

stock with the

global carbon

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cycle for mitigation
of climate change
Part of the
Advances in Soil
Sciences series,
this volume will
appeal to
agricultural,
environmental,
and soil scientists
demonstrating the
link between soil

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organic matter
stock and
provisioning of
critical ecosystem
services for nature
and humans.

Soil Health Testing
and Management
on Organic Farms
in Northern Idaho
Soil Health
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Carbon and
Feeding the Future

Organic
Fertilisation, Soil
Quality and
Human Health
***This is a newly
edited revision
of Albert
Howard's
important text
on organic***
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*farming and
gardening, and
the central role
of humus in
maintaining soil
health and
fertility. No
single
generation has
the right to
exhaust the soil
from which
humanity must
draw its*

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sustenance.

**Modern
agricultural
practices, with
their emphasis
on chemicals,
poisons, and
toxins, lead to
the
impoverishment
and death of the
soil. THE SOIL
AND HEALTH is a
detailed**

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*analysis of the
vital role of
humus and
compost in soil
health – and the
importance of
soil health to
the health of
crops and the
humans who eat
them. The author
is keenly aware
of the dead end
which awaits*

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***humanity if we
insist on
growing our food
using artificial
fertilisers and
poisons. Albert
Howard***

***(1873-1947) was
one of the
leaders of the
British organics
movement in the
mid-twentieth
century. He was***

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*the first
westerner to
document and
publish research
on traditional
techniques of
agriculture,
including Indian
and Chinese
farming and
management of
the soil.*

*"Agriculture is
the fundamental*

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industry of the world and must be allowed to occupy the primary position in the economies of all countries." –

Albert Howard

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***Process 3.3 The
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Meeting the food
requirements of
an ever-
increasing
population is a
pressing
challenge for
every country
around the***

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globe. Soil degradation has a negative impact on food security by reducing the cultivated land areas, while at the same time the world population is predicted to increase to 9.2 billion in 2050.

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Soil degradation adversely affects soil function and productivity and degraded soils now amount to 6 billion ha worldwide. The major factors are salinization, erosion, depletion of

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*nutrients due to
exhaustive
agricultural
practices and
contamination
with toxic metal
ions and
agrochemicals,
which reduces
the activity of
soil microbe. In
addition, poor
soil management
also decreases*

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fertility. As such, measures are required to restore the soil health and productivity: organic matter, beneficial microorganisms and nutrient dynamics can all improve the physical, chemical and

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***biological
properties of
soil.***

***Understanding
the role of soil
health***

***restoration and
management in
sustainability
and nutritional
security calls
for a holistic
approach to
assess soil***

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***functions and
examine the
contributions of
a particular
management
system within a
defined
timescale.
Further, best
management
practices in
cropping systems
are important in
ensuring***

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***sustainability
and food and
nutritional
security without
compromising the
soil quality and
productivity
potential.
Rational soil
management
practices must
allow
environmentally
and economically***

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*sustainable
yields and
restoration of
soil health.
Our capacity to
maintain world
food production
depends heavily
on the thin
layer of soil
covering the
Earth's surface.
The health of
this soil*

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***determines
whether crops
can grow
successfully,
whether a farm
business is
profitable and
whether an
enterprise is
sustainable in
the long term.
Farmers are
generally aware
of the physical***

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and chemical factors that limit the productivity of their soils but often do not recognise that soil microbes and the soil fauna play a major role in achieving healthy soils and healthy

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***crops. Soil
Health, Soil
Biology,
Soilborne
Diseases and
Sustainable
Agriculture
provides readily
understandable
information
about the
bacteria, fungi,
nematodes and
other soil***

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organisms that not only harm food crops but also help them take up water and nutrients and protect them from root diseases.

Complete with illustrations and practical case studies, it provides growers

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*and their
consultants with
holistic
solutions for
building an
active and
diverse soil
biological
community
capable of
improving soil
structure,
enhancing plant
nutrient uptake*

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*and suppressing
root pests and
pathogens. The
book is written
by scientists
with many years'
experience
developing
sustainable crop
production
practices in the
grains,
vegetable,
sugarcane,*

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***grazing and
horticultural
industries. This
book will be
useful for:
growers,
consultants,
agronomists and
soil chemists,
extension
personnel
working in the
grains,
livestock,***

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**sugarcane and
horticultural
industries,
professionals
running courses
in soil health/b
iological
farming, and
students taking
university
courses in soil
science,
ecology,
microbiology,**

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***plant pathology
and other
biological
sciences.***

***The publication
was launched at
the Global
Symposium on
Soil Organic
Carbon (GSOC)
held at FAO
headquarters
(Rome, 21-23
March 2017). It***

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***provides an
overview to
decision-makers
and
practitioners of
the main
scientific facts
and information
regarding the
current
knowledge and
knowledge gaps
on Soil Organic
Carbon. It***

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*highlights how
better
information and
good practices
may be
implemented to
support ending
hunger, adapting
to and
mitigating
climate change
and achieving
overall
sustainable*

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development.

*Soil Organic
Matter as a Soil
Health Indicator
Bio-organic
Manure: A Manual
Guide
Agronomic Soil
Management
Practices
Laboratory
Methods for Soil
Health Analysis,
Volume 2*

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***Soil Organic
Matter and
Feeding the
Future***

***Approaches to
Soil Health
Analysis A
concise survey
of soil health
analysis and its
various
techniques and
applications The
maintenance of***

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*healthy soil
resources
provides the
foundation for
an array of
global efforts
and initiatives
that affect
humanity.*

*Whether they are
working to
combat food
shortages,
conserve our*

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*ecosystems, or
mitigate the
impact of
climate change,
researchers and
agriculturalists
the world over
must be able to
correctly
examine and
understand the
complex nature
of this
essential,*

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fragile

resource. These new volumes have been designed to meet this need, addressing the many dimensions of soil health analysis in chapters that are concise, accessible and applicable to the tasks at

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hand. Soil Health, Volume One: Approaches to Soil Health Analysis provides a well-rounded overview of the various methods and strategies available to analysts, and covers topics including: The

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*history of soil
health and its
study Challenges
and
opportunities
facing
analysts Meta-
data and its
assessment
Applications to
forestry and
urban land
reclamation
Future soil*

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health

*monitoring and
evaluation
approaches
Offering a far-
reaching survey
of this
increasingly int
erdisciplinary
field, this
volume will be
of great
interest to all
those working in*

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*agriculture,
private sector
businesses, non-
governmental
organizations
(NGOs),
academic-,
state-, and
federal-research
projects, as
well as state
and federal soil
conservation,
water quality*

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*and other
environmental
programs.*

*Soil Health and
Intensification
of*

*Agroecosystems
examines the
climate,
environmental,
and human
effects on
agroecosystems
and how the*

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*existing
paradigms must
be revised in
order to
establish
sustainable
production. The
increased demand
for food and
fuel exerts
tremendous
stress on all
aspects of
natural*

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*resources and
the environment
to satisfy an
ever increasing
world
population,
which includes
the use of
agriculture
products for
energy and other
uses in addition
to human and
animal food. The*

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*book presents
options for
ecological
systems that
mimic the
natural
diversity of the
ecosystem and
can have
significant
effect as the
world faces a
rapidly changing
and volatile*

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climate. The book explores the introduction of sustainable agroecosystems that promote biodiversity, sustain soil health, and enhance food production as ways to help mitigate some of these adverse

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effects. New agroecosystems will help define a resilient system that can potentially absorb some of the extreme shifts in climate.

Changing the existing cropping system paradigm to

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*utilize natural
system
attributes by
promoting
biodiversity
within
production
agricultural
systems, such as
the integration
of polycultures,
will also
enhance
ecological*

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*resiliency and
will likely
increase carbon
sequestration.
Focuses on the
intensification
and integration
of agroecosystem
and soil
resiliency by
presenting
suggested
modifications of
the current*

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*cropping system
paradigm*

Examines

climate,

environment, and

human effects on

agroecosystems

Explores in

depth the wide

range of

intercalated

soil and plant

interactions as

they influence

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soil

sustainability

and, in

particular, soil

quality Presents

options for

ecological

systems that

mimic the

natural

diversity of the

ecosystem and

can have

significant

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*effect as the
world faces a
rapidly changing
and volatile
climate*

*" 'Published by
the Sustainable
Agriculture
Research and
Education (SARE)
program, with
funding from the
National
Institute of*

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*Food and
Agriculture,
U.S. Department
of Agriculture."*
*Healthy soils
play a critical
role in
supporting
agricultural
productivity,
climate change
mitigation and
resilience, and
a range of*

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ecosystem

services.

*Degraded and
poorly*

responsive soils

cover large

areas of Africa

and represent

the majority of

poor farmers'

fields in

certain regions.

While there are

hundreds of

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*technical
options for
improving the
sustainability
of land
management and
preventing or
reversing
degradation,
there are many
sociocultural,
institutional,
economic, and
policy barriers*

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*hindering their
adoption at
large scale. At
the same time,
there is an
emerging
consensus within
the
international
development
community that
gender equality
and women's
empowerment are*

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*both an end in
themselves and
an important
means for
achieving a
range of
economic and
social
development
objectives such
as improved food
security, child
nutrition and
education, and*

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women's health.

*Yet, gender
inequality
remains a wicked
problem, whose
deep-seated
socio-economic
and ideological
causes are
difficult to
recognize and
address, and
which require
context- and*

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culture-specific understandings and approaches, involving multiple stakeholders with different and sometimes conflicting interests and different positions within power hierarchies.

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There is an urgent need to make more rapid progress on restoring and sustaining soil productivity and ecosystem functions and also to leverage soil health management for progress on gender equality.

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While there are important interconnections between soil health and gender equality and empowerment, these are seldom recognized, and have not been addressed in a coherent or concerted manner. In this

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study, we have reviewed relevant gender literature and proposed a conceptual framework to help illuminate important gender considerations for soil health and land management.

These

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*considerations
are essential
for identifying
gender-based
constraints,
opportunities,
and unintended
consequences in
promoting soil
management
technologies.
Moreover, the
application of
the framework*

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*can help guide
in priority
setting with
respect to where
gender-
responsive
interventions
are essential.
We make several
recommendations
for setting
priorities for
gender-soil
health research.*

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*Advances in
Measuring Soil
Health
From Basic
Concepts to
Applied Outcomes
Production of
Organic
Fertilizer from
Solid Waste and
Its Utilization
in Intensive
Organic Based
Vegetable*

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*Production and
for Sustaining
Soil Health and
Productivity
Sampling,
Testing, and
Interpretation
Organic
Fertilizers*

Testing for soil
organic matter helps
you monitor soil
health over time.

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Good soil management practices can improve soil organic matter in three to five years.

In order to build resilience to climate change, increase long-term sustainability of farming operations

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and decrease the impacts of our current food production system, the concept of soil health has received renewed attention in recent years. Soil is a vital natural resource with the ability to be degraded. Managing

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for soil health can not only create more sustainable and productive farming systems, but also increase profitability over longer time scales. Benefits of managing for soil health can include decreased soil erosion, more

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efficient fertilizer

use and higher water holding capacity.

Despite the benefits of managing for soil health, there is much confusion regarding how to measure it.

Traditional soil tests allow farmers to chemically evaluate soils for nutrients,

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while newer, more integrative soil health testing combines chemical, biological and physical elements to make a more complete analysis. Farmers in northern Idaho and elsewhere are lacking knowledge of how to

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select appropriate soil health tests, how the results compare to traditional soil fertility tests, and how to interpret and apply the results. This may be especially true for organic growers, since soil health tests have largely been

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developed and researched on conventionally managed farmground. This project aims to further increase resources regarding testing for soil health and fertility by 1) assessing the relationships among

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results from

traditional soil
fertility tests and
those of lesser
known soil health
tests, 2) conducting a
survey to determine
current soil testing
practices in Idaho
and barriers for
adoption. The first
chapter of this thesis

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includes research
comparing
traditional and lesser
studied soil health
tests including the
Haney Soil Health
Test (HSHT) and
permanganate
oxidizable carbon
(POxC) at three
organic farms in
northern Idaho.

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Three fertilizer application rates were created utilizing plant available nitrogen (N) extracted with 2M KCl (standard fertility test) and H3A (a component of the HSHT). These treatments (KCl and H3A), were

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compared to a
"farmer standard"
which simulated
how farmers would
apply fertilizer
without soil testing.
Inorganic N
extracted by KCl
and H3A were
comparable ($R=0.90$,
p

This book gathers

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the latest insights
into soil health and
its sustainability,
providing an up-to-
date overview of the
various aspects of
soil quality and
fertility
management, e.g.,
plant-microbe
interactions to
maintain soil health;

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and the use of algal, fungal and bacterial fertilizers and earthworms for sustainable soil health and agricultural production. It first discusses the past, present, and future scenarios of soil health, and then

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explores factors influencing soil health, as well as the consequences of degradation of soil health for sustainable agriculture. Lastly it highlights solutions to improve and maintain soil health so as to achieve

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greater productivity
and sustainability
without damaging
the soil system or the
environment. Soil
health is defined as
the capacity of a soil
to function within
ecosystem frontiers,
to sustain biological
productivity, to
maintain

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environmental
quality and to
promote plant,
animal and human
health. Soil health is
established through
the interactions of
physical, chemical
and biological
properties, e.g., soil
texture, soil
structure, and soil

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organisms. Healthy soil provides adequate levels of macro- and micronutrients to plants and contains sufficient populations of soil microorganisms. As a result of the increasingly intensified

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agriculture over the past few decades, soils are now showing symptoms of exhaustion and stagnating or declining crop yields. Exploring these developments as well as possible solutions based on holistic and

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sustainable

approaches, this book is a valuable resource for researchers in the area of soil and environmental science, agronomy, agriculture, as well as students in the field of botany, ecology and

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microbiology.

How can the United States meet demands for agricultural production while solving the broader range of environmental problems attributed to farming practices? National policymakers who

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try to answer this question confront difficult trade-offs. This book offers four specific strategies that can serve as the basis for a national policy to protect soil and water quality while maintaining U.S. agricultural

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productivity and
competitiveness.

Timely and
comprehensive, the
volume has
important
implications for the
Clean Air Act and
the 1995 farm bill.

Advocating a
systems approach,
the committee

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recommends specific farm practices and new approaches to prevention of soil degradation and water pollution for environmental agencies. The volume details methods of evaluating soil management

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systems and offers a wealth of information on improved management of nitrogen, phosphorus, manure, pesticides, sediments, salt, and trace elements.

Landscape analysis
of nonpoint source

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pollution is also detailed. Drawing together research findings, survey results, and case examples, the volume will be of interest to federal, state, and local policymakers; state and local environmental and

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agricultural officials
and other
environmental and
agricultural
specialists; scientists
involved in soil and
water issues;
researchers; and
agricultural
producers.

Legumes for Soil
Health and

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Sustainable

Management

A Guide

Cornell Soil Health

Assessment Training

Manual

Basic Soil Processes

Soil Biology Primer

The production of

this manual is a

joint activity

between the Climate,

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*Energy and Tenure
Division (NRC) and
the Technologies
and practices for
smallholder farmers
(TECA) Team from
the Research and
Extension Division
(DDNR) of FAO
Headquarters in
Rome, Italy. The
realization of this*

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manual has been possible thanks to the hard review, compilation and edition work of Nadia Scialabba, Natural Resources officer (NRC) and Ilka Gomez and Lisa Thivant, members of the TECA Team. Special

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*thanks are due to
the International
Federation of
Organic Agriculture
Movements
(IFOAM), the
Research Institute
of Organic
Agriculture (FiBL)
and the
International
Institute for Rural*

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Reconstruction

(IIRR) for their

valuable documents

and publications on

organic farming for

smallholder

farmers.

Laboratory Methods

for Soil Health

Analysis Analyzing,

comparing, and

understanding soil

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*health data The
maintenance of
healthy soil
resources is
instrumental to the
success of an array
of global efforts
and initiatives.*

*Whether they are
working to combat
food shortages,
conserve our*

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*ecosystems, or
mitigate the impact
of climate change,
researchers and
agriculturalists the
world over must be
able to correctly
examine and
understand the
complex nature of
this essential
resource. These new*

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volumes have been designed to meet this need, addressing the many dimensions of soil health analysis in chapters that are concise, accessible and applicable to the tasks at hand. Soil Health, Volume Two: Laboratory Methods for Soil

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*Health Analysis
provides
explanations of the
best practices by
which one may
arrive at valuable,
comparable data
and incisive
conclusions, and
covers topics
including: Sampling
considerations and*

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field evaluations

Assessment and

interpretation of soil-

test biological

activity Macro- and

micronutrients in

soil quality and

health PLFA and

EL-FAME

indicators Offering

a practical guide to

collecting and

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understanding soil health data, this volume will be of great interest to all those working in agriculture, private sector businesses, non-governmental organizations (NGOs), academic-, state-, and federal-research projects, as

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*well as state and
federal soil
conservation, water
quality and other
environmental
programs.*

*Advances in
Organic Farming:
Agronomic Soil
Management
Practices focuses on
the integrated*

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*interactions between
soil-plant-microbe-
environment
elements in a
functioning
ecosystem. It
explains sustainable
nutrient
management under
organic farming
and agriculture,
with chapters*

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*focusing on the role
of nutrient
management in
sustaining global
ecosystems, the
remediation of
polluted soils,
conservation
practices,
degradation of
pollutants,
biofertilizers and*

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*biopesticides,
critical
biogeochemical
cycles, potential
responses for
current and
impending
environmental
change, and other
critical factors.
Organic farming is
both challenging*

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and exciting, as its practice of “feeding the soil, not the plant provides opportunity to better understand why some growing methods are preferred over others. In the simplest terms, organic growing is

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based on

maintaining a living soil with a diverse population of micro and macro soil organisms. Organic matter (OM) is maintained in the soil through the addition of compost, animal manure, green manures and

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*the avoidance of
excess*

mechanization.

Presents a

comprehensive

overview of recent

advances and new

developments in the

field OF research

within a relevant

theoretical

framework

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*Highlights the scope
of the inexpensive
and improved
management
practices Focuses on
the role of nutrient
management in
sustaining the
ecosystems*

*This volume begins
with a review of
advances in*

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*measuring soil
biological activity.
Parts 2 and 3 survey
developments in
measuring soil
physical and
chemical properties.
The collection
concludes by
reviewing soil health
indicators and
decision support*

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*systems for
improving soil
management.*

*AgGuide - A
Practical Handbook
Environmental and
Agronomic Impacts
Improve Water
Retention and
Infiltration; Support
Microorganisms and
Other Soil Life;*

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***Capture More
Sunlight; and Build
Better Soil with No-
Till, Cover Crops,
and Carbon-Based
Soil Amendments
Building Soils for
Better Crops***
*The hidden potential
"Dale Strickler is an
expert on building
healthy soil and*

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*restoring degraded soil,
and in The Complete
Guide to Restoring
Your Soil, he presents
the science of soil,
along with proven
methods of restoring
depleted soil and
agricultural practices
from around the world
that continue to build
soil, rather than cause
it to deteriorate"--*

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Soil fertility is the backbone of agricultural systems and plays a key role in determining food quantity and quality. In recent decades, soil fertility has decreased due to indiscriminate use of agrochemicals, and nations around the globe are now facing the challenge of

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*increasing food
production while
sustainably
maintaining soil
fertility. Written by
leading international
scientists in the field,
this book explores soil
fertility management
strategies, including
agronomic,
microbiological and
soil-science based*

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strategies. Highlighting the practices that can be incorporated into organic farming and discussing recent advances, it is a valuable resource for researchers wanting to broaden their vision and the scope of their investigations.

Recognition of the importance of soil

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organic matter (SOM) in soil health and quality is a major part of fostering a holistic, preventive approach to agricultural management. Students in agronomy, horticulture, and soil science need a textbook that emphasizes strategies for using SOM management in

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*the prevention of
chemical, biological,
and physical problems.
Soil Organic Matter in
Sustainable Agriculture
gathers key scientific
reviews concerning
issues that are critical
for successful SOM
management. This
textbook contains
evaluations of the types
of organic soil constitu*

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ents—organisms, fresh residues, and well-decomposed substances. It explores the beneficial effects of organic matter on soil and the various practices that enhance SOM. Chapters include an examination of the results of crop management practices on soil organisms,

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organic matter gains and losses, the significance of various SOM fractions, and the contributions of fungi and earthworms to soil quality and crop growth. Emphasizing the prevention of imbalances that lead to soil and crop problems, the text also explores the development of

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soils suppressive to plant diseases and pests, and relates SOM management to the supply of nutrients to crops. This book provides the essential scientific background and poses the challenging questions that students need to better understand SOM and develop improved

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soil and crop

management systems.

Studienarbeit aus dem

Jahr 2012 im

Fachbereich

Agrarwissenschaften, ,

Veranstaltung: Soil and

Environment, Sprache:

Deutsch, Abstract: It

has been widely

accepted that organic

materials (plant and

animal sources of

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organic matter) from plants and animals play important role in sustaining and improving soil structure, soil quality, soil function, soil health, soil fertility, and overall crop performance in agricultural production. Organic materials are potential

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*important sources of
micro and macro
nutrients in agricultural
soils environment
(Hood, 2001). They
affect physical,
biological, chemical,
and ecological
processes in soil. They
improve soil structural
quality, soil water
holding capacity, soil
infiltration, soil*

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*organism biodiversity,
and soil nutrient
availability (FAO,
2005). The utilization
of the animal and
plant materials is not
only an economic
benefit for soil and
crops but also for
human being and his
environment. Bio-
organic Manure
(BOM) is processed*

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from some organic materials (animal or plant or combinations of all). Process of decomposition of homogeneous and heterogeneous organic materials will be rapidly undergoing some changes due to microbial functions, temperature control, and water actions. This

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is different from fresh organic fertilizer where natural decay process is brought about by the action of heterogeneous microbes present in the organic matter. [...]

Enhancing Soil Health to Mitigate Soil Degradation

Gendered opportunities for improving soil

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*health: A conceptual
framework to help set
the research agenda
Soil Organic Carbon
Sequestration in
Terrestrial Biomes of
the United States
Crop Rotation on
Organic Farms
Soil Health, Soil
Biology, Soilborne
Diseases and
Sustainable Agriculture*