



unlock the  
**SECRETS**  
**IN THE SOIL**

2013 Soil Planner



Helping People Help the Land



## Words From the Chief

To say that soil is one of our most important natural resources is an understatement. Soil is the factory of our food—and without healthy, productive soil, life as we know it would no longer exist.

With global population on the rise, American farmers and ranchers are seeing an increased demand for production, placing even greater pressures on our soils and other natural resources. Production must happen in a way that's sustainable—using science-based practices that ensure our soils stay healthy and productive with as little negative impact on our water, air, and wildlife resources as possible.

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS)—originally called the Soil Conservation Service—was established to help farmers and ranchers protect our Nation's soil resources after decades of destructive agricultural practices. That's why we're delighted this year's soil planner is focused on the benefits of healthy, productive soils.

Improving the health of our Nation's soil is one of the most important endeavors of our time. By educating our customers and the public about the positive impact healthy soils can have on productivity and conservation, we can help our Nation's farmers and ranchers feed the world more profitably and sustainably now and for generations to come.

To learn more about soils in your State, county, or local community, visit the National Cooperative Soil Survey Web site at <http://soils.usda.gov> and click on "Web Soil Survey."

Dave White  
Chief, NRCS  
[www.nrcs.usda.gov](http://www.nrcs.usda.gov)

   
United States Department of Agriculture  
Natural Resources Conservation Service



## Soil Health and Civilization!

Consider the world around you and all the things that make the earth a great place to live. It may come as a surprise that all living things depend on four basic needs. You may first think of food, clothing, shelter, water, and air.

However, several items such as food, fiber, shelter, and fuel are all related to a single, often overlooked resource, soil! In addition to energy from the sun, air, and water, soil is essential for life. It provides our nutrients for food, filters our water, provides resources for fiber and shelter, and contributes to biofuels. Without soil, civilization as we know it would not exist!

On behalf of the Soil Science Society of America's (SSSA) more than 6,400 members, we are excited to be a part of the USDA-NRCS 2013 Soil Planner, which focuses on healthy soils. SSSA fosters knowledge and practices to sustain global, healthy soils related to crop production, environmental quality, ecosystem sustainability, bioremediation, waste management, recycling, and wise land use. SSSA supports its members, the scientific community, and the public through research-based publications, educational programs, certifications, and science policy initiatives.

Visit us at [www.soils.org](http://www.soils.org), [www.soils4teachers.org](http://www.soils4teachers.org), and [www.iheartsoil.org](http://www.iheartsoil.org) to learn more.

David L. Lindbo

President, SSSA  
[www.soils.org](http://www.soils.org)



## What Is a Healthy Soil?

Soil health is defined as how well soil functions in an ecosystem and whether it functions in way that is useful to our well-being.

A healthy soil gives us clean air and water, bountiful crops and forests, productive grazing lands, diverse wildlife, and beautiful landscapes.

To do this, soil:

- **Regulates water**  
Soil helps control where rain, snowmelt, and irrigation water goes. Water and dissolved solutes flow over the land or into and through the soil.
- **Sustains plant and animal life**  
The diversity and productivity of living things depends on soil.
- **Filters potential pollutants**  
Minerals and microbes found in soil filter, buffer, degrade, immobilize, and detoxify organic and inorganic materials.
- **Cycles nutrients**  
Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled in the soil.
- **Supports structures**  
Buildings need stable soil for support, and archeological treasures associated with human habitation are well protected in soils.

# A Picture of Soil Health

## The Inherent and Dynamic Qualities of Soil

One goal of soil research is to learn how to manage soil in ways that improve soil function.

Soils respond differently to management depending on the inherent qualities of the soil and the surrounding landscape.

Soil has both inherent and dynamic qualities.

Inherent soil quality is a soil's natural ability to function. For example, sandy soil drains faster than clayey soil. Deep soil has more room for roots than soils with bedrock near the surface. These characteristics do not change easily.

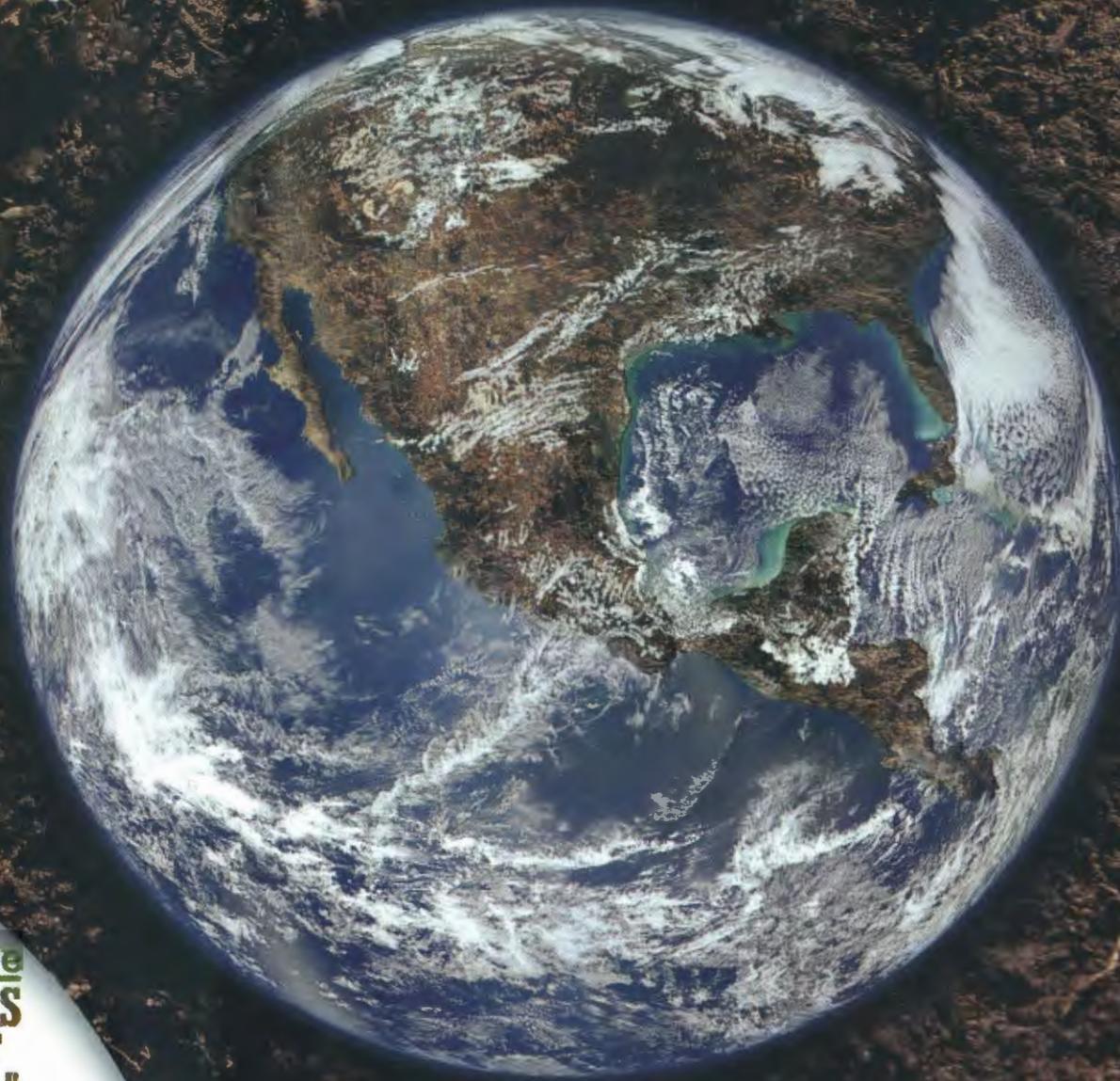
Dynamic soil qualities are soil properties we can change through various soil management practices. For instance, our management choices affect the amount of organic matter, structure, depth, water, and nutrient-holding capacity.

Although we can't change all of the qualities of our soil, we can make better management choices to improve the qualities of soil. Better managed soils are healthier soils.



# we owe our existence...

to the top, precious few inches of our planet's life-giving soil.



**Earth's population is growing. Earth's resources are not.**

**Ensuring the health of our soil is critical to our long-term ability to feed the growing world population.**

## did you know?

- By the year 2050, Earth's population is expected to reach 9 billion.
- Farmers will need to produce as much food in the next 40 years as they have in the last 500.
- Each day prime farmland is turned into neighborhoods and shopping malls.

# january 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
		1 New Year's Day	2	3	4	5
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13	14	15	16	17	18	19
20	21 Birthday of Martin Luther King Jr.	22	23	24	25	26
27	28	29	30	31		

# healthy soils for life.

Healthy, productive soils help the environment while sustaining us.



## did you know?

### Healthy soils:

- Are more productive soils.
- Improve nutrient use efficiency.
- Allow water to infiltrate into the ground, reduce runoff pollution, and provide water to plants when they need it.
- Add nutrients to the food that we eat.
- Break down or capture pesticides and other contaminants.
- Resist wind and water erosion to improve the quality of our air and water.

unlock the  
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# february 2013

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17	18 Washington's Birthday	19	20	21	22	23
24	25	26	27	28		

# the wonderful universe...

# below.

Every inch of a healthy soil contains its own little world of life, complete with millions of builders, decomposers, rivals, and partners.

Countless processes and functions occur every second to keep soils alive and productive. Those functions include filtering and buffering contaminants, cycling nutrients, regulating water usage, providing habitat for microflora and fauna, and stabilizing soil into aggregates.

- There are as many living organisms in a teaspoonful of healthy soil as there are people on Earth.

- There is a remarkable web of life—sustaining our lives—right beneath our feet.

- A balanced food web, free from major disturbances, protects plants from diseases and pests.

# march 2013

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Daylight Savings Time begins						
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			Spring Equinox			
24	25	26	27	28	29	30
31 Easter Sunday						

# exploring our roots.

Plant roots are “hot spots” for biological activities like nutrient cycling and soil aggregate stability. Both living roots and dead or dying roots improve water infiltration and break up compacted soils.

## did you know?

- An abundance of roots helps to stabilize biological activities below ground, making more nutrients and water available to plants.
- Soil with more organic matter in it generates “free” nitrogen and makes these and other nutrients available to crops.

# april 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
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	Earth Day					
28	29	30				

# the riches of residue.

Crop residue isn't trash—it's a treasure. Crop residue provides soil with a protective cover that reduces erosion. It's also a source of carbon, the essential energy source for the soil food web.

## did you know?

- Residue improves water infiltration, reducing runoff, erosion, and sedimentation.
- Residue maintains soil moisture that crops can use in dry periods, resulting in higher yields without irrigation.
- Residue helps improve soil balance of nutrients like nitrogen and phosphorus.

# may 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
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	Memorial Day					

# soil: the porous frontier.

Like all living things, healthy soil needs air and water. Soil organisms need air to breathe, and they also depend on water to deliver nutrients and support the food web. Without pores throughout the soil, air and water would be unable to reach those living organisms.

## did you know?

- Soils are made up of air, water, decayed plant residue, organic matter from living and dead organisms, and mineral matter like sand, silt, and clay.
- Earthworms and dying roots create pores.
- One acre of healthy soil can store more than 160,000 gallons of water in its upper foot.
- Soil microbes (bacteria and fungi) produce sticky substances that hold soil particles together.
- Disturbances, like tillage, destroy pore structure and kill earthworms and fungi.

# june 2013

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Summer Solstice

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# dig a little. learn a lot.

Whether you own a small garden, or a 1,000-acre farm, you can learn a lot about the health and function of your soil.

Simply dig a little—then look, touch, and smell...

## look

You want to see residue on the surface of the soil and a live canopy. The soil structure below the surface should look like chocolate cake with airholes permeating throughout. You should see organic matter and live roots that extend way down. And, of course, you should see earthworms—our wonderful soil engineers!

## smell

Healthy soil should have the aroma of geosmin, which is a byproduct of soil microbes called actinomycetes. Geosmin has a sweet, *earthy* aroma like nothing else.

## touch

The soil should be loose and crumble easily. In healthy soil, roots can grow straight and deep, allowing plants to get the nutrients and water they need to produce the food we love to eat.

# july 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
	1	2	3	4 Independence Day	5	6
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21	22	23	24	25	26	27
28	29	30	31			

# discover the cover.

Planting cover crops can help protect the fragile ecosystem within the soil that is working for us.



## did you know?

**Using diverse cover crops throughout the year helps ensure...**

- Natural fertilizer is delivered to plants.
- Less nitrogen leaches into subsurface water.
- Grazing seasons are extended, creating more profitable livestock operations.
- Wildlife habitat is healthier.

# august 2013

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# do not disturb.

When farmers plow or till the soil, it can cause compaction or “plow pan” which restricts water infiltration and increases runoff.

## did you know?

### Healthy soils...

- Hold water like a sponge.
- Allow better infiltration so plants can get water when they need it.
- Protect against erosion.
- Reduce flooding.

# september 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
1	2 Labor Day	3	4	5	6	7
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22	23	24	25	26	27	28
29 Fall Equinox	30					

# growing with soil health.

Soil conservation systems aren't new, but they still make a difference on today's farms. Creating a soil health management system with the right mix of conservation practices—no-till, nutrient management, and cover crops—allows producers to harvest all the benefits of healthy soil.

## did you know?

### Soil health management systems ...

- Reduce energy costs by reducing tillage operations.
- Naturally lessen disease and pest problems.
- Limit weed growth.
- Improve plant health.
- Help protect against drought.



The Rulon family of Arcadia, Indiana, are among a growing number of farmers who are harvesting the many benefits of Soil Health Management Systems. Pictured from left to right are Dianna, Tasha, Rodney (back row) and Claire and Kaleb (front row) Rulon.

# october 2013

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	Columbus Day					
20	21	22	23	24	25	26
27	28	29	30	31		

# profiles in soil health:

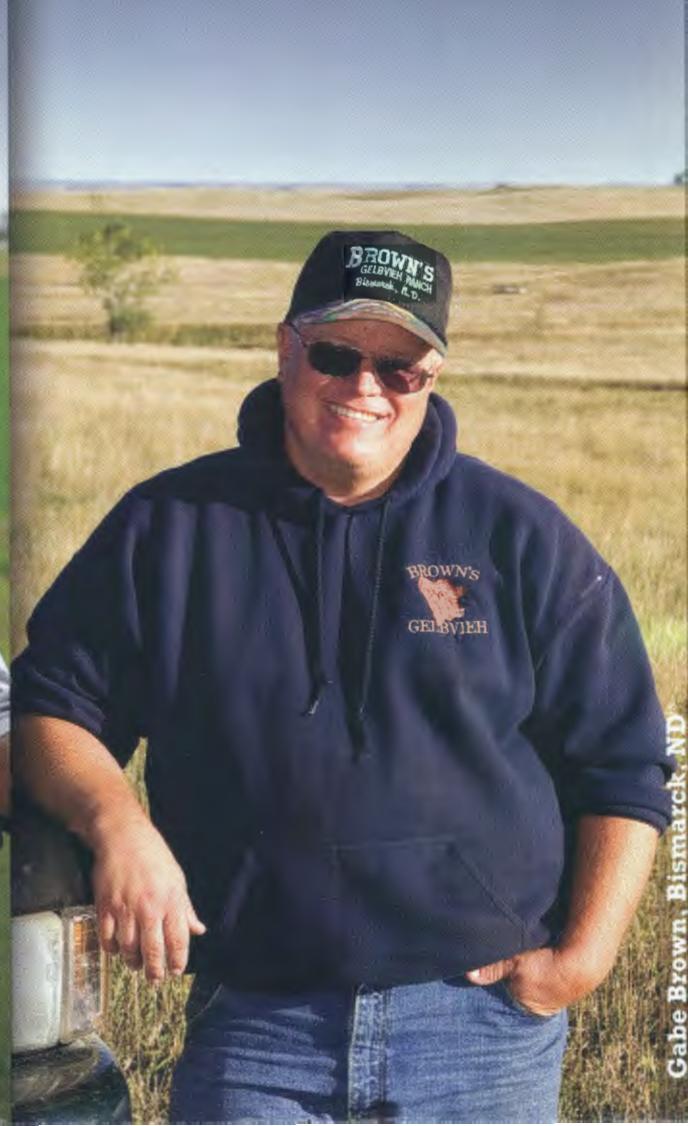
Throughout the country, agricultural producers are using soil health management systems to improve the health of their soils and the health of the bottom line of their business. These *soil health heroes* produce much needed food and fiber AND protect our Nation's soil, water, and wildlife resources.



Erika Garcia, Yakima, WA



Leon Moses, Greensboro, NC



Cabe Brown, Bismarck, ND

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# november 2013

sunday

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Daylight Savings Time ends

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Veterans Day

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Thanksgiving Day



# unlock the secrets in **YOUR** soil...

**The health of our planet begins with the health of our soil. That soil is the factory of our food —the source of our sustenance.**

**Learn more about what you can do in the months and years ahead to *Unlock the Secrets in the Soil*.**

**Contact your local USDA-NRCS soil health expert today, or visit [www.nrcs.usda.gov](http://www.nrcs.usda.gov) to learn more.**

# december 2013

sunday	monday	tuesday	wednesday	thursday	friday	saturday
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8	9	10	11	12	13	14
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22	23	24	25 Christmas Day	26	27	28 Winter Solstice
29	30	31 New Year's Eve				

# 2013 Events

## January

JANUARY 27-30

National Association of Conservation Districts (NACD), 40th Annual National Meeting, San Antonio, TX

## February

FEBRUARY 3-6

Society for Range Management (SRM), 66th Annual Meeting, Oklahoma City, OK

## March

MARCH 24-27

Land Divided Conference, Land and South African Society in 2013 in Comparative Perspective, University of Cape Town, South Africa

MARCH 18-21

Association for Environmental Health and Sciences Foundation, 23rd Annual International Conference on Soil, Water, Energy, and Air, Mission Valley, San Diego, CA

## April

APRIL 7-12

13th International Symposium on Soil and Plant Analysis (ISSPA), Queenstown, New Zealand

APRIL 13-17

American Planning Association (APA), National Planning Conference, Chicago, IL

APRIL 15-19

American Geophysical Union (AGU), Chapman Conference on Communicating Climate Science: A Historic Look to the Future, Thira, Santorini, Greece

## May

MAY 13-16

HydroEco2013 4th International Multidisciplinary Conference on Hydrology and Ecology: Emerging Patterns, Breakthroughs and Challenges, Rennes, France

## June

JUNE 3-7

International Union of Soil Scientists (IUSS), Global Soil Carbon Conference, Madison, WI

JUNE 16-21

National Cooperative Soil Survey Conference, Annapolis, MD

## July

JULY 8-12

XVII Conference of the International Soil Conservation Organization (ISCO), Environmental Sustainability through Soil Conservation, Medellin, Colombia

JULY 20-24

Soil and Water Conservation Society (SWCS), Annual Conference, Reno, NV

## August

AUGUST 4-9

98th Ecological Sciences Association (ESA), Annual Meeting 2013, Minneapolis, MN

AUGUST 18-23

INTECOL 11 - Ecology: Into the Next 100 Years, Joint Meeting with the British Ecological Society Annual Meeting, London, UK

## September

SEPTEMBER 4-6

Commission 3.6 Conference, Utilization and Protection of Halophytes and Salt-Affected Landscapes, Kecskemét, Hungary

SEPTEMBER 16-20

7th International Conference on Urban Soils, Soils of Urban, Industrial, Traffic, and Mining Areas (SUITMA) working group of the International Union of Soil Science (IUSS), Torun, Poland

SEPTEMBER 30-OCTOBER 4

Soils in Space in Time - First Divisional 1 Conference of IUSS, Ulm/Danube, Germany

## October

OCTOBER 27-30

Geological Society of America (GSA), Annual Meeting, 125th Anniversary Celebration, Denver, CO

## November

NOVEMBER 3-7

Soil Science Society of America (SSSA), International Annual Meeting, Tampa, FL

## December

DECEMBER 2-6

American Geophysical Union (AGU), Fall 2013 Meeting, San Francisco, CA

DECEMBER 9-12

4th International Conservation Agriculture Conference in Southeast Asia, Siem Reap, Cambodia

# 2014 Calendar

**JANUARY 2014**

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**FEBRUARY 2014**

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**MARCH 2014**

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**APRIL 2014**

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**MAY 2014**

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**JUNE 2014**

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**JULY 2014**

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**AUGUST 2014**

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**SEPTEMBER 2014**

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**OCTOBER 2014**

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**NOVEMBER 2014**

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**DECEMBER 2014**

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21	22	23	24	25	26	27
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United States Department of Agriculture  
Natural Resources Conservation Service



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PA-2126  
November 2012

  
unlock the  
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