

AN INTRODUCTION TO NMDA'S HEALTHY SOIL PROGRAM

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About me

- **Michael Purdy**
  - **Grew up on family ranch Chamita NM**
  - **Studied Agricultural Economics and Business at New Mexico State University.**
  - **Worked as Technical Service Provider at a SWCD in Northern NM.**
  - **Currently working as a Policy/Planning Analyst for New Mexico Department of Agriculture.**

Today's presentation

- Why is soil health important?
- How can soil health be improved?
- What is NMDA's Healthy Soil Program?
- How can others play a role in the program?
- Questions & Answers

Why is soil health important?

- Healthy soil is **more resilient** to drought, erosion, and noxious/invasive weeds
- Healthy soil is **more receptive to – and better able to store –** precipitation
- Healthy soil can **better support** plant and animal life
- Healthy soil may even **promote** the small water cycle

Image credit: PNG Item

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How can soil health be improved?

By applying 1+ of **5 soil health principles** to the land:

1. keeping soil covered
2. minimizing soil disturbance on cropland and minimizing external inputs
3. maximizing biodiversity
4. maintaining a living root
5. integrating animals into land management, including grazing animals, birds, beneficial insects or keystone species, such as earthworms

These 5 principles appear in the legislation that created the Healthy Soil Program.

Ways to think about the **soil health principles**

- The 5 soil health principles are **guiding principles** to help land managers improve soil health.
- The 5 soil health principles **can be tied to a variety of agricultural practices** designed to improve soil health.
- The 5 soil health principles **cover all land uses:** cropland, rangeland, pastureland and forest land.
- The 5 soil health principles are **scalable**, meaning they can benefit parcels of land whether large or small.

Soil health principle **No. 1: Keeping soil covered**

- **Soil cover protects the surface of the soil from**
  - Rainfall impact
  - Wind erosion
  - Temperature extremes

- **Soil cover can be achieved by**
  - Using cover crops during fallow periods on cropland
  - Implementing grazing systems that leave ample grass cover on rangeland
  - Mulching, residue management, and reduced tillage



Pictured: The soil in this field is covered in plant residue that remains after a cover crop was terminated. Corn was planted directly into that residue using a method called *strip tillage*.

Soil health principle **No. 2:** **Minimizing external inputs** and **cropland disturbance**



Image credit: USDA's Natural Resources Conservation Service (NRCS)

- Maintains soil aggregate stability
- Improves microbiology
- Reduces input costs (plowing, synthetic inputs)

- Can be achieved through
  - no-till farming
  - reduced chemical inputs on all land types

Soil health principle **No. 3: Maximizing biodiversity**

- **Biodiversity includes both above-ground and below-ground plants and animals**
  - Diversity in plant, animal, and microbial life leads to a more resilient landscape
- **Ways to achieve biodiversity**
  - Grazing management to improve plant composition on rangeland (cool-season/warm-season grasses, forbs, and shrubs in proper proportion)
  - Multispecies cover crops



Pictured: Austrian winter pea blooms alongside triticale and barley in a multi-species cover crop mix.

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Soil health principle **No. 4: Maintaining a living root**



- Year-round biological activity
- Living plants promote rainfall infiltration and improve soil structure
- **Methods of maintaining a living root**
  - Cover crops
  - Promoting plant diversification on rangeland

Pictured: NMSU's Extension Agronomist Dr. John Idowu shows off the impressive root of a daikon radish.

Soil health principle **No. 5:**
Integrating animals into land management

- Animals, large and small, recycle organic matter
- Livestock hoof action incorporates organic matter into the soil
- Earthworms create pore space and provide plant nutrients
- Pollinator species and beneficial insects provide many ecosystem services

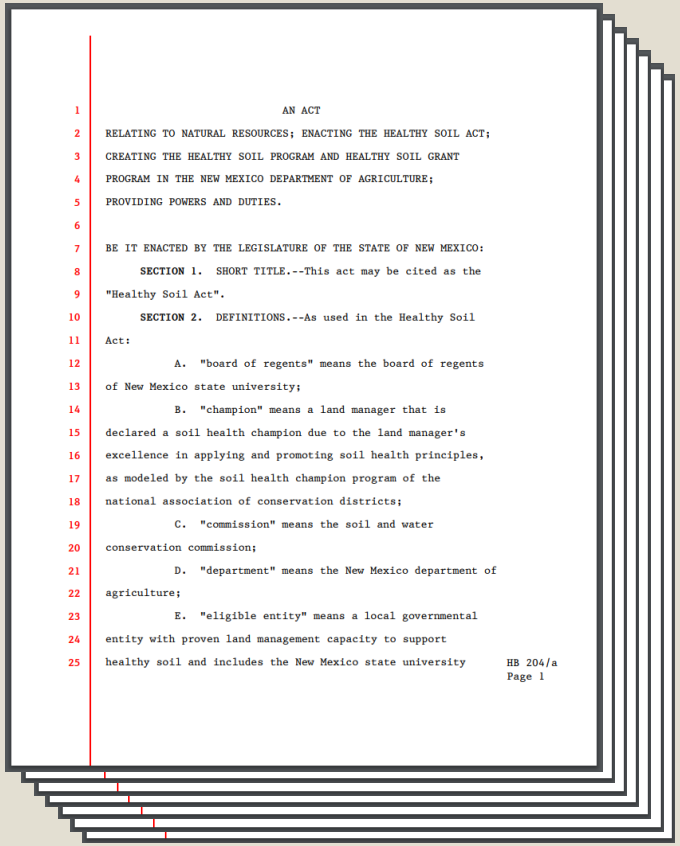


Image credits:
Toby & Kimberly Bostwick (cattle)
D'Llaynn Bruce (butterfly)

What is NMDA's Healthy Soil Program?

- Created in 2019 based on the Healthy Soil Act (House Bill 204)

- Program purpose:
  "to *promote and support farming and ranching systems and other forms of land management* that **increase soil organic matter, aggregate stability, microbiology and water retention** to improve the health, yield and profitability of the soils of the state."



AN ACT

RELATING TO NATURAL RESOURCES; ENACTING THE HEALTHY SOIL ACT; CREATING THE HEALTHY SOIL PROGRAM AND HEALTHY SOIL GRANT PROGRAM IN THE NEW MEXICO DEPARTMENT OF AGRICULTURE; PROVIDING POWERS AND DUTIES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

SECTION 1. SHORT TITLE.--This act may be cited as the "Healthy Soil Act".

SECTION 2. DEFINITIONS.--As used in the Healthy Soil Act:

A. "board of regents" means the board of regents of New Mexico state university;

B. "champion" means a land manager that is declared a soil health champion due to the land manager's excellence in applying and promoting soil health principles, as modeled by the soil health champion program of the national association of conservation districts;

C. "commission" means the soil and water conservation commission;

D. "department" means the New Mexico department of agriculture;

E. "eligible entity" means a local governmental entity with proven land management capacity to support healthy soil and includes the New Mexico state university

HB 204/a
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How the **grants** program works ***(Slide 1)***

- NMDA funds **on-the-ground projects that implement 1 or more of the 5 soil health principles** on land in New Mexico.

- Although **the grant period is less than one year,** NMDA's goal is to encourage practices that will **improve soil health over the long term**.

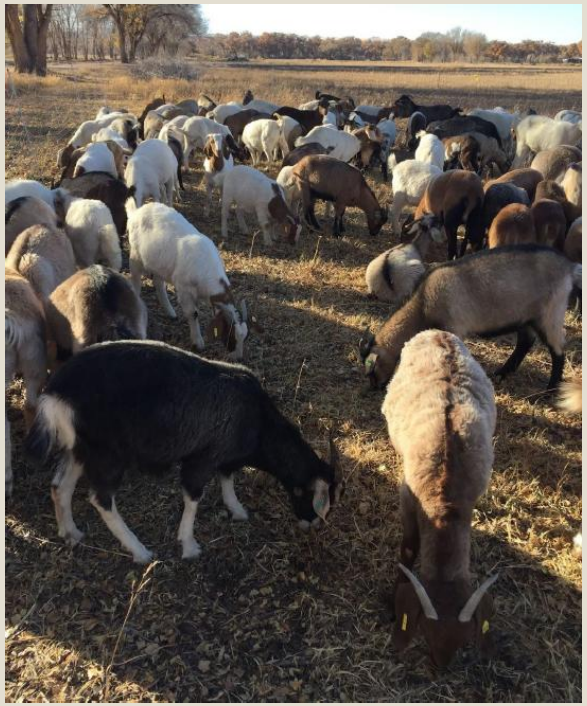
How the **grants** program works ***(Slide 2)***

- NMDA welcomes funding requests from **2 applicant types**:
  - **Eligible Entities**, which are defined in the Healthy Soil Act as *"local governmental [entities] with proven land management capacity to support healthy soil", including*:
    - Pueblos, tribes, and nations
    - Land grants
    - Acequias
    - Soil and water conservation districts (SWCDs)
    - NMSU's Cooperative Extension
  - **Individual Applicants**, which are individuals, businesses, and nonprofits engaged in farming, ranching, or another form of land management

A snapshot of **past and current projects**

- Cover cropping
- Compost application
- Biochar application
- No tillage / reduced tillage
- Livestock integration on cropland
- Pollinator habitat establishment
- Intensive grazing management
- Bale grazing to improve livestock distribution and increase organic matter
- Cover crops on rangeland
- Native grass seeding

One **Eligible Entity**'s grant-funded project



High-intensity, short-duration grazing treatment.

Image credit: CSWCD

Eligible Entity: The Ciudad Soil and Water Conservation District (SWCD)

Project title: Healthy Soil Principles at Candelaria Nature Preserve (CNP)

Project summary:
"CNP is converting traditional cash-crop farmland into wildlife crops and urban wildlife habitat. Ciudad SWCD will begin healing soil compaction, poor soil structure and infiltration, and lack of biodiversity using no-till drilled cover and pollinator crops, mulches, appropriate grazing, and native hedgerows on 35 acres."

Project partners: The city's Open Space Division and Rio Grande Return

Local interest and education:

- Mayor Keller visited to learn about SWCDs and conservation
- KOAT-TV filmed a story about using goats for weed control

NMDA's primary partners in **soil assessment** and **education**



- NMSU's Cooperative **Extension** Service
- USDA's Natural Resources Conservation Service (**NRCS**)
- The state's soil and water conservation districts (**SWCDs**), as well as other Eligible Entity types

Pictured: NMSU Extension Agronomist Dr. John Idowu shows equipment that measures soil compaction, as well as the rate at which water infiltrates the soil.

How others can play a role in NMDA's Healthy Soil Program

- **Subscribe to the HSP e-newsletter** and share with your networks
- **Apply for a grant if you manage land in New Mexico**
- **Partner with an Eligible Entity or an Individual Applicant** to help them meet the matching/in-kind contribution requirement (Not required in FY 25+)

Questions?



https://nmdeptag.nmsu.edu/healthy-soil-program.html

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