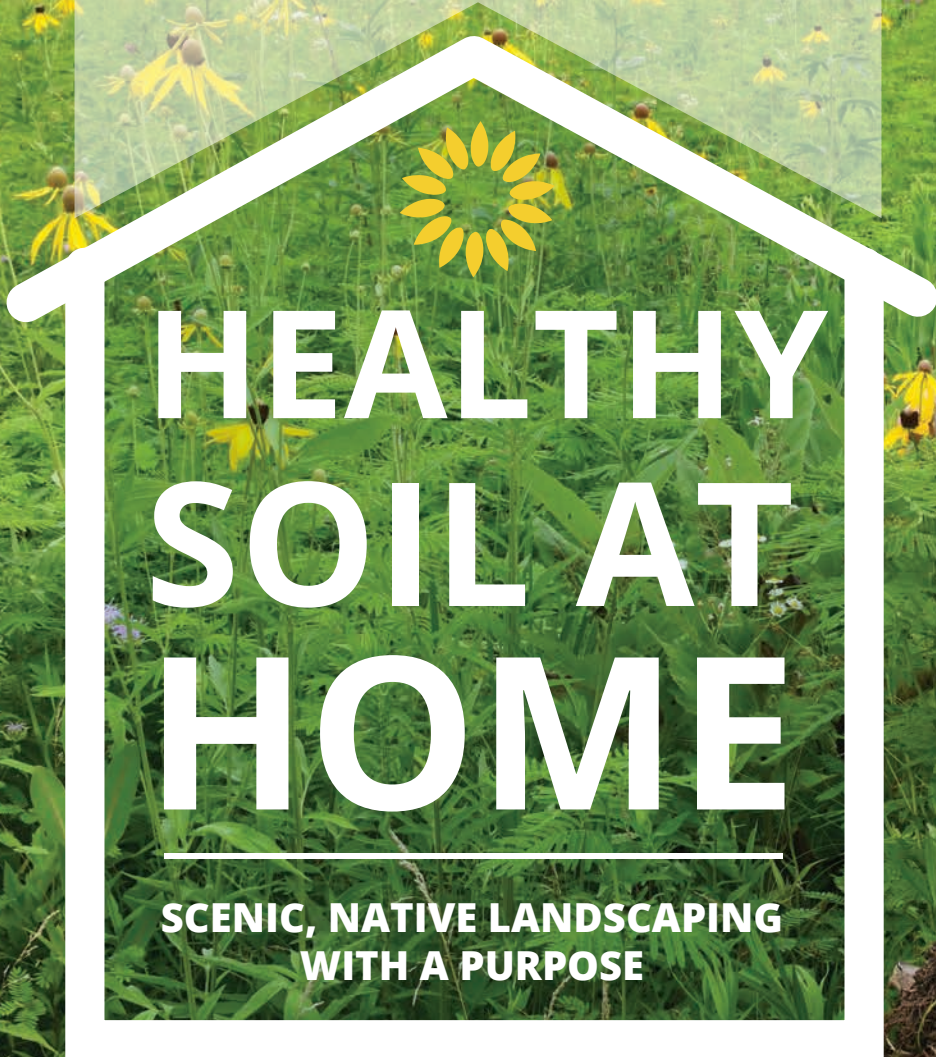




Natural Resources Conservation Service  
U.S. DEPARTMENT OF AGRICULTURE



# HEALTHY SOIL AT HOME

SCENIC, NATIVE LANDSCAPING  
WITH A PURPOSE

# Healthy Soil Makes Sense

While South Dakota's extreme weather can pose "growing" challenges in our yards, gardens, farms and ranches, nature has provided simple, practical solutions—most of which are rooted in our living soil.

You can help nature give yourself and everyone in South Dakota an earth-friendly assist by gardening and landscaping— as well as farming and ranching— using five key soil health principles that nurture, feed and protect the microbial life within our soil.

## At Home

By using these nature-mimicking principles, you'll improve the ecosystem in which trillions of soil health-improving microbes live. As the health of the soil improves, you'll be rewarded with resilient, productive soils and more drought-resistant landscapes.

---

### Soon, your soil will:

1. Absorb and hold more rainfall
  2. Cycle nutrients better
  3. Require fewer fertilizers and pesticides
  4. Need less water and maintenance
  5. Feature native plants in an attractive, environmentally friendly landscape.
- 

## On Farms and Ranches

As a guide to improving the health of your soil at home, we can look to leading-edge South Dakota farmers and ranchers who have pioneered the use of soil health principles and practices here.

Farmers are using practices including no-till planting, diverse crop rotations, multi-species cover crops, and livestock integration to regenerate healthy soils. You can use the same principles they follow for your garden.

Ranchers are rotating livestock through many paddocks or pastures with diverse grasses, forbs and legumes—matching livestock stocking rates to available forage and allowing long rests between grazing periods.

Like their farming peers, soil health-focused grazing practices allow ranchers to improve water infiltration and allow plant roots to better feed soil microbes—all of which build resilient, productive soils that result in greater biodiversity, healthier food, cleaner water, and many other benefits beyond the farm and ranch.



# Once You Know The Soil Is Alive



## Healthy soil is teeming with life.



...it makes sense to treat it that way!

In fact, there are more living organisms in a single teaspoon of healthy soil than there are people on the earth.

Those microbes underneath your feet need the same basics for life as all humans and animals--protection against the elements, food and water, and a safe place to grow and reproduce.

Who has the greatest impact on the abundance and diversity of those microbes? We do--through practices we use on our farms and ranches, and in our gardens and yards.

A single teaspoon of healthy soil may be home to as many as a billion bacteria, a few yards of fungal filaments, several thousand protozoa, and scores of nematodes.



## How we unknowingly create danger for our friends below...

Soil building nematodes, earth worms, microarthropods, bacteria, and fungi are our friends. Like all living creatures, they face the dangers that are part of the natural circle of life, like being eaten by other soil creatures. And they may face even bigger threats from our own farming and gardening practices.

From the perspective of tiny soil creatures, common farming and gardening practices can have a disastrous impact on their subterranean world. For example...



A HOE RUNNING THROUGH THE SOIL IS LIKE AN EARTHQUAKE THAT'S OFF THE RICHTER SCALE.



A BARE SOIL WITH NO PLANT COVER TO PROTECT IT IS LIKE A HOUSE WITHOUT A ROOF.



A THUNDERSTORM PELTING BARE SOIL IS LIKE A TSUNAMI AND HURRICANE COMBINED.



SOIL WITHOUT YEAR-ROUND ROOTS TO FEED MICROBES IS LIKE A MONTHS-LONG FAST.



SOIL WITHOUT CROPS IN ROTATION IS LIKE SERVING MICROBIAL MEALS OF BREAD AND WATER.

# Create Native, Scenic Landscapes With Purpose

## Regenerate your soil...

Whenever and wherever you can, improve your soil's health by following as many of these five key principles of soil health as you can:

1. Do not disturb the soil, with either tillage or chemicals.
2. Keep the soil surface covered.
3. Keep living roots growing throughout the year.
4. Plant a diverse selection of plants suited to your climate.
5. When possible, include grazing animals managed by sound grazing practices.

## ...in your yard

Seed native plants adapted to South Dakota—plants with deep roots, and a mixture of species build healthy soils most quickly.

## ...in your garden

Plant without tilling the entire garden area (use no-till or strip-till), rotate annual crops, put cover crops into the rotation, mulch, and interseed companion crops.

## ...across your acreage

Seed or encourage drought-resistant, native plant species and include forbs, grasses, and legumes for a wide mixture of plant species. Just as grazing buffalo herds helped develop some of the best soils in the world in prairies, you can improve soil on acreages with livestock grazing. Just be sure to Remember the R's: Rotate pastures; allow Rest and Recovery; stock with Rates that match what you can grow; and keep Roots growing in your soil through the year.



### DID YOU KNOW

that tillage kills soil microbes and reduces the long-term ability of soil to infiltrate water?



# Save on Water, Live Easier...

Native prairie grasses and wildflowers are excellent alternatives to traditional landscaping. Landscaping with native plants minimizes mowing, watering, fertilizing, and pesticide inputs. They are less expensive to maintain than turf, require minimal rainfall, and are attractive all year long. Reducing the amount of

turf—the highest water-user and most labor intensive component in a traditional landscape—will save time and money. Consider using a warm-season alternative turf grass, such as blue grama or buffalograss. These grasses are slower to green in the spring, quicker to go dormant in the fall, and require less mowing.

## CONSIDER THESE WATER SAVING TIPS

Planned prairie plantings with curved boundaries are attractive, and can reduce the amount of grass in a yard. There's no mowing or watering required on the portions of a yard planted to prairie.

1



Native wildflowers like purple coneflower can be part of strategically placed group plantings to fill a yard with color and provide for pollinators.

2



Consider water-efficient landscaping, using native plants with year-round beauty that are better adapted to local climatic and soil conditions.

3



# Produce Healthier, Homegrown Food

## The principles that create healthy soil produce healthy food, too.

Soil health experts maximize use of soil health principles in their own gardens and you can, too. Here's how:

1. Keep virtually all the soil covered with a combination of the previous year's cover crop residue, annual ryegrass and crimson clover strips, plastic, and green growing cover crops. Strips of annual ryegrass provide walkways through the vegetables, while they keep ground covered and plant roots growing in the soil.
2. You can reduce soil disturbance by digging a hole for each plant, rather than tilling the whole garden. Sweet corn can be planted through small holes cut in reusable plastic, to help ensure the ground is covered.
3. Keep live roots growing in the soil by devoting a fourth of the garden space to diverse cover crops, rotated to a different space each year. The diverse cover crops feed soil microbes that build soil aggregates, which boost the soil's ability to infiltrate and hold moisture. They also build soil organic matter, enriching the soil and helping it hold more water. Ground cover crop rotations suppress weeds and disease.
4. Keep a diverse mixture of plants growing in the garden, by rotating crops from year to year, and by planting a diverse cover crop mixture.

---

**THE RESULT: healthy food grown without commercial fertilizer or herbicides, and less watering.**

---

## PRO TIPS

THE SAME COVER CROPS FARMERS USE to build and enrich their soils can be used in a garden. If you have space for a large garden, consider planting a fourth of it using multiple species cover crops each year, rotating the space cover crops are planted. Plant vegetables using as little tillage as you can and use mulch to cover the soil. When you do, you'll reduce the need for water, and reduce or eliminate the need for fertilizer—all with better weed and disease control.



## CONSIDER THESE GARDENING TIPS

1

### Easy No-till

An easy way to start a small garden without tilling is to place cardboard on grass, wet it, and spread compost on top. Cut holes for plants like tomatoes, or simply seed companion crops like carrots--or border flowers like marigolds-- in the compost. Adding mulch will lower temperatures, hold the cardboard in place, and retain and even out moisture. The cardboard will decompose in a few months as it's consumed by soil microbes.



2



### Companion crops keep diverse roots growing


Plant companion crops near primary fruits and vegetables. Planting carrots and marigolds alongside tomatoes, for example, improves water infiltration, builds greater soil microbial activity and diversity—and discourages pests and disease.

### Dig a hole and mulch

Rather than tilling the whole garden, dig a hole just big enough to transplant a tomato or other vegetable. Then add mulch. This minimizes disturbance to soil microbial habitat and keeps the soil covered—two of the five key principles of improving soil health.

3



 **DID YOU KNOW**  
that healthy soils with earthworms drain up to 10 times faster than soils without earthworms?

7

# Blend Your Home into a Natural Setting

## Use native plants for more color, diversity, and resilience

To the casual observer, a prairie grass and wildflower landscape may be regarded as an unkempt lawn. But, you can easily—and tastefully—blend prairie landscape features into a traditional neighborhood while improving soil health, increasing biodiversity and saving water. Here are some helpful hints:

**Keep it simple.** Use a short-statured mix of cool- and warm-season prairie grasses and a few selective species of wildflowers to keep the design simple and pleasing to the eye.

**Mow with curves.** Provide naturalistic curves to the outside edge of the prairie landscape with mowed strips or visible edging.

**Plant beautiful borders.** Think “thrillers, spillers and fillers.” Place taller plants (thrillers) near the back and decrease height toward the edge. Use “spillers” (smaller plants) at the edge and “fillers” (medium growing plants) in between. The width of a perennial border should be about one-third the height of the background.

**Accent with fall color.** Place plants with bright, fall colors strategically, as accent plants.

**Create eye-catching island beds.** As with planting borders, think “thrillers, spillers and fillers” for island beds. The most pleasing visual effect comes from a bed twice as wide as the tallest plant.

**Put them where they'll grow.** Place plants according to their needs for sun, water, and soil condition.

**Space plants correctly.** Space plants based on the size they will be when they reach maturity, matching plant size to available space.

**Group plants together.** Plant in groups of three, five, or seven, rather than scattering single plants here and there.

**Control weeds.** Residential prairie landscapes are not maintenance-free, but they require far less maintenance than conventional lawns.

Bonus: native plants attract pollinators that play an integral role in our food system.



**PRO TIPS**

Incorporate wildflower and native grass plantings as centers of interest with color and to reduce the amount of lawn mowing.





## A few rules for a greener thumb

- A minimum of 6 inches of topsoil is preferable for growing most plants.
- Don't mix topsoil with subsoil.
- Ripping or tilling severely compacted soils on new construction sites may be an option; incorporate organic matter into topsoil to avoid more compaction.
- Replant or mulch bare soil as soon as practical.
- Allow disturbed soils to settle before seeding. Most native grasses need a firm seedbed; your feet should not sink more than 1/4" to 3/8."
- Use commercial sources for native shrubs, trees and forbs—do not plant materials found "in the wild."
- Be safe: Before digging, trenching, or post driving, contact South Dakota One-Call 1-800-781-7474.

# Choose Native Plants

Plant the same native prairie plants that built the most productive soils in the world to get healthier soils that infiltrate rainfall and that are more drought resistant.

## Lawns

You can establish a manicured lawn look using improved varieties of native grasses such as grama and buffalograss. Once fully established, buffalograss is highly competitive with weeds. Native grasses tend to fend for themselves, with low-water and fertility requirements and low maintenance needs. These native grasses won't be green as long as cool season grasses like bluegrass because they grow most during the hot summer months.

## Erosion Control

Grasses that spread by rhizomes (below-ground modified stems), stolons (above-ground runners), or tillers (branches) are prime candidates to use to cover the ground for erosion control.

## Landscape Accents

Accent grasses include some of the same plants used in prairie plantings, but are individual plants or clusters. Many of the warm-season and tall-stature grasses are used because of their fall colors and attractive seedheads, with secondary advantages of providing wildlife food and cover. Bunchgrass varieties are ideal for accent plantings because they don't spread.



### DID YOU KNOW

A combination of natives can offer ground cover, habitat for pollinators, and drastically cut down on the need for mowing.

**PRO TIPS**

Choose perennials that will withstand harsh winters; look for the USDA plant hardiness zone for your area, and choose plants accordingly.

South Dakota Plant Hardiness Zones

3b	-30 to -35 °F	4a	-25 to -30 °F	4b	-20 to -25 °F	5a	-15 to -20 °F
----	---------------	----	---------------	----	---------------	----	---------------

Buffalograss is a native that takes less upkeep for your lawn than introduced species like bluegrass.

Indiangrass is very colorful in late summer, fall and winter and a good choice as an accent planting.





# RECOMMENDED GRASSES

## Lawns/Prairies

- western wheatgrass
- thickspike wheatgrass
- streambank wheatgrass
- green needlegrass
- sheep fescue
- blue grama
- buffalograss
- sideoats grama

## Landscape Accents

- big bluestem
- sand bluestem
- switchgrass
- Indiangrass
- prairie sandreed
- little bluestem
- sideoats grama
- blue grama
- prairie cordgrass
- Canada wildrye  
(be careful with pets)
- green needlegrass
- Indian ricegrass

### PRO TIPS

Blend a home into a natural setting by restoring surrounding land to native prairie or meadows. Recommended grasses and forbs include:



- 25% Big Bluestem
- 20% Indiangrass
- 20% Switchgrass
- 20% Sideoats Grama
- 15% Native Forbs  
2% Maximilian sunflower, 3% black eyed Susan, 5% purple coneflower, 3% wild bergamot, 2% butterfly milkweed



- 30% Switchgrass
- 10% Prairie Cordgrass
- 15% Western Wheatgrass
- 15% Bluejoint Reedgrass
- 10% Canada Wildrye
- 15% Native Forbs  
5% PlainsCoreopsis, 5% New England Aster, 5% Milkweed



- 40% Blue Grama
- 40% Sideoats Grama
- 15% Buffalograss
- 5% Purple Prairie Clover



- 25% Western Wheatgrass
- 20% Green Needlegrass
- 20% Little Bluestem
- 20% Sideoats Grama
- 15% Native Forbs  
5% Purple Prairie Clover, 2% Western Yarrow, 3% Purple Coneflower, 5% Milkweed

# Go Wild with Color

## Wildflowers put a palette of color, pollinators at your doorstep

Wildflowers vary greatly in size, shape, color, bloom season, and duration of bloom. Knowledge of these characteristics will help to choose and coordinate plantings that provide interesting color throughout the entire growing season. Some wildflowers require direct sunlight for 6-8 hours per day. As sunlight decreases, plant height and bloom size also decrease.



### RECOMENDED WILDFLOWERS

common yarrow  
leadplant  
columbine  
plains coreopsis  
white prairieclover  
purple prairieclover  
purple coneflower  
blanketflower  
prairie smoke  
Maximillian sunflower  
dotted gayfeather  
Lewis flax  
lupine  
bergamot/beebalm  
plains pricklypear  
beardtongue  
prairie coneflower  
black-eyed Susan  
cup plant  
smooth blue aster  
Culver's root  
soapweed yucca  
butterfly milkweed

# Pollinator Paradise

## Native plant species attract native pollinators

Almost 90 percent of the flowering plant species in the world rely on bees, butterflies, hummingbirds, and the rest of the more than 200,000 insect and animal pollinator species. Whether you have a limited area or several acres, prairie plantings with a mix of native species are excellent choices, because they attract native pollinators, offer nectar at different times of the year, and are resilient.



Milkweed is habitat for monarch butterflies.

### PRO TIPS

- Plant in clumps or as a prairie mix rather than single plants;
- Consider planting milkweeds to offer egg-laying habitat to monarch butterfly adults and food to monarch butterfly caterpillars after they hatch;
- Butterflies like sunny areas with protection from wind.

# Native Plants Long Used for Medicinals...



## Culturally significant native plants used for medicine and more

The historical use of culturally significant native plants is of interest to many Tribal peoples and to the general public. Many plants Native Americans used in South Dakota were also used by pioneers and early settlers. Often the plants had multiple uses; among the most important were medicines.

Here's a sampling of ten of those native plants and some of their uses, each showing the common name (CN) along with the name in native Lakota language (LL) and phonetic guide to its pronunciation:

**CN: Bergamot/Beebalm**  
**LL: Wahpe Wastemna**  
"wahk-PA Y wah-SHTA Y-manah"

Bergamot was one of the plants connected with the Sun Dance, the most important ceremony practiced by the Lakota and nearly all Plains Tribes.

**CN: Bitterroot**  
**LL: Hohwa**  
"Hoh-WAH"

One of the most popular Lakota Sioux Indian medicines, bitterroot was used as a remedy for sore throats, toothaches, and coughs.

**CN: Prairie turnip/Breadroot**  
**LL: Tinsila**  
"TEEN-psee-lah"

A favorite food of the Lakota, this tuberous root was widely used throughout the Plains. Almost pure

starch, the root was peeled and eaten raw or cooked in soups and stew. Roots were dried for winter use, and pounded and added to other foods.

**CN: Purple Coneflower**  
**LL: Echinacea icahe Hu**  
"ee-CHAH-pay HOO"

Coneflower was universally used as an antidote for snake bite and other venomous bites and stings; smoke treatment for headache; distemper in horses; and to reduce enlarged glands, as in mumps. Roots were chewed or rubbed on teeth for toothaches, and used to cure tonsillitis. Burns were bathed with the juice to give relief from the pain, and the plant was used in the steam bath to render the great heat endurable.

**CN: Red Cedar/Juniper**  
**LL: Hante**  
"han-TAY"

The fruits and leaves were boiled together and the decoction was used internally for coughs, and given to horses as a remedy for coughs. For a cold in the head twigs were burned and the smoke inhaled.

**CN: Red Osier Dogwood**  
**LL: Can Sasa**  
"chahn SHAH SHAH"

Considered a very sacred plant, the inner bark was mixed with tobacco for smoking the sacred pipe.

**CN: Rose**  
**LL: Onjinjintka Hu**  
"unh ZHEE Zintka hoo"

Petals were used for a tea and also to make jam. Roots were boiled for a stronger tea. Dried rose hips were added to soups and stew or eaten alone.

Plants including bergamot were used by Lakota tribes in important ceremonies.

**CN: Sage**  
**LL: Pejihota**  
"pay-JEE-HOH-tah"

A decoction of the plant was taken for stomach troubles and many other kinds of ailments. It was used also for bathing, and burned to exorcise evil influences or benevolent powers.

**CN: Sweet Grass (peji)**  
**LL: Wachanga**  
"(pay-JEE) wah-CHAHN-gah"

It was used for perfume and was burned as an incense in any ceremony or ritual to induce the presence of good influences or benevolent powers.

**CN: Yarrow**  
**LL: Taopi Pejuta**  
"tah-OH-pee pay-100-tah"

Yarrow has long been revered as one of the oldest medicinal plants in the world, recorded in oral histories of most Native American tribes. The flowers and leaves were used to treat insect bites, leaves were put in the outer ear to cure earaches and chewed for toothaches, and drunk as tea for headache, digestive distress, and fever.



Coneflower was used by Lakota Indians as a remedy for more ailments than any other plant. All parts of the plants were used for medicinal purposes.

# ...and Central to Native American Culture

## Native Americans hold a deep reverence for nature

Traditionally, native plants were integrated into every facet of daily living among Indigenous people: used for adornments, basketry, building materials, ceremonial events, clothing, cordage, cosmetics, dyes, foods, games, household utensils, medicines, musical instruments, poisons, tools, toys, transportation, and weapons.

The vegetation was the grocery store, the pharmacy, and the hardware shop, tailored by each cultural group into daily life. To this day, native plants are vitally important to Native Americans to continue their traditions of basketry, ceremonies, preparing traditional foods, and other customs.

Armed with collective wisdom about how to tend, judiciously harvest, and use native plants that evolved over thousands of years, Native Americans taught early settlers and pioneers the many uses of native plants.

Native American culture respects nature above all else, a concept intertwined with spirituality that has been noted throughout history and continues today.

Get more information from the USDA/NRCS publication ***Culturally Significant Plants***.



Pictured Right: Ethnobotanist Linda Black Elk continues Native American traditions by passing on the knowledge she's gained from Tribal elders about the ways Indigenous people use native plants for food, medicine, and materials. She teaches at United Tribes Technical College in Bismarck, North Dakota about such things as how edible rose hips (Pictured Left) and petals can also be used to make a tea to treat headaches, or a tonic for earaches.

# Add Trees and Shrubs for Diversity, Protection

Answering these questions will help you decide the location and spacing of trees and shrubs, as well as the species you choose to keep or plant.

1. How tall and fast will they grow?
2. Will they tolerate shade?
3. Will they offer food and/or cover to wildlife?
4. Do I want berries and fruit to eat?
5. What can I expect for fall leaf color?
6. Where should I place them?
7. Do I want protection from wind?
8. Do I want to control snow drifts?

Snow is an important consideration in landscaping. Windbreaks, yard trees, and shrubs will reduce snowblower work and fuel consumption if correctly placed. Spruce and juniper trees with low-level branches left intact provide maximum density and trap snow in the shortest, deepest drifts. Multiple tree rows increase density and shorten snow drifts. While providing diversity and shade, deciduous trees, with the lower branches removed, are least effective for trapping snow.



## RECOMMENDED TREES / SHRUBS

Trees	Shrubs
American basswood	silver buffaloberry
quaking aspen	chokeberry
paper birch	common chokecherry
boxelder	common cranberry
crabapple	highbush
hackberry	golden currant
downy hawthorn	redosier dogwood
ironwood	American hazel
Rocky Mtn. juniper	false indigo
bur oak	juneberry
ponderosa pine	common juniper
Black Hills spruce	American plum
Colorado blue spruce	raspberry
	prairie rose
	woods rose
<b>Groundcovers</b>	four-winged saltbush
spreading juniper	western sandcherry
snowberry	silverberry
	skunkbush sumac
<b>Vines</b>	smooth sumac
riverbank grape	nannyberry viburnum
woodbine	Bebbs willow
	sandbar willow
	yucca
	arrowwood
	black chokecherry



### DID YOU KNOW

up to 20,000 pounds of total living matter are in the top six inches of an acre of soil?

Birch is among the recommended native trees





# If You Love Wildlife...

## Plant what attracts, feeds and shelters them.

The types of plants used to provide food and cover will determine the wildlife species that are attracted to your outdoor areas. Wildlife needs vary, but here are a few plant selections, and planting tips that will attract more wildlife into your life.

1. Select native species that flower and bear fruit or seed at different times during the short Northern Plains growing season.
2. Plant a variety of species including grasses, flowering forbs, shrubs, and trees. Shrubs that hold their fruit can provide food well into the winter season.
3. Plant native forbs, which will attract butterflies and other pollinators.
4. Plant a variety of herbaceous and woody plant materials to provide a diversity of structure for wildlife cover. Depending on the species selected, these same plants can provide cover and food into fall and harsh winter weather.



Butterfly milkweed is a favorite of pollinators.

5. Plant in groups or clusters. Single plants of native grass, forbs, or shrubs will not provide the habitat needed for wildlife. Larger groups of shrubs, grass, or flowering forbs provide increased diversity, cover, and food in close proximity and structural heights attractive to wildlife.
6. Learn the food needs of the species you wish to attract and plant accordingly. Wildlife species require multiple cover types located close to food to avoid predation and exposure to harsh winter elements.
7. Planting native grasses and forbs will attract birds that nest on the ground and feed on small seeds and insects.
8. Planting a variety of trees and shrubs will attract bird species that nest in woody vegetation and need fruits or nuts as food sources. Cover must be close enough to food to provide safe access for wildlife.

Regardless of species, all wildlife need water to survive. Some species utilize dew on plants while other species need open water, so consider incorporating water features that will provide year-round watering opportunities for your wild visitors.



If you have more space, consider planting grasses and forbs that give food and cover to South Dakota's state bird, the ring-necked pheasant.

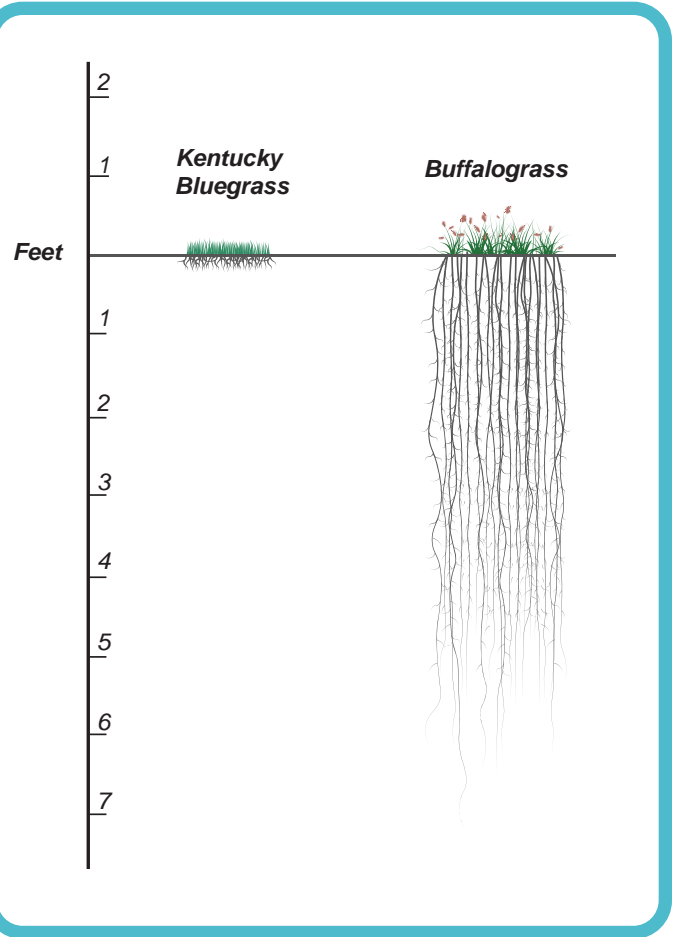
# If You Want Resilience...

## Reach for the plants whose roots grow down!

In a drought or even in dry times—and there are many in South Dakota—native plants outperform non-natives significantly. Why? Their root systems are adapted—they reach deep into the soil for moisture. If those natives are well managed, that is, not mowed or grazed close to the ground repeatedly over time, both plants and roots will recover from dry spells and thrive.

### PRO TIPS

Both cool and warm season native grasses and forbs grow in South Dakota. Warm season natives grow most in the hot summer months and are well adapted to dry weather.



Note the shallow root system of Kentucky Bluegrass on the left of this graphic compared to the extensive, deep root systems of native prairie plants. Even Buffalograss (on the right), which doesn't grow tall, has a root system that extends several feet deep into the soil compared to only a few inches on bluegrass. (Adapted from Conservation Research Institute illustration, 1995.)

# Growing Naturally Begins with Healthy Soil

## Feed soil life and it will feed you.

Nature has provided South Dakota's landscapes and wildlife with an unseen, symbiotic system to constantly feed and regenerate our soil, which in turn, feeds and regenerates all life above it. As our understanding of this remarkable resource has grown through science and research, we now better realize that if we work with this elegant system, instead of against it, we can better care for the soil microorganisms that feed and nurture us.

## Soil: The tie that bonds

Whether you own 10,000 acres of farmland or a small, suburban yard, you can grow *with* nature by using as many of the five principles of soil health as possible.

As the preceding pages have outlined, planting and growing native plants in our native soil has many benefits for us all—including enhancing this all-important soil microbiome.

To learn more about soil health and growing in nature's image, visit the websites of the South Dakota conservation partner organizations listed on the back cover of this publication.

As you learn more, we're confident you'll be amazed by, and further appreciate the value of, our living and life-giving soil.



### DID YOU KNOW

that as many as 1.4 million earthworms can be found in an acre of healthy soil?



Soil health-focused farmers and ranchers are breathing new life into South Dakota's soil and our future by farming and ranching in ways that enable this natural system as they grow our food. In the process, they're providing clean water, clean air, improved resilience and increased biodiversity for all of us.



Visit our website at [www.WhereGoodThingsGrow.org](http://www.WhereGoodThingsGrow.org) to learn more about South Dakota's living and life-giving soil and the people who are working to grow healthier soil, food, farms, ranches and futures--for all of us.



This publication was produced as part of a conservation collaborative grant from the USDA Natural Resources Conservation Service to the South Dakota Association of Conservation Districts. Key partners helping to promote and distribute it include the South Dakota Soil Health Coalition and the South Dakota Grassland Coalition.

USDA is an Equal Opportunity Provider, Employer and Lender