

Project Name: Valley Natural Foods Interpretive Gardens

Location: Burnsville, MN

Category: Communications

Abstract:

The Valley Natural Foods Interpretive Gardens provide a platform for discussing the stewardship of our soil quality and methods for increasing our pollinator population. The space is designed around two interpretive gardens that highlight the multivariate benefits of Minnesota's native prairie species on agricultural productivity. Educational signage provides analysis of land-use changes, a mapping of productivity shifts, species profiles, and calls to attention the symbiotic relationship between pollinators and plants. Utilizing a limited budget, the Landscape Architect designed and constructed the landscape with a simple and cohesive palette of materials: cedar (renewable), stone (local), HDPE (recycled), and boulders (re-purposed).

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Narrative:

There is something wonderfully democratic about food; everyone must eat! Gathering around the table for a meal reminds us of the importance of our food systems and our responsibility to maintaining those systems for future generations. At a time when we have all become uniquely isolated, understanding the food chain negates the notion that we are autonomous individuals and highlights our interdependence. Not only are we reliant on an extensive worldwide network of farmers, grocers, growers, chefs, bakers, abattoirs, food scientists, vets, and bus drivers to feed us several times a day, we are even more dependent on healthy soils, bees, rainfall, worms, sunshine, and the rest of the biosphere to keep our food systems humming.

In the summer of 2019, we (the Landscape Architect) were engaged by the non-profit Valley Natural Foods (VNF) to design and construct an outdoor classroom as an extension of their educational programming and community outreach efforts. The Co-op's mission is *to work in partnership with the South Metro community to support health and well-being through education and expertise in local, sustainable food and wellness services*. The project was particularly challenging since the entire budget for design and installation was \$60k and the only space available for renovation was the side of an oversized stormwater pond. Over the course of four months we worked with VNF to design/build a narrative space for education, conversation, events, and casual dining, built around the idea that informational signage and their associated gardens could promote awareness of our world's interconnected food systems. Two primary avenues for education were selected: pollination and soil health.

Pollinators are almost as essential as soil, water, and sunlight to the reproduction of more than 76% of the planet's flowering species. This ecosystem service is estimated to be worth \$19 billion in just the United States. A central component to the VNF project is a series of infographics along the patio's long bar that outline this pollinator narrative. Additionally, the graphics highlight the rationale for species

selection in a series of pollinator garden plots. The six plots are organized to bloom throughout the season and present specific physical traits such as smell, shape, and color that attract and nourish the region's diversity of pollinators. The featured pairings include: Sky Blue Aster for Soldier Beetles, Nodding Onion for Hover Flies, Prairie Phlox for Monarchs, Butterfly Milkweed for Hummingbirds, Prairie Clover for Hummingbird Moths, and Heart Leaved Alexander for Bumblebees. Without these interdependent species our environment would look very different; the signage explains stressors for pollinators and highlights how citizens might support their reemergence. In 2021 the Co-op will install honey producing hives on their rooftop and the pollinator plots will provide a visible connection to this feature, highlighting the organization's commitment to action in addition to education.

While the flowers of our prairies supply habitat and nourishment for our pollinators, the roots of their myriad species have provided the basis for Minnesota's fertile agricultural fields. Surrounded by agriculture, VNF is set within Dakota County, where farms account for 60% of its land-use and produce \$235M of market goods; 90% of that land is dedicated to crops but only 10% utilizes no till methods. The precious resource of soil has been severely impacted by our society's increased need for agricultural commodities, stimulating the conversion of grasslands and forests to pastures and irrigated fields. The transition of natural vegetation to agriculture often undermines soil integrity for a variety of reasons and many of these plants, such as soybean and wheat, can actually increase soil erosion beyond the soil's ability to maintain itself. This narrative on soil health is incorporated into VNF's educational classes and illustrated on the VNF patio through a series of diagrams that outline shifts in agricultural practices over the last 300 years and their relative effect on topsoil depth. A series of species panels provide a physical representation of the root depths of native prairie species. They illustrate why our topsoil was once several feet deep, built up over time by the rich biodiversity of our prairies. Replacing our topsoil is not a viable option, thus its maintenance is essential for the productivity of our lands and livelihood of our farmers.

We believe that this project effectively and efficiently utilized a meager budget to transform a forgotten space into a meaningful interpretive garden. Working collaboratively with the client, our team provided a platform for their educational goals and furthered their mission: *to support health and well-being through education and expertise in local, sustainable food.*



The Community:

The project's client, Valley Natural Foods, is a major hub for community gathering. The non-profit Co-op is much more than another grocery store; their property features a large community garden and indoor classrooms that they utilize for a regular schedule of educational classes and outreach activities.

(Previous condition in bottom-left)

“The soil is the great connector of lives, the source and destination of all. It is the healer and restorer and resurrector, by which disease passes into health, age into youth, death into life. Without proper care for it we can have no community, because without proper care for it we can have no life.”

- Wendell Berry, *The Unsettling of America: Culture and Agriculture*, 1977

Create an interpretative garden that highlights the essential connection between our ecosystem and regional food production.

- Increased purchasing from farmers that utilize sustainable methods such as no-till agriculture
- Increased pollinator population
- Increased production of organic foods
- Improved biodiversity within the region



- Cost-effective and efficient design
- Tactile and provocative displays
- Design that has a direct connection to the gardens
- Design that directly relates to Co-op curriculum
- Utilize space adjacent to stormwater pond
- Address past, present, and future

- Improves soil health and invites pollinators within the garden
- Provides platform for discussion of food systems
- Increases awareness of soil and pollinator issues
- Empowers community members to incorporate methods into their own personal gardens

Project Mission:

Building upon the existing structure of the Co-op's outreach work, Landscape Architect collaborated with the client to establish a clear mission and goals for the project. The above quote and framework were utilized in design development and became the road-map for decision making throughout the project.



01 Signage:
Soil Health

01 Signage:
Pollinators & Plants

**Prairie
Garden**

Pollinator Plots

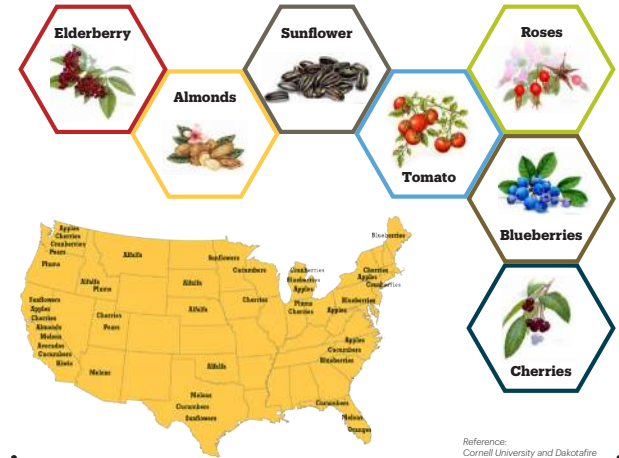
Educational Gardens:

The new signage corresponds to adjacent gardens. The pollinator infographics are placed above the plots, introducing the myriad of pollinator species and their complex relationship with our food systems. The soil health signage is arranged so you can see "through it" and on towards the prairie garden in the distance.



What Needs Pollination?

Pollinators are nearly as important as sunlight, soil and water to the reproductive success of over 75% of the world's flowering plants. They are crucial to the production of most fruits, nuts, and berries on which people and wildlife depend. Over 150 food crops in the United States depend on pollinators, this pollination is estimated to be worth \$19 billion.



Reference:
Cornell University and Dakotafire

How You Can Help...

You can help pollinators by creating habitat, reducing pesticide use, assisting with pollinator research, educating others about pollinators, and taking community action.

- Plant a variety of flowers, especially those that are native to your area.
- Keep your garden blooming all season long; choose plants that provide pollen and nectar in the spring, summer, and fall.
- Provide nesting sites by leaving dead branches and logs to remain, leaving bare earth for ground-nesting insects, or installing bee nesting blocks.
- Reduce the use of pesticides.
- Become an apiarist or citizen scientist to help researchers collect data about pollinators and their habitat.
- Tell your friends and family about pollinators and inspire them to take action!



“Cherish the natural world because you’re a part of it and you depend on it”

- Sir David Attenborough

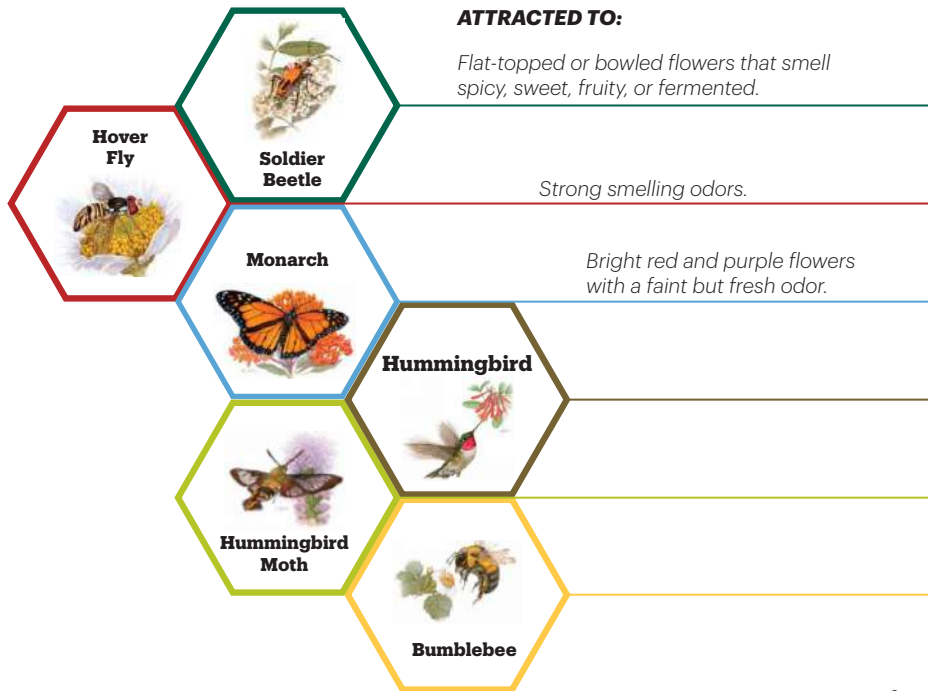
Reference:
U.S. Fish & Wildlife Service
MN Department of Natural Resources

“What Needs Pollination?” & “How You Can Help”:

The first diagram illustrates the relationship between the crops we eat and the pollinators that enable them. The second diagram highlights the stressors on pollinator species and provides the reader actionable information to increase habitat or change practices that affect species health.

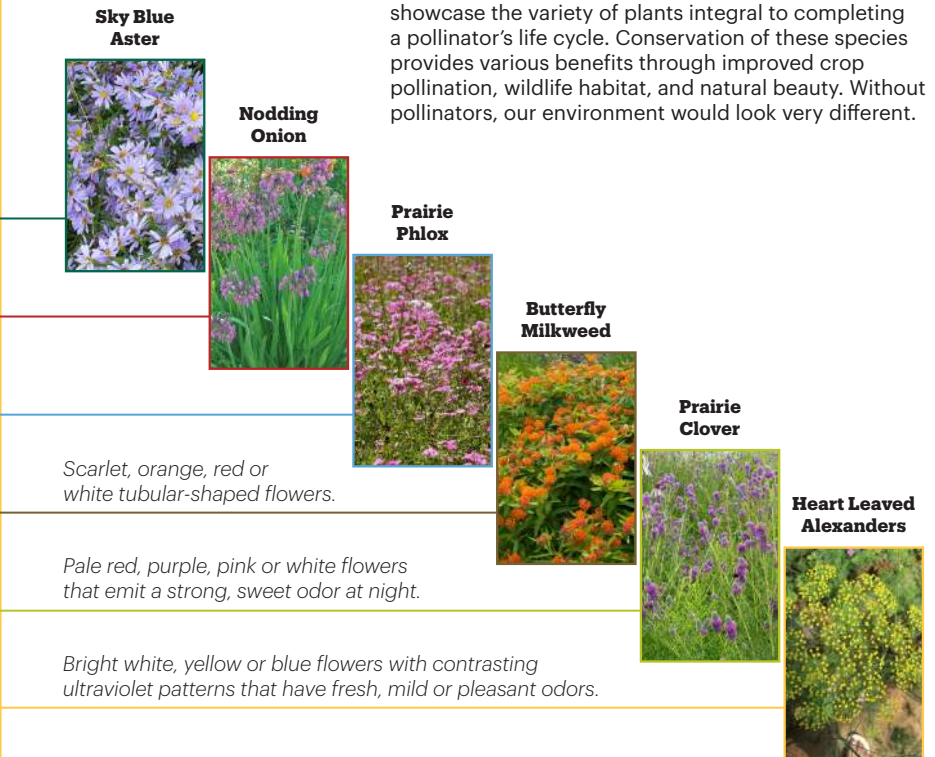
The Pollinators

There are thousands of pollinator species in Minnesota, including over 400 species of native bees. Our pollinators face challenges on many fronts, they have experienced declines due to multiple stressors such as habitat loss and fragmentation, loss of floral resources, non-target impacts of pesticides, climate change, diseases, and parasites.



The Garden

Our pollinator garden features six native species that showcase the variety of plants integral to completing a pollinator's life cycle. Conservation of these species provides various benefits through improved crop pollination, wildlife habitat, and natural beauty. Without pollinators, our environment would look very different.



“The Pollinators” & “The Garden”:

These two diagrams illustrate the vital connections between pollinators and prairie habitat. The development of hundreds of pollinator species are intricately connected to the life-cycle stages of prairie plants. Greater plant diversity directly impacts pollinator diversity.



APRIL MAY JUNE JULY AUG SEPT OCT NOV

The Garden

Skyblue Aster *Symphyotrichum oolentangiense*

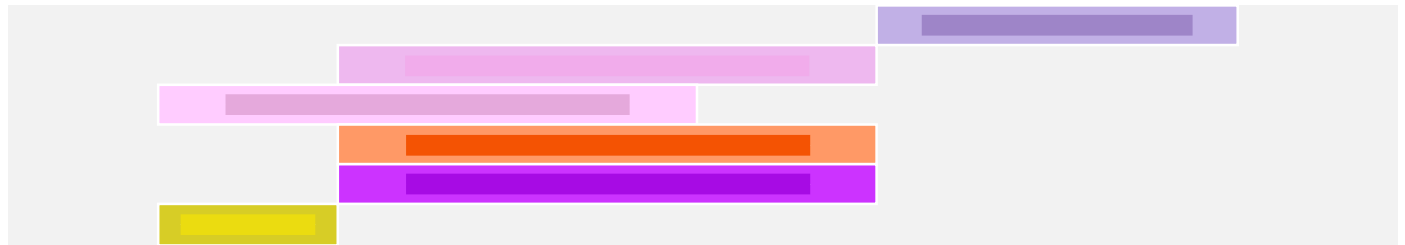
Nodding Onion *Allium cernuum*

Prairie Phlox *Phlox pilosa*

Butterfly Weed *Asclepias tuberosa*

Prairie Clover *Dalea purpurea*

Heart Leaved Alexanders *Zizia aptera*



HEIGHT (FEET)

- 3
- 2.75
- 2.5
- 2.25
- 2
- 1.75
- 1.5
- 1.25
- 1
- 0.75
- 0.5



Bloom Diagram:

This chart illustrates how the garden plots create a healthy habitat for pollinators throughout the entire growing season. The featured photos were taken by Co-op staff and show how the variety of plant species create continuous foraging opportunities for onsite pollinators.



Gathering:
The signage is intentionally posted above the long table, where co-op customers will have time to pause and read while they enjoy local fare from the grocery.

The importance of soil health

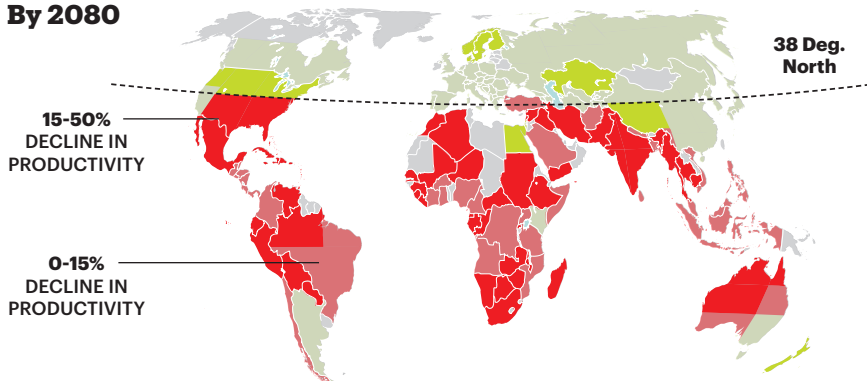
1/2 OF THE WORLD'S TOPSOIL HAS BEEN LOST IN 150 YEARS

Soil anchors all life on Earth, it is comprised of countless species that create a dynamic and complex ecosystem and is among the most precious resources to humans. Increased demand for agriculture commodities generates incentives to convert forests and grasslands to farm fields and pastures. The transition to agriculture from natural vegetation often cannot hold onto the soil and many of these plants, such as soybean, cotton, coffee, and wheat, can actually increase soil erosion beyond the soil's ability to maintain itself.

Our topsoil was once several feet deep, built up over time by the rich biodiversity of our native prairies. There is no replacing our topsoil, its maintenance is essential for the livelihood of our farmers and productivity of our lands. Soil quality is affected by many aspects of agriculture: compaction, loss of soil structure, nutrient degradation, and soil salinity are all very real concerns.

The effects of soil erosion go beyond the loss of fertile land, it has led to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in fish and other species. Degraded lands are also less able to absorb and hold water, which can worsen flooding. While there are many challenges, sustainable land use can help to reduce these negative impacts and maintain the fragile resource of healthy soil.

By 2080

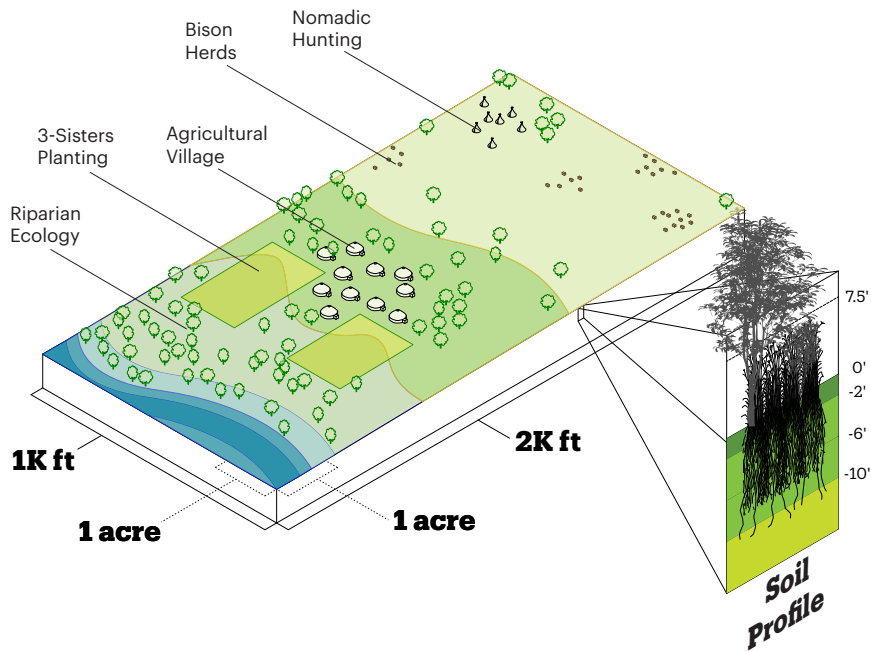


Soil Health:

This sign discusses the vital function that soil health provides in agricultural productivity. The map highlights expected decline in productivity by 2080 if we do not alter our current practices. The photo shows how the green panels modulate their length to correspond with the root depth of their featured plant species.

Our Land

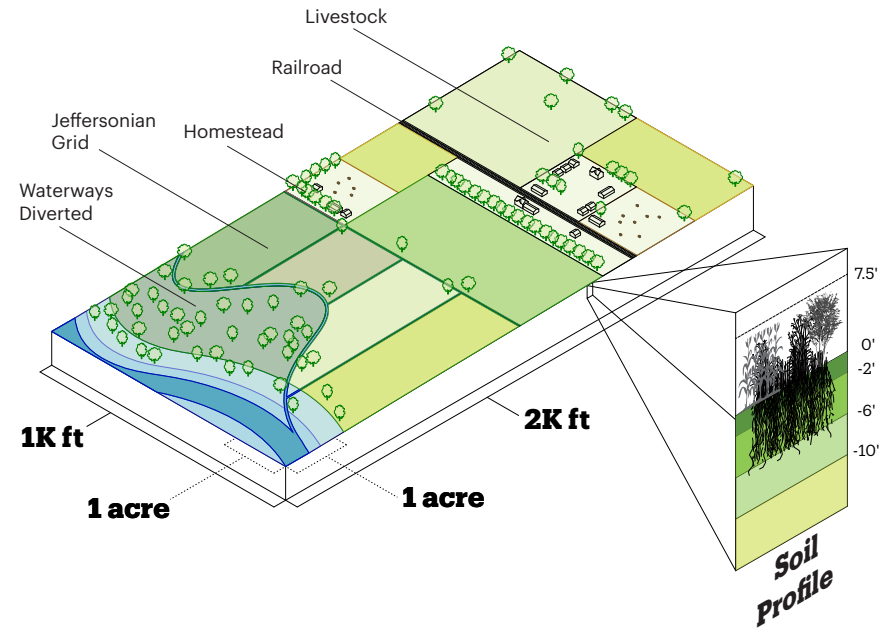
1700



- People's effect on the land was extremely minimal.
- Three sisters planting was employed, this holistic method utilized complementary species (winter squash, maize, & climbing beans).
- Herds of Bison contributed to the maintenance of prairie ecology, their population was balanced.
- Waterways were undisturbed or altered.
- Topsoil exceeded 2 feet in most areas.

Our Land

1900



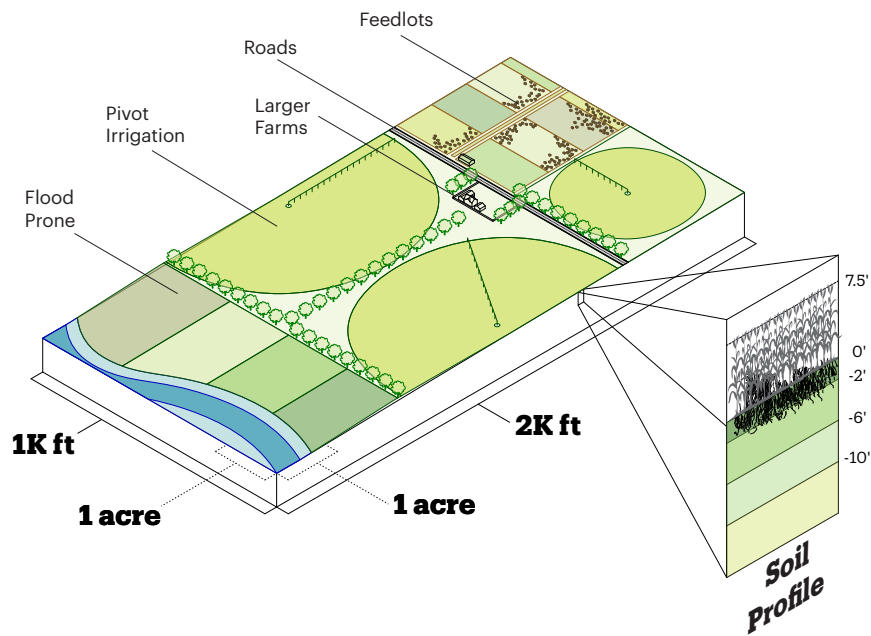
- People begin large-scale manipulation of their landscapes.
- Agriculture still includes a great deal of diversity, cultivated species replace native varieties.
- The bison are eradicated, livestock & farm fields replace the native prairie.
- The railroad & ownership create unnatural land divisions.
- Topsoil depletion begins due to clearing & erosion.

Our Land-Use Changes:

These diagrams spatially depict the evolution of human land management with regards to agriculture and animal husbandry. Callouts illustrate the soil profile during each period and reveal its parallel decline.

Our Land

TODAY



- Native ecological systems only exist via conservation.
- Agriculture is largely mono-crops.
- Due to loss in soil nutrients, bio-engineered crops receive increasingly amounts of fertilization.
- Irrigation systems modify flow of waterways, while native vegetation loss increases occurrence of erosion.
- Topsoil has depleted to 6 inches in many areas.

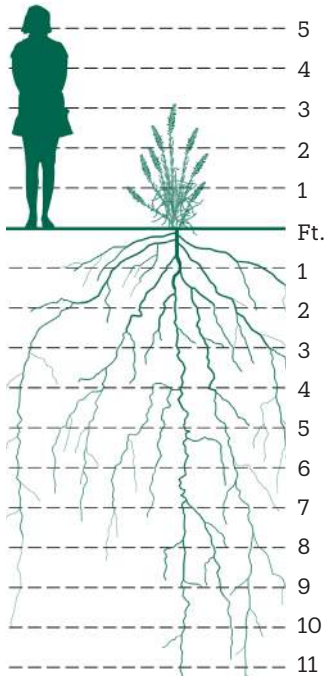


Today:

The present day diagram of agriculture depicts the dramatic changes that have occurred over the last 300 years. The site photo illustrates how the signage is harmonious with the overall site design, echoing the same details and materials as the walls and benches.

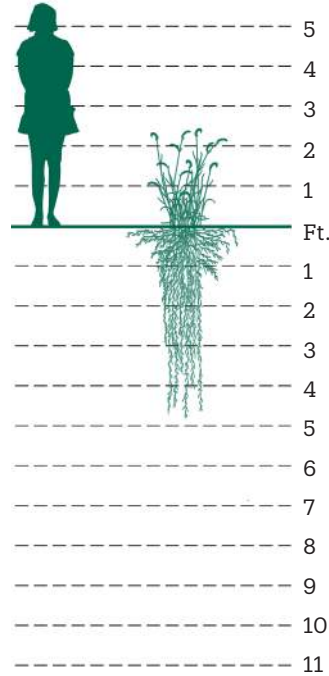
Liatrix spicata

BLAZING STAR



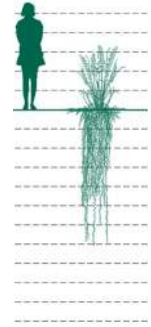
Bouteloua gracilis

BLUE GRAMA



Bouteloua curtipendula

SIDEOATS GRAMA



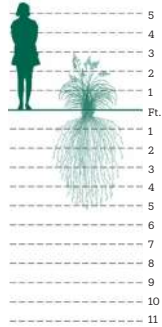
Schizachyrium scoparium

LITTLE BLUESTEM



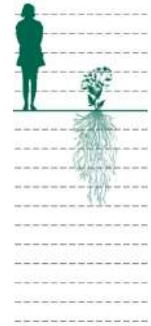
Sporobolus heterolepis

PRAIRIE DROPSEED



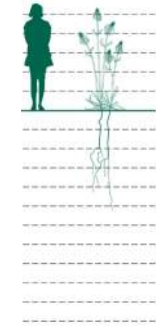
Rudbeckia hirta

BLACK-EYED SUSAN



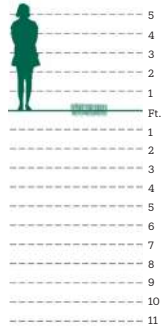
Echinacea purpurea

PURPLE CONEFLOWER



Poa pratensis

KENTUCKY BLUEGRASS



Plant Bios:

Eight species diagrams illustrate plant height and root depth. These were installed on panels of recycled HDPE cut to match the root depth of the associated plants. The physical representation of root depth highlights the massive amount of organic material that Minnesota's historic prairies contributed to create our fertile topsoil.



The Prairie:

Visitors can look past the educational display towards a prairie planting of the same species. The use of green ties together VNF's brand and overall environmental concepts bringing a freshness and ecological focus. The photographs are of onsite prairie species provided by Co-op staff.



Site View:

The Co-op's mission is furthered within the new interpretive gardens. The Landscape Architect designed and constructed the entire landscape within the client's budget by utilizing a simple palette of crushed local stone, cedar-wood, re-purposed boulders and steps, and recycled HDPE.



Gathering:
 The gardens are merely prompts for conversation; it is the hard work of VNF that will further the dialogue around pollinators and soil health. After opening in the summer of 2019 the gardens were immediately embraced by the community and we look forward to all revisiting them, together, in 2021.