Native & Drought Tolerant Pollinator Plants

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Learning Garden Lead

Why Native Plants?

- Utah’s diversity of landscapes host unique ecosystems
- Native plants support local pollinators
- Decline of native plant habitat
- Native plants use less water (most do, not all) and nutrient input compared to traditional landscapes

Benefits of Native Plants

- Provide essential habitat for native pollinators
- Adapted to regional climates
- Adapted to native soils
- Often require less water – Once Established
- Help mitigate flooding and erosion
- Promote biodiversity
- Food and habitat for wildlife
- Carbon sequestration
- Do not require fertilizer
- Diverse, unique, and aesthetically pleasing

Basics of Pollinators

- **Who are Pollinators?**
  - Bees
  - Butterflies
  - Moths
  - Birds
  - Beetles
  - Bats
  - Wasps
- **Threats to Pollinators**
  - Habitat loss
  - Climate change
  - Pesticides
  - pathogens
- **What would we lose without Pollinators?**
  - Around 80% of flowering plants
  - 30% of the food we eat
  - About 50% of the world’s oils, fibers, and materials

Fun Facts, just becuase

- Arthropods is the largest phylum under the Animal Kingdom – 86%
- Insects comprise of 75% of the Animal Kingdom
- There are over 400 species of Lady Beetles
- Ants make up 20% of the total terrestrial animal biomass
- Insects have been on earth over 350 million years – roughly 300,000 years longer than humans
- It takes roughly 10 million trips for honeybees to produce just one pound of honey

Common Types of Native Bees in Utah

- **Bumble Bees (*Bombus* spp.):** Large, fuzzy social bees with annual colonies. Nineteen species are documented in Utah.
- **Sweat Bees (Halictidae):** A diverse family that includes metallic green bees (*Agapostemon*) and others that are attracted to salt on human skin.
- **Leafcutter Bees (*Megachile* spp.):** These bees cut neat, circular pieces from leaves to line their nest cavities.
- **Mining Bees (*Andrena* spp.):** One of the most abundant groups in Utah, active mainly in the spring, which nest in the ground.
- **Mason Bees (*Osmia* spp.):** Often use pre-existing holes in wood or reeds to build nests, including the blue orchard bee, a vital pollinator for fruit trees.
- **Small Carpenter Bees (*Ceratina* spp.):** These bees nest in hollowed-out stems.
- **Squash Bees (*Peponapis pruinosa*):** Specialist pollinators that are often found in and around pumpkin patches

Leafcutter Bee

Mason Bee

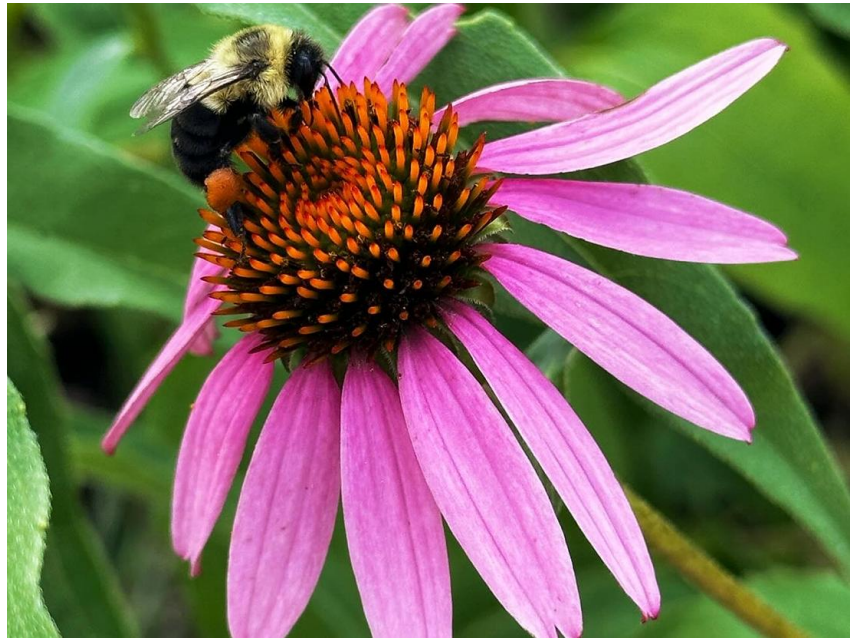
Sweat Bee

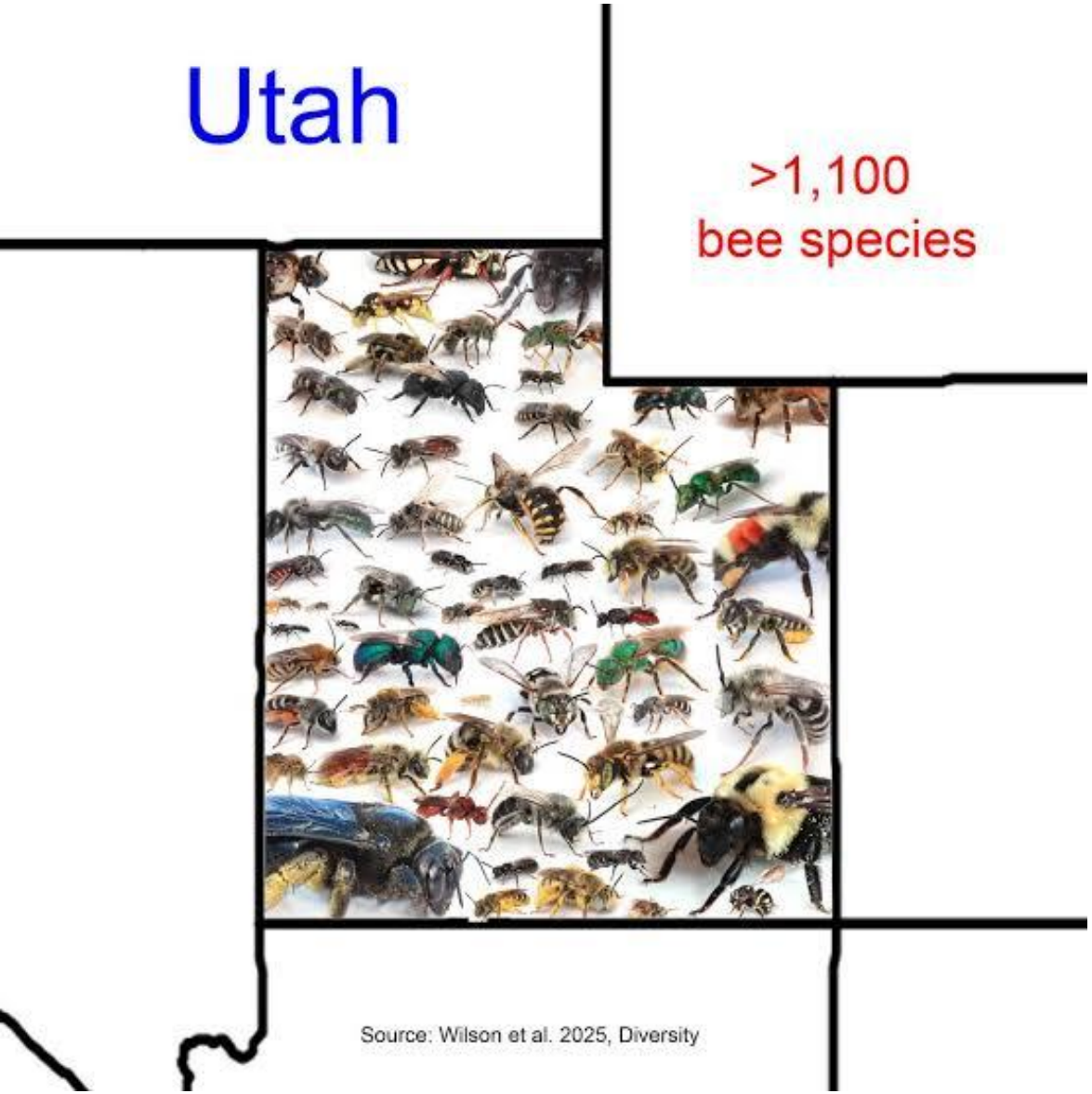
How can You Support Pollinators?

- Provide diverse flowering plants
  - Bloom times in spring, summer, and fall
- Plant other diverse vegetation for shelter, roosting, and perching for wildlife
  - Ornamental grasses, shrubs, & trees
- Minimize use of pesticides where possible (use as last resort)
  - Spot-spray
  - Selective pesticides
  - Organic pesticides
- Designate undisturbed areas for nesting
  - Some bare ground (ground nesting bees)
  - Wood and brush piles
  - Minimal mowing or increase mowing height in designated areas

Diversity

- Flower Type (nectaries)
- Flower Size
- Plant Size





Native Bees!

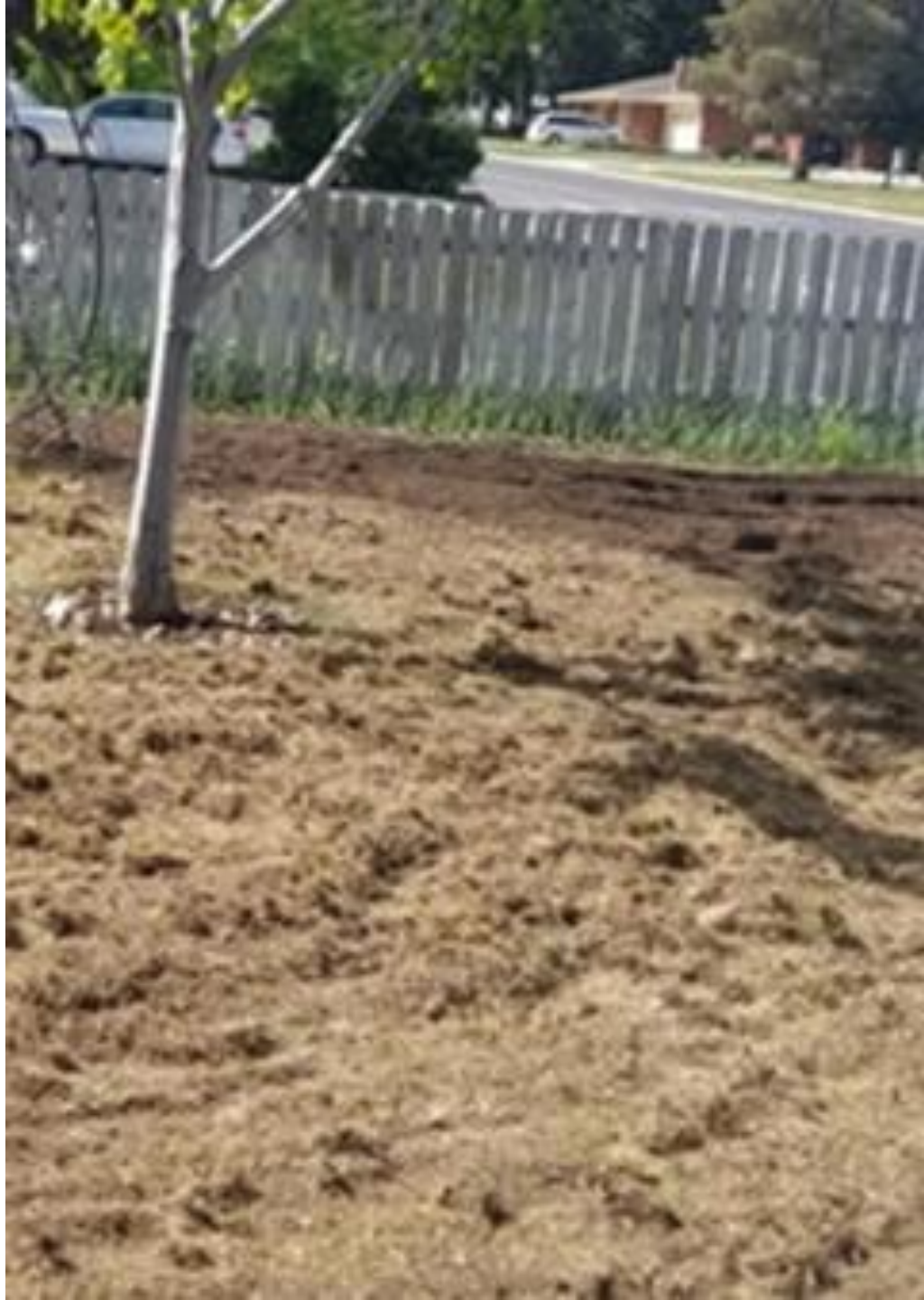
- More efficient pollinators than honeybees
- Utah represents 1/3 of the total native bee population in the US
- Nearly 1,100 species are native to Utah
- 90% are solitary
- 70% nest in the ground
- 20-45% are specialists species requiring native plant pollin
- Rarely sting
- Most don’t make honey

Site Preparation

Soil Type

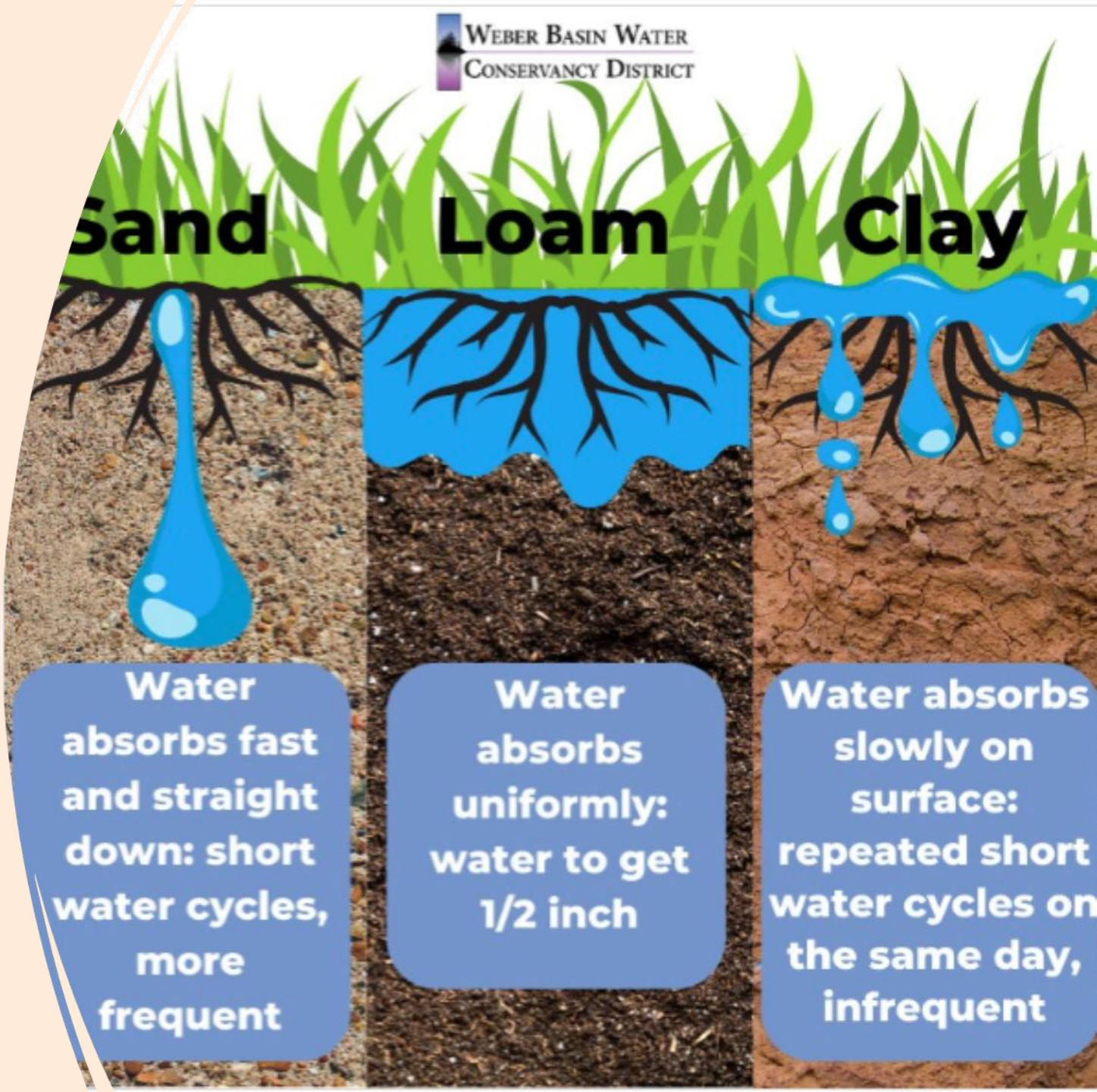
Sun Exposure

Water availability



Soil Texture

- % Sand, Silt, & Clay particles
- Determines water movement

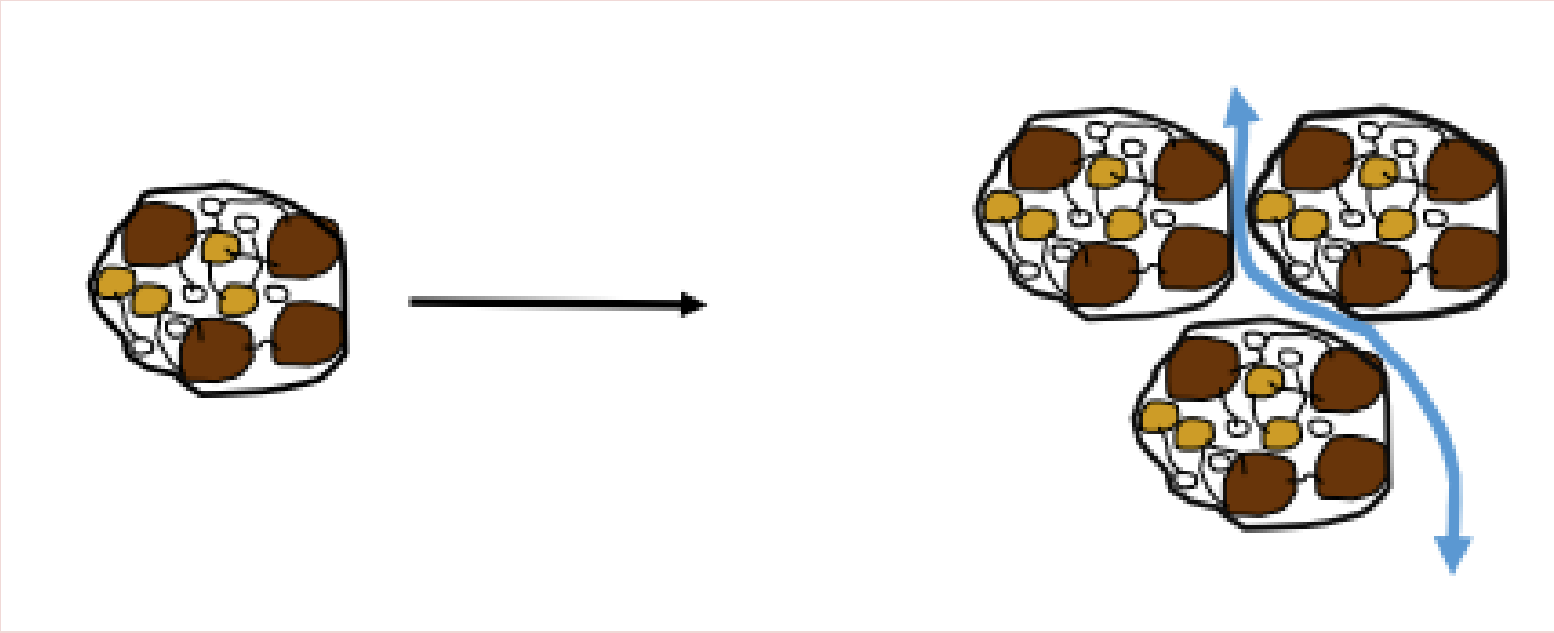


Soil Structure: When Particles Join Forces to Build Aggregates

How particles are grouped together into stable collections

Increase pore-space - nutrients, water, oxygen

Organic Matter (OM)



Many ways to find out your soil's texture

- By feel – Ribbon Test (google "soil texture feel")
- Using the jar method at home
- Submit a soil sample

www.usual.usu.edu

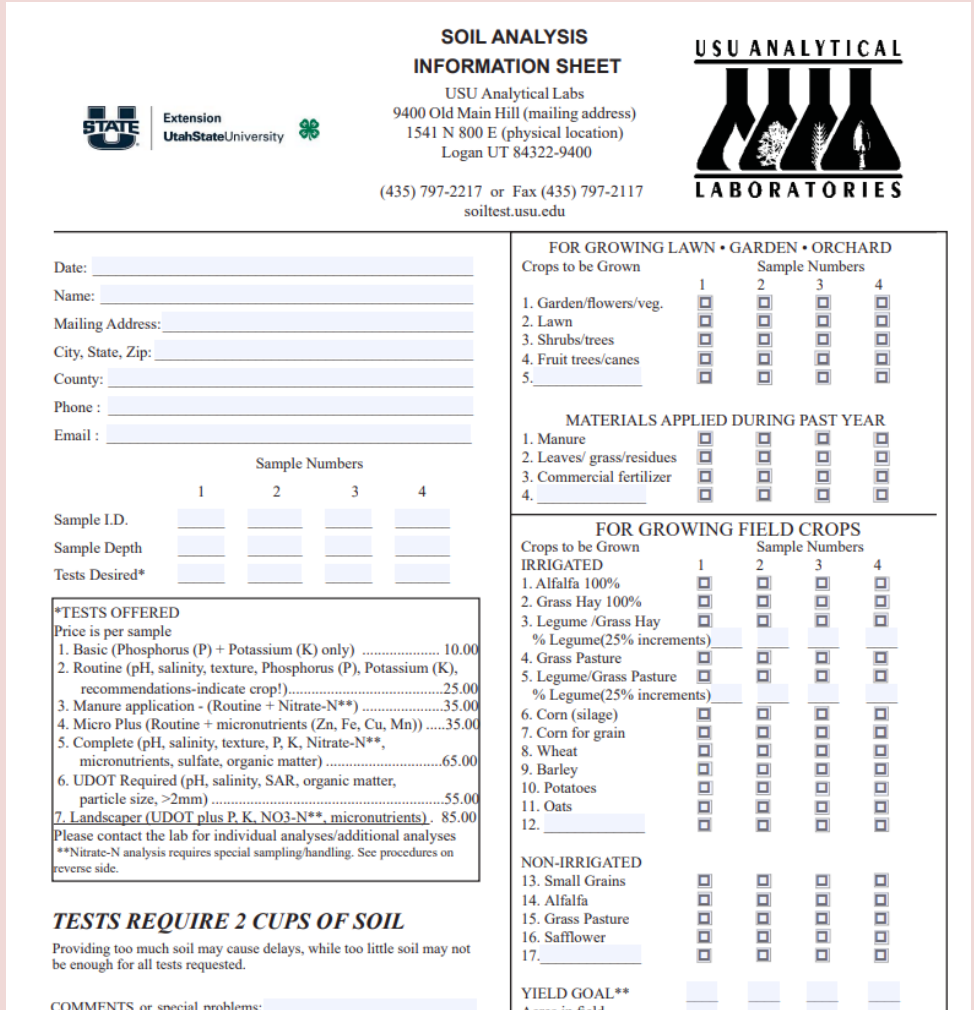

JAR TESTING FOR SOIL TYPE
SAND
LOAM
CLAY
0 - 10% clay
0 - 10% silt
80 - 100% sand
10 - 30% clay
30 - 50% silt
25 - 50% sand
50 - 100% clay
0 - 45% silt
0 - 45% sand


CLAY
SILTY CLAY
SANDY CLAY
CLAY LOAM
SILTY CLAY LOAM
SANDY CLAY LOAM
LOAM
SILT LOAM
SANDY LOAM
SILT
LOAMY SAND
SAND
Percent Clay
Percent Silt
Percent Sand

Submit a Soil Sample

Soil Test - $25 - $35

https://www.usu.edu/analytical-laboratories/tests/home-soil-testing



SOIL ANALYSIS INFORMATION SHEET

Extension UtahStateUniversity

USU Analytical Labs
9400 Old Main Hill (mailing address)
1541 N 800 E (physical location)
Logan UT 84322-9400

(435) 797-2217 or Fax (435) 797-2117
soiltest.usu.edu

USU ANALYTICAL LABORATORIES

Date:
Name:
Mailing Address:
City, State, Zip:
County:
Phone :
Email :

	Sample Numbers 1	2	3	4
Sample I.D.				
Sample Depth				
Tests Desired*				

*TESTS OFFERED
Price is per sample
1. Basic (Phosphorus (P) + Potassium (K) only) 10.00
2. Routine (pH, salinity, texture, Phosphorus (P), Potassium (K), recommendations-indicate crop!).....25.00
3. Manure application - (Routine + Nitrate-N**) 35.00
4. Micro Plus (Routine + micronutrients (Zn, Fe, Cu, Mn)) 35.00
5. Complete (pH, salinity, texture, P, K, Nitrate-N**, micronutrients, sulfate, organic matter) 65.00
6. UDOT Required (pH, salinity, SAR, organic matter, particle size, >2mm) 55.00
7. Landscaper (UDOT plus P, K, NO3-N**, micronutrients) . 85.00
Please contact the lab for individual analyses/additional analyses
**Nitrate-N analysis requires special sampling/handling. See procedures on reverse side.

TESTS REQUIRE 2 CUPS OF SOIL

Providing too much soil may cause delays, while too little soil may not be enough for all tests requested.

COMMENTS or special problems:

FOR GROWING LAWN • GARDEN • ORCHARD

Crops to be Grown	Sample Numbers 1	2	3	4
1. Garden/flowers/veg.	☐	☐	☐	☐
2. Lawn	☐	☐	☐	☐
3. Shrubs/trees	☐	☐	☐	☐
4. Fruit trees/canes	☐	☐	☐	☐
5.	☐	☐	☐	☐

MATERIALS APPLIED DURING PAST YEAR

1. Manure	☐	☐	☐	☐
2. Leaves/ grass/residues	☐	☐	☐	☐
3. Commercial fertilizer	☐	☐	☐	☐
4.	☐	☐	☐	☐

FOR GROWING FIELD CROPS

Crops to be Grown	Sample Numbers 1	2	3	4
IRRIGATED				
1. Alfalfa 100%	☐	☐	☐	☐
2. Grass Hay 100%	☐	☐	☐	☐
3. Legume /Grass Hay	☐	☐	☐	☐
% Legume(25% increments)				
4. Grass Pasture	☐	☐	☐	☐
5. Legume/Grass Pasture	☐	☐	☐	☐
% Legume(25% increments)				
6. Corn (silage)	☐	☐	☐	☐
7. Corn for grain	☐	☐	☐	☐
8. Wheat	☐	☐	☐	☐
9. Barley	☐	☐	☐	☐
10. Potatoes	☐	☐	☐	☐
11. Oats	☐	☐	☐	☐
12.	☐	☐	☐	☐
NON-IRRIGATED				
13. Small Grains	☐	☐	☐	☐
14. Alfalfa	☐	☐	☐	☐
15. Grass Pasture	☐	☐	☐	☐
16. Safflower	☐	☐	☐	☐
17.	☐	☐	☐	☐
YIELD GOAL**				

- pH
- Salinity
- Texture
- N, P, K
- Micronutrients & Organic Matter (costs extra)

Removing Weeds and Vegetation

- Clearing ‘undesirables’ that create resource competition (water and nutrients)
- Solarization
  - Clear plastic for up to 6 weeks
- Sheet Mulching
  - Cardboard overlap 4-6 inches
  - Compost or topsoil 2-4 inches
  - Wood chips 2-4 inches
- Sod Cutter (lawn removal)
- Herbicide if needed
  - Minimal use of pesticides (including herbicides) to avoid harming pollinators
- Minimal tillage

Establishing Native and Drout Tolerant Plants

- Little to no soil amendment needed depending on soil conditions
- Watering Frequency – First Season Establishment
  - Weeks 1 & 2: Water every 1-2 days
  - Weeks 3 & 4: Water every 3-4 days
  - Weeks 5 & 6: Water every 4-6 days
  - Weeks 7 & 8: Water every 7 days
  - Water as needed after week 8
    - Soil type and environmental conditions (spring, summer, fall)

Long – Term Maintenance

- Weed management – hand weeding
- Spring Clean-up, Not fall Clean-up:
  - Leave plants and fallen debris until late spring when temperatures are consistently above 55 degrees
  - Minimal disturbance to pollinator nesting sites

Native Plants for Pollinators

Yellow Beeplant, *Cleome lutea*

- Water: Very Low. Little to no irrigation once established
- Soil: Sandy to Loamy
- H x W: 1-5’ x 1’
- Full Sun
- Bloom Time: May – July
- Zone: 3-8

Native Plants for Pollinators

Rocky Mountain Beeplant, *Cleome serrulata*

- Water: Very Low. Little to no irrigation once established
- Soil: Sandy to Loamy
- H x W: 2-6’ x 1-3’
- Full Sun
- Bloom Time: July - September
- Zone: 3-8

Native Plants for Pollinators

Swamp Milkweed, *Asclepias incarnata*

- Water: Medium to High
- Soil: Sand to Clay
- H x W: 3-5’ x 2-3’
- Full Sun to Part Shade
- Bloom Time: July - August
- Zone: 3-8

Native Plants for Pollinators

Showy Milkweed, *Asclepias speciosa*

- Water: Low to Medium
- Soil: Clay, Loam, Sand
- H x W: 1-5’ x 1-3’
- Full Sun
- Bloom Time: June - August
- Zone: 3-9

Native Plants for Pollinators

Hummingbird Trumpet, *Epilobium*

- Water: Very Low to Low
- Soil: Clay, Loam, Sand
- H x W: 1.5’ x 1-2’
- Full Sun
- Bloom Time: July- October
- Zone: 5-10

Native Plants for Pollinators

Blanket Flower, *Gaillardia aristata*

- Water: Very Low to Low
- Soil: Clay & Sand
- H x W: 2-3’ x 1-2’
- Full Sun
- Bloom Time: June - September
- Zone: 3-8

Native Plants for Pollinators

Sneezeweed, *Helenium autumnal*

- Water: Medium to High
- Soil: Loamy to Silty, high organic matter
- H x W: 3-5’ x 3’
- Full Sun
- Bloom Time: July - October
- Zone: 3-9

Native Plants for Pollinators

Lewis Flax, *Linum lewisii*

- Water: Low to Medium
- Soil: Sandy or Loamy
- H x W: 3-5’ x 3’
- Full Sun to part shade
- Bloom Time: May - July
- Zone: 2-7

Native Plants for Pollinators

Desert Four O’ clock, *Mirabolis multiflora*

- Water: Low
- Soil: Dry and rocky or sandy
- H x W: 1-2’ x 3-6’
- Full Sun to part shade
- Bloom Time: June - September
- Zone: 4-8

Native Plants for Pollinators

Hooker's Evening Primrose, *Oenothera elata*

- Water: Low to high
- Soil: Dry and rocky or sandy
- H x W: 2-5' x 2-3'
- Full Sun to part shade
- Bloom Time: June - September
- Zone: 5-9

Penstemon – 100 Native Species in Utah!

- Firecracker, *eatonii*
  - *Spring-early summer*
- Palmer's, *palmeri*
  - *Spring & Summer*
- Rocky Mountain, *strictus*
  - *Spring & Summer*

Native Plants for Pollinators

Desert Globemallow, *Sphaeralcea ambigua*

- Water: Low
- Soil: Adaptable
- H x W: 3’ x 2-4’
- Full Sun
- Bloom Time: Spring
- Zone: 5-8

Native Plants for Pollinators

Blue Vervian, *Verbena hostata*

- Water: Low to High
- Soil: Clay to Sand
- H x W: 2-5’ x 1-2’
- Full Sun to Part Shade
- Bloom Time: July - September
- Zone: 3-8

Native Plants for Pollinators

Desert Sage, *Salvia dorii*

- Water: Prefers Sand
- H x W: 1-3’ x 1-3’
- Full Sun
- Bloom Time: May - July
- Zone: 5-9

Native Grasses for Pollinators

- Indian Ricegrass
- Sideoats
- Blue Grama
- Little Bluestem

Native Shrubs

- Serviceberry
- Golden Currant
- Elderberry

Native Shrubs

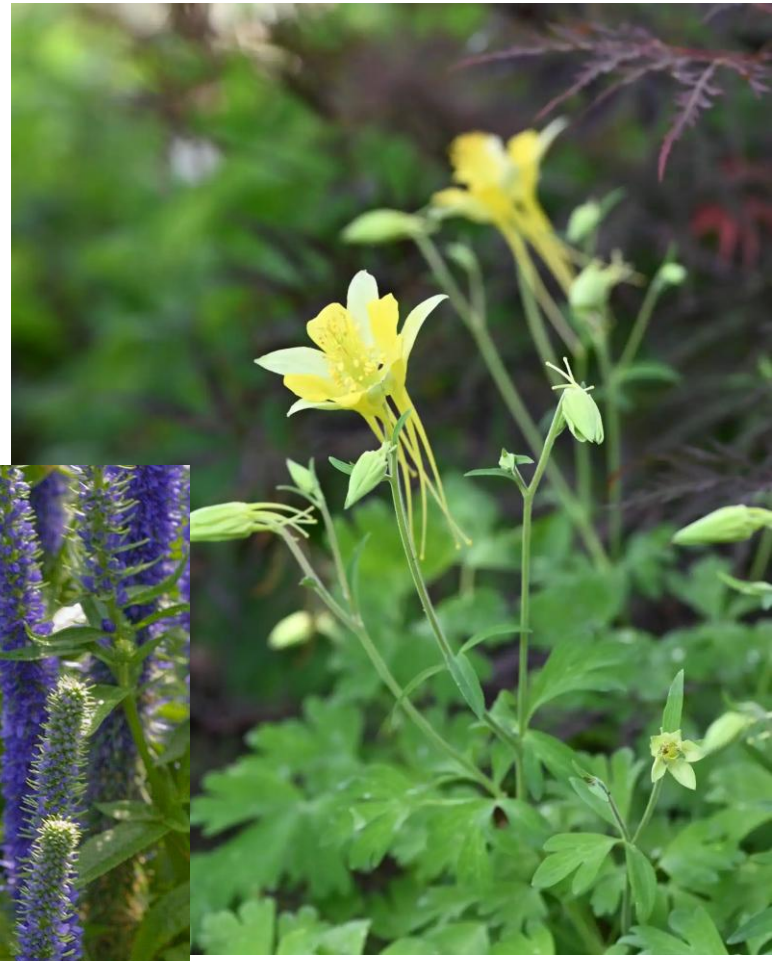
- Apache Plume
- Littleleaf Mockorange
- Mountain Mahogany

More pollinator plants!

- Liatris
- Gaura
- Hyssop / Agastache

More Pollinator Plants!

- Yarrow
- Veronica
- Columbine



References & Resources

- https://extension.usu.edu/planthealth/research/beginners-guide-to-common-native-bees
- https://www.usu.edu/analytical-laboratories/
- https://ag.utah.gov/conservation/utah-pollinator-habitat-program/
- https://www.highcountrygardens.com/

Thank You!

Class Feedback

Monthly Newsletter

WEBER BASIN WATER
LEARNING GARDEN