

Landscaping in Utah for Beginners

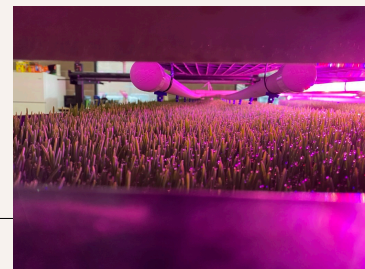
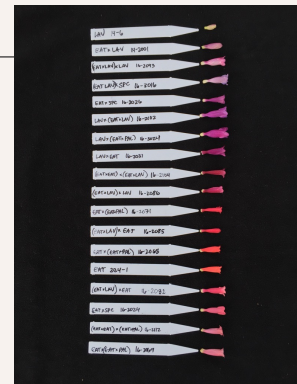
WESLEY CRUMP
USU EXTENSION
HORTICULTURE
WASATCH AND SUMMIT
COUNTIES



Photo: Robert Wilson

Who am I?

- USU Extension Faculty
- Wasatch and Summit Counties
- Joined USU Extension ~1 year ago
- Education
 - B.S. Plant Genetics
 - Penstemon hybridization
 - M.S. Horticulture
 - Sweet cherry breeding program
- Post-schooling
 - Indoor agriculture



Who are you?

- Please put in chat if you are:
 - New to Utah
 - New homeowner
 - New to landscaping
 - Just here to learn
 - All the above!
-

Outline

- This isn't a design class...
- Climate
- Soils
- Water
- Plant selection
- Planting basics
- Resources



Photo: Robert Wilson

Design resources

- This, unfortunately, is not a landscape *design* course
- But there are great resources!



5 Steps of a Localscape

1 Central Open Shape
If you use an irregular shape, you can prevent landscaping design from becoming too symmetrical. Instead of forcing symmetry, let your design flow through the space. Open shape allows gardeners to work efficiently. Your central open space can also be used for other purposes like a garden, lawn, patio, gravel court or any low lying, relatively flat landscape. If you want landscaping, you can have it too.

2 Gathering Areas
Landscape maintenance is part of landscape design. Every good landscape plan includes a gathering area. Gathering areas like patios, decks, or gravel courts, or even lawn areas, are areas to enjoy and relax.

3 Activity Zones
Just like gathering areas, activity zones like transportation, play area, fire pit, and hot tub should be placed near the main area. You get the same benefits plus no more objects to move around.

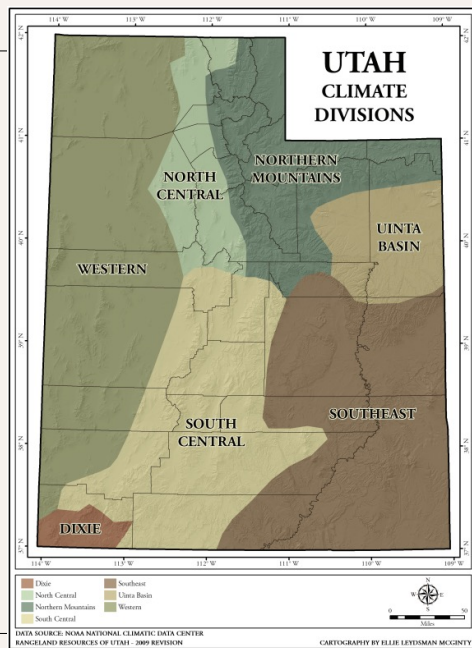
4 Paths
Paths are often an overlooked element of your landscape design. Paths connect different areas of the landscape you want to enjoy.

5 Planting Beds
Choosing the right plants is the most important part of your landscape design. It saves you money and time because dead plants have to be replaced.

DESIGN 4 EVERYONE

Climate in Utah

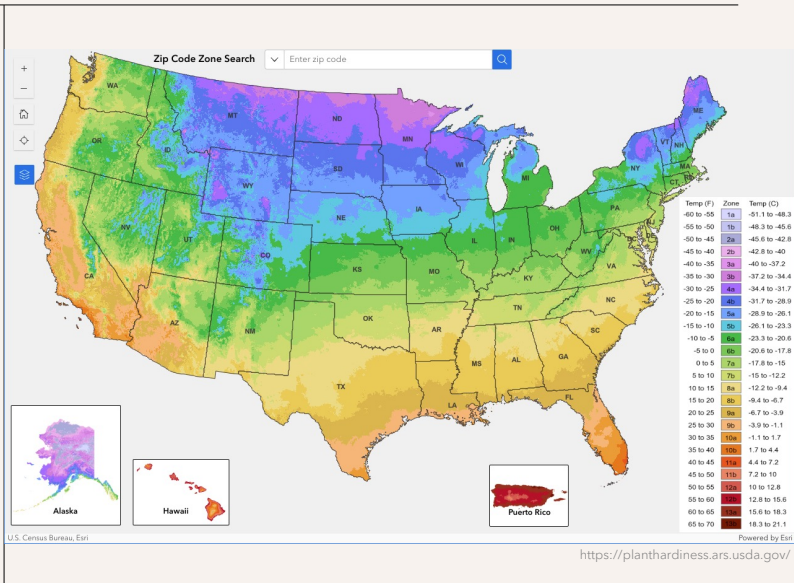
- Several different climates throughout the state - difficult to make sweeping statements
- Characterized by dry, hot summers, cold winters.
- Majority of precipitation comes during winter months
- Spring weather can be unpredictable, variable



Gillies and Ramsey, Climate of Utah

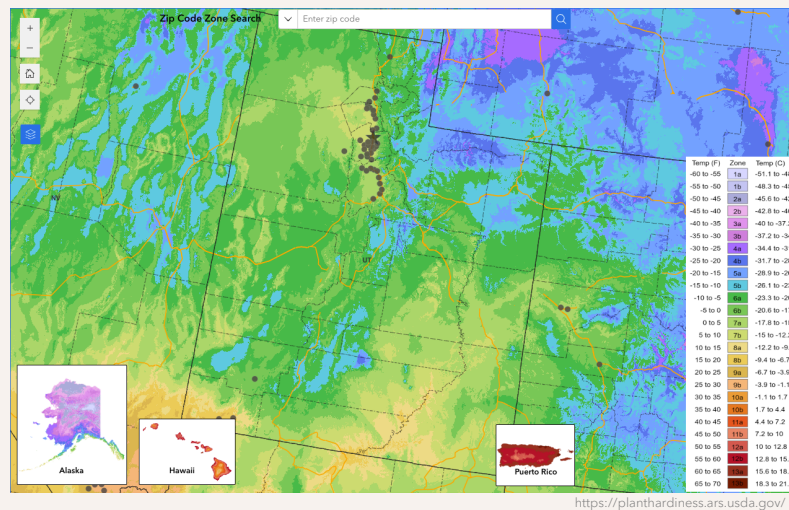
Climate in Utah

- Hardiness zones
- Revised in 2023
- "Average minimum temperature"



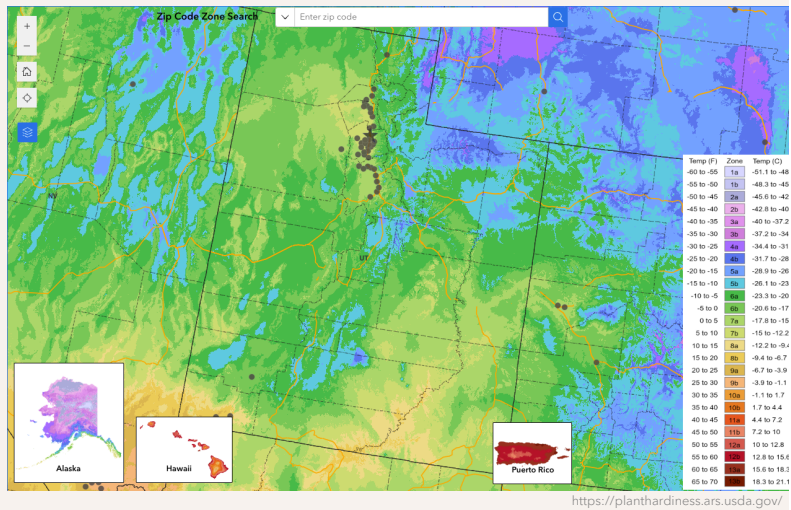
Climate in Utah

- Hardiness zones
- Revised in 2023
- "Average minimum temperature"
- Scale from 1 to 13
 - 1 is coldest; 13 warmest
 - "a" is colder than "b" (4a vs 4b)
- Utah County (6a - 7b)
- Salt Lake County (6a - 7b)
- Wasatch County (5b - 6b)
- Washington (6a - 9a)



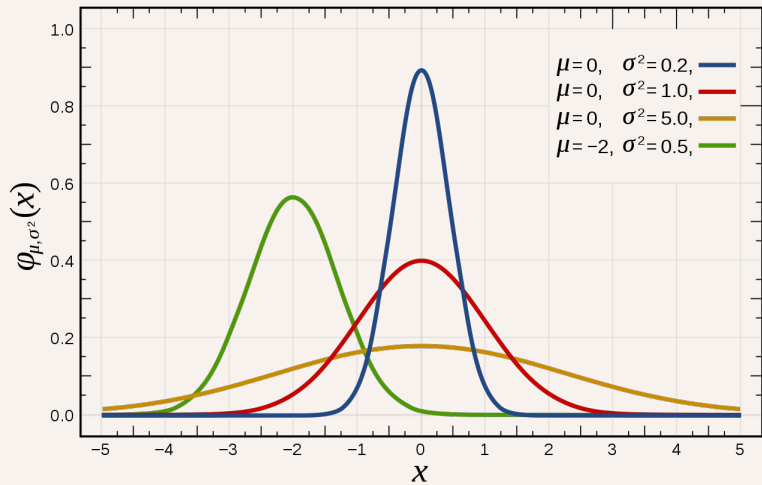
Climate in Utah

- What does our hardiness rating tell us?
 - "Average minimum temperature"
 - Will the plant make it through the winter?
 - Not relevant for annuals (most vegetables)

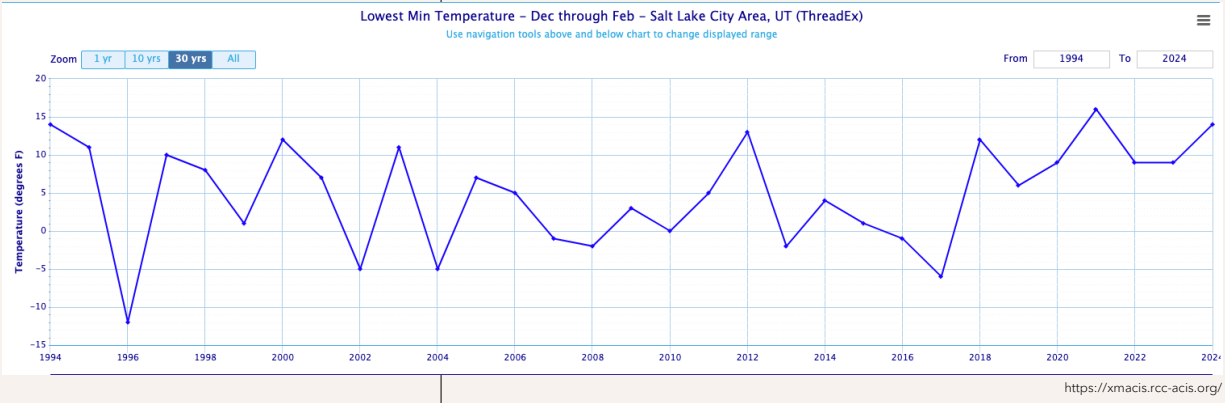


Climate in Utah

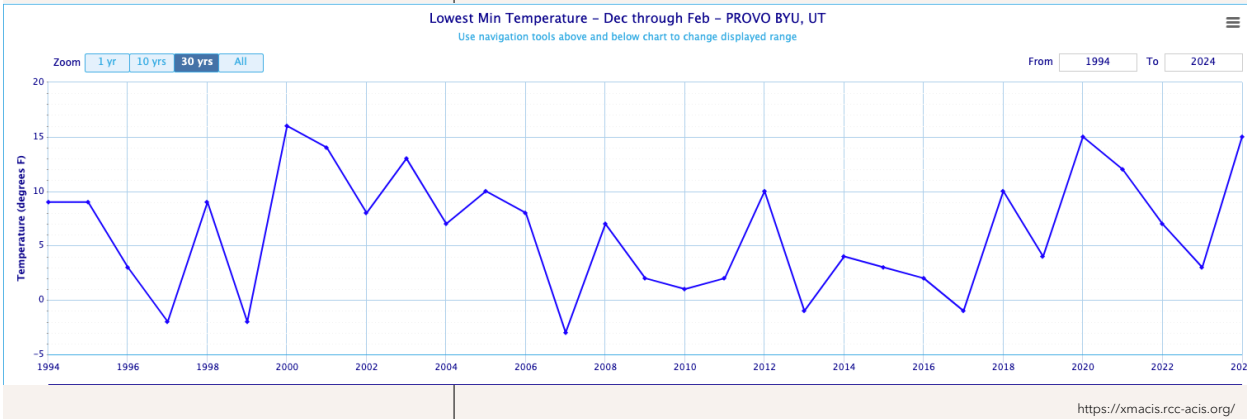
- A note on averages
 - Summary statistic - it is not an extreme
 - There will be variation from the average
 - Important consideration for a home gardeners
 - General rule of thumb - the longer lived the plant = the more cautious



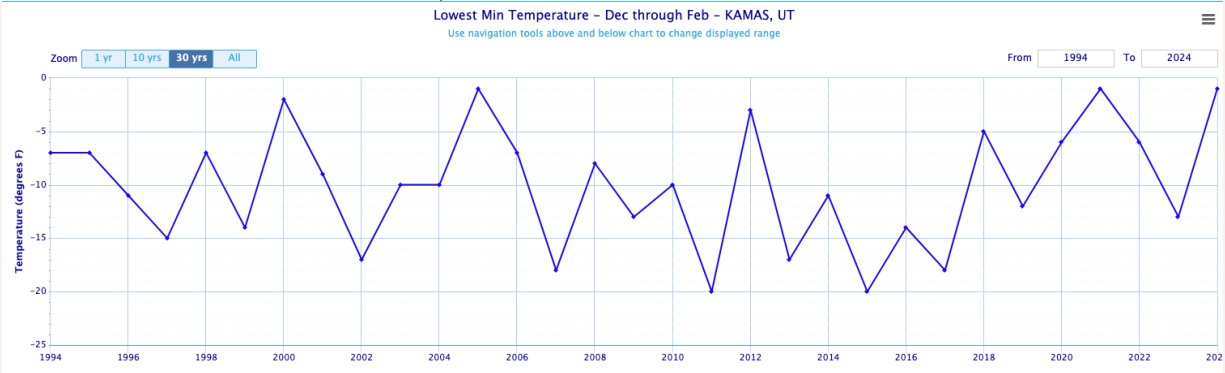
Climate in Utah



Climate in Utah



Climate in Utah



Climate in Utah

- Freeze-free days
 - Period from last frost in spring to first frost in fall
 - Determine the traditional "growing season"
 - Important to consider for annual plants and perennial flowering/fruited plants

Salt Lake City

1990	04-30 (1990)	30	10-17 (1990)	30	169
1991	04-27 (1991)	31	10-24 (1991)	31	179
1992	03-11 (1992)	32	11-03 (1992)	29	236
1993	04-14 (1993)	31	10-29 (1993)	30	197
1994	04-08 (1994)	31	10-29 (1994)	30	203
1995	04-16 (1995)	31	10-22 (1995)	32	188
1996	04-28 (1996)	32	10-16 (1996)	31	170
1997	04-13 (1997)	27	10-13 (1997)	31	182
1998	04-18 (1998)	32	11-03 (1998)	32	198
1999	05-11 (1999)	30	10-16 (1999)	29	157
2000	04-01 (2000)	30	11-02 (2000)	30	214
2001	04-13 (2001)	31	10-12 (2001)	32	181
2002	05-08 (2002)	26	10-13 (2002)	32	157
2003	04-08 (2003)	30	10-26 (2003)	32	200
2004	04-11 (2004)	32	10-31 (2004)	30	202
2005	04-05 (2005)	32	11-12 (2005)	32	220
2006	04-20 (2006)	32	10-18 (2006)	31	180
2007	04-13 (2007)	32	10-22 (2007)	32	191
2008	05-02 (2008)	31	10-10 (2008)	32	160
2009	04-06 (2009)	32	10-26 (2009)	32	202
2010	05-07 (2010)	31	10-26 (2010)	32	171
2011	05-01 (2011)	32	10-26 (2011)	30	177
2012	04-07 (2012)	28	10-26 (2012)	29	201
2013	04-23 (2013)	31	11-03 (2013)	31	193
2014	04-30 (2014)	32	11-04 (2014)	29	187
2015	04-16 (2015)	32	11-07 (2015)	29	204
2016	03-19 (2016)	31	11-17 (2016)	30	242
2017	03-07 (2017)	29	10-15 (2017)	32	221
2018	04-03 (2018)	29	10-15 (2018)	29	194
2019	03-31 (2019)	32	10-10 (2019)	30	192
2020	04-14 (2020)	30	10-23 (2020)	32	191
2021	04-12 (2021)	32	11-17 (2021)	28	218
2022	04-13 (2022)	30	10-28 (2022)	32	197
2023	04-07 (2023)	32	10-28 (2023)	32	203
2024	-	-	-	-	-
Minimum	03-07 (2017)		09-13 (1928)		124
Mean	04-22		10-19		180
Maximum	06-06 (1914)		11-17 (2021)		242

<https://xmacis.rcc-acis.org/>

Climate in Utah

- Freeze-free days
 - Period from last frost in spring to first frost in fall
 - Determine the traditional "growing season"
 - Important to consider for annual plants and perennial flowering/fruited plants

Year	Last	Value	First	Value	Season Length
1994	04-30 (1994)	31	10-29 (1994)	32	181
1995	05-13 (1995)	31	10-05 (1995)	31	144
1996	04-29 (1996)	30	10-17 (1996)	28	170
1997	04-13 (1997)	26	10-13 (1997)	29	182
1998	04-18 (1998)	32	10-18 (1998)	32	182
1999	05-11 (1999)	31	10-17 (1999)	29	158
2000	03-31 (2000)	31	11-02 (2000)	32	215
2001	04-13 (2001)	29	10-10 (2001)	32	179
2002	05-09 (2002)	31	10-13 (2002)	31	156
2003	04-08 (2003)	29	10-11 (2003)	32	185
2004	03-29 (2004)	32	11-01 (2004)	26	216
2005	04-11 (2005)	31	10-31 (2005)	31	202
2006	04-20 (2006)	31	10-18 (2006)	32	180
2007	04-11 (2007)	31	09-30 (2007)	32	171
2008	05-02 (2008)	30	10-11 (2008)	31	161
2009	04-27 (2009)	30	10-02 (2009)	32	157
2010	05-25 (2010)	32	10-27 (2010)	31	154
2011	05-02 (2011)	32	10-27 (2011)	29	177
2012	04-07 (2012)	27	10-25 (2012)	32	200
2013	04-23 (2013)	31	10-05 (2013)	31	164
2014	04-29 (2014)	30	10-28 (2014)	32	181
2015	04-16 (2015)	30	11-07 (2015)	26	204
2016	04-01 (2016)	32	11-17 (2016)	32	229
2017	04-10 (2017)	30	10-15 (2017)	30	187
2018	04-18 (2018)	30	10-15 (2018)	27	179
2019	03-31 (2019)	32	10-10 (2019)	29	192
2020	04-17 (2020)	29	10-23 (2020)	30	188
2021	04-07 (2021)	32	10-15 (2021)	29	190
2022	05-14 (2022)	29	10-28 (2022)	27	166
2023	04-20 (2023)	31	11-01 (2023)	29	194
2024	-	-	-	-	-
Minimum	03-29 (2004)		09-30 (2007)		144
Mean	04-20		10-19		181
Maximum	05-25 (2010)		11-17 (2016)		229

Provo - BYU

<https://xmacis.rcc-acis.org/>

Climate in Utah

- Freeze-free days
 - Period from last frost in spring to first frost in fall
 - Determine the traditional "growing season"
 - Important to consider for annual plants and perennial flowering/fruited plants

Frost/Freeze Summary for HEBER, UT
 Each section contains date and year of occurrence, value on that date and number of missing values.
 Click column heading to sort ascending, click again to sort descending.

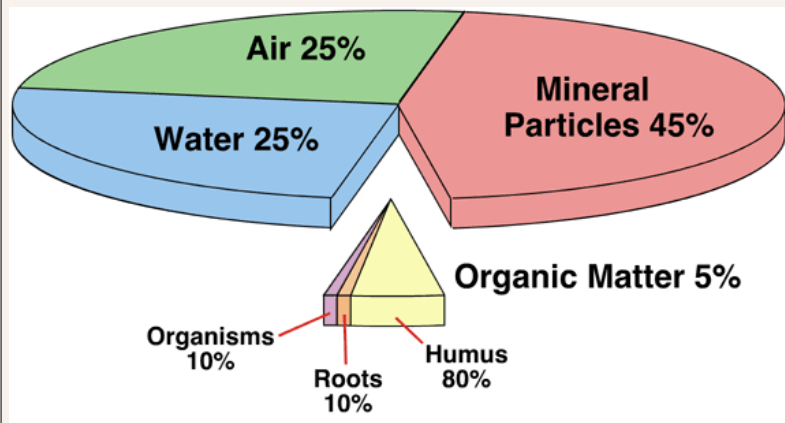
Year	Last	Value	Missing	First	Value	Missing	Season Length
1980	06-16 (1980)	32	0	08-20 (1980)	31	0	64
1981	06-16 (1981)	31	0	09-26 (1981)	28	0	101
1982	06-10 (1982)	30	0	09-12 (1982)	32	0	93
1983	06-14 (1983)	27	2	09-20 (1983)	26	1	97
1984	06-12 (1984)	32	1	09-22 (1984)	28	1	101
1985	05-30 (1985)	31	0	08-13 (1985)	30	1	74
1986	05-23 (1986)	30	0	09-11 (1986)	31	2	110
1987	06-02 (1987)	30	0	09-17 (1987)	29	0	106
1988	05-21 (1988)	32	0	09-15 (1988)	31	0	116
1989	05-27 (1989)	32	0	09-11 (1989)	29	0	106
1990	06-02 (1990)	31	1	10-07 (1990)	32	1	126
1991	05-20 (1991)	31	0	09-15 (1991)	30	0	117
1992	05-11 (1992)	32	0	08-26 (1992)	30	0	106
1993	06-24 (1993)	31	0	09-13 (1993)	30	0	80
1994	06-09 (1994)	32	1	09-15 (1994)	30	0	97
1995	06-07 (1995)	31	0	09-21 (1995)	30	0	105
1996	05-24 (1996)	27	0	09-19 (1996)	29	0	117
1997	05-08 (1997)	29	0	09-28 (1997)	30	1	142
1998	05-23 (1998)	30	0	10-05 (1998)	27	1	134
1999	05-18 (1999)	32	1	09-27 (1999)	26	0	131
2000	06-01 (2000)	31	0	09-23 (2000)	30	1	113
2001	06-13 (2001)	27	0	09-09 (2001)	28	0	87
2002	06-11 (2002)	28	4	10-09 (2002)	32	2	119
2003	05-20 (2003)	31	0	09-14 (2003)	31	0	116
2004	05-26 (2004)	32	0	09-15 (2004)	32	0	111
2005	06-14 (2005)	32	0	09-26 (2005)	31	0	103
2006	05-29 (2006)	29	0	09-17 (2006)	31	0	110
2007	04-17 (2007)	30	1	10-08 (2007)	32	2	173
2008	-	-	10	-	-	8	-
2009	05-09 (2009)	32	3	10-02 (2009)	31	5	145
2010	06-17 (2010)	32	1	09-07 (2010)	32	0	81
2011	06-11 (2011)	32	0	10-07 (2011)	31	0	117
2012	06-11 (2012)	31	2	10-04 (2012)	29	1	114
2013	-	-	65	-	-	365	-
Minimum	04-17 (2007)			08-13 (1985)			64
Mean	05-31			09-18			110

Heber City

<https://xmacis.rcc-acis.org/>

Soil

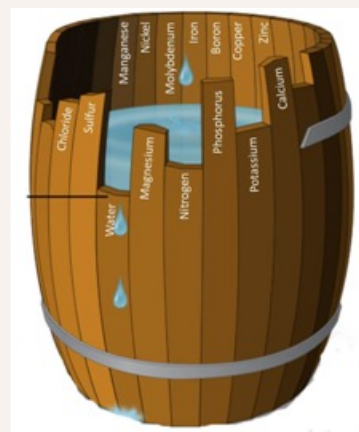
- What is soil?
 - Sand, silt, clay
 - Organic matter
 - Air, water (hopefully)
 - Watch out for compaction!
- Growing substrate
 - Provides anchorage for your plants
- Bank for nutrients and water



Soil

- Essential nutrients for plants
 - 16 - 17* essential
 - **Macronutrient** - need larger amounts
 - Micronutrient - need small amounts
- If ANY nutrient is lacking, plant growth and health is compromised
 - Most nutrients can be found in most soils here in Utah

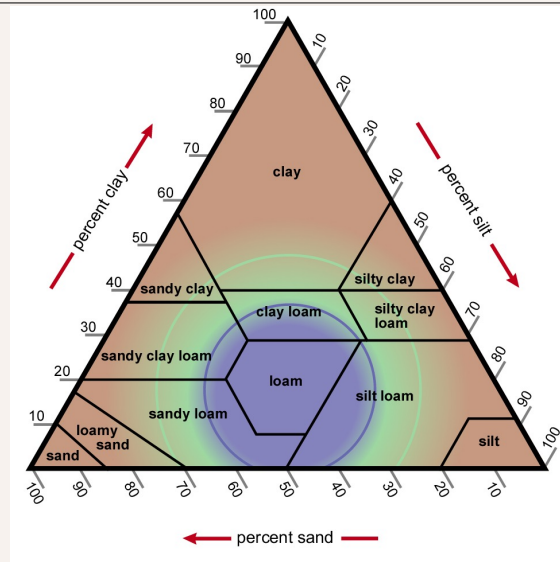
- Air
 - Oxygen (O)
 - Hydrogen (H)
 - Carbon (C)
- Soil
 - Nitrogen (N)
 - Phosphorous (P)
 - Potassium (K)
 - Sulfur (S)
 - Magnesium (Mg)
 - Calcium (Ca)
 - Iron (Fe)
 - Zinc (Z)
 - Manganese (Mn)
 - Boron (B)
 - Copper (Cu)
 - Molybdenum (Mo)
 - Chlorine (Cl)
 - Cobalt* (Co)



http://corn.osu.edu/newsletters/2011/2011-04/Mullen%202011-04a.PNG/image_preview

Soil

- What "type" of soil do you have?
 - % sand, silt, clay
 - "loam" = the goal
 - A good mix
- What does soil type/texture influence?
 - Water, nutrient, and air holding properties
 - Compaction potential
 - Watering schedule
 - Fertilizing/amending schedule
 - Plant selection
 - Maintenance



Soil

- Organic matter (OM)
 - Decomposed, once-living material
- Organic matter is king
 - The best soil improver
 - Can increase water and nutrient holding abilities
 - Improve structure of soil (air space)
 - "Soften" tough, compact soils
 - Maintain nutrient levels
- Be careful not to LOVE YOUR PLANTS TO DEATH with some sources of OM

Compost Type	N	P ₂ O ₅	K ₂ O	pH	Salinity [dS/m]	Moisture Content [%]	C:N
	%						
Manure-Based							
Beef	1.1	0.9	1.3	8.5	4	28	12
Chicken	1.4	5.8	2.8	8.2	16	33	17
Dairy	1.0	0.7	1.5	8.5	8	39	12
Goat	1.0	0.9	1.9	8.4	5	54	10
Horse	0.7	0.3	0.9	8.6	4	37	28
Mink	1.1	3.0	0.3	6.4	6	41	8
Sheep	1.0	1.1	1.3	8.0	3	39	15
Turkey	2.2	5.3	2.2	8.2	11	89	10
Other							
Biosolids	1.8	1.5	0.2	6.9	5	43	7
Commercial	1.3	0.9	1.0	7.8	5	35	17
Municipal	1.2	1.1	0.7	7.8	5	38	17
Plant-Based	1.4	0.9	0.9	7.9	3	33	16

Stock, Miller, 2019

Soil

- USU Soil-related fact sheets

Sustainable Manure and Compost Application: Garden and Micro Farm Guidelines

Are Organic Matter Soil Amendments Created Equal?

It's All About Soil Structure!

Selecting and Using Inorganic Fertilizers

Selecting and Using Organic Fertilizers

Backyard Composting in Utah

Preparing and Improving Garden Soil

Topsoil Quality Guidelines for Landscaping

Soil

- Testing

• www.usual.usu.edu

Pick a Test and Complete a Form



Routine Test

Price
\$25

Basic measurements for the vast majority of home gardening needs

Provides Phosphorus (P205) and Potassium (K2O) fertilizer recommendations

Provides soil salinity and pH levels useful in choosing appropriate plants for these important conditions in arid/semi-arid Western US environments

Provides a soil texture classification used to determine water holding capacity and irrigation regimen

[Download Test Form](#)

[Additional Soil Tests](#)



Animal Feed Testing



Irrigation & Livestock Testing

Extension
Utah State University

**SOIL ANALYSIS
INFORMATION SHEET**

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

Name: _____

Mailing Address: _____

City, State, Zip: _____

County: _____

Phone: _____

Email: _____

Sample ID	Sample Numbers			
	1	2	3	4
Sample Depth	_____	_____	_____	_____
Tests Desired*	_____	_____	_____	_____

***TESTS OFFERED**

Price is per sample

- Basic (Phosphorus (P) + Potassium (K) only)10.00
- Routine (pH, salinity, texture, Phosphorus (P), Potassium (K), recommendations-indicate crop)25.00
- Manure application (Routine + Nitrate-N**)35.00
- Micro Plus (Routine + micronutrients (Zn, Fe, Cu, Mn))35.00
- Complete (pH, salinity, texture, P, K, Nitrate-N**, micronutrients, sulfate, organic matter)65.00
- UDOT Required (pH, salinity, SAR, organic matter, particle size >2mm)55.00
- Landscaper (UDOT plus P, K, NO3-N**, micronutrients) 85.00

Please contact the lab for individual analyses/additional analysis
**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: _____

Total cost of analysis: \$ _____

Check # Cash
 PLEASE INVOICE FOR CREDIT CARD PAYMENT

ONLINE PAYMENT OPTIONS AVAILABLE AT SOILTEST.USU.EDU

PLEASE FILL OUT COLUMNS AT RIGHT TO ENSURE BEST RECOMMENDATIONS FOR YOUR SPECIFIC CROP AND PREVIOUS MANAGEMENT

Crops to be Grown	Sample Numbers			
	1	2	3	4
FOR GROWING LAWN • GARDEN • ORCHARD				
1. Garden/flowers/veg.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Lawn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Shrubs/trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Fruit trees/canoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MATERIALS APPLIED DURING PAST YEAR				
1. Manure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Leaves/ grass/residues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Commercial Fertilizer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FOR GROWING FIELD CROPS				
IRRIGATED				
1. Alfalfa 100%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Grass Hay 100%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Legume/ Grass Hay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
% Legume(25% increments)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Legume/Grass Pasture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
% Legume(25% increments)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Corn (silage)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Corn for grain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Wheat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Barley	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Oats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NON-IRRIGATED				
13. Small Grains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Alfalfa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Grass Pasture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Safflower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YIELD GOAL**				
Acres in field	_____	_____	_____	_____
CROP LAST YEAR	_____	_____	_____	_____
Yield per acre	_____	_____	_____	_____
Was straw/stover removed? <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MANURE APPLIED FOR THIS CROP:				
Tons per acre	_____	_____	_____	_____
**Use realistic goals for your conditions				

Soil

- How to collect soil sample
 - 6-12"
 - Zone your space
 - Subsample



Soil

- Soil test results are in, now what?
 - Know thresholds
 - Add what's needed
 - Excess nutrients do not help plants and can have negative environmental effects

Table 2. Soil test values and fertilizer recommendations for nitrogen, phosphorus, and potassium. Recommendations are for a 100 ft² garden plot.

Test Category	NITROGEN (N)		PHOSPHORUS (P ₂ O ₅)		POTASSIUM (K ₂ O)	
	Test Result	Fertilizer Recommendation	Test Result	Fertilizer Recommendation	Test Result	Fertilizer Recommendation
Very Low	<10	Add 0.3 lbs N	0-10	Add 0.3 lbs P ₂ O ₅	0-70	Add 0.4 lbs K ₂ O
Low	10-25	Add 0.2 lbs N	11-20	Add 0.2 lbs P ₂ O ₅	70-125	Add 0.2 lbs K ₂ O
Adequate	>25	NONE	21-30	NONE	126-300	NONE
High	-	NONE	>31-60	NONE	>300	NONE

Table 3. Salinity thresholds and the ideal pH for crops. Salinity thresholds indicate the tolerance level of different crops. At salinities greater than the threshold, yield begins to decline.

Crop Type	Ideal pH ¹	Salinity Threshold [dS/m]
Apple	5.5-6.5	1.4
Artichoke	6.5-7.0	6.1
Blackberry	5.5-7.0	1.5
Corn	5.5-7.5	1.7
Bean, green	6.0-7.0	1.0
Beet	6.5-8.0	4.0
Broccoli	6.0-6.5 ³	2.8
Carrot	6.0-7.0	1.0
Cucumber	5.5-7.0	2.5
Garlic	6.2-7.0	3.9
Grape	5.5-7.0	1.5
Lettuce	6.0-7.0	1.3
Onion	6.0-7.0	1.2
Pea	6.0-7.5	3.4
Peach	6.0-7.0 ⁴	1.7
Pepper	5.5-7.0	1.5
Plum	6.8-8.5	2.6
Potato	4.8-6.5	1.7
Spinach	6.0-7.5	2.0
Strawberry	5.5-6.5	1.0
Sunflower	6.5-7.5 ⁵	4.8
Tomato	5.5-7.5	2.5
Zucchini	6.0-7.0	4.9

Equation:

$$\frac{\text{From Soil Test: lbs of nutrient to add}}{\text{From fertilizer: \# on bag divided by 100}} \times \text{Your garden area (ft}^2\text{) divided by 1000} = \text{lbs of fertilizer to add to your garden}$$

Example:

Soil Test Results: P 72.1 (0 lbs P₂O₅/1000 sq ft), K 880 (0 lbs K₂O/1000 sq ft), Ultra-N 1 (0.4 lbs N/1000 sq ft)

Recommendations: 12-0-0 (0 lbs N/1000 sq ft)

0.4 lbs nitrogen (12% ÷ 100) × 15 ft × 10 = 150 (150 ÷ 1000 = 0.15)

3 lbs ÷ 0.12 × 0.15 ft² = 3.75 lbs of fertilizer

Worksheet:

$$\underline{\hspace{2cm}} \text{ lbs} \div \underline{\hspace{2cm}} \% \div 100 \times \underline{\hspace{2cm}} \text{ ft}^2 \div 1000 = \underline{\hspace{2cm}} \text{ lbs of fertilizer to add}$$

Soil

- Typical Utah soils (very general)
 - Alkaline pH (pH > 7)
 - Relatively low organic matter (2-3%)
 - Potassium and Calcium tend to be naturally high
 - Iron is abundant, but not “bio-available” due to pH
- New homes
 - Watch out for subsoil
 - Can be saltier, rockier
 - Foreign topsoil - know the source, try to get analysis beforehand



Water

- Water is a precious resource and should be used judiciously
- But remember: **your plants will die without water**
 - We often want a plant that does not actually exist!
 - Water stress often manifests itself in a cumulative manner in older, mature plants
 - “But we had such a wet winter!”



<https://slowtheflow.org/>



<https://www.utahwatersavers.com/>



<https://conservewater.utah.gov/weekly-lawn-watering-guide/>

Water

- Irrigation methods
 - Flood
 - Sprinkler
 - Micro sprinkler
 - Drip irrigation
- Different spaces in your landscape will likely need different irrigation methods
 - Lawns (sprinklers)
 - Perennial plant areas (drip, microsprinklers)
 - Vegetable gardens (drip)
 - Fruit trees (microsprinklers, drip)

Photos 2,3: homedepot.com

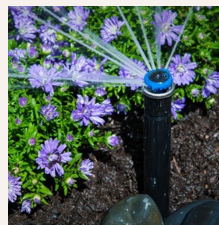


Water

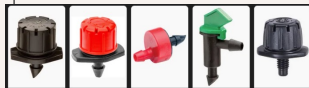
- Sprinklers
 - 30 - 45+ psi
 - Fixed heads, rotor heads
 - Head-to-head coverage
- Drip irrigation
 - 15 - 30 psi
 - Many different outputs and spacings
 - Inline vs separate emitters
- Microsprinklers
 - 20 - 55+ psi
 - Many different outputs
- Often wise to keep with one brand - some cross compatible
- Do not mix types on same zone



http://agritech.tnau.ac.in/agriculture/images/agri_agrometeorology_microclimate.JPG



<https://www.dripdepot.com/2000-series-mp-rotator-thread-female-arc-360-degree>



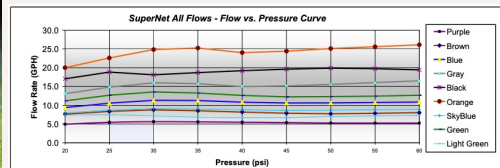
Rainbird R-Van



<https://www.dripdepot.com/r-van-rotary-nozzles-radius-8-feet-14-feet-arc-adjustable-45-270-degree>



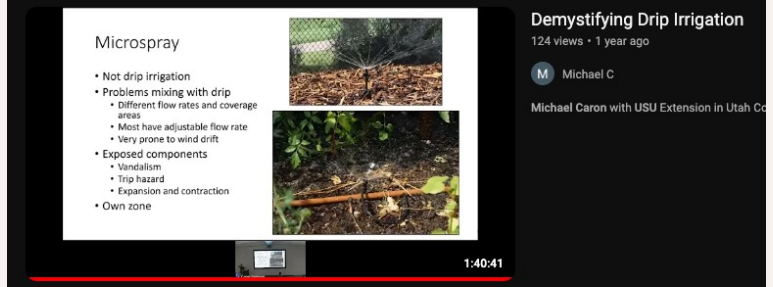
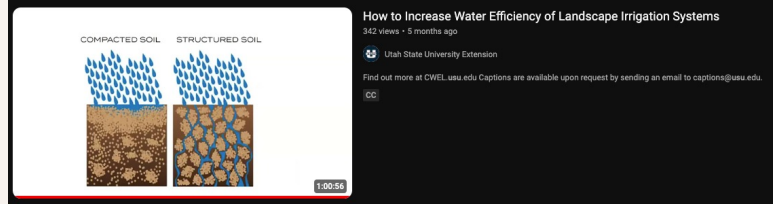
<https://www.netafimusa.com/bynder/BEB44871-C5AE-48C5-80CD8827E4726A92-sprinkler-tech-guide.pdf>



<https://www.netafimusa.com/bynder/BEB44871-C5AE-48C5-80CD8827E4726A92-sprinkler-tech-guide.pdf>

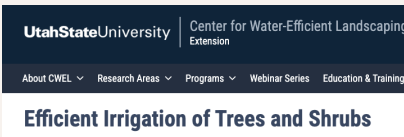
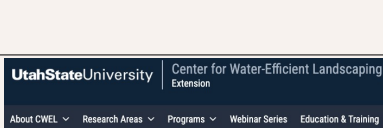
Water

- Some great resources

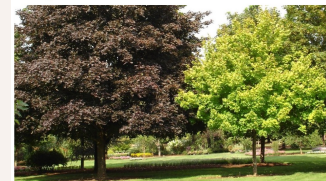


Water

- How much should I water my plants?
 - **DEPENDS!**
 - Should always keep soil moist for newly planted plants
 - Depending on plant, establishment can take months to years.
 - Waterwise plants still have establishment phase
 - After establishment, use references!



How Much Water Do Landscape Trees Require in Utah? An Irrigation Calculator



Weekly Lawn Watering Guide

Weekly Lawn Watering Guide
For the week of: May 03, 2024 to May 09, 2024

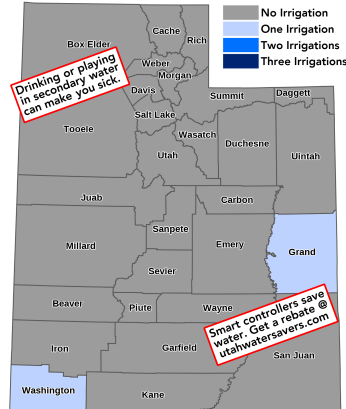


Get a rebate at UtahWaterSavers.com

Water

- How much/frequently should I water my lawn?
 - DEPENDS!
 - Weather, grass species, soil type, sprinkler efficiency
 - Shouldn't need to water your established lawn more than three days a week (in hottest time of year)
 - May consider spot watering for sprinkler system inefficiencies
- If possible, water early morning, not when windy

Weekly Lawn Watering Guide For the week of: May 03, 2024 to May 09, 2024



Get a rebate at UtahWaterSavers.com



Salt Lake County
Iron County
Washington County
Davis County
Weber County
Morgan County
Summit County

Do Your Own Water Check

Steps:



1. Use the Checklist. Start with the right list (check) for your location. Consider a site inspection and a simple soil test with these resources.



2. Find Gaps. Perform a simple sprinkler test to measure how evenly and efficiently your irrigation system applies water. Call us up or email us to receive the Utah Local Extension Office or you can download your own Gaps Check.



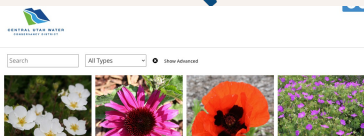
3. Run Water Check Test. Use our web-based BMP audit checklist tool. After using this tool or comparing to our simple test of your irrigation system, water results by the 'Tool' you use then receive a customized irrigation schedule for your landscape.

Plant Selection

- Where to begin?
 - Demonstration gardens! Resources!



Botanical Center
UtahStateUniversity.



Plant Selection

- Maybe avoid growing...
 - Based on climate, soil, water, make educated decisions
 - Examples
 - Maples!
 - Iron chlorosis due to high pH soils
 - Some are more prone, but won't show serious problems for years

Maples in the Landscape



<https://www.fast-growing-trees.com/products/autumnblaze?variant=13940786397236>



<https://jfschmidt.com/all-trees/introductions/pacific-sunset-maple/>

Plant Selection

- Maybe avoid growing...
 - Examples
 - Acid-loving plants
 - Rhododendrons
 - Azaleas
 - Blueberries
 - Red Maples
 - Sugar Maples
 - Utah native plants in their non-native habitat
 - Quaking aspen in hot, dry, low-elevation areas
 - Red Twig dogwood in hot, dry areas



https://extension.usu.edu/pests/ipm/notes_om/list-treeshrubs/iron-chlorosis

Plant Selection

- Plant lists!

Annuals for Utah Gardens



SALT LAKE CITY PLANT LIST & HYDROZONE SCHEDULE 2013
prepared by Salt Lake City Public Utilities | Salt Lake City, Utah



Landscaping in Dry Shade: 15 Great Landscape Plants for Dry Shady Areas

Finding the right landscape plants for dry areas that are also shady can be challenging. Most of the drought tolerant plants used in Utah's residential and commercial landscapes come from dry environments and are adapted to full sun. Therefore, these plants do not grow well in shaded environments.

Shade produces a microclimate with unique cooling effects, reduced soil evaporation and reduced plant transpiration (Lin & Lin, 2010). In spite of the common perception that shade gardens are always cool and moist, often there is not ample soil moisture. Often the very conditions that create shade can reduce soil moisture. For example, the soil beneath the canopy



16 Less Common Trees for Utah Landscapes: Diversifying Utah's Community Forests

Utah is a fairly harsh place to grow trees in town and city landscapes, leading people to think that only a few tough species can be grown here. It seems to be this attitude that leads to the over-planting of a fairly narrow palette of not very good quality trees – a handful of maples, too many cottonwoods and willows, Siberian elm, etc. Yet there are many tree species that have proven themselves in Utah's urban environments, but that are little known. Often this is due to lack of commercial availability, lack of experts promoting them, or lack of existing examples for people to look at when they are considering a new tree.

The species included in this fact sheet are a handful (16) that the authors feel are rock-solid selections for much of urban and suburban Utah (from big cities to small towns) – selections that deserve to be planted much more than they are now. None are truly native to Utah, though one (Chitalpa) is a hybrid of a native and a non-native species. We hope in the future to have several good Utah-native tree species more readily available so we can add them to the list. Nevertheless, many Utah-native trees are adapted to cool, moist mountain conditions, while most of Utah's people live in the hot dry valleys that really challenge these trees. Aspen is an example of a good native tree that does poorly in most non-mountain landscapes.



April 2010 Horticulture/Landscapes/2010-01p

Shrub Selection for Utah Landscapes

Tawn Beddes, JayDee Gunnell, Heidi Kratsch and Rick Heftbower

Planting Basics

- Best time to plant?
 - Dormant = early spring
 - Growing = Spring after last frost or fall
- Area preparation
 - Clear of weeds (especially important in perennial plantings)
 - Supply nutrients lacking in soil
 - Amendments
 - Granular fertilizers
 - Till if desired / needed
 - Grade / shape as desired / needed



Planting Basics

- Area preparation (cont.)
 - Do I use landscape fabric?
 - Sometimes makes sense
 - Limits oxygen exchange
 - Maintenance can be frustrating



<https://extension.unh.edu/blog/2019/05/should-i-use-landscape-fabric-keep-weeds-out-my-perennial-garden>



<https://extension.unh.edu/statewide/dodge/landscape-fabric/>



<https://www.gardeners.com/how-to/using-weed-fabric/7524.html>

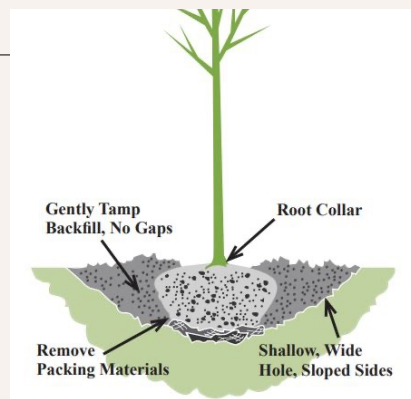
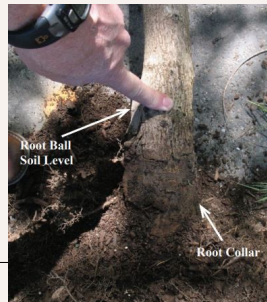


<https://www.amazon.com/WAHHWF-Non-Woven-Gentextile-Underlayment-Landscape/dp/B0C3Y179HK>

Planting Basics

- Planting (woody plants)
 - Ensure root ball is well hydrated
 - Remove burlap (at least cut slits)
 - Break up / prune roots if circling
 - Dig hole 2-3x width of roots
 - Soil line right below root collar
 - Backfill with native soil, some amendment ok (not more than 1/4 to 1/3)
 - Water thoroughly
 - Mulch around plant

Planting Landscape Trees



Planting Basics

- Planting (herbaceous plants)
 - Less finicky than trees
 - Break up roots if too thick
 - Bury root ball completely
 - Don't plant too deep (some exceptions exist, rule of thumb)
 - Water thoroughly



Maintenance

- Mulch
 - Especially in perennial beds
 - Many types - I prefer wood chips
 - Unless inorganic - will need replenishing
- Water
 - Establishment period - keep soil moist
 - Daily, every other day, weekly, every other week, etc.



- Fertilization
 - Depends on plant
 - Lots of woody plants do not need much (any) yearly fertilization
 - Herbaceous plants - refer to sources, usually at least once a season in spring (N), see soil tests
-

Thank you!

Presentation Survey



https://usu.co1.qualtrics.com/jfe/form/SV_eLNyiyasXoEBkAC

Presentation Resources



<https://extension.usu.edu/wasatch/wesley-crump-presentation-resources>
