

Xeriscape From The Ground Up with Jim Tolstrup

March 14, 2012





The ARNOLD
ARBORETUM
of HARVARD UNIVERSITY

Austin, TX



Shambhala Botanic Gardens



*Shambhala Mountain Center has much to offer a visitor, especially in the botanical and horticultural realm. Shambhala reminds me very much of some of the spectacular monastic settings I have seen in Asia. The native plant garden has inspired rock work and a fine collection of widespread and unusual native plants from the Rocky Mountain region... I am inspired at how the dramatic development of new buildings and increasing numbers of guests at Shambhala have been sensitively managed to minimize trampling the pristine, flowery meadows, and woodlands. The participants have demonstrated exemplary stewardship at this inspiring, beautiful high mountain valley where Eastern traditions tread gently on the Western landscape. **Panayoti Kelaidis, Denver Botanic Gardens***

Restoring nature where we live, work and play

The High Plains Environmental Center engages developers, builders, businesses and residents in making their community a “living laboratory” that provides integrated, leading edge examples of community design, land stewardship, eco-literacy and sustainable living that are grounded in reality and replicable.



Ireland 50-80 inches of rain per year



Northern Colorado is in a bio-region known as the short grass prairie on the high and dry western edge of the Great Plains. This region is essentially a desert environment with a scant 10 -14 inches of precipitation per year.



A Radically Altered Landscape

- 98% of the lower 48 states has been altered for human use.
- 43,480 sq miles of pavement
- 62,500 Sq miles of suburban lawns
- Source: *Bringing Nature Home* - Douglas W. Tallamy

What is Beautiful?



Chemicals

- 78 million households in the U.S. use home and garden pesticides
- More pesticide and fertilizer is applied to turf grass than any other crop (3.2-9.8 lbs) than agriculture (2.7 lbs per acre)
Nitrogen finds its way into waterways
- On average lawns receive twice the amount of herbicides/pesticide per square foot as any other crop in the U.S.
- It is estimated that seven million birds die each year from ingesting granular pesticide applications on American lawns
- As many as 5 million people are poisoned by pesticides worldwide each year the majority of which are young children



Lawnmowers

- Polluting at 100 the rate of the average car, lawn mowers and other small engines are responsible for 3% of the world's Co2 emissions.
- 800 million gallons of gas are used each year to power lawn mowers
- On average mowing grass for one hour produces as much pollution as driving 650 miles





How do you measure the value of a river?

- One square foot of lawn requires 20 gallons of water per year
- 60% of the residential water usage in the Western U.S. goes to landscaping
- Every year billions of gallons of water are used to support landscaping in Fort Collins alone.

Decline in bio-diversity

- Surveys by the Audubon Society reveal that bird populations in Colorado have declined 60% within the last 40 years as a result of suburban sprawl. Honey bees and other insects have experienced a similar decline within the same time-frame



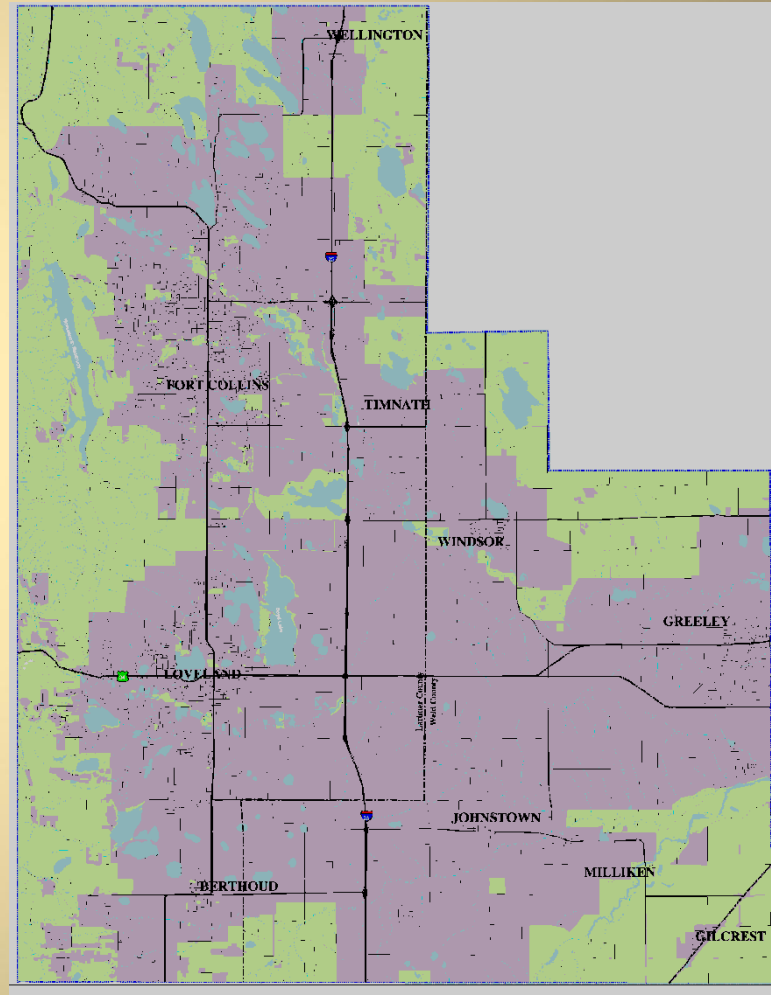
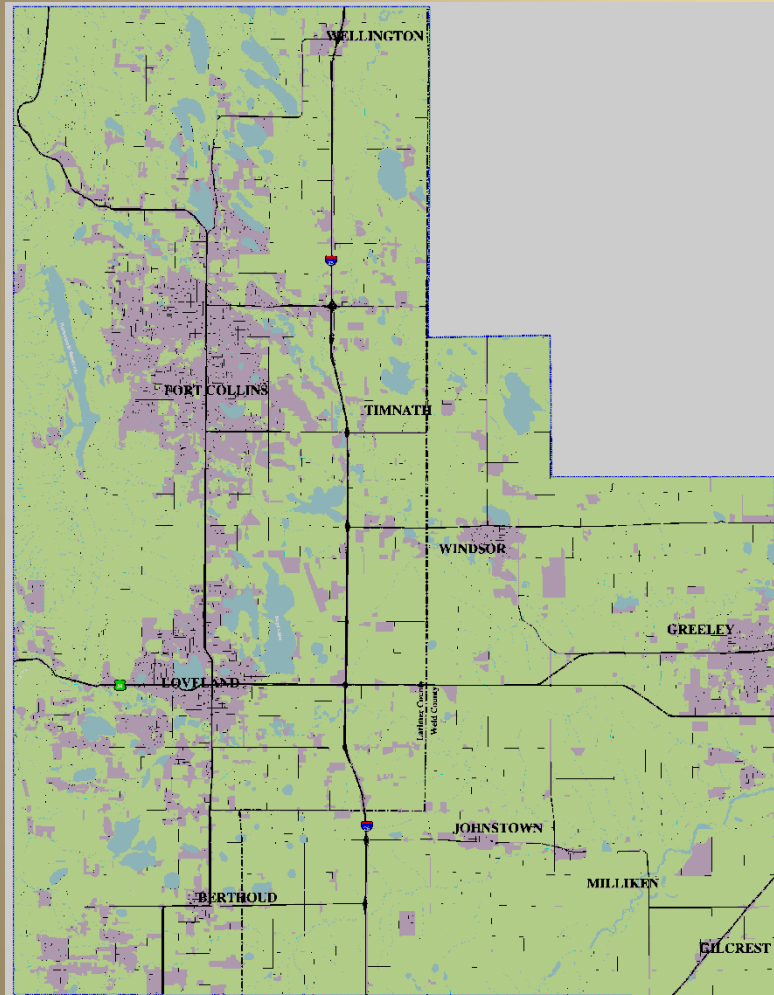
A sustainable society is one which satisfies its needs without diminishing the prospects of future generations



What is a “Sustainable” landscape

- Minimal maintenance cost
- Carbon neutral (or better)
- Healthy for humans and animals
- Promotes native biodiversity
- Bioregional
- Conserves natural resources
- Aesthetically pleasing
- Does not promote oppressive social hierarchy

Growth projections for Northern Colorado



To save the planet we have to stop growing?

- “Let’s reframe ‘growth’ for all that enhances life and go for more of it...lets use “growth” to describe that which aligns with nature’s rules to promote greater health, happiness, social and ecological vitality, resiliency and the dispersal of social power” Francis Moore Lappe

7 Principles of Xeriscape

- 1. Good Landscape Planning and Design**
- 2. Low Water Use Plants**
- 3. Appropriate Turf Areas**
- 4. Efficient Irrigation**
- 5. Soil Improvements**
- 6. Use of Mulches**
- 7. Appropriate Maintenance**

1. Good Landscape Planning and Design

- **Become well acquainted with the site**
- **Think regionally**
- **Identify desired activities/spaces**
- **Aspect, elevation and micro-climates where would plants grow naturally on this site?**
- **Opportunities to harvest water from the topography (nothing is flat)**
- **Group plants with similar requirements together**
- **Planting to achieve density**
- **Xeriscape does not have to disregard what has been learned over hundred of years of landscape architecture (a garden is not just a bunch of plants)**
- **Design and maintenance are related**

Becoming acquainted with the site



Re-defining Colorado's regional style



Identify desired activities/spaces

Plant Select Garden at HPEC

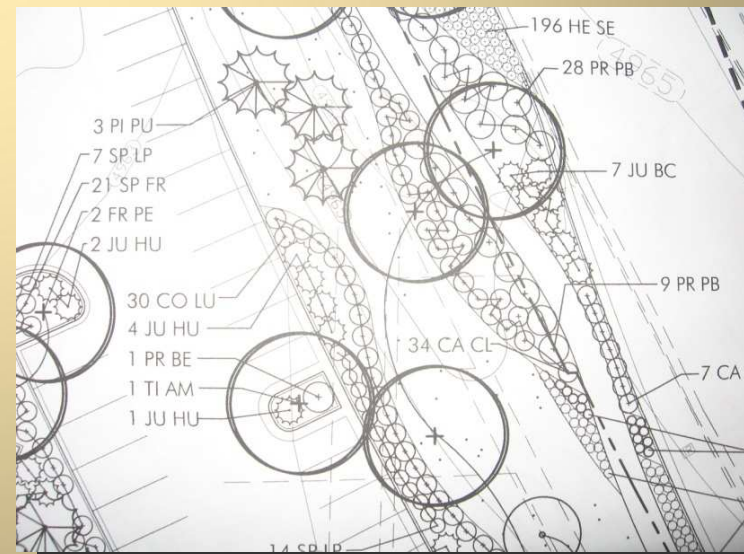


Micro climates



Design and maintenance are related

- Sustainable landscaping means putting the right plant in right place



Plant heavily to achieve density







Structure



Simple themes can be effective



Colorado water law declares that the State of Colorado claims the right to all moisture in the atmosphere that falls within its borders

- Senate Bill 09-080, which was passed by the General Assembly and signed by the Governor during the **2009** legislative session, allows limited collection and use of precipitation for landowners, only if:
 - 1. The property on which the collection takes place is **residential property**, and
 - 2. The landowner **uses a well, or is legally entitled to a well**, for the water supply, and
 - 3. The **well is permitted for domestic** uses according to Section 37-92-602, C.R.S., (generally, this means the permit number will be five or six digits with no “-F” suffix at the end), and
 - 4. **There is no water supply available in the area from a municipality or water district**, and
 - 5. **The rainwater is collected only from the roof**, and
 - 6. **The water is used only for those uses that are allowed by, and identified on, the well permit.**

Passive water harvesting



- Replicates the hydrology in a natural landscape
- Run-off is directed toward moisture loving plants

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Rainwater Harvesting for Drylands and Beyond

Brad Lancaster

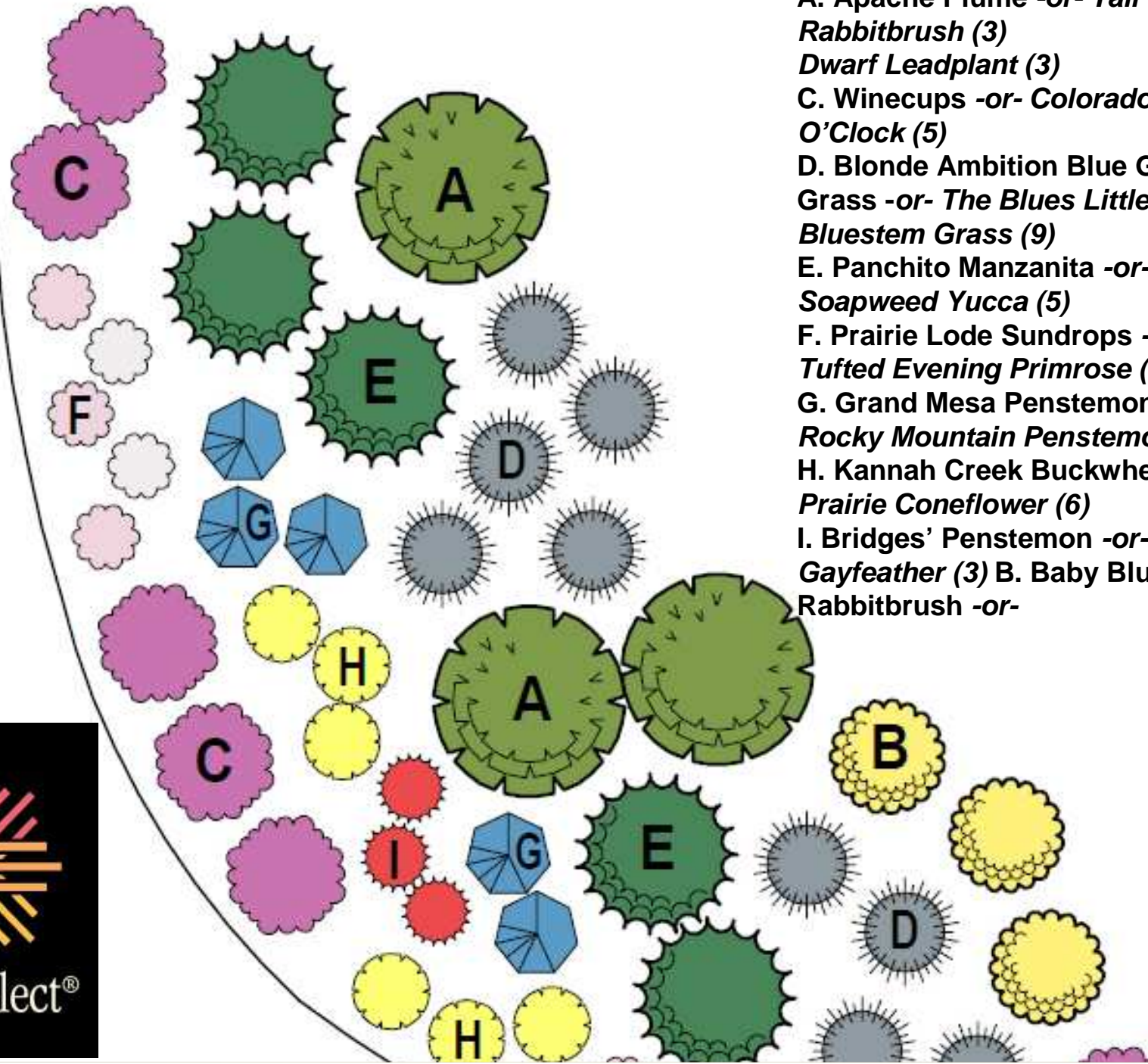
HarvestingRainwater.com ©2008 Brad Lancaster



HarvestingRainwater.com ©2008 Brad Lancaster

- A. Apache Plume -or- Tall Blue Rabbitbrush (3)
- Dwarf Leadplant (3)
- C. Winecups -or- Colorado Four O'Clock (5)
- D. Blonde Ambition Blue Grama Grass -or- The Blues Little Bluestem Grass (9)
- E. Panchito Manzanita -or- Soapweed Yucca (5)
- F. Prairie Lode Sundrops -or- Tufted Evening Primrose (11)
- G. Grand Mesa Penstemon -or- Rocky Mountain Penstemon (5)
- H. Kannah Creek Buckwheat -or- Prairie Coneflower (6)
- I. Bridges' Penstemon -or- Plains Gayfeather (3)
- B. Baby Blue Rabbitbrush -or-

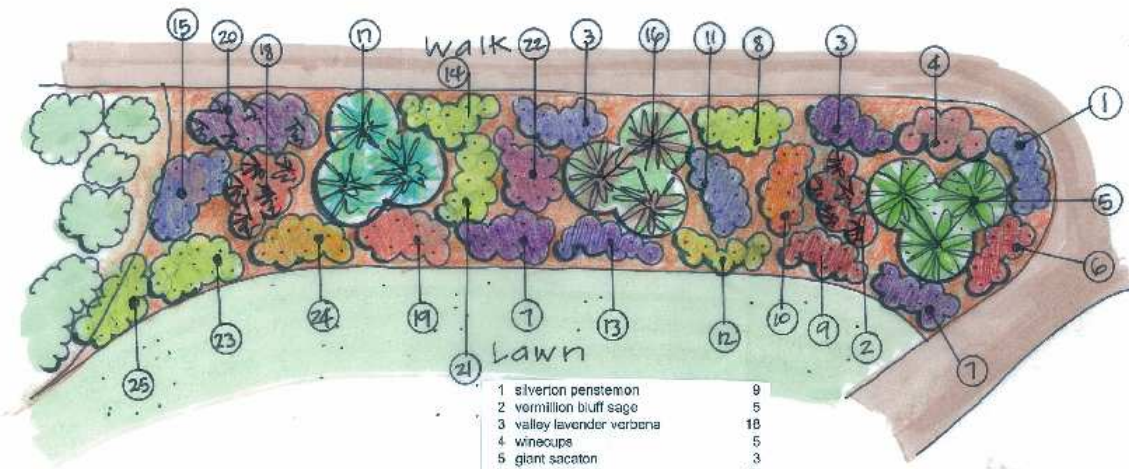
30'



HIGH COUNTRY GARDENS

BEAUTIFUL PLANTS FOR THE WATERWISE GARDEN





- | | |
|----------------------------------|----|
| 1 silverion penstemon | 9 |
| 2 vermilion bluff sage | 5 |
| 3 valley lavender verbena | 18 |
| 4 winecups | 5 |
| 5 giant sacaton | 3 |
| 8 cherry skullcap | 13 |
| 7 pikes peak penstemon | 18 |
| 8 prairie lode sundrops | 9 |
| 9 red rocks penstemon | 9 |
| 10 Sunset hyssop | 9 |
| 11 shadow mountain penstemon | 9 |
| 12 denver gold rudbeckia | 9 |
| 13 mohave sage | 9 |
| 14 kannah creek buckwheat | 9 |
| 15 prairie jewell penstemon | 9 |
| 18 red yucca | 3 |
| 17 bluestern joint fir | 3 |
| 18 red birds in a tree | 5 |
| 19 wild thing sage | 9 |
| 20 la veta lace geranium | 7 |
| 21 prices plume | 9 |
| 22 anoron sunset hyssop | 8 |
| 23 silver blade evening primrose | 9 |
| 24 coronado hyssop | 9 |
| 25 chocolate flower | 9 |



Native plants = habitat

**Native plants sustain the wildlife species they
co-evolved with over millions of years**



2. Low Water Use Plants





Kannah Creek Buckwheat



Plant Select®

Agastache rupestris
SUNSET® Hyssop



Plant Select®

Agastache cana 'Sinning' PP 13,673
SONORAN SUNSET® Hyssop

Red Bird in a Tree



Denver Gold Columbine





Pikes Peak Purple



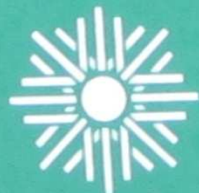
Rosaceae

Rose Family

Fallugia paradoxa

Apache Plume

SW United States,
Mexico



Plant Select®

Arctostaphylos x coloradoensis
PANCHITO™ Manzanita



Plant Select®

Cercocarpus intricatus
Leaf Mountain Mahogany



Prairie lode Sundrops

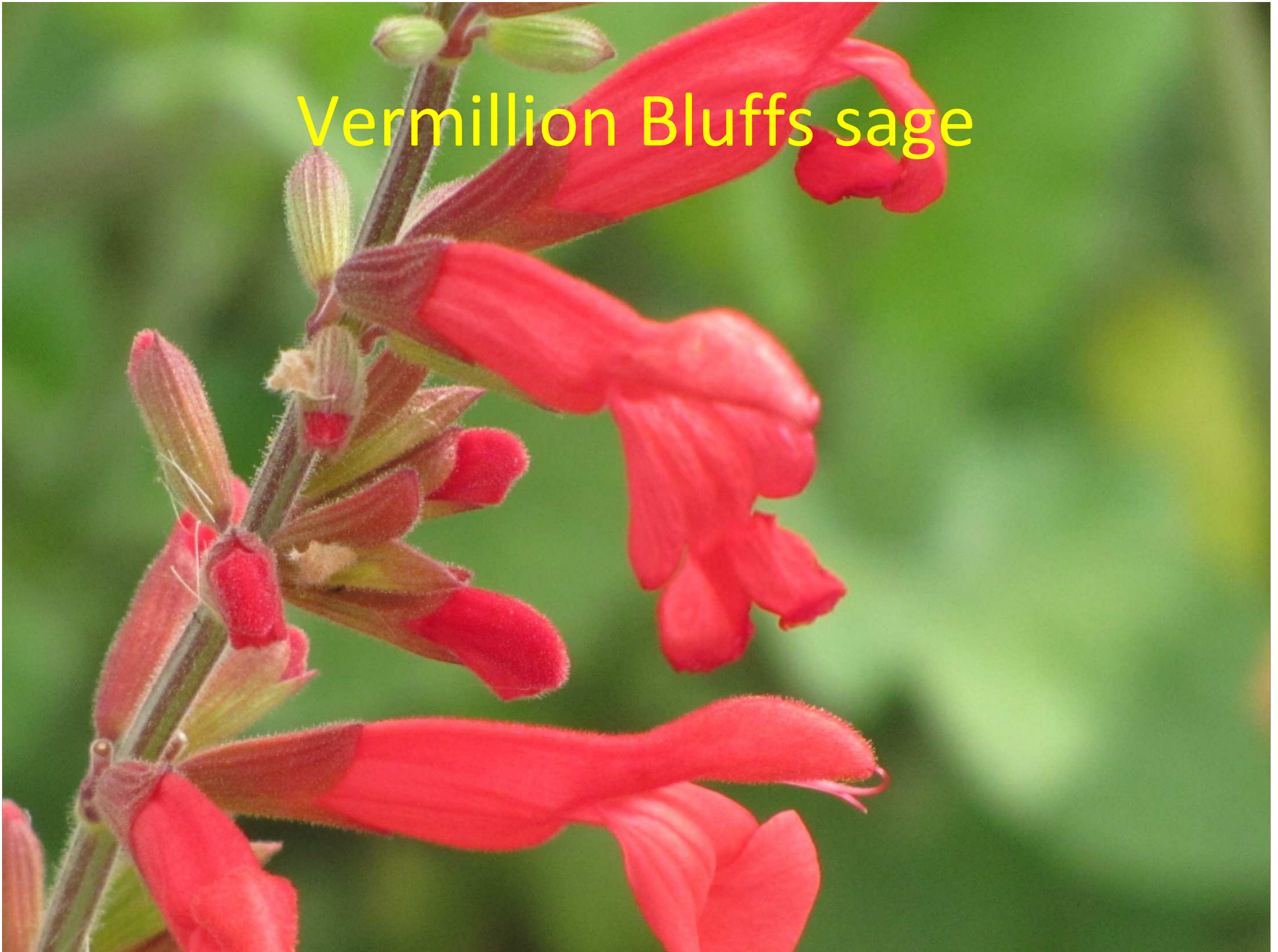


Fern bush



Prairie Jewel Penstemon

Vermillion Bluffs sage





Red Rocks Penstemon





Plant Select®
Salvia greggii
Wild Thing Sage

A stage with red curtains. The top part of the curtains is draped in a scalloped pattern, while the bottom part is pleated. The word "Intermission" is written in a large, white, serif font in the center of the stage.

Intermission

A photograph of a golf course with several large trees and long shadows cast across the grass. The scene is captured in the late afternoon or early morning, with the sun low in the sky, creating long, dark shadows that stretch across the green grass. The trees are mostly deciduous with green and some yellowing leaves, suggesting late summer or early autumn. The overall atmosphere is peaceful and well-maintained.

3. Appropriate Turf Areas



Turf-type fescue uses half the amount of water required by Kentucky Bluegrass



Turf wars?

Some cities and home-owners associations have essentially banned the use of native turf grasses.



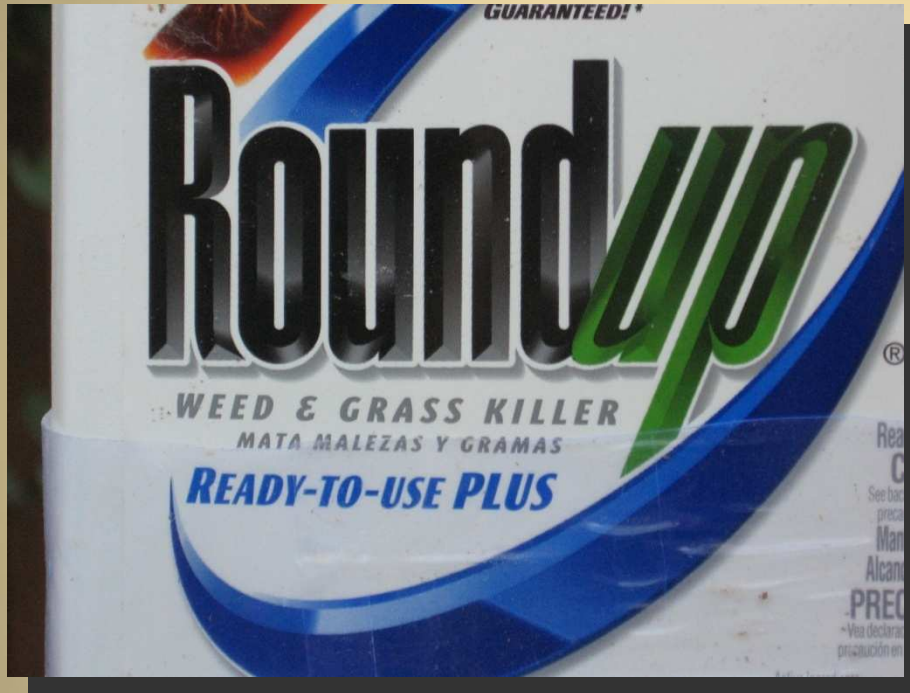
Establishing native grasses

- Use herbicide before seeding to eradicate weeds such as bindweed
- Warm season grasses such as Blue Grama and Buffalo Grass will not germinate until May or June.
- Add cool season grasses such as Green Needle Grass to green up more quickly
- Water grass through establishment period (first season)
- Grasses can be mowed once a year before growing season begins, after that the more you mow the more weeds you will have. Excessive mowing stresses the grass and opens the soil to sunlight, allowing weeds to germinate
- If you have to mow more often in order to control weeds, set mower height at 8 inches or higher to spare the grass.
- Look out for “dry-land” grasses such as Crested or Intermediate Wheat Grass which are aggressive non-natives





The time to use herbicide is before you plant your garden



- Using herbicides can be a safe and effective tool to establish your landscape, it doesn't have to become a lifestyle.

4. Efficient Irrigation



Northern Water



5. Soil Improvements

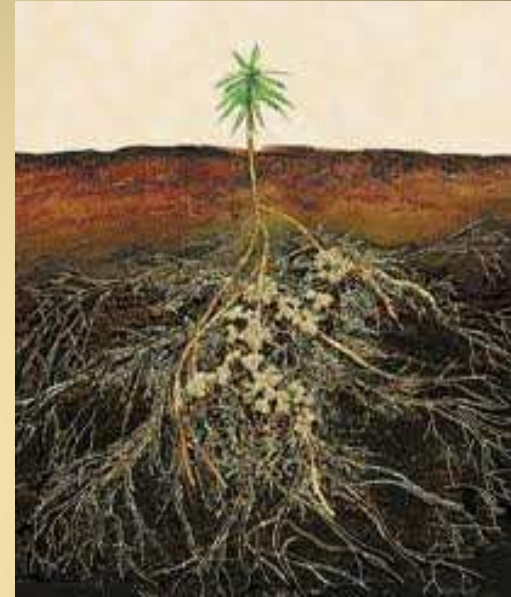
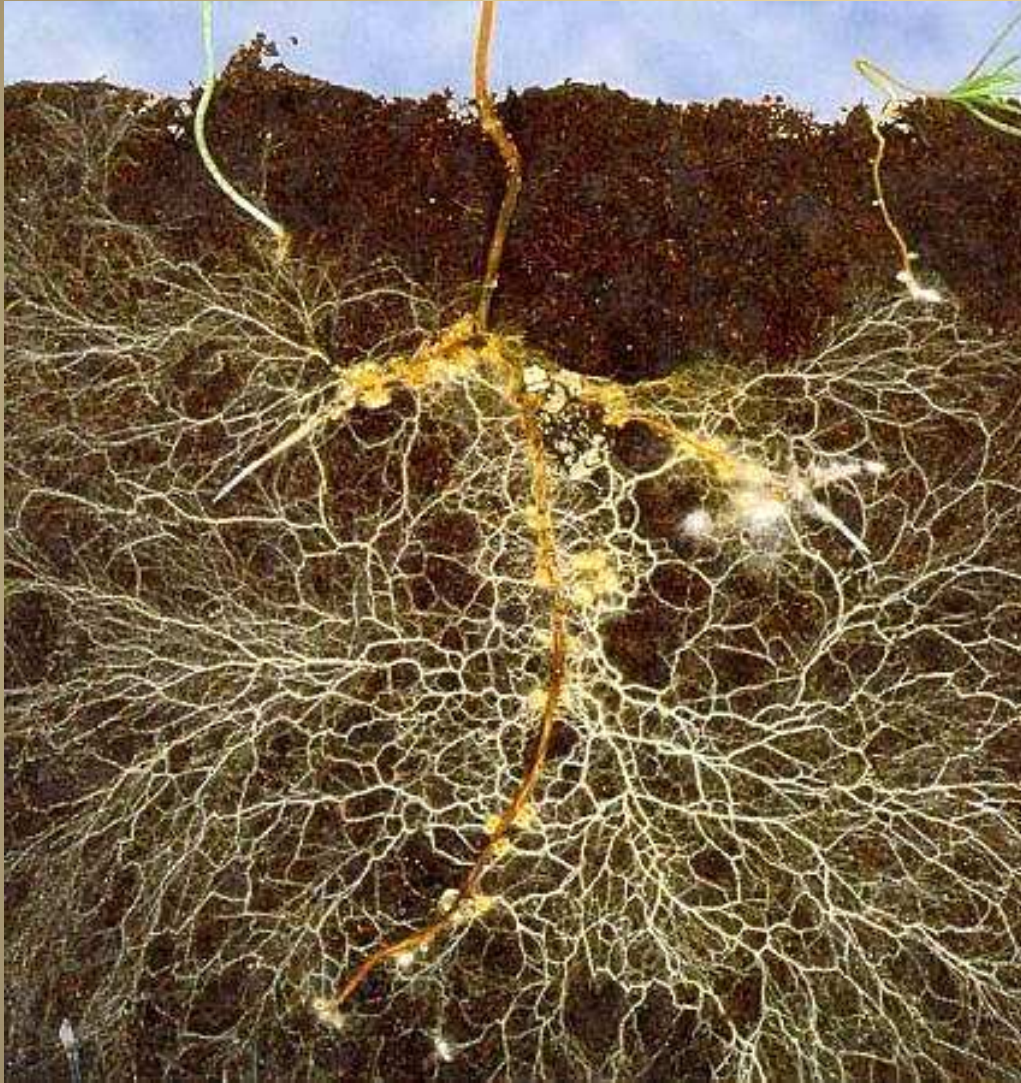
- Where did this soil come from?
- How was it stored?



Soil preparation



mycorrhizae



Covering the ground



- Temperatures beneath gravel (although hotter on top are the same as those under mulch).
- Gravel does not absorb water the way mulch does.
- Bark mulch can lock up nitrogen
- Weed barrier does not allow plants to move naturally (but weeds still grow on top of it.) weed barrier is not recommended where bark mulch is used.
- Steel edging is unnecessary with non-rhizominous grasses



7. Appropriate Maintenance

During the growing season

Most pest problems resolve themselves if plants are healthy

Prune shrubs that bloom on old wood (hydrangea, forsythia, lilacs, etc.)

Avoid over-pruning (clean pruners between plants)

After Frost

- Don't be in a hurry to cut back old growth
- Winter watering is essential for new plantings even for xeric plants
- Cut back shrubs that bloom on new wood (roses, buddleia, etc.)



