



Las Campanas Water Cooperative

SANTA FE, NEW MEXICO

Landscaping for Today and Tomorrow Spring 2021

Challenges and Changes--Gardening in the High and Dry

What are the challenges to landscaping here and how are things changing?

Climate

Temperatures

- Now listed in Zone 6 (winter lows to -10 F), in Zone 5 before 2011
- Continued potential for severe freezes (to -18F in 2011)
- Earlier warm up in spring with continued potential for late freezes (into early May)
- First freeze coming later in the fall (mid-late Oct.), creating a longer growing season
- Unpredictable variability (2013 vs 2015)

Precipitation

- Less predictable patterns and possibly less overall precipitation
- Lower snowpack in mountains that melts quicker, more rain/less snow in lower elevations
- More intense rain events with longer dry spells in between during growing season
- More severe droughts more frequently; likelihood of multi-year or multi-decadal drought by 2050

Sunlight UV rays 30% higher at 7,000 ft than at sea level.

Effects of the above

- Potential for severe freezes limits use of heat and drought tolerant low desert plants
- Earlier spring warm up leads to earlier bloom, can lead to disruption of plant/pollinator networks
- Earlier spring bloom can easily be damaged by late frosts, making fruit tree culture less reliable
- Warmer fall temps can lead to delayed dormancy and possible damage from hard fall freezes
- Hotter environment increases stress on plants, making them less resistant to pests and diseases
- Increased heat leads to more soil evaporation and greater water need, over a longer time
- Warmer winters and lower snowfalls lead to less soil moisture storage for spring growth, less water for irrigation in summer
- Sporadic frequency and greater intensity of summer rains leads to less soil recharge and potential for greater erosion
- Intense sunlight can lead to sunscald of thin bark, sunburn of unprotected gardeners
- All factors lead to greater stress during droughts, with likelihood of greater dieback and death and prolonged negative effects





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Soils

southwestern soils

high mineral/low organic matter content

alkaline, with iron and other micronutrients often tied up in mineral complexes

Solutions--Gardening for Today and Tomorrow

Develop a partnership with Nature

frame of reference

"we are the hosts at a garden party celebrating the intricate web of interdependence among species"

some pathways to partnership

Permaculture, Biodynamics, Devic gardening, ecological studies

Site Analysis

patterns of energy movement

sunlight, water, wind, animals, fire

topography

where are the slopes and what lies at the bottom? where does water go?

South and west-facing slopes are hot and dry, hard to irrigate with sprinklers (revegetation)

microclimates

around structures and natural features— warm/cool surfaces, wind protection, cold air drains

soil characteristics

throughout the site--don't lump soils together for testing if they are different

water sources & quality

municipal, grey water, harvested rainwater

plants

"weeds"/useful plants--erosion control, windbreaks/screens, wildflowers, "problem" plants

potential non-human pests

deer/elk, gophers, rabbits, ground squirrels, pack rats, skunks

man-made limitations

utilities, laws/covenants, solar access, neighbors' needs

Needs Analysis

humans, other large animals, microbial communities, plants

consider needs in relation to changing climate and other future potentials

Dealing with climate/weather factors





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Take advantage of microclimates

heat off south & west walls, shade on north and east

Provide protection from sun/intense rainfall/erosion

including shade structures, one-rock dams, terracing

Work to insure a water supply

Passive water harvesting

land sculpting

Soil Sponge--"pumice/scoria" wicks

Active water harvesting

holding water in tanks

grey water use

Drip irrigation

Dealing with soil factors

understand soil interactions

plants from different environments have different needs

creating different kinds of soil for poorly adapted plants

how much can you change the soil, over how large an area? how big do root systems grow?

build microbial communities over time <compost, mulch, irrigation>

fertilizers and soil fertility

building soil fertility—chemical salts or plants & rocks?

Plant selection

characteristics to look for

hardiness--zone 5 vs zone 6

tolerance to drought/heat/alkalinity/low humidity

adaptation to specific site conditions

disease/pest resistance

beneficial aspects





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Learn from Others

Santa Fe Botanical Garden on Museum Hill, Santa Fe Master Gardeners, SFCC, New Mexico Native Plant Society, Santa Fe Cactus and Succulent Club

Landscaping Fundamentals

Plan before you plant

Prioritize development based on your site analysis, your needs analysis, your resources and your limitations.

Develop the site in logical order

move from land shaping
to hardscape and utility infrastructure
then soil modification (if necessary)
and last--planting

Understand how plants grow here

growth rates

buying time, the bigger they are the longer they are in ICU

mature sizes

nurseries are for babies--most people tend to overplant or plant in the wrong place
"It's easier for us to change our expectations than for plants to change their growth habits"

Going shopping finding help "caveat emptor"

finding plants--container grown vs. balled in burlap

potential problems--root spiraling/root bound, planted too deep

Getting grounded--planting techniques preparing the site/planting hole

the fertilizer/amendment debate and how to think about it

planting depth/what to leave in the hole

Working with drip irrigation

keep soil and plant types in mind
water in season
water the expanding root system
avoid disasters





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Dealing with drought, now and in the future re-prioritize garden regularly

what's working/what isn't?

what really suits your needs?

how much water am I using? (Eye on Water)

what can I let go of/what needs to change?

