This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
Landscape Trends:
Reducing Water While Growing Food For People and Pollinators

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DALLAS
Improved and sustainable urban and suburban living
7.5 MILLION PEOPLE
MISSION
Shape perception
Change behavior
D.I.Y. GUIDES, OTHER PUBLICATIONS
LIVE PUBLIC COURSES

- 60 municipalities
- 4 major water utilities
Outdoor Design Trends

Clients are asking for:

Outdoor living spaces that

- Are environmentally sustainable
- Reduce water costs
- Are lower maintenance

83% Native plants/Adapted Plants
74% Pervious Paving
72.4% Drip/ Efficient Irrigation
71.2% Rain Gardens
70.8% Reduced Lawn Area

70.6% Food/vegetable gardens
68.7% Rainwater/ Graywater Harvesting
65.9% Water-saving Xeriscape
35% in U.S. Are Growing Their Own Food
(42 million households)

- **Millennials** - 63% increase in edible gardening

**Solution to:**
- Social and environmental issues?
- Food waste?
- Food security?
- Food transport miles?
- Wasted water?
- Depletion of arable land?
"Lettuce" talk about vegetables! Whether you're trying to eat healthier, want to know where your food comes from, or just love the idea of growing delicious vine-ripened vegetables at home, this class is for you. Learn proper soil preparation, garden design and layouts, disease and insect identification, as well as the proper planting times for getting the most production out of your favorite vegetables in the challenging climate of North Texas. {All Seasons} 
(1.5 - 2 hour class)
FoodScaping

Edible landscapes are one of the hottest trends in garden design! Utilizing areas in your landscape to grow edible plants is a great way to add food to your table and reduce your grocery bill. This program teaches you how to incorporate edible plants into your home garden and landscape by taking advantage of their ornamental value. You will learn how herbs, fruits and vegetables can add to the colors and textures of your permanent landscape combining both aesthetics and functionality. {All Seasons} (1.5 - 2 hour class)
Let's Ketchup on Tomatoes

Have you always wanted to grow this delicious fruit?! The most sought-after garden treasure can be challenging to grow in the extreme climate and soils of North Texas. We'll go into depth, providing tips on how to get the most production out of your tomato plants covering everything from variety selection, proper planting, best irrigation practices to pest and disease control. No matter your gardening skills, this class will be sweet! {Spring/Summer/Fall} (1 hour class)
Herb Your Enthusiasm: Herb Gardening

Get the most out of your landscape or kitchen garden by choosing from the assortment of tasty and beautiful herbs adapted to Texas. We'll talk about everything from design and plant selection, proper soil prep and planting techniques, to the many uses of our favorite herbs inside and outside the home. This class is sure to be a great thyme! (All Seasons) (1 hour class)
The Urban Orchard: Fruits, Nuts and Berries

Fruits, Nuts, & Berries
For Water Efficient Landscapes

Site Selection
Soil Preparation
Irrigation
Plant Selection

Composting
Mulch
Fertilization
Pesticides

The Urban Orchard: Fruits, Nuts and Berries

Whether you're trying to grow (or planning to grow) fruits, nuts and/or berries at home for their superior flavor, to save money or just want to know where your food comes from, this class is for you! This program teaches you how to become more water efficient in your "urban orchard", what plants and varieties work best in our area, the basics of pest control, proper pruning methods and other practical ways to increase production. Branch out and join us for a fruitful program! (All Seasons) (1.5 - 2 hour class)
Outdoor Design Trends

Giving Back with Gardens

Wildlife Friendly Landscapes
- Are environmentally sustainable
- Are lower maintenance
- Can reduce water costs

Attract pollinators
IPM/ Organic methods
Native Plants
Gardening for Wildlife

On The Wild Side: Gardening to Attract Wildlife

A often overlooked asset of many regionally native and adapted plants is their ability to attract and provide food and shelter for wildlife – literally bringing life into your landscape. Many native birds, butterflies, bees, and other welcome animals actually depend on these plants for survival. There are a number of plants with various structures, textures, and colors to meet the needs of homeowners interested in maintained and naturalistic landscapes. Designing a garden of your personal aesthetic or the types of wildlife you’re interested in attracting, there is a native and adapted plant palette to suit your tastes while boosting wildlife efficiency at home.

Benefits of Native & Adapted Plants
Native and native-adapted plants in home and business landscapes serve as environmentally sustainable assets that are usually more efficient when compared with resource intensive varieties. Some of the characteristics leading more Texans to incorporate native and adapted varieties include:

- Drought tolerance
- Heat tolerance
- Water efficiency
- Typically low fertilizer requirements
- Typically low pesticide requirements

What do you mean by Native & Adapted?
Native plants are hardy, having evolved in our (sometimes) harsh and unpredictable climate. They thrive on the soils that occur here and on the specific nutrients those soils provide. Native plants also tend to be more resistant to pest pressures of insects and diseases common to North Texas. A plant might be native to:

- Texas
- North Texas
- Your County
- Your City

Adapted plants are also hardy but have been introduced to Texas landscapes through the horticulture industry. Most often, they originate from areas with similar soil types, climates and or hardness zones.

Texas Plant Hardiness Zones

Visit unlawnstress.tamu.edu for a comprehensive and searchable database of plants that thrive in North Texas.

Remember, even though a plant is native to Texas, it is important to make sure it is well adapted to our area. A plant native to Corpus Christi may not feel so at home in Dallas.

There are also many plants available that have native parents, but have been bred for improved ornamental characteristics.

Before you begin, Pesticide and fertilizer awareness

ALWAYS apply fertilizers and pesticides adhering strictly to label instructions.

Practice INTEGRATED Pest Management (IPM) whose goal is to eliminate pest problems. NOT to eradicate pests. IPM helps to strengthen and stabilize the landscape by creating conditions that are more favorable for plants than for pests.

1. Identify the insect first! Is it a friend or foe? A pest or predator? A weed or wanted treatment?
2. Is it a pest, does the problem warrant treatment? (high numbers, damage to plant)
3. Consumer treatment options that are less toxic to you and the environment.
4. Make sure the treatment, organic or inorganic, will not adversely affect beneficial insects like bees, butterflies, and caterpillars.

Visit http://ipm.tamu.edu for IPM information.

Conservation
Plant Selection
Mulch
Stormwater
Fertilization
Pesticides
Butterfly Gardening

Butterflies are welcomed visitors that bring the landscape alive with activity and help to pollinate our favorite plants. Learn tips to create butterfly habitat in your landscape by introducing a water source and feeders, as well as how to select the right plants as host species for caterpillars. We'll also talk about our favorite native and adapted flowers that provide long lasting blooms as nectar sources to help your garden take flight! {Spring/Summer/Fall}

(1 hour class)
**GARDENING FOR WILDLIFE**

**GOOD GARDEN GUESTS FOR GROWTH**

Plant a variety of plants to ensure continuous flowering from early spring through late fall. A full spectrum of wildlife visitors with plants of varied height and type. Flowers, trees, and shrubs should provide habitat in a variety of flower shapes, sizes, and colors. Include plants that produce seed and fruit at different times throughout the year.

**BUTTERFLIES**
-}

**HUMMINGBIRDS**
- Deep-hued flowers are a favorite of hummingbirds. Try red, orange, and yellow flowers.
- But don't forget to include plants with white, blue, yellow, and pink flowers.

**BIRDS**
- Sow seeds of plants that produce seed and fruit for other birds.

**LAYERING FOR BIRDS AND WILDLIFE**

Implement a border with native, native, and adapted trees and shrubs for a native wildlife habitat. Layer your plant life with the shrub, tree, and vine and balance toward the rear. Create vertical niches for a variety of habitats and connect to natural or man-made features in your yard.

Trees:
- American Elm
- Hackberry
- Maple
- Oak
- pear
- Redbud
- Willow

 Shrubs:
- Amur cork
- Asters
- Barberry
- Black cherry
- Blueberry
- Boxwood
- Crabapple
- Dogwood
- Elderberry
- Forsythia
- Honeysuckle
- Privet
- Rhododendron
- Rose
- Speckled alder
- Sumac
- Tiger lily
- Viburnum
- Yew

Grasses:
- Agropyron
- Blue grama
- Fescue
- Sedge
- Sedge
- Switch
- Tangelos
- Veronica
- Vetiver

Wildflowers:
- Black-eyed Susan
- Bachelor's button
- Black mustard
- Cardinal flower
- Coreopsis
- Daylily
- Evening primrose
- False foxglove
- Fireweed
- Gazania
- Gladiolus
- Heliotrope
- Indian paintbrush
- Jerusalem artichoke
- Lupine
- Marigold
- Michaelmas daisy
- Monkeyflower
- Nasturtium
- Nolina
- Oxalis
- Phlox
- Poppy
- Primrose
- Red clover
- Scabiosa
- Snapdragon
- Sunflower
- Sweet pea
- Tulip
- Valley lily
- Verbena
- Wild carrot
- Wild geranium
- Wild petunia
- Wild rose
- Wildrye
- Yarrow
The Bait and Switch
Texas Reservoirs: Monitored Water Supply Reservoirs are 89.7% full on 2019-02-06
Population of Texas

Increase 70% by 2070
(29.5 million to 51 million)
*TWDB Projections

Figure E5.2 - Projected population in Texas (millions)
Texas’ existing water supplies

(that can be relied on in the event of drought)

Expected decline by approximately 11% (2020 - 2070)

15.2 million to 13.6 million acre-feet
Water supply expected to decrease (from 15.2 million acre feet to 13.6)

Figure ES.3 - Projected annual water demand and existing water supply in Texas (millions of acre-feet)
Drought In Texas

U.S. Drought Monitor
Texas

January 29, 2019
(Released Thursday, Jan. 31, 2019)
Valid 7 a.m. EST

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/
Potential water shortage?

4.8 million acre-feet per year in 2020
8.9 million acre-feet per year in 2070

(in drought of record conditions)
What Can We Do To Get Wore Water?

Texas 2017 State Water Plan

Conservation & Reuse strategies –

Increased from 34% to 45 % of total future water volume!
Conservation Potential

Outdoor Use

Table 3: Annual average water use by city for 2004 through 2011.

<table>
<thead>
<tr>
<th>City</th>
<th>Indoor use (gallons)</th>
<th>Outdoor use (gallons)</th>
<th>Outdoor use as a percentage of total use</th>
<th>Gallons per household per day for indoor use (gallons)</th>
<th>Gallons per household per day for outdoor use (gallons)</th>
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<tbody>
<tr>
<td>Amarillo</td>
<td>4,203,333,000</td>
<td>3,110,188,125</td>
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<td>Arlington</td>
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<td>Austin</td>
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<td>College Station*</td>
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<td>Corpus Christi</td>
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<td>Houston</td>
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<td>Katy</td>
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<td>Laredo</td>
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<td>Lubbock</td>
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<td>Odessa</td>
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<td>Pflugerville</td>
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<td>City average</td>
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</table>

*City with the highest outdoor water use
**City with the lowest outdoor water use

Average Annual Outdoor Water Use
2004 - 2008

Outdoor Use (Percent of Total Use)
- 10% - 20%
- 20% - 30%
- 30% - 40%
- 40% - 50%
- 50% - 65%
Development Impacts the Water Cycle

- 40% increase in urban evaporation
- 30% increase in urban runoff
- 50% decrease in natural evapotranspiration
- 15% decrease in natural runoff
- 55% decrease in natural infiltration
Development Impacts the Water Cycle

Runoff

- Fertilizer
- Pesticides
- Pathogens
- Sediment
- Toxic Contaminants
- Debris
- Thermal Stress

Increased Quantity
Decreased Quality
Greater Speed

50%
10%
15%
55%
Protecting Our Surface Water

Down the Drain
Into OUR Reservoirs

Urban Areas
Agriculture Areas
Commercial Properties and Multi-Family
Residential Single-Family Homes

Community Stewardship
Landscape CPR

C - Conservation
  • Saving resources **Water, Soil, Energy, Air Quality**
  • Preserving and **enhancing habitat** and **ecological functions**

P - Permeability
  • Disconnecting impermeable surfaces
    • Breaking up hard surfaces **allow water to spread** out & sink in the ground
    • **Creating soil** that is biologically active & **holds on to water**

R - Retention
  • Holding water on the property for the benefit of **Soil, Plants, and Habitat**
  • Grading to **capture water** and **allow it to sink** throughout the landscape
  • Eliminating of Runoff
Lawns

Commonly over watered
- Creates the stigma “water hogs”

Overuse can lead to Water Pollution
- Fertilizers
- Pesticides,
- Other chemicals
  (If managed the wrong way)
Reduce Turf Areas?

- 1/3 Turfgrass
- 1/3 Native/Adapted Perennials
- 1/3 Pervious Hardscape
Benefits of Native & Adapted

- Drought Tolerance
- Heat Tolerance
- Less Water
- Less Fertilizer
- Less Pesticides

*Native=Hardy & from Texas
*Adapted=Hardy & introduced to landscapes
Creating Advocates

2019 attendance *2174

36% of total attendance
Reducing Water While Growing Food For People and Pollinators

Questions?

@TXPlantGuy DANIEL CUNNINGHAM