



PLANTS THAT SUPPORT HONEYBEES IN NORTH TEXAS

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@RootedinTX

WHY PLANTS MATTER

- **Healthy forage = resilient bees**
- **Nutrition strengthens defenses**
- **Hive health starts in the landscape!!!**

“The nutritional landscape surrounding a colony is as important as its genetics or management. Diverse, high-quality pollen and nectar sources make honey bee colonies more robust against stressors like parasites, pesticides, and disease.”

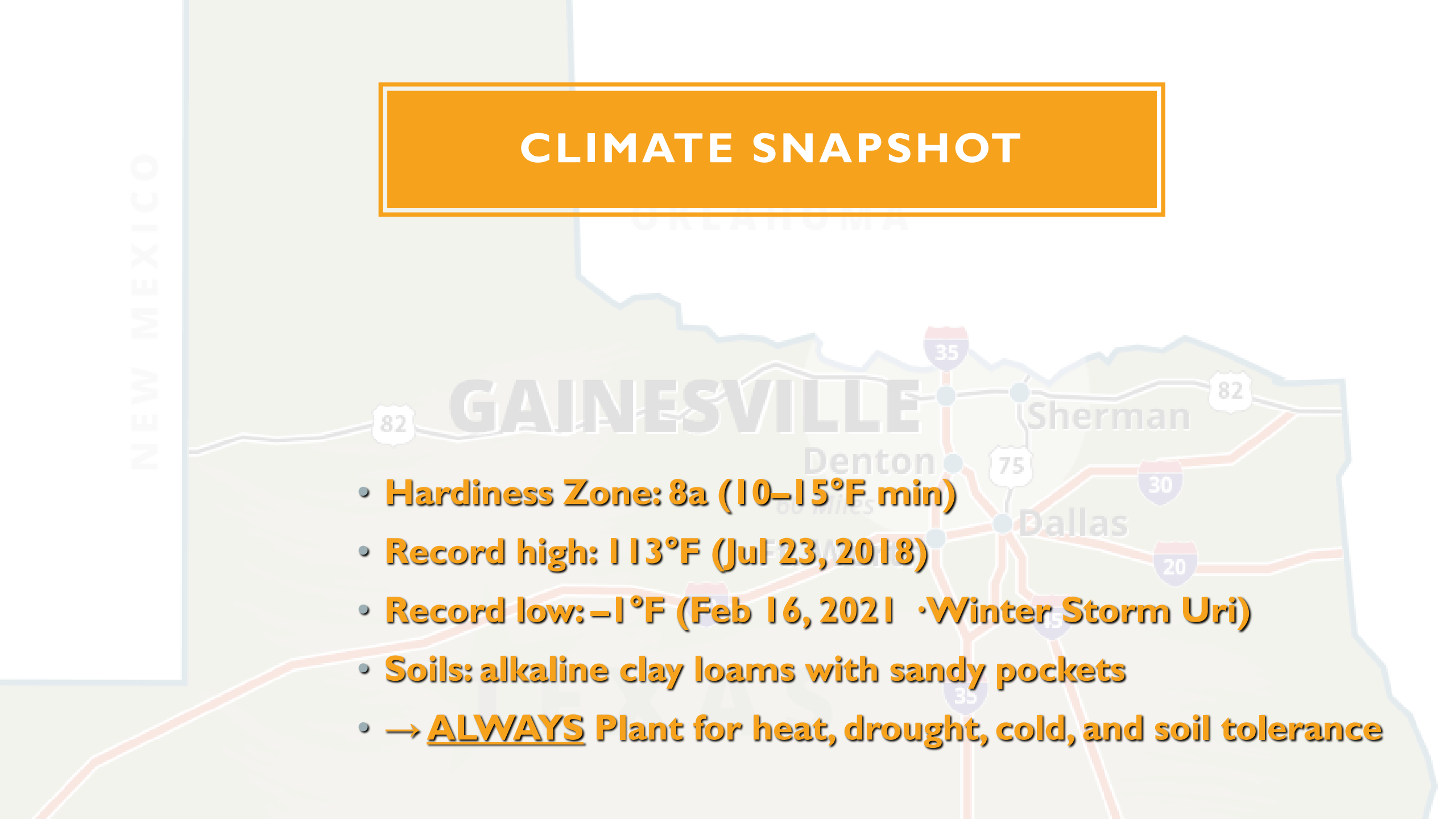
— **Juliana Rangel, Ph.D., Texas A&M AgriLife Research, Entomology**



BEE PRESSURES TODAY

- **Pests:** Varroa · SHB · Wax moths
- **Habitat:** forage gaps · urban sprawl
- **Climate:** heat · drought · extremes

CLIMATE SNAPSHOT

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- **Hardiness Zone: 8a (10–15°F min)**
 - **Record high: 113°F (Jul 23, 2018)**
 - **Record low: –1°F (Feb 16, 2021 • Winter Storm Uri)**
 - **Soils: alkaline clay loams with sandy pockets**
 - → **ALWAYS Plant for heat, drought, cold, and soil tolerance**

TREES VS. PERENNIALS

***Trees: Powerhouse Forage**

- Thousands of blooms in a 3-D canopy (20–40+ ft of vertical forage)
- Large surface area → huge nectar & pollen yield
- Anchor food sources in spring/summer?

Perennials: Patchwork Forage (Fill seasonal gaps when trees are not flowering)

- Ground-level diversity, long bloom windows!
- Easy to mass plant for quick bee attraction

Best Practice

- Mix **trees, shrubs, and perennials** → continuous bloom
- Scale up: large acreage = wildflower seeding; small lots = perennial blocks

A close-up photograph of a mesquite tree branch. The branch is covered with green, pinnate leaves and several yellow, cylindrical flower clusters. A honeybee is perched on one of the flower clusters, facing left. The background is a soft-focus view of more mesquite foliage.

MESQUITE (TREE)

- **Bloom:** Spring–Summer; Resource: Both
- **Size:** ~20–25' H × 20–25' W
- **Sun:** Full sun to part sun



DESERT WILLOW (TREE)

- **Bloom:** Summer–Fall; Resource: Nectar
- **Size:** ~18–25' H × 15–20' W
- **Sun:** Full sun to part sun

* and Chitalpa

A close-up photograph of a Honey Locust tree branch. The branch is covered in vibrant green, pinnately compound leaves. Several long, drooping catkins of small, yellowish-green flowers hang from the branch. The background is a soft-focus view of more tree foliage.

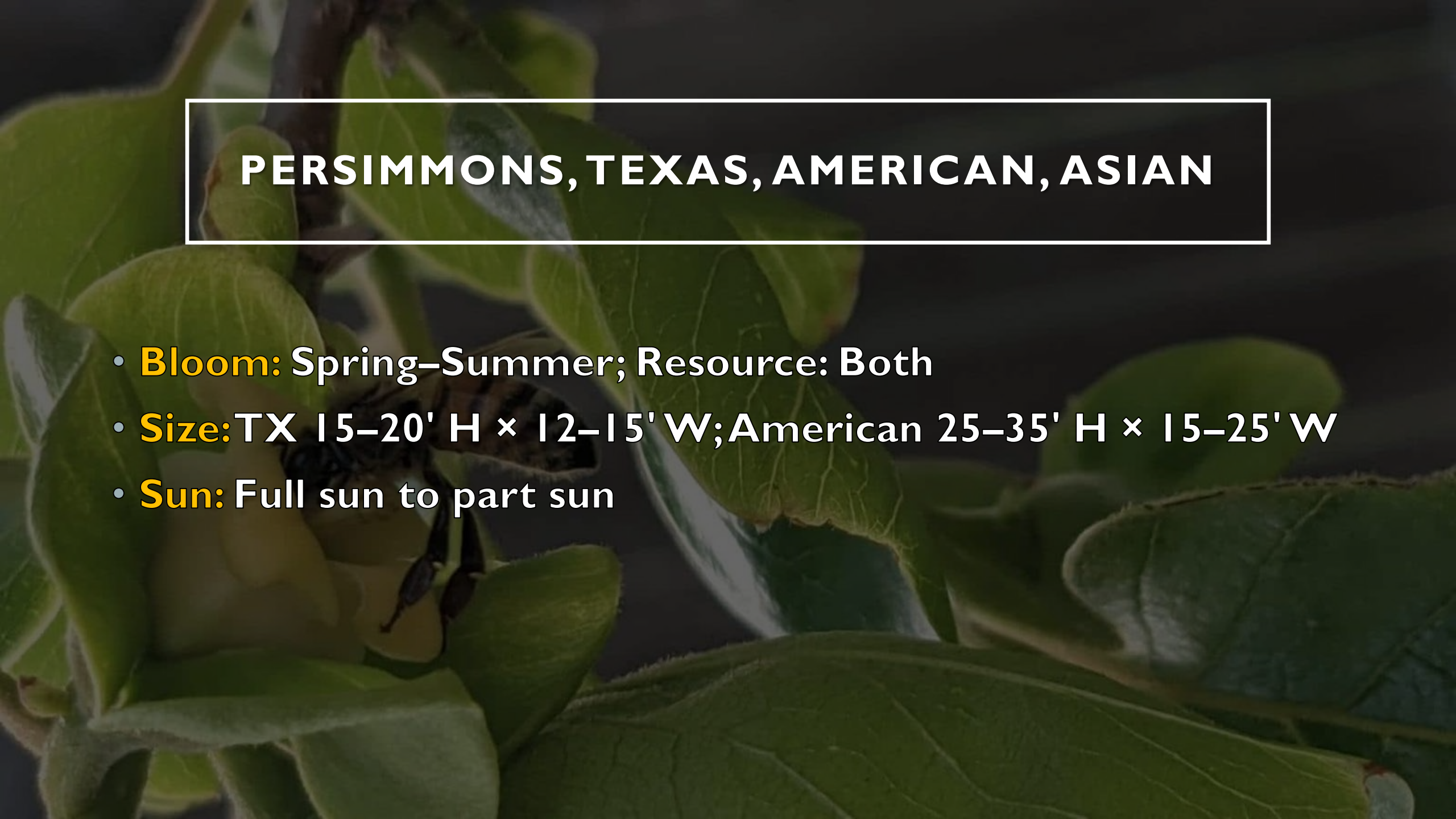
HONEY LOCUST (TREE)

- **Bloom:** Spring; Resource: Both
- **Size:** ~30–40' H × 25–35' W
- **Sun:** Full sun to part sun

A close-up photograph of a Mexican Plum tree branch in bloom. The branch is covered with clusters of small, white, five-petaled flowers with prominent yellow stamens. The background is a soft-focus view of more branches and flowers, creating a sense of depth. The overall lighting is bright, suggesting a sunny day.

MEXICAN PLUM (TREE)

- **Bloom:** Spring; Resource: Both
- **Size:** ~20–25' H × 15–20' W
- **Sun:** Full sun to part sun

A close-up photograph of persimmon leaves and fruit. The leaves are green and have a slightly serrated edge. A small, dark, elongated fruit is visible in the center. The background is dark and out of focus.

PERSIMMONS, TEXAS, AMERICAN, ASIAN

- **Bloom:** Spring–Summer; Resource: Both
- **Size:** TX 15–20' H × 12–15' W; American 25–35' H × 15–25' W
- **Sun:** Full sun to part sun



MEXICAN BUCKEYE (TREE)

- **Bloom:** Spring; Resource: Nectar
- **Size:** ~12–18' H × 10–15' W
- **Sun:** Full sun to part sun



SHRUBS OVERVIEW

- Bridges seasonal gaps
- Residential scale plantings
- Cluster for higher bee traffic



VITEX (STERILE SELECTIONS) (SHRUB/SMALL TREE)

- **Bloom:** Summer; Resource: Nectar
- **Size:** ~3.5–15' H × 3.5–15' W
- **Sun:** Full sun to part sun

STERILE VITEX

- **Shoal Creek**
 - Nearly seedless, low seed set
- **Delta Blues**
 - Patented, little to no viable seed
- **Summertime Blues**
 - Sterile
- **Blue Puffball**
 - Compact, seedless cultivar
- **Flip Side**
 - Heavy reblooming hybrid, sterile
- **Delta Breeze**
 - Reported sterile / low seed (less common)
- **Shoal Creek Improved**
 - Marketed as more reliably sterile than original

A close-up photograph of a Buttonbush (Ceanothus americanus) plant. The image shows several large, round, white flower heads with numerous long, thin stamens protruding from them. The leaves are large, green, and ovate with prominent veins. The background is dark and out of focus.

BUTTONBUSH (BIG SHRUB)

- **Bloom:** Summer; Resource: Both
- **Size:** ~8–12' H × 8–12' W
- **Sun:** Full sun to part sun

A close-up photograph of a Kidneywood (Big Shrub) plant. The image shows a dense cluster of small, white, five-petaled flowers arranged in a raceme. The leaves are green, pinnate, and appear to have small droplets of water on them. The background is a soft-focus green. A white rectangular box is overlaid on the upper left portion of the image, containing the title text.

KIDNEYWOOD (BIG SHRUB)

- **Bloom:** Summer–Fall; Resource: Nectar
- **Size:** ~4–12' H × 3–10' W
- **Sun:** Full sun to part sun

A close-up photograph of a Yaupon Holly shrub, showing dark green, waxy leaves, bright red berries, and small white flowers. The image is darkened to serve as a background for the text.

YAUPON HOLLY (VARIABLE SHRUB)

- **Bloom:** Spring; Resource: Both
- **Size:** ~3–18' H × 3–15' W
- **Sun:** Full sun to full shade

Male plants = pollen source Female plants = nectar source



TEXAS SAGE (SHRUB)

- **Bloom:** After summer rains; Resource: Nectar
- **Size:** ~3–8' H × 3–8' W
- **Sun:** Full sun to part sun



ABELIA (SHRUB)

- **Bloom:** Summer–Fall; Resource: Nectar
- **Size:** ~3–6' H × 3–6' W
- **Sun:** Full sun to part sun

A close-up photograph of white Chickasaw Plum flowers with prominent yellow stamens and green leaves. The image is slightly blurred in the background, focusing on the flowers in the foreground.

CHICKASAW PLUM (SHRUB/SMALL TREE)

- **Bloom:** Spring; Resource: Both
- **Size:** ~6–15' H × 8–15' W
- **Sun:** Full sun to part sun



ALOYSIA/ ALMOND VERBENA

- **Bloom:** Summer–Fall Resource: Nectar
- **Size:** Almond Verbena 5–10' × 5–10'
- **Sun:** Full sun to part sun
- * Needs protection under 15F during establishment
 - Cover, Mulch replace every few years

A photograph of a nursery aisle. On either side of a gravel path, there are long wooden tables displaying various potted plants. String lights hang from a dark metal frame above the path. In the foreground, two green metal carts with wheels are parked on the gravel. A person is visible in the distance on the right side of the path. The background shows more nursery structures and trees under a cloudy sky.

PERENNIALS OVERVIEW

- Long bloom windows
- Mass in blocks for visibility
- Easy to scale up

PERENNIALS OVERVIEW

- **Mass plantings**

- ▶ Large clusters attract more bees than scattered singles
- ▶ Easier for foragers to collect efficiently

- **Flower shape preferences**

- ▶ Open, accessible blooms (daisies, asters, sunflowers) = fast nectar/pollen access
- ▶ Tubular blooms-- still valuable, especially for nectar foragers
- ▶ Double-petaled, complex flowers = often poor forage (less nectar/pollen)

- **Takeaway**

- ▶ Plant in **drifts/blocks** of simple, nectar-rich flowers to maximize bee visitation

A close-up photograph of a goldenrod plant, showing several upright stems with dense, elongated clusters of small yellow flowers. The background is a soft-focus green, suggesting foliage. A white rectangular box is superimposed over the upper middle of the image, containing the title text.

GOLDENROD (PERENNIAL)

- **Bloom:** Fall; Resource: Both
- **Size:** ~3–5' H × 2–3' W
- **Sun:** Full sun to part sun



GREGG'S MISTFLOWER (PERENNIAL)

- **Bloom:** Late Spring–Fall; Resource: Nectar
- **Size:** ~1.5–2' H × 2–3' W
- **Sun:** Full sun to part sun

A close-up photograph of a white mistflower plant. The plant has green, serrated leaves and clusters of small, white, daisy-like flowers. The background is dark and out of focus, showing more of the same plant.

WHITE MISTFLOWER (PERENNIAL)

- **Bloom:** Fall; Resource: Nectar
- **Size:** ~3–6' H × 3–6' W
- **Sun:** Full sun to part sun

A photograph of an Anise Hyssop plant with multiple tall, purple, spike-like flower clusters rising from green, serrated leaves. The background is a blurred stone wall.


ANISE HYSSOP (PERENNIAL)

- **Bloom:** Summer–Fall; Resource: Nectar
- **Size:** ~2–4' H × 1.5–2' W
- **Sun:** Full sun to part sun



'AUTUMN JOY' SEDUM (PERENNIAL)

- **Bloom:** Late Summer–Fall; Resource: Nectar
- **Size:** ~1.5–2' H × 1.5–2' W
- **Sun:** Full sun to part sun



FALL ASTER (PERENNIAL)

- **Bloom:** Fall; Resource: Both
- **Size:** ~1–2' H × 2–3' W
- **Sun:** Full sun to part sun

The background of the slide features several tall Maximilian sunflowers with bright yellow petals and dark brown centers, growing against a clear, deep blue sky. The plants are slender with green leaves and multiple flower heads on each stem.

MAXIMILIAN SUNFLOWER (PERENNIAL)

- **Bloom:** Summer–Fall; Resource: Both
- **Size:** ~4–7' H × 2–4' W
- **Sun:** Full sun to part sun



MEALY BLUE SAGE (PERENNIAL)

- **Bloom:** Spring–Fall; Resource: Nectar
- **Size:** ~2–3' H × 1.5–2' W
- **Sun:** Full sun to part sun



BLACKFOOT DAISY (PERENNIAL)

- **Bloom:** Spring–Fall; Resource: Both
- **Size:** ~1' H × 1.5–2' W
- **Sun:** Full sun



FOUR-NERVE DAISY (PERENNIAL)

- **Bloom:** Spring–Fall; Resource: Both
- **Size:** ~1–1.5' H × 1–1.5' W
- **Sun:** Full sun to part sun

KITCHEN GARDENS FOR BEES **(HERBS & VEGETABLES)**

- Food for you = forage for bees!!!
- Extends bloom diversity
- Interplant for continuous bloom





HERBS (part I)

- Basil (N, Su–Fa);
 - Oregano (N, Sp–Su)
 - Thyme (N, Sp–Su)
- Mint (N, Sp–Su)
 - Rosemary (N, W–Sp)
 - Borage (B, Su–Fa)

A close-up photograph of a honeybee on a large, purple, multi-petaled flower. The bee is positioned on the left side of the frame, facing right. The flower's petals are numerous and layered, creating a dense, textured appearance. The background is a soft, out-of-focus green. A white rectangular box is overlaid on the upper left portion of the image, containing the title text.

HERBS (part 2)

- Lavender (N, Su–Fa)
- Onion/Garlic chives (B, Su–Fa)
- Dill (B, Su)
- Lemon balm (N, Sp–Su)
- Fennel (B, Su–Fa)
- Sage (N, Sp–Su)

The background of the slide is a close-up photograph of a bee on a yellow flower. The bee is positioned in the center-left, facing right, with its head buried in the flower. The flower is bright yellow with four petals. The background is a soft-focus green, suggesting foliage. A white rectangular box with a thin border is positioned in the upper left, containing the title. A list of vegetables is on the right side.

VEGETABLES FOR BEES

- **Squash/cucumbers/beans (B, Sp–Su)**
- **Okra (B, Su)**
- **Southern peas (B, Sp–Su)**
- **Pumpkins/melons (B, Sp–Su)**
- **Brassicas (B, Sp-Fa)**



VEGETABLES FOR BEES

- “Bees pollinate one-third of the food we eat, including high-value Texas crops like melons, berries, nuts and vegetables. A sustained decline in pollinator health could upend agricultural productivity, rural economies and ecosystem balance.” — **Garett Slater, Ph.D., Texas A&M AgriLife Extension honey bee specialist**)



FRUITS FOR BEES

- **Jujube** → nectar & pollen, summer–fall
- **Loquat** → nectar & pollen, winter–spring
- **Peach** → nectar & pollen, early spring
- **Blackberry** → nectar & pollen, spring
- **Elderberry** → nectar & pollen, spring–summer
- **Grape** → nectar & pollen, spring



WEEDS FOR BEES

- **White clover** → nectar & pollen, spring–summer
- **Dandelion** → nectar & pollen, very early spring
- **Henbit** → nectar, late winter–spring
- **Chickweed** → nectar & pollen, winter–spring
- **Purslane** → nectar & pollen, summer

A close-up photograph of a passionflower with its characteristic purple and white striped petals and numerous stamens. Several bees are seen foraging on the flower, including one prominently in the center and another in the lower left. The background is a soft-focus green, suggesting foliage.

VINES FOR BEES

- **Passionflower** → nectar & pollen, spring–summer
- **American wisteria** → nectar, spring–summer
- **Virginia creeper** → nectar, spring–summer
- **Crossvine** → nectar, spring

WILDFLOWERS FOR BEES

- **Broad forage:** spring → fall
- **Dense blooms** = heavy bee use
- Benefits **honey bees** + **native bees!**
- Seed swaths cover acres easily
- **Low input** (once established)
- Mix annuals + perennials
 - Texas natives = tough + reliable



NATIVE WILDFLOWER TIPS

- **Site prep** = remove weeds, bare soil
 - Good seed-to-soil contact
- Right season: fall is best
- **Avoid** heavy mulch cover
- Water for establishment ?
- **Patience** — 1-3 years for seed bank

TOP 10 NATIVE WILDFLOWERS (NECTAR)

- ANNUALS

- Indian blanket
- Plains coreopsis
- Lemon beebalm
- Annual sunflower

- PERENNIALS

- Frostweed
- Cowpen daisy
- Purple prairie clover
- Eryngo
- Clasping coneflower

TOP 10 ADAPTED WILDFLOWERS

- *Mexican Sunflower*
- *Zinnias*
- *Cosmos*
- *Hollyhock*
- *Amaranth*
- *Cleome*
- *Bachelor's Button*
- *Larkspur*
- *Nigella*
- *Annual Sunflowers*



INVASIVE BEE-FORAGE (AVOID PLANTING)

- Chinese tallow – N, late Sp–Su
- Privet (Ligustrum spp.) – N, Sp
- Japanese honeysuckle – N, Sp–Su
- Golden rain tree – N, Su
- Chinaberry – N, Sp
- Empress/Princess tree (Paulownia) – N, Sp
- Hairy vetch – B, Sp–Su
- Balloon vine – N, Su–Fa
- Coral vine – N, Su–Fa
- Sweet autumn clematis – N, Fa
- Vitex (non-sterile forms) – N, Su

SUMMER DEARTH (MID-JULY–AUGUST)

- Hot/dry lull; nectar scarce
- Stress on colonies
- Plan for continuous bloom



PLANTING BEATS SUGAR WATER

- Nutrition > Calories
- Protein, lipids, micronutrients
- Resilience and immunity

“When given a choice, honeybees prefer forage that provides pollen, lipids, and micronutrients — nutrition far beyond what sugar water alone can offer.”

— Juliana Rangel, Ph.D., Texas A&M AgriLife Research

A background image of a plant with green leaves and clusters of small purple flowers. A white rectangular box is centered in the upper half of the image, containing the title text.

CORE DEARTH BREAKERS

- **Trees: Kidneywood, Desert Willow**
- **Shrubs: Vitex, Texas Lantana**
- **Perennials: Russian Sage, Henry Duelberg Salvia, 4-nerve daisy, Blackfoot daisy**
- **Annuals: Esperanza, Mexican Sunflower, Zinnia**



MORE DEARTH HELPERS

- **Basil; Borage; Fennel; Lavender**
- **Texas rock rose; Globe mallow**
- **Annual sunflower; Southern peas**

BEE FORAGING PATTERNS (AM VS PM)

AM vs PM shifts — nectar peaks at different times by species

- ex) cotton & sunflowers peak mid-morning; goldenrod peaks PM

Daily variation — weather alters flow (*temp, humidity, light*)

Why it matters: better pollination, richer honey diversity

Action: observe & log plant activity in your apiary?

- Have you noticed “bee traffic jams” moving from one plant to another during the day?!



DIVERSITY & DIET (SCIENCE)

Bees seek pollen diversity even near monoculture crops

Study: colonies in sunflower fields collected from >10 species!

Balanced diet matters — protein, lipids, amino acids support brood

Plant diversity = stronger colonies

More brood, higher survival, improved immunity

Benefit to beekeepers: diverse forage → healthier hives & better

What's blooming near your hives right now?

ALL POLLEN IS NOT EQUAL

Protein % varies:

- *Sunflower* \approx 20–25% *Goldenrod* \approx 20% + *Pine* \approx 7% (poor quality)
- Lipids & micronutrients differ by species
- Some pollens rich in sterols, key for immunity

Diet composition drives use

Colonies prefer diverse mixes over single-source pollen

Takeaway: more plant diversity = higher brood success

MONITOR POLLEN IN YOUR APIARY?

- **Trap & Peek** → Watch entrance/ use pollen traps?
- **Color Code** → jot down pellet colors week by week
- **Match Game** → link pollen colors to what's blooming?

No great ID resources for TX

- TAMU Ento lab \$\$\$

HONEY QUALITY & DIVERSITY

Diverse blooms = layered flavors

- Polyfloral honeys = more complexity than single-source
- Nutritional edge
- Polyphenols & antioxidants vary by plant

GLOBAL PERSPECTIVE

Darker Texas honeys (e.g., goldenrod, sunflower, frostweed blends) frequently show phenolic content in the same range as Manuka

Flavor complexity often exceeds Manuka, because of diverse bloom sources

Takeaway: More plant diversity → better flavor and potential health benefits



HONEY PROFILES (EXAMPLES)

- **Floral source** = taste, color, aroma
- **Mesquite** → light, mild, smooth finish
- **Sunflower & Goldenrod** → darker amber, warm & spicy notes
- **Frostweed (Fall)** → rich amber, sometimes smoky/molasses-like
- **Polyfloral blends** → layered, complex flavors --
-unique to season



PLANTING RECIPE (SCALE UP)

- **Trees (2–3) + Shrubs (10–15)**
- **Perennial blocks (8–12 species)**
- **Seed native wildflower swaths**
- **Grow Food – For People & Pollinators!**

RESOURCES:

- Rootedin.com
- Wildflower seed mixes
 - Native American Seed
 - Turner Seed
- Chat GPT
- Google TAMU Bees

NTX PLANTS FOR BEES

