

Forage Plants for Honey Bee Nutrition



**“IT’S MORE AND MORE ACCEPTED
THAT POOR NUTRITION IS AN
IMPORTANT PLAYER IN THE DECLINE
OF BEES.”**

--Geraldine Wright, Professor, Insect
Neuroethology, Newcastle University, UK

Dwindling Food Supplies



- Honey bees need nectar and pollen to survive
 - Nectar = carbs for flight, work
 - Pollen = protein, fats, lipids, vitamins, minerals-needed for health
- Sources: cultivated crops, flowers, weeds, shrubs, trees
- Food supply dwindling:
 - Continuing urbanization/suburbanization
 - Changing agricultural practices
 - Pesticides

Nectar



- Nectar = sugar & water
 - Carbs for flight, work (adult fuel)
 - Raw material for honey
- Sugar content range – 5%-80%
 - Pears – 10%, clover - 40%
- Secretion usually greatest first day of flowering
- Greatest on sunny days, esp. midday (photosynthesis)
- After pollination some flowers stop nectar production
- Foragers find flowers by sight (long range) or scent (short range)
 - Flower color
 - Flower shape
 - Nectar guides

- Bees see ultraviolet



Aster (top) and dead nettle - natural light and UV light

- Forager scouts recruitment dance
- Scent powerful, long-lasting attractant
- Floral fidelity
 - Especially true for nectar foragers
 - Subsequent trips, subsequent days
 - “Unemployment”

Pollen



- Provides what bees need to thrive
 - Proteins, fats, lipids, sterols, vitamins, minerals (critical for larval growth)
- Bees convert pollen to bee bread & royal jelly
- Need stimulus to collect pollen
 - Presence of brood
 - Declining day length
- Pollen availability varies
- May differentiate by nutritional value/missing ingredient in diet
- Malnourished bees:
 - Smaller
 - Weaker
 - Less Fertile
 - Shorter-lived
 - ✦ Carry more parasites
 - ✦ Easy prey to viruses
 - ✦ Less able to detoxify insecticides
 - Poor learners
 - ✦ Scents, colors
 - ✦ “GPS”
 - Generational Effects

When Planting for Bees, Keep in Mind...



- Abundance
- Sequence
 - Late summer, fall especially important
- Diversity
- Maximize value, minimize bees' energy:
 - Plant near hives
 - High value plants
- Utilize trees, shrubs, ground covers, vines + flowers
- Skip highly-hybridized flowers, use single blossoms
- Be lazy gardener



- Re-think lawn
- Try not to use pesticides
 - Kill bees
 - Weaken bees, increase susceptibility to pests and diseases
 - Decrease fertility of queens and drones
 - Interfere with navigation systems
- If you must use pesticides:
 - spray at dusk when bees not active
 - spray only foliage, not flowers

Plants for Honey Bees



- **Trees & Shrubs**

- Early Spring - Silver, Red, Norway Maple, Alder, Elm, Hazelnut, Pussy Willow, Cotoneaster, Quince, Redbud, Fruit
- Spring-Summer - Black Locust, Linden, Tulip Poplar, Berries
- Late Summer/Fall – Vitex, Inkberry, Hydrangea, Sumac, Snowberry

- **Bulbs**

- Snowdrop, Winter Aconite, Crocus
- **Perennials/Natives/Weeds**
 - Early Spring – Henbit, Deadnettle, Dandelions
 - Spring-Summer – Clovers, Mints, Sages, Cosmos, Hyssop, Boneset, Herbs, Veggies
 - Late Summer/Fall – Goldenrod, Asters, Sunflowers, Sedum, Partridge Pea, Perilla

Honey Bees on Flowers



(l-r) Arugula, Hyssop,
Boneset, Aster, Sedum

More Information



- **Article:**

- “*The Whole Food Diet for Bees,*” American Bee Journal, Feb. 2018

- **Books:**

- *Garden Plants for Honey Bees*, Peter Lindtner
- *Honey Bee Biology and Beekeeping*, Ch. 10, Dewey Caron and Lawrence Connor

- **Websites:**

- www.in.gov/dnr/entomolo/files/ep-Gardening_for_Honey_Bees.pdf
- www.Xerces.org
- www.pollinator.org
- www.thehoneybeeconservancy.org
- www.EarthJustice.org
- www.grownative.org