Herbaceous Ornamental Plants

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What is an herbaceous plant?

• Plants whose above-ground parts are annual.
• “Dies to the ground” each winter
• For perennial plants, leaves at the crown of the plant may be evergreen or stay alive at ground level during winter.

What is an herbaceous plant?

• Winter buds are at or below ground level.
• Some grow by producing more, new stems of the same size
• Older plants produce more buds.
  – Clump gets larger
Spread by:

- Seeds (annuals and perennials)
- Stolons (above ground)
- Rhizomes (at or below ground)

Life cycles

- Annuals – several definitions
  - **Botanical**
    - A plant that completes its life cycle in less than 12 months
      - Celosia, annual sunflower, zinnia, cleome
  - **Horticultural**
    - A plant that is grown only for one season
      - Botanical annual
      - Perennial that can’t survive the winter
        - “Tender perennial grown as an annual”
      - Tropical plants that are planted outside. Note: these could be brought indoors as a houseplant
Biennials
► Lives for two years. Grows leaves the first year, flowers the second year, then dies.
► May flower first year if started indoors early.
► May grow from their own seeds in future years.
► Examples – Foxglove, Sweet William, Canterbury Bells, Money Plant, Hollyhocks

Perennials
► Live for 3 or more years
► Flower at same time each year, some for a very short period.
► If grown from seed, may not flower until second year.
► Will only be hardy to a certain temperature, e.g. “Zones 4-7”.

To Wrap up: Herbaceous Plants Definition
• Plants whose above ground parts die back to the ground every year.
  • Annual plants
    Live only one growing season
  • Biennial plants
    Live for two growing seasons
  • Perennial plants
    Live for more than 2 growing seasons
Designing with Herbaceous Plants

Selecting Your Plants

- Aesthetics – flower and foliage color
- Adaptation to environment
  - Soil moisture
  - Soil fertility
  - Light
  - Temperature
- Be aware of bad habits

Aesthetics

The plants in relationship to each other

- Size – with and without flowers
- Leaf color and texture
- Flowers – color, time, form, fragrance
SELECTING YOUR PLANTS

Bed
- View from all sides
- Tallest plant in center

Border
- View from one side
- Needs backdrop
- Tallest plants at rear (but not too tall)

Selecting Your Plants
- Don’t mix up plants with different requirements!
- Overwatering can kill plants that need dry soil.
- Sun-loving plants don’t bloom in heavy shade!

Bad Habits
- Ugly if flowers not removed
- Reseeds
- Spreads
- Disease-prone
- Poisonous
Planting and Care

Get Rid of the Weeds
- Eliminate vegetation
  - Skim off sod, turn soil, and remove roots.
  - Tilling
  - Non-selective herbicide – glyphosate
  - Smother with newspapers or cardboard topped with organic matter and/or soil.

Spend time on this! Perennial weeds are almost impossible to eliminate from a perennial bed.

Loosen, Improve the Soil
- New beds
  - Loosen the soil 8-12" deep
  - Add 2-4 inches organic matter (compost, peat moss, etc.) per 8-10 inches
  - Incorporate fertilizer based on soil test.
  - This is best done in the FALL
- Established beds
  - Work organic matter into new planting holes
  - Mulch with compost
Where to Get Plants
► Some can be started from seed
  ➤ See HO-14
► Garden centers or mail order

Picking Good Plants
Purchasing perennials
► Look for robust new growth with good color
► No pests
► Don’t always look for flowers!

Picking Good Plants
Purchasing annuals
► Roots fill soil ball
► Plant has good color
► No pests
► Plant is branching
How to Plant

Planting hole
► Depth = height of rootball
► Width = 2 x width of rootball, especially if you have not prepared the bed
Spacing – many references to help

How to Plant

► Cut through any circling roots before planting
► Usually only a problem with perennials

How to Plant

► Tease out the roots if they are thick
► Top of soil ball should be level with soil surface
► This is true for annuals in containers as well
How to Plant

► Press soil firmly around plant
► A lip around the plant will make it easier to water the rootball for the first few days.
► Make sure to water the soil outside the rootball to encourage roots to grow out.
► Water regularly!!

Fertilizing at Planting

► Starter fertilizers with high P are often used at planting.
  ► If soil P is adequate and soil is warm, starter fertilizers are not needed
  ► If annuals have not received good care at store, then starter fertilizer may help.

When to Plant Perennials

► In spring as new growth is emerging – will vary a bit depending on plant. (mid-April through May)
► If you plant in the heat of summer, the plant will need more care.
► As the weather cools, leave 4-6 weeks for roots to become established before cold weather arrives (before end September). Make sure to water!
► If you must plant later, mulch after planting to help retain soil warmth.
Routine Care

Watering

► Water deeply. "Rule of thumb" is 1" per week
► Pay attention to individual plants
  ► Sedum and purple coneflower may never need watering
  ► Astilbe may need extra water

Deep watering = deep roots
Shallow watering = shallow roots that dry out quickly

6-8"

► Use soaker hoses or drip irrigation.
► Overhead watering encourages fungal disease.
  ► If you use overhead watering, water early morning so leaves can dry off.
► Water perennials through fall until ground is frozen

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Fertilizing

► Do a Soil Test!
► Phosphorus and potassium should be worked into the soil before planting if soil test indicates a deficiency.
► If soil phosphorus levels are acceptable, use a fertilizer with a balanced analysis. If high, use a low or no phosphorus fertilizer.

► If soil P is adequate, high P fertilizers will NOT increase flowering.

Fertilizing - Perennials

► 1-2 lb N/1000 sq ft at beginning of growing season (10-10-10, 5-10-5)
► Don’t fertilize after August 1.
► Long bloomers may require light fertilization mid season.
Fertilizing thru the Summer

► Apply ½-1 lb of dry 5-10-5 per 100 sq ft every 4-6 weeks.
► Annuals in containers will need to be fertilized more frequently.
► Water soluble and slow-release fertilizers can be used
► If old leaves are yellow, new leaves are small, and flowering decreases, more nitrogen is needed.

Weeding

► Weeds compete for water, nutrients, and sunlight.
► Pull them out, cut them off.
► Use mulch to reduce weeds and conserve soil moisture
► Herbicides – but be careful not to kill the plants you want.

Weeding doesn’t have to be a daily task!!
Controlling Weeds at Time of Planting

Pre-emergent herbicides

► Must be applied before weed seeds germinate
► Work into top 1-2 inches and/or water in
► Preen, Treflan, etc.
► Follow label instructions.
► Apply to perennial beds in spring when you treat lawn for crabgrass, by early to mid April.

Don’t Weed, Mulch Instead

Mulch

► Should be shallow – no more than 2 inches
► Apply new mulch after soil warms in spring
► Apply winter mulch (3-4”) after soil has frozen, often after Thanksgiving (may help late planted perennials survive).

Making the Garden look Great!
**Staking**
- You don’t have to stake – there are plenty of great plants that never require staking.
- Tall, top heavy perennials may require staking
- Place support so plant can grow up through it
- Stakes should be 6-12 inches shorter than full height of plant

**Pinching**
- Remove plant’s growing stem tip just above a leaf
- Makes plant short and bushy rather than tall and lanky

**Pinching**
- Stimulates branching
- Increases number of flowers

Pinched not pinched
At Planting - Annuals

► Pinch to encourage branching

► Especially needed on plants grown mainly for foliage

Salvia splendens 6 weeks after planting

At Planting - Annuals

► Cut off terminal flowers if plant is not branching

► Especially important for Celosia and Salvia

► Also suggested for:
  ► Astyanthemum (Marguerite daisy)
  ► Cleome
  ► Lobelia
  ► Tagetes (marigold)
  ► Torenia
  ► Zinnia

Deadheading

► Deadheading is the removal of flowers after they have faded

How many of you think you should deadhead your plants? Why?
Deadheading

**DO IT!**
- Makes garden look neat
- Encourages plant to flower again
- No seedlings to dig up and discard

**DON’T DO IT!**
- It’s a lot of work
- Seed heads add interest
- Birds and beasts eat the seeds
- I get seedlings for my garden and to give away

How to Deadhead

**YES!**

**NO!**

Lily

Cut above a set of leaves.
Do not cut all the way back to the ground. Lily leaves will remain green most of the summer.
Purple Coneflower
Cut just above the first leaf below the flower.
This may encourage branching and more flower formation.
Do not cut it all the way to the base of the plant or you will limit the number of flowers.

Cutting Back after Flowering
• Cut back old lanky growth to encourage fresh, attractive growth.
  – For example: lady’s mantle, columbine, perennial geranium

Dividing Perennials
► Divide plants when:
  ► They have outgrown their space
  ► To keep them in bounds
  ► Flowering is reduced
  ► The center has died
  ► You want more plants
► Rule of thumb - Always leave enough time for roots to grow before stress sets in.
Divisions are like Planting

- Most species in spring
- As growth emerges
- After flowering for spring flowering plants
- Summer – bearded iris in August, daylilies and hostas will tolerate division in summer
- Fall – Peony, oriental poppy, Siberian iris, some native spring woodland ephemerals

How to Divide

- Trim Back foliage
- Dig up plant
- Divide
- Replant – protect from weather for 1st few days

Perennials not easily divided

- Aconitum
- Asclepias tuberosa
- Aurinia
- Baptisia
- Dianthus
- Dicentra spectabilis
- Dicentra spectabilis
- Echinops
- Gypsophila
- Iberis
- Limonium
- Linum
- Lupine
- Papaver orientale
- Platycodon
- Thermopsis
After the Excitement – Winter Care and Sanitation

► You can leave plants standing to add winter interest in your garden.
► Annuals are often removed in fall
► Leaving the old foliage may help perennial survive the winter
► If you have had pest or disease problems, you should cut back and remove litter.

Winter Care and Sanitation

► In spring, cut back perennials, removing any remaining stalks before or just as new growth is beginning.

Just a Few Words about Containers
Containers and Soil

- Pots MUST have holes in the Bottom!!!
- Soilless potting mix (contains vermiculite, perlite, etc.) is best – doesn’t compact, holds moisture, more air.
- Soilless potting mix has few micronutrients. Use a water-soluble fertilizer that has copper, iron, manganese, etc.

Container Care

- The plants are crowded in the pot
  - You will need to water more often, sometimes twice a day.
  - Because you water so much, you wash out nutrients. You’ll need to fertilize frequently, maybe every two weeks.
    - Slow-release fertilizer is a good alternative.
  - When you water, add enough that water runs out the drainage holes.

Problems in the Garden

- Environmental
- Diseases
- Insects
Problems in the Garden – Environmental

► Herbicide Damage
  ► Plant killed
  ► Leaves twisted, rolled, or stunted (e.g. 2,4-D)

Herbicide Damage

► Leaves are the wrong color
  ► Nutrient deficiency
  ► Yellow or low N
  ► Too little light
  ► Leaves large, plant tall, no flowers
  ► Too much light
  ► Leaves bleached, edges burned
  ► Too much water
  ► Leaves yellow, plant stunted

Leaves bleached and yellow – too much sun (Hosta)

► Breakage
  ► Wind – stake tall plants or plant in spot with protection from wind
  ► Hungry mammals such as rabbits, deer, voles – exclusion, scare them, repellents

Purdue Wildlife Conflicts hotline:
  ► http://www.wildlifehotline.info

Deer vs. Hosta
Problems in the Garden – Frozen Plants

► Average last frost date
  ▶ 50% chance last light frost will occur after April 9 to May 18 for Indiana

https://ag.purdue.edu/indiana-state-climate/freeze-frost-probability-growing-season-length/

Problems in the Garden – Frozen Plants

► Frost Damage
  ▶ Leaves watery, leaves darken and wilt
  ▶ Mostly a problem with annuals
  ▶ With perennials, you’re more likely to lose the flowers. Most likely a plant can survive a freeze if not too severe.

Problems in the Garden – Frozen Plants

► Average first frost date
  ▶ 50% chance the first frost will occur is Sept 24 to Oct 23

https://ag.purdue.edu/indiana-state-climate/freeze-frost-probability-growing-season-length/
Why doesn’t it flower?

- Many perennials will not flower the first year when grown from seed.
- Has it already flowered?
- Were the flower buds destroyed by a late (or early) frost?
- Overfertilized with nitrogen? Needs some fertilizer?
- Too much shade? Moisture stress?
- Was it divided last year?

Problems in the Garden – Diseases

- General Rules
  - Choose disease-resistant plants
  - Choose healthy plants and pull out diseased individuals
  - Avoid overhead watering
    - If you must use overhead watering, water early in the day so plants dry out
  - Leave enough space between plants so air can circulate. Divide or thin.
  - Clean up garden if you’ve had a problem.

Powdery Mildew

- Several different fungi that infect over 300 different herbaceous and woody plants.
  - Most common phlox, zinnia, and bee balm-leaves yellow and drop, white powder on leaves
  - Occurs when nights humid, temps 70-80°F
  - Does NOT necessarily spread by water
**Powdery Mildew**

- Control
  - Plant resistant varieties
  - Correct plant placement important
  - No excess N
  - Clean up!
  - Preventative fungicide – Cleary’s 3336, Funginex, Bonomyl, Summerweight oils

**Botrytis – Grey Mold**

- Fungus can infect many plant parts, especially in wet weather, especially noticeable on flowers
- Solution – sanitation and proper cultural control

**Problems in the Garden – Insects**

- General Rules
  - Plant resistant selections
  - Inspect plants before buying
  - Encourage natural predators
  - Clean up garden in fall if you’ve had a problem
  - Use least toxic control – practice IPM and always identify the insect
Japanese Beetles

Coleoptera – a beetle

- Adult is stout, 3/8-1/2” long, metallic green with coppery wing covers
- Larva is C-shaped white grub, up to 1”
- Chewing mouthparts
- Adults eat over 300 different plants, larvae eat grass roots

Japanese Beetle Control

Treat for aesthetics, beetles unlikely to harm health of established plants

- Cultural
  - Plant less susceptible plants (see E-75)
- Mechanical
  - Hand-pick beetles as soon as they are seen, remove damaged leaves
  - Protect small or valuable plants with netting or cheesecloth
- Chemical
  - Spray leaves. Pyrethroids are taking the place of older conventional insecticides.

Japanese Beetle Control

- DON’T -
  - Use Traps – they attract more beetles than they can catch
  - Believe that treating for grubs will reduce the number of adult beetles in your yard.
  - Beetles can fly up to two miles!
Slugs

- A mollusk
- Soft-bodied and slimy, like moist places
- Feed at night, leave slime trails
- Chew holes in leaves

Slug Control

- Cultural
  - Remove decaying plant matter and mulch
  - Rake remaining mulch weekly to dry out
  - Space plants further apart so they dry out more quickly
  - Plant slug-resistant plants
  - Don’t water late in the day

- Mechanical
  - Put down rolls of newspaper or boards and collect slugs that hide under them during the day.
  - Put out dishes of beer or yeast+sugar.
  - Place copper band around plants, 2” above and below soil.
Slug Control

- Chemical
  - Slug baits are available. Keep away from pets.
  - Iron phosphate, sold as Sluggo or Escar-Go, is toxic only to slugs and snails. They eat it and stop feeding, though they may take several days to die.

Aphids

- Small, pear-shaped, many different colors
- Two tailpipe-like rear projections (cornicles)
- Suck sap leading to plant discoloration or distortion
- Produce honeydew which can lead to sooty mold
- Many plants show no ill effects

Aphid Control

- Mechanical
  - Knock off with forceful spray of water
- Biological
  - Natural enemies such as lady beetles and lacewings may provide control
- Chemical
  - Soaps and oils work well
  - Conventional insecticides also labeled for aphid control
Iris Borer

Lepidoptera – a moth caterpillar
- Pink caterpillar up to 2”
- Eggs overwinter in plant material and hatch in late April
- Young caterpillars enter foliage and act as leafminers until they reach the rhizome.
- Leaves may be streaked, yellow or brown
- Large caterpillars tunnel into rhizome making it susceptible to soft rot

Iris Borer Control

- Cultural
  - Remove all debris, remove and destroy old iris leaves and rotted rhizomes after 1st frost
- Mechanical
  - Inspect leaves in April and June and squash the caterpillar in the leaf
- Chemical
  - Apply labeled insecticides in spring when foliage 6” high

Wrapping Up

- Right Plant, Right Place
  - Right zone
  - Right lighting
  - Right care and support
- Design with Attention
  - Match plants needs
  - Remember foliage color
  - Remember to plant in odd numbers
- Pests: insects and diseases
  - Use plants less susceptible
  - Use least toxic first
  - You can sacrifice a plant for the better of the others.