

# Putting Your Garden to Bed

# Plant Sleep

Summer leaves = more glucose than the plant needs for energy and growth.

Excess = starch / stored

Daylight shortens = plants begin to shut down food production.

Leaves preparing for autumn since spring.

Base of each leaf : "abscission" or separation layer.

Summer: small tubes in this layer carry water into leaf, and food back to tree.

Fall: cells of abscission layer swell, form a cork-like material= cutting off flow

Glucose and waste products are trapped in the leaf

Without fresh water: chlorophyll begins to disappear.

They decompose: nutrients trickle soil and feed .future generations of plant and animal life.

Fallen leaves are a key factor in the survival not only of trees, but of forests as a whole

# Leaves

Leaves: trace minerals drawn up from deep in the soil.

Leaves feed earthworms and beneficial microbes.

Lighten heavy soils and help sandy soils retain moisture.

Make an aesthetic mulch in the flower garden.

Great source of carbon: balances nitrogen in composting

Insulate tender plants from cold.

# Plant leaves

- Plants grow: shed older leaves /grow new ones.
- Replace: leaves become damaged over time.
- Shedding / replacement all the time.
- Deciduous trees shed all their leaves in prep for winter.
- "Evergreens" keep most of their leaves during the winter. These leaves resist cold /moisture loss.
- Evergreen leaves: oil tubes, waxy leaves, curl up to reduce moisture loss

# Water Fall plants

Fall: Water trees /shrubs = begin winter with moisture.

Young trees: benefit from watering every three - four weeks when temps above freezing.

Early in the day = more time to absorb the water before night freezes the soil.

Cold weather = wrap tree trunks with crepe-paper tree wrap / burlap until spring. Prevents sun scald, (sunlight on a subfreezing day warms tree trunk to as much as 40 some degrees above freezing) . Ice forms in the tree cells. Night cold freezes cells and they explode. Dead tissues in spring will crack open.

# Don't Procrastinate

Urge to put off moving, planting and dividing until spring.

Fight that urge.

The weather won't be any better in early spring than it is now, maybe even worse.

The plants will be much, much nicer next spring if you do the work now rather than then.

If you don't get the work done in early spring, then it's too late and you've missed your opportunity for another year.

Fall is a great time for gardening, so take advantage of it.

# Fertilizing

# Fertilizer

All trees / shrubs need fertilizer,

Mulch beds use up nitrogen as they decompose.

Fall raking leaves deprives plants of nutrients that decomposing leaves

Recommend: three pounds of slow-release nitrogen per 1,000 square feet of bed .

10-10-10



# Fertilizer #'s

Fertilizer formula: three numbers, such as : 5-10-5.

First number: nitrogen = green growth

Second number: phosphorus+ which helps root growth/fruit

Third number: potassium = cell function / absorption of trace elements. General plant health.

Perennials : fading/roots still active

Benefit from 0-20-0 super phosphate fertilizer

Around the plants at recommended doses

Lightly cultivated into the soil= stronger spring plants

# Fertilizer Myth

Organic followers: organic nutrients from organic sources are different from the ones provided by fertilizer.

NOT!

Chemically cannot tell the difference between a nitrate molecule from manure and one from a bag of synthetic fertilizer. Plants can't tell the difference either, because there is no difference. They don't care where the nitrate came from. (QUANTITY THE PROBLEM-LMW)

<https://www.gardenmyths.com/does-fertilizer-kill-soil-bacteria/>

# Perennials



# Perennials

"Perennials" live > two years.

Includes : trees , shrubs, herbaceous plants

Winter: Plants rest and live off stored food until spring

Woody parts of trees /shrubs can survive the cold.

Herbaceous plants (leaves, stalks) above ground die

Underground parts (roots, bulbs) remain alive.

# Standing Plants

Stunning interest : form of height and structure.

Winter Artistry: Evergreens/ branches of shrubs / grasses and standing perennial seedpods display beautiful plumes:

Switch grass (*Panicum*) Leave them standing until spring then cut them back before the new shoots appear as an example.

Blue false indigo (*Baptisia australis*) have interesting elongated black seedpods that stand out against the snow.

Allow the seeds of sedum 'Autumn Joy' (SeduJoe Pye weed (*Eutrochium purpureum*) to display their large, round lacy globes all winter long.

# Allowing seed heads to stand

Attractive foliage and/or seed heads,

Food resources for birds.

Stems of perennials = place for some birds to hide during the winter.

Marginally hardy perennials: stems help overwintering. Foliage helps to insulate the crowns.

Strap leaves cut

The stems and dried flowers add interest to the winter landscape and provide habitat for birds.

Leaving perennial tops : winter protection

Stems catch and hold snow, which is a good insulator, especially important during cold winters with little snow and in windswept areas.

Tops reduce alternating freezing and thawing of soil, which injures perennials.

Borderline =intact tops hold protective mulch

# Cutting back fall foliage

Fall cutting back perennials:

Foliage diseases. Removing foliage a positive = reduce the amount of inoculum able to reinfest next year's foliage  
Aesthetics.

Cut after dormant and several hard frosts.

Cut to within 2-3 inches of the crown. Too close = injury on the buds for next year's growth.

Leaving perennial tops= cut them back in spring, new growth from ground level.

# Cleaning Beds

- **Remove Dead Foliage**  
Herbaceous (i.e. non-woody) perennials die off above ground in the winter and sprout back up from the roots the next spring. Some of these have colorful fall foliage like trees and shrubs do, and are fun to watch as their colors change
- Mildew on Phlox and Monarda, cut it off, and put it in the garbage, not the compost.

Some perennials keep their leaves through winter, like spring-blooming groundcovers, Heucheras,

- **Kill Slugs**  
Slugs are going to be looking hard for food as the supply of fresh foliage becomes scarcer. Be merciless. They will actually burrow underground to eat out the crowns below the soil if you let them get away with it. Slugs will want to hide in any mulch you use so put down slug bait just before mulching.

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# Perennial Transplant Process

Spade - bow saw - Hori-hori knife - watering can/hose

Inspect roots on transplant. Remove any weed roots. If very clotted with weeds, soak in a 5-gallon bucket to release dirt.

Pull out weed roots.

Trim roots up to 1/3.

Plant transplant in new prepared hole as proscribed.

Water thoroughly, mulch with wet newspaper, hide with mulch

# Perennials in the fall

- If **planting** in the **fall**, water **perennials** regularly until frost. (See local frost dates.) The soil should never be overly dry or wet. Avoid getting water on the foliage to avoid disease.

# Planting Fall Seeds

- **How To Plant Wildflowers in the Fall**
- Planting of your seed in fall same as spring, except the weather better :and you can choose the time.
- Choose your site and best planting time. Full sun is best, and a "border area" between lawn and woods or a more natural area is perfect.
- Done AFTER a killing frost in your area : seeds\_won't sprout until spring-up until the ground freezes..)

# Corms, Bulbs, Tubers

# Rhizomes, Bulbs ,Corms

- September and October: plant now =well rooted before the ground freezes
- . Bulbs planted after October may not root adequately =not flower uniformly in the spring.
- Freezing and thawing push an un-rooted bulb out of the ground.
- Mulching =consistent soil temperature.
- Plant the bulbs 4x bulb height: Growing tip point up
- Ground freezes: add 3-inch mulch prevents alternate freezing and thawing that breaks roots and damages bulbs.
- Remove flowers as they die.
- Developing seed diverts food needed for roots.
- Apply nitrogen at the rate of 1/4 pound per 100 square feet before the foliage withers.
- After the foliage gone= bulb is dormant. Additional fertilizer wasted.

All underground storage units ready to come to life when the time is right.

The energy for the plant : photosynthesis of the leaves. Do not to cut back the leaves after the plant is finished flowering. Leaves needed to produce and store that energy.

Rhizome: Wild Ginger. Stem or root and shoots grow upwards from many different places on the tuber.

- Bulbs: underground storage: lily family, consisting of a short stem surrounded by fleshy scale leaves or leaf bases: Nodding onion

Corm: rounded underground storage organ :Liatris

# Wildflower Roots

- Rhizome: blood root
- Bulb: Nodding onion
- Corm: Liatris

# Corms bulbs tubers

Size of a bulb = size of the flower grown .

- Late September : time to plant bulbs= root well before ground freezes.
- Fertilizer must be present in the root zone to be effective.
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# Corms

Selects the site, then bulbs.

Adequate sunlight to regenerate strong bulbs.

Southern exposure close to the foundation= early emergence =  
may freeze .

Good drainage=bulbs will not waterlogged.

Plant in solid blocks of one color =is more impressive at a distance.

Mix if viewed close up.

# Fertilizing Bulbs

- Fall : plant bulbs.
- Super phosphate: root growth
- Bone meal : Dogs dig up, attracts rodents who eat both bone meal and bulbs.

Trees/shrubs

# Moving trees/shrub size plants

- Fall: optimum time to move established trees or shrubs:
- Deciduous plants: any time during the dormant season
- Evergreens plants: when the soil is beginning to warm up. WATER
- **Fall** : transplant shrubs. Days / nights cooler; soil moist longer
- Air temperature: chilly: ground still warm = root growth late in the season.

# Pruning in the Fall

- Best : don't prune in the fall.
- Unless : dead branches. branches that are a winter hazard.
- Why?
- Colder seasons: trees focus energy on their roots. Cuts from pruning won't heal in time. Open cuts = tree vulnerable = months of struggling.
- Pruning = growth. Tree isn't trying to grow in fall. Thus, Pruning weaken the plant. Wait to prune until the dormant season next spring
- Do not cut evergreens in fall=sap leak

# Planting Shrubs

Shrubs: over 4 feet are cut back to 6-12 inches.

Pull back mulch and soil away from plant surface to be sure there are multiple stems.

Cut a clear path through the stems to the base

Try to use a spade to split down through plant.

Use a sharp axe to split something a spade cannot go through

MULCH

# Why mulch?

- Surface insulation
  - To conserve moisture
  - To moderate extremes in temperature
  - To control weeds
- Soil amendment
  - To improve soil aggregation and granulation
  - To increase water absorption and retention
  - To prevent soil compaction and improve aeration
- Beautification
  - To make surface areas more attractive
  - To make surface areas more usable for paths, play and sitting areas
  - To make areas easier to maintain



# Mulch

Mulch : retain moisture. Moist roots are happy roots

Protects plants roots — scorching sun/winter's chill.

Keeps rain from washing away soil

Organic mulch settles and thins =breaking down = enriching soil and making more fertile

Ties everything visually together as well as adding texture and color to your beds.

# Mulch

Excess mulch = soil to be soggy and plant diseases begin.

Not enough: won't keep down weeds from pushing their way through.

2-4 -inches good .

Scrabble in spring to keep from blocking the sunlight they need to sprout.

# Mulching Around

Trees and shrubs:

Small mulch-free zone: 1 to 2 inches out from the base of plants,  
3 to 4 inches out from shrubs,  
6 to 12 inches out from the base of trees.

2- to 3-inch layer : fine-textured materials like sawdust, shredded leaves and compost;

4 to 5 inches thick for coarser-textured materials like wood chips, straw and pine needles.

# ORGANIC MULCHES FOR FALL AND WINTER

Organic mulches settle and decompose: Need to apply additional mulch to keep it at the right depth.

Bark is chipped/shredded: around trees, shrubs and perennial beds.

Decomposes slowly, stays put, long-lasting; porous seed /rhizome bed. Not treated with chemicals.

- Shredded leaves : lightweight, improve soil, quick to decompose, great winter cover.

# Mulching

- **Mulching**

Insulation = organic matter over the root areas and up around the crowns of plants to help protect

- Keeps from severe freezing weather, and to prevent soil compaction and erosion from pounding rains.
- If you use a mulch with good nutrient value, like leaves and compost, you can really help your soil quality and plant health as well.
- I'm not a fan of bark as a mulch; softer, faster-decomposing mulches are better for the soil and the plants. Adding more organic stuff to the soil surface is good any time of year, not just in fall.

# Types of Mulch

Pine needles : ornamental beds /shrubs = contain acid-loving plants.  
The moisture-retentive, lightweight, weed-free , doesn't blow much.

Straw: lightweight insulator, blows around, garish color, no nutrients

Hay: stable, adds nutrients, color blends in, moldy hay does not sprout seeds, cardboard/paper cover

# Leaves

# Neighborhood Leaf Collection

- Neighbor begging
- Cruise and Grab bags set out
- (Observe if neighbor uses yard as a dog toilet)
- Offer to rake
- Especially pine needle- they don't blow away-neat



# Street Gutter Gold

- Trash Can ( with wheels) and fan rake
- Ash-curlly /light
- Maple –slimey
- Oak-tough rodents don't like

# Trash Can Shred

- Shredding leaves = nutrient-rich mulch
- Filling a trashcan one-third of the way with raked leaves
- String trimmer chops them up= airy mulch from fallen leaves
- Lawn mower-plywood collector
- String trimmer-garbage can
- Google: string trimmer leaf chop

# Hay

- Hay-Craigs list Duluth : Farm
- Plates
- Buy now
- Beds-Lawn-rot
- Soak ,deposit

# Paper Layer Mulch

Paper-Reader, Sunday paper

Cardboard- Early

2 layers

Super One :Kenwood, Target

Menards paper bins

# Transplant

# Transplant Dig Prep

Check drainage: Dig 1 shovel deep. Fill with water. Drains in 1 hour=good drainage. Doesn't drain=standing /subsurface water

Can't dig = rock, thick roots (maple) very large trees, subsurface roots.

# TRANSPLANTING / SPLITTING

Late fall-after leaves have fallen: best after after rain

Tools: spade, axe, heavy limb lopper, garden knife, long handled shears, large plastic tub, wet newspaper, hay/peat moss, hose/watering can.

Put mix of hay and peat moss in tub  $\frac{1}{4}$  full. Submerge in water.

Dig new hole to plant, charge with water. Have peat moss, hay, soil mix ready. Be sure to saturate plant area where you will you will be moving plant from.

# Transplant Process

- Dig around the side of the plant you want to remove.
- Lift out plant. Transfer and wrap in thick, wet newspaper.
- Place in bottom of plastic tub.
- Fill hole where transplant was removed from garden with water Back fill with new soil. Replace mulch.
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# Planting/Transplanting

Dig hole, fill with water

Dig plants to be transplanted (spade)

Clip feeder roots (up to 1/3)

Pruning roots = tree / shrub to grow new feeder roots. These roots younger, healthier.

Stake: Garden stake, hose, cord 3 point

Seed

# Wildlife Benefits in Standing Perennials Seedheads

**Birds:** seed heads= food.

Goldfinches = purple coneflower (*Echinacea purpurea*) Black-eyed Susan (*Rudbeckia*), Oxeye sunflower (*Heliopsis helianthoides*) and others.

Birds find protection in plant stubs and ground covers.

**Insects** in winter: hide in /near native plants (pupae, caterpillars or eggs).  
Shelter from predators: birds or spiders.

Native **butterfly:** Viceroy, rolls itself in a leaf, drops to the ground. Stays until spring. Do not to rake plant debris from around your perennials.

Plants that need crown protection: asclepias (butterfly weed), asters, and heuchera (coral bells) better if cleaned in spring.

# Saving Seeds

- Seed collection : vary depending on the species.
- Grass seed: stripping or shaking it off the stem- or clipping the stem below the spikelet.
- Shrub seed: picked, lightly beaten or shaken: Tarp to catch seed.
- Explosive seed: Flower head can be cut prior to maturity. Dry in mesh paper bags, or under netting.

Other seeds located: when mature: birds eating, dry before capsules open

# Seed Storage

How seed collected and stored determines its viability.

Overheating = dead seeds

Excessive heat / temperature variability bad should be avoided.

High moisture content during storage = mold

Paper bag, refrigeration-or consistently cool place

# Seeds Sowing in the Fall

- Clear the ground of existing growth: Grass, weeds, roots, other plants in the area.)
- Small areas: turning the soil with a shovel. Remove all old growth.
- Larger areas: rototiller. Dance on surface. Just deep enough to remove the old growth. Deep tilling: more weed seed into surface soil.

NEW GARDEN

# New garden footprint

Weed after rain

## NEW GARDEN BEDS

Consider sun, water, wind.

Test soil texture: porosity (air spaces, water retention)

Handful Wet thoroughly. Rub wet soil across palm:

Clay: slippery, shiny

Silt: slippery, not shiny-very fine like flour

Sand: Gritty feel

Earthworm method: Roll handful of thoroughly wet soil into earthworm form.

Clay: extends easily in worm form: how far= how much clay in soil

Sandy: Difficult to make into a ball



# Garden Bed Footprint

- Plantings run together very soon underground.
- Mulch keeps weeds out, moisture in, and new roots, cool and moist.
- The proposed garden bed is now a series of plants sheltered from disturbance.
- As the plant's get bigger, pull paper back.
- If you want to keep in same footprint, leave paper in place.

# Garden Bed Footprint

- Sandwich:

- Cardboard

Leaves

Hay

Windy: Deer Netting

Garden stakes

Wet-Overlap by 1/3-Mulch 6"

# Plant Purchase

Determine best plant: Check zone 0-4. Check soil preference (dry, moist, wet etc.) Check /Google/ Research height, sun, color change, flowers, berries fruit deer resistance- (no fence). Fertilize with 10-10-10 (NPK). Mulch with hay, wet paper, hiding mulch

# New Garden Bed

- Soak newspaper, or cardboard until saturated. Lay directly on area you want smothered.
- Layer by 1/3 like shingles on a roof. The layers should be ½” thick.
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- Cover with wet hay (in garden) or
- CEDAR FIBROUS mulch over paper to obscure.
- If a weed pops up, brush overlay away and put a ½ “thick piece of paper over it. Re-cover with mulch.

# Purchasing Plants

- **Look for plants where roots/stems fill the pot so you can divide.**
- **Single stem plants ---look down into top, look for good symmetry.**
- **When you buy / bring home your plants, line them up in the shade/ and water to the rim every day.**
- **You can keep perennials for next summer like this if you keep watering**
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# Planting Soil

Improve soil texture:

Fill tub  $\frac{1}{2}$  with peat moss. Fill to  $\frac{1}{4}$  full of water. Stir with spade. Fill  $\frac{1}{4}$  more with water and let sit. Do another tub the same with hay.

Dig hole as deep as root ball and a hand width wider all around.

Cut off any flowers to base or nearest bud.

Put soil to side. Put grass chunks separate.

**Tools/ Ingredients to improve soil texture**

**Cubic yards of peat moss**

**6-8 bales of HAY not straw-(, Kathy 218-721-3280) by Is. Lake) (Dan's feed Mill, Superior WI)**

**2- Deep plastic tubs (1-for soaking, mixing peat moss, and 1 for soaking hay.)**

**Long hose, BRASS adjustable nozzle**

**A spade (square bottom) --look for lifetime guarantee-you will use forever-**

# Paper Layer Mulch

Paper-Reader, Sunday paper

Cardboard- Early

2 layers

Super One :Kenwood, Target

Menards paper bins



# Planting

Release roots: Bottom-cut off until bottom roots= specks. Cut down through root ball vertically to stop roots from encircling.

Put plant in hole.

Mix soil from site with peat moss and hay 2 to 1. Fill in around plant.

Make a rim around the plant (upside down grass clumps are great) hands width from edge of plant. Fill with water.

Overlay ½ inch newspaper like roof shingles over planting and soil rim. Do not let touch plant stems.