GROWING TOMATOES IN WISCONSIN

- Choosing Varieties
- Growing from Seed
- Watering and Fertilizing
- Hardening Off And Planting Out
- Tomato-growing Tips
- Diseases
- Crop Rotation
- Harvesting and Storage
CHOOSING VARIETIES

- Indeterminate vs determinate cultivars
  - Determinate
    + 3-4’ tall
    + Flower buds at branch ends
    + All fruits ripen at once
  - Indeterminate
    + 7-15’ tall
    + Plant “never ends”, remains vegetative
    + Forms flowers in leaf axils
    + Cherry and pear tomatoes
  - 1 plant can produce 10-50 lb fruit/season

CHOOSING VARIETIES

- Uses
  + Cooking, fresh eating, grilling
  + Heirlooms, other types
- Disease resistance
  + V, VF, LB, TSWV. Remember that resistant does not mean immune
- Grafted tomatoes:
  + Why Graft tomatoes?
    - Factsheet #8226: Side Grafting Tomatoes
    - Video at Johnny’s site
GROWING FROM SEED

- Start tomatoes indoors in timing depends on location
  - 5-7 weeks before your area’s ‘last frost date’
- Use ‘seed starting media’ in plastic packs, pots or flats, peat pots or terra cotta. Start in a smaller container and transplant at 4-5 weeks
- Optimal germination temperature for media is between 70-85°F
- Germination in 6-12 days

GROWING FROM SEED

- Lighting
  - If natural light, should be south-facing and rotate flats to keep seedlings from bending toward the light
  - If using grow-lights:
    - Keep lights on 16 hours/day
    - Keep plant tops 1-2 inches from lights
    - Move flats or lights as plants grow
    - Grow-lights more closely replicate natural sunlight. If using standard fluorescent tubes, use cool white AND warm white bulbs.
Watering

- Can water from below in tray before seeds germinate and when seedlings are very small, but don’t allow packs or pots to sit in water for long periods
- Can use humidity domes
- Use watering cans with fine-holed roses
- Leaves and media shouldn’t stay wet
- Allow some drying between waterings
  - Helps prevent damping-off
- Don’t allow seedlings to wilt
**Fertilizing Seedlings**

- Start when seedlings are about 1” tall
- If using a water-soluble traditional fertilizer, use an analysis of 10-10-10 and dilute it to half strength.
- Fertilize every other week
- As seedlings reach 4”, can use full strength
- Can also use organic products such as compost tea or fish emulsion to fertilize, but may need to apply more often
**GROWING FROM SEED**

- **Pinching**
  - Pinch the top leaf/stem when they have three strong true leaves and a fourth emerging about at 3-4 weeks old. Don’t include the two cotyledon leaves.
  - They are probably 3 inches tall at this time.
  - Pinch right above a leaf axil. Don’t leave a long internode.
  - Pinching creates a sturdier plant with more branching.

**HARDENING OFF & PLANTING OUT**

- **Tomatoes are warm season crops**
  - Sensitive to cold temperatures and frost
  - Hardening off process
  - Overnight lows should be above 45°F
  - Will not produce flowers or fruit unless night temperatures are over 55°F
  - If tomatoes are leggy, can plant deeper as they easily produce adventitious roots along their stems
**COLD PROTECTION (WALL-O-WATER)**

[Wallowater.net](#)  [Burpee.com](#)

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**PRUNING OUT SUCKERS**

- **What Are Suckers?**
  - Suckers are side stems growing out of the leaf axils where leaves attach to the main stem.
  - If left on the plant they will form their own branches, flowers and fruits.
PRUNING OUT SUCKERS

- Why Prune Out Suckers?
  - **Earlier Production on Main Stems:** Suckers pull energy from the rest of the plant and delay fruiting on main stems. Suckers at the bottom of the plant are stronger than those near the top because the plant’s sugar concentration decreases up the height of the plant.
  - **Allows More Sunlight In:** Removes excess foliage and lets more sunlight in for more vertical growth and larger fruits.
  - **Increases Air Circulation:** Better air circulation helps prevent fungal disease development because foliage stays drier.
  - **Structural Benefits:** Un-pruned plants spread more horizontally and are harder to support. Suckers that emerge in mid- to late season are nearly always weak, produce inferior fruit.

- Do you need to Prune Out All Suckers?
  - No, not if you don’t want to, but any left on need support.

TOMATO-GROWING TIPS

- **Disease Prevention Techniques**
  - Mulching
  - Removing lower leaves
  - Crop rotation
  - Air circulation – plant 3-4’ apart
  - Water at base, not on foliage
  - Grafting
  - Fall clean-up

- Trellising keeps fruit off ground, prevents disease, easier to harvest.
**TOMATO TRELLISING**

**CULTURAL DISORDERS**

- **Blossom End Rot**
  - Calcium uptake problem, not a ‘disease’
  - Keep soil at a consistent moisture level
  - Can use calcium sprays
CULTURAL DISORDERS

- Cat-facing
  + More common on heirloom and beefsteak varieties
  + More common when weather is cold and night temps are under 50°F when tomatoes are flowering
  + Can be in response to 2,4-D herbicide drift
  + Avoid high nitrogen levels, especially in cold, wet, compacted soils

CULTURAL DISORDERS

- Sunscald
CULTURAL DISORDERS

- Juglone toxicity from black walnut trees
- Causes wilting and death of the plant
- Don’t grow tomatoes in the root zone of black walnuts
- Use raised beds or containers if needed
- pddc.wisc.edu/ for a printable factsheet

CULTURAL DISORDERS

- Top stays green or yellow & these areas are hard
- More common on heirlooms—genetic trait
- Often when temps are high for a while or if fruit gets too much direct sun.
- Fruit with GS is still edible. Cut around it
- Heirlooms with GS gene tend to be sweeter, more flavorful. Hybrids bred for uniform-ripening, disease resistance, shipping ability disabled the gene.
DISEASES

- Early blight
  - Fungal pathogen
  - Soil-borne
  - Dark brown spots on older leaves, concentric rings
  - Defoliation, sun scald, stem or fruit lesions
  - Overwinters on diseased plant debris

DISEASES

- Late blight
  - Fungal pathogen
  - Brought in on transplants, air
  - Irregular grayish areas, fuzzy
  - Plant collapse and die rapidly
  - Not supposed to overwinter here
**DISEASES**

- **Late Blight Resistant Tomato Cultivars**
  - Mountain Magic
  - Plum Regal
  - Defiant
  - Wapsipinicon
  - Matt’s Wild Cherry
  - Legend
  - Pruden’s Purple
  - Sun Sugar

- **Septoria Leaf Spot**
  - Soil-borne
  - Gray circular leaf spots with dark borders, may see black dots inside
  - Wet weather favors development
  - Overwinters in plant debris and weeds
CROP ROTATION

- Important in reducing disease
- 3-4 year rotation between families
- Solanaceae family
  - Tomatoes, potatoes, eggplant, tomatillo, pepper, petunias, flowering tobacco
  - Don’t grow these crops in the same place for 3 or 4 years

HARVEST AND STORAGE

- Ripe, well-formed, blemish free
- Heirloom & beefsteak tomatoes often are irregular in shape
- Never refrigerate tomatoes – won’t fully develop flavor after harvest
- Ripen unripe fruit in a paper bag out of direct sunlight
- Freeze, dehydrate, or can to preserve the summer flavor
GROWING TOMATOES IN SOUTHERN WI

Resources


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Resources (to order Learningstore publications if you don’t have computer access, call 608-224-3704)

+ [http://learningstore.uwex.edu/Hornworms-P566.aspx](http://learningstore.uwex.edu/Hornworms-P566.aspx)
+ [http://learningstore.uwex.edu/Tomato-Disorder-Post-Harvest-Fruit-Diseases-P548.aspx](http://learningstore.uwex.edu/Tomato-Disorder-Post-Harvest-Fruit-Diseases-P548.aspx)
+ Factsheets at [http://labs.russell.wisc.edu/pddc/](http://labs.russell.wisc.edu/pddc/)
  × Blossom End Rot
  × Black Walnut Toxicity
  × Early Blight, Late Blight, Septoria Leaf Spot
  × Crop rotation, green manures, etc.
Thank You!

For more information on this topic contact
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or visit our website: http://dane.uwex.edu/