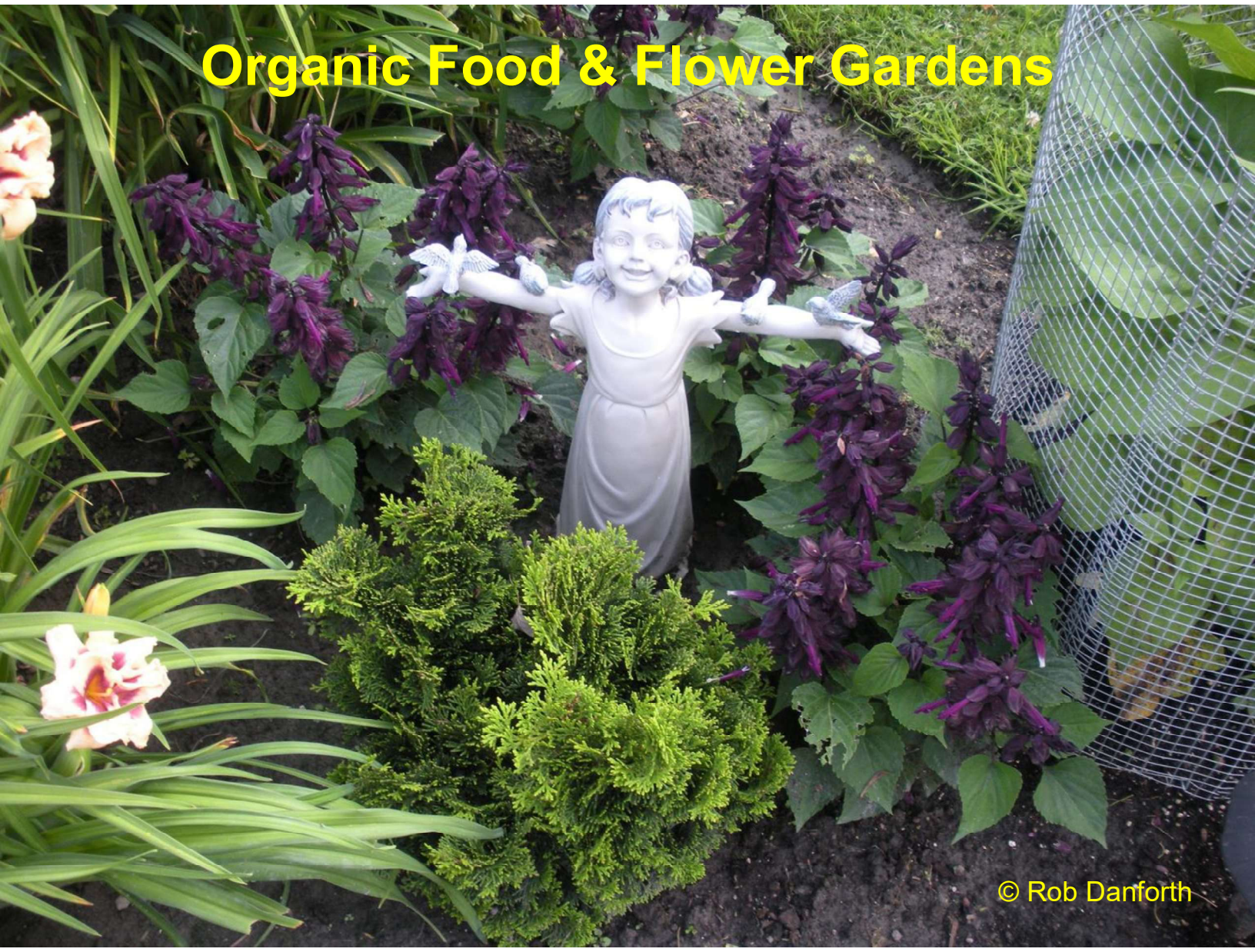

Organic Food & Flower Gardens
© Rob Danforth

Organic Food and Flower Gardening

Get a bag, pot, or a plot and grow organic food & flowers. Enjoy the colours, fragrances, shapes, textures, sounds, and tastes! Although food gardening takes some time and effort, it is easy and affordable, and leads to many health benefits: fresh air, physical exercise, relaxing therapy, mental stimulation, beautiful scenery, personal satisfaction, and fresh, nutritious, great tasting food – to name a few! Grow vegetables, herbs, flowers, & berries – here in the city! Try a rooftop, balcony, porch, deck, patio, backyard, front yard, flower garden, or community garden space. Improve the view, the smells, the tastes, the soil, and your health – and do it all organically. Anyone can do it, including children. All you need is a container, "garden soil," seeds, sun, and water! You can even buy a bag of organic garden soil and plant right into the bag!

You can grow any food plants that will fit the growing time, seasonal temperatures, & gardener availability.

Organic "garden soil" free from contaminants is essential for the health of the plants and the gardener.

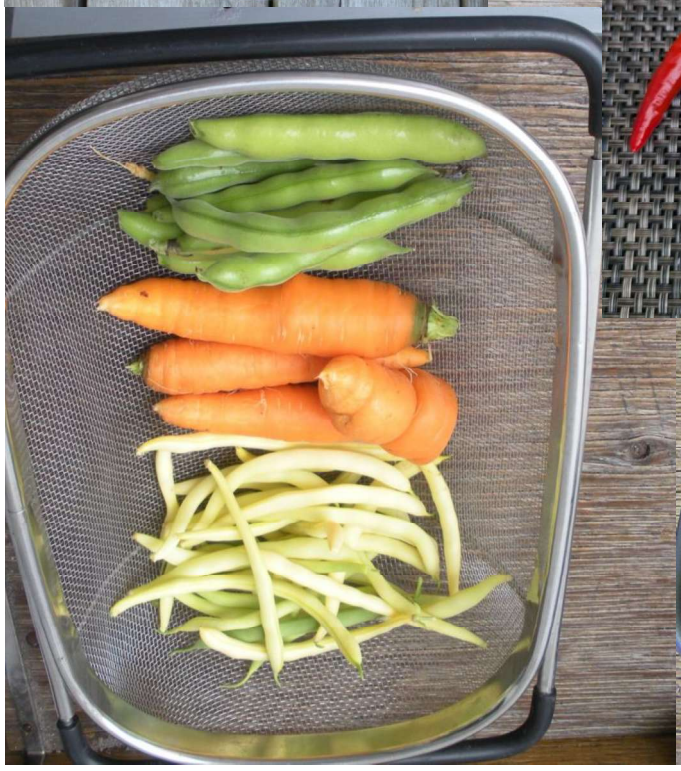
To every gardening season there are usually both plusses and minuses. Do not expect perfection as there are too many variables which change from year to year: weather (temperature, sun, wind, rain), soil quality, compost quality, mulch affect, insects, viruses, fungus, bacteria, weeds, critters, & gardener's practices. What worked well last season may not be so terrific this season. Celebrate the successes and next season adjust for the failures. We have done this every year for 50+ years.

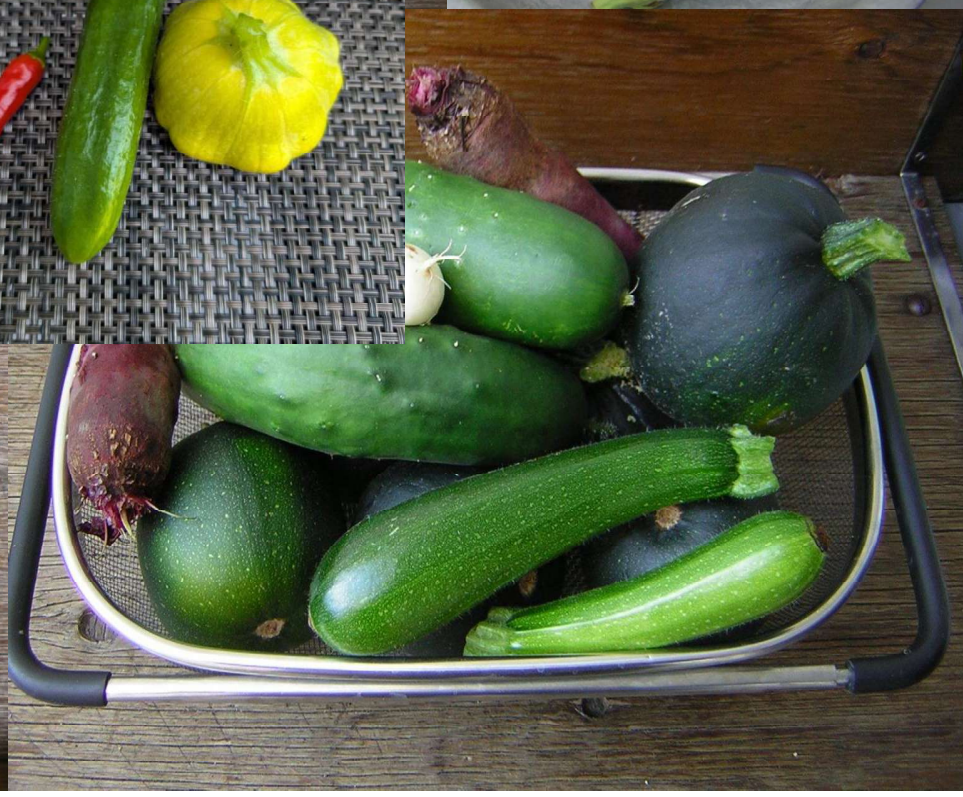
Fascinators, Fillers, & Fallers

Starting & Maintaining an Organic Food Garden

- 1st – establish & maintain healthy soil & healthy plants.
- 2nd -- encourage helpful insects & critters.
- 3rd – manage (do not eliminate!) the harmful insects, critters, diseases, invasive plants, climate, & people.

Organic: no chemicals, treated seed, GEO/GMO, or sewage sludge. "Simple Garden soil": Clay, Sand, & Organic Matter.





Basic Facts

- Gardens have helpful & harmful
  - Fungus
  - Bacteria
  - Insects
  - Plants
  - Animals
  - Weather
  - People

- Plants do well in some soils but poorly in others.
- Soil composition affects taste.
- **Note:** weakened plants attract feeding insects as per nature's design! **Healthy plants fight back & can tolerate a few bugs**.

Exhausted Soil

- Signs: lackluster performance in plants, weakened plants, and the onset of more than the usual diseases and insects.
- Best possible soil amendment for food plants and flowers is **compost** – nourishes soil (slow-release of plant nutrients from A-Z), non-burning, fights disease, balances pH, retains moisture, conditions soil structure (more friable). Alternatives are cut-and-drop the soft parts of spent plants (veg, flowers, & seedless weeds) and add mulch, purchased compost, or well composted farm animal manure (chicken, sheep, cow, horse).

Insects

Helpful

Pollinators: bees, moths, flies, mosquitos, ….

Insect Predators: Assassin bug, Big Eyed bug, Damsel bug, Damselflies, Dragonflies, Fireflies, Ground beetles, Hover Flies (Syrphid), Lacewing flies, Ladybugs, Mantids, Minute Pirate bug, Robber Flies, Rove beetles, Soldier beetles, Spiders, Predatory Stink bug, Tachinid Flies, Tiger beetles, Wasps.

Lady Bug
Larva takes Fly

Harmful

Aphids
Beetles (Flea, Colorado, Cucumber, Japanese)
Caterpillars
Cutworms
Earwigs
Leaf Miners
Slugs & Snails
Vine borers

Critters

Harmful

- Deer (eat leafy greens)
- Groundhogs (eat leafy greens)
- Mice (eat seeds, urinate, shred cloth, chew holes)
- Rats (omnivores)
- Rabbits (eat leafy greens)
- Racoons (eat corn + compost & green bin items)
- Squirrels (eat & plant seeds, sample produce, & dig holes displacing plants)
- Voles (eat grass, roots, bulbs, seeds, ….)

Helpful

- Bats (eat insects)
- Birds (all young birds get protein)
- Frogs (pond & tree versions eat insects)
- Racoons (eat lawn grubs)
- Shrews (eat insects, beetles, worms, etc.)
- Skunks (eat lawn grubs)
- Snakes (eat rodents)
- Toads (eat insects)

Garden Helpers


Hornet takes Caterpiller

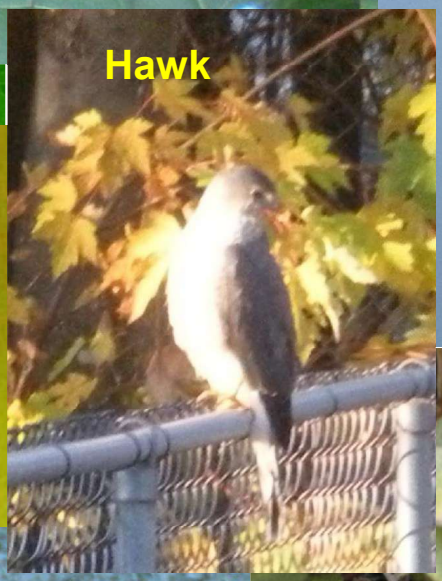

Spider


Parasitic Wasp


Lacewing


Bat


Rove Beetle


Hawk


Skunk & skunk foraging


Firefly

Cdn Tree Frog

Diseases: Bacteria, Fungi, & Viruses

Bacteria start as skin/rind dimples and create serious discolouration on leaves and fruit;
Fungi have furry or fruiting bodies & often create dark or white colouration on leaves;
Viruses produce unusual leaf colour & odd structural variations in leaves.

Bacteria on produce (e.g. tomato tops, fruit that touches ground soil or has soil splash), appears as strong colour variation & wasted areas. Water helps it to stick. Mulch to protect fruit and leaves from soil; water plant **roots only-** not the leaves or the fruit. A thirsty plant needs a drink, not a bath. Compost compromised material.

Tomato blight (both early & late) on leaves & stalks: remove & green bin **all** affected parts + fallen debris; rotate plants to new locations **and new soil** for the next 2 to 3 seasons. Apply significant amounts of compost to the former area.

Powdery Mildew (white or grey) on leaves – spray milk & water 50/50, or baking soda & water - do not rinse. Safe to compost at end of season.

Mosaic virus via sap sucking insects (e.g., cucumber beetle or aphids) - remove entire plant and green bin, yard waste, solarize, or torch it. Do not compost any parts.

Squash Bacteria; Tomato Blight; Powdery Mildew; Corn Smuts; Mosaic Virus




Under / Over Watering

Under watering causes plants to wilt or droop as water in the plant makes leaves and stalks firm – like air in a balloon. **Water the roots only**, and the plant should recover in an hour or two. "Blossom end rot" in tomatoes and peppers is due to irregular watering which stops the uptake of calcium to the fruit. These plants do not swim so soil must be moist but well drained; however, they must not be allowed to dry out. This problem is easy to identify and treat.

Over watering or lack of good drainage leads to drowning – plants need moisture **and air** at the roots and too much water eliminates air. Leaves will turn yellow, usually from the bottom first, but not always. This problem is slow to appear and plants are slow to recover since the damage is more severe. Excess water has to be removed as soon as possible. Re-potting may be necessary.

Nutrient Deficiencies

Nutrient deficiency shows up as an odd colouration (usually yellow, tawny, or purplish) on either the edges or the centers of leaves around the veins, and plant growth may be stunted. Trying to figure out which nutrient is missing is a waste of your time – many deficiencies show up as yellow, including drowning and spent plants.

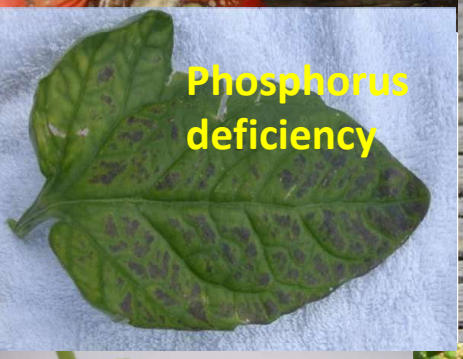
Solution: add 4 cm+ of **compost** or composted farm animal manure (not pig), or organic liquid or granulated fertilizer according to instructions. Recovery will be slow until water soluble nutrients replenish the soil and reach the plant.

Note: – Excess nutrients burns plants. Most excesses get rained/watered away and wasted. Too much nitrogen (N) grows large green plants with little to no fruit at all (e.g., too much Mushroom Compost or fertilizer with high N). High NPK numbers are good for a lawn or meadow – **not** your food and flower gardens (e.g. use 20-20-20 for the millions of plants in your lawn); use decimal points for tens of plants!

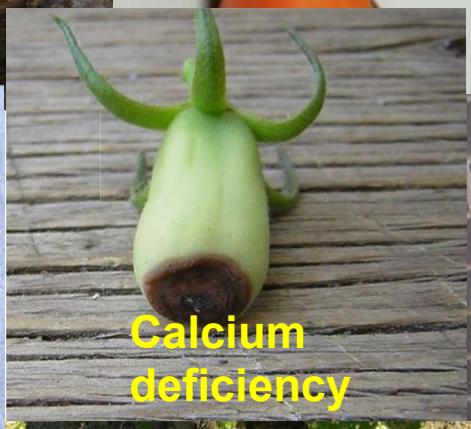
Plant Health

Bacterial Infections

Powdery Mildew



Phosphorus deficiency



Calcium deficiency

Thirst

Nitrogen deficiency

Septoria Fungus

Plant Health Check

- Look over and under leaves for insects, insect eggs, webbing, disease, unusual structures, and unusual colour (usually motley &/or not normal).
- Remove wilted material. If diseased, place it in yard waste; if not, compost it. Wilted material can infect other parts of a plant or neighbouring plants (e.g., tomato blight) or hasten the decomposition of other leaves (e.g., Lettuce).
- Remove competing plants if the plants are interfering with the health of the edibles (e.g., weeds, tree/shrub roots, veg & flower bullies).
- Trim plants to improve ventilation: reduces humidity, and avoids the growth of bacteria & fungus.
- Add extra supports to keep plants from touching the soil and trim off any lower branches or leaves that touch the soil. Lower leaves can pick up soil born diseases, and they provide a stairway for slugs and snails. Add Mulch.
- Option, but recommended: trim off new flowers to reduce the energy drain on the plants (e.g., stop continued tomato or squash production to concentrate energy, growth and flavour; remove potato flowers, herb flowers, …).


Mosaic Virus


Carrot Rust


Tomato Blight
Spoiled Garlic


Mold


Warts

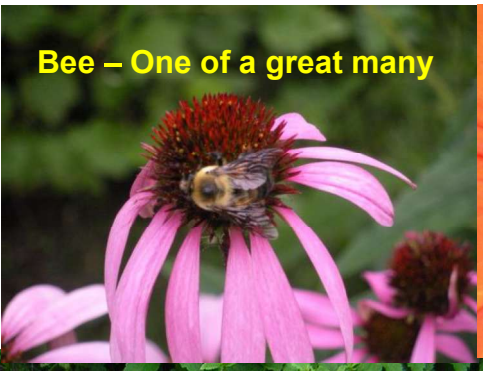

Aphid excretions &
fungus

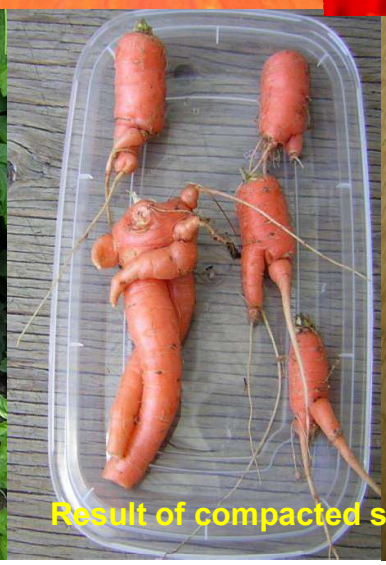

Drowning

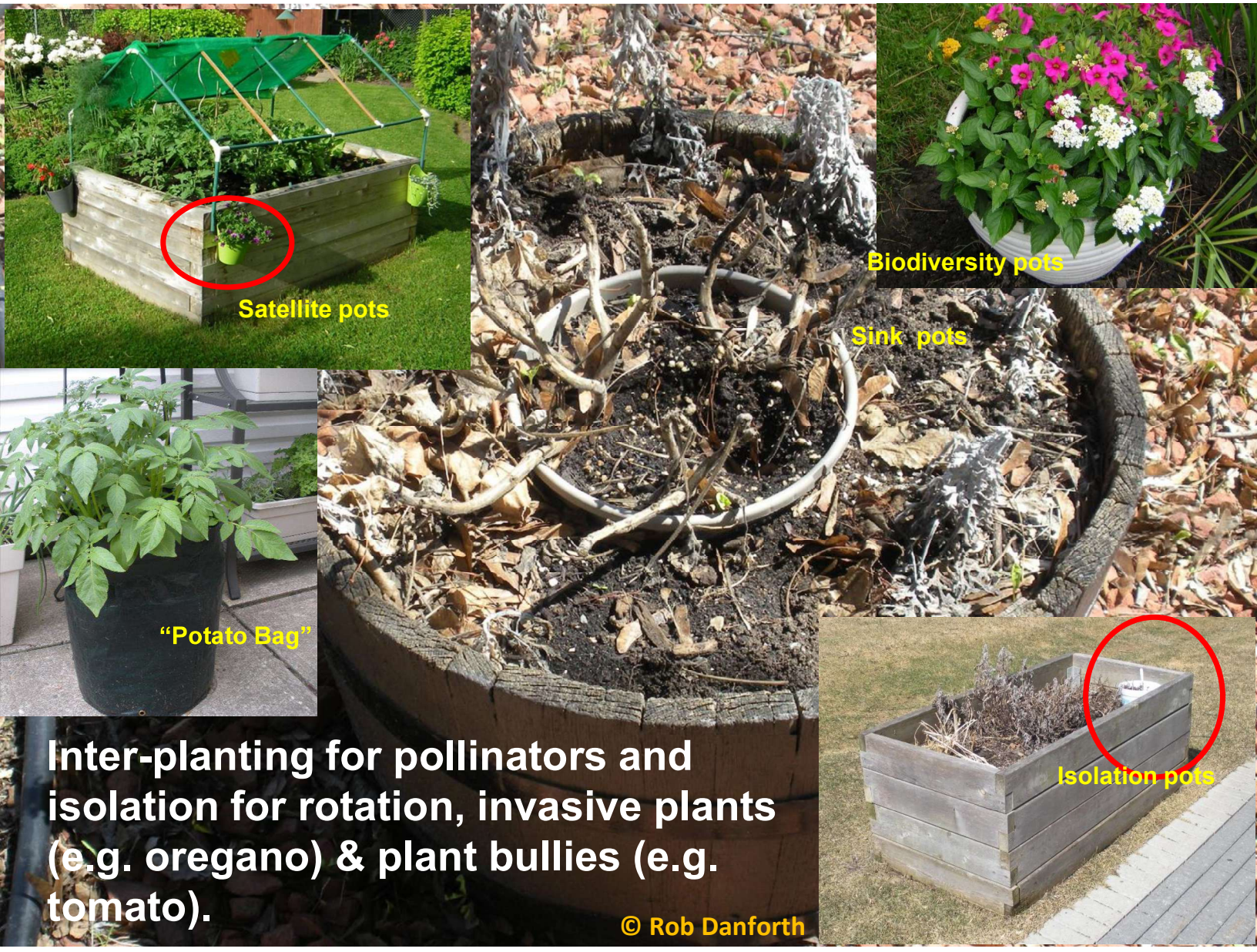

Potato scab
© Rob Danforth

Garden Maintenance

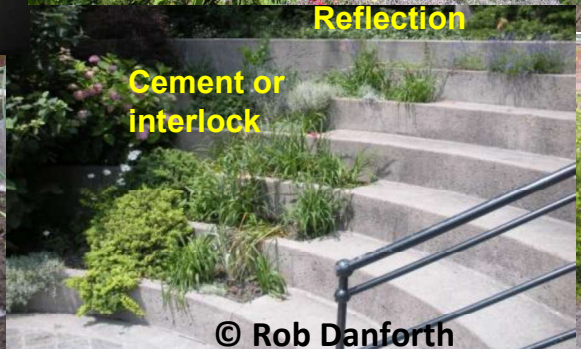
Attract & Keep Pollinators & Insect Predators; **Deter** critters with barriers – nets, row covers, or fencing; **Aerate/loosen** container soil approx. once/mo; **Thin dense foliage** for better air circulation; **Water** with a watering can so you can check <u>each</u> plant for issues and save water; **Weed** Weekly.






Satellite pots
Biodiversity pots
Sink pots
"Potato Bag"
Isolation pots
Inter-planting for pollinators and isolation for rotation, invasive plants (e.g. oregano) & plant bullies (e.g. tomato).
© Rob Danforth

Light & Heat Boosters

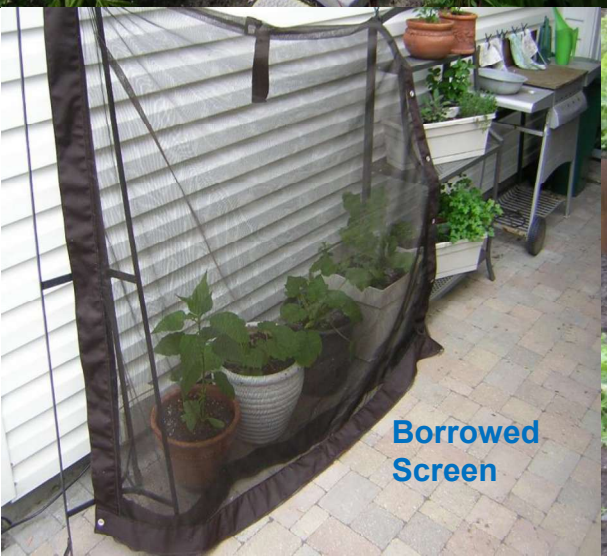


Sun Screen


Plant Screen


Landscape
fabric, burlap,
window screen


Vegetation Screen


Borrowed
Screen


Cedar Shakes
© Rob Danforth

Plant Rotation offsets nutrient loss, disease, insect eggs, & insect larvae.

Heavy feeders

The larger the plant & fruit, the heavier the feeder and the greater depletion of soil nutrients. (e.g. Corn, Cabbage Family, Rhubarb, All Vine plants)

Best to move heavy feeders (but not perennials like rhubarb) and veg which are prone to disease to new areas seasonally.

Rotation Cycles of 2-3 years would be best; 4 is ideal !

Solutions:

-- If box bed, elevated bed, or cold frame, rotate into satellite containers with new soil for 2 seasons

-- Try different plants for 2 seasons and forget the troublesome ones.

-- Add compost, compost, & more compost – no such thing as too much!

#1 **Greens use N**
(moderate feed)

(Leaf Lettuce)

#2 **Fruits use PK**: Corn, Vines
(heavy feed)

(Celebrity &
Lemon Boy)

(Sugar Snaps)

#4 **Legumes Fix N**: Peas, beans, soybeans….

(Danvers)

#3 **Roots use P** (light feed)

For Plots & Raised Beds rotate via Sections: Quadrants or Tank Tread.

End of Season Planning

- Harvesting and disposition.
- Curing for long term storage.
- Produce Salvage.
- Collecting & storing herbs.
- Saving Seed.
- Planting Garlic.
- Plant Rotation next season.
- Maps/photos/notes: What worked well?

What did not work well? What will you try next season (succession and/or companion planting?) New Vegetables? Indoor Food Gardening?

Pro-active Plant Stress & Disease Management

to reduce bug attacks & stress induced blossom drop.

1. **Reduce weed pressure** (remove weeds & add mulch)
2. **Follow watering guides** (water roots only x2 -- no swamps, ever)
3. **Ensure sun requirements** (trim bushy plants, & sun boost or sun screen as needed)
4. **Reduce wind destruction, wind drying & air borne diseases** (set a windbreak – e.g., tall/bushy plants, poly tunnel, row cover)
5. **Keep leaves & fruit from soil & soil splash** (trim lower leaves/add mulch or manufactured soil cover)
6. **Aerate all dense soils for air & water penetration** (don't cut roots)
7. **Maintain air circulation to reduce humidity** (thin bushy plants)
8. **Fertilize twice a year (**fall or early spring & mid-season) with compost, composted farm animal manure, liquid or granulated fertilizer.
9. **If possible, rotate plants or <u>at least some plants</u> to new areas each season**.

Reactive Plant Stress & Disease Management

#1. Remove diseased parts ASAP [leaves, roots, & fruit: green bin/yard waste]

#2. Remove all disease debris from soil [do not compost]

#3 If the whole plant is diseased, put a bag over it and pull it out, roots and all [Place the plant in the yard waste or green bin]

#4. Clean garden tools to avoid transfer of disease [hot soapy water, rubbing alcohol, hand sanitizer, or diluted bleach].

#5. Spray powdery mildew and tomato blight with water ans diluted baking soda or milk 50/50 [slows, doesn't cure]

#6. Add compost 2x/year [fall or early spring & mid-season -- adds **all** necessary nutrients, retains moisture, does not burn, neutralizes disease over time, balances pH, makes soil friable] NB: we "mulch" with compost, but compost is not a mulch! Cover compost additions with organic mulch (e.g., shredded leaves saved from the fall).


Secateurs


2 Tine Cultivator


Hori Hori Knife


A Happy Garden Makes a Gardener Happy.
Keep calm and carry-on organic food & flower gardening.
The many benefits are worth it despite any setbacks or sacrifices to nature!