

Two presentations this evening.

Seed-Starting Indoors, by Deb Schatz

Supplies

Deb brought lots of props so we could visualize the process. Here's a list of suggested supplies:



1. Steel shop or grow light for rack mounting, with pull-chain switch, and wired with plug ([photo](#) is a similar product). She recommends one fluorescent bulb and one grow light, or two grow lights. Use one unit for each rack.

2. Steel shelving rack, with wheels for ease in moving for available light ([photo](#) gives general idea, without wheels). Deb welded her own, with 4 steel mesh shelves (easy to hang a light, and for water drainage).



3. Starter trays: You can go simple, using 1-cup yogurt containers (punch holes in bottom for drainage) set on a jelly roll baking sheet, and covered with plastic wrap. Or you can buy plastic trays made for this purpose ([photo](#) is similar product); they include a bottom tray, rack of seed cells, and plastic cover.

4. Transplanting pots, in 3 increasing sizes. These can be plastic or biodegradable for direct planting. [Photo](#) is "Cow Pots" made from cow manure



5. Seed starting medium: Deb recommends Miracle Grow Garden Soil, but it is not organic. All-natural and organic versions are available such as from Gurney's or Johnny's Seeds (see Sources).



6. Watering can.

7. Liquid Miracle Grow is recommended by Deb, to augment the fertilization, but it is not organic. Organic liquid fertilizers are also available, such as the fish fertilizer [pictured here](#).



8. Seeds. Deb recommends Garden City (also known as Irish Eyes) and Gurney's. Other reliable brands include Baker Creek and Johnny's Selected Seeds. (See sources)

Timing

Start with average date of last frost, then work backwards to determine when to start your seeds, paying attention to growing instructions on the seed packet. In our area, the date of last frost is June 1. It takes about 6 - 8 weeks for the young plants to grow to a transplantable stage, which puts us at April 1. Time is also needed for germination, about 2 weeks for tomatoes and peppers (sow around March 15), or 3 - 4 weeks for corn, cucumbers and melons (sow around March 1).

Starting indoors is not recommended for lettuces and greens, nor for peas. These are all cool-hardy and can be sown outside.

Starting

1. Start with tomatoes and peppers, because they require the longest growing season.
2. Fill individual containers with planting medium, then plant 2 seed per cell. Plant more than you think you will need, for spares. Set the containers on the tray.
3. Moisten well, but do not flood.
4. Set plastic cover over trays, and place on your rack
5. Put rack in warmest spot in your house. It will take 1-2 weeks before they germinate; they should stay moist during this time -- the cover creates a micro-climate.
6. When you see the young sprouts emerging, hang the grow light about 1" above the plants. Adjust position of light, and remove plastic cover, as the plants grow.
7. When all seedlings are up, move the rack to a cooler spot, perhaps next to a window. Turn off grow light at least 6 hours at night, because they need darkness to develop good roots. If there is a lot of outside light at night, cover the rack with a cloth to ensure darkness.

Moving to Bigger Pots, and Their Summer Home

1. When they are bigger, and beginning to crowd, it's time to transplant to the next bigger container (1 plant per pot). Pack medium loosely. Place pots on trays, water, & continue to use the grow light. Reuse starter trays for cucumbers & corn.
2. Again, when they begin to crowd each other, transplant to the next bigger pot, twice (3 transplantings in all). Slowly increasing pot size supports good root development.
3. When weather warms, perhaps in May, move rack outdoors, perhaps to a porch to protect them from the direct sun at first. Start with about 30 minutes each day, then slowly increasing the time outdoors. Do not leave them out at night.
4. June is the best time to transplant your young plants to their summer home (your garden or outdoor containers). By this time, the plants are sturdy and tough, and can withstand the change. And hopefully, the last frost is behind you.

Watering

- Don't over-water. Soil should be moist, not wet.
- Best time to water is in the evening.
- some plants, such as lettuces, like to be misted.

Pitfalls

- Starting too soon -- no more than 8 weeks indoors.
- Too crowded.
- Wrong starter mix. Garden soil is not advisable for starting, as it gets harder with watering. Better to use softer mix.
- Over-watering. Too much water could encourage mold and fungus. You want moist but not wet. Don't allow to dry out, either.
- Stagnant air: Consider a fan to move the air.
- Relying on light from windows alone -- not enough light. use a grow-light.

Sources:

Baker Creek Heirloom Seeds: <http://rareseeds.com/>

Burpee: <http://www.burpee.com>

Gurneys: <http://gurneys.com>

Irish Eyes (Garden City Seeds): <http://www.gardencityseeds.net/>

Johnny's Selected Seeds: www.johnnyseeds.com/

Terrapin Farms (Whitefish, 862-6362)

see also [Montana.gov: Organic Seed Resources](http://Montana.gov/OrganicSeedResources) for more Organic seed sources)

Links for photos:

Shop/grow lite:

www.homeharvest.com/fluorescentfixturesstd.htm/mac.com/catherinehaug/iWeb/Cats_Site/Welcome_Menu.html

Steel shelving system:

http://www.staples.com/office/supplies/p4_Hirsh-Boltless-Steel-Shelving_92041_Business_Supplies_2_10051_FEATURED:SC2:CG40

Cow Pots, watering can & liquid fish fertilizer: <http://www.johnnyseeds.com>

Introduction to Permaculture & Container Gardening, by Sally Janover

What is Permaculture?

Developed by Bill Mollison, permaculture started as an agriculture design to return human consumption of organic material to nature.

Everything must serve at least 3 purposes, including providing nutrition and supporting other things. Examples are nitrogen fixing, providing shade, providing support for other plants, and holding moisture.

What Can You Grow in Containers?

Almost anything can be grown in a container, provided certain conditions are met. for example, dwarf trees, herbs, vegetables and fruits.

Containers can be just about anything (as long as there is good drainage), including a raised bed garden

Why Grow in Containers?

If your space or soil are not conducive to a garden plot:

- ▶ Limited space
- ▶ Bad soil or too many rocks
- ▶ Not enough sun or too much shade (such as too many trees or structures)
- ▶ Wrong exposure

Containers take less space and provide portability (to follow the sun).

You can create micro-climates to expand your growing options. For example, tomatoes are difficult to grow here. They don't like a lot of moisture (they were originally desert plants). Growing them in containers allows you to provide less moisture than the rest of your garden.

You can combine kitchen herbs in a window box at a kitchen window, or in a pot outside the door.

Getting Started

Study your grounds, looking for different conditions, such as available light/shade:

- ▶ cool weather plants need 6 - 8 hours sun
- ▶ hot weather plants need 7 - 8 hours sun

Start with what you want the most. If you want crops you can store fresh all winter, choose root vegetables and cabbage. If you love Mediterranean food, choose tomatoes, basil and Italian herbs.

Choose varieties suited for containers and that are disease resistant.

Decide on a watering system: drip lines, sprinklers, and hand watering. Consider self-watering systems; see handout (How to Make Self Watering Containers).

Choose your Containers

Choose a size that will handle the root size (refer to seed packet)

If doing companion planting -- plants that assist each other to resist disease and enhance growth, without competing for root space -- choose a size that can accommodate the mix, and allow for differing root depths. Examples of companion planting:

- tomato, basil and garlic
- “Three Sisters:” corn, pole beans, and squash

Containers should be clean -- never have had anything toxic in it. Wash with 10% bleach solution, and rinse many times.

Must have excellent drainage

Choose plastic vs clay depending on the needs of your plants: clay pots provide better oxygen exchange, but lose moisture faster than plastic.

Container options:

- Raised beds
- Clay pipes
- Old wooden barrels
- Baskets and hanging baskets can be very attractive, and are great for herbs. Try an Italian herb basket, or a Chinese herb basket.
- Window boxes
- Grow bags (plastic)
- Gunny sacks are great for potatoes
- Hydroponic pots
- Self-watering pots are handy; they are a pot within a pot.
- Avoid metal because it can heat the soil too much.

Use a trellis or wire cage for plants that need support, such as tomatoes

[Note on tomatoes: determinate tomatoes grow like a bush and don't need as much support as indeterminate tomatoes which grow upward.]

For large pots, put them on a wheeled stand for ease in moving them around

Soil

You can buy planting soil, or make your own. See handout (Soil for Container Gardening) for ratios. Two types:

- ▶ Organic: Sally recommends 1 part each soil, perlite, peat moss, and compost
- ▶ Soil-less soil (the latter is for larger plants -- not as heavy): a combination of vermiculite, peat moss, limestone, super-phosphate and garden fertilizer

Mixture should be loose and friable.

Include a mulch (sphagnum or peat moss work great)

If using compost in your mix, test your soil to know what to add.

Planting in your Container

Put about 1 inch of gravel in the bottom of the container, then cover with screen. This keeps pests out of your pot. Wet the pot.

Mix soil well (use a tub or wheelbarrow), then wet it and mix again.

Add soil on top of the screen. Pack soil loosely around plant.

Watering

Several different watering systems can be used: by hand self-watering, or drip irrigation system on a timer.

Best time to water is in the evening.

If hand watering, will need to water most every day.

Water until it comes out the bottom; put a tray under the the pot to capture the water.

Don't water leaves, but you can mist cool weather plants (lettuce, etc.).

Test soil in pot for moistness. Small pots: moist to depth of finger nail. The larger the pot, it should be moist to farther down your finger.

If going away for a few days, fill a tray under the pot, and it should be OK.

Once a month, check for white on the outside of the pot at its bottom. If present, you need to flush it out (water until it comes out clear).

Other considerations

Maintain fertilizing and also pest and/or disease control throughout growing season.

Prune produce as needed; don't allow fruit, squash, cucs, etc. to touch the ground; stake up as needed.

Cool crops (lettuce and most greens): a second crop can be planted in July.

Tomatoes: in late July or into August, pinch off blooms so the plant can work on ripening fruit that has already formed.

Indoor pots:

They need 6 - 8 hours of sunlight, or a grow lite; take pot outdoors on sunny days, or in a warm rain.

References and Links (from Sally Janover):

- Container Gardening for Veggies:
<http://gardenblog.projo.com/2007/05/container-veggi.html>
- Growing Tomatoes: <http://www.helpfulgardener.com/vegetable/2003/tomatoes.html>
and <http://aggie-horticulture.tamu.edu/extension/container/container.html>
- Google on “growing vegetables indoors” to get many files
- Goggle on “Companion plants for container vegetables” to get many files

General Discussion:

1. How to garden without chemical fertilizers:

Compost & manure mixed into soil before planting.

Mulch in fall with straw or alfalfa hay or meal. An element in alfalfa has been identified (by the University of Wisconsin) that stimulates growth. Try alfalfa tea for watering.

2. How to grow good, full garlic bulbs (from Stephanie Pointer):

Plant individual bulbs in the fall (October or early November). They love bone meal, just like other bulbs. Also chicken manure. Work manure into soil, then make rows about 5” deep. Add bone meal. Then plant individual bulbs, root-end down, pushing down an inch into soil, about 12” apart. Then cover with about 6” of soil.

Wait for first hard frost, then cover with straw mulch. This will hold moisture so do not need to water.

Water when they start to grow in the spring, after a dry spell.

3. Hobo spiders in garden:

Question was not answered

4. Seed exchange

Siara is working with a group on a local seed exchange. Contact her for more information: mountonwynd@hotmail.com