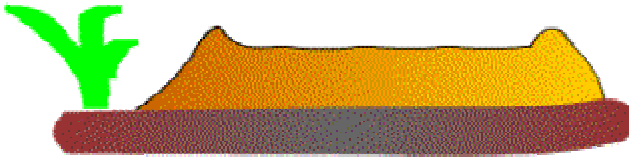
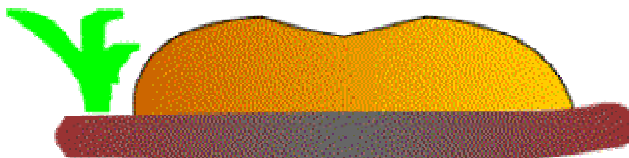


Gardening Tips

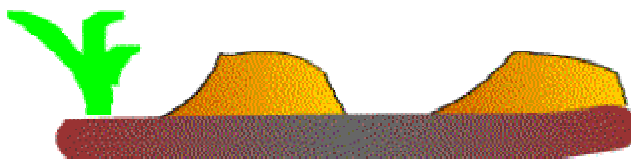
Raised Bed Styles



Flat, for light, sandy soil



Rounded for good humus



Trench in the middle,
more drainage

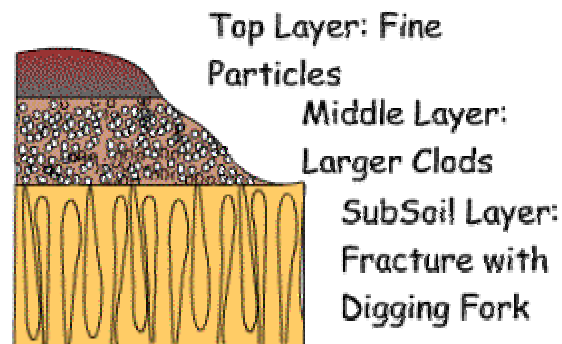
Previously we have discussed the forms of plants and the development of the proper soil environment. Now let's consider how we approach garden chores.

Bed Preparation

The preferred approach is to build raised beds that allow air and light to penetrate the soil. Double-digging is labor intensive but provides well tilled beds. The goal is to maintain the soil strata, while working up the beds to have a fine layer on top and well-broken layers below. To avoid compacting the soil, the beds are made 2 1/2 to 5 feet wide so that the gardener can stand along side in the path. The rounded shape increases surface area for exchange with the air. Remember to preserve the soil layers -- that is, keep the topsoil on top.

The final step is to add a layer of compost and/or any other soil amendments. Then "tilth" the upper layer -- that is, you toss each forkfull into the air to lighten and texturize it. When completed, the bed should have the structure shown -- a fine layer for plants to get started in, and lower layers with good aeration. Needless to say, you can't do this operation if the soil is

Double-dug Bed

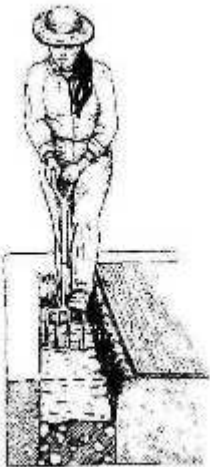


wet and heavy. That's our biggest problem in the Willamette Valley -- much as we would like to get into the garden in the spring, you can't work clay soil while it's wet or it just forms clods. Best to wait until the soil has dried out enough to work.



Step by step digging.

1) Skim off weeds with a spade. Lay out a bed about 3-5 feet wide and as long as you want. Taking the first part of the bed, select an area about 2 feet long and as wide as the bed. This will be the first trench. In this first trench, dig a hole with the spade about as deep as the spade's blade. Pile topsoil temporarily in wheelbarrow.



2) When the trench is cleared out, use the fork to break up the subsoil. Don't waste your strength trying to dig it. Pile weeds back into bottom of the trench.



3) Start a new trench and use the new topsoil to refill the first trench. Go back to step 2 and repeat until the bed is complete. Use the topsoil in the wheelbarrow to refill the last trench in the bed.



4) When the bed is completely dug, scatter compost and soil amendments.



5) Tilt the bed by lifting the top layer of soil and compost and tossing into the air. Avoid stepping on the bed because we don't want to compact it.

(Illustrations: Jeavons, *The Sustainable Vegetable Garden*.)

Good tilth is the gardener's best friend. A friable soil can be up to 50% pore space due to the action of worms, roots, bacteria and other soil life. Note that pore space is very different from air pockets that form if the soil is too heavy and clod-like. While water can drain down, air pockets interfere with capillary action to bring water back up again. Fine root hairs are killed by excessive air and organic matter is too easily oxidized. If the clay soil is sticking to the shovel blade, it is too wet. Let it dry out and try again later.

How much effort is required to double-dig? John Jeavons estimates that it takes 6-14 hours of labor to initially prepare a 100 square foot bed. Of those, 2-4 hours are spent double-digging. The rest are the usual hours that would be spent anyway -- on weeding, watering etc. In subsequent years, the beds will be in better shape and should require more like 3 hours of double-digging and 4 hours of other activities. The proper technique is to avoid stooping over and bending your back -- this can give you sore muscles in places you didn't know you have! Instead keep the back straight and use knees and legs to lift. Be careful to pace yourself and don't work too hard, especially the first year. You can always start some beds using less labor-intensive measures and gradually work up to double-dug beds.

When is double-digging not a good idea? Sandy soils don't need aeration and are already receptive to air and warmth forces. Beds that are too high will dry out too rapidly. Similarly, in areas with hot summers, the raised bed may heat up too much. Maintaining a living mulch with close plantings will be a better practice. Plus you should be in strong physical shape to do major digging. Finally, there may be times when you are trying to plant a large area -- then you need farming techniques, not intensive gardening ones. Double-digging works great for high-value crops like salad greens where you are planting small amounts several times during the year. It is a lot of work for crops like corn and winter squash that will take up a large area for the whole season. There is nothing wrong with applying biodynamic methods while using conventional tillage. Just remember the basic principles of encouraging air and light to enter, while avoiding compacting soil that is wet and heavy.

Crop Rotation

Crop rotation follows the same idea. We grow a plant species to prepare the soil for the next species.

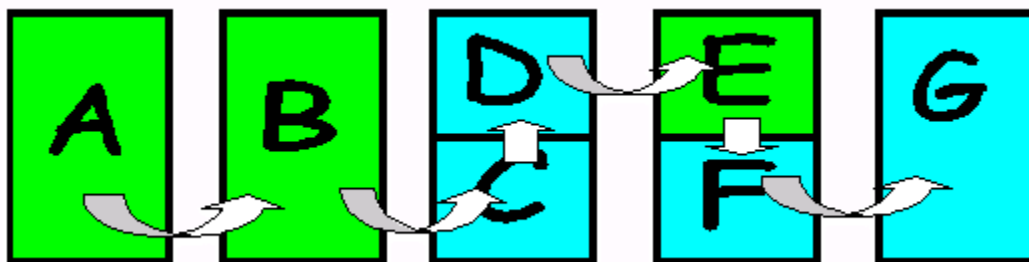
How to assemble all these plant families together? Koepf suggests one example of a rotation scheme:

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
1st year	Root	Leaf	Flowers	Fruit	Strawberries
2nd year	Fruit	Root	Leaf	Flowers	Strawberries
3rd year	Flowers	Fruit	Root	Leaf	Strawberries
4th year	Leaf	Flowers	Fruit	Root	Strawberries
5th year	Root	Fruit	Flowers	Strawberries	Leaf
6th year	Fruit	Flowers	Leaf	Strawberries	Root
7th year	Flowers	Leaf	Root	Strawberries	Fruit
8th year	Leaf	Root	Fruit	Strawberries	Flowers

This follows the general plan: follow roots with fruiting vegetables, follow with leaf vegetables, then annual flowers. The strawberry beds last for several years but eventually need to be replanted. They do best after root crops; a new bed could be started in July-August after an early crop of carrots. Otherwise, they could be started in the spring after a winter cover crop. The old strawberry crop will be good for leaf vegetables. The same beds can be interplanted to include both early and late crops, such as lettuce and cabbage.

Here is another rotation plan from Robert Kourik. This plan calls for 5 beds of which half are growing vegetables (in blue) and the other half are growing compost material or cover crops (in green). The rotation cycles each year so that Plot A becomes Plot B the next year, and so forth.

Plot A	First year grass/legume cover, cut/mow several times for compost material, becomes # B next year
Plot B	Second year grass/legume cover, cut/mow several times for compost material, becomes #C next year
Plot C	Till in cover (#B) in spring, plant vegetables, manure in fall, winter cover crop
Plot D	Till in cover (#C) in spring, plant vegetables, plant grass cover in late summer
Plot E	Broadcast clover seed into grass (#D), cut grass for compost before seed heads form, grow clover and cut throughout summer
Plot F	Till in cover (#E) in spring, plant vegetables, plant winter legume in late summer
Plot G	Till in legume(#F) in spring, plant vegetables, reseed grass/legume in late summer, return to "A" cycle next year.



Dry Gardening

When the homesteaders planted their gardens, they needed to feed their family for much of the year. They couldn't afford to do raised beds or to develop irrigation systems. How did they do that? Part of the answer is to give plants lots of elbowroom. Space rows widely at about 8 times what we do with intensive beds. They also hoed or cultivated to keep a "dust mulch" between the plants. This technique is quite effective at preserving water so the plants can make it through the summer with only an occasional irrigation. Most of this class is directed at intensive gardening because we have limited areas for garden plots. But if you have the room, one can produce high-

quality produce without irrigation. Vegetables must be able to send down deep roots so that they can draw in the water that is stored in the soil. Plants that work are root crops, brassicas, corn, squash, and beans. Ones that don't work are onions, celery, lettuce, Chinese cabbage, radishes, and spinach. The plants need to get well established in June using the natural soil moisture. Then they can carry themselves through the dry months. It helps to give 5 gallons of compost tea every 2-3 weeks during July-August. Liquid fertilizer helps with the stress of low water.

Starting Seeds

Seeds are the treasurehouse for the plant. It is important to use strong, vital seed. If you want to save your own seed, make sure you select from the best plants. If you don't have a large enough population for good selection, it may be better to buy new seed. Most commercial seed is raised agribusiness-style. There are a few small farmers that specialize in organically grown, and even biodynamically grown seed. These seeds should be more vital to start with and should provide you with better, more nutritious plants.

Alan Chadwick had his preferred way of starting seeds. The preferred potting mix was a mixture of leafmold, turfloam (that is, composted turf) and sharp sand. Seed flats were three inches deep, lined with oak leaf mulch and then filled with the potting mix. Later, the developing seedlings are "pricked out" or transplanted to another flat to grow again before finally being transplanted outdoors. Chadwick's advice was to think of "Breakfast, lunch, and dinner". The potting mix is breakfast, the seed should wake up to soil that is not too rich. Then it can get transplanted to "lunch", a richer growing mix. Finally, it will go into "dinner" the biodynamically prepared bed. The idea is that at each step, the plant will see a richer diet so it will not be upset by transplant shock.

For gardening on a small scale, this method is hard to duplicate. We may be starting only small amounts of seedlings; we don't have the flats or the greenhouse space in which to raise them. We can still follow those principles. But for us, the acceptable approach may be to plant in 6-pack cells using store-bought potting mix. Plant in 2 3/8 inch cells for large plants. (Peat pots aren't a good idea -- the seedlings tend to wilt when set out.) We want to avoid seedlings becoming root bound before we have a chance to set them out. Remember that plants double in size or root area every two weeks. The

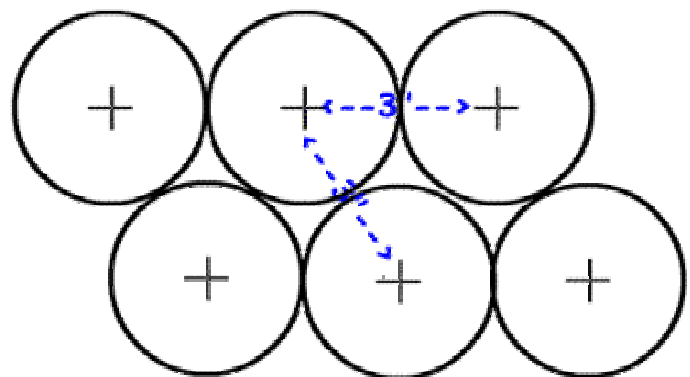
three-inch deep flat is so the seedling has enough root-room. If the roots are constricted, the plant will cease growing and start to mature. If starting in small cells, you will have to watch root-room carefully. Transplant into a growing pot if the roots start to get cramped.

To water, use a siphon from 5 gallon bucket. Mount the siphon tube on a broom stick to conveniently deliver to the desired plant. This allows use of compost and fertilizer teas. If you have a problem with damp-off fungus attacking the seedlings, spray with diluted equisetum tea. This spray is high in silica and toughens the plant tissues.

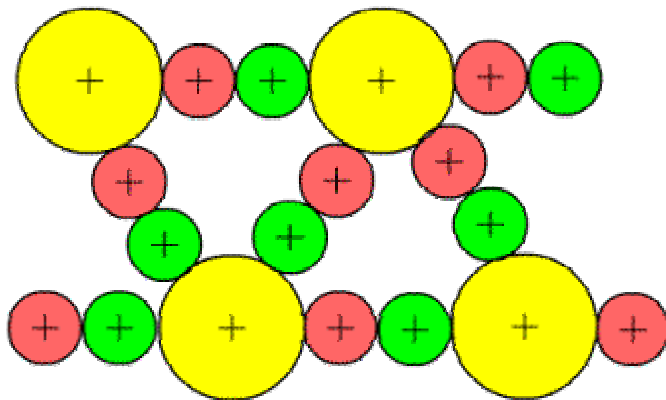
If you want to make your own potting mix a useful receipt is: 1 part soil, 1/2 part screened compost, 1/2 part peat moss, 1/2 part sand or perlite. To 5 gallons add 1/2 cup dolomite lime. If soil is sandy, add vermiculite instead of sand. Vermiculite holds water and nutrients too. Perlite only holds water. Commercial potting mix is adequate.

Of course, good light is a must. Under our cloudy skies, a windowsill may not receive sufficient daylight. We generally need supplemental lights. Use a schedule of light 14 hrs/day, dark 10 hrs. Plants in a cold frame are usually all right because they grow slower under cooler temperatures and can tolerate low light.

When plants are set out in the beds, arrange them diagonally so that there is a uniform distance between them.



Diagonally Offset Planting



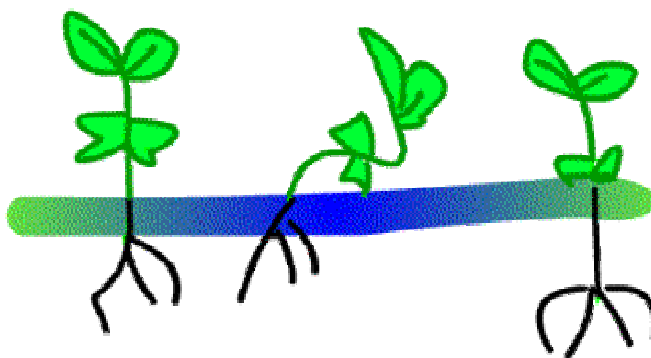
Corn Beets Bush Beans

Interplanting Spacing Diagram

You can do the same when interplanting different varieties. In the diagram, the beets and then the beans will be harvested while the corn is still growing. By the time the corn is fully grown, the other crops will be removed. Plants placed this way form a living mulch over their bed. A table of recommended plant spacings is included in the appendix.

In transplanting, the most important area is 2 inches above and 2 inches below the soil surface. Here we have to create a mini-climate so that the plant will not be stressed from the move. If the plant toughens its stem, that will retard the flow of sap and set the plant growth back. The transplant hole should be big enough that the root ball is not squashed. It's better to be a little bit deeper than in the flat so that the stem has good support. For brassicas, plant up to the first two leaves so the plant won't flop over. Firm contact with the soil encourages the roots to grow.

Plant up to first two leaves.



Improper Planting

Flops Over

Proper Depth

For direct planting in the soil, remember which way is down for big seeds like fava beans. Either place them horizontally or with the eye down so that the radicle shoot has a straight shot downward.

Watering and Irrigation

Since we are proposing an intensive method of planting, all the growth factors must be available to the plants. That means the beds need consistent watering. John Jeavons uses "shininess" as a gauge of how much water to apply. When you first apply water, it forms a shiny layer of the soil. When you stop the shiny layer will disappear into the soil. For watering, try to have the shininess persist for 5-15 seconds after you shut off the water -- the actual time depends on the soil texture. For clay soil, it should be a shorter time. Once again, This technique is an ideal. It's nice to know the ideal method but that approach may not be possible for gardeners can only water once or twice a day. If you are strapped for time, consider setting up some sort of irrigation system on a timer. Most of us just don't have the time to hand water several times a day.

To check for soil moisture, test the soil 5-6 inches down. Does it form a ball when firmly squeezed, like the test for tillage?. If it forms a gluey ball, moisture is above 70%. If it sticks together but falls apart easily, moisture is at 70%. If it won't form a ball, it's less than 70% and needs more watering. Here is a table of moisture levels and water needed.

Moisture Scale

Soil	Moisture Level
Totally Dry	0%
Permanent wilt	20-33%
Temporary Wilt	50%
Minimum for Intensive bed	70%
Saturated	100%

Water to bring 1 cubic foot of soil from 70% to full capacity

Sandy soil	0.25 inch
Medium loam	0.5 inch
Clay soil	0.75 inch

We see that peak moisture loss is 0.2-0.3 inches per day in Willamette Valley, so we will need to water every 2-4 days in summer. For comparison, a lawn sprinkler puts out 2 inches per hour; an oscillating rectangular sprinkler about 2-4 inches per hour. So watering time need only be 20-30 minutes with these sprinklers. However, the general trend is toward smaller, more efficient low-pressure systems on automatic timers. If you have that kind of system, you will need to plan the schedules carefully.

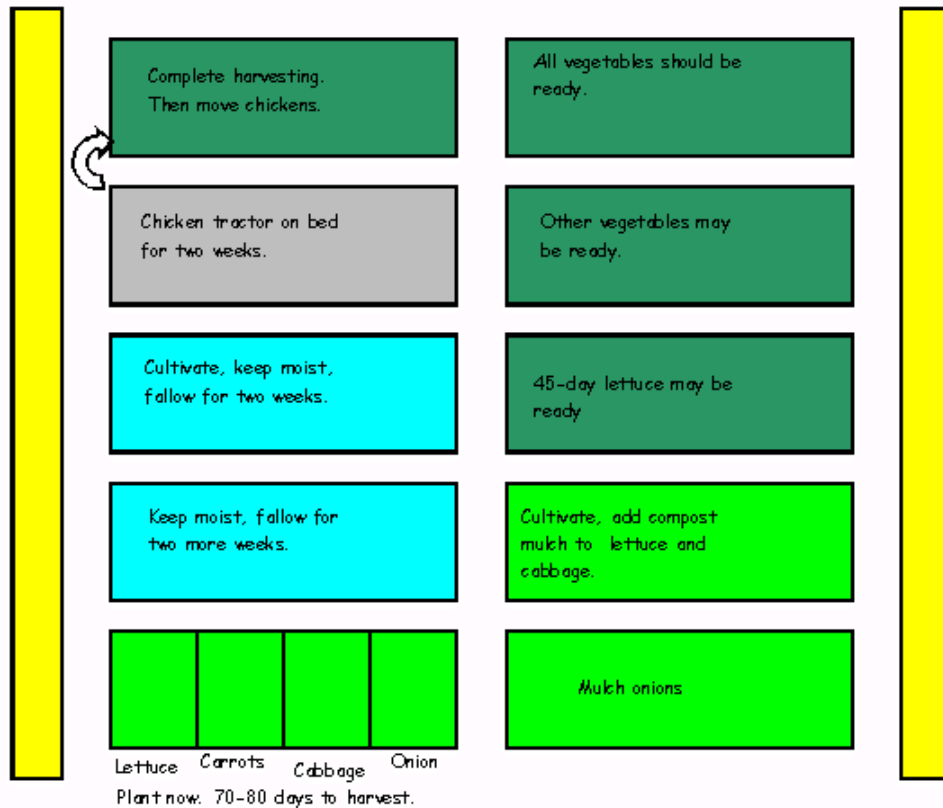
Beds will need more water on hot or windy days, and some plants, like squash, like more water than others. Remember that hot weather crops generally don't like to be shocked with cold water. It's best to water the soil, not the leaves. Perforated cans or milk jugs can be set in the soil as watering reservoirs. Punch several holes in the bottom, place in the soil leaving the top open to add water. The narrow top minimizes evaporation. This method delivers water and compost tea closer to the plant roots.

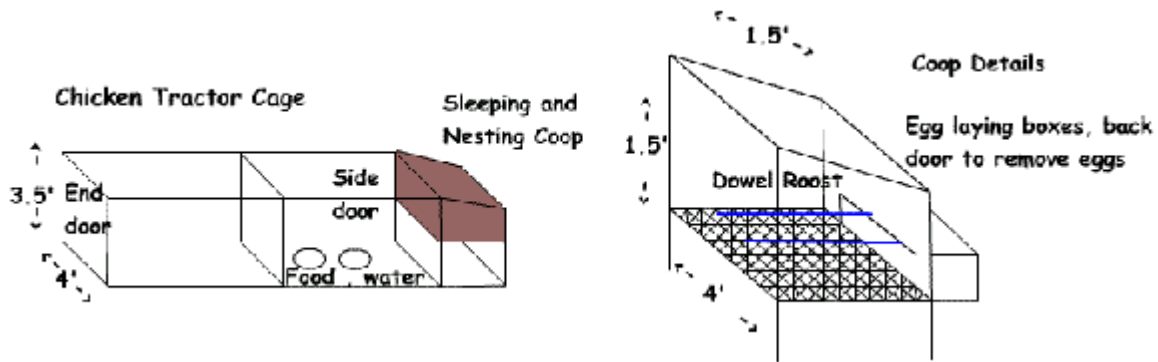
Animals in the City

We have already talked about making sure that we have the four elements represented in different plant forms. Similarly we want to encourage animal presence.

Then there are the domestic animals. Obviously, the farmstead is built around animals. The suburbs does not provide quite the same level of opportunity, but there are still rich possibilities. Rabbits are urban livestock that provide excellent manure for the garden. They fit well into the garden ecosystem because they will enjoy eating many weeds and garden trimmings. Chickens or poultry are another integration idea -- this is one way to provide a predator on slugs! Zoning restrictions may limit how chickens can be grown. Usually they cannot run loose and they should not be roosters. But hens adapt well to living in "chicken tractors". These are portable cages that can be moved from bed to bed. While on a bed the chickens will clean up trash, devour slugs, till the soil and add fertilizer. All this while providing eggs! Not a bad deal. The catch is that, like any livestock, one must be provide on-going care. While the amount of care is not onerous, anticipate the impact on trying to plan for a vacation or weekend off. So backyard animals are not for everyone.

The "chicken-tractor" is a successful adaptation of the integration concept. In the rotation layout, there are ten raised beds. The paths between are planted in grass and legumes (clover, alfalfa) that is clipped with a lawn mover and fed to the chickens. The end borders are planted to flowers and herbs, such as borage, umbellifers, aromatic herbs, Jerusalem artichokes and pole beans. These hedges shelter beneficial insects as well as providing supplemental food for the chickens and humans. Up to eight hens, of six weeks or older, live in the "tractor". Brown egg layers get along with each other well. The tractor is a bit longer and wider than the bed so it rests on the paths. The pen is moved every 2-4 weeks depending on how the garden is growing. After moving, immediately dig in the chicken manure to save nutrients. Then let it rest for four weeks before working up and planting to the new crop.





Gardening Calendar

How we respond to the seasons depends on how much we want to respond to the environment. Here is a month by month description of how one could conduct gardening activities throughout the year.

January: Prune fruit trees and spray with BD tree paste. Keep bird feeders full, include suet for chickadees and insectivorous birds. Take the time to relax, read the seed catalogs and plan next year's garden.

February: We usually have a week or two of dry weather, but don't rush out to till garden too soon. More rain is coming. You can turn over the winter cover crops but don't compact the soil by standing on the beds. Corn salad (maches), wild greens and over wintering crops may be coming on. Root crops will turn woody and bolt if left out any longer -- time to harvest the last of them. After danger of freezing is past, it's time to cleanup plant debris that my harbor slugs. Shred the debris for the compost pile.

March: Time to sow cold hardy seedlings, brassicas, lettuce, onions, celery, spinach. These can be started in a cold frame. Check the calendar for good sowing times. Optimists can direct sow peas or radishes, fava beans are a better bet. These seeds will germinate in cold soil but won't be able to grow fast enough to escape slugs. Direct sowings are better when the soil has warmed up. St. Patrick's day is a traditional time to plant potatoes. Any dormant fruit trees should be planted by now.

April: If dry enough, you can direct sow hardy root crops like beets, carrots, parsnips and turnips. The problem is that it's usually too wet to be able to work up a bed. So wait until things are dried enough. Continue with the

previous plantings. Time to sow hot weather seedlings in a hot bed or greenhouse.

May: Hopefully, we can get some beds worked up. Time to put out the cold hardy seedlings. Also get peas and onions in, if you haven't already. You should be getting spinach and lettuce soon!

June: By now, one should have the beds worked up. Time to transplant hot-weather crops like tomatoes, eggplants, peppers, melons, squash. Remember these plants don't like cold rain. So keep them covered with plastic, row covers, grow-caps or whatever. Once we are over the rains, it's time to direct sow corn, beans and summer lettuce.

July: Apply mulch to keep beds cool. Now you will have to make sure beds are properly watered for the next few months. Train tomatoes and cucumbers upward -- wire cages are a good idea. Sow fall vegetables in the cold frame after the summer solstice (the ones sown before are going to bolt). Thin as needed to keep plants growing well. Keep zucchini and beans harvested or they will stop producing.

August: Continue. Transplant fall crops. Cut and dry herbs for harvest while their aroma is at its highest. Mark the best plants to save for seed, if desired.

September: Direct sow corn salad (maches) and spinach for winter. Start cover crops, like crimson clover. Put in garlic cloves. Harvest time!

October, November: The jungle-like profusion is over, plants are hardening and contracting. Clean up debris and fallen leaves for compost. Cover winter crops with straw mulch.

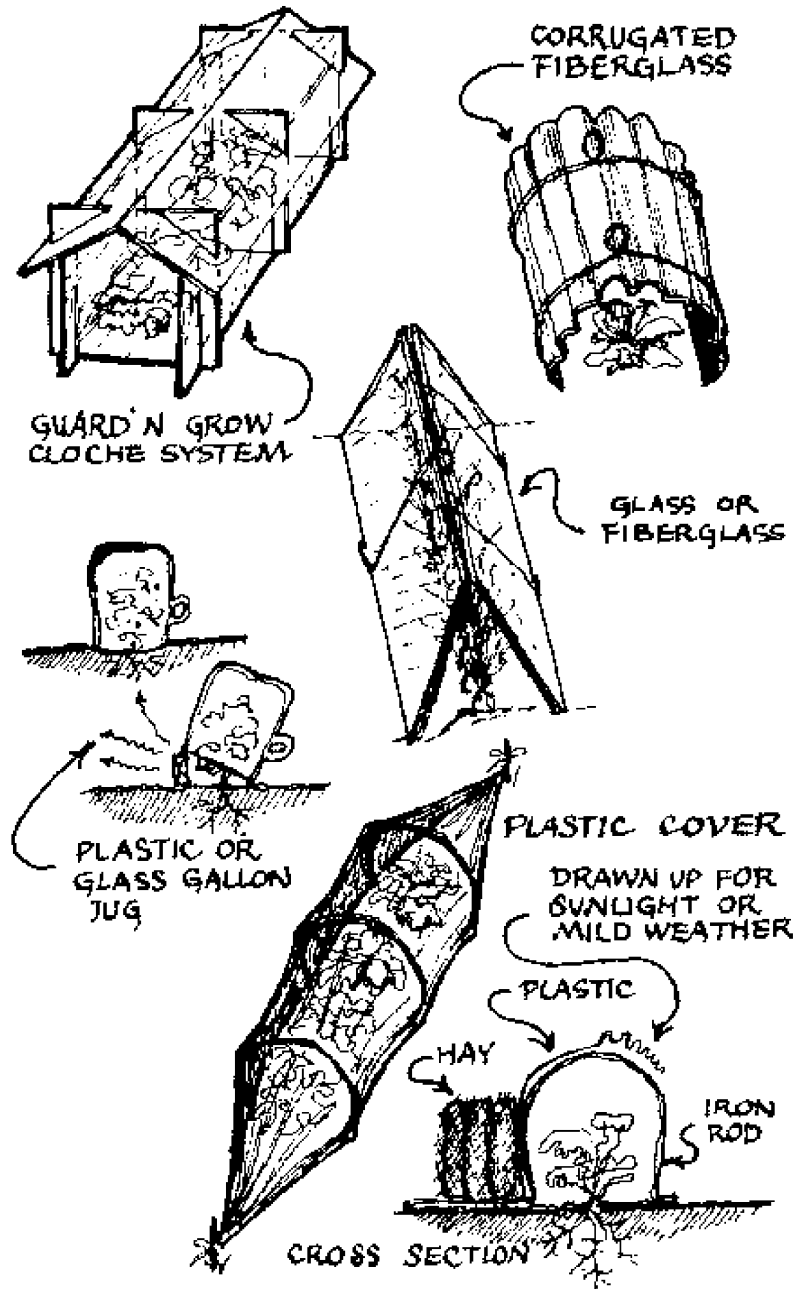
December: Relax and count your blessings. The winter months are when the garden rests in the mind of the gardener. Cultivate your intuition and imagine the garden. Think about what worked and what didn't. Now is a good time to read some books and plan for next year.

Winter Gardening

Winter gardening is an unrecognized opportunity. We all enjoy being out in the summer sunshine, it never occurs to us that we could be doing something during the rain and gloom of winter. The trick is that winter gardening isn't done in the winter -- you must grow the plants before winter. All plant growth stops during winter. During dark months, food reserves are used up and the plant succumbs to rot even when it's not cold. If we have strong plants, they can hold over and provide some greens. And then they can give us a great treat of spring growth, all before any planted crops can get their act together. For a number of the brassicas, winter gardening is better than any other time of year. For example, cauliflower is tricky -- they always want to bolt during summer. But plant an over-wintering variety and it's easy to have perfect heads in early spring.

So the plan is to plant early enough so that plants have a good start. Plants protect themselves against freezing by increasing sugar content, so some varieties, like Brussels sprouts, are best harvested after some cold weather. Start the plants in mid-summer, after the June solstice. (If planted before the solstice, the plants respond to the change in day length by bolting early.) Transplant and keep watered for good growth during the fall. Horn Silica helps the plants harden off.

Cloches



Cloche is the French word for bell, referring to the bell shaped jars originally used by farmers to cover tender plants. Now it means many types of structures that can be put over an entire row or bed. A tunnel cloche is a long sheet of clear plastic supported by wire or plastic hoops. A cold frame is a more permanent structure, a box with glazed covers. The cloche offers a way to extend the season, either by starting the early crops under cover in the spring or by maintaining the fall crops longer into the winter. Here are some ideas for fall/winter plantings.

Cold Frame or Cloche Calendar

Planting Date	Crop	Harvest Period
September	Loose-leaf lettuce, mustard green, spinach, endive	Nov-Jan
October	Loose-leaf lettuce, mustard green, spinach, endive	Feb-April
February	Loose-leaf lettuce, mustard green, spinach, peas	Mid-April-June
March	Same plus brassicas, beets, carrots, chard	Mid-May-June
April 15-May 15	Tomato transplants, bush beans, squash	June-Sept
Late May	Pepper and eggplant transplants, melons, cucumbers	July-Sept

Transplants

To get a jump on growing, we often start with seedlings and transplant them. Select store-bought seedlings carefully. Look for sturdy rather than fragile seedling. There should be at least three pairs of dark-green leaves. Plants should be well rooted, not pot bound. Being pot bound ruins brassicas -- they need fast, uninterrupted growth. This is a frequent problem with store-bought seedlings. It only takes a week to go from being well-rooted to being pot bound.

Sow under Lights	Vegetable	Move to Cold Frame	Transplant
Feb 1	Fall Leeks	April 1	May
Feb 1	Onions	March 5-15	April 1-15
Feb 15	Early brassicas	March 5	April 1
March 1	Cauliflower	March 20	April 10
March 1	Early lettuce	March 20	April 10
March 15	Tomatoes	April 15	May 1-15
April 1	Peppers, eggplants	May 5	June 1-15
April 15	Squash	April 25	May 1
May 20	Cucumbers, melons	June 1	June 5-15

Most store-bought seedlings were raised in a too-warm greenhouse and will sulk when planted. They will benefit from a week of hardening off before planting. To harden: First day put in bright shade, bring in at night. Second day put in direct morning sun, bring in at night. Third day place in full sun and leave unheated at night. Fourth day have it spend all night outdoors. Continue for a few more days.

Steve Solomon has good transplant directions:

- Scoop out hole 4 inches deep, put in 1/2 cup organic fertilizer, mix into 1 gallon of soil.
- Fill hole back with soil.
- Compress to restore capillarity, press with pint size Mason jar so there is a hole.
- Shake out seedling. Touch plant as little as possible, handle from soil ball or by tips of leaves, not stem. Position so soil level will be up to first set of leaves.
- Add 1 quart tepid water or compost tea.
- Add soil into water, mud in the root ball

Steve makes up an organic fertilizer mix to give an added boost to the plant. Remember that organic nutrients are not immediately available to the plant - they have to go through the soil food web first. If you mix the fertilizer into the soil below the plant, hopefully the nutrients will be ready by the time the plant roots grow down there. Our goal is to provide the nutrients with properly prepared compost, but it takes time to build up the soil, so giving an extra food boost is a good idea. Steve's receipt is: 4 parts nitrogen source (cottonseed meal, feather meal, alfalfa meal), 1/2 part lime (use at least some dolomite lime), 1/2 part phosphate source (phosphate rock or clay, bone meal is suspect due to Mad Cow disease), 1/2 part kelp meal (for potash and trace elements). The weak link for organic gardeners is phosphate -- it takes time for organic sources to be incorporated into the food web. Adding rock powders to the compost gives more time for soil organisms to incorporate the nutrients.

Harvest Time Tips

How do you know when your crops are ripe? It's not always obvious. Here are some tips:

Beans: Best when pods snap readily, while tips are still pliable.

Broccoli: Cut while the buds are compact, have not turned yellow or opened into flowers. Leave the plant so side shoots will develop new, smaller buds.

Corn: Pick when silk turns dark, about 3 weeks after silk first appears.

Kernels should be plump and milky.

Cucumbers: Pick at 2 inches or less for pickles, can be longer for slicing.

Cukes are old if they are large, puffy, dull and yellow. Keep vine picked so young fruit develop.

Eggplant: Harvest when 6-8 inches long and uniformly deep color. Too old when dull, soft and seedy.

Garlic: Pull when top turns yellow, air dry and trim roots later. Store in dry location.

Lettuce: Ready in 50-60 days, turns bitter as the stalk goes to flower, remove it and plant something else.

Melons: Stem "slips" or separates easily from the fruit. Bottom spot turns to yellowish color. Rind resists penetration with a fingernail.

Onions: Harvest dry onions after tops fall down. Allow to air dry for 2-3 weeks. Then trim tops and store with good air circulation.

Potatoes: New or "baby" potatoes form anytime after flowers die back. For large potatoes, wait until the vine dies. Then dig and allow to finish drying in cool dark place.

Pumpkins/Squash: Allow to ripen on the vine to deep color and a hard rind.

Winter squash are ready when the ground spot" on the underside changes from white to gold color. Cut from vine leaving 3-4 inches of stem attached. Store in a cool, dry place.

Tomatoes: Fully colored but still firm. Overripe ones turn mushy. Green tomatoes with a white star on the blossom end are good for frying.

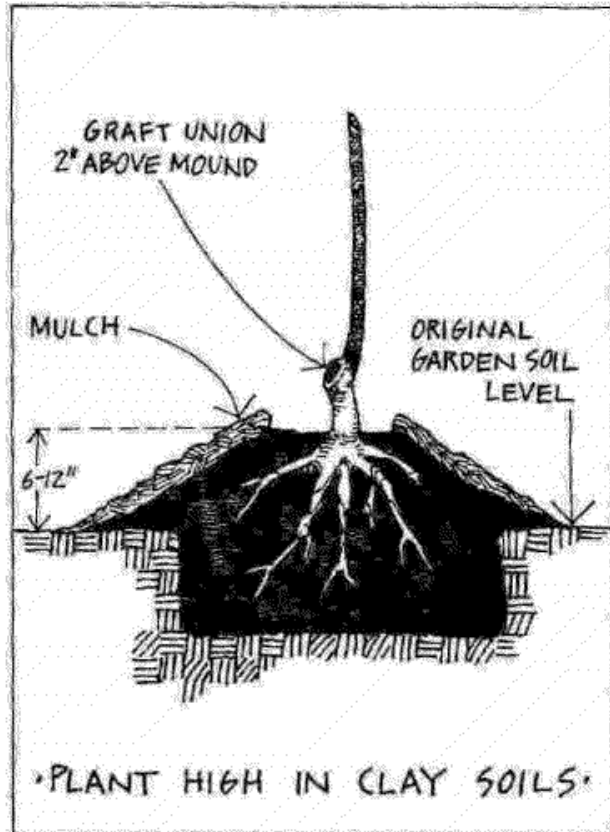
See Appendix for a more complete list of harvest time tips.

Edible Landscaping

Fruit trees and shrubs are large and long-lived; they provide the garden with a strong, permanent structure that sets the atmosphere for all one's interactions. For this reason, placement becomes a matter of aesthetic, as well as practical, concern. What's the point in having a garden unless it communicates the joy you feel? Obviously, the landscaping decisions will

depend on the site and characteristics -- more detail than we can hope to cover here. So let's just talk about some basic principles.

A principle in permaculture is stacking, arranging plant species so that taller and lower ones can grow together, utilizing different niches in the vertical space. Fruit trees give that vertical dimension. Their contribution is practical, in terms of space utilization. Furthermore, they represent the bounty of the earth in a way that contributes to the overall beauty of the garden.



Now for the cautions. These fruits are a fairly major commitment. One needs to plan before starting. Where do you want to place the plant? What are its ornamental qualities? How much space will it want when full grown? What maintenance will be needed for pest and disease control?

For all these reasons, the suburban gardener is well advised to consider small or dwarf varieties. That way, if a plant doesn't work out, it is still possible to transplant or reposition it. There are other advantages: small size means that it's easier to prune

and pick fruit, one can have more different varieties in a small space and small trees are suited to cordon or espalier shapes that encourage early fruiting.

Most fruit trees are dwarfed by grafting the fruiting variety onto special rootstocks. You want to make sure that the graft is planted above ground -- if the part above the graft grows its own roots, it will cease being a dwarf. Some rootstocks are not tolerant of soggy soil, that's why planting on a mound is a good idea in heavy clay soils. It pays to select the dwarf trees from a nursery that specializes trees for home gardeners, rather than buying one from a discount store. An even better option is to join the Home Orchard Society. This is a non-profit group of amateur enthusiasts who will

show you how to make your own grafts at low cost and can provide graphs for many unusual fruit varieties.

Most fruit tree vendors have disease-resistance varieties available. Obviously, one would want to select resistant varieties whenever possible as part of organic methods. With apples, for example, there is no reason to start with a variety susceptible to apple scab fungus. Remember that being immune to scab only solves one problem -- we have enough other problems dealing with insect pests on apples.

With these thoughts in mind, it may be useful to think of fruits in order of the level of care involved.

Plant	Good Points	Concerns
Low Maintenance		
Blueberry	Attractive for landscaping, good fall color. Few pests. Select different varieties for an extended season that lasts all summer.	Basically a swamp plant, needs acidic, high-humus soil with consistent moisture. Mulch well.
Fig	Fruit is sweet, but light colored varieties tend to be insipid. Brown varieties have more flavor.	Most varieties need more summer heat than we have, so fruit ripens poorly. They like lime and sun.
Plum	Tolerate heavy soil better than other stone fruits. Relatively free of pests. European types are self-fertile	Japanese types need another variety for cross-pollination. Possible pests are plum curculio, tree borers and brown rot.
Cherry	Dwarf trees that produce the pie cherry. Despite the name, modern varieties are sweet. Self-fertile.	Possible pests are cherry fruit fly and brown rot.
Oriental	Pest free with attractive large leaves. Self-fertile. Delicious fruit, provided it is fully ripened.	Trees tend to be large, can be kept down with pruning. Fruit needs summer heat, look for an early variety.
Kiwi	"Issi" is a self-fertile variety but	Both need a male

Plant	Good Points	Concerns
Chinese	not productive. <i>A. deliciosa</i> is the fuzzy, supermarket kiwi. <i>A. arguta</i> is a hardy variety with small, smooth-skinned fruit like grapes.	pollenizer and won't pollinate the other species. Vigorous, productive vines need a STRONG trellis.
Cornelian (<i>ornus mas</i>)	Pest free "cherry", not as attractive to birds.	Grows to a good size tree. Select carefully -- the best fruiting varieties are new Russian imports, not the varieties sold as shade trees.
Moderate Maintenance		
Caneberries	Wide choice of varieties for raspberries, blackberries, etc. Some are thornless and attractive - possible landscaping material.	Raspberries want good drainage. All need winter pruning to remove old canes. Some raspberries can be managed as a fall-bearing crop, which minimizes pruning.
Pear	Relatively pest free. Oriental pears are a new and delicious introduction.	Possible pests are codling moth and sometimes apple maggot fly. Trees tend to grow vertically with little dwarfing.
High Maintenance		
Apple	The exemplar of fruit. Many excellent varieties with disease resistance, good dwarfing character.	Susceptible to apple scab, codling moth and apple maggot fly. Practice clean cultivation, use traps for insects.
Cherry	A delicious fruit for hand eating. Trees tend to grow vertically with little dwarfing.	Susceptible to cherry fruit fly, bacterial disease (gumosis) and overly attractive to birds.
Peach	Prolific and wonderful fruit.	Very susceptible to peach

Plant	Good Points	Concerns
		leaf curl, even disease resistant varieties. Possible options: Grow dwarf trees cover during winter to keep off disease spores spread in the rain, try compost tea as fungicide.

General Growing Instructions

Root Plants

Sow, plant, cultivate on root days. Potatoes, onions and garlic are included although their tuber or bulb is really a stem.

Carrots: Like friable soil, work up bed well. If you have heavy clay soil, consider round types, shaped more like radishes. They don't need feeding, add compost only if soil is poor. However, they like wood ashes for extra potash. Mix seed with sand to help sow it evenly. Germination is critical, you can't let the bed dry out even once during the first couple weeks, One trick is to mulch with burlap, remove as soon as leaves appear. Another is to pound down the covered seeds so they have good contact with the soil. Don't harvest carrots too soon, sugars are formed relatively late. Spray with Horn Silica in the afternoon, 3-4 weeks before harvest, when moon is in Aries or Pices. Avoid harvest on leaf days for good storage.

Start	Sow	Transplant	Culture
		Direct seed	Keep moist during germination. Allow 2-3 weeks to germinate.

Parsnips: Similar to carrots. Work up the bed for friable soil. Add compost only if soil is poor. Spring sowing may grow too large, a July sowing produces better sized roots. Must keep seed moist during germination.

Start	Sow	Transplant	Culture
	July for fall crop	Direct seed	Keep moist during germination.

Beet: tops are wonderful, tender greens. They can be planted on leaf as well as root days. Cultivate on root days. Not fussy about clay soil although they like good fertility. Sow April-May, thin to 1-4 inches depending on desired size. Water consistently, they get woody if growing stops. Sow winter types after July. Winter types need mulch to keep from freezing, but will hold in the garden until spring.

Start	Sow	Transplant	Culture
	April-May for spring, July-Aug for fall.	Direct seed	Thin to 1-4 inches. Water consistently.

Radish: Grow rapidly and harvest quickly. Doesn't need much fertility. Sawdust mulch may reduce cabbage maggots. Flea beetles love radishes and may attack so strongly that growth is slowed, then roots become woody. Floating row covers will keep both pests out. For seed parent, sow in Aries, this will benefit next year's seed. Because this is such a quick crop, it doesn't fit well within a rotation schedule. You can interplant with carrots or cabbage seeding, then harvest quickly as the other crops grow.

Start	Sow	Transplant	Culture
	Repeated	Direct seed	Mulch with sawdust and harvest quickly to avoid root maggots.

Onion: The size of the bulb depends on how much top growth has developed. Bulbing is caused by the day length; once it starts, further growth ceases. Most of the sweet onions are intermediate-day-lengths, which means they are not adapted to our longer summer days. Long-day or storage varieties are better adapted to our climate; these are more pungent, yellow onions. Flat topped short-day onions are sown in the fall, grow over the winter and bulb in the spring. These are easy to grow if they have enough time to become pencil sized before winter. Sweet onions are sown early and transplanted around end of April. Storage onions are started later, by March for transplanting or direct seeded in April, any later and bulbs will be small.

Thin to about 4 inches and the thinings can be transplanted. Since we have a cool spring, onion sets (small bulbs) are a way to get a quick start. Choose bulbs that are about marble-size. Plants sown and harvested on root days have the best storage. Fertilizing with plant, not manure, compost is better. Manure compost is said to attract the onion fly. However, we do not usually have that pest. If you see a flower stalk, break it off or the bulb won't form.

Start	Sow	Transplant	Culture
6-10 weeks before planting date	Broadcast on seed flat	When seedlings are thick as pencil lead, on 4 in centers or use sets.	Needs good watering.

Garlic: Break up a head of garlic and simply plant the cloves. Plant in the fall with sun in Virgo on a root day, cultivate on root days. Harvest in summer when dry.

Start	Sow	Transplant	Culture
Fall	Plant cloves		Leave over winter, harvest next summer.

Potato: The tubers are not roots, but a stem that forms underground. So think about how to lengthen the stem in order to get good production. Start potato eyes in sunny place until skin turns green and small stocky sprouts are forming. Then cut up into eyes and plant. Covering gradually with plenty of soil is a trick to elongate the stem and get plenty of tubers. You can put eyes in bottom of trench while double digging but don't set too deep. You want to have fertile moist soil below and loose friable soil above the tubers. This is why the old-timers say to hill up soil and litter around the plants. Best to fertilize in autumn with finished compost or follow fava beans. Plant and cultivate on root days with Horn Manure. Hoe 3 times and spray with Horn Silica 3-4 times; at 6 inches high, at final cultivation, as flowering starts and just before harvest. If there is excessive foliage, spray once with horn silica on fruit day in afternoon. Try to get good vine growth early, once flowering starts, growth stops. You can harvest early potatoes after flowering starts. For the main crop, withhold water and then harvest after vines die back. For seed potatoes, plant with sun and moon in Aries, cut out

just the middle eyes from tubers, space 4 inches apart. Sprinkle with wood ash after harvest to aid keeping. Maria Thun sows lupine with potatoes, then nips off flower buds to encourage nitrogen-fixing root nodules.

Start	Sprout	Transplant	Culture
4 weeks before planting date	Put to sprout in warm, lighted area, when sprouts are less than 3 in long, cut potatoes into pieces, cover surfaces with ash	Plant on 9 in centers while double digging	Cover stems with loose soil or mulch to encourage tubers.

Rutabaga: The hardiest brassica root crop, fairly immune to cabbage root maggots. Easy to grow and vigorous. Sow in July, thin to 8-12 inches. Will hold in the garden until March if protected from freezing with a thick mulch. Does well following peas or favas, and prepares a good bed for spring peas or lettuce.

Start	Sow	Transplant	Culture
July-Aug		Direct seed	Thin to 8-12 inches

Leaf Plants

Sow, plant and cultivate on leaf days, but harvest should be on fruit or flower days, flower for cabbages.

Cabbage: harvest on flower days. Early types are set out in Mid March. With hot caps or cloche, they can be direct seeded from April-June. Thin to about 18 inches. These take about 3 months to mature. Late varieties take 120 days to mature, sow in June for harvest in fall. Look for English and Dutch varieties that are hardy -- late Savoy types are the hardiest. All brassicas like some lime in the soil. Because it uses up leaf forces, cabbage prepares the bed well for onions or roots in the next rotation.

Start	Sow	Transplant	Culture
3-4 weeks before planting	In 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 15 in centers	Watch for root maggot.

Brussels Sprouts: a type of cabbage producing many small heads. Avoid too much nitrogen or sprouts will be too loose-leafed. They like heavy soils. Sow in July for fall harvest. In fall, trim off lower leaves to avoid rot and interplant crimson clover.

Start	Sow	Transplant	Culture
3-4 weeks before planting	In 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 15 in centers	Best to harvest after freezing.

Kohlrabi: Avoid working on root days, they have weak roots. Becomes woody in hot weather, harvest before mid-June or in fall. Direct sow in April for early harvest, in August for fall crop. Thin so bulbs are 3-4 inches apart. Harvest at about 2 inches (silver dollar size) for most tenderness. Good substitute for turnips since root maggots won't affect the bulb. Kohlrabi prepares for leeks.

Start	Sow	Transplant	Culture
April for early harvest, 3-4 weeks before planting	In 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 6 in centers	Grow early or late, skip summer. Harvest quickly for tenderness.

Cauliflower: Leaf days are best, otherwise they bolt. It's like a delicate and hungry cabbage, must have unchecked growth. Overwintering varieties are much easier to grow -- sow in August, transplant in fall, they will produce the next spring.

Start	Sow	Transplant	Culture
April for early harvest, 3-4 weeks before planting	In 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 6 in centers	Difficult to avoid bolting in summer, overwintering types work better.

Chinese Cabbage: Tends to bolt, must have unchecked growth, lots of nutrients and moisture. Better to direct sow, doesn't like being transplanted. All varieties must be harvested promptly because they will bolt

quickly. Late varieties are better, sow after mid July but not too late or plant will not have time to head up.

Start	Sow	Transplant	Culture
Mid July for fall harvest		Direct sow	Difficult to avoid bolting in summer, fall crop works better.

Kale: The most vigorous brassica, direct seed 5 seeds in July, thin to best plant, thin to 24 inch centers. Growth stops after November but resumes in spring. Flower stalks are a good spring broccoli.

Start	Sow	Transplant	Culture
July-Aug		Direct seed, several seeds in a group	Thin to best plant, good for overwintering.

Lettuce: Leaf days. Grows quickly with moisture. It won't form good heads after July, sow loose-leaf types for fall. Seed won't germinate if temperatures are high, like 80 degrees. If necessary, place seed in freezer overnight to break dormancy before planting. Thin to 12-14 inches apart. Since lettuces are a quick crop, one can sow between carrots, then pick out the lettuce seedlings out to cabbage beds, harvest before cabbage expands. It's hard to avoid the plants becoming bitter in the heat of summer. To compensate: (1) select summer varieties, like Oak Leaf, (2) give plenty of water (3) harvest in evening, around the new moon (4) let it sit in a bag in the refrigerator for a few days, (5) harvest before the head elongates, (6) have heat tolerant substitutes, like chard.

Start	Sow	Transplant	Culture
3-5 weeks before planting date	in 3 in flat, on 1 in centers	When 2.5-3 in tall, on 9 in centers	Even watering, harvest quickly

Mustard Greens: Tend to bolt from spring sowing, sow after mid July for fall crop. Pak choi and Tai sai are brassicas with spoon shaped leaves -- make sure to use variety resistant to bolting in summer. Most varieties are better grown as fall crops.

Start	Sow	Transplant	Culture
3-4 weeks before planting date	in 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 15 in centers	Difficult to avoid bolting in summer, fall crops work better.

Corn salad (maches): sow on leaf, sow in August for winter harvest.

Start	Sow	Transplant	Culture
Early spring or fall for harvest the next spring	Let some plants go and it will readily self-seed	Direct seed	Forms a nice cover crop, good for over wintering.

Endive, escarole: Very cold hardy salad green, if you keep the rain off in winter. Fall crop does not taste so bitter. Thin to 12 inches apart. "Sugar Hat" forms a head like romaine. Lettuce, spinach, and endive can be a fall crop planted after harvesting early cabbage, bush beans, or early potatoes.

Start	Sow	Transplant	Culture
July-Aug		Direct seed, several seeds in a group	Thin to best plant, good for over wintering.

Swiss Chard: A beet bred for greens. Sow April-June, thin to 10-12 inches apart. Susceptible to symps and leaf miners. "Perpetual Spinach" is a short, cold hardy type that keeps producing greens all winter.

Start	Sow	Transplant	Culture
Late spring		Direct seed	Thin to 10-12 inch.

Leeks: Imagine an onion that doesn't form a bulb but just the stem. Leeks eliminate the problems of storing onions because they can be harvested from October to April. They don't mind clay soil but like compost. They grow very slowly. Fall leeks are started early under lights and transplanted in May. Ideally, the leeks are planted in the bottom of a trench and soil is gradually hilled around them to keep the stem growing tall. You can run two trenches down the middle of the raised bed. Winter leeks are direct seeded April-May. They are better if started in a nursery bed with plenty of organic

matter and transplanted midsummer. Let the nursery bed get crowded so the seedling grow tall, then clip half the leaf area at transplanting to compensate for transplant shock. It's good to keep them shaded until they get reestablished.

Start	Sow	Transplant	Culture
6-10 weeks before planting date	Broadcast on seed flat	When seedlings are thick as pencil lead, on 4 in centers	Hill up soil to elongate stem. Hold in garden over winter.

Spinach: pre-dress soil in fall with mature compost, sow with sun and moon in Pisces, Cancer or Scorpio, first hoeing after 3 weeks on leaf day. Tendency is to bolt with warm weather. Sow early variety in March. Sow bolt-resistant varieties April-May. Sow from Mid July-August for fall crop. Needs cool soil for germination. Doesn't winter well unless you keep the rain off with a cloche cover. Susceptible to symps. As a quick crop, one can plant at edges of cucumber, then harvest before the cukes expand. Start

Start	Sow	Transplant	Culture
		Direct seed	Needs cool weather.

Arugula: Bolts too easily from spring sowing, sow July-Sept for fall crop, winters well.

Start	Sow	Transplant	Culture
July-Sept		Direct seed	Harvest quickly as salad green.

Flower Plants

Sow, plant, cultivate on flower days. There are not a lot of vegetables in this category. Flowers include oilseed plants and broccoli. Flowers are a good substitute for potatoes in the crop rotation.

Flower bulbs: plant on flower days in first half of November

Medical herbs: harvest blossoms on flower days for medicinal teas, also aromatic herbs

Broccoli: treat as a flower. Italian is the common type, making a large central head. The sprouting types overwinter, then produce an abundance of flower heads in the spring. You can direct seed 5 seeds in a spot, then thin to one best plant. Space 24 inches. If growth slows, side dress with compost and organic fertilizer. Sow Mid July for overwintering, do not side dress to ensure hardiness.

Start	Sow	Transplant	Culture
3-4 weeks before planting date	in 3 in flat, on 2 in centers	When seedlings have 2-3 true leaves, on 24 in centers. Also can direct seed.	Watch for root maggot. Overwintering types provide very early produce in the spring.

Fruit Plants

Sow, cultivate and harvest on fruit days. For seed crops, Leo is particularly good. Fruit days also good for processing or preserving food or baking bread. A good crop rotation is to follow fruit crops with flowers or roots.

Corn: Another heat loving plant. The seed needs 60 degrees to germinate so don't try to plant too early. Jubilee is the favorite variety and represents the extent of the season; don't try a variety listed as taking longer than Jubilee. White corn or the supersweet hybrids tend to be too late for the Willamette Valley. Corn needs to be in blocks for pollination. Good to follow with fava bean or crimson clover cover crop for winter. Give ample fertilizer (2 inches of compost) and water well until ears fully developed.

Start	Sow	Transplant	Culture
Not too early		Direct seed	Plant in blocks.

Peas: Plant in cool weather, hot weather brings enation virus, use enation resistant varieties, such as Oregon Sugar Pod. They like some lime. Don't plant too early or seedling won't escape the slugs. Better to wait until after March or use Peter Chan's method of starting in rolled up tubes of newspaper, about 4 inches tall, 1 inch diameter, tied with string. When seed has grown a bit, plant the whole thing, newspaper decomposes in place.

Start	Sow	Transplant	Culture
Wait till March or start in paper tubes		Direct seed	Likes cool weather, needs trellis.

Beans: It helps to inoculate seed with a nitrogen-fixing bacteria culture but this is probably not necessary if you have good organic matter content in soil. Beans need soil temperature of 60 degrees, late May or June. Can start early in a cloche. Thin to 6-8 inches apart in rows 18 inches apart. Pole beans produce all summer if kept picked. Runner beans: pick at 3/4 maturity for tenderness, these have a tendency to become stringy when mature. Look for a better culinary variety than the common Scarlet Runner (too stringy). T&M has many varieties, these are favorites in Britain.

Start	Sow	Transplant	Culture
May-June		Direct seed	Likes warm weather. Keep harvested.

Fava Bean: Overwintered hardy varieties can be sown October 1-Nov 15 for spring crop finished by June, good for rotation. Great fixer of atmospheric nitrogen. Spring varieties sown about March. Old variety "Windsor" is bitter and not that good, look for "Aquadulce Claudia" or "Approvecho". T&M has various varieties.

Start	Sow	Transplant	Culture
October, as fall cover crop.		Direct seed	Likes cool weather.

Tomato: Sow with sun in Aquarius, moon in fruit. Don't prune on leaf days. They hate getting cold water on leaves, start early ones in cloche, until maybe July. Steady water supply and magnesium (dolomite lime) prevent blossom end rot. Withhold water starting late August, prune off blossoms and immature starting September to encourage ripening. They like a rough bed with rank, semi-ripened compost buried under soil. Cherry tomatoes mature faster than slicing types and are pretty fool proof.

Start	Sow	Transplant	Culture
7-12 weeks before planting date	in 3 in flat, on 2 in centers	When 5-6 in tall, on 21 in centers	Keep transplants covered from cold rain

Eggplants: Very sensitive to soil temperature, don't even try to transplant until night low temperature is better than 50 degrees, about mid June. Harden off thoroughly. Don't need a lot of fertilizer. Compost tea or manure tea help them resist flea beetle attack.

Start	Sow	Transplant	Culture
Start late	in 3 in flat, on 2 in centers	When 5-6 in tall, on 21 in centers, when soil is warm, harden off well.	Keep transplants covered from cold rain

Peppers: Very sensitive to soil temperature, don't even try to transplant until night low temperature better than 50 degrees, about mid June. May want to start in cloche or floating cover row. Cover if we get cold weather in June. Select small, early bell varieties, tropical varieties want more heat than we have. They love fertilizer, feed at least once a month. Compost tea or manure tea help them resist flea beetle attack.

Start	Sow	Transplant	Culture
Start late	in 3 in flat, on 2 in centers	When 5-6 in tall, on 21 in centers, when soil is warm, harden off well.	Keep transplants covered from cold rain. Fertilize with compost/weed tea.

Cucumbers: Seed won't germinate before soil is warm in June, nor will unprotected transplants be happy. Water consistently, roots are shallow. Provide trellis to keep off the ground. Keep harvesting cukes or production slackens. After summer weather ends, they fall victim to mildew.

Start	Sow	Transplant	Culture
Start late	in 3 in flat, on 2 in centers	When 5-6 in tall, on 21 in centers, when soil is warm, harden off well.	Train up on trellis, water and harvest consistently.

Melons: They demand warm soil and heat, tricky in our climate. Choose only the earliest varieties and start in a cloche. Harvest when vine separates from fruit, fruit will not ripen further after being picked.

Start	Sow	Transplant	Culture
Start late	in 3 in flat, on 2 in centers	When 5-6 in tall, on 21 in centers, when soil is warm, harden off well.	Train up on trellis, water and harvest consistently.

Squash, pumpkins: Seed won't germinate in cool soil, but once up they are more tolerant. Summer squash are harvested young and small, keep up with the harvest or production will slow. Winter squash need a long ripening season, leave on the vine as long as possible. Remove all the immature squash in September to hasten maturity. Store at 55 degrees.

Start	Sow	Transplant	Culture
Start late		Transplant quickly. When 5-6 in tall, on 21 in centers, when soil is warm, harden off well.	Keep summer squash harvested.

Strawberry: The traditional rule is to tend this year for the following year's harvest. This is because the conventional varieties produce one large crop in late spring. For these varieties, add compost immediately after harvest and water to develop buds for next year. Work the bed on fruit days when moon descending. Spray Horn Manure after harvest on fruit day in evening, followed by Horn Silica in afternoon after 9 days. Repeat sequence 2 times more at 9-day intervals. Don't cut back foliage. All these practices are designed to set up buds for next year's crop. Luckily, with the new day-neutral varieties we can get a good crop all season long. Look for varieties like "Tri-Star". The cultural practices for these varieties with continuing production have yet to be established. Strawberries in the wild grow in wooded areas and get buried each year under leaf debris. We can duplicate that condition. Do a root pruning during winter using a large (#10) tin can to cut a circle around the plant, then cover with 1-2 inches of compost. During the summer, keep runners trimmed so strength goes into the fruit.

Start	Culture
Permanent bed	Root prune in winter, cover with compost. Keep runners trimmed in summer.

Trees/bushes: well -done compost in November during planting time (descending moon). Cut scions mid Feb-Mid March on fruit day, moon ascendant. Graft around end of April, moon ascending. Cuttings planted during planting time of descending moon. Harvest soft fruit on fruit days, ascending moon, for storage harvest on fruit or flower days, avoid leaf days. Tree paste in November to March.

Green Manure Crops

Better on root days.

Crimson clover: plant in Sept -Oct so it gets well established with first rains. Till or remove when flowering starts in late spring or it gets too woody.

White clover, Dutch clover, and red clover are all hard to eliminate and become weeds. These are not recommended.

Fava: A great cover crop. Small seeded fava grow better in the winter than Austrian field peas. Favas are tilled in before seeds form. "Banner" and "Sweet Lorane" are winter hardy, "bell beans" are not.

Tyfon: a hybrid of turnip and Chinese cabbage produces more biomass than any other green manure. A sowing can be cut several times for compost material. Sow in fall and pull out in spring for ready to plant seedbed. Young seedlings are eatable as turnips or greens.

Seed Sources

Aurora Biodynamic Farm, www.kootenay.com/~aurora. All biodynamic from British Columbia.

Turtle Tree Seed, Camphill Village, Copake, NY 12516 (518) 329-3038 All organic, all biodynamic.

Garden City Seeds, www.gardencityseeds.com, All organic from Montana.

Deep Diversity, www.seedsofchange.com. All organic from New Mexico, heirloom varieties but not necessarily adapted to our climate.

Territorial, www.territorial-seed.com, trialed for Willamette Valley, not all organic.

West Coast, www.westcoastseeds.com, not organic, but from Vancouver. BC

Stokes, www.stokesseeds.com, trialed for Canadian climate, not organic.

Thompson & Morgan, www.thompson-morgan.com, expensive British varieties, not organic.

Bountiful Gardens, repackages British seed, allied with John Jeavons, www.bountifulgardens.com

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