



Urban Harvest

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Crop Rotation for a Bigger Harvest

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To grow good vegetables, you need to know both where to plant and when to plant them. Planting them at the right time means that vegetables will have the right soil and air temperatures to grow well, and that flowers will have the right temperatures to pollinate and produce fruit.

The “where” to plant is equally important. If you put tall plants like tomatoes or snap peas next to short plants like green beans or garlic, you will put too much shade on the short plants. Accordingly, most good gardeners group similar plants together in one place so that they will all die at the same time and therefore permit a new planting of all short or all tall plants.

As well, if there is a bare spot in a bed, you have a choice: either wait until all the plants finish in that bed and then replant, or simply replant seeds or transplants of similar-sized plants in the bare spots. I fill up the bed by this patching if the bed has been recently planted, but wait if the bed is nearly mature.

After you have identified a crop from the planting schedule you want to plant, the next question is where to plant it. What you do depends on how much land you are using. If you only have a little space, you probably will be tempted to plant there. But that approach may cause a problem. Pests like flea beetles or root knot nematodes or pepper funguses that prospered on the plant last year will be back in increased numbers this year. One alternative is to do temporal rotating. Don't plant pest prone plants two years in a row. Rather skip years. Plant only mustard this winter, and collards next; plant only tomatoes this spring and fall, and green beans next, etc.

If you have more than one plot at least 4 ft. by 10 ft., you can plant a crop in plot A this year and the same crop in plot B next year. By replacing cabbage family plants like collards & mustards one winter with lettuce family and onion family plants the next winter, you make it harder for flea beetles and cabbage loopers to find their food. Similarly, by planting tomatoes this spring after planting onions, corn, and then crotalaria last spring and summer, you starve root destroying minute nematode worms before they get at the tomatoes.

But creating a good plant rotation can be a tricky business. Gardens come in all sorts of sizes from patio container mini-gardens to multi-acre farms. As well, different gardeners have different preferences. One likes winter lettuce and another mustard, and a third likes both. One likes summer cantaloupes, another okra, a third heads for Colorado. So it is difficult to provide an exact plan that will work for everyone. Below, I have provided two rotation plans: one for a small vegetable garden

of 200 sq. ft. of raised bed, and the second for a larger one of about 1150 sq. ft. of raised bed. In these, there are suggestions of what crops to plant, but substitutions are permitted. You can freely substitute any plant for any other provided (a) it is in the same family of vegetables and (b) it is the proper time to plant it

ROTATING A SMALL VEGETABLE GARDEN (4 PLOTS)

If you are just starting a raised-bed vegetable garden of about 200 sq. ft., divide all of the vegetable areas into four equal plots. Then put signs on them: plot 1, plot 2, etc. A bed can be divided into more than one plot using a divider if desired. One easy way to label plots is to put metal posts (Home Depot, Lowes) at corners of beds where you want to prevent hoses from being accidentally dragged into a bed. Then take a piece of white plastic such as from a yogurt container or plastic knife and wire it to the post. Using a Sharpie indelible pen (OfficeMax, Office Depot) write the plot number together with the vegetables planned for the plot for the next year. Then phase in the following plan.

Plot 1: Legumes

In plot 1, in mid-December to early January, plant the plot in sugar snap peas, English pole peas, or snow peas on a trellis, and bush English or petit pois or fava/ broad beans in the rest of the plot. In March or April, plant pole snap beans like Fortex at the foot of the trellis (even if there are still peas on the trellis) and plant bush beans like Derby where the November peas have finished. In May to July, as space frees, plant long beans and butterpeas (limas) on trellises, or peanuts, edamame (soy) or Southern peas such as blackeyes, crowders, purple hull, cream, or zippers, in the remainder of the space. In July, plant more pole beans, and in August bush snap beans. In October, broadcast lettuce seeds in a vacant patch, and transplant some in late October. In November, change the plot number to Plot 2.

Plot 2: Lettuce, Tomatoes and Cabbage Family

In plot 2, grow salad crops until space is needed in February for tomatoes. Follow these in July with buckwheat, and in September plant the plot in cabbage family plants: mizuna, broccoli, kale, collards, cauliflower, cabbage, kohlrabi, radish, cress, arugula, daikon, bok choy, kai lan, Chinese cabbage, and other Brassicas. In November, change the plot number to Plot 3.

Plot 3: Cabbage Family, Cukes, Okra, Fall Roots

In plot 3, grow cabbage family crops (see above). Replace the ones that finish such as mizuna, arugula, cauliflower and broccoli with more of them, but leave room in late March for cucumbers and a trellis to grow them on. In May, add okra or eggplant. In September, add carrots, parsnips and beets, and multiplying onions. In November, change the plot number to Plot 4.

Plot 4:

In November, add fennel, cilantro, Italian parsley, dill, bulb onions, garlic, leeks, etc. In late March, put peppers where the beets were and in May or June add basil or eggplant where the onions were. Be sure to water and mulch for fall production. In November, change the plot number to Plot 1.

ROTATING A LARGE VEGETABLE GARDEN (8 PLOTS)

If you have enough room and want plentiful food, eight 140 sq. ft. plots (5 x 28 ft. or 4 x 35 ft.) will easily feed 2-4 people every day. If you are growing for more people, you can do 16 plots, 24 plots in multiples of eight. If you are just expanding a smaller raised-bed vegetable garden to about 1120 sq. ft., divide all of the vegetable areas into 8 equal plots. Then put signs on them: plot 1, plot 2, etc. As with the 4 field system, a bed can be divided into more than one plot using a divider if desired. Label the end posts of each bed with the year's planting schedule. You may also find it helpful to make a drawing of the eight plots and put the year's plan on it in writing. In fall, phase in the following plan.

Plot 1: Squash

In plot 1, as the November plot clears from peppers and eggplants (plot 8), plant 100 sq. ft. of Berseem clover November to April for soil improvement, and in late March, plant Moschata species squash such as Calabasas and Seminole (seed from Urban Harvest/ ECHO), or butternut. Do this by removing some clover and planting plants down the middle of the bed. From March to November, squash will take up the entire plot (and more). You can try summer squashes there in August, but they produce poorly compared to the Moschatas. In November, change the plot number to Plot 2.

Plot 2: Legumes

In plot 2, as the plot 1 squash finishes, plant about 30 sq. ft. of snow peas for pea shoot vegetable, and if there is a warm winter, for snow pea pods. Then in mid-December to early January, plant the rest of the plot in sugar snap peas or English pole peas or snow peas on a trellis, and bush English or petit pois or fava/ broad beans in the rest of the plot. In March or April, plant pole snap beans like Fortex at the foot of the trellis, even if there are still peas on the trellis, and plant bush beans like Derby where the November peas have finished. In May to July, as space frees, plant long beans and butterpeas (limas) on trellises, or peanuts, edamame (soy) or Southern peas such as blackeyes, crowders, purple hull, cream, or zippers, in the remainder of the space. In July, plant more pole beans, and in August bush snap beans. In October, tear down any unproductive plants and broadcast lettuce seeds in a vacant patch. Transplant some in late October to fill out the bed. In November, change the plot number to Plot 3.

Plot 3: Salads, Watermelons, and Cabbage Family

In plot 3, from November to February, plant about 70 sq. ft. in lettuce and other non-cabbage family salad greens such as minutina and miner's lettuce. Save the ends of beds for artichokes. Plant from November to May perhaps 70 sq. ft. of globe artichoke transplants companion planted with Berseem clover. In late March, remove the remains of the lettuce and plant watermelon down the center of the bed. If watermelon finishes before late July, plant buckwheat. In September, plant the entire bed in cabbage family plants: mizuna, broccoli, kale, collards, cauliflower, cabbage, kohlrabi, radish, cress, arugula, daikon, bok choy, kai lan, Chinese cabbage, and other Asian Brassicas. Plant cauliflower, broccoli, and early cabbage at ends of beds. In November, change the plot number to Plot 4.

Plot 4: Cabbage, Spring Beets, and Sweet Potatoes

In plot 4, grow the cabbage family (see above) November to May. When fall mizuna is no longer needed, plant broccoli in January or February. Protect from snails with bottomless nursery pots. Plant more mizuna and arugula in empty places. In February, plant beets and chard at the ends of beds. In May, tear out everything but the remaining beets and chard, and plant sweet potatoes. Harvest these from August to November and plant a green manure crop such as Berseem clover, vetch, oats, or cereal rye in the fall. In November, change the plot number to 5.

Plot 5: Spring Tomatoes, Corn, Summer Tropical Veggies, and Fall Roots

Once the sweet potatoes are harvested (Labor Day to Thanksgiving), plant green manure crops (see above). In late January, turn over enough green manure to plant spring tomatoes, and plant 3/4 plot of tomatoes in February to early March. In the remainder of the plot, plant corn (March-June). When the corn and tomatoes finish, or among the corn, plant sesame, summer spinach, ginger, okra, yuca, and roselle, leaving about 1/4 plot where the tomatoes were for September carrots, parsnips, garlic chives and multiplying onions (September to November). Make this root area on the edges of the bed because there will be cantaloupes planted there next March. Plant this area in the summer, before fall roots are planted, with buckwheat. In November, change the plot number to Plot 6.

Plot 6: Carrots & Onion Family, Cantaloupes, Fall Beets

In plot 6, keep the onion and carrot family roots already planted. In what is left, in November, plant bulb onions, garlic, leeks, dill, cilantro, Italian parsley. Keep garlic and leeks near the edges of beds. Leave an area of one foot down the middle of the bed for late March cantaloupe transplants. Plant these in late March. As these begin to crawl in late April, remove all vegetables and other vegetation before the vine gets within a few inches. Cantaloupes don't compete. Use newspaper and mulch around the vines. In August to September, plant beets, chard, summer squash, green beans, Berseem clover or oats for hay mulch. In November, change the plot number to Plot 7.

Plot 7: Fall Beets, Spring Salads, Cucumbers, and Fall Tomatoes

In plot 7, keep the fall beets, chard, summer squash, beans, clover or oats until they finish. In February, plant up to 70 sq. ft. of Sierra lettuce and other salad crops. In April, plant 50 sq. ft. of cucumbers. In May, plant up to 60 sq. ft. of tropical edible and decorative gourds such as cucuzi, bottle gourd, or bushel gourd; or crotalaria or buckwheat, peanuts, or Southern peas; or sesame. In late July, plant 10-16 tomato plants in two rows down the bed, ideally spaced four feet apart in the down-the-row direction, so there will be two feet between the two foot wide cages. This will make it easy to plant two foot strawberry strips in November (see plot 8). When you plant the July tomatoes, shade them, and water them frequently, to make sure the plants don't die from dehydration. Assume some will die, so over plant.

Plot 8: Fall Tomatoes, Strawberries, Spring Beets, Peppers, Eggplant, Okra and Basil

In plot 8, keep the fall tomatoes until they finish or are frozen. In early November, plant two foot wide strips of strawberries 6 in. to one foot apart across the beds between the tomatoes. Remove the old vines and cages when they finish. In January, plant about 30 sq. ft. of beets and chard. In late March, plant 40 sq. ft. of peppers. In May, plant the remaining strips not occupied by strawberries in eggplant, basil, okra, perilla, roselle, chaya, or yuca. These plants will shade the strawberries in late summer when they need it. In November, change the plot number to Plot 1.

If you have an existing garden, you can phase in rotation by waiting until August. Make the area where you will be planting fall cabbage and mustard plot 3, and then label the rest of the plots accordingly as above. Phase in the rotation as beds empty. If you put the plot signs in some order (such as circular or left to right), it will be easy to remember the rotation the next year.

About 10 years ago, I studied production in community gardens. Some were very productive and some were very unproductive. Among fairly good gardeners, those that had a large garden--but not so large they couldn't keep it planted--by following a rotation plan and keeping the beds full of

plants at all times year round, produced 6-7 or more 4 ounce servings of food per square foot per year. Those that followed a rotation plan but were slow to fill bare spots, did about 4 servings per square foot per year. Those that did neither, got about 2.5 servings per square foot per year. And unhappily, those new to the task, were on the bottom.

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