Week 7

Rooftop Lawn and Garden

Stretching Routine for Garden Activity

- Mindfulness Exercise -

Pest & Disease Control in the Garden

Disease prevention
Pest and disease identification
Pest and disease management

Hands-on Activity: Hand-picking and using available resources

Healthy Eating Tips

Recipe Tasting: Dessert Flip

Using fruits, and even vegetables, to make your desserts even better!
EFFECTIVE GARDEN MANAGEMENT

BMPs or Best Management Practices are the safest and arguably the most effective means of controlling unwanted long term pests and disease issues. While using sprays or other purchased products is sometimes unavoidable due to an unexpected infestation or infection that becomes a serious threat to your crop, using BMPs and cultural controls first can often prevent the need for these costly products by encouraging the plants own natural defenses and discouraging the pest or disease from making a home in your vegetable garden.

- Always begin with healthy soil. Healthy soil creates healthy plants which are most resistant to both pests and diseases. Promote good soil biology and use only organic slow-release fertilizers. They contain micro-nutrients and are not harmful to microorganisms. Good drainage and nutrition are also critical for plant health.
- Employ crop rotation, if possible. This is not as necessary in smaller gardens but is still a good idea for some plants such as tomatoes, which can develop certain diseases that are encouraged by being planted in the same spot year after year. Crop rotation is also not always feasible due to lack of space so, it just depends on the individual garden and what makes the best sense. Crop rotation may not be as crucial when using the Square Foot Gardening method due to increased plant diversity.
- Be aware of beneficial insects! Ladybugs, lacewings, pirate bugs, braconid wasps, hover flies, etc. are all great insects to invite in your garden. (Refer to p. 21 for pictures) Encourage beneficials to stick around by planting nectar-rich plants nearby including the following plant families:
  - Apiaceae (carrot family): dill, fennel, parsley, Queen Anne’s lace
  - Asteraceae (daisy family): chamomile, cosmos, sunflowers, Echinacea, yarrow
  - Lamiaceae (mint family): thyme, rosemary, catnip, horehound, sage, catmint, agastache
- Plant poly-cultures and keep companion plants in mind. The SFG method lends itself very well to this. Companion planting with strong smelling plants such as marigolds, basil and plants in the onion family confuse and discourage pests. Try the following pairings: onions/carrots or tomatoes/basil for example. The smell of onions helps deter carrot flies from finding your carrot crop. Basil not only helps deter tomato hornworm and aphids but many also believe that planted together, each crop even tastes better!
- Use good watering techniques. Remember to water the soil, not the plant, which minimizes leaf wetness. Also, try to water in the mornings, if possible. Plants are healthiest when soil moisture is somewhat consistent. It’s ok, and even good for most plants to dry out a bit in between waterings (whether supplied by the gardener or Mother Nature) but being dried out completely, especially for long periods of time weakens the plant. Excessive dryness also inhibits the health of soil biology. Lastly, keep in mind that most rain showers don’t actually supply enough water so even if it has rained recently, this may have moistened only the top 1/4” to 1/2” of soil, which quickly evaporates and doesn’t get to the roots, so supplemental water may still be needed.
- Weeding and mulching. Weeds compete with your plants for water, nutrients and soil volume so weeding is important, especially when plants are young. Mulching helps maintain soil structure and moisture and helps suppress weed growth.
- Keep it clean! Always be sure to discard diseased or dead plant material carefully, especially at the end of the season. Many disease pests can overwinter on dead plant material so don’t provide a home for them to appear next spring. Remember, disease occurs only when all three things are present: the pathogen, the host and a favorable environment. Remove one of those, and you have prevented a problem from occurring.
- Air circulation. Keep air flowing through your garden and around your plants to help minimize leaf wetness. Remember to prune effectively, stake or support when needed and keep the weeds down.
IS IT A PEST OR A DISEASE, OR NEITHER?

Learning how to identify whether the symptom was caused by a pest or disease will help you treat the problem appropriately. First, consider whether the symptom is from a biotic or an abiotic factor.

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<thead>
<tr>
<th>Abiotic Factors</th>
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<tr>
<td>Light</td>
<td>Insects</td>
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<td>Temperature</td>
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<td>Nutrient Deficiency</td>
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If a pest or disease has been identified, choose the appropriate method of control. These may be biological, cultural, mechanical, physical or chemical - used as a last resort. Be sure to use only sprays/treatments that are ‘Organic Certified’ or OMRI (Organic Materials Review Institute) listed and never use harsh chemicals.

EXAMPLES OF PEST AND DISEASE CONTROLS

- Row covers
- Hand picking
- Netting
- Fencing
- Water spray
- Traps/Sticky cards
- Beneficial nematodes and milky spore
- Homemade sprays such as garlic and hot pepper
- Electric fencing
- Horticultural oils (neem oil or even vegetable oil)
- BT (*Bacillus thuringiensis*)
- Diatomaceous earth
- Insecticidal soap

EXAMPLES OF SOME COMMON GARDEN DISEASES

- **Blossom End Rot**: affects tomatoes, peppers, eggplant and summer squash, most often for the 1st fruit of the season. Caused by calcium deficiency, usually from excessive fluctuations in moisture. Add lime to correct.

- **Powdery Mildew**: affects squash, melons, cucumbers, and others. Mulch around plant to control moisture, increase air flow, minimize leaf wetness. Raise or lower pH on leaf surface to correct. Use a 10:1 Milk to water solution or mix 1 qt. water, 1 tsp. baking soda and a few drops liquid soap. Spray all leaf/stem surfaces.

- **Septoria Leaf Spot**: Commonly affects tomatoes. Mulch around tomato plant to prevent splash up, provide good air flow, minimize leaf wetness by watering at soil level. Prune off affected parts and dispose of, maintaining proper sanitation in between pruning cuts. If necessary apply a copper spray or bio-fungicide.

NOTE: When using any commercial product, always read the label and instructions before using and always use protective gear if needed. Make sure the product you are about to use is the most appropriate one and be sure you are using the correct dilution rates and applying the product at the right time.

- Choose resistant varieties!
- Get a good organic pest/disease control book
- Call the Master Gardener hotline: (802) 656-5421 or submit your question online at: uvm.edu/extension/mastergardener/helpline

HINT: When pruning diseased plant parts such as stems or leaves, be sure to clean pruning shears with a solution of 1 part bleach to 4 parts water in between pruning cuts to prevent spreading bacterial or fungal disease.

If you have to spray, make sure its...
WHAT IS COMPANION PLANTING?

Companion planting is basically the idea of planting certain things near others in order to encourage the overall health and vigor of the plants or to increase yields and/or pest and disease resistance. Conversely, there are also plant relationships that are known to be detrimental to each other, for example beets and beans or brassicas and strawberries. These relationships have been studied and observed over generations and while the mechanisms for these beneficial, or non-beneficial relationships are generally not well understood, there are many who believe firmly in their efficacy.

The remainder of this document is a valuable excerpt discussing companion planting from VegetableGardener.com.

Companion planting by definition is simply any plant that is purposefully planted next to another to enhance growth, beauty or flavor. Typically we see companion plants that do any number of supportive things for both vegetable gardens and our ornamental plants. Sometimes you’ve companion planted completely by accident.

If you have giant sunflowers and decide to plant cucumbers in between to take advantage of the space underneath the flowers, you have companion planted. Gardeners swear by this companion planting because the sunflowers provide afternoon shade for the cucumbers and end up producing a higher yield of vegetables.

The sunflowers benefit from the cucumber plants because they act as living mulch, keeping moisture in the soil and deterring weeds. The result is productive and gorgeous plants – and the added benefit of less weeding makes this a serious win-win situation.

One of the best ways to take advantage of companion planting is to not plant any massive amounts of one desirable vegetable in one place. The idea of planting with diverse plant species is not to have a concentrated area of one crop (say a large crop of cabbage or squash), so the ‘bad’ bugs aren’t alerted to the feast. Plus, by planting varying plants, a beneficial bug habitat is created.

Some Tried and True Companionships:

- Cucumbers – plant nasturtiums and radishes for cucumber beetle control
- Asparagus – tomatoes, parsley or basil will help control asparagus beetles.
- Potatoes – horseradish to repel Colorado potato beetles
- Eggplant – catnip will deter flea beetles
- Tomatoes – basil will repel tomato hornworms
- Carrots – onions control some nematodes and rust flies
- Corn or Squash – peanuts inter-planted will produce a higher yield for all of these crops

Specific Companion Needs

Your specific growing goals will determine which plant combinations you choose. Do you want to attract beneficial insects to your garden? Repel the bad guys away from your fruit trees? Or mask the delicious odor of your cabbages or your tender rose buds?

Another way to companion plant is to grow plants that emit a strong odor to repel unwanted bugs from the immediate area. Strong fragrances such as those from mints and rue are also great for masking the great smell of your desired plants and repelling insects.
Luring beneficial insects to your yard or garden is one of the best ways to incorporate organic pest control. It’s also one of the most popular ways since good bugs are fun to watch. The two components that bring beneficial insects to the garden are pollen and nectar. Grow plants that are high in these things and they will come.

Beneficial insects fall into two categories; the pollinators such as bees and butterflies, and the predators such as ladybugs and parasitic wasps. Some general plants to consider planting to attract them are zinnias, asters, cosmos, marigolds, sunflowers, coriander, dill, anise and fennel. More specifically are:

- Goldenrod (*Solidago spp.*) – attracts parasitic wasps, predaceous beetles, ladybugs
- Evening Primrose (*Oenothera biennis*) – attracts ground beetles
- Angelica (*Angelica archangelica*) - attracts lacewings and ladybugs
- Yarrow (*Achillea spp.*) – attracts parasitic wasps, hover flies, and bees
- Candytuft (*Iberis spp.*) – attracts syrphid flies

**Companion Planting Isn’t Just About Bugs**

Companion planting for weed control and water conservation is easy if you use cover crops, such as clover planted under your corn. There’ll be virtually no weed pulling and clover is a perfect green manure crop, as well. If you till the clover into your soil after the corn harvest, you will add more nitrogen back into the bed, which helps replace nitrogen in the soil after growing a heavy feeder such as corn.

Are you a garlic grower? If you plant your garlic with a cover crop of oats in the fall, you won’t be weeding in the spring since the oats crowd out weeds and then again, do double-duty as a soil amendment when they break down.

With a little research, you’ll find that some plants do triple duty in the garden such as French Marigolds. *Tagetes spp.* is one of the easiest and most beneficial annuals that you can add to any garden. Marigolds can call in the beneficial insects, repel unwanted bugs with their strong scent (also masking delicious stuff) and have a compound they emit that battles nematodes in the soil.

Certainly, scientists have grounded certain companion plantings as fact and some are still in the folklore category. Whatever the case, I encourage you to experiment in your own yard and report back to Vegetable Gardener.com and share with us your personal discoveries.
Healthy Eating Tips
Dessert Flip!

"Life is uncertain, eat dessert first" - Ernestine Ulmer

DESSERT PLEASE!

Enjoying delicious foods is one of life’s many pleasures and desserts can be included in a healthy diet, but with a few tweaks. Dessert Flip is taking the ‘heavy’ part of the dessert and flipping it to the top. Thinking of desserts in a whole new way, you can take the same components of a dessert but change up the focus to make it lighter. For example, instead of chocolate cake with raspberry sauce, how about fresh raspberries sprinkled with chocolate? Use fresh or frozen fruit as the base of your dessert and top with shaved chocolate or toasted coconut. With every meal you eat, you’ve got an opportunity to treat your body to the food that will help you feel your best. By paying attention to ingredient lists, you can make choices and swaps that can boost nutrition without sacrificing flavor. Effortlessly (and deliciously) fight inflammation and diet related diseases by being mindful of sugar, refined carbohydrates, trans fats, and sodium.

SUGAR

Got a sweet tooth? Well, most of us do! We are wired to want to love sugar because our brains need glucose (a simple sugar) to function, and sweets are very high in it. Desserts are delicious and you absolutely don’t need to give them up to lead a healthy lifestyle. However, sugar is easy to over-do because of how common it is in many packaged foods. Having too much sugar throughout the day can cause blood sugar spikes, cravings, inflammation, and feeling tired. Cereal, granola, trail mix, granola bars, flavored instant oatmeal, flavored yogurts are often labeled as ‘natural’ and ‘healthy,’ but can contain as much sugar as typical desserts like candy bars and cookies. Many foods you might not think of as sweet can be laden with hidden amounts of them, too, like teriyaki sauce, BBQ sauce, pasta sauce, salad dressing and non dairy milks.
Tip: A helpful rule of thumb is to buy the unsweetened/plain versions of foods with 0 added sugars, then sweeten them to your liking. Add some fruit, brown sugar, agave nectar, turbinado sugar, coconut sugar, honey, molasses, or have a taste of Vermont with maple syrup! These sweeteners are just as delicious as regular sugar, and they tend to have more interesting flavors too. By doing this, it’s much easier to see how much sugar you’re eating and indulge in dessert when you feel like it without having constant cravings. For example, if you love starting your day with strawberry flavored yogurt, try swapping it for plain yogurt and top it with some fresh berries, granola/nuts and a drizzle of maple syrup instead.

Stay away from artificial sweeteners like Splenda, aspartame, Sweet ‘n Low, Equal, sucralose, saccharin and neotame. Although they contain fewer or zero calories compared to regular sugar, they are chemical products not found in nature and many people have a hard time digesting them. Some have also been linked to causing more intense cravings for sweets.

Sugar-smart substitutions
- Go for unsweetened muesli instead of breakfast cereal with added sugars
- Plain yogurt in place of flavored yogurt
- Unsweetened tea with fruit and herbs in place of sweetened iced tea
- DIY trail mix with nuts and dried fruit
- Make your own salad dressing instead of buying ready made ones (see page 31 for ideas!)
- Plain oatmeal with cut up fruit, cinnamon and peanut butter or tahini instead of instant flavored oatmeal

SO WHAT’S THE DEAL WITH FAT?
Fat has become a controversial topic in nutrition over the years, and if you’re confused about whether or not it’s healthy, you are not alone! What you need to know is that fats most definitely have a place in your diet—your body uses them as a satisfying source of energy, and fat also contains the building blocks for making your brain cells.

The essential fatty acids are omega 3 fatty acids and omega 6 fatty acids. Omega 3s are important for reducing inflammation in the body and the risk of getting blood clots, and some studies have shown that they can help improve memory and cognitive function. You can find them in salmon, walnuts, flax seeds, seaweed, canned sardines, tuna, herring, and foods fortified with them. Omega 6 fats actually increase inflammation, which is important in moderation, however a typical American diet contains an unhealthy amount of them. They are found in corn oil, soybean oil, safflower oil and sunflower oil, which are common ingredients in processed foods.

Be very careful about trans fats. These fats are not found in nature, and they are very inflammatory, causing a higher risk for creating plaques in the arteries and a heightened risk for cardiovascular disease. Always check nutrition fact labels to make sure that there are 0 grams of trans fats.

How to enjoy healthy fats:
- Cook with olive oil or canola oil
- Avoid products with that have trans fats and hydrogenated oils in them
- Nuts, fatty fish, avocados and olive oil are healthy plant-based sources of fat
- If you eat dairy, opt for full fat options and enjoy them in moderation
- If you eat meat, try buying local or certified-organic meats if your budget allows and have it just 2-3x per week.
- Try baking up some root veggies and home fries instead of buying the frozen ready made kind
- Add avocado to savory dishes
Quick Veggie Lasagna

**INGREDIENTS**

8 ounces whole wheat lasagna noodles  
4 cups sliced mushrooms (10 ounces)  
¼ cup water  
1 pound frozen spinach thawed  
1 28 ounce can crushed tomatoes, preferably chunky  
¼ cup chopped fresh basil (also fine to use dried)  
¼ teaspoon salt  
Ground pepper to taste  
1 pound cottage cheese (or part skim ricotta); roughly 2 cups  
8 ounces part skim mozzarella cheese, shredded (about 2 cups), divided into thirds

**INSTRUCTIONS**

1. Preheat oven to 350F. Coat a 9 x 13 inch baking dish with cooking spray. Bring a large pot of water to boil and add noodles and cook to about 2 min less than package directions. Drain and return noodles to pot, cover with cool water and set aside.

2. Coat a large nonstick skillet with cooking spray and heat over medium high heat. Add mushrooms and water, cook stirring occasionally until cooked through and the water has evaporated and the mushrooms are tender; 8-10 minutes. Squeeze spinach to remove excess water, then stir into the pan; remove from heat.

3. Mix tomatoes with basil, salt and pepper in a medium bowl.

4. To assemble lasagna: spread 1/2 cup of tomatoes in prepared baking dish. Arrange a layer of noodles on top; trim to fit if needed. Evenly dollop half the cottage cheese over the noodles. Top with half the mushrooms and spinach, 1/3 remaining tomatoes and 1/3 of the mozzarella.

5. Continue with another layer of noodles, the remaining cottage cheese, half the remaining tomatoes, the remaining mushrooms and spinach, and half the remaining mozzarella. Top with a third layer of noodles and the remaining tomatoes. Cover the lasagna with foil and bake until bubbling through, 1 hour to 1 hour and ten minutes.

6. Remove the foil; sprinkle the remaining mozzarella on top. Return to oven and bake until cheese is just melted but not browned, 8-10 minutes. Let rest for ten minutes before serving.

**CARBO-CONSCIOUS EATING**

Carbohydrates are another nutrient that you can and should enjoy in your daily lifestyle (unless you have a medical reason not to). Complex carbohydrates are loaded with fiber and give you a slow release of starches and sugars that can help sustain your energy levels without making your blood sugar spike or crash. Here are some ways to nourish your body with carbs healthfully:

- **Rule of 3s**: Make sure to pair your carbs with a source of protein and fat
- Try out brown rice, volcano rice, purple rice, wild rice or forbidden rice instead of white rice
- Starchy tubers like potatoes, sweet potatoes and cassava are good sources of complex carbohydrates
- Try experimenting with cooking grains like quinoa, farro, barley, amaranth and bulgur
- Go for whole wheat pasta
- Enjoy whole wheat, multigrain or sourdough instead of white bread