This garden manual has been prepared to provide a concise overview of some important tips to help you get started with your own kitchen garden. The information has been based on the most common questions that our agriculture department receives from folks who are interested in growing healthy food for their families.
Our intention is to provide a stepping stone into learning the basics and to get your green thumbs blooming. We know that there are many resources available online, in the library and at local garden centres; but we would like to share with you some of our favorite tips for getting started that have worked for us over many growing seasons. This manual is intended to help facilitate your learning; the developments of your backyard garden and to encourage you to get out there get dirty and eat healthy.

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Growing your own vegetables: Kitchen Gardening in Carleton County

1) Why are Organic Gardening Methods Important?

It has been estimated that about 1/3 of health care costs could be eliminated through an increase in exercise and eating a nutritious diet. Gardening, even on a small scale, provides us with both of these, resulting in a win-win proposition for anyone who takes on the exciting job of growing their own food.

By choosing organic methods you are choosing a gardening lifestyle that encourages natural processes of growing and caring for plants and animals. This means eliminating the use of petrochemically derived fertilizers, herbicides, and pesticides while at the same time actively supporting the natural soil and water biota that nature has programmed to take care of the Earth. It is amazing to discover that nature has given us a willing workforce of worms, beetles and microscopic bacteria in the soil that do a lot of the gardening work for you by maintaining a natural balance of predator and prey. The beneficial bugs are able to compete with the bad bugs keeping your garden pests in check. Fertilizing the soil with compost made from your garden and kitchen waste, as opposed to liquids or powders found on the shelves of a big box garden centre, encourages these organisms (your workforce) to flourish.

An organic gardener strives to work in harmony with natural systems and to minimize and continually replenish any resources the garden consumes.

2) Getting Started

How much space do you need to start?

An area of 30 square metres (should be large enough to provide one person with vegetables year round in a growing zone with a season 90 to 150 days. Beginner gardeners using newly cultivated ground may require a larger area to produce similar yields, but it is recommended that you start small and avoid becoming discouraged by a space that is too big and weed control becomes an issue.
The space required to provide the vegetable supply for one person is approximate as the amount varies depending on what kind of vegetables you would like to grow. For example, if you enjoy corn, you will require more space than if you are growing carrots, beets or tomatoes (which require much less area per kilogram of food produced).

Prepare your ground: Mark off the space you want to use-vegetables generally do well in spaces that get about 6 hours of direct sunlight per day. A well drained site is better as too much water can cause fungus or rot, but too much drainage can cause drought.
Remove the sod (the top layer of about 6 to 8 cm) turn the soil underneath with a garden fork. A depth of 15 to 20 cm is enough to start. Add compost or well rotted manure to amend soil nutrients and get your growing energy started. Shape and level your garden with a rake and you are ready to start planting.

3) Soil

Why is Soil So Important?

The simple answer is: “we are what we eat”.

Soil is an important part of the circle of life. By mixing organic matter into the soil whenever possible you mimic nature’s cycles of birth, decay and rebirth. Good soil is rich in black humus, which is decayed organic matter. Ideal garden soil is dark colored, smells sweet, compresses into a loose lump in your hand when moist and is full of earthworms. Earthworms and bacteria are the main microbial agents in humus formation. Soil is full of creatures you can’t see, all working hard to obtain nourishment and in turn creating soil fertility.

HUMUS is the <u>PRODUCT</u> and the <u>SOURCE</u> of all living material.

4) Compost and Soil Fertility

What is Compost?
Compost is the finished product of the breaking down of garden and kitchen scraps. It is a dark substance that is earth-smelling and wonderfully full of nutrients.

Why Compost?
When your garden grows, it uses nutrients and minerals from the soil. When we eat the plants, our bodies are nourished by those nutrients. In most cases, however, we do not eat the entire plant and some scraps are left for the garbage. By putting them in your backyard compost pile, scraps are digested by soil organisms and turned into a nutrient-rich substance that you can put back onto your garden, returning those nutrients and minerals, fertilizing it naturally.

Where should you make your composting pile?
Your compost pile is not something to be hidden. Be proud of your compost; you are creating a full-circle garden system! The ideal location is a place that is relatively close to where you will be spreading the finished product (think of moving wheelbarrow loads of soil – how far do you want to haul them?). Your pile should be in an open area with good air circulation and sun exposure, on a soil base with good drainage. The ideal size of a pile is about 1.3m x 1.3m.

How do I start?
The recipe is a balance of nitrogen ("green"), carbon ("brown"), water, air, and heat. You can build a bin to contain your scraps (wood pallets, cedar logs, even plastic snow fence or chicken wire can work), or just make an open pile. The trick: layering! Layer your compost materials like a lasagna – 6" of brown, 6" of green, 6" of brown, 6" of green, etc. The organisms that digest the compost materials need air and water to eat and digest properly. Make sure that your pile stays moist like a wrung out sponge; you may need to put the hose to it during those dry August days. In order to keep those bugs breathing, ensure that there is proper air flow through the centre of your pile – add chunky materials such as straw with your "brown" layer and/or turn it over with the pitchfork every few days. The pile will heat up as the soil organisms digest the food, up to 90 - 160°F! The heat is a sign that your pile is decomposing properly. Mixing the pile up every once in a while will speed up the process, but even a static pile will produce finished compost in about 6 months.

How do I finish?
When you pile reaches approx 1.3m high, stop adding to it and give it a final layer of "brown" on top, then step back and let the worms and micro-organisms do the work. As the pile is digested by the bugs, its height will decrease rapidly – the finished product will be about 1/2 - 1/3 the size of the original pile. The key to determining if the pile is finished: check the heat! If the pile has cooled down, the bugs have digested all the food and left behind nutrients and minerals good for your garden. Start shoveling out your pile and put it directly on your garden. A good 2-3cm layer is ideal; fork it into the ground.– If you are feeding your indoor plants, first sift your compost through a fine mesh screen and put the larger chunks back into your next pile to be further broken down.

Did you know? There are more than six billion microbial life forms in one level teaspoon of cured compost. That's more than the number of people on Earth!

5) Planting your garden

When is it best to direct seed and to transplant?
It is certainly easier to start your vegetable garden by seeding directly into the garden. However some vegetables take several months to mature from seed, so in our area it isn't practical to direct sow everything into the garden when the growing season is short. Know your zone and find out what grows naturally in your area, and what varieties grow the best. Talk to other gardeners in your neighborhood about what takes the least effort and what will need a little more.
Ordering your seed from a local seed company with similar growing conditions will help ensure better results and higher yields. Here in New Brunswick we are fortunate enough to have a couple of seed suppliers to choose from whom carry varieties that are hearty to our zone 3b.

A few Helpful Hints:
Root crops and vegetables with tap roots do not transplant well and prefer cool weather conditions and they are able to withstand frost. Therefore are direct seeded in the early growing season. Some quick growing crops, like peas and summer squash, don't benefit from being started indoors.
Warmer climate crops (herbs, tomatoes, peppers, melons, cucumbers and squash) are best transplanted. For example, tomatoes need a 4 or 5 month growing season to mature from seed, which means that in the Knowlesville area we need to transplant mid-June, or after the last frost whichever comes first, to enjoy a ripe tomato off the vine.
Your seed supplier should be able to give you a lot of the information you'll need about when to start indoors and transplant or when to start from seed in the garden. Sometimes this information is printed on the seed package or found in the supplier's catalogue. Asking your experienced gardening neighbor when they start their vegetables is a great way to learn about your local growing schedule.
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Vegetables that are usually direct seeded:
Beans, beets, carrots, corn, garlic, lettuce, micro greens, okra, parsnips, peas, radishes, rutabaga, salsify, turnips.

Vegetables that transplant well:
Basil, broccoli, brussels sprouts, cabbage, cucumbers, Chinese cabbage, cauliflower, celery, chard, chives, collards, eggplant, endive, escarole, kale, kohlrabi, leeks, mustard, muskmelons, okra, onions, parsley, peppers, pumpkins, squash, tomatoes, watermelon.

Then there are a handful of vegetables that aren't usually grown from seed at all. They're grown vegetatively:

VEGETABLE	GROWN BY
Asparagus	1-Year Old Roots
Garlic	Cloves
Horseradish	Root Cuttings
Potatoes	Seed Potatoes
Rhubarb	Root Crowns
Sweet Potatoes	Slips

6) Healthier Gardens

We know that maintaining good soil health and fertility are necessary for a bountiful harvest, but there are other things we can do in addition to adding compost that will improve the over-all health and increase the productivity of our kitchen gardens, here are a couple of examples of what you can do with little effort in your backyard:

1. Companion planting
Companion plant means putting plants together in the garden that like each other, or help each other out. This method of planting is a technique which relies more on observation than on science, and can play a significant role in pest control. Some combinations work because the scents released repel bugs and others attract beneficial bugs.
Make your own observations when trying some of the combinations listed in the chart below:

Companion Planting Chart for Vegetables

Vegetable	Likes to be with…	Dislikes being with…
Asparagus	Basil, Tomato, Nasturtium, Parsley	Onion, garlic, potato
Beans	Carrot, cabbage, cauliflower, cucumber, marigold	Chives, leek, garlic
Broad Beans	Brassicas, carrot, celery, corn, lettuce, potato	Fennel
Beets	Brassicas, lettuce, onion, sage	Bean (pole)
Broccoli	Celery, chamomile, dill, rosemary	Oregano, Strawberry
Brussels Sprouts	Potato, Thyme	Strawberry
Cabbage	Beetroot, potato, oregano,	Strawberry, tomato

	sage	
Carrot	Bush beans, pole beans, lettuce, onion, pea, radish, tomato	Chives, dill, parsnip, radish
Cauliflower	Beans, celery, oregano	Nasturtium, peas, potato, strawberry, tomato
Celery	Cabbage, leek, onion, spinach, tomato	Parsnip, potato
Corn	Bean, cucumber, melon, pea, pumpkin, potato, radish	Tomato
Cucumber	Bean, celery, lettuce, pea, radish	Cauliflower, potato, basil
Eggplant	Bean, capsicum, potato, spinach	
Leek	Carrot, celery, strawberry	
Lettuce	Carrots, radishes, strawberry	Beans, beetroot, parsley
Melon	Corn, radish	Potato
Onion	Bean sprout, broccoli, cabbage, lettuce, strawberry tomato	Bean, pea
Pea	Beans, Carrot, corn, cucumber, radish	Onion family
Potato	Bean, corn, cabbage, pea, eggplant	Cucumber, pumpkin, squash, sunflower
Pumpkin	Corn	Potato
Spinach	Celery, cauliflower, eggplant	
Tomato	Asparagus, celery, carrot, parsley, marigold	Corn, fennel, potato
Zucchini	Nasturtium	

2. Crop rotation

Crop rotation is the practice of grouping related vegetables together and moving them to a new location each season.

The longer you can leave between growing a crop in any one patch of soil the better, however most of us only have space for a four year crop rotation; in other words each crop should only occupy any given area of soil one year in four. Divide your garden plot into quarters and try to keep your “groups” together each year, moving them on to the neighbouring plot next season. Raised beds make the job easier.

The main reason for grouping related crops together in this way is to avoid the build-up in the soil of the pests and diseases that commonly attack them. However, each group of crops also has specific needs with regard to nutrients, and moving the crops around avoids the possibility that the soil will become depleted.

7) End of season ~putting your garden to rest!

It's hard to believe, but living in an area with colder winter climates, the time quickly rolls around where it's already time to hang up your gloves and put away your spades for the season. Say goodbye to the garden you've dedicated so much time to working on in recent months, but don't despair because before you know it, it will be time to plant all over again!

Nevertheless, before you bid your garden farewell, don't forget to close down shop, or as regular green thumbs refer to it, put your garden "to bed" for the winter. The work you do as you shut down your garden for the year can be a very important and critical factor in how well your garden will do next year. It is essential to take the time now in completing a few simple tasks that will leave your yard in a healthier condition to quickly and more effectively begin growing again in the spring.

Be Frost Aware:

Be alert that the weather usually gets colder near the full moon. Times to watch for frost will be late May and early June, then again late August and early September. Late summer and early fall you may need to cover your more sensitive plants during cool nights in order to protect your harvest. Some of the plants we are most protective of are the tomatoes, peppers, melons, eggplant etc.

Clean up time. Get mulched!

All material from harvested annual vegetable plants and annual flower should be put into your compost pile. If left in the garden over winter you are providing habitat for pests, fungi and bacteria to survive the winter. If any of the material shows visible evidence of rot, mold or fungus you should avoid adding it to the compost pile. Dead and wilted waste is okay, noticeably infected, or insect infested material should be burned or trashed. If you have trees in your yard, don't rake and bag your leaves for disposal. Instead, mow over them with your lawnmower and then create a "leaf mold" by raking them for mulch, a process that will produce a richer fertilizer. Laying down a 3-4 inch layer of organic matter and working it lightly into your garden soil will get the worms and microbes working earlier and the freezing and thawing throughout the winter will help to work the organic matter deeper into the soil for next year's vegetable roots to access.

Go with garlic

Planting isn't quite done for the season, prep a bed or two with finished compost and plant your garlic in September to harvest next August. Choose a sunny location and plant individual cloves of garlic approximately15 centimeters apart, top off by mulching with straw before the snow arrives.

Record Keeping

As you are finishing up your cleaning and trimming, you may want to draw a diagram or take pictures (if you haven't already done so) to make a record of what was planted where. This can be helpful next year when thinking about replanting and rotating your crops. Just remember you are actually starting next year's garden now!

Bibliography, References and Links

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