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Lets Get Growing!

Before you start:

For a garden to be successful you need the right soil conditions, nutrients, sunlight and water.

- Decide in advance what you are going to grow, how many and where you want them.
- Label your plant markers with the variety name and date before you head outdoors.
- Lightly rake over the prepared beds to break up the crust and weed if needed.

pH : if the ph level is not in an optimal range, the plant can't access nutrients from the soil. Veggies will grow in either slightly acidic or slightly alkaline soils. Most NB soils are naturally slightly acidic and will benefit from lime application

Nutrients or Fertilizers : NPK (the main 3): nitrogen (N) helps plant foliage to grow strong, phosphorus(P) helps roots and flowers, and potassium (Potash) is important for overall plant health. There are several other minerals that plants require as well.

Animal manure contains most of the nutrients that crops require, including nitrogen, phosphorus, potassium, and “ roughage “ – straw and other materials that will bulk out soil and make it easier for good creatures such as worms , and bacteria to grow. *Raw manure – will burn plants, manure also contains weed seeds you may not want.*

Compost from kitchen, garden waste or leaves make excellent garden ‘food’. Organic gardens do not use chemical fertilizers, you can purchase organic fertilizers.

Light: Vegetables need at least 6 hours of direct sunlight, a few will tolerate less, they stop growing well once the days are less than 10 hours long in Fall.

Watering: most NB summers have adequate rain fall. When seeds and plants are planted in the spring, water is important to get them going. Water early in the day or in the evening. Once established, water as needed, it is best to give a thorough watering less often than frequent small watering's which encourage shallow roots.

Mulching: Keeps weeds down, keeps soil warm/ cool/ or moist depending on use. (Dried fresh grass clippings, straw, leaves, newspaper)

Seeds

- Seeds develop into a plant like the mother plant. Seeds contain enough nutrition to last for several weeks after germination.
- **Annual vs biennial vs perennial.** An annual is a plant that will complete its entire life cycle in one year. A biennial is a plant that will complete its entire life cycle in two years. A perennial is a plant that will complete its entire life cycle in at least three years if not more.
- Seeds are from **self-pollinating plants** (pollen transfers and fertilization occurs within the same flower or flowers of the same plant meaning the seeds will have the same genes as the parent plant) or **cross pollinating plants** (pollen transfers between different plants, meaning the plant genes can be a mixture of both parent plants). This is important to know when saving seeds as a cross pollinating plant may cross with related plants i.e. beets with swiss chard.

- Seeds can also be **Open Pollinated**: varieties produce offspring that closely resemble the parent or **Hybrid** varieties result from the controlled crossing of genetically distinct parents. They produce offspring very different than their parents.
- You cannot successfully save seed from hybrid plants; hybrids are often very useful in the garden.

Choosing your seeds

- Choose a reliable source, must grow in your region, must be suitable for your growing skills
- Choose companies in your province or region, safe seed pledge, non-GMO
- The seed packet is an indispensable source of information on growing your seeds, use internet sources if more information is needed. Keep the packet until the end of the season.

Prepare your seeds to increase rate of germination by:

- Scarification: scratch or nick the coat of very hard seeds
- Stratification: seeds need time in a cool moist environment before warming and planting
- Soaking: 4-24 hours, can be used for most seeds.

Planting your seeds inside

- ❖ Needed: good potting soil; clean planting container; water; air movement; lots of light
- ❖ Know your growing season, don't start your plants too soon before the stated planting outside time, onions 10-12 weeks, peppers/ tomato 8 weeks, most others 6 weeks, cucumber 4 weeks
- ❖ Fredericton is zone 4b, on the edge of 5a, the frost free period is mid-May until the ~Sept 21
- ❖ Pre-moisten your soil, fill container removing all air, don't over pack the soil.
- ❖ Plant 2-3 seeds in each individual pot, thinning to the strongest one, or plant seeds in rows 1" apart. Plant seed no deeper than twice the diameter of the seed (1/4 -1/2 "), keep warm and keep a few inches from LED, CFL or fluorescent light fixtures. Bright day light is ok but not enough for strong plants, give 16-18 hours of light / day.
- ❖ Fertilize after ~3 weeks, the seed has enough nutrients for 3 weeks. Seedlings tend to need a fertilizer high in phosphorous, like a 1-2-1 N-P-K ratio. A liquid or water-soluble fertilizer will be easiest and quickest way for the seedlings to access nutrients. A complete fertilizer has all 3 major nutrients, (5 10 5 fertilizer is 5% nitrogen, 10 % phosphorus, 5% potassium by weight). Use a '1-2-1' ratio for vegetables, which need plenty of phosphorous to set the fruit.

Transplanting your seedlings or potting up

- Once the true leaves of your plant begin to grow, move them to larger individual pots. Loosen the soil around the roots with a fork or small shovel, handle by the leaves, and transfer to a prepared pot having made a hole for the plant. For most plants, plant the seedling deeper than it was originally. Leave the first leaves just above the soil level.

Damping-off

- A variety of fungal problems that lead to sudden seedling death.
- Prevention is the key, don't over water, have good air circulation,
- Cinnamon sprinkled on the soil surface may help

Hardening Off

- 7-10 days before transplanting to the garden, plants need to gradually become used to the sun, wind, and temperature variations.
- Start in a sheltered shady spot, then give short periods of direct sun, gradually lengthening the time in full sun with full wind and temperature exposure.

Transplanting outside

- Transplant in the evening or on a cloudy day, water plants well before transplanting, make sure they aren't drooping, firm soil around plants, water well again, cover lightly to protect from sun and heat for a few days.
- Try adding 1 Tablespoon of rolled oats to the bottom of the transplant hole (a good fertilizer containing many trace elements).
- Break apart peat or paper pots to allow roots to spread. Completely cover or remove the top edge of the pot. Many plants can and should be planted deeper than the pot they were in (tomatoes, cabbage family, cucumbers for example)

Sowing seeds directly in your garden

- Sow most types of vegetables directly in a garden. First make sure that the soil has dried out before you work it and be sure that the soil is warm enough for the seeds that you want to plant. Peas & greens germinate in soil as cool as 4°C, and plant them as soon as you can work the soil in spring. Squash and beans need warm soil. If your soil temperature is much below 65°F (18°C), the seeds are likely to rot in the ground before they sprout. Sow pole beans in a trench lined with newspaper especially if the area is likely to dry out –pole beans love moisture and the newspaper will hold moisture, until it decomposes.

Planting Choices:

- **Row planting:** Mark the row, make a furrow at the correct depth along the row. Sow seeds more thickly than you want the final spacing of the crops to be, space seeds as evenly as possible. Cover with soil and then pat firmly to make sure that all the seeds are in contact with the soil. Water gently.
- **Wide row planting:** This method allows you to plant more seeds in less space by concentrating watering & weeding, Rows are generally 10 to 16 inches wide. Plant the entire width of the row and continue as with row planting.
- **Square foot planting:** divide your bed into 1-foot sections, plant each section like the wide row planting, plant seeds as directed on packed for seed spacing, ignore how far apart to plant the rows.
- **Hill planting:** Plant seeds for vining crops that spread out in hills or circular groups. (cucumbers/squash) Loosen the soil in a 1-foot-diameter (30 cm) area, plant five to six seeds close together. Thin out all but the two strongest seedlings.

Specific Advice for Various Crops

***Corn.** Warm soil is essential for germination. Seed heavily (up to four seeds per foot) to make up for any losses from birds. Corn is wind-pollinated, so to ensure pollination, you must plan on a minimum of 16 plants in a block of four short rows.

***Seeds with very thick covers (gourds, morning glory, sweet pea(flower)).** Sow seeds after the last frost. Nick each with a file or soak them in lukewarm water before planting.

***Peas.** Plant peas in early spring as soon as you can work the ground. Optional: Soak seeds 12-24 hours prior to planting, pre-treat the seeds with inoculant. Peas will germinate in very cold soil (40°F), but this can take weeks.

• **Carrots.** Sow after danger of frost. Cover them with fine soil, 1/4 to 1/2 inch deep. Carrot seeds can take up to a month to germinate. To aid germination, cover bed with a board, burlap, or such to keep the soil evenly moist, remove once germination begins.

• **Beets** each seed is several seeds, weed out smallest ones, edible greens.

- **Radish** need to grow early, will bolt when it gets too hot.
- **Spinach** does not germinate well when soil is warm, beets and lettuce are similar
- **Lettuce** and spinach don't taste as good once they send up flower stalk. It helps to give shade in the heat. Harvest leaves not the whole plant, plant every few weeks.
- **Beans:** Plant once soil warms, every 2 weeks. Try using stakes and string to stop storms blowing over. Like with peas soak seeds and harvest frequently. Harvest when dry, avoid rain and dew this can damage the plants. Like peas they add nitrogen to the soil. Sometimes bugs will chop off the top of the plant when it is small, you can replant or sometimes the plant will continue to grow
- **Ground cherries:** small, sweet fruit in a paper package like Chinese lantern, Harvest when falls to ground, Start early, inside, but put outside during daytime if warm. Transplant after last frost. 1-2 plants is all you need.
- **Dill:** Plant after last frost directly in ground, thin once up, can eat leaves or seeds. Plant between other plants to help keep bugs away.
- **Cucurbits:** Plant once soil warm, also can start inside 4-6 weeks early. They need space to spread, or grow on a trellis or tomato cage off ground. To protect from cucumber beetles cover with a frost blanket or fine insect netting until plants get big. Male and female flowers grow on each plant. Insects must go from male to female (the flower with the mini fruit at the base) for the fruit to grow so you must uncover when the plant is big and healthy. Members of this family include cucumbers, pumpkins, summer and winter squashes, and zucchini.

Succession Planting

The goal of succession planting is to make the most of your garden space and keep the beds growing and producing fresh harvests.

Interplanting

This is a version of companion planting where the second crop is planted while the first is still growing. Lettuce, radish can be interplanted with a slower crop to increase productivity and provide better habitat (shade, nutrients) for one or both crops. Cultivation is reduced, and the relay planting allows maximum use of the space. Examples transplant warm-weather crops such as peanuts, tomatoes, or peppers into the center of beds of lettuce. Interplanting chard with a fast-growing crop such as lettuce or scallions (green onions) is another possibility. Interplanting peas in spinach beds saves time and space and makes good use of resources. Being a legume, peas do not need high levels of nitrogen in the soil and instead add nitrogen to the soil.

Companion Planting

Minimizing Risk: Increases odds of higher yields even if one crop fails or you are effected by natural hardships such as weather, pests or disease, mimics nature.

Crop Protection/ Shielding: Companion Planting can offer a more delicate plant shelter from weather such as wind or sun by growing aside another plant which can shield and protect.

Trap Cropping: Companion planting is also the ultimate organic pest management; you may keep away unwanted pests that may be attracted to one crop but repelled by the other.

Positive hosting: Predator recruitment typically in planting in proximity to plants which produce a surplus of nectar and pollen you can increase the population of beneficial insects that will manage your harmful pest population for you.

Roses And Garlic: Garlic or garlic chives repel rose pests. Garlic chives probably are just as repellent, and their small flowers in late spring looks great .

Tomatoes And Cabbage Tomatoes repel cabbage caterpillars.

Cucumbers And Nasturtiums. Nasturtiums "are reputed to repel cucumber beetles, and as habitat for predatory insects," such as spiders and ground beetles.

Peppers And Pigweed Leafminers preferred both pigweed and ragweed to pepper plants. Just be careful to remove the flowers before the weeds set seed.

Cabbage And Dill Dill is a companion for cabbage family plants. The cabbages support the floppy dill & the dill attracts beneficial wasps that control cabbage pests.

Corn And Beans Beans attract beneficial insects to protect corn, pole bean climb up corn stalks.

Lettuce And Tall Flowers Nicotiana (flowering tobacco) and cleome (spider flower) give lettuce the light shade it grows best in.

Radishes And Spinach Planting radishes among spinach will draw bugs away from the spinach. Bug damage to the radish leaves doesn't harm the root.

Potatoes And Sweet Alyssum The sweet alyssum has tiny flowers that attract beneficial insects, such as predatory wasps. Plant alongside bushy crops like potatoes, or let it spread to form a living ground cover under arching plants like broccoli

Cauliflower And Dwarf Zinnias The nectar from the dwarf zinnias lures ladybugs and other predatory insects that help protect cauliflower.

Collards And Catnip planting catnip alongside collards reduces flea-beetle

Marigolds And Melons marigolds control nematodes in the roots of melon

Miscellaneous:

- Know your growing zone (on border between 4band 5a), last (May 20) and first frosts (Sept. 22) our growing season is 120-125days
- Place tallest plants to the north, or back of garden so they don't shade other plants.
- Know which plants like some shade.
- Read your packet/ or planting directions and rotate your crops.
- Plant early: Peas, lettuce, spinach, radish, beets, onions
- Plant after last frost: Beans, cucumber, carrots (can be somewhat earlier), etc.
- Plant for Fall: all the early ones except onions as not enough time to get big.
- Plant bedding plants: cabbage family soon along with pansies are early, remainder after last frost.
- Seeds for onions, parsnips, parsley, and corn – buy annually – they do not germinate easily after two years. Most other veg if stored correctly will last up to 4-5 years, but will slowly decrease in viability.
- Sow bean seeds with hair or fur in the trench – hair contains all sorts of trace elements.
- Sow pole beans in a trench lined with newspaper especially if the area is likely to dry out –pole beans love moisture and the newspaper will hold moisture, until it decomposes. Fill the trench with well rotted manure and compost – pole beans need good food to thrive.
- When you water after planting seeds never use cold water- it shocks them into thinking it is still winter- use lukewarm water. This also applies to any watering at any time. Sun-warmed water is good for all plants.
- If you grow seeds on a windowsill- take them off the sill at night – the cold radiating from the windowpane will not aid germination or growing. Also turn the plants every day so that they do not lean towards the sun. Plants on windowsills tend to get leggy – try diffuse light rather than direct sunlight.
- Banana skins for roses – bananas contain magnesium, calcium, sulphur, phosphate, silica and sodium. Chop up and bury near rose bushes. good for increasing blooms.

- Grow wonderful cabbages and other brassicas- if you are prepared to waste a little beer! 1 beer to ½ gallon water and water around the plants. Ale is good for tall growing flowers- hollyhocks, sunflowers etc. Use it without dilution –once a week if you can afford it!

War on weeds

A “clean” weed-free plot before you start is the key to success with vegetables. Weed 1-2 weeks before planting, weed at planting time, then 1-2 weeks following (this catches weeds while they are just germinating, then as needed. Weeds compete for available nutrients and water. Once plants get big, the weeds often get shaded out. The organic approach is to pull out weeds and their roots as you dig. For hard to remove perennial weeds with spreading wiry or deep roots, cover the soil with card or doubled-up sheets of newspaper topped with a 2in (5cm) mulch of compost. This is sufficient to stop even persistent weeds regrowing. Do not use chemical herbicides unless it states they are safe for organic use.

Safe natural protection from crop damage

- keep gardens clean and free of places where snails/ slugs can hide
- Guard maturing cucumbers and squash by using onion skins! Simply throw a big handful loosely across the top of each hill, also cover plants lightly while small to keep beetles from reaching the small plants.
- Protect tomato crops by sowing dill and borage.
- Protect maturing corn with vegetable or olive oil or a pinch of cayenne pepper on the silks.
- Place discarded cabbage leaves and grapefruit rinds—or even old boards—throughout the garden in the evening. When day breaks, remove the occupants in the "slug domes."
- pour soured milk over the young cabbages, etc. to keep the moths and the worms away
- Ants don't like: Lavender, Calendula, African marigold, Tansy, Pennyroyal ,Chives . Yeast and sugar mixed with a little water is lethal to ants. Cayenne pepper – spread around plants you want to save from ants, also old coffee grounds. BUT Ants are aphid predators – so do not get rid of all of them...

<p>Natural Insecticidal Soap spray aphids, mites, white flies, thrips, and mealy bugs: 1 1/2 tablespoons of liquid soap (biodegradeable) 1 quart of water A couple drops of orange or lemon essential oil, mix and use to spray plant thoroughly</p>	<p>Garlic, Peppers & Onion Insecticide 2 hot peppers 1 whole bulb of garlic 1 large onion 1/4 cup water Toss in the food processor and add water, blend until a mash is made. Cover mash with 1 gallon hot (not boiling) water and let stand 24 hours. Strain. Spray on roses, azaleas, vegetables to kill bug infestations. Bury mash in ground where bugs are heaviest. Good for thrips, aphids, grasshoppers, chewing and sucking insects.</p>
<p>Baking Soda Spray 1 tablespoon of baking soda 1/2 tablespoon of oil 2 quarts of warm water for treating plants with fungal diseases on leaves, mix and use immediately</p>	<p>Japanese Beetles, borers, leafhoppers and slugs Garlic also deters larger pest like deer and rabbit. -Natural Insecticidal Soap Spray (from recipe above) -1 tbsp chili powder (or fresh or dried hot peppers) -5 cloves of garlic, crushed Allow garlic and chili powder to steep overnight. Strain and pour into a spray bottle. Add Natural Insecticidal Soap Spray. Will keep for a couple weeks.</p>