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# D Acres of New Hampshire

## Organic Farm & Educational Homestead

### Preparing a Vegetable Garden Site

**Location, Location-** The decision where to plant has many factors. The amount of sunlight, soil composition, grade and proximity to the gardener are important to consider. Proximity to the gardener is vital for day-to-day care of the plants. Access to water for irrigation is most helpful. Shade from trees or structures can reduce sunlight availability. Site selection involves taking note of annual shifts in the sun incidence on the site. The soil provides nutrients to the plants, some soils are better suited than others and all must be evaluated to improve year to year. Sand, clay, rocks and organics make up the soil composition, 5-8% organic material is a good percentage. Ultimately what creates soil, especially those that are rich and vital, is the biological activity of the micro and macro-organisms within the soil. As these organisms multiply, they digest materials such as rock, plants and other microorganisms, and then as they die off, they are building the organic matter that creates healthy soils. A soil's health is partially judged by its tilth. This refers to the soil's overall structure, ability to hold nutrients and water, and its looseness in relation to the plants' roots ability to penetrate deep enough. The grade of the land will also affect the garden design in relation to water runoff and solar exposure. Steep slopes present the challenge of capturing fast moving runoff and terraces are often employed. Flat lands need drainage and floodplains are highly fertile but susceptible to weather's whims. It is helpful to take note of prevalent wind direction and utilize windbreaks or buffers as necessary.

**Prepping the Bed-** Once the site has been established the next step is to improve the soil and reduce competition for the plants we wish to propagate. Rocks can be removed if feasible to ease cultivation and provide more space for roots. Soil fertility is the food of the plants and will determine the success of the garden. A soil test can be prepared. Tests typically show pH, % of organic matter, and available Nitrogen, Phosphorous and Potassium. The state of Maine MOFGA organization will test soil and give organic recommendations. Most soil in NH requires additional nitrogen year to year for growing vegetables. Nitrogen can be acquired by using leguminous cover crops, manure applications or concentrations such as blood meal. A slightly acidic soil of around 6.5 is optimal but some plants such as blueberry prefer a more acidic soil as low as 5. Raising the pH is conventionally done by adding agricultural lime or wood ash. Potassium in NH is typically not a problem as granite provides a significant source. Using rock phosphates can raise phosphorous levels. Azomite and Greensand are minerals that can release an array of beneficial nutrients over time. Generally speaking compost is the solution to soil fertility. The rich hummus provides organic material and plant food. Thus soil composition and fertility are simultaneously improved. There is a guide to composting on the [www.dacres.org](http://www.dacres.org) website under Articles & Useful Links. Rock powders and other amendments can be purchased in Bradford, VT at North Country Organics.

There are non-organic commercial and household fertilizer products available. Miracle Grow and other 10-20-10 fertilizers are synthetic petroleum based products that boost plant growth. Unfortunately these chemicals destroy soil life and provide an incomplete balance of the nutrients plants need. Thus crops grown with Miracle Grow do in fact grow but often lack the strength to deter common pests. The weeds also grow rapidly increasing competition. Water-soluble petroleum fertilizers run off causing pollution problems in our water system. These "miracle" products provide an incomplete balance of the essential supplies plants need to thrive at the expense of long-term soil health.

Improving the soil is essential and so is reducing competition from weeds. Weeds are plants that vol-

unteer and take nutrients and light from the plants the gardener is cultivating. A weed can be a useful native plant in the wrong place; that is the decision of the gardener. Hand weeding is always necessary but there are techniques to reduce this arduous task. Mulching reduces weed competition by blocking the weeds from the sun. Layers of newspaper, cardboard, straw, leaves, hay, seaweed, grass clippings, compost and decomposed wood chips can be used as mulch. When you choose to mulch consider the material and its appropriateness. The chemicals in glossy newspaper should be avoided, the toxicity of ink and glues in cardboard are a concern, raw wood chips rob the Nitrogen from the soil, straw is expensive, hay is full of weed seeds, leaves blow away, seaweed is salty and far away, grass clippings are high in nitrogen and can burn plants, and compost is limited and needed everywhere. So think in terms of availability, cost and the diet your plants prefer. A mulch of bark works great on blueberries but would inhibit the growth of nitrogen craving annual vegetables. The tubes of straw and hay allow the soil to breathe while a thick leaf mulch prevents soil respiration. This form of sheet mulch composting is intuitive, akin to making a soup. The ingredients are often what is available in the cupboard. Established weeds are difficult to suppress. Switching sod to rich soil requires 6-8 inches of mulch, thick newspaper (5-10 sheets), cardboard, or a combination thereof. The sheet mulch can be applied thickly as insurance and then pulled away as necessary. Black plastic is an option to prepare a site but it degrades rapidly and becomes pollution.

This is a no-till approach to gardening. The technique is employed because we believe it is better than a till system. Tilling is less desirable than a natural farming system for several reasons. By cutting weeds like quack grasses with a tiller the operator actually spreads the roots of the weed. The rototiller exposes the soil to wind and water, which accelerates soil erosion instead of soil building. The rain compacts the soil, whereas before the tiller worms had spread a network of tunnels through the ground. The rototiller chops the worms and destroys the capillary sponge-like ability of the soil to retain nutrients, water and exchange air with the atmosphere. Roto-tilling is a short-term solution. In a matter of minutes, the tiller breaks the sod up and provides bare soil to cultivate. The resultant oxygen influx provides a burst of life in the soil creating a year's worth of wonderful growth. Weed seeds are exposed to the sun and there is a frenzy of microbial activities in the soil. This is short lived because the microbes quickly eat the supply of food and demand a re-supply. Tilling accelerates soil decomposition.

No till is about building the soil. Mulches are used heavily to improve the soil composition and reduce weed competition. The thick blanket moderates extremes in temperature and also protects the soil from wind and water damage. The mulch protects the soil from heavy rains, compaction and erosion. The effects of dry hot windy days are mitigated because the moisture is trapped under the mulch. Therefore the mulched bed needs less irrigation. Over time the mulch becomes part of the soil. This addition of a mixture of organic materials is akin to making compost on the soil surface. Weed problems improve over time because the weeds are mostly annuals and biennials that need to seed regularly to thrive. Because the weed seeds aren't tilled to the surface and the soil is not exposed annually, the weed population gradually diminishes.

Natural no-till gardening is a practical philosophy. It is about mimicry of nature's process of building rich, productive soil. The 4 foot topsoil in the Midwest was created by progressive years of annual grasses dying back into the soil. Conventional tractor farming is very destructive to this process of soil building. The forest also provides an example for creation of rich soil. The layers of leaves form an organic hummus that traps moisture and provides nutrients. No-till builds the soil by annually adding organic material and promoting the natural soil structure.

**Rotate-** There are three main families of annual plants that must be rotated to avoid pest, disease and nutrient deficiencies. Cucurbiaceae, Brassicaceae, Solanaceae. Rotate in leguminous plants of the Fabaceae.  
Cucurbits (squash, melons, cucumbers)  
Brassicas (kale, broccoli, cauliflower, mustard, asian greens)  
Solanums (potatoes, tomatoes, pepper, eggplants)  
Legumious (peas, beans, alfalfa)

Rotation to prevent pests can be considered futile on a small garden plot. The pests can often travel the small distance that the plant is rotated in the plot. This is not an excuse to ignore crop rotation. It is necessary to understand that some crops such as squash will pull more nutrients from the soil. Inter-planting design strategy and using a chicken tractor can be pro-active ways to address pest problems. Diseased plant material should be removed, fed to the animals or burned. Rest is also part of the rotation. Cover cropping or letting the site lay fallow with a thick mulch for a season will rejuvenate the plot.

**Spring will Cometh-** There are two basic methods of propagating annuals. Direct seed or transplanting is the most common way to go. There is abundant information about how to time your planting but experience is the most reliable guide so practice and record keeping are essential. The idea is to plant outside at the right time for maximum plant health and food production. Cold crops like broccoli and spinach are excellent in the early spring but slugs and warming temperatures conspire against these plants as the summer progresses. When using a direct seed method make sure to mulch early in the summer the preceding year or the sod will not have decomposed sufficiently. Seeds can be planted by pulling back the mulch and then gently cultivating the spot to be sown. Direct seeding requires that the soil is bare from competition and the soil must be accessible for shallow depth planting. To plant transplants simply dig a hole to size in the mulch.

**Organic versus Non-Organic-** Organic certification is regulated by the USDA. The government has provided a definition of organic practices. These practices are debated in regard to sustainability and soil health. A common definition of organic is to use only soil amendments and weed/pest control methods that are naturally occurring. As such synthetic petroleum-based pesticides and fertilizers are not Organic. Generally the organic dictum is to use nature's biological and mineral resources to cultivate crops. The philosophy and necessity of organic farming is to improve the soil rather than deplete it annually.

## Resources:

The Lasagna Garden by Patricia Lanza- a Rodale publication, informative and practical guide with specific vegetable and flower sections, also a section on rubble wall gardens.

Masanobu Fukuoka author of philosophical and practical guides to natural farming. Titles include, One Straw Revolution and Natural Way of Farming.

Weed-free Gardening by Lee Reich- A NorthEast gardener and author, Lee is an advocate of great results with less work.

### Seeds

Fedco Seeds ME a cooperative, supports education in Maine

High Mowing Seed, VT strictly OG

Johnny's –large selection of hybrids and organics

Pinetree-a favorite for small seed packet-sizes for home gardeners