



PLANNING THE ORGANIC ORCHARD

This fact sheet is written for the relatively inexperienced fruit lover in New York planning a new orchard or tree fruit block of at least one half-acre to be managed organically.

Carefully planning the design and layout of your orchard will facilitate managing it organically. Consider these four questions before designing your orchard:

1. Are you prepared to change all your plans if necessary during the months of spring and early summer to put on a timely spray? If not, you want a backyard or homestead orchard.
2. Can you provide labor, cooler space and marketing to sell 200 or more bushels of fruit? If not, you want a backyard or homestead orchard.
3. Will you plant in a frost pocket? If so, you want a backyard or homestead orchard.
4. How long of a sales season do you want?

Step One: Purchase a copy of *The Apple Grower* by Michael Phillips and read it twice, cover to cover. Then, add these tips:

Site Selection

Site selection can make or break your orchard. Elevation is one of the most important factors. Good air drainage can reduce the possibility of spring frosts. Well-drained soil (of any soil type) is needed as most tree fruits will struggle and die where it stays wet part of the year. Locating your orchard at least a few hundred yards from woodlots, brushy windbreaks and fencerows, or any area with unmaintained apple trees will reduce pest pressure.

Fruit and Cultivar Selection

An organic orchard in New York can easily produce a diversity of fresh fruit from July to November. Consult the many books and extension publications available on cultivar selection. Note your hardiness zone and choose accordingly. Don't bank on global warming to allow tender selections to grow in a climate that is too cold. Choose varieties that you will



be able to sell in your market and are available at the right time. If you have a winter market, grow a significant amount of high quality good-keepers. If you grow peaches, you may not want many early apples.

Disease resistant cultivars (DRC) should be on the top of your list, particularly for apples. All organic apple growers should plant some, if not all, disease resistant cultivars. Use of these cultivars can save a lot of time and money spent on sprays to control diseases, as well as avoiding the detrimental effects of copper and sulfur. Note that not all DRCs have the same levels of resistance to each disease affecting apples.

Of typical New York State tree fruit crops, apples are the most profitable under good management. Peaches and Asian pears are probably next, then European pears and plums. Cherries are good for u-pick situations.

Rootstock and Tree Density

The rootstock controls the size of the tree, its hardiness, and in some cases, susceptibility to diseases and some insect pests, such as fireblight, woolly aphid, and dogwood borer affecting apples. In general, the more dwarfing the rootstock the sooner the tree will start to bear fruit. The more dwarfing the tree, the more support it will need, such as a stake or trellis. Other tree fruits do not have as many

rootstock options as apple, and the range of dwarfing is not as large. Unless you are a highly experienced grower, do not start with full dwarf trees. Dwarf trees are prima donnas and cannot tolerate competition from grass and weeds. They require excellent soils, irrigation, and top level management. Establishment costs per acre for full dwarf trees may be up to 10 times those for semidwarfs. Tree density and tree size determine how quickly your orchard reaches full production. You do not need to buy certified organic trees to eventually produce organic fruit. There are few nurseries supplying organic stock. If not commercially available as organic, non-organic planting stock can be used as long as managed organically for one year before being represented as organic. Further, your trees may not be producing much for the first three years from planting, which is the required land transition time from last application of prohibited material.

Site Preparation

The commercial grower needs to prepare the site in order to build up the soil, reduce weed competition, and avoid future problems. The best-case scenario is to start preparing your site the year before planting.

First, take soil samples, map the layout of the field, and look for potential problem areas (such as low spots, steep areas, rock outcropping, and thin eroded topsoil). While ridges and hilltops have great advantages for fruit trees, they often have issues with rocks, erosion, and irregular shaped fields.

In year one, plow the soil, add approved compost and fertilizer based on your soil test recommendations, and then plant a cover crop. Sudan grass or another sorghum strain makes an excellent first cover. Sudan grows very quickly and will grow over six feet tall, smothering out grasses and perennial weeds. It can be mowed throughout the season and will come back strong. This helps to kill off woody perennials that may be struggling under the sudan grass canopy. Sudan grass is also fairly drought tolerant. It will germinate with minimal rain and survive dry spells. It does require warm soil to germinate. The fast growth, drought tolerance, and inability to reseed make it perfectly suited for New York.

In the fall of year one, plow down the cover crop and smooth out the area that will eventually be the orchard floor. You may want to create raised berms—like giant raised beds—if the soil drainage is not perfect. If the field is in good shape you may only need to disc the soil and smooth off the rough spots

with a field drag. If the field was a rough pasture or has dead furrows, swales, big rocks or uneven ground you may have to rent a box blade or hire a small bulldozer to smooth things off. A few hundred dollars per acre spent prior to planting can avoid thousands of dollars of problems over the life of the orchard. After the groundwork is done, a fall germinating cover, like winter wheat, will help to keep the soil in place and give you a nice green carpet to work in the following spring.

Early spring in year two, start planting. The earlier you plant, the more growth you will get on your trees. Planting in April can give you more than twice the growth you would get if you wait until June. A power auger will make the planting go more quickly than shovel digging. If you do use an auger, make the holes at least twelve inches in diameter. In wet clay soils use a shovel to break up any glazing of the hole's sides to help roots grow beyond the hole. The fastest option is to rent an apple tree planter and large tractor. If commercial orchards are in the area, see if they are using a tree planter that you could rent or hire the rig and driver. Be sure to clean rented equipment or any equipment also used conventionally and document cleanout prior to organic use. With a tree planter, several hundred to 1000 good size trees can be planted in a day. If you prepared excess ground, sow a cover crop to keep the perennial grasses from getting established. If you will plant more trees, mow down the cover crop in the fall and plant into it in the spring. If you do not plan to plant more trees, disc the cover crop in the fall, and seed a ground cover of mixed perennial grasses and clovers.

Not everyone can take a full year to prepare for planting. The field should at least be fall plowed before the spring of planting to expose roots of woody perennials and grasses and make planting much easier in the spring. If the land is hilly, plow strips where the rows will go. Plowing down sod and adding compost to the soil the spring of planting will be better than planting into sod, although more difficult than with fall plowing. Shovels, augers, and tree planters all have problems digging into unturned sod or clumping spring-plowed sod. Any mix of cover crops prior to tree planting is going to be much better than planting into spring-plowed sod.

Soil Amendments

Test your soil for phosphorous, potassium, pH, and organic matter and ideally make adjustments to your soil a year before planting. Be sure to with your



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certifying agent such as NOFA-NY Certified Organic LLC on approval of any materials before applying. Great publications developed by NOFA NY and available from Chelsea Green include: [Building Soils for Better Crops](#), [The Real Dirt](#), and [Organic Soil Management](#). Use their recommendations for soils prior to tree planting.

Organic matter, such as compost, manure, or green manure crops, should be added to the soil prior to planting to increase the soil's biological activity and make nutrients more available. Locally produced, aged manure spread on the soil is a step better than a commercially processed product. Even raw fresh manure is suitable the year before planting.

Fungal inoculants can be applied to the roots prior to planting.

Planning orchard floor management. Dwarf trees will require tilled strips of soil. For semi-dwarf trees, it works fine on most soils to let the sod grow right up to the tree. Consult *The Apple Grower* for strategies to manage the grass.

Final Layout

Grouping the early ripening varieties together will allow you to stop monitoring and controlling pests in those sections after harvest. Late varieties will require several more weeks of monitoring and control. They are best grouped separately. Summer varieties color and sweeten in mid-summer when apple maggot females are at peak flight. Concentrating traps and repellants in these areas will be necessary while the late ripening green acidic fruit will be much less attractive to the maggot flies. Placing scab-susceptible varieties together will make spraying easier.

An orchard of less than ten acres with many varieties of apples will not have pollination issues or need pollinator trees. A small planting of plums should have pollinator trees mixed throughout. Most plum varieties will not self-pollinate as easily as apples as they bloom earlier before the pollinating insects are as active. A pollinator tree placed every five to ten plum trees within a row can drastically increase fruit set in a spring with poor pollination conditions.

Spacing between trees is determined by rootstock and variety combination, but between-row spacing is determined by how much production you want per acre and the size of equipment you intend to use. Rows as narrow as 12 or 14 feet are possible with full dwarf stock, but equipment four feet wide or narrower will be necessary. A small orchard of an acre or two can get by with a yard tractor. Five to ten acres will require more powerful equipment. Compact orchard tractors, sprayers, and mowers are expensive and used compact equipment is hard to find.

Dwarf trees planted in rows 16 to 20 feet apart should accommodate utility tractors as wide as seven feet. Semi-dwarf orchards will need rows at least 20 feet apart to accommodate common utility tractors. Twenty-four feet between rows of vigorous, semi-dwarf trees on rich clay loam soils would be reasonable for a seven-foot wide tractor.

Additional Resources include:

- *The Holistic Orchard* by Michael Phillips
- *The Apple Grower* by Michael Phillips
- ATTRA's section on organic fruit <http://www.attra.ncat.org/organic.html#fruits>
- A Grower's Guide to Organic Apples By Gregory M. Peck and Ian Merwin http://nysipm.cornell.edu/organic_guide/apples.pdf

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