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EXTENSION FOLDER F-123

PLANNING AND PLANTING *the* ORCHARD

**By Staff Members
of the
Department of Horticulture**

**MICHIGAN STATE COLLEGE
COOPERATIVE EXTENSION SERVICE
EAST LANSING**

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Planning and Planting the Orchard

The first and most important point to consider before planting an orchard is the selection of a suitable site. The success of an orchard depends largely upon the site and the soil.

Usually the most profitable orchards are those that are most productive. Those having the best soils and locations will have the highest yields and the lowest cost per bushel of fruit. With good care, orchards on poor or mediocre sites are sometimes profitable but, in general, skill in management will not offset the disadvantages of an unfavorable site and soil.

Orchards intended for commercial production should be planted only on the best sites. Less favorable sites may be used for small home plantings where the fruit is not to be grown for profit. However, the points suggested for the selection of a site should be carefully considered.

A prospective grower should study carefully the available sites on his farm and determine their suitability for the different kinds of fruits before deciding which he wishes to grow. Only those kinds and varieties that are best adapted to his farm and to the region or locality should be planted.

Inexperienced growers who intend to purchase farms for planting orchards should have the land evaluated by competent persons before making investments.

Site and Soil

The site should:

- Provide good air drainage.
- Have an elevation somewhat higher than is general for the region or locality.
- Be more or less rolling, with slopes gradual enough to avoid destructive erosion, or relatively high level upland such as the tops of broad ridges or plains bordering on depressions.

Avoid:

- Low flat lands. They are more subject to frost, high water table, and severe winter freezing.
- Steep slopes or abrupt hillsides. A rise of 4 or 5 feet in 100 is sufficient.
- Tops of high hills that are exposed to winds.
- Pockets, depressions, or land at the base of slopes from which there is no outlet for cold air to lower land levels.
- Badly eroded sites where the surface soil has been washed away.

The soil should have:

- Good water drainage. Fruit trees will not thrive on poorly drained or water-logged soils.
- A deep fertile loamy surface layer.
- Good texture, mellow and easy to work, not hard and lumpy.
- A sufficient amount of available moisture and mineral elements to meet the requirements of vigorous mature trees.
- A well drained, retentive subsoil that will permit deep root penetration. A gravelly clay is ideal.
- Characteristics adapted to the kinds of fruit to be grown.

Avoid:

- Hard clay soils.
- Those with a hard pan or impermeable layer close to the surface.
- Those that frequently are dry, such as deep sands or gravels with little silt or clay in them.
- Those that are too wet. A gray, rusty, yellow-mottled subsoil indicates poor water drainage.

Soil Preferences—Different kinds and varieties of fruit trees grow best on different soil types. In general the pome fruits (apple, pear and quince) prefer heavier soils than the stone fruits (peach, cherry, Japanese plum, apricot, and nectarine). The apple usually does best on light-to-medium clay loams, although varieties differ in their requirements. Northern Spy, Jonathan, Delicious, Steele Red, and Grimes seem to succeed better on the heavier soils than McIntosh and Wealthy which are better suited to lighter soils. Pears will succeed on most soils that are satisfactory for the apple, but generally they do best on heavy silt and clay loams. Cherries thrive best on well-drained, deep, rich sandy loams; plums on somewhat heavier loams; peaches and apricots and nectarines on the lighter sandy loams; and quinces on a heavy deep moist loam. Peaches are more subject to winter injury when grown on rich moist loams which cause a prolonged growth in the fall and delay the maturity of the wood.

Soil Preparation

It is better to build up the organic content of the soil before planting than to try to do so after planting. Green manure crops and barnyard manures applied and turned under one season before planting will help. The soil should be plowed deeply and be thoroughly prepared for planting.

If the trees are to be planted in the spring, fall plowing is an advantage unless the slope is such that the soil will wash badly. Plow across the slope to lessen winter and spring erosion. Spring plowing, if necessary, should be done as early as conditions will permit.

Soils that are subject to erosion need not be plowed as a field. In such cases strips may be plowed for the tree rows, or the trees may be set on scalped areas and hoed or mulched to keep down the weeds and conserve moisture.

Planting

Time—All things considered, early spring planting is usually most satisfactory. Fall-planted trees may make better growth than spring-planted trees if the winter is moderate, but if injury occurs from winter cold the entire planting may be lost. The more hardy fruits such as apples, pears and sour cherries may be planted with less likelihood of winter injury, but it is not safe to plant peaches, plums, sweet cherries, apricots or nectarines in the fall.

Distance—Proper spacing of the trees depends on 1) soil fertility, 2) soil moisture, 3) kind of fruit grown, 4) vigor and habit of growth of the variety, 5) size of mature trees, 6) types of pruning to be employed, and 7) method of soil management.

Planting distances under ordinary conditions are as follows, the greater distances applying to large-growing varieties and plantings on rich or heavy soils:

Standard Apples	
(modified pruned).....	24 to 36 feet
Standard apples	35 to 45 feet
Dwarf apples	12 to 20 feet
Standard pears	20 to 25 feet
Dwarf pears	12 to 15 feet
Sweet cherries	25 to 35 feet
Peaches, sour cherries, plums, apricots, and nectarines	18 to 24 feet
Quince	12 to 15 feet

The number of trees required to plant an acre may be determined by dividing the number of square feet occupied by each tree into the number of square feet per acre. Example: 40 feet \times 40 feet=1600 square feet divided into 43,560 (square feet in an acre)=27.225 (or 28) trees.

FILLER TREES are sometimes planted in the spaces between the permanent trees to obtain early returns from the orchard. Their use can be recommended only if the proper varieties are selected and if they are either removed or modified by pruning before they begin to

crowd and interfere with the growth and production of the orchard. Modified pruning of apple trees has become very popular in recent years.

Early bearing varieties of the same class, as all apples or all peaches which require the same spraying and cultural treatments, are best to use together. Mixed plantings of peaches, apples, plums, pears, and cherries frequently raise serious problems.

Systems of Planting—Most orchards in Michigan are planted according to the square system in which a tree is set in each corner of a square. The system is sometimes modified by setting the trees closer in one direction with a wider spacing between rows in the other direction. For example, it is recommended that peaches be planted 18 feet apart in rows spaced 24 feet apart instead of the standard distance of 20 x 20 feet. The wider spacing between rows facilitates the application of sprays and dusts, harvesting and other orchard operations.

When fillers are planted, the **quincunx system** in which a tree is planted in the center of each square, is used. **Contour planting** is used on sloping land where severe erosion is likely to occur. Advice on land preparation and laying out an orchard for contour planting may be obtained from your County Agricultural Agent or the local representative of the Soil Conservation Service.

Pollination—Two or more varieties each of apples, pears, plums and sweet cherries should be planted together in an orchard to insure cross pollination and fruit setting. The varieties may be arranged so that 2 to 4 rows of one variety alternate with an equal number of rows of another variety, or every fourth row may be planted to the variety of least importance. If a minimum number of pollenizers is desired, every third tree in every third row may be of the pollenizing variety. The varieties planted together should have about the same blooming season.

Rhode Island Greening, Baldwin, Stayman, and other varieties of the Winesap group are

poor pollenizers for other varieties of apples. Seckel and Bartlett pears are unfruitful when planted together unless another variety is planted with them. Varieties of European plums such as Lombard and Green Gage will not fertilize varieties of the Japanese type such as Burbank and Abundance and vice versa. Bing, Lambert and Napoleon sweet cherries will not fertilize each other. Some other variety should be planted with any one of them. Standard varieties of sour cherries and most peaches, except Mikado and J. H. Hale and Halberta, are self-fruitful and may be set in solid blocks.

Hints on Purchasing Nursery Stock

Buy trees direct from reliable nurserymen of known reputation.

Buy only the best grade of trees. Cheap ones are often the most expensive in the long run.

Trees of medium-to-large size are best.

Specify age of trees. Either 1- or 2-year-old trees of apples, pears, plums and sour cherries and 1-year-old peaches and sweet cherries are preferred.

Order trees early and specify date of delivery so that they will be on hand ready to plant as soon as the soil can be worked in the spring. Many spring plantings are made too late.

Care of Nursery Stock

Open the package and examine the trees as soon as received from the nursery. If they appear dried out, soak the tops and roots for a day or two before planting.

If planting is delayed, the trees should be heeled-in on a well drained location preferably at the north side of a building or wood lot where it is cool and shady.

Dig trench deep enough to receive all the roots.

Lay the trees in separately but close together with tops to the south, to avoid sun-scald injury.

Pack fine soil firmly around the roots and cover the lower part of the trunks.

If the trees are heeled-in during late fall or

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early winter be sure to remove all packing material that may harbor mice. Place a quarter-inch mesh fence about the heeling-in area to protect from rodents.

If the trees arrive in freezing weather do not unpack immediately. Place the box in a cool damp place and allow it to thaw out gradually.

Keep trees protected from sun and wind during the planting operation.

Planting the Trees

All broken roots and ragged or torn ends of roots should be cut off smoothly before the tree is planted.

Dig hole large enough to accommodate all of the roots without bending them, and deep enough so that the tree can be set 2 or 3 inches deeper than it stood in the nursery. Keep top soil and subsoil in separate piles.

If the bottom is hard, pick until mellow or throw some loose top soil in the bottom of the hole.

Never place coarse manure, sod or commercial fertilizers in the bottom of the hole.

If a half-bushel of moist granulated peat or muck soil is mixed with the soil around the roots the tree will start quicker and make a better growth the first season.

Place the tree in its proper place, spread the roots naturally, and shake moist surface soil or a mixture of soil and peat around the roots until the hole is about half filled.

Tramp soil firmly so that there are no air spaces left, especially beneath the fork of the roots, then fill hole completely and tramp again. Leave some loose soil on top to prevent baking and to check the loss of moisture.

Set trees leaning slightly toward the direction of prevailing winds.

Prune the young trees immediately after spring planting. If the trees are set in the fall they may be headed back enough to prevent swaying during the winter and then headed back to the proper places in the spring, as described in Extension Folder 122, **Pruning Young Fruit Trees.**