

UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE

Extension Division

THOMAS P. COOPER, Dean and Director

Published in connection with the agricultural extension work carried on by cooperation of the College of Agriculture, University of Kentucky, with the U. S. Department of Agriculture, and distributed in furtherance of the work provided for in the act of Congress of May 8, 1914.

PLANNING AND PLANTING AN ORCHARD

By A. J. OLNEY

Experience has shown that mistakes made at planting time are responsible for many orchard failures. Hundreds of fruit trees are



set every year that do not live to bearing age and many that do are unprofitable. This loss of time and money can be avoided by taking proper precautions. A well planned orchard, properly located and cared for, should be productive for many years. Altho home orchards are noto-

riously neglected and unproductive a good supply of fruit can be grown with satisfaction on most farms in Kentucky.

New commercial orchards should be planted only after full consideration of conditions in the country as a whole, and of local aspects. Commercial plantings for the general market are justified only where conditions for production and marketing are considerably above the average. In Kentucky, plantings have not been sufficient to replace the old orchards that are going out of production. The decline in the number of bearing apple trees in the United States in recent years, is expected to continue for some time, but it does not seem likely that production for commercial purposes will fall much below the present volume. In many localities, however, there are excellent opportunities to produce apples for local sales and markets to the south.

The trend of peach production in the nation is upward but expansion should be limited to locations and conditions that are unusually favorable. A number of localities in the state are adapted to peach growing and offer opportunities for limited plantings to supply local needs.

Requisites. Planting an orchard, however small, obligates the owner to provide adequate equipment, materials and timely labor, if the venture is to succeed. The most important items are a spray outfit, spray materials and fertilizers, and stinting on any one of them will bring disappointment. A spray outfit capable of delivering

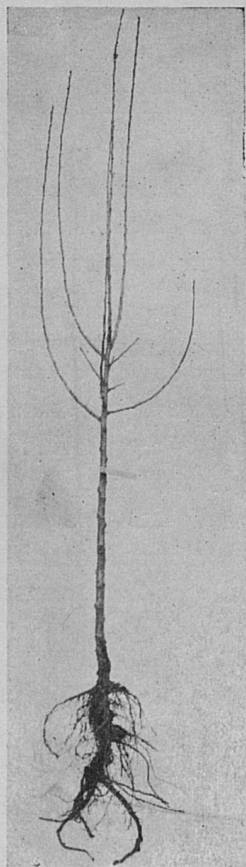


FIG. 1. A well-shaped two-year-old apple tree.

the spray at a pressure of about 100 pounds is the minimum that can be recommended for small home orchards. Larger orchards require better equipment for good results. The annual cost of spray materials and fertilizers will range from about 10 cents a tree while the trees are young to about 75 cents at mature age.

Ordering Nursery Stock. That the best trees (not necessarily the highest in price) are essential to successful orcharding can hardly be over-emphasized. Ordering early helps to assure both the grade and kind of stock desired. Usually, it is best to buy from local or nearby nurserymen. It is always risky to deal with tree agents unless they are known or their reliability can be established.

Receiving Nursery Stock. Nursery stock should be examined as soon as received. Stock arriving in bad condition should be reported to the carrier and the nursery company immediately, to facilitate adjustment. If planting cannot be done immediately, the trees should be heeled in as soon as possible. This is done by placing the trees in a shallow trench and covering the roots and part of the trunks with moist earth pressed firmly to prevent air pockets that may allow excessive drying. The roots of nursery stock are easily killed by freezing and adequate protection should be given during cold weather. Care should be taken to keep the trees properly labeled as to variety.

What To Plant. This important detail deserves much study in order that the kind and variety to be planted may serve the desired purpose. The experience of local growers usually is invaluable in determining what to plant. A detailed discussion of fruit varieties

will
Tree
Vari
low i
varie
listec

A
Padu
man,
P
Hale
P
S
S
P

A
than
Blac
are c

P
Hile

V
Elev
ard.
thes
duct
soil
thriv
is of

V
the g
succ
plan
the
soil
and

* G

will be found in Kentucky Experiment Station Bulletins Nos. 394, Tree-Fruit Varieties for Kentucky, and 396, Grape and Small-Fruit Varieties for Kentucky. The limited list of varieties suggested below includes a few of the kinds that are popular in Kentucky. Other varieties may be required to meet individual needs. Varieties are listed in the order of ripening.

FOR HOME ORCHARDS

APPLES. Transparent, Gravenstein, Polly Eades,* Wealthy, Paducah, Grimes,* Delicious,* Jonathan,* Golden Delicious,* Stayman, Turley, Winesap, Rome.

PEACHES. Mayflower, Carman, Alton, Hiley, Golden Jubilee, Halehaven, South Haven, Belle of Georgia, Elberta.

PLUMS. Green Gage, French Damson, Wild Goose.

SWEET CHERRIES. Black Tartarian,* Napoleon, Windsor, Gold.

SOUR CHERRIES. Early Richmond, Montmorency.

PEARS. Seckel,* Kieffer.*

FOR COMMERCIAL ORCHARDS

APPLES. Transparent, Polly Eades,* Paducah*, Wealthy, Jonathan,* Golden Delicious,* Grimes,* Stayman, Turley, Rome,* Black Ben.* (Winesap and Delicious, prominent in many orchards, are omitted because their record as money makers is poor.)

PEACHES. Carman, Golden Jubilee, Halehaven, South Haven, Hiley, Belle of Georgia, Elberta.

Where To Plant. The site is a matter of major importance. Elevation and air drainage should be provided to reduce frost hazard. The soil should be deep, well-drained and fertile because these factors are essential to deep rooting, tree vigor and long, productive life. It is generally accepted that the character of the subsoil is more important than that of the surface soil. Trees cannot thrive in wet soils. The direction of the slope of the land usually is of little importance.

When To Plant. Plantings made either in the late fall before the ground freezes or in the spring before growth starts have been successful in Kentucky. Experienced growers usually prefer fall planting because the roots can begin to establish themselves during the winter and are ready to absorb water and nutrients from the soil as soon as growth starts. If the weather in the spring is cool and moist the advantage in fall planting may be slight but spring

* Good pollen producers

weather is rather undependable. Late spring planting is always risky.

Preparation of The Land. Since the orchard is to occupy the land a long time, terracing, if needed, should be done and the land



FIGURE 2. Medium-sized peach trees pruned to about 2" spurs, well started, give an opportunity for a good selection of scaffold branches.

each other's blossoms effectively, nor the blossoms of other varieties.

Most varieties of peaches except Hale are self-fertile and do not require pollinizers.

Most varieties of plums will pollinize other varieties of the same

should be brought to a good state of fertility before the trees are set. It is essential that orchard soil contain an abundance of humus and it is difficult to build up the supply after the orchard is established. Thus, it is desirable to turn under properly fertilized soil improvement crops and to use manure on the land for a few years preceding planting to orchard.

Arrangement of Trees. The square system of planting is preferred by most orchardists. Provision should be made for good pollination, since many varieties are self-sterile and the trees cannot bear fruit without the aid of pollen from other suitable varieties growing nearby. The pollen of some varieties is of little value; also some do not bloom at the right time. For example, an early blooming variety like Delicious may not serve to pollinate a late blooming sort such as Rome. Usually an arrangement equivalent to a row of the pollen variety to 3 or 4 rows of the variety to be pollinated is adequate. Note pollen varieties marked with an asterisk (*), on page 3.

Winesap, Stayman and Black Twig apples cannot pollinate their own or

type.
Kent
S
P
trees
sider
and
S
sun
failu
roots
comm
they
the
soil
is be
F
zers
peric
izing
be u
begi
F
shou
The
be r
tree
S
begi
early
ing
soil,
duri
early
if su
hum
S
sum
the
to d

type. The three types are Japanese, European and American. See Kentucky Bulletin No. 394.

Sour cherries are self-fertile.

Planting Distances. Satisfactory planting distances for fruit trees depend on kind and varietal habit. The following are considered standard distances. Apples, 35 to 40 feet apart; peaches and plums, 20 to 25 feet; cherries and pears, 25 to 30 feet.

Setting the Trees. Careless exposure of the roots to drying by sun and wind during the process of planting is responsible for the failure of many trees to grow. After removing broken or injured roots the young trees should be set in a hole large enough to accommodate the roots without crowding and slightly deeper than they grew in the nursery. The soil should be worked in around the roots by shaking the tree sideways and up and down as the soil is added and then tamped firmly against the roots as the hole is being filled.

Fertilizers. Newly set trees are not capable of utilizing fertilizers until new root development has taken place and during this period some fertilizers may injure the roots; consequently, fertilizing at planting time is not recommended. However, manure may be used safely as a mulch and this will be beneficial after the trees begin to grow.

Records and Labels. When the planting is completed a record should be made showing the location of each variety on a chart. Then the labels which were wired to the tree at the nursery should be removed because the wires will soon girdle the bark and the tree may be ruined.

Soil Management. From the time of planting until the trees begin to bear, thoro cultivation of the soil during the spring and early summer is desirable to assure healthy, vigorous growth. During the latter part of the summer a cover crop, used to improve the soil, should be sown and a cover of rye or barley should be grown during the winter. Of course, a cultivated crop, such as tobacco, early potatoes or truck crops, may be grown during the early years, if such a crop does not crowd the trees and ample fertilizers and humus material are added to maintain the fertility of the soil.

Spraying. Young trees rarely need much spraying during the summer following planting. If aphid should become abundant at the tips of the new shoots, one of the best ways to eradicate them is to dip the tips of the shoots into a solution made of 1 teaspoonful of

a 40-percent nicotine solution to 1 gallon of soapy water. This is cheaper and more effective than spraying. In later years, spraying with nicotine solution may be more practical. Sometimes caterpillars or other insects may be found eating the leaves. These are easily killed by spraying with lead arsenate and lime at the usual strength, or 1 heaping tablespoonful of lead arsenate and 1 heaping



FIGURE 3. A well developed peach tree in its first summer.

tablespoonful of hydrated lime to 1 gallon of water. In the fall after the first summer, peach trees should be examined for borers, see Kentucky Horticulture Leaflet No. 17, Control of the Peach Tree Borer. During the winter following the first summer the dormant sprays should begin. See Kentucky Extension Circular No. 293, Peach and Plum Spray Schedule, and Horticulture Leaflet, No. 1, Apple Spraying Program.

Protection. The trunks of young fruit trees should be protected from rodents, particularly rabbits and mice, during the fall, winter and spring. The best protection is afforded by wrapping or inclosing the trunks with protective material. Hardware cloth, one inch

PRUNING

Immediately after planting, the young trees should be pruned to balance the tops with the roots, since considerable root area was removed when the trees were dug. This pruning also facilitates the development of the framework desired. The pruning differs somewhat with different kinds of trees.

Apples and Pears. One-year whips usually are cut back to

abo
cut
back
Aft
sele

I
by c
to sp

P
that
mus
to b
train
of th
of 6
to a
the
are

plum
The
the
The
prev

I
lish
form
ter o
appe
Prun
del
bran
bran
utili

A
prov
care
man
catic
Agri

about 3 feet. The side branches of two-year-old trees should be cut back about half and the central or leading shoot may be cut back a little or left unpruned according to the tree form desired. After the first season's growth the framework branches should be selected and the other branches removed.

Peaches. The young tree should be pruned to a single stem by cutting the top back to about three feet and the side branches to spurs or stubs about 2 or 3 inches long.

Plums and Cherries. The first pruning for these is similar to that of the apple. The development of the framework of trees must be started during the first year or two if the desired form is to be attained. *Apples, pears, and sweet cherries* are commonly trained to a form known as modified central leader. This consists of the encouragement of the main stem until it has reached a height of 6 or 8 feet when its vertical growth is checked by heading back to a side branch. Three or four side branches, well distributed along the trunk to avoid the weakness that develops when the branches are close together, are selected for scaffold branches. *Peaches, plums and sour cherries* are pruned to open-center or vase form. The central leader is removed and 3 or 4 selected branches form the framework. Good distribution along the trunk is important. The center of the tree should be kept open to let in sunlight and prevent shading out of the lower branches.

In all kinds of trees the pruning, after the framework is established, should be limited to slight corrections needed to maintain form, and the removal of cross or interfering branches in the center of the tree, until bearing begins. Trees of pre-bearing age often appear to be too thick, but the first crops will spread the tops. Pruning dwarfs a tree in proportion to the severity of the cuts and delays the time when bearing will begin. The heading back of a branch dwarfs its total growth, but stimulates the growth of side branches. The removal of a side branch thins the top and is utilized to open the branching to let in light.

A GOOD START NEEDS A GOOD FINISH

A young orchard started with careful planning and attention provides the foundation for successful production of fruit, but care must continue thruout its life. Information on the details of management of bearing orchards may be obtained in other publications of the Extension Division and bulletins of the Kentucky Agricultural Experiment Station.

U

A

P
tion o
Agric
of Ma