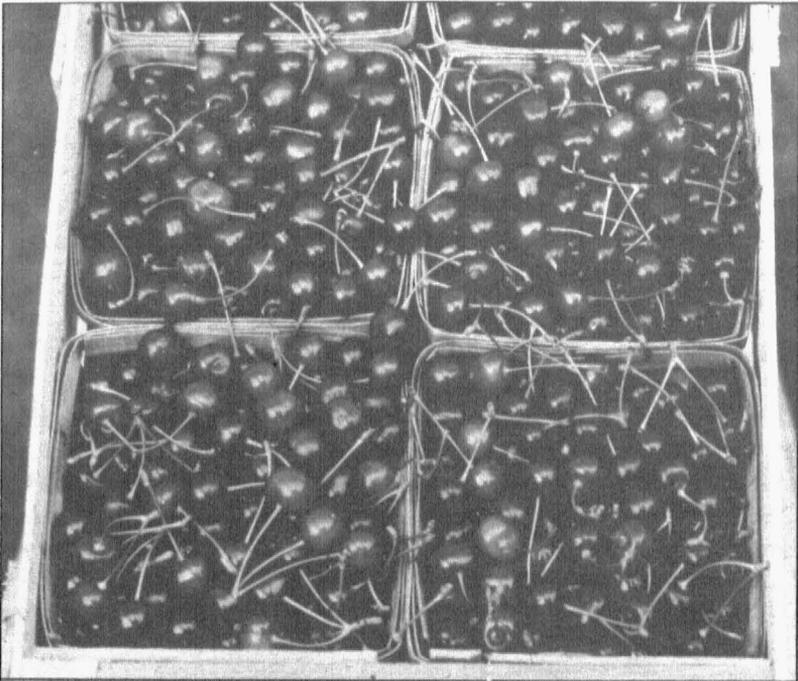


Cherry and Plum Culture in Missouri

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Montmorency cherries ready for the market.

Both the cherry and the plum come into bearing in three to five years, are regular and abundant croppers, and are comparatively easy to grow. Their fruits are among the most popular grown for family and local consumption, and are also important in supplying the de-

mands of the commercial fresh fruit markets. Quantities are also needed for both canning and freezer-locker processing. In some districts of the state there is a strong demand for extensive plantings of these fruits to fill the requirements of commercial concerns.

Soils and Sites for Cherries

In general, cherries of all kinds do better on the light sandy or gravelly loam soils than on the heavy soil types. This is more true with sweet than sour cherries. Some of the most profitable sweet ~~cherry orchards~~ are found on soils that might well be classed as sands.

Sour cherries, however, are grown successfully on a great variety of soils. In home fruit plantings they may be found thriving in soils ranging from stiff clay to almost pure sand.

This is not suggesting, however, that commercial plantings be placed on impoverished or poorly drained soil types. On the contrary, the opposite is recommended. If the extensive planting can be located on deep, fertile, well drained loams such a procedure will go far toward insuring heavy yields, low production costs and a profit instead of a deficit at the close of the season's operations.

The site selected should afford good air drainage. To obtain this, it may not be necessary to make the planting on the highest or steepest lands. Frequently somewhat lower ground unobstructed by timber or hills may furnish ideal air drainage. This may be particularly true of broad open valleys.

Soils and Sites for Plums

Like the cherry, the chief requirement for the best results with plums is the selection of fertile, deep, well drained loam soils. Some varieties will withstand more soil water than others. Plum stocks are often selected because of their tolerance of fairly wet soils. The *Domestica* types can usually be grown successfully on rich clay loams. The other groups of plums vary considerably as to their ability to thrive in soils inclined to be slightly wet. All varieties generally produce more and live longer on the light rather than the clay loams. The sites suggested for cherries apply equally well to plum plantings.

Buy Good Trees

It is false economy to plant inferior or low grade fruit trees. The best which can be secured are the most profitable. Clean, vigorous, healthy stock withstands transplanting better and develops into more profitable fruit plants than stunted, less growthy trees. The early life of the trees is very important. If neglected for a single year during this period they may be injured seriously or ruined.

Root Stocks for Cherries

Cherries are propagated on two kinds of root stocks. These are known as the Mazzard and the Mahaleb and are grown from seed. Mazzard is the name given to a wild or semi-wild type of sweet cherry native of central and southern Europe. The fruit of the Mazzard is small, black, astringent, and bitter. The trees reach great size and may live to be very old.

Sour, sweet, and Duke types of cherries are propagated on both kinds of stocks. Nurserymen generally prefer the Mahaleb stock especially for the sour varieties because it is easier to bud successfully and to grow a salable tree than on Mazzard stock. It is also true that the Mahaleb root is hardier than Mazzard and is less likely to be injured by winter cold. This is an important factor in cherry culture especially in central and north Missouri.

The evidence seems to indicate that on heavy soils Mazzard stocks give the better results; while on typically gravelly orchard soils Mahaleb stocks are preferable.

Pollination Requirement

The pollen of fruit trees generally is of a sticky or waxy nature and is not spread widely by air currents. Insects, therefore, are largely responsible for carrying the pollen from blossom to blossom. In the spring at blossoming time the common honeybee is chiefly responsible for cross-pollination. Good orchardists plan to have at least one strong colony of bees placed on each acre of bearing orchard during the blooming period.

In most years, both cherries and plums may be benefited by cross-pollination. Two varieties planted together in strips of four rows each or three varieties planted alternately in strips of two rows may help to produce regular cropping. Three varieties consisting of two rows each should benefit most in securing a good set of fruit.

Cherries.—All the commercial varieties of sour cherries are considered self-fertile in Missouri. In years when cold rainy weather prevails at blooming time, the set of sour varieties generally may be greatly benefited by facilities for cross-pollination.

Most varieties of hybrid or Duke cherries especially May Duke, Royal Duke and Late Duke, are self-sterile due to their hybrid nature. They should, therefore, be interplanted with the chief sour varieties. These are Montmorency, Early Richmond, and English Morrello.

The popular varieties of sweet cherries are self-sterile. For example, such varieties as Bing, Lambert, and Napoleon are inter-sterile with each other. Strains of Black Tartarian, Yellow Spanish,

and Black Republican generally yield satisfactory results as pollinizers for the different sweet cherry varieties.

Plums.—Since plum varieties may prove highly self-sterile they may not produce fruit when planted alone. It should also be remembered that the earliest bloomers are the Japanese sorts which are followed by the American varieties and these by the European kinds. The blooming time of the Japanese-American hybrids falls between the blooming periods of the parents with considerable overlapping. It is obvious, therefore, that varieties of each group should be planted in adjoining spaces if possible.

Kinds or Types of Cherries

The cultivated varieties are divided into two main groups or types. First, the sweet cherries are usually large, tall-growing trees, pyramidal in form, blooming earlier than most fruit trees, and susceptible to winter injury. Second, the sour cherries are usually low-growing trees, and sometimes assume a bush-like form. The trees are hardier and are much more fruitful than the sweet cherries. Varieties of these two species, and hybrids between them, are grown throughout Missouri.

The Sour Cherry.—The sour cherry may be grown successfully in every county in Missouri. It will thrive in many different soil types and is able to withstand heat, cold, and extreme dryness to a great degree. The trees are generally more resistant to the attacks of insects and fungi than other stone fruits. It is the easiest of the stone fruits to grow. Cropping is as regular as that of the apple. The trees are nearly immune to San Jose scale attacks and usually require only two to four sprays during the spring and early summer for the protection of fruit and foliage against insects and diseases.

Cherries respond to good culture. It would be folly as a rule to plant trees without preparing to practice proper cultivation, fertilization, pruning and spraying. On fertile, well drained soil with good care, trees should be expected to fruit regularly and profitably after about four or five years. There is usually a strong local demand for cherries.

Dyehouse.—The chief advantage of the Dyehouse is its earliness. It ripens its crop about a week earlier than the Early Richmond. The fruit is somewhat smaller than that of the Early Richmond and the trees are not quite so productive. This variety may be worthy of a place in the home orchard where a variety earlier than Richmond is desired.

Richmond (Early Richmond).—The Early Richmond is considered the leading sour cherry of its season. The fruit is medium in size,

mediocre in quality and ranks fair to good in attractiveness. The fruit is not in so great demand for canning and pie making as Montmorency.

Montmorency.—This variety takes first rank as the leading sour cherry grown in the state. Its fruit is in demand on the chief markets of the country for both commercial and home uses. Like the Richmond, it is well adapted to a great diversity of soil types, and this makes the variety suitable for wide planting. The fruit stands handling well in harvesting, shipping and on the markets. The canned product is attractive. The many good qualities of this variety recommend it as the best in its season. It is widely known as the best pie cherry.

English Morello.—This is the standard late cherry. The fruit is attractive in appearance, stands harvesting and shipping well, is resistant to brown rot and hangs on the trees after ripening. It is distinctly a canning, preserving, and cooking fruit. As it is so astringent, it is not suitable for eating out of the hand.

The Duke Cherry.—Duke cherries are hybrids or crosses between the sweet and sour cherries. Consequently, Duke cherries have some of the characteristics of both the sweet and sour varieties. They are generally as hardy as the peach and bear fruit as often. Since they occupy an intermediate place between sweet and sour sorts, they are worth while for both home and commercial plantings. In time of ripening the chief varieties are May Duke, Royal Duke, and Late Duke. Royal Duke is generally preferred, although, the blossoming time of Late Duke is somewhat later and the variety is valuable for the northern sections of the state.

The Sweet Cherry.—The sweet cherry is very exacting in soil requirements, lacks hardiness to both heat and cold and is susceptible to the attacks of insects and fungi. The trees bloom early and the developing fruit buds are subjected to injury by late spring freezes and frosts. In spite of these drawbacks, sweet cherries are grown for home and local market uses and may be expected to fruit about as often as peaches. Sweet cherries are worthy of trials especially in the southern and southeastern districts of Missouri.

Seneca of the Black Tartarian type is rated as the best sweet cherry for Missouri. Other sorts grown more or less widely throughout the state are Gold, Wood, Tartarian, Napoleon, Lambert, Bing, Winsor, and Yellow Spanish.

The Plum

The plum varieties have a great range of flavors, aromas, and colors, as well as in forms and sizes. Named and cultivated kinds are

widely distributed. In general, the markets demand large-fruited varieties that stand harvesting and handling well, but in home orchards a wide selection may be made.

It is very essential that a properly planned and thoroughly executed spraying program be followed in the culture of plums. The chief insect enemy of the fruit is the curculio, and the most destructive diseases are *Bacterium pruni* and brown rot. Thorough and timely spraying, however, supplemented by good culture, will usually control these pests.

Native and Japanese Hybrid Plums. *Native Plums.*—Most of the native plums are inferior to the domestica, damson, and Japanese varieties. In fact they may be considered of commercial importance in localities where only native plums are hardy and suitable for culture. Hardiness to cold and resistance to heat and freedom from diseases and insects are the chief advantages of many varieties of our native plums. The Wild Goose plum is an old, well known, hardy, productive variety and the only native American plum planted extensively. Other popular American varieties are Excelsior, Miner and Weaver.

Japanese Hybrid Plums.—These constitute a large group of varieties which generally bloom before most of the European sorts. Consequently, these are usually much more susceptible to frost injury than the better European varieties. In flesh texture and quality, the Japanese Hybrid plums are much like the American plums. They are not rated highly for either dessert or culinary purposes particularly when compared with the superior European varieties. A few of the leading varieties are Underwood, Omaha, Red Wing, Hanska, and Gold. Other hybrids such as Munson, Waneta and Superior are found of value in some districts.

The European or Domestica Plums.—The European plums are the oldest and best known. They also have the widest range in flavor, size, color and aroma. Moreover, their adaptation including hardiness and period of blooming make the groups the most sought *in areas where they can be grown successfully*. A few of the varieties that seem promising for planting *in central and southern Missouri* are Stanley, Grand Duke, Gueii, Italian Prune, German Prune, and Shropshire Damson. Still other sorts that might be used for home requirements and in trial plantings for commercial purposes are President, Yellow Egg, Moore's Arctic, Arch Duke, Pacific, Bradshaw, French Prune, Damson, Silver Prune, and Green Gage.

Fruit Station Varieties.—On the grounds of the Missouri State Fruit Experiment Station at Mountain Grove, 125 different varieties

of plums of the three groups, European, Japanese and American, and their hybrids have been studied carefully for several years. Susceptibility to disease, quality of fruit, tree growth, hardiness of fruit buds to winter cold, and productiveness were given special attention.

The varieties recommended for planting *apply particularly to the Ozark region*. They are listed in order of ripening and the following is quoted from Bulletin 31, October 1942, of the above station:

First Choice		Second Choice	
Munson	Hybrid	Hanska	Hybrid
Red June	Japanese	Gueii	European
Underwood	Hybrid	Moore's Arctic	European
Gold	Hybrid	Burbank	Japanese
Maynard	Hybrid	Yellow Egg	European
Ember	Hybrid	French Prune	European
Stanley	European	Albion	European
President	European	Pond	European
		Monarch	European

Planting at Proper Time

Cherries.—In former years, cherries and other stone fruits were usually planted in the spring. Cherries were believed to be the most difficult of the orchard fruits to transplant successfully. Often from one-third to two-thirds of the trees died when set in the spring.

For Missouri conditions, experiments have shown that late fall or early winter is the best season for setting both sour and sweet cherry trees. Late fall planting of sour cherry trees, at the Missouri Experiment Station, has uniformly resulted in a good stand. Those set in the fall have usually transplanted as successfully as apples or other fruits.

Plums.—The Japanese varieties and other slightly tender species of the plum are subject to winter injury in Missouri and are more safely set in the spring. American and European plums, however, benefit from late fall and early winter planting about as much as apples and pears.

Soil and Water Conservation

Cherry and plum trees, while young, may be grown successfully under a somewhat reduced program of cultivation and, when the bearing period is reached, the trees may be kept in good production under a permanent sod mulch through a system of supplementary fertilization. Producers usually find it advantageous to reduce cultivation as much as they can while still keeping up satisfactory growth and production.

Contour Tillage.—Erosion can be partially controlled through contour planting and tillage, the construction of dams, use of cover crop rotations, and strip cropping. The furrows made on the contour

by tillage store rainfall and prevent much washing. The tree row is usually maintained as a low ridge and if made on the contour may conserve both soil and moisture. The implements used in preparing, planting or cultivating, provide small channels and ridges in the soil which hold the rainfall for a short time, allowing more of it to be absorbed.

Only when it is necessary to destroy deep-rooted weeds or grass is deep cultivation more effective than shallow cultivation. Moreover, there is nothing gained by cultivating more than needed to destroy weeds and keep the surface soil porous and loose enough to retain and absorb rain water.

Terracing.—Orchard lands are now terraced effectively against soil erosion and the loss of water through run-off. The practice is most needed on sloping land where erosion is a serious problem. The work is generally most satisfactory if done properly before the trees are planted. Moreover, planting on the terrace ridge is usually considered advantageous. Spacing the terraces about the distance desired for the trees should give good results in most cases. On more level land, if the terraces are spaced two tree rows apart they may be even more desirable, all factors considered.

The establishment of terraces is not difficult, yet the work should be done properly. Where help is needed, this can usually be obtained through the county agent, the College of Agriculture, or some orchardist familiar with terracing practices.

Preparing the Soil

Well-drained, typical fruit soils may be prepared for orchard setting by deep plowing and thorough harrowing or disking as for potatoes, corn, or wheat. Thoroughly prepared, friable, and loose soil in good working conditions grows much better trees during the first few years than unplowed or poorly cultivated land.

Where the orchard location is too hilly and steep to permit cultivation on account of the danger of serious soil erosion, the natural growth of weeds and grass should not be plowed up. It would also be well to consider the planting of trees on the contour plan. This may permit the cultivation of a strip of land including the tree row at least 6 to 8 feet wide. If such strip cultivation is continued for a few years after the trees are planted and supplemented with sufficient hoeing to destroy the weeds and grass within a few feet of the tree trunks, it should help materially in growing good trees.

Planting Operations

Distance of Planting.—The distance of setting varies with soils, varieties, pruning practices, habits of growth, and climatic conditions.

Space between trees therefore may range from 20 to 24 feet for plums, 24 to 30 feet for sour cherries, and 28 to 32 feet for sweet cherries. Experimental evidence has proven that even wider planting distances might be more satisfactory.

The Square System.—This method of laying off the ground for planting is generally used because it is easy and efficient. A base line for the first row of trees is commonly established on one side of the field, about 20 to 30 feet from the fence or road. Stakes several feet in length should be driven into the ground at each end. The distance between the trees is then measured off and a small stake driven down to mark the place where each tree should be set.

Planting on the contour will require a different system from that given above. Cultivation and orchard operations may be confined to one direction, in the space between the contour tree rows or terraces.

Determining Number of Trees Needed.—The number of trees required to plant an acre may be determined by multiplying the distance they stand apart and dividing the figure into the number of square feet in an acre—43,560. For example, with cherry trees planted 25 feet by 25 feet, multiply 25 by 25. This amounts to 625 square feet. Then, 43,560 square feet divided by 625 square feet gives a quotient of approximately 70—the number of trees required to plant an acre when spaced 25 feet apart each way.

Making the Holes.—Making the holes for planting is a simple matter if the land is well prepared. They should be large enough to receive the roots without bending them from their normal position and deep enough to let the trees stand about two inches deeper after planting than they stood in the nursery row. The roots should be kept in their normal position when placed in the tree hole. The soil is compacted about them by shaking the tree with one hand while the earth is being sifted from the spade or shovel with the other. In this way the dirt falls lightly among the roots instead of bending them down and leaving air pockets.

Compacting the Soil.—Layer by layer, as the soil is shaken into the tree hole, it should be packed firmly by tramping from time to time. Much of the mortality of fruit trees is due to failure to compact the soil in planting. It is impossible to pack the soil properly if the hole is entirely filled before tamping. The last two or three shovelfuls are not tamped but allowed to lie loose to keep the surface soil from baking.

Watering.—Where water is available it may aid much in preventing injury through root drying. After the tree hole is one-half to two-thirds full of tamped soil, it may be filled with water and the soil

filling discontinued for a few hours or until the water has been absorbed. In filling-in the soil after watering, tamping is not needed.

Planting Trees in Sod

Where trees are set in sod as in a lawn, or on steep slopes where cultivation is impractical, or where replanted between established trees in an uncultivated orchard, the newly set plants make much better growth if the soil is spaded to a depth of 10 to 12 inches to kill back the competing roots and the surrounding grass to a distance of 4 to 6 feet. It is difficult to make replants live in bearing orchards unless good care is given for at least 2 or 3 years after planting.

From three to five cultivations may be required during the growing season. For large acreages, cultivation may be made easier and less expensive through the use of an implement of such a type as will facilitate the cultivation or stirring of the soil near the trees. Some supplementary hoeing may be needed to keep the area near the young trees free from grass and weeds.

Fertilizing Plums and Cherries

Manure.—All factors considered, no other nitrogen-carrying fertilizer is believed to be better than manure. Manure not only acts as a fertilizer to supply fruit trees with available nitrogen but it improves the tilth of the soil. Also through the humus supply, the water-holding capacity is improved, and erosion and injury from drought are reduced. If sufficient manure is not available and even where it is plentiful, supplementary applications of commercial nitrogen fertilizers are helpful in promoting growth.

Commercial Nitrogen.—The chief substitutes for manure are nitrate of soda, sulphate of ammonia, calcium cyanamid, and ammonium nitrate. These commercial products contain much larger percentages of nitrogen than are found in manure. They are also far less bulky, and easier to transport and handle. Sodium nitrate contains 15 or 16 per cent nitrogen, depending upon methods of preparation, while ammonium sulphate contains about 20 per cent nitrogen, cyanamid 21 per cent, and ammonium nitrate 32 per cent. From these percentages, the grower finds that only about three-fourths as much sulphate of ammonia and cyanamid or one-half as much ammonium nitrate are needed as nitrate of soda for the same amount of nitrogen. Spring applications of chemical fertilizers are much more effective in increasing growth than manure applied at the same time. This is because most chemical fertilizers are more readily and quickly available to the tree roots.

Amount of Fertilizer to Use.—The amount to use per tree depends

upon the size and age of the trees and the cultural practices used. For sod orchards, about one-half pound for each year of age, is customary while in cultivated orchards only about half that amount is needed.

Young fruit trees even when planted on only moderately fertile soil, may be maintained in good vigor without using nitrogen fertilizers by proper cultivation of the soil and the application of manure or the growing and plowing under of leguminous green manure crops. If the land is kept in sod with ring or strip cultivation, then the trees should be fertilized at the rate of about 8 ounces of a 20-30 per cent nitrogen fertilizer per year of age of trees till they are 4 or 5 years old. At this age cherry and plum trees may be producing crops. For good growth and fruiting, applications of nitrogen fertilizers at the rate of 3 to 5 pounds per tree should be continued in most orchards.

Care of Young Orchard

Soil Management.—Regardless of soil types, the particular fruit section, or the kind of fruit grown, good orchard practices are necessary for a permanent soil management program. These consist of the maintenance of an adequate supply of organic matter, the presence of nitrogen in sufficient quantities, and the control of run-off water to check erosion and conserve the moisture supply.

The organic matter of the soil acts as a storehouse for moisture and nitrogenous compounds. With its gradual depletion, the nitrogen disappears and growth is reduced. Constant tillage tends to reduce or "burn out" the humus supply. The cultural practices, therefore, that make nitrogen most rapidly available, at the same time most rapidly deplete the total supply. To maintain the soil organic matter, manures or cover crops must be worked into the soil from time to time.

Young cherry and plum trees when cultivated may grow twice as fast as similar trees in sod without cultivation. Moreover, the yield of bearing trees, under cultivation, is often double that of comparable trees growing in sod with no cultivation.

Trashy Cultivation.—This method of culture is also known as stubble-mulch cultivation. It consists of cutting and chopping into the soils the stubble of oats, wheat, clover, beans, grasses, etc., left on the ground after reaping. Such materials as straw, hay and manure may be spread as a mulch and partially worked into the soil with disk or cultivator after applying a nitrogen fertilizer.

Stubble-mulch or trashy cultivation leaves the surface rough and littered with the stubble or mulch partly covered with soil. The trash and rough soil surface tend to hold and absorb rainwater even when received in fairly large amounts on moderately steep slopes.

Use of Cover Crops

Clean cultivation with cover crops usually means the planting of some crop in the orchard, following early spring and summer tillage. This crop, when plowed under the following spring, will add organic matter to the land. Thus both nitrogen and humus may be added, and by keeping the land covered during the fall and winter the soil moisture is conserved and erosion largely prevented. In the young orchard this system is quite important as the soil organic matter should be built up while the trees are young.

Overwintering Legumes.—Leguminous cover crops that overwinter usually include winter vetch, crimson clover, red clover, mammoth clover, and sweet clover. Of these, hairy vetch is considered the best winter cover, particularly in the young orchard. It is always preferred for localities subject to cold winters.

With legumes which have the ability to take free nitrogen from the air and fix it through organisms in the root nodules, the total nitrogen supply in some soils may be actually increased.

Overwintering Non-Legumes.—Overwintering non-leguminous crops commonly used in orchards are rye, wheat, and winter oats. Like legumes, these have many advantages such as holding the snow, preventing erosion, conserving moisture when plowed under, and increasing the soil aeration and organic matter. They lack, however, the important ability to store nitrogen and thus increase the supply.

Some Cover Crops Killed by Frost.—Some crops killed by frost in autumn and early winter are also valuable for cover or green manure. Legumes most suited for this purpose are cowpeas and soybeans. Non-legumes are rape (Dwarf Essex), turnips, millet, and weeds allowed to grow in late summer and fall.

Intercropping the Orchard

In planting intercrops, a certain portion of land should always be reserved for the trees. This should be a strip not less than 6 to 8 feet wide along each row and should be widened with each year's tree growth to allow sufficient room for unobstructed root extension. The space reserved for the trees should be given thorough and timely cultivation at the same time the intercrop is tended.

Why and How to Prune

If the young trees are properly pruned at planting time they do not usually require severe pruning during the first two or three years of growth. The so-called corrective pruning during the first few years in the orchard is done largely to thin out interfering or competing branches, and since such cutting need not be severe it does not delay

bearing materially or reduce the size of the trees. Severe or heavy pruning, however, does delay the time of bearing.

Pruning is necessary to correct the shape or form of the tree and thereby to develop strong branches for carrying a heavy load of good colored fruit. Beyond this, however, severe cutting should be avoided. Light cutting each year keeps the branches properly spaced and in balance, but even this should be reduced to a minimum as the trees come into bearing.

Pruning Sour Cherry Trees

The sour cherry is pruned to both the open head and modified leader. Either system may give satisfactory results if carried out properly. The object should be to train and grow spreading tree tops, sufficiently open to allow sunlight to enter. In fact, the tree tops should be kept open enough to admit sunlight to all parts of the interior; otherwise the fruiting branches and spurs die out toward the center and fruit production is confined to the outer portions of the trees.

Pruning Young Trees.—One-year-old trees, which are usually straight whips, require little or no pruning. However, since sour cherry trees do not start growth readily from lateral buds, under Missouri conditions, heading back should be avoided. If two-year-old trees are planted all but three or four of the strongest and best distributed branches are removed close to the main stem. Those left are the permanent ones and should be well distributed around and up and down the trunk with as much as 5 or more inches between them if possible. The lowest main branch may be left at a height of 12 to 16 inches from the ground.

In training trees to the modified leader type, they are grown for the first few years as typical leaders. To produce this type of head, the main stem or the highest branch located near the center is allowed to grow a little faster than any of the lateral side branches. The modified leader is thus formed by adding a length of about 12 to 18 inches each year depending on growth, to the main stem. When the trees have reached sufficient height the leader or main stem is removed, if necessary, by cutting to a side branch of about the same size as the branch removed.

After the first three to five years, the trees may be treated as open center trees. Consequently the term "delayed open center" is frequently used in this connection. A comparatively large number of scaffold limbs are developed but the trees are not so tall as to prevent thorough spraying or economical harvesting and pruning.

Splitting at the crotch is practically eliminated and all the advantages claimed for the open center or vase form may be claimed.

Some young trees from the beginning lend themselves best in training and pruning to the open center system. Where this is very evident, this type of head may be the one to develop.

Pruning Bearing Trees.—After the trees come into bearing, care should be taken to keep the tops and sides thinned sufficiently to allow the fruit spurs to develop properly and be productive. The tendency of sour cherry trees is to form a canopy of twigs and branches so thick that little sunlight penetrates to the interior. Without thinning and opening up the tops, much of the fruiting wood toward the center dies from a lack of food materials manufactured by the leaves in sunlight. In general, the pruning of bearing sour cherry trees should be light and of a corrective nature. It may well consist of the removal of dead and weak wood, and thinning of thick clusters of branches.

Pruning the Sweet Cherry

As in the case of sour cherries, the sweet cherry may be pruned to either the open head or the modified leader type. It is generally easier to prune to the modified leader type than the sour cherry. Some modification of the central leader is required as many varieties tend to grow rangy with strong upright branches. The trees usually attain somewhat larger size than sour cherries, but at planting time are pruned and trained like the sour cherry.

When the trees come into profitable bearing it is not necessary to thin out or cut back much to admit sunlight, because the largest percentage of the crop is borne laterally on spurs. As trees grow older, however, they become less productive and vigorous. To stimulate the growth of new branches and new fruit spurs then and for general invigoration, somewhat heavier pruning may be done. This should consist of thinning out the tops and sides and cutting back the upper limbs to outward growing branches of about the same size.

Pruning the Plum

Usually young plum trees produce fruit buds on shoots which gradually give way, as the trees grow older and less vigorous, to the development of fruit buds on spurs. The Japanese plum however, is more like the peach in that it also produces fruit buds laterally on one-year-old wood. This is true to a greater extent on Japanese than on other kinds of plums, though all have a tendency to bear considerable fruit on spurs.

In plum culture, it is better to prune too little than to prune too much. Though apple trees may recover from severe cutting, plum trees may never recover. Trees should be pruned when young so that

well-arranged scaffold branches may be developed as in the case of the cherry trees. Bad crotches should be prevented and symmetrical tops encouraged.

European varieties are usually trained to the modified central leader type while the Japanese sorts follow the open center system. The usual methods of training, pruning, and shaping the young trees should be practiced to develop branches able to carry heavy loads of fruit without breaking.

After bearing age is reached, pruning should become much like that for sweet cherries. Japanese plums are usually pruned a little heavier than other plums. This seems necessary to produce better-shaped trees, prevent breakage of branches, and to encourage the profitable production of fruiting wood. The heavier cutting consists of thinning out slender weak branches and cutting back strong upright growths to produce more spreading trees. This may be especially helpful with the Burbank variety.

Cutting Back Damaged or Weak Trees

Young fruit trees which are injured or fail to make a satisfactory growth during the first and second year after planting may be cut back to stumps from 4 to 6 inches high. Sprouts should arise from the remaining portion of the stem and continue growth in a satisfactory way. One good sprout starting above the graft or bud union should be allowed to grow to take the place of the top or part removed. The best season for cutting back is early in the spring just as growth is starting or shortly before.

In comparison to normal or untreated trees, no material difference has been noted in the age of coming into bearing between untreated trees, trees cut back at planting time, and after one to two years' growth in the orchard. Trees cut back after 3 or 4 years' growth in the orchard, however, may be delayed in coming into bearing as much as two or more years.

The main or scaffold branches in cut-back trees start much nearer the ground. In most instances well placed branches push out at heights from 14 to 18 inches above ground and spread out at a much wider angle than branches from trees not cut back. The branches are better placed up and down the main stem of the tree trunk enabling the pruner to select without difficulty the branches desired for a well-shaped and well-balanced head.

Preventing Damage to Fruit by Birds

The injury to the fruit of cherry and plum trees by birds at or near the harvesting period may range from slight or noticeable dam-

age to the destruction of the entire crop. Small plantings usually suffer worst but the loss from commercial acreages may be great enough to make the project unprofitable.

At present no one has found or developed a practical and economical method which alone will prevent bird damage to the ripening fruit. In order to save the crop, in some instances, a number of control measures may be needed. Some of these are listed as follows:

Scarecrows.—These may consist of wooden frames and old clothing made to look like men. For a time such scarecrows may work. Sometimes, however, certain kinds of birds soon determine the difference and continue their ravages.

Growing Mulberry Trees for Bird Food.—For some comparatively small plantings, a few good fruiting mulberry trees may supply an abundance of fresh fruit of which the birds are very fond for periods of from 3 to 5 weeks. Inasmuch as the mulberry may begin to ripen its fruit at the fruit picking time of cherry and plum trees, the birds may concentrate their feeding on the mulberries or at least vary their diet and divide their attack.

Electric Contrivances.—Through an electric explosion occurring at short intervals of time and sounding much like the discharge of a rifle, birds have been driven away for a time. As in the case of other methods, the birds may after a day or two refuse to be fooled by the explosive noise.

Use of Shot Guns.—Growers have driven away the so-called cherry bird, which feeds in large flocks, by firing guns at the flocks in the orchard or vineyard at intervals during the day.

Mechanical Methods.—Strings stretched by means of stakes so as to enclose areas of trees and plantings may prove effective especially against crows and jay birds.

Glittering and shining pieces of tin and glass when hung from the branches of trees flutter in the breeze and cast rays of light which may frighten birds for periods long enough to be of value.

Use of Furs.—Old furs of many kinds when hung in the tree branches may drive the birds away and enable producers to pick the fruit before it is injured or consumed by the birds.

Dogs and Cats.—Producers with small plantings report that dogs and cats when properly trained help in preventing injury to the fruit.

Spraying

Complete information dealing with sprays and spraying practices for both home and commercial growers of cherries and plums may be obtained upon request to University of Missouri, College of Agriculture, Columbia, Missouri.