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Growing Pears in Ohio



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Growing Pears in Ohio

By

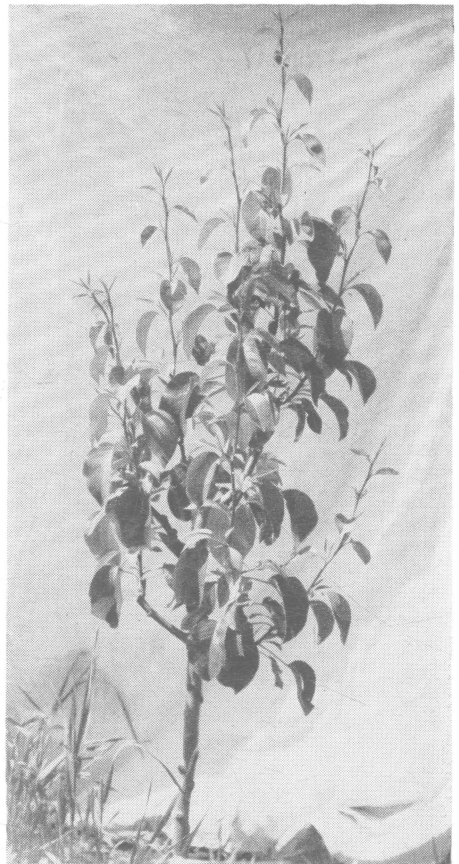
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Outlook for Pear Production

Pear production in Ohio has decreased steadily during the past 25 years to the point where production of this fruit amounts to only a small percentage of the pears consumed in the state. This decrease has been largely, if not solely, due to fireblight, a bacterial disease for which there has been no satisfactory control.

Now, researchers have found that damage may be kept at a minimum by certain horticultural practices such as the use of the Old Home blight resistant stock, limited use of nitrogen fertilizer and cutting out blighted portions of the tree as they appear in the summer period. More recently, the use of antibiotic sprays has proven a further assist in the control of fireblight disease.

Here are some of the more pertinent facts to consider in establishing and growing pears in Ohio.



Old Home stock budded to Bartlett variety. Note the excellent growth of shoots from buds inserted previous summer.

Site and Soil Requirements

A frost-free site is as important with pears as it is with any other fruit. Pears bloom relatively early in the spring as compared to apples, and damage from spring frosts can be very severe. Areas noted for high humidity and high temperatures early in the summer are not well adapted to pear culture, because fireblight is usually more severe under such conditions. A favorable site for pears is an area, higher than the surrounding area, from which cold air can

drain on cold nights in the spring and where foliage will dry quickly following dews or rains.

Pears will succeed on heavier soils than apples and are, perhaps, more tolerant of poorer soil drainage. On the other hand, it should not be assumed that pears are well adapted to heavy, poorly drained soils. Like most other fruit crops, pears do best on a deep, well-drained, fertile soil.



Bosc variety trees in full bloom at the Ohio Agricultural Experiment Station at Wooster, Ohio.

Varieties

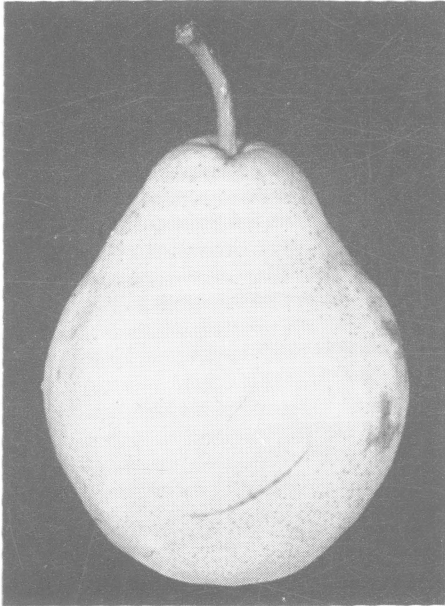
Pear production in Ohio has become limited to a few varieties, with Bartlett having no competitor either in quality or consumer acceptance. Therefore, Bartlett should form the bulk of the planting with other varieties selected for extending the season and, more importantly, for cross-pollination purposes.

The following descriptions of varieties may be helpful in selection of varieties:

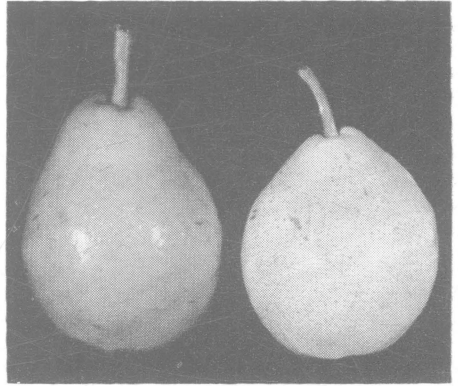
Other varieties of lesser value and use are listed in Ohio Agricultural Experiment Station Circular 21.

Bartlett

This is the best known and most popular variety for home and commercial planting in Ohio. Consumer demand warrants the favored position of



Bartlett



Bartlett (Russet and Striped strains)

this variety despite its susceptibility to blight. Trees should be established on an Old Home framework.

The fruits are large, attractive and of excellent quality for eating fresh and for canning. They may be harvested even somewhat prematurely without the hazard of core breakdown which is a disadvantage of certain other varieties. The fruits will keep a reasonable length of time in storage at 32°F.

The variety is productive under Ohio conditions, but it requires thorough cross-pollination. For this purpose Duchess D'Angouleme, Beurre D'Anjou, Beierschmitt, Ewart or Beurre Bosc may be utilized. *May 1, September 2, 124 days.

A russet strain of Bartlett, which is harvested a week later than the parent variety, has been obtained. An attractive fine-grained russet overlays its surface, and the fruit develops very good quality. This strain may have some commercial value as a novelty and to extend the Bartlett season. *May 1, September 8, 131 days.

Beierschmitt

This variety is one of the best of those newly introduced on trial at Wooster. Originating in Iowa, it seems to be more hardy than Bartlett although it ripens about the same time.

The fruits are only reasonably attractive, medium in size, tender, juicy, sweet and well-flavored. In addition, the variety appears more blight resistant than Bartlett for which it might be used in a limited way as a pollinizer.

The fact that it is harvested at the same time as Bartlett limits its value in Ohio. However it is recommended for limited commercial trial in Ohio to supplement Bartlett. *May 2, August 30, 121 days.

Beurre Bosc (Bosc)

This variety has been under special test at Wooster during the last 20 years and has done surprisingly well. Top-

worked upon the blight-resistant Old Home framework, the trees have been productive, and few have been removed because of blight.

The fruits have been large, attractive and of excellent quality both for fresh use and for canning. The fruits keep well in storage at 30° to 32°F. and even after some months, when properly ripened, are still of excellent quality.

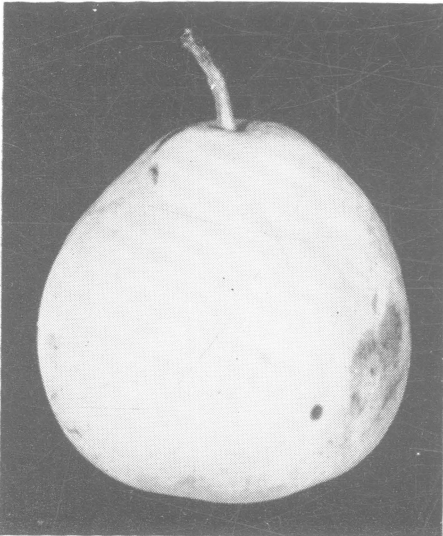
Studies on time of picking indicate that the pressure test must be used to determine the best time to harvest the fruits to prevent core breakdown.

Although the trees are relatively slow in coming into bearing, they are reasonably productive thereafter. If properly protected against fireblight, the variety is recommended along with Bartlett for limited commercial planting in Ohio where a late pear, already enjoying considerable consumer acceptance, is desired. *May 3, September 29, 150 days.

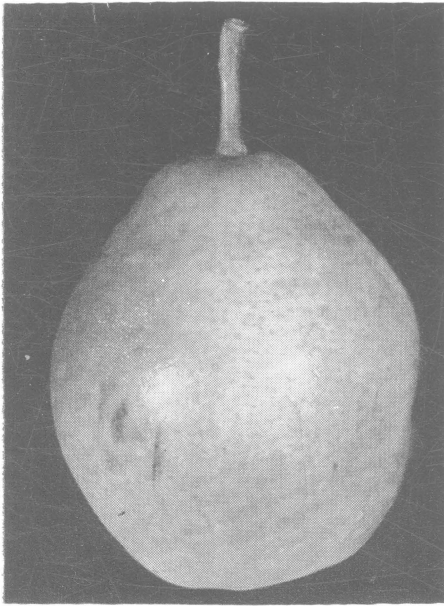
Clapp Favorite

The fruits of this variety are large and attractive, resembling Bartlett in dessert quality. It precedes Bartlett by about 10 days, but its intense susceptibility to blight and the rapidity with which the fruits mature limit its usefulness in Ohio. Care must be taken to harvest the fruits while still quite firm, as delayed harvest will result in interior softening, even though the outer portion appears overly firm.

Only those who have local retail trade, successful experience in controlling fireblight and will utilize Old Home as the framework for the tree should plant this variety. *May 3, August 23, 113 days.



Beierschmitt



Clapp Favorite

Tyson

This variety is the earliest ripening summer pear found in Ohio. Harvested about mid-August at Wooster, the fruits keep only a brief period. They are small in size, dull yellow in color, sweet and well-flavored. The tree is relatively blight resistant. Tyson is valuable chiefly as an early variety for home use.
*April 30, August 19, 112 days.

Max-Red Bartlett

This is a bud mutation of Bartlett in shape and size. Skin color is usually a cranberry red over entire fruit. Flavor is good to very good and its flesh is similar to Bartlett.

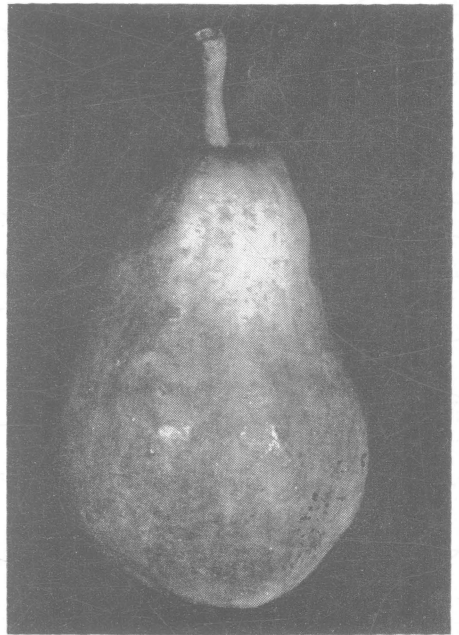
Max-Red Bartlett is harvested at Wooster during the first week of September, at least Bartlett season. Keeping quality is similar to Bartlett. It is worthy of trial to supplement Bartlett.

Seckel

This well-known sweet pear possesses excellent dessert quality, and the tree is remarkably free from blight. The small size of the fruit, however, has a tendency to limit its use, thus restricting the commercial value. Although the trees may be slow in coming into bearing, their eventual productivity is a rewarding feature. Worden Seckel seems preferable to Seckel as are several of the newly introduced Seckel seedlings such as Clyde recently introduced by the New York State Experiment station.

Winter Nelis

Winter Nelis, an old variety of very good dessert quality and possibly the latest one to ripen, has never attained commercial prominence in the East.



Max-Red Bartlett

The fruits are of medium size and only fairly attractive. The flesh is tender, sweet and juicy. The trees have a reputation for reasonable freedom from blight.

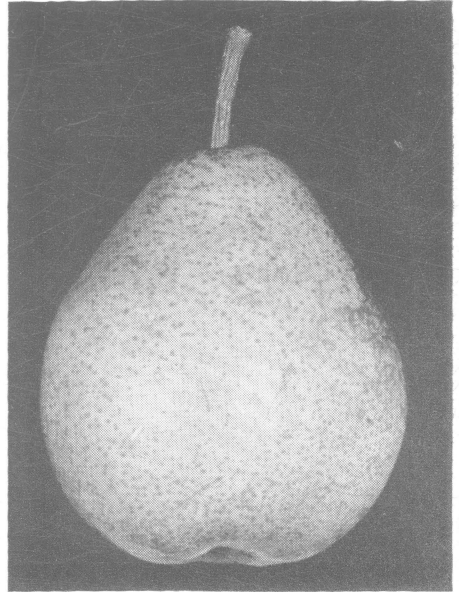
Where a very late good variety is desired for home use, this variety has no competitor. A russet strain is also known but it has no particular advantage over the ordinary variety. *May 5, October 18, 168 days.

Ewart

This variety, which originated near Akron, Ohio, has been one of the most satisfactory of the newer varieties at Wooster. The fruits are medium or slightly larger in size, greenish yellow to yellow and occasionally mottled with russet, a fact which limits its attractiveness. The flesh is soft, tender, juicy and of a very good quality when eaten fresh.

The tree is probably more blight resistant than Bartlett and seems to bear very well. Its season of harvest is two weeks later than Bartlett, for which it

might be planted in a limited way commercially as a pollinizer. *May 2, September 15, 137 days.



Ewart

* Dates refer to average bloom date, harvest date, and average number of days from bloom to harvest at Wooster, Ohio.

Dwarf Pear Trees

Small sized or dwarf pear trees are usually obtained by using the Angiers quince as a rootstock. Rooted cuttings of the Angiers quince are used for this purpose.

Dwarf pear trees are satisfactory for backyard plantings and have a limited

place in commercial orchards, providing the blight resistant Old Home variety is used as an interstock. In this case Old Home is budded on the Angiers quince at about ground level, and the top is budded to the desired variety as suggested elsewhere in this bulletin.

Planning and Planting

The use of Old Home fireblight resistant stock and the cutting out of blight infected parts of the tree as they appear are suggested to insure a long-lived orchard.

The use of Old Home stock does not give any increased resistance to fireblight of the standard variety which is budded to the Old Home. It does insure the framework of the tree and permits reworking to the desired variety in case fireblight occurs.



Bartlett variety on quince. This shows the size of dwarf tree at mature age.

Old Home stock is available from a few nurseries. In most cases the grower will have to do his own budding of the desired variety to the Old Home stock, unless he can find a nursery willing to propagate standard varieties to the Old Home stock in advance. The young tree is planted just as any other tree might be; after the development of lateral branches sufficiently thick in diameter, the desired variety is budded on these laterals a foot or so from the trunk. Budding may begin the first season after the one-year whip is planted but usually is completed the second year, when 8 to 12 laterals are topworked.

As a result of this procedure, if fireblight becomes established, it will progress only to the point of union between the standard variety and the Old Home framework. The stub may be re-worked again; but this is not usually necessary if enough of the branches remain unaffected. At least, the disease will not affect and girdle the main trunk of the tree.

Pear trees are usually planted 25 feet apart in rows 25 feet apart. Provision must be made for cross-pollination by planting a variety not more than 50 feet from another variety that is considered a pollinizer.

Usually Bartlett will form the bulk of a planting, and only the minimum of a pollinating variety will be desired. Planting every fourth tree row as a pollinating variety should provide opportunity for effective pollination. Thus the main variety will in no case

be more than 2 tree rows from a pollinizing variety.

Practically any combination of varieties, with the exception that Seckel is not a satisfactory pollinizer for Bartlett and vice versa, will provide cross-pollination.

Pears may be planted in the fall or spring of the year when the soil can be prepared for planting; however, fall planting is to be preferred.

Bartlett variety injured by fireblight, showing point at which main trunk was removed and new growth development that appears not to be infected to date.



Soil Management and Fertilizers

The soil management system and fertilizer practice with pears must be based on the control of fireblight. As more satisfactory control measures are devised, the soil management system and fertilizer practice may be revised. Otherwise, until control measures are proven, any practice that encourages the development of overly succulent wood should be avoided.

Generally speaking, a bluegrass sod without mulch is to be preferred. Limit

fertilization to intermittent applications of a nitrogen-carrying fertilizer. The amount of fertilizer per tree will depend on the growth of the trees. A suggested application for bearing orchards is 200 pounds per acre of a 10-10-10 analysis broadcast over the entire orchard floor every 2 or 3 years. Variance from this suggestion should be made to avoid production of succulent growth or to keep the trees from exhibiting only minor nitrogen deficiency symptoms.

Training and Pruning

Pear trees are usually trained to the modified leader system of pruning.

When 2-year-old Old Home stock is planted, the usual procedure is to select 8 to 12 well located laterals and cut them off at a point 3 to 4 inches from the trunk. The leader is headed at a point 36 to 48 inches long or to mature wood. This procedure should result in the development of growth from buds on the laterals and the leader for insertion of buds the following year. If one-year-old Old Home stock is planted, the one-year-old whip is headed at a

point 36 to 48 inches long, and the previously mentioned method is followed the second year.

If the Old Home stock is not used, one-year-old whips are headed from 36 to 48 inches long, and the second year, 3 to 5 scaffold branches are selected to form the framework of the tree. The scaffolds selected should be as far apart as practical on the trunk and occupy a different sector on the tree. The laterals are then headed to unequal lengths.

Follow very light, corrective pruning until the tree comes into bearing. Pre-

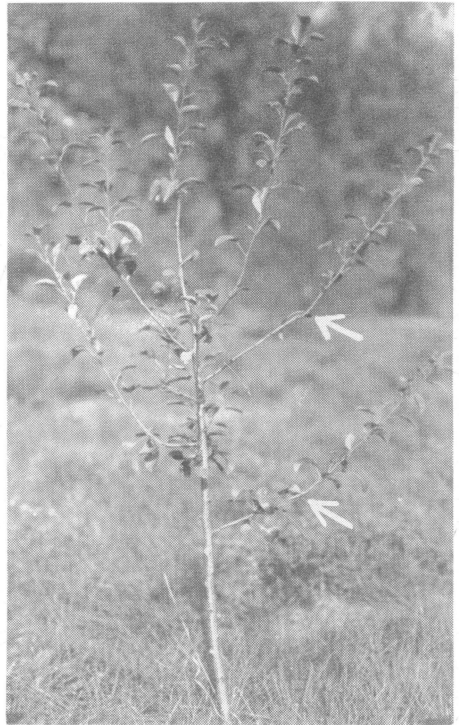
Keiffer variety being top-worked to Bartlett. Picture shows excellent growth from buds on scions inserted in the spring. Note, polyethylene wrap around scion on left.



vicious to bearing, pear trees may appear too dense, resulting from upright growing branches; however, the tree will be naturally spread by crops of fruit. It is, therefore, unwise and unnecessary to remove branches to thin out the tree.

Very light pruning is also practiced with bearing trees. Since heavy pruning results in invigoration of the pear tree and the development of succulent growth that is susceptible to fireblight, keep pruning to a minimum.

Beginning shortly after bloom and continuing until mid-summer, trees should be inspected every 2 or 3 days for shoots and spurs infected with fireblight. Prompt removal of infected parts 3 or 4 inches below the obvious infection and disinfection of wounds and pruning tools is recommended. Use of a dye colored mixture of cyanide of mercury and bichloride of mercury in glycerine (1 to 500 each in commercial glycerine). Blight cankers and blighted terminals that were not removed in the summer should be removed in the dormant pruning.



Old Home variety budded to Bartlett shown in the summer of the season following the insertion of buds. Note points at which buds were inserted on scaffold branches.

Harvesting and Marketing

Pears must be harvested before softening occurs, while fruit is still firm on the tree. It is obviously difficult to give an index of maturity that is infallible but rather the grower will have to combine experience with several indices to harvest pears at the proper time.

As the fruit develops and ripens to maturity, there is an increase in size, increase in sugar content and a gradual change in fruit color from green to yellowish green. The ease with which the stem can be separated from the spur by an upward twist is also used as an index of maturity. The number of

days between full bloom and maturity as given under description of varieties is fairly consistent within a region, and this will be helpful in determining picking date if date of bloom is recorded.

Fruit pressure testers are available from various companies and are extremely useful in determining maturity.

Pears ripen rather rapidly after harvest at normal temperatures, and, unless fruit is to be sold immediately, pears should be in refrigerated storage at once. A storage temperature of 30° to 31°F. is suggested for longest storage

life, and a temperature of even 36°F. will still hold Bartlett and similar shorter-lived varieties for several weeks. Ripening of pears at temperatures of from 60° to 70°F. is necessary for satisfactory quality before selling to the trade.

The Bosc variety, which has a place in pear production in Ohio, should be held in storage at 30° to 31°F. then ripened at temperatures of 60° to 70°F. When Bosc pears are held in storage for a period of time at 35°F. or lower they may not ripen at all, but will shrivel and remain hard.

Insect and Disease Control

The pest control program for pears is revised as better materials and methods become available. At present the accompanying pear spray schedule is suggested. Further details regarding materials and spray procedures may be found in the current spraying program bulletin available from Ohio County Agricultural agents.

Fireblight control with streptomycin sprays was excellent in the seasons 1953 and 1954 at the Ohio Agricultural Experiment station. Experimental results from the use of streptomycin at Wooster in 1955 were less favorable than in the previous seasons. However, other states, notably Indiana, Michigan and Pennsylvania reported excellent results in 1955.

In view of the good results in 1953 and 1954, and the reported good results

in 1955, recommendations for the use of streptomycin sprays for fireblight control are being continued. Recommendations may be changed as research work continues.

The additional cost of the spray program must be considered by the individual grower and balanced against the probability of loss from fireblight. In some orchards fireblight has been a serious threat while in others fireblight has never been seriously damaging.

Streptomycin formulations for orchards may be purchased under various trade names such as Agrimycin, Agristrep and Phytomycin. Directions printed on the container will indicate the quantity needed to give 100 p.p.m. dosage in a given quantity of water.

Pear Spray Program

Name and Time of Spray	Materials to Use in 100 Gallons of Water	To Control	Further Suggestions
DORMANT — Before buds open, or when beginning to swell	Oil Emulsion Carrying 3% Oil or Miscible Oil at Manufacturer's recommendation	Scale Pear psylla* Red mite	This spray is necessary only in case one or more of these insects is serious. The addition of dinitro in the green tip state, or the sub-situation of DN 289 in the dormant is effective against psylla.
CLUSTER BUD—When blossom buds are separated in the cluster before bloom	Microfine Dry Wettable Sulfur 6 lbs. (95% plus) or Ferbam—1½ lb. or Captan—1½ lb.	Scab Leaf Spot	This spray may be omitted if disease is not prevalent.
EARLY BLOOM—When 20% of blossoms are open	Streptomycin 100 parts per million	Fireblight	
FULL BLOOM — When 100% of blossoms are open	Streptomycin 100 parts per million	Fireblight	
AFTER BLOOM — 5 Days after full bloom spray	Streptomycin 100 parts per million	Fireblight	
PETAL FALL — When last of petals are falling	Same as Cluster Bud spray plus Parathion 1½ lb.	Codling moth Curculio Plant bug Scab Leaf Spot	Spray blossom clusters thoroughly.
FIRST COVER — 3 to 4 Weeks after petal fall	Same as Cluster Bud spray plus Parathion 1½ lb.	Codling moth Curculio Scab Pear slug	Cover small fruits and foliage thoroughly.
SECOND COVER — 2 Weeks after first cover	Lead Arsenate 3 lbs.	Codling moth Slugs	Can be omitted where codling moth are not serious
THIRD COVER — 9 to 10 Weeks after petal fall	Same as second cover. Caution—Do not apply Lead Arsenate within 40 days of harvest	Codling moth	Parathion 1½ lb. or EPN 1 lb. may be used on varieties ripening within 40 days.

* For summer control of pear psylla, use Parathion 1 pound, Malathion 2 pounds, or EPN ½ pound to 100 gallons of water when nymphs become active or blackened foliage is first noticed.