



Sites for Planting Pear Trees

in the Willamette Valley

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Establishing a pear orchard represents a long-time investment, and consideration should be given to all of the factors involved, especially a desirable site. The chief things to consider are soil and topography; without a favorable combination of these two factors pear production can be hazardous. Fortunately there are many more favorable sites available than will ever be needed, and it is unfortunate that many orchards have been planted on "marginal" or "sub-marginal" sites. Skill and management cannot off-set the disadvantages of low yields, high costs of production, poor color, low quality, and actual loss of trees--a part of the capital investment--due to the selection of a poor site.

The economic advantages of the location may under some circumstances outweigh those secured from a superior site and soil. Such items as a roadside or home market, and nearness to storage facilities, canneries, a source of water for spraying or irrigation, and sources of orchard supplies would fall in this category. However, it is becoming less and less advisable to plant on any but the most desirable sites and soils, because of the increasing importance of high average yields per acre or per tree for best returns from pear orchards.

Fruit trees including pears thrive on a wide range of soil types and the limits are not as exacting as with some other crops. Nevertheless, our experience indicates that soil alone may cause from 50 to 100% difference in yield in a given crop. A very productive soil for farm crops may not be suitable for orchards, and a less productive soil in good physical condition may support excellent pear trees when properly fertilized and managed.

Soils

It is especially important that pears be planted on deep, well-drained soils. This is felt by many to be the most important single factor in selecting a pear orchard site. Pear trees will thrive on practically all orchard soils with enough moisture and good drainage. Where the heavy soils are used we find troubles with root rots and similar diseases. Where irrigation is not supplied, it is particularly important that the soil be deep with a good capacity to hold moisture. In the Willamette Valley summers are dry, and if the soil is not able to hold large amounts of available moisture the trees will suffer as they grow older unless irrigation is practiced. With deep, retentive soils fairly good production can be obtained without irrigation.

The better soils in the Willamette Valley will produce good pear orchards with high production. A soil of 4 feet in depth is felt to be adequate pear ground if it is well drained and irrigated. Various soils will hold varying amounts of soil moisture, hence shallow soils hold much less water and limit the size of pear crops in dry years. Soils with good water retention but not of the water-logged type are desirable for growing pears. Even on the best of soils there are times when wet spots will appear in certain areas. For the best pear production, these wet areas should be drained before planting.

In Oregon the variety or kind of fruit does not enter into the rooting of a given tree as much as the type of soil. The best soils permit rooting to depths of 8 to 10 feet. The depth to which roots can penetrate is the actual depth of the soil so far as tree growth is concerned. No matter how much farther it is easy to dig or bore, deeper soil is of no value to the tree. It has also been learned that the extent and depth of the root system of a tree has a very important bearing on its productiveness and length of life. Soapstone layers and other restrictive layers near the surface soil are very detrimental to the production of pears and other fruits.

Other factors which influence root distribution are improper aeration of the soil, high water tables, faulty drainage, and the properties of the soil profile associated with inadequate aeration and the presence of a clay pan. Many pear trees have been planted on sites where winter and spring soil moisture exceeds that considered ideal for best tree growth. Even though pears are somewhat better adapted to heavier soils than other orchard trees, adequate depth of soil, good drainage, and aeration are especially important.

Since fruit trees belong to a group of plants that require large amounts of oxygen in the soil air, it can be seen that partial water-logging or extreme compactness of the soil could interfere with their functioning. Under these conditions the limiting factor in orchard production is drainage. If ground water persists within a foot or two of the surface during the critical blossoming and fruit setting periods, many roots will die and the tree will suffer accordingly. Well-drained soils contain almost no ground or free water in the surface 4 feet except shortly after a rain. Imperfectly drained soils will have ground water at about the 2-foot level for a month or more in May and June while the poorly drained soils will be water-logged within a foot of the surface. Studies have shown a high percent of root rot problems on trees planted on wet soils in the Medford area.

Slopes

Slope does not appear to make a great deal of difference in pear production and trees can be planted on hillsides. Usually though, deeper soils are located on the east and north slopes in the Willamette Valley and these slopes would be more desirable. A south slope may be considerably drier than the others and soils would need to be a great deal deeper to hold enough moisture. However, there is the possible advantage of earlier ripening on southern slopes. Slopes on hillsides often afford better drainage for pears than other soils, but they may have disadvantages as far as lack of irrigation, distance from market, and other things of this nature are concerned. From wind standpoint, usually eastern slopes are best to prevent fruit damage.

Good air drainage is essential in pear production, especially in the spring when frosts may occur. This means that slopes and rolling land would, for the most part, be preferable in order to get away from frost pocket areas. The location of pear orchards with good air drainage and freedom from spring frosts is very important as pears are relatively early-blooming trees. If the rest period has been completely broken during the winter, pears will normally bloom several days before apples. Blossoms of pears are about as easily damaged by spring frosts as those of apples and peaches. Temperatures of 26 F. or lower will generally kill the open blossoms. Therefore, because of the early blooming season, spring frosts are hazardous to pears. Frosts occurring in the autumn in certain areas are of economic importance to pear growers. However, this is not usually the case in the Willamette Valley; frosts occurring in the spring are much more disastrous. The destruction of fruit blossoms by spring frosts, either locally or over large areas, may completely wipe out fruit crops if orchards are poorly located.