

## **New Cherry Training Systems Show Promise**

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Although the majority of sweet cherry orchards in the United States are still being trained to an open vase system, American growers are beginning to recognize and desire the advantages offered by other systems. Driven by the high cost of labor, scientists and growers in Western Europe have pioneered the research and development of several very interesting systems.

Increased productivity is of primary interest to the European cherry grower. Pickers are paid by the hour rather than the pound consequently the harvest process is slow. By growing smaller trees productivity can be increased significantly, especially in systems such as Spanish Bush where two-thirds of the crop can be harvested from the ground without ladders.

Throughout Germany and most of northern Europe bacterial canker is also a major concern. Both the Vogel and Zahn Spindle systems help to reduce the incidence of bacterial canker in orchards and therefore, may be of interest to New York growers who struggle with this disease.

### **Vogel Spindle**

Utilizing the natural growth habit of cherry trees, very few pruning cuts are required in the establishment years. This training system provides good light penetration and high early yields. In Germany, where the Vogel system was developed, dwarfing rootstocks, such as Gisela 5, help control tree height, a critical factor in any central leader system.

### **Establishment**



- Typical spacing 9 ft. x 15 ft.
- Planting: If possible plant a feathered tree. Tie down branches to horizontal. If planting whip, head at 30 in.
- Bud removal: As buds swell in early spring, leave top or terminal bud, remove next 5-6 buds.

### First Leaf



- Attach clothespins to trunk once new shoots reach 4 inches.
- Move clothespins to branch tip to keep shoot flat as it grows.
- To keep branches flat maintain moderate vigor by avoiding fertilizers until cropping.

### Second and Third Leaf



- Head leader if it has grown more than 30 in.
- At bud swell leave top or terminal bud; remove the next 5-6 buds.
- Clothespin the emerging branches as before.
- Encourage lateral branches throughout trunk length rather than distinct whorls.
- Laterals which are greater than  $\frac{1}{2}$  the diameter of the trunk should be removed or stubbed back.

### Maturity



- Branch renewal: Each year a percentage of bearing branches should be stubbed back to 8 inches or thinned to side laterals.
- Remove spurs on the underside of branches to reduce crop load and encourage fruit size.
- Maintain tree height: At maturity cut terminal leader back to a weak lateral after harvest.

The Vogel system was developed in a high rainfall area where bacterial canker can be a severe problem. The fact that few cuts are made reduces the likelihood of infection. European growers and scientists maintain that stub cuts also lessen the potential for this disease.

## Zahn Spindle

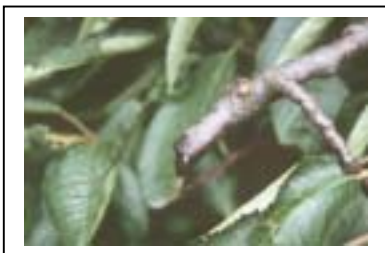
Contrasting with the Vogel Spindle is a second spindle system out of Germany, known as the Zahn Spindle. Developed for use with full size rootstock, tree size is controlled through pruning and competition in a high density planting. The Zahn Spindle was also developed to curtail the incidence of bacterial canker, which is often severe in the moist, humid climate of northern Germany.

### Establishment



- Typical in row planting distance for mazzard or Colt rootstock is 3 to 5 feet.
- If possible, feathered trees are planted.
- Head whips at 30-36 inches depending on vigor of stock. Weaker stock should be headed harder.
- Lateral branches are not bent. Upright and vigorous laterals are headed, leaving 5 or 6 buds. (If laterals grow larger than  $\frac{1}{2}$  trunk diameter then they are headed.)
- Flat branches that grow from these buds are selected; others are removed or cut back.

### Disease Control



- Stub pruning is purported to stop canker advance.



- It is believed that ripping out branches reduces bacterial canker incidence. Small branches should be ripped out rather than stubbed back whenever branch placement inhibits good light distribution.

### Second Leaf



- Central leader is never cut.
- If second year branch is too thick ( $> \frac{1}{2}$  trunk diameter) it should be cut back to 12 inches. Upright shoots are also cut back.

### Maturity



- Heavy pruning in treetop helps maintain pyramid shape.
- Thin strong branches to weak laterals to keep branches from growing into neighboring trees.
- Cut leader in half to control tree size when tree reaches maturity.

Although originally developed for use with Colt and mazzard, Gisela 5 and other dwarfing rootstocks are now commonly used. Most impressive, however, is the reduction of bacterial canker reported in Zahn orchards. This accomplishment is attributed to maintaining a proper trunk to branch size ratio and proper branch removal as described above.

## Spanish Bush

The Spanish Bush system was designed to provide high early yields on trees easily harvested from the ground. Although trees can be grown, with success, on full size rootstock, they are much easier to control and provide much earlier yields on dwarfing stock. In trials in Oregon, Gisela 6 has provided these yields with an easily manageable tree. Unlike the Vogel Spindle, this precocity is not provided so much by the nature of the system itself but rather from precocious rootstocks and dense plantings. Typically, in Spain, trees are planted six by 12 feet apart.

The Spanish Bush system is dissimilar from the Vogel system in many respects. Trees are pruned hard the first two years and early tree vigor is encouraged. In Spain, by the end of the second year the tree structure is formed and pruning and tree growth is discouraged to aid production.

### Establishment, First and Second Dormant



- Head whip 12 to 24 inches above the ground after bud break. Be sure 4 to 5 buds exist below the cut.
- Multiple branches will grow from these buds.
- First Dormant: Head all branches. Leave shoots 8 to 12 inches long.
- Second Dormant: Head all new shoots. Leave shoots 8 to 12 inches long.

Normally these heading cuts would be made in the growing season of the first or second year. However, due to high bacterial canker potential in New York, dormant season pruning may be advised.

### Third Leaf to Maturity

By the third year, tree structure is formed and vigorous growth should be discouraged so that the tree will begin to bear fruit. At this point, a shift is made away from heading cuts to thinning and branch renewal cuts. Thinning cuts should be used to maintain light penetration to the tree center.



- Obtain good light penetration through thinning cuts.



- Branch renewal: Cut back a percentage of the bearing branches each year to a four to eight-inch stub to renew the growth.



- After harvest, trees are topped and hedged to maintain a height of 8 feet.

The Spanish bush system produces a true pedestrian orchard. Two-thirds of the crop can be harvested from the ground, without ladders. With the small tree size the potential also remains to cover the orchard against rain damage. Where this system is grown in Spain the soils are very poor and a clonal mahaleb rootstock is used. On more vigorous soils in New York, Gisela 5 or 6 should be considered.