

## **Recent Trends in Peach Pruning**

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Our ongoing research shows that training peach trees in V-shaped growing systems has potential to increase yields and improve fruit color in Mid-Atlantic peach orchards, but some challenges remain. One challenge is that these trees are tall and require ladders or platforms for workers to access the tree tops for hand thinning, harvesting, etc. Another is the difficulty in renewing one-year-old fruiting branches (laterals) in the lower canopy.

The natural growth habit of peach trees, coupled with peach tree growth response in relation to sunlight, and the growth response in relation to renewal pruning all play a role in how successfully the canopy is managed with pruning and training. The growth habit of peach trees is defined as acrotonic; that is, the most vigorous shoot growth is out at the periphery of the canopy.

In addition to the inherent tendency to be strongly acrotonic, the buds, leaves and young shoots of peach trees are intolerant of shade. Any portion of the canopy which is in shade becomes unfruitful and dies within just one or two seasons.

Furthermore, renewal pruning is relatively unsuccessful in comparison to apples, because the secondary buds at the base of peach shoots tend to be weak and unlikely to grow into new shoots when a renewal cut is made. Regardless of training system or pruning practices, the productive zone of the peach tree canopy migrates up and out as a result of these three factors.

### Canopy Height Management and Scaffold Heading:

The best long-term solution to restricting fruit tree height is to plant the trees on size-controlling rootstocks. Size-controlling rootstocks for peach are under investigation, and may offer a future solution to growers' desire for a shorter tree canopy. We probably don't want the Malling 9 of peach trees. Since the best peaches are produced on moderately vigorous one-year laterals, a moderate level of vigor is desirable for assuring adequate fruit size and quality. A semi-dwarf peach rootstock could strike a balance between adequate vigor for lateral renewal, while containing maximum tree height without excess re-growth. To-date, the closest thing to a semi-dwarf rootstock that is well adapted for the Mid-Atlantic region is Bailey.

Bailey produces a productive tree with good survival, but the size of trees on Bailey is about 90% of seedling; closer to “semi-vigorous” than “semi-dwarf” (Schupp et al., 2012). A new peach trial is planned for PSU FREC in 2014 that will investigate the role of size-controlling rootstocks in high density peach production systems. The potential roles of training, pruning and hedging should also be investigated, as growers are shortening peach tree height, and are being advised to head fruiting laterals (van den Ende, 2013), or to hedge fruiting canopies, without the benefit of research into the outcomes from these practices.

Training peaches to create multiple scaffolds per tree does little to reduce tree stature. Our 2007 peach systems trial showed that increasing the number of scaffolds on a V canopy tree from 2 to 4 or 6 did not reduce canopy height after 5 years. Loring tree height was not shortened by pruning in this trial until after the fifth growing season. By that time tree height had reached 13.9 feet (hex- and quad-V) to 14.4 feet (perpendicular V).

Some peach growers have experimented with low-headed V systems; adopting the narrow V canopy shape, while still attempting to maintain a pedestrian canopy. The heading cut used to shorten the canopy often creates problems. This cut is made into the upper half of a vertically-angled scaffold in a strongly acrotonic tree on a vigorous rootstock. As with all heading cuts into vigorous, young limbs with an upright branch angle and favorable light environment, the severing of apical dominance stimulates the regrowth of several new vigorous upright branches. If allowed to remain, these new branches worsen shading. The result is a shorter tree with worse light distribution in the bottom of the tree than if it hadn't been pruned.

Another possible management strategy is to maintain the narrow canopy shape and shorter stature with a combination of dormant thinning cuts and summer pruning or summer shearing. Following scaffold heading, the expected vigorous regrowth may be prevented from shading by the use of summer pruning. Some growers are experimenting with hedging to reduce this regrowth. In both cases, selective thinning cuts will be required during the dormant season to remove undesirable secondary wood, and maintain the simple canopy structure.

#### Heading of Fruiting Laterals:

The acrotonic growth habit of peach is due in part to the strong influence of light on shoot growth, and in part because the secondary buds at the base of peach shoots tend to be weak and unlikely to grow into new shoots. While this problem is actually more acute in open vase trained trees, the loss of productive laterals in the lower section of V systems is very noticeable, since overall canopy height is not being managed with bench cuts. The bench cuts used to maintain short-statured trees are often severe, sometimes leading to loss of productivity and increasing the incidence of fungal canker infections, but such heavy cuts do stimulate the renewal of lateral shoots closer to the ground. While bench cutting slows the ascent of the canopy, it does not prevent it, and the severe bench cut pruning creates vigorous regrowth that shades the lower regions of the canopy and reduces peach orchard productivity and fruit quality. Summer pruning

becomes mandatory to maintain flowering and fruit color in vigorous open vase trees. Peach growers have lived with this problem so long that it is generally regarded as “just the way it is”. In the Mid-Atlantic, 350 bushels per acre is considered acceptable peach orchard yield, when in fact 600 bushels of high quality peaches per acre can and should be attained.

Heading the fruiting laterals during dormant pruning may present a way of stimulating shoot growth closer in to the scaffold, while simultaneously reducing thinning costs (van den Ende, 2013). The new shoots stimulated by these heading cuts can then be selectively pruned to select new laterals for the following season. One concern with heading fruiting laterals is that it removes a portion of the best flower buds, leaving less-desirable basal buds to produce more of the crop. These buds often have lower potential to set and to produce large fruits. Studies to evaluate the effects of scaffold heading height, dormant heading of lateral fruiting shoots, and summer shearing on perpendicular V peach tree productivity, light distribution, and lateral shoot renewal are underway.

#### Literature Cited:

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