

## **Trellising Options for Raspberries and Blackberries in Cold Climates**

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Several principles involving bramble plant growth and physiology must be understood before one can appreciate the benefits of trellising, and the various ways that brambles can be trellised.

- 1) The top half of a cane has the potential to produce more fruit than the lower half of a cane.
- 2) The amount of light intercepted by a bramble plant is somewhat proportional to its yield
- 3) Brambles can compensate somewhat for the loss of flowers and buds through pruning by increasing bud break and the size of remaining fruit
- 4) Primocanes can interfere with floricanes light interception and harvesting
- 5) Blackberry primocanes bend when they are young and succulent, whereas raspberry primocanes do not bend.
- 6) Erect blackberry canes exposed to a typical winter will experience damage to fruiting canes.

Knowing these principles, we can examine various approaches to trellising.

### 1. No trellis

This option is obviously less expensive to implement, but unsupported canes often bend over when they have a fruit load and are then difficult to harvest. If canes are topped to prevent bending over, a significant portion of the fruiting potential is lost.

### 2. I-trellis

This option holds canes erect and prevents loss from topping. But light interception is poor, and yields do not meet their full potential. Primocanes grow towards the light and can interfere with spraying and harvesting of the floricanes.

### 3. V-trellis

This system opens up the canopy by pulling fruiting canes to the outside of the V, and allows primocanes to grow in the middle of the V. Interference with picking is minimized and light interception and penetration are improved. Yields can be improved 30% by converting from and I to a V-trellis, although the trellis is more elaborate and expensive to install.

### 4. Modified V for a tunnel

Blackberries in a tunnel grow very vigorously; primocanes of some varieties can grow 20 feet in one season. Standard trellising does not work well in a tunnel as the canopy is too dense and canes are too tall. Vigor can be reduced without a major reduction in yield by horizontally training a limited number of primocanes (2 or 3) to the lower wire of a V-trellis. When the primocane reaches the adjacent plant, it is pinched to promote lateral bud break.

These buds are trained upright to one side of the V. Harvesting a one-sided V is much easier than a regularly trained plant (where densely arranged primocanes are shortened to approximately 6 feet). Primocanes are trained to the opposite side of the V in alternating years. This system does not work for raspberries as canes do not bend even when they are young.

#### 5. Rotatable cross-arm trellis

Primocanes are trained similarly to the previous description of the V-trellis. However, the accommodating trellis has a cross-arm that can rotate into a horizontal position so that canes can be laid against the ground at an appropriate time. The trellis arm with attached canes is laid on the ground prior to winter, and covered with a row cover to minimize winter injury. The trellis arms are raised after winter, and the buds emerge with significantly less injury. We have documented five-fold differences in yield in cv. Chester between canes laid on the ground and those held erect for winter.

Canes bent and trained along the lower wire twist about 90 degrees when the cross arm is laid in a horizontal position. This small amount of twisting does not damage the canes. However, a vertical cane forced into a prostrate position will snap. Therefore, it is important to train the canes horizontally from the time of their emergence in spring so they will twist and not break when laid horizontally.

Applying these principles to a good trellis design will allow growers to maximize their yield potential in raspberries and blackberries. Installing a trellis requires materials and labor, but the fact that nearly all raspberry and blackberry growers use them, attests to their efficacy.