



## Thompson Seedless

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### Pruning

Thompson Seedless is one of the few table grape varieties that requires cane-pruning. Cane pruning is necessary because the buds at the base of the cane are not sufficiently fruitful to produce a full crop. The most fruitful buds are those from the fifth through the twelfth position on the cane. Usually the canes are left about 15 buds long, sometimes longer if the distance from the head of the vine to the wire is so great that tying a shorter cane would be difficult. The number of canes to retain varies from four to six depending upon the history of fruitfulness in any particular vineyard. Occasionally more canes may be left with exceptionally low fruitfulness but eight canes per vine is near a maximum. Each vine pushes only a limited number of shoots, so leaving a lot of wood does not necessarily lead to more yield potential.

### Choosing Canes

More important than the number of canes is the quality of the canes. Thompson Seedless canes require a high light exposure to be fruitful. Their potential fruitfulness can be judged visually as follows:

1. Choose medium diameter, round, well-browned canes with nodes about 3-3½ inches apart, with plump buds. Avoid large flattened canes with long internodes, poor color and thin buds.

2. Choose canes that have been exposed to sunlight, that is, having developed on the outside of the vine. Avoid canes which have grown in the shade. The vigor of growth and the type of trellis also influences the fruitfulness. High vigor vines are apt to be less fruitful, partly because of shading and partly because of poor wood maturity. The trellis and the position of the head of the vines in relation to the trellis may also influence fruitfulness because of the effect on light exposure.

### Spurs

In addition to the usually 4-6 canes, spurs are left on the head of the vine in order to produce canes for next year's crop. There is no set number to leave, usually two to four are chosen. The important consideration is the location of the spurs. Choose those located on the head of the vine where it appears they would be of some benefit. It is not absolutely necessary to leave any spurs. Shoots will develop from latent buds on the head of the vine - these shoots can be left as canes. Also canes can be chosen from the base of last year's cane. A good pruner will choose the best appearing cane regardless of its origin so long as that choice does not destroy the form of the vine.

### Tying Canes

The canes are tied to a wire by twisting around the wire and tying with twine or a paper coated

wire, usually the latter. If possible, tie canes separately on the wires to separate the fruit. Where canes are tied depends upon the trellis. With a single crossarm, with four wires, tie canes on the two inside wires. If pruning with six canes, tie the additional two canes on the south wire (east-west rows) or the west wire (north-south rows). The additional canes could also be tied by doubling on the inside wires.

With a double crossarm trellis, the canes are always tied on the lower crossarm wires leaving the upper crossarm wires for foliar support.

### **Shoot Thinning**

Shoot thinning is not a standard practice on Thompsons. Shoots are seldom thinned on the canes since there is no advantage in doing so. There may be an advantage in shoots thinning on the head of the vines with vigorous vines to reduce shoot crowding and thus increase light exposure of the remaining shoots.

On medium or low vigor vines, shoot thinning is not necessary. Shoot thinning is done at a length of 10-20 inches, when they still break off easily. Shoots are retained which have the best potential for fruiting canes the next year with removal of those with poor position and those in excessive numbers in crowded areas. Usually four to 10 shoots might be removed. The goal is to reduce shoot crowding while retaining sufficient numbers for fruiting canes the following season.

### **Flower Cluster Thinning**

Flower cluster thinning is not often done with Thompsons because the vines do not usually produce an excessive number of clusters. There are exceptions. If cluster number is in excess of

36 per vine on medium to vigorous vines or in excess of 24 on weaker vines, then flower cluster thinning is an option. It is a fast and inexpensive way of cluster reduction. The most common practice followed is to thin to a set number of clusters per cane. Thus, if the vines were pruned to six canes and the desired number was 36 clusters per vine, then each cane would be thinned to six clusters; if four canes, then nine clusters would be left per cane. Vine cluster counts would usually not come out quite to a uniform number because all the canes might not have an excessive number. When the thinning is done, the worker first removes second (apical) clusters on each shoot with two clusters. Always retain the basal cluster because this is the larger of the two. Then reduce to the desired number by removing flower cluster from the weaker shoots, small clusters, and if this is not sufficient reduction, remove additional clusters to space out the fruit.

It is not wise to flower cluster thin to the exact number ultimately desired since each cluster will not be good. Leave an excess of at least five above the desired number.

### **Pre-Bloom Gibberellin**

Gibberellin is registered for a prebloom treatment, a "stretch" treatment for cluster elongation. According to label, the application is 8-16 grams per acre applied when the flower clusters are 3-5 inches long. Trials conducted by University of California personnel have not shown a benefit from this treatment. Although the growth of the clusters was accelerated temporarily, no benefit could be detected at harvest.

## **Bloom Gibberellin Treatment for Thinning**

Thompson Seedless set a fairly tight cluster. When the berries are enlarged by girdling, gibberellin treatment and thinning, cluster can become very compact. Gibberellin applied during bloom will decrease set, usually about 30 percent although the benefit varies from year to year. This loosening reduces the compactness of the cluster. The gibberellin spray has additional effects on berry shape and weight. The berries are elongated and enlarged by the treatment.

Label calls for application of 8 to 16 grams during bloom as one spray or as two sprays of equal amounts when the bloom period is extended, with the second spray made 3 to 7 days after the first.

Work done by University of California personnel has indicated effective thinning with sprays applied during the 30 to 80% bloom stage. This figure is estimated by observing clusters on both sides of the vine, noting the percentages of caps which have fallen or which have cracked at the base. If the clusters are to be berry thinned by removing all but the upper laterals, observe only that portion of the clusters in making estimates. The bloom stage is an overall average, some clusters may have completed bloom while others may not have begun. Bloom may be uniform or staggered; this usually depends upon the uniformity of bud break and the temperature during bloom. The period during 30 to 80% bloom may pass in as little as two days during hot weather or may last for several days during cooler weather. If the bloom period is extended, then growers may prefer to make a second application as provided for in the label. A grower must have the

capability of spraying his entire acreage during the short period of two days.

Application during the earlier stages of bloom does not result in as elongated a berry as spraying during the latter stages of bloom, thus if the capacity exists, the spraying may be done from the 50 to 80% stage. There is not much difference in response between 8 and 16 grams per acre. The thinning response is essentially the same, the higher rate may produce slightly larger berries.

Gallonage mentioned in the label call for 100 to 500 gallons per acre dilute or 30 to 80 gallons concentrate. Usually dilute gallonages used by growers varies from 175 to 250 gallons per acre or 30 to 50 gallons concentrate.

The measurement of the thinning response is determined experimentally by counting the numbers of berries per length of cluster branch (shoulder). The second shoulder from the base (top) of the cluster is chosen for measurement. The berries are pulled off and counted, then the length of the shoulder is measured from its origin at the main cluster stem (rachis) to the base of the most extended cap stem.

Effect of temp on set - It is generally believed that the set is looser if bloom occurs during hot weather than during cooler weather. Certainly the duration of bloom is shorter during hot weather.

## **Shelling**

Shelling is an abnormal abscission of flowers just previous to the beginning of bloom or in bloom. Its cause is not known nor are there any treatments to prevent or reduce it. Under the

worst conditions, some clusters will shed all their flowers. When this happens, the cluster stems die because there's nothing to keep them alive. Usually some clusters are lost completely while others set straggly clusters.

About 10 to 14 days after full bloom (70% bloom) about 3/4 of the ovaries fall off, a process called drop. When the drop has been completed, fruit set has been reached. The ovule has been pollinated, fertilized and is now a fleshy fruit called a berry. Usually, the berry diameter is 4-5 mm at this point although this diameter can vary depending on the time the drop occurs sometimes being slightly larger than 4-5 mm. Not all clusters reach this stage at the same time. From a commercial standpoint, the fruit set stage (also sometimes called the completion of shatter) has been reached when some 95% of the clusters have completed their drop.

The clusters may vary considerably in the number of berries that have set on each cluster, some being compact, some tight, some loose and some straggly. The most desirable are those loose to well-filled allowing sufficient room for each berry to develop.

## **Fruit Set Practices**

There are three practices used at fruit set to increase berry size. These are girdling, thinning and gibberellin sprays. The two practices requiring labor crews are girdling and thinning. Of the two, it is the most important to do the girdling first because the time of girdling has more influence on berry weight than time of thinning. Girdling is also much faster than thinning. Gibberellin sprays that must be

applied do not interfere with either the girdling or thinning.

## **Girdling**

The vines are girdled for two reasons; for an increase in berry weight and to strengthen the attachment of the berry to the cap stem. Girdling alone will increase berry weight about 30%. Girdling may be done on either the bases of the individual canes or on the trunk, the results being equivalent. Most growers trunk girdle because the operation is faster for most vineyards and because any fruit produced on the head of the vine is also subject to girdling. With cane girdling, there may be a few clusters produced behind the girdle that remain unaffected.

Start girdling as soon as the drop has occurred and complete as soon as possible, within a week preferably.

## **Thinning**

As soon as the crew has finished girdling, it should begin thinning. The fruit is always berry thinned and usually cluster thinned. Berry thinning means the removal of some berries from the cluster, an operation that can be done in any one of several ways depending upon the crop load and the grower's preference. With an adequate number of large shouldered clusters, the most common method is to clip the cluster leaving only the upper 4-6 shoulders. This is quick and simple. Depending upon the size of the shoulders, these clusters will weigh between one and two pounds. If there are 25 such clusters per vine, each weighing an average of 1-1/2 pounds and with 454 vines per acre, total production will be about 8-1/2 tons per acre. Of this, about 500-550 boxes per acre might be

packed, about six tons. This is about industry average.

If there are insufficient clusters per vine, then each cluster is berry thinned less so that it weighs more. With one method, the upper 4 shoulders are retained, then 2 branches are removed, 2 kept, 2 removed, etc. and the cluster tipped to a length of 6-7 inches. A slightly different method follows essentially the same method by tipping the cluster to 6-7 inches, then removing all the branches on one side of the cluster up to the fourth or fifth shoulder. For clusters without well developed shoulders, called carrot clusters, that must be kept because of low cluster counts, these are tipped to 6 inches and berry thinned on one side of the cluster if this seems necessary.

Growers always prefer clusters with large shoulders, not only because they are easy to thin and give good-sized clusters, but their quality is usually better.

### **Cluster Thinning**

Although Thompson raised for raisins or the winery usually have cluster numbers averaging between 35 to 40 per vine, cluster counts in table Thompson vineyards are usually lower. The reasons for this are not known. Probably the trellises used for table grapes leads to poorer light exposure of the canes and thus lower fruitfulness. The gibberellin sprays used for enlarging the fruit may also be involved in the lower fruitfulness but its influence has not been studied. Whatever the reasons, numbers of clusters in table grape vineyards are often lower than growers would desire.

If there are excessive numbers of clusters, then the clusters chosen for removal are small ones, those excessively straggly or compact and those on weak shoots. When these are eliminated and if there are still excessive clusters, then the clusters are simply spaced out. When thinning, clusters are straightened to hang freely. Another consideration is position. Those clusters exposed on top or south (or west) side of the vine will probably burn and should be removed.

### **Burn**

Thompson are susceptible to heat damage from fruit set until the berries begin to ripen (turn soft). Girdling increases the possibility of burn as does gibberellin. Natural Thompson (those not girdled nor spaced with gibberellin) usually do not burn unless in very weak vineyards or directly exposed to the sun. Table Thompson may burn even under the canopy with high temperatures. The greatest difficulty results in sudden temperature increases to which the vine cannot adjust.

To alleviate burn as much as possible, allow grass to grow in the middle with flood or furrow irrigated vineyards with the last cultivation no later than May 1 in the San Joaquin Valley. Irrigated after the bloom sprays have been applied but before fruit set so the girdling crews can enter the field and the spray rigs can run in the vineyard. Keep the vines well watered until ripening begins.