



## **TRAINING AND PRUNING GRAPES IN SOUTHERN NEVADA**

**Fred Wolf, Master Gardener**

**Wayne S Johnson, Former State Horticulture Specialist**

Homeowners grow grapes for a variety of reasons, some of which include fruit production, landscaping, erosion control, privacy screens and shade. Vines are often used to cover walls, fences, arbors and various types of trellises. Each situation may require unique training and pruning as compared to growing grapes for fruit production only. However, the basic rules of training and pruning apply in all cases.

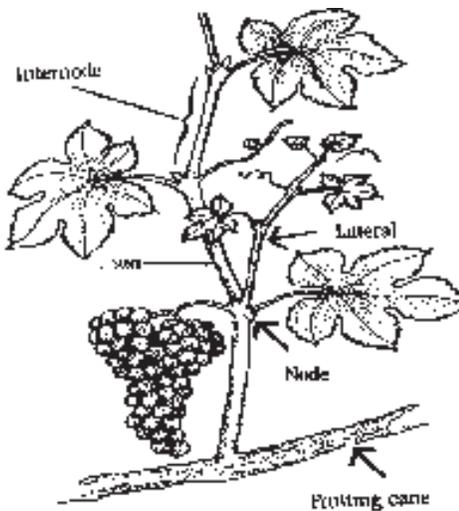


Figure 1. Parts of a Grape Stem.

### **GRAPEVINE GROWTH**

Understanding how grapes grow helps gardeners train and prune properly. A number of terms are used to describe the grape vine (Figure 1). **SHOOTS** are the new green growth consisting of stems, leaves, tendrils and flower and fruit clusters that develop from previously dormant **BUDS** located on **CANES**. Plants less than two years old are often entirely vegetative with no flower or fruit clusters. **CANES** are the matured tan colored stems of shoots after leaf fall. They contain the dormant buds from which the next seasons shoots emerge. As buds are developed almost exclusively on new wood, canes become unproductive the second year, but support the next generation of canes and buds. **SPURS** are canes pruned back to one to three buds. **BRANCHES/ARMS/CORDONS** are laterals from

the trunk consisting of wood two or more years old. **Fruiting canes** become branches in their second year. **NODES** are the thickened portion of the shoots/canes where the leaves and lateral buds are located.

### **PRUNING SYSTEMS**

The two systems of pruning are the cane and spur methods. In the spur system, canes are pruned to two or three buds in length to accommodate European grape varieties which fruit best from the buds near the base of each cane. The cane system is used for pruning American varieties which produce more from buds near the middle of their canes, consequently they are pruned to 6 to 12 buds each. The total number of buds reserved on each plant should be about the same for either system. The spur system may have up to 20 spur canes located along permanent branches (cordons), while the cane system commonly has only 4 to 6 canes. Often home gardeners use a combination of these pruning methods when maximum fruiting is not an overriding objective.

### **TRAINING SYSTEMS**

The two common training methods are the head and cordon systems. The head system develops fruiting canes and renewal spurs near the trunk on very short branches (arms). In the cordon system, the spurs develop on long branches (cordons) that extend four to five feet laterally along trellis wires.

## SOUTHERN NEVADA CONDITIONS

Although many varieties of grapes grow well in this area, gardeners can expect plant stress from heat, drought, wind and high light. Some varieties may grow normally but slower than others. Infrequently, late spring frosts kill tender buds and reduce yields. Seldom is the vine killed outright. Winter dieback may occur from desiccation when vines are young. If the trunk of younger plants is killed during winter, suckers will resprout from the roots in spring. These suckers are the same as the mother plant except when the plant is grafted on a root stock. Any sprouting from below a graft does not make a desirable replacement plant.

Depending upon the grape variety, site and climatic conditions, fast growing plants may develop a trunk with lateral canes during the second year. These canes can then produce shoots and some fruit during the third season. A year's setback may occur with winter kill. Maximum fruit production usually occurs after the fifth or sixth year. Where late springs frosts are common or expected, delay pruning until just before spring bud break. This timing facilitates selection of viable canes and maintains plant twiggy that helps protect buds from mild spring frosts

## TRAINING AND PRUNING

High light in southern Nevada along with drying winds and droughty soils may cause leaves and fruits to sunburn if not protected. It is recommended that vines be trained to a trellis without spreading arms. A fence works well. Training grapes along a wire suspended from a cross arm on a fence or trellis exposes the leaves and fruits to more light and drying winds. Tender leaves and fruits sunburn. Otherwise, the outer leaves shade and protect inner leaves and fruit from the direct sun. Interestingly, grape fruits do not require direct sunlight to ripen. Do not spread the canopy out or much of the fruit will be damaged under southern Nevada conditions.

Illustrations may show only half of the plant and are drawn without leaves to reflect the dormant stage. The following discussion encompasses three objectives of training and pruning: fruit production, landscape beautification and managing older untrained vines.

## TRAINING AND PRUNING FOR MAXIMUM FRUIT PRODUCTION FIRST GROWING

### SEASON

Let vines grow without pruning. The major objective is to build a strong root system.

#### FIRST DORMANT SEASON

Prune the first year's growth to a single stem with two buds. After the buds begin to grow, select the strongest and best located shoot to form the trunk, then remove all the other shoots (Figure 2).

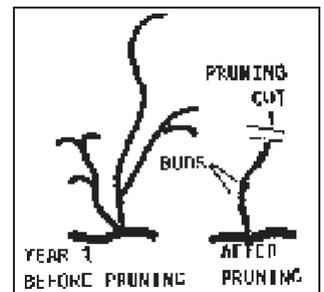


Figure 2. First Year Pruning.

#### SECOND GROWING SEASON

As the trunk shoot grows, remove all other shoots that may grow from the roots. The objective for this growing season is to promote growth of a strong trunk with lateral shoots left only at selected

locations. Allow two shoots to grow at each of the two trellis wire locations (Figure 3). All other shoots are pinched off as they appear in order to direct energy to the trunk and the chosen laterals. Trim the trunk shoot through a bud at the desired height, i.e. top of trellis, after it grows a foot to eighteen inches past the wire.

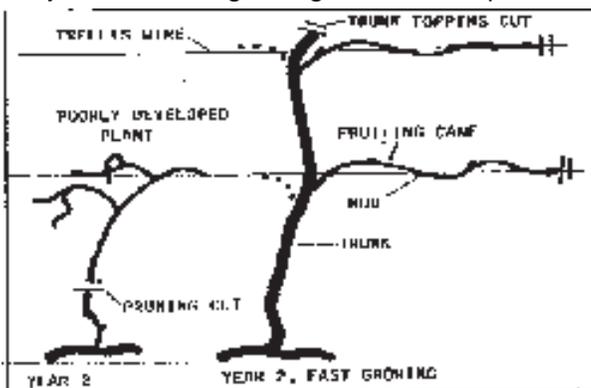


Figure 3. Select Laterals During Second Year.

#### SECOND DORMANT SEASON

Slower growing plants may not develop well. If the trunk and laterals have either died back in the winter or are poorly developed, prune the trunk back to two buds and start again. Although a year is lost, starting over develops a stronger vine and saves time in the long run. Prune fast growing grapes with a properly developed trunk and lateral canes to a total of 15 to 20 buds for the whole plant.

#### THIRD GROWING SEASON

Buds on canes that develop properly the second growing season will produce shoots with some fruit the third year. Summer pruning is limited to removing suckers and pinching off any new trunk shoots that are not part of the desired form. Do not prune any of the growth along the lateral canes. These shoots produce the foliage important for plant growth, flowering and fruiting.

### THIRD DORMANT SEASON CANE SYSTEM

Fast growing varieties are now properly developed and require routine annual pruning. Remove all of the previous seasons growth except a pair of canes growing from the arms on each side of the trunk at each trellis wire (head system) (Figure 4). During pruning:

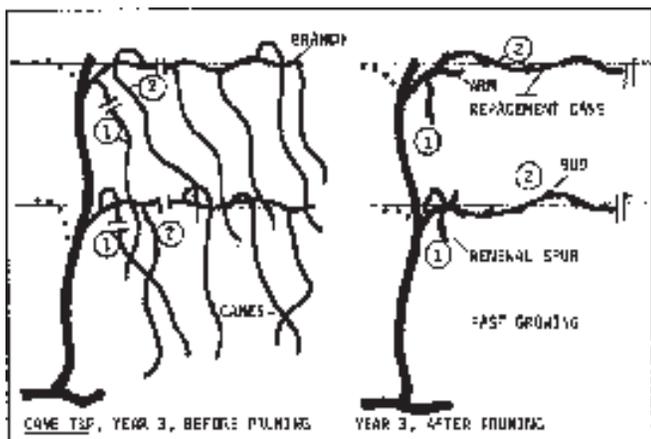


Figure 4. Third Year Dormant Season Pruning Cuts.

- (1) Select two strong canes located near the trunk on each branch. Remove the rest of the branches and their canes.
- (2) Prune one cane of each pair to leave at least six or eight buds and place each on the wire as a replacement fruiting cane for the upcoming season.
- (3) Prune the remaining cane to two buds as a renewal spur to grow replacement canes during the coming season.

Fruiting occurs near the plant's center when the renewal and replacement canes originate near the trunk. Replacement canes should be pruned to leave only 30 to 60 fruiting buds on the entire plant. Full producing vigorous plants may have up to 60 buds.

### THIRD DORMANT SEASON, SPUR SYSTEM

Spur pruning begins in the dormant season after the original lateral canes have had a growing season to complete shoot growth from their buds. Commercial growers often use a single trunk with one set of branches (cordons) some three to five feet above the ground. The cordon should extend half way to the next plant (cordon system) (Figure 5). The canes that grew from these permanent cordons are pruned to short spurs with two or three buds each.

These spurs produce the plant's foliage and fruit and also next years fruiting canes. It often takes two years to establish the cordons to their full length unless the plants are very vigorous. When developing the spur locations, rub off the buds where the cordon bends, near the trunk, as they produce vigorous growth that shades and weakens other shoots.

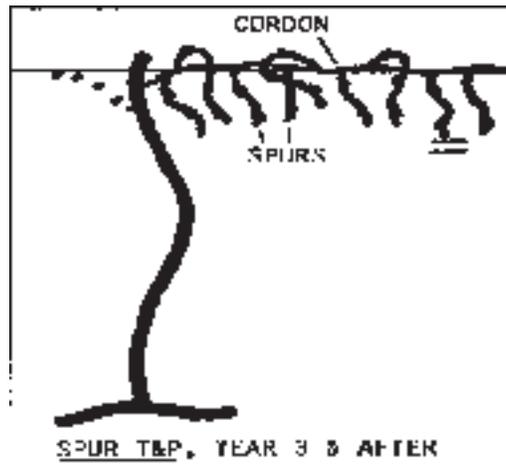


Figure 5. Spur Trained Grape.

### TRAINING AND PRUNING FOR LANDSCAPE PURPOSES

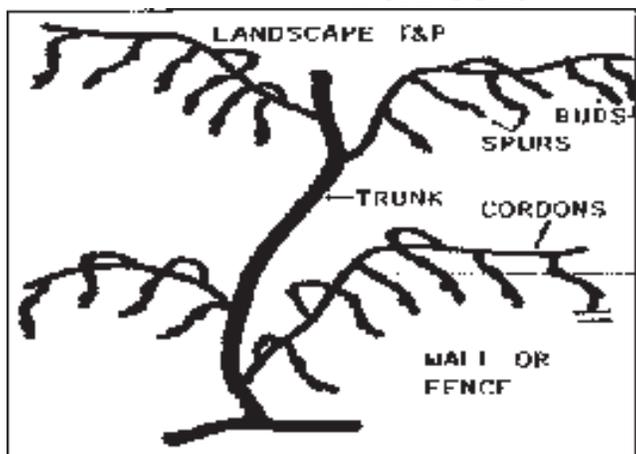


Figure 6. Pruning a grape vine on a wall.

Grapes are a versatile landscape plant. Vines will reach heights of fifteen feet or more and can be trained in a variety of forms. Training and pruning should be initiated in the second year and continued annually. A major objective is to develop a permanent framework that can produce foliage year after year in desired locations and shapes.

Spur pruning with cordon branches is well suited for landscape purposes. Once the permanent structure of trunks and branches are trained and secured in place, the canes developed from the spurs are easily pruned each year. The cane system often requires more annual effort in selecting and securing replacement canes.

Either system can be used for American or European varieties when maximum fruit production is not needed. The example shows spur training applied to a vine growing on a wall (Figure 6).

A trunk and permanent branches are trained to a framework over the wall. The spurs located along the cordons branches will produce shoots that cover the wall with foliage. Every dormant season, the canes developed from these spurs should be pruned to one or two buds. Properly sculpted, the permanent vine structure will make an interesting landscape feature after the leaves fall.

### MANAGING OLDER UNTRAINED VINES

Old vines usually have a proliferation of trunks and branches supporting a multitude of shoots at the perimeter of the plant. Wild growth produces poor quality fruit and leggy undesirable plants. However, with appropriate pruning, the gardener can quickly retrain the vine and not have to replant. The first step is to remove unneeded, weak trunks and branches. Keep the canes with buds near to the plants center, the main trunks. No more than three trunks are necessary. Any retraining must consider the location of the dormant buds which produce the foliage and fruit in the upcoming season. Select viable fruiting canes, at least pencil size in diameter, in the best locations, i.e. at favorable harvesting heights and nearest the plant's center. Pruning may be either cane or spur or a mixture of both (Figure 7). Retain 40 to 60 buds for a full producing plant. Fewer than 40 buds may cause large mature vines to produce excessively long unproductive "bull" canes. More than 60 can result in poor fruit production and poor fruit quality. An alternative, applicable to ungrafted rootstock, is to train a ground sucker while gradually removing the old plant over time. Retraining an old vine can be like painting a picture. The vine is the canvas; the pruning shears are the brush and knowledge of grape plant growth is the paint.

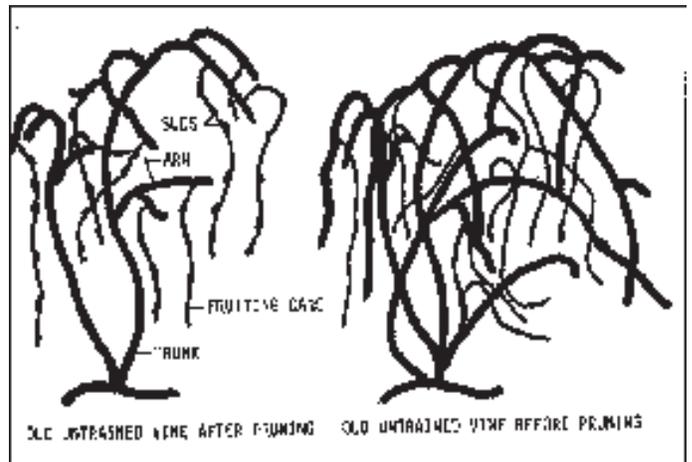


Figure 7. Rejuvenate an Old, Untrained Grape.

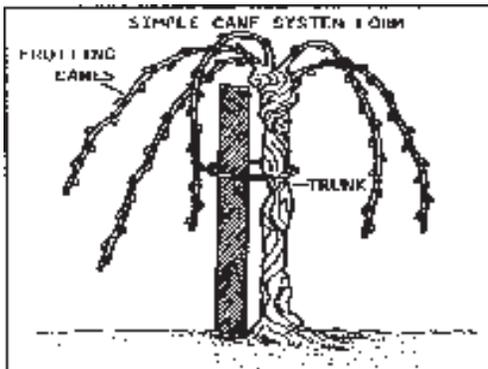


Figure 8. A Simple Trellis for Growing Grapes

### SUMMARY

Train and prune according to what you want to accomplish. For best fruit production, use cane pruning for American varieties and the spur system for European grapes. For landscape purposes or reshaping old vines, freelance as appropriate, but adhere to the principles of pruning. Many gardeners use a combination of spur and cane pruning to meet their needs. For best results and vine control, use a trellis. For many gardeners, a trellis can be as simple as a five foot stake to support the vine with fruiting canes hanging down from the top of the trunk (Figure 8). In any case, manage the level of fruiting, keep the new buds (each year's growth potential) near the trunk or cordons, prune annually to manage growth, and mix confidence with patience.

**For more information:  
Master Gardener Help  
Line 702.257.5555 or  
extension.unr.edu or**

**UNR Extension  
Clark County Main Office  
8050 Paradise Road, Suite 100  
Las Vegas, Nevada 89123  
702.222.3130**

**Angela O'Callaghan, Ph. D.  
Social Horticulture Specialist  
ocallaghana@unr.edu**