

# GRAPES

Home Gardens



By  
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 Fruit Scientist

Grapes can be grown in almost any fruit garden in Kansas. These long-lived plants are easy to grow, bear early, and do not require a large area. Grapes produce fruits for juice, wine, jelly, jam, and fresh eating. A well-cared-for vine should produce between 10 and 20 pounds of grapes.

## Growing Requirements

Grapes grow well in a wide range of soil types. Fertile, deep and well-drained loams are best, but grapes also grow in soils that contain sand, gravel, shale or clay. Soil should be at least 4 to 6 feet deep for good root development. Avoid extremely wet or dry soils. Good drainage is essential, regardless of other desirable characteristics. Soil pH can vary, but if it is alkaline, with a pH above 7.3 as in some western Kansas locations, adding sulfur may be necessary to reduce pH. Results are temporary, and the practice will need to be repeated in areas where water quality is the cause of the alkalinity.

## Grape Varieties

American bunch grape varieties were derived primarily from wild species native to North America. American bunch grapes and French-American hybrids are the most productive in Kansas. The most winter-hardy varieties can be grown throughout the state, while less hardy varieties may be grown successfully in south central and southeast Kansas.

European grapes are used primarily for table grapes and raisins. They require a long growing season and mild winter temperatures and generally are not adapted to Kansas. Muscadine or southern fox grapes also are not well adapted where winter temperatures may drop below 10°F.

## American Varieties (*Vitis labrusca*)

- **Beta** – blue fruit; juice and jelly; small-size fruit; plant is vigorous and hardy.
- **Concord** – blue-black fruit, the quality standard for juice, jam, and jelly; medium clusters of medium to large berries. Greatest problem in Kansas is uneven ripening during hot summers or heavy crop loads; cold hardy.
- **Cynthiana** – black fruit; excellent red wine; medium to small clusters of small grapes; moderate vigor, moderately productive, very disease resistant and good cold hardiness.
- **Reliance** – red; seedless table grape; excellent raisins; ripens early mid-season; vigorous and winter-hardy.
- **Mars** – blue; seedless table grape; medium-size clusters with large fruit; resistance to common grape diseases; vigorous and cold hardy.
- **Venus** – blue-black; seedless table grape; large berries; early ripening; vines are vigorous, moderately cold hardy.
- **Fredonia** – blue; extra-large fruit and thick skin; juicy and good quality; vigorous and cold hardy.

• **Steuben** – blue fruit; table and wine; concord type; vigorous and cold hardy.

• **Niagara** – white; table and wine; large-size fruit with good flavor; vigorous and cold hardy.

• **Catawba** – red; table, juice and wine; large fruit; vigorous and cold hardy.

### French-American Hybrids

• **Foch** – blue; wine use; very vigorous and winter hardy.

• **Aurore** – white; table; vines are hardy and productive but susceptible to black rot and splitting at harvest.

• **Chancellor** – blue; wine use; good vigor, productive and moderate hardiness.

• **Baco noir** – blue; wine; clusters are large with small fruit; vines are vigorous and productive; moderately winter hardy.

• **Vidal blanc** – yellow-white fruit; large clusters of large berries; excellent wine; moderate cold hardiness.

• **Seyval Blanc** – medium-size white-yellow berries in large clusters. Good wine; one of the better white grapes. French hybrids. Medium to high vigor; not very cold hardy.

• **Vignoles** – small to medium white-yellow berries in small clusters; very good wine; medium vigor and cold hardy; berries very susceptible to botrytis.



### Site Preparation

Soil should be free of perennial weeds before planting vines. If the area has been in grass or has not been cultivated, it should be worked up so the soil is well pulverized the fall before planting.

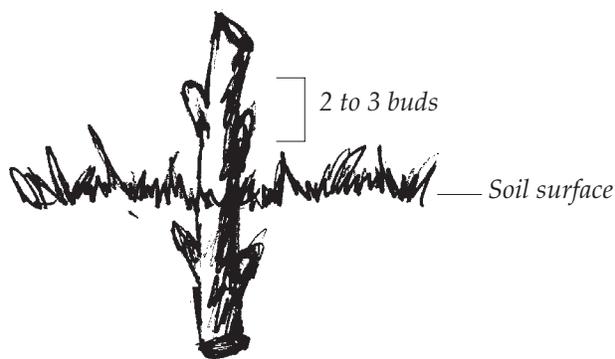
Heavy clay soil can be improved by incorporating organic matter such as grass clippings or peat moss before planting. Fertility can be determined by collecting a soil sample and sending it for nutrient analysis and pH level. Your local K-State Research and Extension office can help prepare the sample and send it to the K-State soil-testing laboratory.

### Plant Selection

Most commercial nurseries prefer receiving orders five to six months before planting, so place an order early to get the varieties you desire. Purchase rooted 2-year-old dormant vines from reliable commercial nurseries.

When rooted plants are difficult to obtain, or if you want to propagate a favorite cultivar, you can grow vines from hardwood cuttings. In late January or early

February, select one-year-old dormant canes that were new shoots the previous year. Select healthy vines with canes exposed to full sunlight. Avoid canes grown in shade because they may be spindly and not have enough stored food to support the cuttings before leaves and roots develop. Make cuttings directly from the vine or from a branch that has been recently removed. Select wood at least  $\frac{1}{3}$  to  $\frac{1}{2}$  inch in diameter. For vigorous varieties such as Niagara and Fredonia, each cutting should have three to four buds with 3 to 5 inches between buds. For less vigorous varieties, leave more buds per cutting. To identify the bottom from the top end of each cutting, make a straight cut just below the basal bud closest to trunk and a slant cut just above the top bud.



Place the bundled cuttings in plastic bags or in a box of moist sand, peat moss or sawdust. Keep them at 40 to 45°F or in a cellar to prevent them from drying out, or bury them in well-drained soil.

Cuttings can be rooted inside at about 70 to 75°F and transplanted outside in the spring after the danger of frost has passed, or they can be planted directly into the soil. Place the cuttings into the rooting medium or soil with two buds above and two buds below the surface.

### Planting

Grapevines from the nursery or rooted one-year-old cuttings should be planted in late March to early April, or at least before hot, dry summer weather arrives. Plant them about the same depth as they grew in the nursery, and prune off broken roots. Trim long roots and all but one vigorous cane. Prune the cane back to two buds. Set the plant in a hole large enough to spread roots without bending them.

Spacing between rows depends on the training and trellis system you choose. In your backyard, 9 feet generally is appropriate. Vine spacing within the row depends on cultivar vigor and the training system. European cultivars (*Vitis vinifera*) should be spaced 6 to 7 feet apart, while the more vigorous American

cultivars are generally spaced 7 to 8 feet apart within the row. Set two or three vines between wooden posts. Do not set vines against posts that have been treated with a wood preservative.

### Trellis

Structurally, the common trellis is similar to a fence. The trellis should be strong and adequately braced to support the heavy load of the crop. It is best to construct the trellis in the first or second growing season so training can start. The trellis consists of two or more wires attached to wood, concrete or steel posts. Construction is essentially the same as for a sturdy wire fence. End posts should be larger and set deeper than line posts because they must serve as the anchor points as well as wire supports. Line posts can be set 24 feet apart with three vines between each post. The top wire

for the trellis system should be 5 to 6 feet above the ground. The higher the top wire, the greater the amount of foliage exposed to sunlight. The lower wire is fastened 30 to 36 inches from the ground. Trellis wires should be tightened each spring before the weight of the season's growth develops and adds weight to the wires.

### Grapevine Terminology (Figure 1)

**Trunk** – the main perennial part of the vine.

**Cordons** – horizontal extensions of the trunk that bear spurs and canes.

**Shoot** – a current season's growth of green wood. Shoots originate from buds on trunk, cordons, canes or spurs. A shoot always produces leaves and tendrils; it may bear fruit. After leaf fall, mature woody shoots are called canes.

**Tendrils** – a long, slender, curled structure on shoots that wraps tightly around trellis wire, posts or other shoots.

**Bud** – a compressed shoot in a dormant state containing primary, secondary and tertiary buds.

**Cane** – dormant woody shoot with buds after leaf drop in the fall.

**Curtain** – plant part with shoots positioned downward or upward.

**Fruiting spur** – a cane pruned to three to six buds, depending on type of pruning, that produces fruitful shoots.

**Renewal spur** – a cane pruned to one or two buds that produce nonfruitful shoots that will be used as fruiting canes or spurs the following season.

### Training and Pruning

The most common problem growing grapes at home is that vines are not pruned enough to produce quality fruit and keep vines healthy for many years. During pruning season, remove the majority of the canes produced the previous season. Eighty to 90 percent of the canes should be removed, and little wood should be retained to produce the following season's crop. Annual pruning prevents overproduction and keeps the vine healthy. Unpruned vines become weak and produce small fruit clusters that do not ripen uniformly.

Grapevines should be pruned during the dormant season. Early winter pruning is not advisable because low winter temperatures in Kansas may damage more buds on the vines. Late pruning causes sap bleeding, which is not detrimental to the plant or yield. However, late pruning makes managing and tying the new growth difficult, and some swollen buds may be lost during pruning.

Figure 1. Grapevine

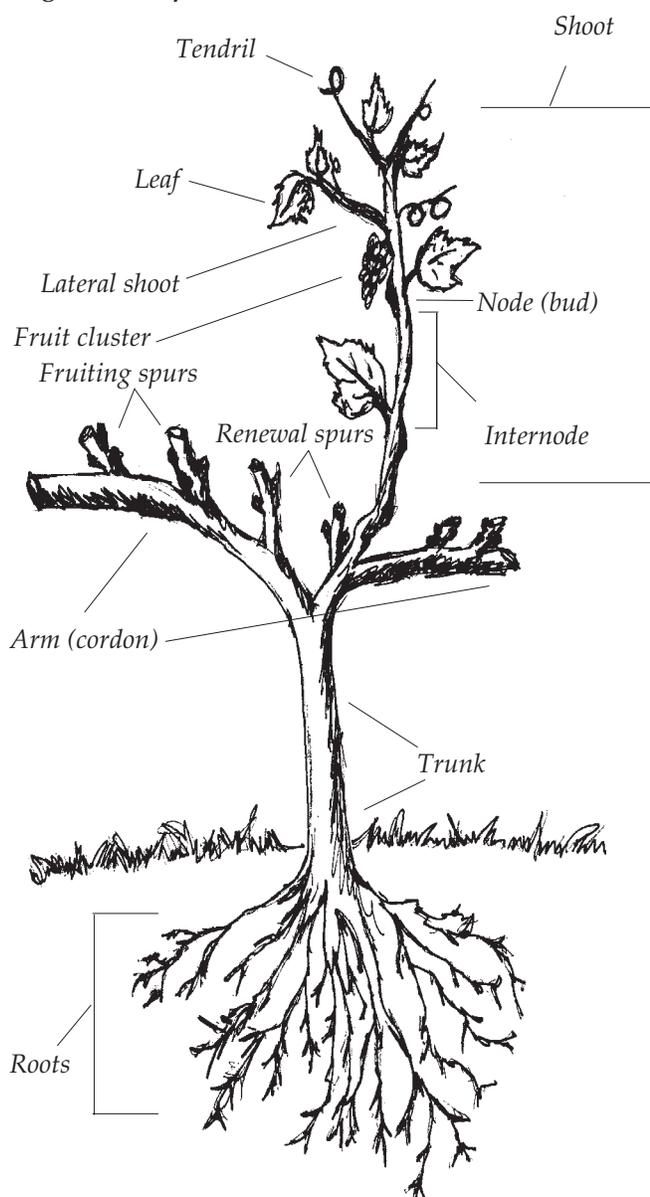
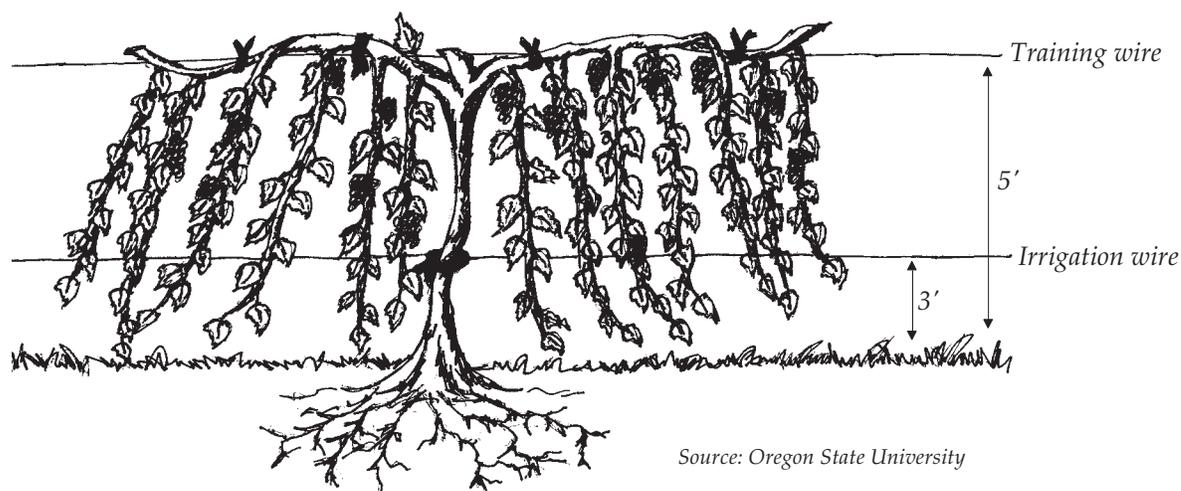


Figure 2. Single curtain training system



Training and pruning are interdependent operations. Productive vines are trained to a definite system and pruned so the trellis supports the vines and exposes maximum leaf area to sunlight.

Knowledge of grapevine terminology is especially helpful when pruning (Figure 1).

Three training systems are recommended for Kansas gardens: the single curtain, umbrella Kniffin, or the four-cane Kniffin system.

The single curtain system is best adapted for vigorous and cold-hardy grape varieties. Less vigorous varieties or those more susceptible to winter injury should be trained to the umbrella Kniffin system. Both systems are easy to develop and maintain with proper pruning. With single curtain and umbrella Kniffin systems, foliage is exposed to more light, and production is greater than with the four-cane Kniffin system.

Training begins during the first growing season. After the vine is planted and before growth starts, cut back the strongest cane, leaving only two buds, and train the cane to a stake so that a straight and strong trunk develops. If the new shoot from the cane does not reach the top wire, prune it back the next winter to three or four buds. Train the strongest shoot that grows the following summer, and prune off all others. As soon as the shoot reaches the wire, cut it at a node when dormant and tie it to the wire. Further training and pruning depend on the training system you select.

### Single Curtain (Figure 2)

Select one strong cane for a trunk. Train the trunk to the top wire of a single-wire trellis. Pinch off the tip just below the wire close to a bud to encourage side-shoot growth. When the side shoots are 10 to 12 inches long, select and train two strong shoots — one in each direction — along the top trellis wire to form the cordons. Remove all other side shoots along the trunk and cordons as they develop. Continue to tie or wrap the cordons around the wire every 8 to 10 inches; the tips of cordon shoots should be pinched off when they reach four feet in length or touch the next vine's cordon. The side shoots that develop should be retained for next season's spurs.

During the second dormant season, most of the canes that have branched off the cordons should be pruned to renewal spurs with two buds. These buds will produce nonfruitful but vigorous shoots that will be used as fruiting spurs. Only two to four canes should be pruned to fruiting spurs containing three to five buds for the third growing season. These will produce shoots with a few clusters of grapes.

In the third and following dormant season, canes should be pruned to leave four to six fruiting spurs, depending on vine vigor, and the same number of renewal spurs on each cordon. Spurs should be spaced evenly along. Remove all excess canes.

Some additional training during the growing season is required. In late spring when shoots have grown

Figure 3. Umbrella Kniffin system

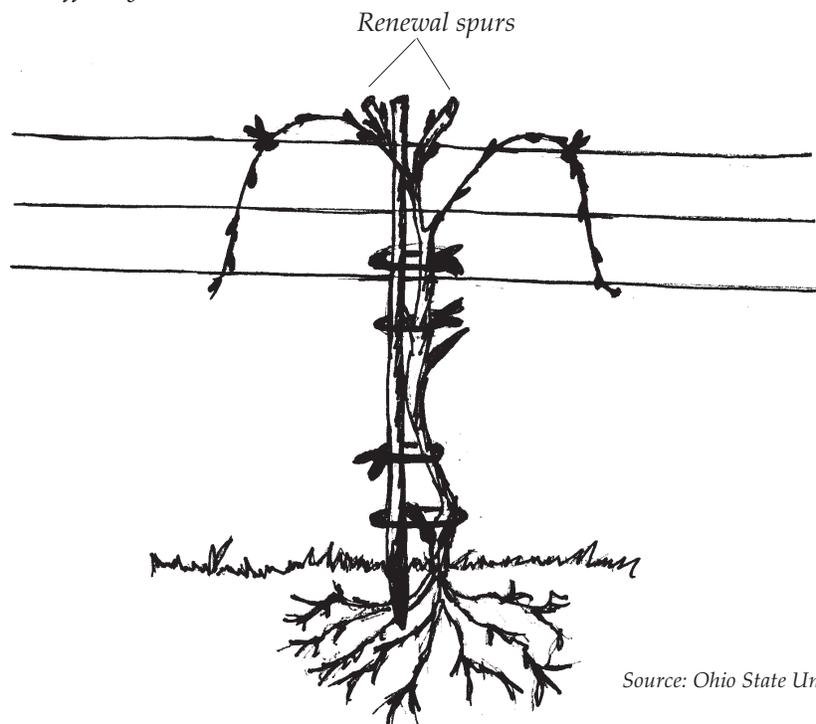
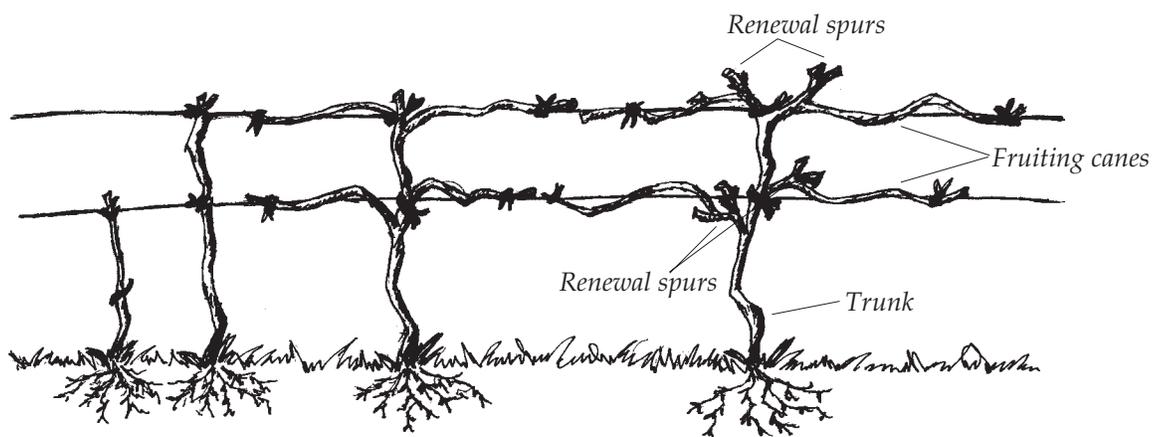


Figure 4. Four-Cane Kniffin system



4 feet or more, flower clusters will be evident, and tendrils will begin to form. At this time shoots should be gently pulled away from the trellis wire and each other and allowed to hang straight down. The shoots then grow and hang down, and fruits developing on the vine are well exposed at the top of the canopy, promoting good fruit quality.

#### **Umbrella Kniffin (Figure 3)**

Select the stronger of the two canes to be the trunk; remove the other cane. As new shoot growth starts in the spring, strip off all shoots except from the uppermost bud on the cane. Continue to tie the shoot to the

stake as it approaches the top trellis wire. When the shoot is about 6 inches below the top wire, pinch off the shoot tip to encourage side shoot growth. These side shoots will develop into canes that will produce fruitful shoots the following season.

During the dormant period following the second or third growing season, depending on vigor, select two to six of the most vigorous canes for fruiting canes. Prune these canes to 10 to 15 buds, then bend them sharply over the top wire and loosely tie the tips to the lower wire. Select two to six of the remaining canes for renewal spurs. Prune these back to two buds. Remove all other canes.

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Each dormant season, remove the previous year's fruiting canes and select and prune back two to six new fruiting canes, depending on vigor, from the old renewal spurs. Select and prune two to six renewal spurs and remove any remaining canes.

#### **Four-Cane Kniffin (Figure 4)**

This system is similar to the two-cane Kniffin system except it has four trained fruiting canes. The disadvantage of the four-cane Kniffin is that fruit production along the lower wire may be reduced by shading from the foliage on the upper trellis wire, resulting in lower fruit quality. Shading can be reduced when the top trellis wire is about 6 to 6 ½ feet above the ground and the bottom wire is at least 2 to 2½ feet below the top wire.

During the first growing season, vine growth is managed the same way as the single curtain and umbrella Kniffin systems. If growth is weak, dormant pruning the second or third year consists of selecting four vigorous canes for the cordons. Prune these canes to approximately 10 buds on each cane, then tie them to the trellis wires. Also, cut two canes at each wire level to two buds for renewal spurs. Remove all other canes.

#### **Grape Arbors**

Grapevines may be trained on walls, fences and arbors to provide shade as well as fruits. Training to an arbor, vines should be pruned less severely, and long canes allowed to cover the arbor. Leave more buds per plant, keeping in mind this will produce low-quality fruit. To make the arbor attractive, plant and train three different colored table grapes to an arbor.

#### **Watering**

Irrigate young and mature vines as required, especially during the summer. Avoid overhead irrigation, especially during fruit maturity, to prevent fruit rots. Water may be applied by conventional yard watering methods such as a sprinkler hose along the grape row. A small trickle of water by each vine generally is one of the most efficient water application methods.

#### **Fertilization**

Grapes do not need a high level of fertility. Overfeeding causes more problems than underfeeding. Apply 10 ounces of 10-10-10 per vine in the spring. Manure or compost also can be used, but avoid heavy applications that delay fruit maturity.

#### **Weed Control**

Cultivate shallowly as needed to control weeds.

#### **Disease and Insect Control**

Grapes are susceptible to various diseases and insects. Generally, chemicals are applied when new shoots are about 2 inches long, and about 6 to 8 inches long, just before bloom, just after bloom, and in mid- to late July. Follow recommendations in the publication, *Fruit Pest Control*, C-592, available from your local K-State Research and Extension office.

#### **Harvesting**

Maturity usually is determined by taste and color of seeds as they change from green to brown. The stem of the cluster turns brown and berries pull easily from the cluster as they ripen.

Berry color is not a reliable gauge of maturity. Most grape varieties change color from two to three weeks before they are fully ripe. Clusters exposed to sunlight develop the best flavor and quality.

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## Suppliers

The following is a list of a few grapevine suppliers that have good selection of varieties. This list does not indicate endorsement of a particular supplier.

American Nursery  
Rt. 1, Box 87B1  
Madison, VA 22727  
(504) 948-5064

Blossomberry Nursery  
Rt. 2, Box 28F  
Clarksville, AR 72830  
(501) 754-6489

Bailey Nurseries, Inc.  
1325 Bailey Road  
St. Paul, MN 55119-6199  
1-800-829-8898

Double A Vineyards, Inc.  
10277 Christy Road  
Fredonia, NY 14063  
(716) 672-8493

Foster Concord Nurseries, Inc.  
10175 Mileblock Road  
North Collins, NY 14111  
1-800-223-2211

Great River Vineyard  
35680 Highway 61 Boulevard  
Lake City, MN 55041  
1-877-345-3531

Northwind Nursery & Orchards  
7910 335th Avenue NW  
Princeton, MN 55371-4915  
(612) 389-4920

Saint Francois Vineyards  
1669 Pine Ridge Trail  
Park Hills, MO 63601  
(573) 431-4294

## Related K-State Grape Publications

*Preventing Hormonal-Type Herbicide Damage to Kansas Grapes*, S-142

*Questions and Answers About Vineyard Injury from Herbicide Drift*, MF-2588

## Related K-State Fruit Publications

### For Home Gardeners

*Plant Your Fruit Garden*, MF-352

*Harvest and Storage of Fruits and Vegetables*, MF-661  
*Strawberries*, MF-598

### For Commercial Growers

*Commercial Grape Production*, MF-2370

## Publications from other states

*Colorado Grape Grower's Guide*, 550A, Colorado State University Extension

*Growing Grapes in Your Home Garden*, EC1305, Oregon State University Extension Service



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