University of California Cooperative Extension ■ Tulare County

Grape Notes

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Spring Fever Symptoms

Bill Peacock and Nick Dokoozlian

This spring's alternating pattern of warm and cool weather has resulted in symptoms of spring fever (sometimes referred to as "false potassium deficiency") in mostly young and vigorous vineyards. It is not the result of potassium deficiency, although symptoms are somewhat similar. It is a weather-connected problem. Spring fever rarely results in economic loss as vines quickly outgrow the condition.

Symptoms of spring fever begin prior to bloom triggered by stop and go weather (a series of cool and then suddenly warm temperatures). Yellowing occurs at the margin of basal leaves and then progresses between the primary and secondary veins. Leaf margins also curl upward. Curling can be quite pronounced on basal leaves and there may be some necrosis between veins. In severe cases some basal leaves may drop.

Spring fever is more prevalent on certain varieties. Thompson Seedless, Flame Seedless, Crimson Seedless, and Princess are particularly susceptible. It is often worst on very healthy, vigorous vines that are in their third or fourth leaf and aggressively fertilized with nitrogen. Spring fever putresene in the leaves. With spring fever, vines are not potassium deficient. Thus, laboratory analysis of leaf petioles can differentiate spring fever from true potassium deficiency.

Production of Autumn Royal Table Grapes

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Autumn Royal is a late-maturing black seedless table grape developed by David Ramming and Ron Tarailo of the USDA-ARS in Fresno, CA. The cultivar, formerly known and tested as USDA selection #A97-68, was released in 1996 and resulted from the cross of Autumn Black x C74-1. In addition to several USDA numbered selections, its parentage includes Blackrose, Calmeria, Flame Seedless and Ribier. The cultivar produces large, dark purple to black berries that ripen in late September to mid-October.

The commercial appeal of Autumn Royal rests on its large berry size and late maturity, as well as the fact that relatively few inputs are required for the production of high quality fruit. Variable production among seasons has been observed as a

Vine Growth and Rootstocks

Depending upon growing conditions, Autumn Royal exhibits moderate to high vigor when planted on its own roots. Information on rootstock selection is limited, but rootstock use is recommended in replant or other situations where soil pests such as nematodes and phylloxera are potential problems. Depending upon soil type and specific pest pressures, likely choices for the San Joaquin Valley include Harmony, Freedom, Ramsey (Salt Creek) and 1103P.

The optimum in-row spacing of quadrilateral cordon trained vines ranges from 6 to 8 feet, depending upon soil type and rootstock. Between-row spacing is typically 12 feet, but closer spacings may be used as trellising systems and farming practices allow.

Pruning and Training Systems

Spur pruning is recommended for optimum cluster size and fruit quality. Quadrilateral cordon training is necessary for maximum productivity, with 32 2-bud spurs typically retained per vine (8 spurs per cordon). Productivity on bilateral cordon trained vines is lower based on the fact that fewer spurs can be retained at pruning. In some cases kicker canes are used on spur pruned vines to increase production. However, cane pruning is generally not recommended due to the potential for overcropping and the production of loose, straggly clusters with reduced berry size.

Productivity

The yield of Autumn Royal usually averages between 750 to 950 boxes per acre, although observations suggest that productivity has been similar on the standard "T" and gable systems.

Cluster and Fruit Characteristics

Autumn Royal produces large clusters, with cluster weight typically averaging between 2.5 to 3.5 pounds. Clusters are conical in shape, and loose to well filled. One of the primary problems with the cultivar is that its cluster framework or rachis is relatively weak. The attachments between the capstem and rachis, as well as the berry and pedicel, are moderate to poor. Individual berries, as well as entire shoulders, are prone to postharvest shatter, and packing clusters in bags is highly recommended.

The natural berry size of Autumn Royal is the largest among currently available seedless cultivars. Without gibberellic acid sizing treatments or girdling, its berry weight averages 9 grams or more. In comparison, girdled and gibberellin treated Thompson Seedless produce berries weighing 6 to 7 grams. Berries are ovoid to ellipsoidal in shape, and purple-black to black in color. The berry flesh is firm and translucent, and the skin low to medium in thickness. Clusters may withstand small amounts (1/4 - 1/2") of precipitation during the fall without suffering significant damage due to bunch rot.

Cultural Practices

Compared to the standard seedless table grape cultivars, relatively little input is required for the production of Autumn Royal. Shoot thinning must be performed following budbreak, and fruitful shoots thinned to a single cluster following berry set. Canopy management

Untipped clusters may weigh up to 4 pounds at harvest, making them difficult to color and pack. Clusters tipped to retain the upper 6 to 8 shoulders weigh between 2 and 2.5 pounds at harvest. Based on this estimate, vines adjusted to 25 clusters should produce about 2 packed boxes of fruit per vine or about 900 boxes per acre for a standard spacing. Cluster thinning and tipping are reduced in seasons of low bud fruitfulness.

Berry set is often excessive, resulting in tight, compact clusters. Berry thinning may be performed by applying 1 to 2 grams/ac gibberellic acid at 85% to 90% cap fall or bloom. This application reduces fruit set and increases berry weight and berry length, but has no effect on return fruitfulness. Another potential benefit of this application is that seed trace number and size are typically reduced, making them less detectable.

In some years manual berry thinning may be necessary to remove shoulders in order to loosen clusters following berry set. Berry size can be increased 10 to 15% by girdling at berry set, but this treatment delays color development and may prolong harvest. Color or maturity girdles have little effect on this and other late-season cultivars. GA sizing sprays have little or no effect on berry growth, but can reduce budbreak and return fruitfulness the following year. These applications are not currently recommended.

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