

# The Cardinal Grape

## A Thousand Acres Grown in Arizona

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The Cardinal grape was first tried commercially in Arizona by the late Colonel Dale Bumstead in the area northwest of Phoenix near Peoria. From an original planting of 10 acres, which was budded on Thompson Seedless stock, came much of the early information known about the variety. About 1000 acres are now planted in Arizona, 95 percent of which is in full, or nearly full, production. The major part of this acreage is in the Phoenix area, with smaller plantings on the Yuma Mesa.

The Cardinal grape originated at the United States Horticultural Field Station, Fresno, California, and resulted from a cross of Flame Tokay and Ribier varieties. A relatively new grape variety, it was first released to the industry for trial in the western grape-growing regions in October, 1946.

### It's Early

The Cardinal ripens about 10 to 14 days earlier than Thompson Seedless (its closest competitor) in Arizona and the Coachella Valley, and 3 to 4

weeks ahead of the earliest varieties in the Fresno area. It has a rich, dark red color and a heavy gray bloom.

There is considerable variation in berry size, but generally speaking the Cardinal is a large spherical fruit, often exceeding one inch in diameter. The average cluster weighs from 9 to 13 ounces, with individual clusters weighing as much as 2 pounds.

Eating quality is excellent and the clusters may be stored for extended periods without stem drying and discoloration.

### It Has Its Problems

Unfortunately and in spite of its beauty and general high quality, the Cardinal is not without production problems. Agreement among growers is lacking as to correct management practices for the Cardinal, since the only information available is based on studies with other varieties.

All are in agreement, however, that this new variety offers a challenging problem in the search for pruning, thinning, girdling, irrigation and fertilization practices which will assure continued high production and quality. In this respect the help of the University of Arizona Agricultural Experiment Station has been enlisted.

Early in 1951, the Arizona Grape Growers' Association was organized. At a meeting held in October 1951,

a modest research program was drawn up. In addition to information concerning vineyard management practices, help was sought in gathering maturity data for use in the future establishment of maturity standards.

When enacted into a state law, these standards will protect the industry against the shipment of inferior fruit by unscrupulous persons. This particular work was anticipated by the Experiment Station and one year's data were already available at the time of the formal request.

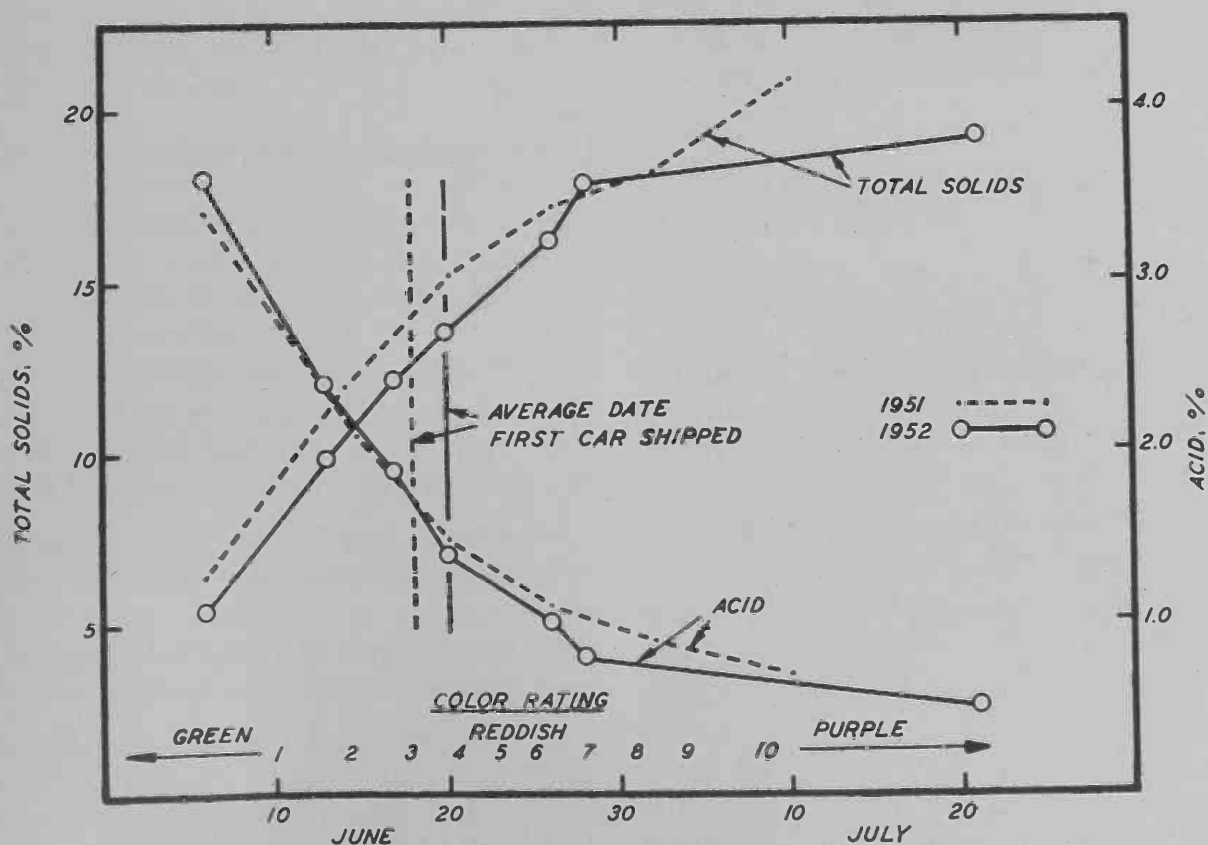
On the basis of studies in which seasonal changes in total soluble solids content and in acid content of fruit from many locations (see chart) were correlated with color and taste, a minimum solids-acid ratio of 18 or a maximum acid content of 1 percent or both has been tentatively established as a satisfactory maturity standard. No definite recommendations are to be made from this, however, as several more year's accumulation of data are necessary.

### Pruning, Thinning Necessary

In 1952, three types of pruning and four different pruning dates were compared at two widely distant locations. No single kind or time of pruning was outstanding. It was apparent that, due to the extreme vigor of the Cardinal vine in Arizona, severe pruning and heavy, closely controlled thinning is necessary for the production of quality fruit clusters.

The proper time for girdling of vines may vary with location and type of pruning used. In Deer Valley, fruit from bilateral cordon trained vines had the highest solids content when girdled in early June, at the time of first color appearance. On the other hand, fruit picked from 4-cane pruned vines in the Litchfield Park area had the highest solids content when girdling was done in mid-May (fruit pea-sized).

Plans have already been made to continue the pruning tests during 1953, and to study more closely the relation of thinning and time of girdling to improvement in setting of fruit on the clusters. All of the work completed and reported upon to date has been done cooperatively with the growers and with the University of Arizona Agricultural Extension Service.



Seasonal changes in total soluble solids and acid content of Cardinal grapes, 1951 and 1952. (Average values from two to three locations in 6 different vineyards.)