Scarlet Grape
new variety for fresh juice and jellies

H. P. Olmo

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A new juice grape—with a Concord-type flavor—adaptable to the climatic conditions of California, produces a juice that can be canned, or frozen, or used in pure, sparkling soft drinks. Wine-growers may find the new grape useful in blending, because of its high color, flavor and acidity.

Named “Scarlet” because of its characteristics—the bright red of its extracted juice and the early fall coloring of its leaves—the new variety was developed at Davis.

Scarlet is a hybrid of Golden Muscat × Teinturier, station seedling 294E7 from a cross made in 1935. The seed was planted at Davis in the fall of that year and the vine first fruited in 1939.

The Golden Muscat parent is a hybrid of Muscat Hamburg and Diamond. The Teinturier is of the south of France.

Qualities of Scarlet

Of many new seedlings tested, Scarlet best meets the requirements for producing a juice grape, with a Concord-type flavor, that can be grown successfully in California.

Its color is bright, stable and attractive, and its chemical composition is so balanced that the pure juice can be used without correction.

The vine is well adapted for home gardens as it is vigorous enough to grow on fence, trellis or arbor. Scarlet fruits regularly and well without great attention to detailed pruning methods, and is somewhat resistant to powdery mildew. The fruit will hang a long time on the vine without spoilage.

Productivity

Scarlet was selected from 60 plants and, as a seedling vine, it was the most productive of all. It averaged 11.5 pounds to the vine during the period 1940 to 1942 in plantings placed two feet apart in the row, when the vines were pruned to only three spurs of two buds each.

In 1945 the original vine was stubbed back to the main trunk, and all the canes were removed. Even with such severe pruning, over ten pounds of fruit were harvested. Many of the dormant buds proved fruitful.

Scattered trial plantings of Scarlet have been too small to furnish reliable data on yield in comparison with such varieties as Concord or Delaware. The more vigorous growth of the vine and the abundance of fruitful buds indicate that it will be more fruitful.

Utility

Because the berry is small, the variety cannot be used as a table grape. Scarlet is introduced to give the commercial market, and the home grower a specific product—fresh or processed pure juice that can be produced in California with a minimum of effort.

High sugar content and acidity make a well-balanced juice. For example:

<table>
<thead>
<tr>
<th>Date of test</th>
<th>Sugar content (Gms/100 cc)</th>
<th>Acidity (Balling) as tartaric</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 19, 1940</td>
<td>20.0</td>
<td>1.00</td>
</tr>
<tr>
<td>August 31, 1941</td>
<td>20.8</td>
<td>1.30</td>
</tr>
<tr>
<td>October 4, 1942</td>
<td>28.2</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Scarlet is very productive when spur-pruned, in contrast to Concord, but it also can be cane-pruned and then will carry much greater crops to maturity. The optimum stage of maturity at Davis is from 22 to 23 Balling for making the most palatable fresh juice.

Rapid sweetening of the fruit on the vine necessitates some care in harvesting at the proper period. The acidity can be increased by including the small clusters—second crop—which ripen later and have very high acid content.

Scarlet has a thick skin that is very resistant to mechanical injury, is heavily pigmented and separates easily from the pulp.

The pulp is soft, very juicy and most of the berries have three seeds.

The fruit is very resistant to fruit rots and molds.

Ripening in early midseason, the berries hang on the vine and shrivel rapidly when overripe.

The juice is bright scarlet, more intense than Alicante Bouschet, and very stable, not oxidizing easily on exposure or when processed for jellies or beverage use. Sediment settles readily after extraction.

The flavor of Scarlet is similar to Concord and, though less pronounced, is highly palatable.

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In Valencias, only occasionally are the fruits affected severely enough to produce the acorn shape. What appears to be the same disease is found on grapefruit trees where it is more pronounced in the Coachella Valley than in other parts of California. It is severe on some grapefruit trees in Arizona.

The infectious nature of the disease was confirmed in experiments begun in 1939.

Young trees propagated by means of buds from diseased trees developed the same types of growth. In 1943, when the trees were four years old, they were top-worked with healthy buds. By 1946 these buds had formed a top which again showed the disease. Buds from the same

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Stubborn Disease
one cause of nonbearing in navels, Valencias, and grapefruit

H. S. Fawcett and L. J. Klotz

An increasing number of nonproductive trees sometimes noted in navel orange orchards as the trees advance in age may be due—in part—to the infectious disease known as stubborn disease.

Stubborn disease—also known as acorn disease, and as pink nose, in reference to effects on some of the fruit—has been found in California in all sections where navels are grown.

The stubborn disease appears to affect Valencia trees less severely than navels and it is more difficult to diagnose in Valencias than in navels.
STUBBORN DISEASE
Continued from page 4
source used to topwork healthy trees of
the same age formed a healthy top.

Characteristics
Stubborn disease is characterized by
abnormal branching and formation of
multiple buds which produce a brushlike
growth of twigs.

SUGARS
Continued from page 12
There was a definite change in flavor
at 70% inversion and a noticeable one
at 90% which was more marked to the
more discerning tasters. The flavor of
the peaches decreased with increase in
storage time, and this decrease was
greater in the peaches frozen in 70% and
90% invert sirup. It was particularly
noticeable as a combination of oxidized
and foreign flavor.

Nectarines
In Kim nectarines there was an
appreciable discoloration at 90% inversion
which persisted throughout the storage
period.

Kim nectarines retained their color
better than did the apricots or the
peaches. In texture there was little differ-
ence between the sucrose and invert sirup
samples. Unlike apricots, the nectarine
skin was thinner and tender, and re-
ained so during storage. In flavor there
was a slight difference at first in invert
sirup, noticeable at 70% inversion, but
this difference did not persist, owing
largely to variability of samples.

In general, nectarines were of higher
flavor initially and retained their color
and flavor better during freezing storage
than did the apricots or peaches.

In Gower nectarines there was no ap-
preciable difference in color, flavor or
texture between sucrose and 90% invert
sirup samples.

Preparation of Syrups
One method of preparing sirups was
to dissolve the necessary amount of gran-
ulated sugar in water at 20°C with vigori-
out stirring. In another case, the water
was brought to boiling and the sugar was
dissolved with minimum of stirring and
then allowed to cool to 20°C in un-
covered beakers. There was little difference
in oxygen content of the sirups under
these conditions at lower densities but
the percentage difference progressively
increased with increase in density.

Protective Effect
That sugars do exercise a protective
effect on nonenzymic oxidation of ascor-
bic acid has been established but
there is a question as to the relative
effectiveness of the sugars.

Of the pure sugars tested, the most
efficient in retarding oxidation of ascor-
bic acid in solutions containing about
50 mg. per cent of ascorbic acid allowed
to stand quietly exposed to air at room
temperature were maltose, levulose and
lactose; the least effective was dextrose.

In the case of sirups, the most efficient
were puritose and invert sirup.

Under conditions of vigorous oxy-
genation, the order of decreasing protection
was maltose, dextrose, sucrose and lac-
tose. The order of decreasing protection
in sirups was puritose, sucrose, invert
sirup and low conversion corn sirup.

More work in this field is now under
way.

More Study Needed
It is not known certainly whether it is
transmitted by any means other than by
propagation of nursery trees but observa-
tions would indicate that it is increasing
and is suspected of having other ways of
spreading. The sudden appearance of the
trouble on trees that have been healthy
for many years suggests that an insect
vector is spreading the disease.

Pending further information regarding
the stubborn disease, every effort should
be made to select trees entirely free from
this disease as a source of propagation
for nursery trees. When trees develop
pronounced cases of this disease and be-
come nonproductive, they should be re-
placed. It appears to be useless to top-
work these trees with healthy buds, since
as has been proved, the subsequent growth
will be infected and, in time, the tree will
manifest the same trouble.

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Acorn-shaped citrus fruit, evidence of stubborn disease.