growth of 'sprinter' callus at 10 klx was greater than growth of 'Kleine Liebling' or 'Sincerity' at that intensity. Growth of 'Sprinter' callus at 1 and 5 klx was significantly greater than growth of 'Kleine Liebling' and 'Sincerity' (Table 1). All tissues grew poorly at 10 klx. Growth of callus from stem tissue excised in the winter months was significantly greater than growth from summer explants. As a result, differences in callus growth that occurred among cultivars and among light intensities were more apparent when winter explants were used (Table 2).

Reports indicate that in some cases light may be inhibitory (8, 16) or stimulatory (3, 13, 14) to growth of tobacco cultures in vitro.

The effect of light on growth was influenced by the time of year stem excision took place. Greater differences among light treatments and among cultivars occurred when stems were excised in the winter compared with the summer. Seasonal differences in growth could be related to seasonal differences in endogenous indoleacetic acid (5, 6, 10) and abscisic acid (2, 6, 15).

**Table 2. Growth of callus from tissue excised in the winter and summer.**

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Winter*</th>
<th>Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 klx</td>
<td>5 klx</td>
</tr>
<tr>
<td>Kleine Liebling</td>
<td>0.53dy</td>
<td>0.69c</td>
</tr>
<tr>
<td>Sprinter</td>
<td>1.76a</td>
<td>1.45b</td>
</tr>
<tr>
<td>Sincerity</td>
<td>0.46de</td>
<td>0.43e</td>
</tr>
</tbody>
</table>

*Each number represents a mean of 32 observations.

*Mean separation by Duncan's multiple range test, 5% level.

**Literature Cited**


**HortScience 13(2):154–155. 1978**

No Off-flavor Associated with Imidan-treated Blueberries

Ruth H. True1, Howard Y. Forsythe, Jr.3, and Elizabeth S. Barden2

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Additional index words: Vaccinium angustifolium, taste panel

Imidan (phosmet), N-(Mercapto- methyl) phthalimide S-(0-0-dimethyl- phosphorodithioate), has been registered by the EPA and tolerances have been established by the FDA for use on many crops. It has been found to be effective in the control of the blueberry maggot (Rhagoletis mendax Curran).

This study was conducted in compliance with EPA regulations to determine if any off-flavors were associated with the application of the insecticide Imidan on lowbush blueberries (*Vaccinium angustifolium* Ait.).

The treated and the untreated control blueberries were grown at Blueberry Hill Farm, Jonesboro, Maine. Imidan 50-WP was applied with a hand sprayer at the rate of 2.24 kg in 568 liters/ha (2 lb. formulation in 150 gal/acre) on July 23 and August 14, 1975. No other pesticides were applied. The berries were harvested August 18 and held at 7.1°C (45°F) until tested.

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1Received for publication December 7, 1977.

2Associate Food Scientist and Associate Professor and Chairman, respectively, Department of Food Science.

3Associate Professor and Chairman, Department of Entomology.
Inheritance of Fruit Color in the Sweet Cherry  

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Abstract. A series of sweet cherry (Prunus avium L.) crosses using yellow-fruited cultivars homozygous recessive for fruit color as tester parents segregated in simple Mendelian ratios for dark fruit and blushed yellow fruit. No evidence was found for the presence of modifier genes.

The sweet cherry produces fruit of 3 distinct color classes—purplish black, pale yellow with a reddish blush, and pale yellow without a blush. Dark flesh is associated with dark skin and colorless flesh with light skin, whether blushed or nonblushed. Crane and Lawrence (1) and Lamb (3) reported that fruit color segregated for dark and light fruits in simple monohybrid ratios. Fogle (2) concluded that fruit color segregated for dark fruit. The presence of modifier genes was suggested by other workers who noted variation in expression of these primary genes. If such genes were present they would cause intensifying skin color and expressing itself as a blush in the absence of the major factor.

Apparent variations in intensity of skin and flesh color in the dark-fruited class and of the blush in the blushed class have been observed among cultivars and among seedlings in progenies from breeding crosses. These variations might be due in part to minor modifying genes. This study was conducted primarily to determine if such modifying genes could be detected by crossing cultivars bearing colored fruit with homozygous recessive testers. Such test crosses should give relatively simple genetic ratios, which would facilitate interpretation of the results.

With a single exception sweet cherries cannot be successfully self-pollinated due to the presence of sterility genes, which also cause failure of some cross combinations. Therefore, to determine if cultivars bearing pale yellow fruit without blush are homozygous recessive for fruit color, 2 such cultivars, 'Donnissen's Gelbe Knorpelkirsche' and 'Gros Blanc', were crossed reciprocally with each other and also with a third nonblushed yellow-fruited cultivar, 'Kaiserin Eugenie'. At the same time 'Donnissen's Gelbe Knorpelkirsche' and 'Gros Blanc' were used as the seed parents in test crosses with 7 cultivars which bear colored fruit. Two of the 7, 'Emperor Francis' and 'Napoléon', produce blushed yellow fruit. The other 5, 'Badacsoner Riesenkirsche', 'Bing', 'Lambert', 'Ulster' and 'Sam', produce dark fruit.

These cultivars were chosen to represent some of the apparent differences in fruit color observed in the field. 'Emperor Francis' develops a blotchy blush. The blush of 'Napoléon' is more uniform. The flesh of 'Bing' and 'Sam' becomes very dark. 'Lambert' and 'Ulster' have less intensely-colored flesh. The flesh of 'Badacsoner Riesenkirsche' develops the least amount of color, retaining a pinkish tinge when ripe.

The crosses were made in 1970 under cloth-covered tree cages at Prosser, Washington. Fruit color evaluations were made in 1975 and 1976. In both years the weather was mild during the period of fruit ripening and was, therefore, favorable for optimum development of color. The sizes of the progenies brought to the fruiting stage were relatively small due to poor germination of the seeds, a frequent problem in sweet cherry breeding. The sweet cherry is a diploid species. In interpreting the results it was assumed that fruit color is determined by 2 major genes, A for dark vs. a for light fruit and B for blushed vs. b for nonblushed fruit. If modifying genes were present they would cause variation in expression of these primary genes.

The reciprocal crosses between 'Donnissen's Gelbe Knorpelkirsche' and 'Gros Blanc' failed to produce seed, indicating that these cultivars are cross-incompatible. The crosses of these cultivars with 'Kaiserin Eugenie' produced 26 seedlings, all of which bore nonblushed yellow fruit. Also, the crosses of blushed yellow and dark-fruited cultivars with 'Donnissen's Gelbe

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Table 1. Flavor means of Maine lowbush blueberries treated with Imidan 50-WP compared with an untreated control.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Flavor mean a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imidan</td>
<td>-0.29</td>
</tr>
<tr>
<td>Control</td>
<td>-0.36</td>
</tr>
<tr>
<td>Significance, 5% level</td>
<td>NS</td>
</tr>
</tbody>
</table>

aMean of 39 judges, 8 replications.

1Received for publication December 8, 1977. Scientific Paper No. 4838. Washington State University, College of Agriculture Research Center, Pullman, 99164, Project 0280.
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