R. S. BRINGHURST AND VICTOR VOTH

Larger Strawberries

through plant breeding

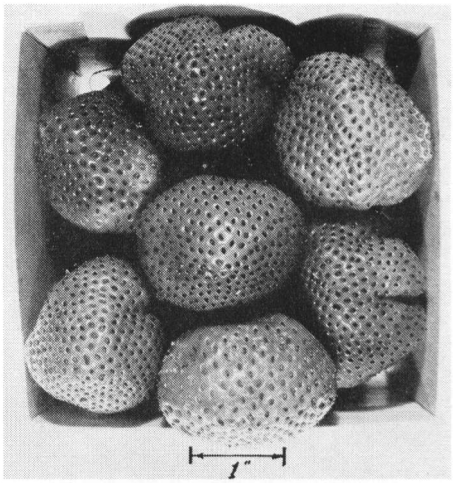
Larger strawberries is one of the prime objectives of the current plant breeding program bec' e harvesting cost decreases as fruit size increases.

Selected seedlings from hybridization between a native South American strawberry—*Fragaria chiloensis*—and commercial California varieties or selections have consistently produced exceptionally large fruit.

During the 1958 season one hybrid selection tested in a semi-commercial planting at Davis produced strawberries that averaged 21.3 grams per fruit throughout the season, compared with 8.9 grams for Lassen, 11.4 grams for Shasta and 12.6 grams for Solana.

During 1959, a different hybrid selection averaged 20.6 grams through the season, compared with 11.5 grams for Lassen, 9.6 grams for Shasta, and 13.3 grams for Solana. On the first full picking the fruits of the hybrid had an average weight of 47 grams per fruit compared with 16 grams for variety Lassen, 14 grams for Shasta, and 17 grams for Solana.

Although those two hybrid selections consistently bear larger fruit than any other strawberry variety in these tests, it may be some time before derivatives are available for use as commercial varieties. A number of undesirable plant and fruit characters appear to be associated with large size. However, because of experience in plant breeding programs, it is reasonable to assume that acceptable combinations of fruit and plant characters can be bred into selections that will maintain the wanted large fruit size.



Midseason fruit from hybridization between the Shasta variety and the native South American variety, in a standard one pint basket.

R. S. Bringhurst is Associate Professor of Pomology, University of California, Davis.

Victor Voth is Associate Specialist in Pomology, University of California, Davis, located at the South Coast Field Station, Santa Ana.

The above progress report is based on Research Project No. 1387.

RED MITE

Continued from preceding page

With Ethion alone, control of European red mite was difficult the first season. The orchard had a history of mite resistance to other organic phosphates although Ethion had not been previously used. Four treatments were necessary in 1958, and the mites built up in the interval between sprays even though populations were sharply reduced immediately following each treatment. Leaf damage was evident by midsummer. In 1959 the populations continued to increase despite two applications, and both leaf burn and defoliation were widespread by early July when the plot was resprayed with another acaricide to avoid more damage.

The Ethion-Glyodin combination looked promising in 1958 although the mites did build up in August. In 1959, however, the mites were not controlled after two applications, and severe leaf burn and defoliation were evident by June, when the plot was resprayed.

The Ethion-oil combination gave very good control over the two-year period. The mite counts remained below economic levels, and there was no evidence of foliage damage.

With Tedion, control was excellent with all combinations in the 1958 season. A few mites were encountered in late August on the Tedion-Glyodin plots, but no significance was attached to the count at the time. In the 1959 season, however, it was evident that the Tedion-Glyodin treatment was not providing control. The mites continued to increase regardless of the spray applications until severe leaf burn and defoliation occurred. In July it was necessary to discontinue the plot and spray with another acaricide. The plot treated with Tedion alone followed the same general pattern except that mites did not increase to damaging numbers as rapidly. In early July, following the first spray in May, the plot showed enough mites to warrant retreatment. After the second application on July 6, the populations did not decline and continued to increase until the trees showed leaf burn and defoliation. At this point, the plot was discontinued.

The Tedion-oil plot was outstanding in both 1958 and 1959. Not a single mite was encountered in any of the leaf samples, and the trees were free of any sign of mite damage. The plot was especially striking as it was located between the Tedion and Tedion-Glyodin sprayed trees, both of which showed extensive foliage damage.

Although there were no concurrent laboratory studies, it seems probable that the European red mite developed a resistance to Tedion and Ethion as a result of repeated applications of these compounds in the same area.

The performance of the Glyodin combinations, especially with Tedion, is difficult to explain. An excessive wetting of the tree, when Glyodin was included, was suspected of causing a lower deposit of Tedion. However, leaf analysis showed the deposit of Tedion was actually higher when used in combination with Glyodin than when used alone. It is possible that the heavy dosage of Glyodin ties up Tedion so it is not available to the mites. There is also a possibility that only part of the Tedion is active and therefore a resistant strain of the red mites develops rapidly.

One point that was illustrated as a result of the trial plots is the danger of repeated use of the same compound. Even though spectacular results are obtained in one season, complete failure may be encountered in the next.

Harold F. Madsen is Associate Entomologist, University of California, Berkeley.

Peter H. Westigard is Laboratory Technician in Entomology, University of California, Berkeley.