PRUNE VARIETAL IMPROVEMENT

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Objective:

The objective of this project is to breed commercially desirable prune varieties that ripen approximately 2 weeks earlier than the commonly grown 'French' types.

Results and Conclusions:

Analysis of data taken from 2 independent seedling populations at Davis indicate the heritabilities of ripe date; fruit length, width and weight; seed size; and % soluble solids all are very high; being .84, 1.0, .79, .89, .97 and .67 respectively, on a 0 to 1.0 scale. Consequently, simple mass selection breeding procedure should be very effective in producing seedlings with fruit of equivalent or larger size than the French variety, with equivalent or higher soluble solids than the French variety, and that ripen 2 weeks earlier than the French variety.

Were such a program initiated, 2 to 10% of our breeding stock (40 to 200 seedlings if the project is maintained at the current funding level) would be expected to meet these criteria within 2 generations (8 years).

The yield trait differs conspicuously from the above mentioned traits. The heritability of yield of seedlings during their first year of bearing is zero. The zero heritability could be almost entirely due to the unreliability of our measurements (a subjective guess) or it could be that genes affecting yield are not expressed during the seedlings first year of bearing. We don't know which is the case. However, it is clear that seedlings that are outstanding with respect to the first mentioned traits will have to be evaluated with respect to potential yield.

Work Planned:

1. Establish a breeding stock based primarily on self-pollination of French, and consisting of 2000 to 3000 seedlings. The nursery will be established in the Spring of 1975.

2. Select parents, on the basis of the desirable heritable traits, from this seedling population (1977-1978).

3. Intermate these selected parents and select potential new varieties from the F_2 generation on the basis of criteria outlined (1982-83).

4. Test potential varieties for a broad spectrum of performance traits, including yield, and release superior-performing genotypes as varieties (1979-85).