

COMPREHENSIVE RESEARCH ON PRUNES

PROGRAM AREA Agricultural Engineering. Optical Prune SortingPROJECT LEADER T. H. BurkhardtPERSONNEL R. F. MrozekOBJECTIVES:

Determination of the reflectance spectra using prunes with various defects and sound prunes.

Determination of other properties (specific gravity, orientation when floating, effects of dyes and stains, effect of temperature changes on defects and sound skin, etc.) which might show promise for prune sorting.

WORK IN PROGRESS:

Prune samples from 4 areas have been obtained. These samples are from the Fresno, Santa Clara, Sonoma, and Sacramento areas. Light reflectance characteristics for good light, good dark, scab, side crack, end crack, skin damage and exposed pit prunes are being investigated. The samples were tested in December and will be tested again in March, and again in June to determine effect of storage on reflectance characteristics.

EXPERIMENTS COMPLETED:

Preliminary reflectance investigations were conducted on prunes from the 1969 and 1970 crops. The investigations provided information on which to base a more complete study conducted from December 1970 to June 1971. Early results indicated a favorable spectral range for sorting, this being from 1400 millimicrons to 1800 millimicrons. This range is of longer wavelength than previously investigated. It was established that there is a large variation in sizes of damage, size of prunes and reflectance percentages among prunes. The future experiments were designed to statistically determine these variations.

WORK PLANNED:

During the first part of 1971 the samples under study will continue to be examined to determine time effect on reflectance characteristics. Variability of reflectance characteristics and size of damaged areas will be determined.

MAJOR ACCOMPLISHMENTS:

The sample size necessary to study time effects on reflectance characteristics was determined. A study has been set up and initiated that will yield the desired prune sorting information.

The experiments thus far indicate a favorable wavelength range for prune sorting, this is from 1400 millimicrons to 1800 millimicrons. Within this wavelength range it appears possible to sort prunes into two groups. One group is good dark, good light, and skin damage. The other group is scab, side crack, exposed pit, and end crack. This information must be verified by the continuing experiments.

EVALUATION OF PROJECT:

At the present time an experiment is underway that will yield reflectance characteristics of prunes from 4 areas in California. Data is being gathered on the size and variability of prunes, and the size and variability of damaged areas on prunes. The distribution of reflectance percentages and the effect of time on reflectance characteristics are being determined. This information is necessary for the design and evaluation of sorting equipment.