

COMPREHENSIVE RESEARCH ON PRUNES

PROGRAM AREA: I. Fruit Quality and Production II. Processing

PROJECT LEADER: M. W. Miller

PERSONNEL: Professor I; Laboratory Technician IV 60%; Laboratory helpers
10-40%; Research Assistant 25%

OBJECTIVES:

Area I. The department involvement in this portion of the accelerated prune program is limited to that phase regarding more definitive indices to measure prune maturity - as correlated to dried fruit quality.

Area II. To determine the relationships between fresh fruit characteristics, dehydration and processing procedures and storage conditions on the quality of prunes. Changes in composition and flavor during processing and means of protecting or augmenting quality factors in various prune products are emphasized.

WORK IN PROGRESS:

Area I. Data which were collected have been subjected to statistical analyses. A computer is being used to determine correlations between the variables for which data are available. This work is still in progress as the computer programming for graphing of correlations has not been satisfactorily worked out.

Area II. Work at present is concentrated on the procedures used commercially for processing various prune products at a laboratory scale to determine if volatile flavor components can be preserved and if not, whether suitable additives can be used to successfully augment the flavor remaining.

EXPERIMENTS COMPLETED:

Area I. Variations in the computer programs have not given satisfactory results in the graphing of correlations obtained previously.

Area II. All samples except one set of extended storage samples have been analyzed. Information has been obtained on French variety prunes grown in two typical areas (interior valley and coastal) which were dried by conventional counterflow and parallelflow procedures in commercial dehydrators. Dried fruit was processed by rehydration and by aqueous extraction for juice by the two main commercial methods. Data were collected on the fruit from the fresh stage through dehydration, storage, processing and subsequent storage through 6-9 months of storage. Preliminary studies on various means of essence recovery have to be reexamined as data collected were inconsistent from sample to sample.

WORK PLANNED:

In general the "Work in Progress" is to be continued. Initially most of the effort will be placed on prune juice (aqueous extract of dried prunes) and methods of improving flavor quality with subsequent work on high moisture processed prunes. Analyses on the prolonged storage samples are to be done for further confirmation of the changes found to occur during storage to date.

MAJOR ACCOMPLISHMENTS:

The most important results answer the questions of prune growers and packers regarding the effect high temperature, short time, parallelflow dehydration have had on the quality, storage and processing characteristics of the dried fruit as compared to prunes dried by the conventional counterflow procedures. As the procedures used commercial equipment and conditions insofar as possible it is felt that the results obtained are commercially applicable. Briefly the study has shown to date that from each of the two growing areas there is no significant difference in the dried fruit count per pound whether dried counter- or parallel-flow. Similarly the changes in acidity, sugar compositions and contents and flesh colors show insignificant differences particularly after storage and processing. Processing showed that fruits dried by the two methods rehydrate in a similar manner and that juice manufactured from the different samples was very much alike.

EVALUATION OF PROJECT:

The additional funds made available for the accelerated program have permitted a more consistent effort in greater depth to be made on prune research problems. The accomplishments made over the past year would have taken considerably longer under previous arrangements, and being able to plan for several years permits a more effective use of continuously used trained personnel.

PUBLICATIONS OR REPORTS:

A research report submitted in partial satisfaction of a Master of Science degree in Food Science has resulted from this work. Pertinent data and conclusions have been published in the Proceedings - Tenth Annual Research Conference - Dried Fruit Industry Research Advisory Committee, Fresno, California July, 1970. Title: Changes in Prunes resulting from drying procedures, storage and processing. pp. 29-38.