

COMPREHENSIVE RESEARCH ON PRUNES

PROGRAM AREA: Program 48, "Food Technology and Engineering--Applied and Developmental Research".

PROJECT NUMBER & TITLE: Program 48, Project 2603, "An Investigation of the Dehydration of Fruits and Processing and Storage of Dried Fruits".

PROJECT LEADER: M. W. Miller

PERSONNEL: 1 Faculty, 2 Staff Research Associates, some Student Assistants.

Research efforts on the prune program are in two of the four program areas of comprehensive research in prunes. Data for each area will be reported separately.

Program Area II: Fruit Production and Quality (1, 2).

Program Area IV: Processing (3, 4).

OBJECTIVES: Area II 1. Completion of the analyses run on samples of dried prunes obtained from the Alar treatments (Dept. of Pomology and Extension personnel) to determine the effects of using Alar in the orchard on the nutritional composition of the resulting dried fruit.

2. To continue developing information of use to the prune industry from data collected by personnel from Pomology, Extension and Food Science on fresh fruit vs. dried fruit characteristics. Also an evaluation was made of data obtained from a commercial green size-grading study to see how this technique may be practically applied.

Area IV 3. To complete the study of the effect of processing on flavor retention in prune juice.

4. To obtain additional and supportive compositional data on prunes and prune products.

WORK IN PROGRESS: Area II 1. Analytical work on Alar samples completed.

2. Means of predicting dried fruit characteristics by the use of fresh fruit analyses is continuing particularly in the areas of determining the value of green size grading and predicting dried fruit size and size distribution. This is being done primarily by Drs. Claypool and Miller.

Area IV 3. Work has been concluded on prune flavor retention.

4. While data is lacking for a number of prune products, no work is presently in progress.

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EXPERIMENTS COMPLETED: Area II 1. When completed in 1973, a total of 145 samples obtained from the Alar experimental program had been analyzed for compositional variation. Analysis of the nearly 8,000 tests showed that the fruits of prune trees treated with various concentration levels of Alar when dried did not differ significantly from fruits of control (non-treated) trees.

2. Although many one-to-one factors are completed, evaluation of fresh-dry prune characteristics is such that interrelationships still are to be completed.

A commercial study of green size grading was completed and data studied by Drs. Claypool and Miller for the practical application of this method.

Area IV 3. Fresh prunes were freeze dried and then extracted with warm (120°F) water. The resultant juice was compared with similar prunes dehydrated and extracted according to commercial procedures.

4. Ten natural condition, 19 processed, 15 prune juice and 7 prune juice concentrate samples had analyses completed. Data was used (a) for latest revisions (1973) in CPAB "Nutritive Value of California Prunes" booklet, and (b) average values sent to USDA Beltsville, MD for use in revision of Handbook No. 8 "Composition of Foods", (c) and to check accuracy of some advertising copy (in conjunction with other published data).

WORK PLANNED: Area II, 1. Although data from only one crop season is presently available on the effect of Alar on dried prune composition, no further work is planned unless needed by the prune industry for certification of Alar. In the event the industry planned to use this compound in the future the information presently available may or may not suffice for certification for usage on prunes.

2. A continuation of evaluating data and reaching conclusions on fresh-dry prune characteristics and interrelationships is planned.

Area IV, 3. No further work is planned on the retention of prune flavor at this time.

4. Future plans include compositional analyses of prune products for which there is little or no data presently available.

MAJOR ACCOMPLISHMENTS: Area II, 1. Analyses of dried prunes showed that the application of Alar at various concentration levels did not significantly affect the composition of the prunes as compared to untreated control fruit.

2. While a massive amount of data is being analyzed, it is felt that predictions of dried prune characters from fresh fruit analyses can be made. Final recommendations and conclusions are still not completed.

Area IV 3. Previous experiments had indicated the heat sensitive nature of fresh prune flavor components. The present work where the application of heat during drying and subsequent water extraction was minimized

definitely produced an extract of dried prunes superior in fresh prune flavor. The conclusion is that the flavor of prune juice (water extract) is influenced by "total heat" treatment both during drying and during extraction.

4. Nutritional composition data for processed prunes, juice and concentrate have been completed for up-to-date data.

IMMEDIATELY APPLICABLE RESEARCH RESULTS: Area II, 1. Results from compositional studies on dried fruit from the Alar study can be used as supportive data should the industry wish to obtain certification for usage of Alar.
2. While much information from fresh-dried prunes studies has and is being used by industry the work is not completed.

Area IV, 3. Prunes destined for juice manufacture will produce better flavored extracts if exposed to the minimum amount of heat necessary to dry and also the minimum heat for extraction of the fruit.

4. The data on the composition of processed prunes, juice and concentrate have been used by CPAB for supplying up-to-date information to the trade, consumers, etc. The information has also been supplied to USDA personnel in Beltsville, MD. for use in revision of USDA Handbook No. 8.

PUBLICATIONS OR REPORTS: 1. Preliminary results were reported on Prune Day 1972. Completion of study to Research Subcommittee CPAB.
All other studies have been submitted and/or reported to the CPAB or its Research Sub-Committee.