

RESEARCH DEPARTMENT

Oil Determinations

From January 1 to September 30, 1927, the laboratory made 825 refractometer readings. These were given free to members, at cost to Horticultural Commissioners, and at a reasonable charge of \$2.00 to others.

Grinding

One of the slowest steps in oil determination is the grinding of the pulp preparatory to oil extraction. The old-fashioned meat grinder, followed by mortar and pestle, is still the only method practicable for the purpose. *Maturity Determination Through Inspection and Sampling*

For the purpose of determining maturity in relation to oil content, a number of growers have been sending in two fruits for test. One is used immediately for the refractometer reading—the other is softened and then tested for taste impressions. Surprisingly uniform results have been obtained. The tasters are not informed of what variety is under observation or its oil content until after their impressions have been given, and no taster is allowed to make comparisons with another. Results were summarized. Immature fruits were invariably marked "Poor". Mature—"Good" and "Excellent".

In addition to the tasting test, every fruit has been given a most careful external and internal observation in an endeavor to note every possible marking that would aid the grower to distinguish maturity by observation. Our data on the changes in appearance as maturity advances has increased 90% since January.

Retarding Ripening

Experiments have been made with Fuerte, Taft and Spinks to discover how long the ripening could be safely retarded. Temperatures used have varied from normal to 32°.

Prof. Overholser, at the University Farm, has consented to continue his very valuable experiments on the determination of the optimum and maximum storage time of various varieties.

Pre-Ripening

Some simple experiments have been begun in an attempt to hasten ripening. No definite conclusions have as yet been reached. It is planned to construct a small box in which to test our different types of heat and insulating materials for the purpose of pre-ripening.

Packs

Excelsior and paper packs were both experimented with and while the colored paper pack makes a fascinating holiday display attraction, it has a tendency to heat the fruit and for all ordinary occasions, the excelsior pack is preferable.

Iced Crates

Iced crates were successfully used in experimental shipments into territory where there is no refrigerated express service. When volume warrants our going into the question, this method of shipment will again be considered.

Pre-Cooling

Various types of car pre-coolers have been considered but nothing has been worked out more practicable than ordinary electric fans, the fruit, as always, being pre-cooled in the refrigerator room.

Vitamins

Dr. Weatherby, of the University of Southern California, is nearing the conclusion of his investigation on Vitamin B content and intimates that he will have something of great interest to report to us.

Dr. D. Breese Jones, in charge of the U. S. D. A. Protein and Vitamin Laboratory in Washington, is about to conduct some experiments along the lines of research into the vitamin content of Calavos and will give us thereby the benefit of his long experience in vitamin research.

Protein

Dr. D. Breese Jones, in charge of the Protein Laboratory in Washington has also begun some investigations as to the protein content of Calavos^ and having isolated these proteins, is now studying them.

BY-PRODUCTS

Salad and Cocktail Ease

A full report of the investigations of Prof. W. V. Cruess and Miss Elizabeth Harrold along the line of a sandwich spread, cocktail, or salad base, mayonnaise, etc., was published in the last year-book of the California Avocado Association. The problem confronting us in the salad base is that when sufficient acid is put in the base to overcome the oil and preserve the compound, it loses its distinctive Calavo flavor. Though a pleasing spread and mayonnaise have been made, these products have too great a similarity to sandwich spreads made of much cheaper materials to have any commercial value as yet.

Avocado Oil

A study of the oil is being made at the present time by Dr. Jamieson, of the U. S. D. A. Laboratory of Oils in Washington. Though the first steps' have been made in the examination of the oil, it will take a careful study over a period of time to determine keeping quality and other elements that enter into its value commercially.

Ice Cream Ease

Many experiments have been performed, both by the University in the persons of Prof. W. V. Druess and Miss Elizabeth Harrold, and the Calavo Growers under the direction of Mr. Crosby, in an endeavor to secure a product that would be practicable commercially. As yet it is only sold by a few ultra-fashionable restaurants at fabulously high prices. Research work is being continued along this line in an attempt to perfect the

base for commercial use.

Canning

As shown by Prof. Cruess and Miss Harrold's report, there have been as yet only negative results in the attempt to can avocados. Two commercial canneries are now making experiments.

Conclusions

All such research work is of the utmost value to the industry, especially if it can be performed and conclusions reached before the press of immediate necessity forces a hurried outlay of large sums of money. Our Research Department is endeavoring to work in advance of the need.

PACKING OPERATIONS

Machinery

In the early part of the year, conveyors were extended directly into the packing-house cooler and from the cooler into the cars. A slow-moving belt was installed to convey the fruit from the sizer to newly constructed packing-bins. Mechanical counters were installed.

New Brands

Aside from stamping, the new brands, Fino, Bueno, and Gusto, necessitated little change in packing methods because these names were substitutes for the previous grades of Extra Choice Off-Grade, Choice and Standard.

Operations Simplified

Stamping and grading was somewhat simplified by the omission of the variety name, the grade only being stamped.

One very marked contribution to the economy program was the cooperation of packing-house employees. The force, when reduced to a minimum increased its efficiency, even though the volume of fruit decreased floor space also was sublet to reduce rent.