Processing Milk Powders For Their Particular Uses

Hilde Shipstedt

The first successful milk drying process was the atmospheric double drum dryer.

The advantage of this dryer is its simplicity that makes possible a continuous production without the necessity of cleaning between different milk products. The milk powder is dried in the drum dryer, the system being designed for this purpose specifically. The milk powders are then conveyed by air to the final packaging equipment. This system has been used for the past ten years in the United States and has been found to be an effective and economical method of milk drying.

Investigations On The Control Of Codling Moth On The Payne Walnut In Central California

A. F. Mitchelbacher and W. W. Middlekauff

The codling moth, Carpocapsa pomonella, occurs throughout California and is one of the most important pests of walnuts. In southern California, investigations on the control of this pest have been conducted by members of the entomological staff at the Citrus Experiment Station, Riverside, while in central California, the problem has been carried out by members of the entomological staff at Berkeley.

If the early spray is neglected, observations have shown that under conditions of severe attack, 25 per cent or more of the walnut crop may be infested before the end of May. This will influence the importance of applying any early spray in those areas where the codling moth is a major pest.

The principal differences between the various powders are the nutritive value, however, and the handling ease. Whole milk powder made from preconcentrated milk has a much better keeping quality than that made from fluid milk. The particles of the preconcentrated milk are larger and heavier and present a much smaller surface of exposure to the air.

Keeping Quality Improved

Elimination of upper and lower congealing resulted in a great improvement in keeping quality. In spite of this, and other improvements, it was not possible to keep whole milk powder at room temperature for more than three to six months without development of a tallowy flavor. It was evident that this flavor was caused by oxidation of the butter-fat constituents of whole milk powders.

Flavor of the spray color score of the powder according to the amount of oxygen absorbed. The brown color indicates the critical level of oxygen absorption to be around 5 per cent of powder. This meant it would be necessary to remove the air from the can of whole milk powder to reduce the total remaining free oxygen to below 0.6.

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Vitamin A Content Similar In Yellow Or White Butterfat

A. W. Began

A conclusion drawn in some thirty years ago still holds the milk consuming public, and the dairymen followed suit.

Carotenols were found to be the pigment that gave milk its golden yellow color. Later it was discovered that carotenols derived from plants, was the precursor of vitamin A.

The conclusion was drawn that yellow milk was distinctly superior to white milk in vitamin A content.

Dairymen with high producing Holstein heifers and unable to purchase white milk, began to compromise their scarcity and high price, sorted to cross-breeding, placing Guernsey bulls at the head of their herd. Dairy farmers, finding it difficult to maintain two breeds on the same ranch, adopted the easy way out and crossed to white.

More recently it was shown that the white butterfat of the Holstein was approximately the same vitamin A value as the yellow fat of the Guernsey, when the cows are on the same feed. The Holstein converts the raw carotenols very effectively.

Market Demand Complications

The situation is further aggravated by the demand for market milk at a fat content not typical of (Continued on page 3)

Waltos cut through blossom end to reveal young codling moth caterpillar injury to developing nuts. The caterpillars are indicated by the white arrows.

The information contained in this report covers only the work done by the Berkeley station and is applicable to central California conditions. The investigations were started in 1941 and have been conducted primarily at Linden on the Payne variety of walnut.

Timing Spray Applications

A study of the habits of the codling moth in relation to the timing of spray applications was undertaken.

Moth flights have been determined through the utilization of bait pans for trapping the adults. Records for the years 1943 to 1963 inclusive show that there were two broods of moths that must be considered. The first occurs in late April or early May and the second in July.

In order to protect the walnut crop from the first brood it is necessary to apply a spray in early May, as the time when the developing walnuts are still very small.

Basic lead arsenate used at the rate of 4 pounds to the 100 gallons of water has been the standard in our tests. In order to get satisfactory control with this material a second spray is necessary.

Investigations show that this second treatment can be applied with good results any time from the latter part of May until the middle of June.

If the early spray is neglected, observations have shown that under conditions of severe attack, 25 per cent or more of the walnut crop may be infested before the end of May. This will influence the importance of applying an early spray in those areas where the codling moth is a major pest.

A second standard lead arsenate spray improves the control but it is doubtfull whether the results justify the added expense.

In 1946 a number of growers in the Linden area applied the standard lead arsenate treatment to at least a portion of their planting. No injury whatever was reported and the program will be further tested on a commercial scale in 1947. However, unrestricted recommendation for substituting standard lead arsenate for basic lead arsenate must wait.

Effects Of Plant Growth Regulators On Orange Drop

W. S. Stewart, L. J. Klae, and R. S. Boyd

In citrus, fruit drop may be considered a continuous process from the time of flowering to fruit maturity.

Superimposed on this background of continuous drop are three periods during which drop is most intense. These are preharvest, fruit drop, and preharvest drop.

Preharvest Drop Reduced

The first early spray material plots reported here, using water sprays of 2,4-D to reduce mature fruit drop in citrus was established in Valencia orange orchard in May, 1941.

Concentrations of 2,4-D tested, ranged from five pounds of 2,4-D in one million pounds of water, to 40 pounds of 2,4-D in one million. In subsequent tests, a reduction in drop of mature fruit was found even when the spray was applied weekly after a heavy drop had been in progress.

In this respect the data are very comparable to those obtained by treatments in fruit drop was variable, ranging from 20 to 60 per cent in eleven plots distributed throughout southern California.

This was to be expected, considering the variety in drop observed among the species and varieties, and considering that some plots were harvested before severe drop from the unsprayed trees occurred.

Similarly fruit drop reductions, ranging from 7 to 60 per cent were obtained in 25 plots of bergamot using 2,4-D sprays of 25 pounds per acre.

New Vegetables For California Farms Result Of Research

Glen N. Davis

A number of varieties of vegetables have been developed in recent years, either individually or jointly by the California Agricultural Experiment Station and the United States Department of Agriculture. Some of the varieties investigated will be available for several years. Others are of minor importance.

Cantaloupe

Powder Mildew Resistant No. 45 is resistant to the powdery mildew but is not resistant to wilt and is recommended as a resistant type. Report No. 45 is resistant to both forms of the powdery mildew. Under good cultural conditions it has been observed over 200 crates to the acre. The high quality is reflected in higher market readings of 12 to 14 per cent soluble solids and is evidently superior to many as various nor is it completely immune from mildew. It is tolerant and is the first indication of the "slip" they tend to be-

Powder Mildew Resistant No. 6 and R. W. Held is well shaped. It has a larger seed cav- ity than No. 45 and the fruits have less edible flesh than those of No. 45. It is also a small oblate melon and in comparis- on with No. 5 and No. 6 is somewhat later in maturity. The seed cavity and flesh are comparable to No. 4. (Continued on page 2)
Studies On Plasma Fractions From Domestic Livestock May Lead To Animal Disease Control

W. A. Cameron

Investigations of the effectiveness of plasma fractions obtained from the blood of domestic animals, especially cattle, have shown that the presence of these fractions can retard the virulence of viruses, bacteria, and protozoa. These findings have led to the development of a new type of vaccine known as "virus-like" vaccine. The vaccine is prepared by treating the virus with a plasma fraction to inactivate it, and then using this fraction to protect animals against the virus. The vaccine is not a complete virus and cannot cause disease, but it can stimulate the body's immune system to produce antibodies to the virus. This makes the vaccine highly effective in preventing disease.

White or Yellow—Butterfat Has Approximately Equal Value In Vitamin A Potency

(Continued from page 1)

White or yellow butterfat is an important source of vitamin A, and is also used in the manufacture of margarine and other food products. The vitamin A content of butterfat is determined by the diet of the cow, and can vary depending on the breed of cow and the type of feed it is fed. In general, butterfat from Holstein cows contains a higher concentration of vitamin A than butterfat from Jersey or Guernsey cows.

Production Problems Of Rabbit Growers Subject Of Cooperative Research At Davis And Fontana

T. C. Hoge

Disease-free herds and better management practices for commercial rabbitries are emphasized in a new research project under way.

The United States Rabbit Experiment Station and the Department of Animal Husbandry and Biochemistry at the University of California are cooperating in this study. The aim of the research is to improve the health and productivity of commercial rabbit herds by developing disease-free herds and implementing better management practices.

The study involves the use of guinea pigs as test animals. Guinea pigs are used because they are highly susceptible to rabbit diseases and can be used to test the effectiveness of new management practices. The research team is working to develop disease-free herds by using a combination of disease control measures such as proper sanitary practices, the use of disease-resistant breeds, and the use of vaccines.

White rabbit as the left is normal, weight 3 pounds, with smooth, bright, alert, and the fur smooth and clean. The white rabbit has a fine coat, and is free from DDT contamination. White rabbit as the right is normal: weight 3 pounds, usual stance, eyes bright, ear flat. The white rabbit has a fine coat, and is free from DDT contamination.

The rabbit as the left is normal, weight 3 pounds, with smooth, bright, alert, and the fur smooth and clean. The white rabbit has a fine coat, and is free from DDT contamination. White rabbit as the right is normal: weight 3 pounds, usual stance, eyes bright, ear flat. The white rabbit has a fine coat, and is free from DDT contamination.