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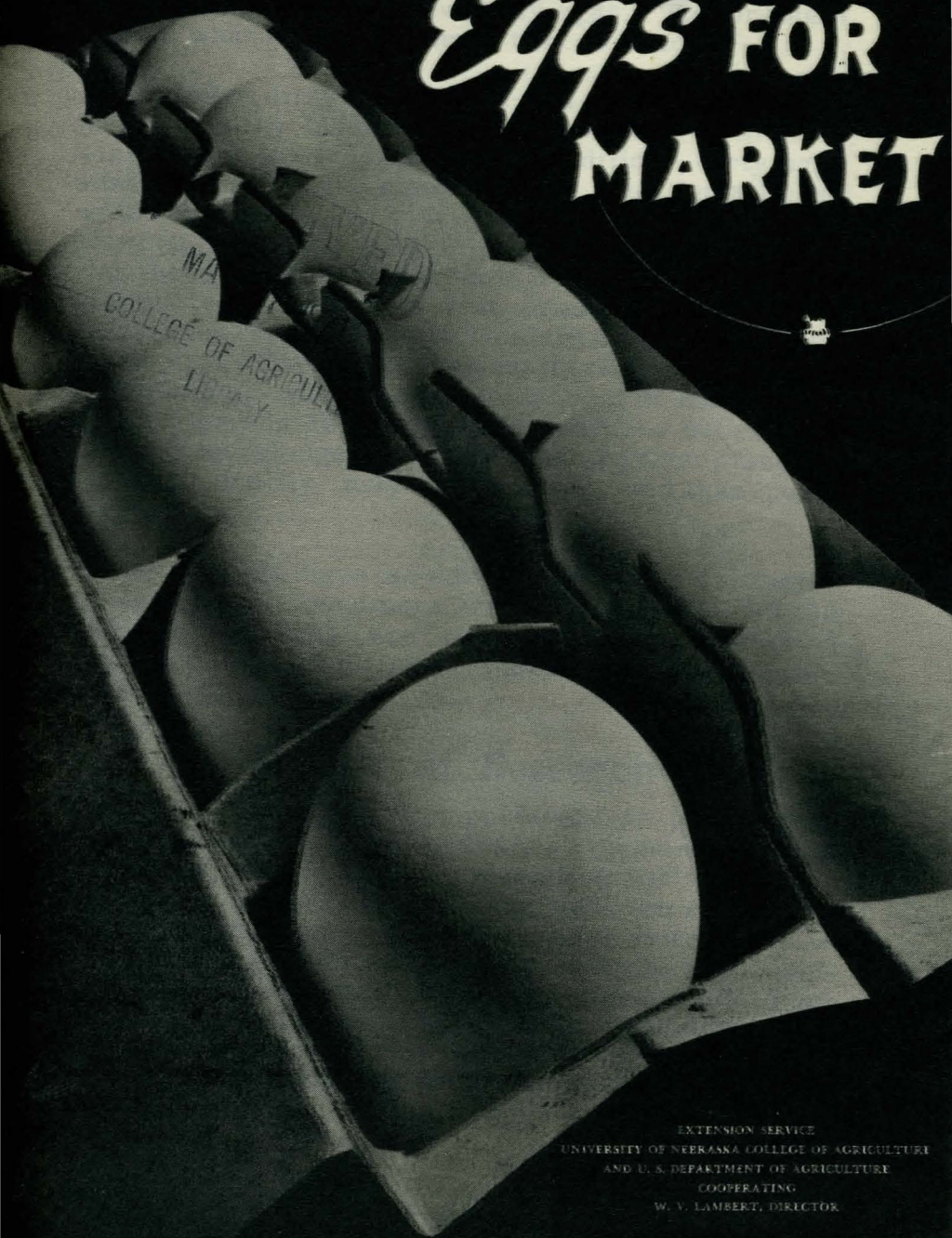
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CLEANING *Eggs* FOR MARKET



EXTENSION SERVICE
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE
AND U. S. DEPARTMENT OF AGRICULTURE
COOPERATING
W. V. LAMBERT, DIRECTOR

Cleaning Eggs For Market

J. W. Goble

Dirty eggs are generally the result of poor management. Even with the best management, however, there will be a few dirty eggs. The problem then is what to do with those that do occur.

Soiled or dirty eggs result in a considerable loss to the poultry industry because of deterioration in quality and lower prices. In addition, dirty eggs adversely affect the general price level for all eggs within a region. A wide differential usually exists between the price paid to producers for dirty eggs and that paid for clean ones if marketing is on a graded basis. This is true even though interior quality may be comparable. Dealers may incur losses in two ways. Dirty eggs are usually cleaned by central assemblers, which adds to the cost of marketing. If the cleaning is done by the producer without the dealer's knowledge, and if the eggs are then placed in storage, quality may deteriorate and thus cause losses.

Dirty eggs have an adverse effect on consumer acceptance. Consumers want clean food! Yet too many dirty eggs are passing through marketing channels to consumers, thereby tending to discourage consumption.

Results of Research

There is no general agreement as to the best way to clean eggs. Egg buyers have opposed washing as it was thought that the resulting bacterial contamination caused deterioration when the eggs were placed in storage. Producers have been urged to dry-clean eggs with sandpaper or similar abrasives as this method was thought to be less harmful than washing. Most companies prefer to clean dirty eggs themselves, rather than have it done on the farm. This eliminates the possibility of washed eggs being placed in storage.

Considerable research work has been done by experiment stations in and endeavor to discover a satisfactory method of cleaning soiled eggs. The results of experiments so far have varied considerably. Experiments conducted at the Missouri Experiment Station¹ in 1937 indicated that eggs could be satisfactorily cleaned with a lye solution (Na OH) and that the eggs would keep as well in storage as those which were naturally clean.

A more recent experiment conducted by a commercial organization² showed that washing eggs does not necessarily result in the development of rots. The conclusion was made that conditions must be such that the eggs become inoculated with organisms that will develop into rots when favorable environmental conditions exist. Results of the experiment indicated that eggs could be successfully cleaned provided the wash water remained sterile and provided the interior of the eggs was not previously infected with rot-producing organisms.

In an experiment conducted at the New Jersey Agricultural Experiment Station³, the internal quality of washed eggs was equal to that of unwashed eggs after both had been held in cold storage.

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- 1/ E. M. Funk. "Improving the Keeping Quality of Eggs by Cleaning With Sodium Hydroxide," University of Mo. Research Bul. 277, Febr. 1938.
 - 2/ M. Wayne Miller, V. Jankovsky, Albert Kraght, "Experiments Relating to the Spoilage of Washed Eggs", Poul. Sci., Vol. XXIX, No. 1, 1950, p. 27.
 - 3/ John A. Pino, "Effect of Washing With a Hot Detergent Solution on Keeping Quality and Hatchability of Eggs," Poultry Science, Vol. XXIX, No. 6, 1950, pp. 888-893.

Several other experiment stations, including Nebraska, have been conducting studies in an attempt to solve the problem of cleaning eggs.

Methods of Cleaning

Dry-Cleaning

Dry-cleaning dirty eggs has been recommended by produce dealers in preference to washing. Either brushes or abrasives such as sandpaper are generally used to remove dirt.

If only a small area of the shell surface is dirty, brushing or sanding is a rapid method of cleaning. However, if a large area is soiled, considerable time is required for removing the dirt. There is also the danger of loss from cracking or crushing eggs in the cleaning process.

Tests conducted at the Ohio Experiment Station⁴ indicated that dry methods of cleaning eggs are no better than wet methods.

Washing

Producers use several methods of washing dirty eggs. A common practice is to wipe the eggs clean with a damp cloth. Eggs that are too dirty to be wiped clean are often soaked in water. This is highly undesirable, since the water becomes contaminated and serves as a medium by which organisms may enter the interior of the eggs.

⁴/ Report of N.C.M. 7 project, "Preservation of Shell Egg Quality," 1950.

In recent years, several commercial egg cleaning machines have been developed for farm use. Many of them use the washing principle, although the quantity of water used varies with the type of machine. Some machines submerge the eggs, some spray them, and others simulate the action of wiping the eggs with a damp cloth.

Several materials have been used in the wash water for more effective cleaning. Some have an adverse effect on quality. One cleaning material that is sometimes used on farms is vinegar. The use of vinegar is to be discouraged as it does not aid in cleaning and may affect quality by imparting a foreign odor or taste to the eggs.

Varying results have been obtained in tests in which bactericides such as chlorine were used to reduce the build-up of bacteria in the water.

A detergent such as trisodium phosphate is generally recommended for use in the cleaning water. Materials of this type aid in removing dirt, yet impart no off flavor to the eggs.

Washing eggs has the advantage of saving time, is less difficult and more thorough than dry-cleaning and usually results in less breakage.

The primary disadvantage attributed to washing is the spoilage of eggs that occurs when they are placed in storage. The cost of the equipment must also be considered. The time required and the inconvenience of dry-cleaning acts as an inducement to produce naturally clean eggs. Washing, because of its convenience, may actually encourage lax management practices.

Recommended Cleaning Procedure

Most authorities agree that dry cleaning should be done as soon as soiled eggs are gathered. There is some difference of opinion, however, as to when soiled eggs should be washed. Some believe that if eggs are washed immediately after gathering and held under unfavorable conditions they will deteriorate more rapidly than if they are washed just before marketing. Others believe that a delay in cleaning will permit the organisms to enter the egg through the pores of the shell. Subsequent cleaning of the shell, in their opinion, would only result in improving the appearance since the organisms would already be inside the egg.

If cleaning is done immediately after gathering, the eggs should be held under favorable conditions on the farm until marketed. Even naturally clean eggs may deteriorate rapidly unless precooled before casing and held at temperatures of 55° - 60°F. and a relative humidity above 60 per cent.

Use Clean Water

Wash water should not be permitted to become filthy. Ideal conditions would permit continuous change of the wash water. Where this is impossible, the water should be changed as frequently as possible.

Several products now on the market combine a germicide with a detergent. When added to water, these products have proved effective for cleaning soiled eggs.

Do Not Soak Eggs

Eggs should never be soaked in a cleaning solution. They should be in the solution for the minimum time necessary to clean them. Soaking merely intensifies the problems created by washing. If the dirt firmly adheres to the shell, soaking requires too much time for its removal. Most dirty eggs require some manual cleaning in addition to the action of the liquid.

Temperature Difference

Most authorities suggest that the wash water should be several degrees warmer than the interior of the egg. The temperature of the water should range from 110° - 130°F. If the water is warmer than 136° F., the albumen (white) will begin to coagulate (cook). When cool eggs are submerged in warm water, the contents of the eggs expand and resist the entrance of organisms. If warm eggs are placed in cool water, the contents shrink, thereby drawing in rot producing organisms through the shell.

Dry After Washing

Eggs should be dried immediately after washing. An electric fan is satisfactory for this purpose. If damp eggs are cased, the bacteria in the water clinging to the shell is given an opportunity to pass into the egg. Stains may also occur on the damp end of eggs that are placed in the fillers, defeating the purpose of cleaning.

Case Separately

All eggs that are cleaned by either the washing or dry-cleaning method should be cased separately and identified from the naturally clean eggs. Segregation of these eggs enables a dealer to move the cleaned eggs into market channels for immediate consumption.

Most dealers will accept cleaned eggs at the same price as those that are naturally clean if the cleaned eggs are segregated.

When washed eggs are put in cases with those that are naturally clean, a dealer will be forced to pay a lower price for all the eggs. This is necessary to cover the risk of deterioration from storing eggs that have been cleaned.