

California Poultry Letter

University of California • Cooperative Extension

July - August 1999

Egg Cooling Times Can Be Reduced

Now that eggs are required to be maintained in coolers with air temperature at 45⁰F or below from the point of packaging through retail, there has been some concern that buyers of eggs may balk at receiving warm eggs. This is understandable, since receiving coolers would require more refrigeration capacity to maintain an ambient temperature of 45⁰F with the addition of a shipment of warm eggs, than would be required to simply maintain that temperature with previously cooled eggs.

An informal survey of a few southern California egg processors revealed that in some cases as many as 75% of the eggs are shipped within 24 hours after packing. Other processors hold the majority of their eggs for 2 to 3 days after packing before shipment. Most buyers prefer to receive eggs within 3 days of packing. We assume the reason for this is to assure high egg quality and safety for customers, and possibly to prevent exceeding the sell-by date. One processor indicated that a buyer recently requested eggs that had already been cooled to 45⁰F.

If buyers demanded eggs that were previously cooled to 45⁰F, could egg processors accommodate? If so, how could it be done, and at what cost? This spring we demonstrated two methods of cooling eggs that can significantly reduce cooling times with relatively little additional cost or modification to cool rooms and refrigeration systems. We learned that by forcing refrigerated air across pallets of cartoned eggs in wire baskets or ventilated fiberboard

cartons, we could cool eggs in a matter of hours compared with conventional cooling that took up to a week in time. This method of cooling is routinely used by the fruit and vegetable industries and can be adapted to the egg industry with a few modifications to the cool room.

Improvements in cooling time for eggs packed in fiberboard cases can also be achieved by packing eggs into ventilated boxes or wire baskets and simply room cooling them. Both methods would require additional refrigeration capacity if all eggs were to be shipped at 45⁰F which is not currently the practice.

Although many eggs are not packed in fiberboard boxes, for the purpose of this discussion, I would like to focus on simple room cooling using ventilated case box material. In this study 15 dozen customized case boxes were provided by Coast Packaging which had 1-1/4 inch holes drilled in all four side-walls of the box (5% ventilation). After temperature logging probes were inserted into strategically located eggs, the cases were stacked on pallets and placed into a cool room that had an average ambient temperature of 45.7⁰F. Control pallets of eggs packed in conventional boxes were also placed in the cool room at the same time for comparison purposes. While both foam and fiber cartons were tested, room cooling rates were not affected by type of carton material and only the results from the fiber cartons are presented here. Egg temperatures which are reported are the average of all eggs monitored in the pallet.

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Figure 1.

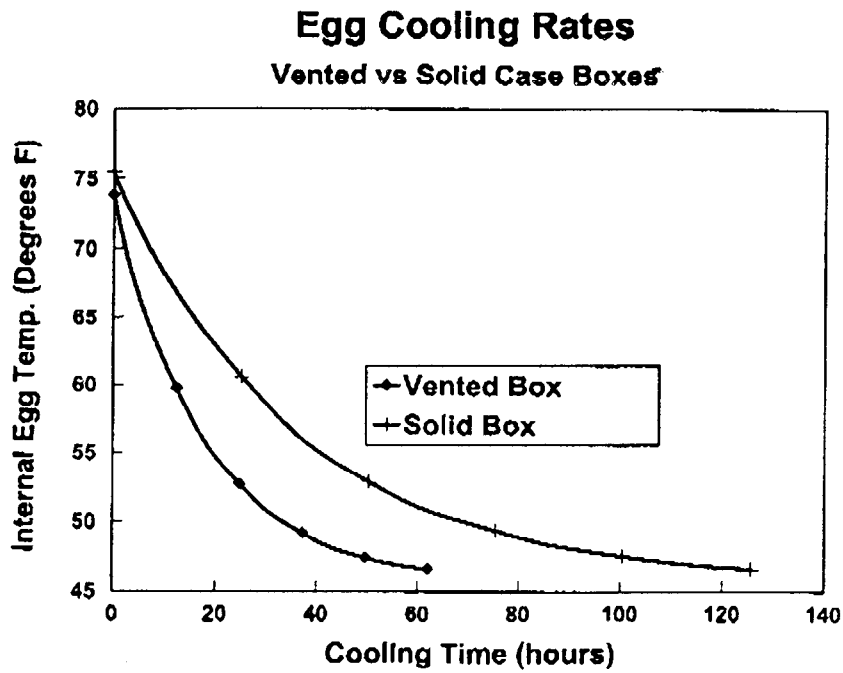
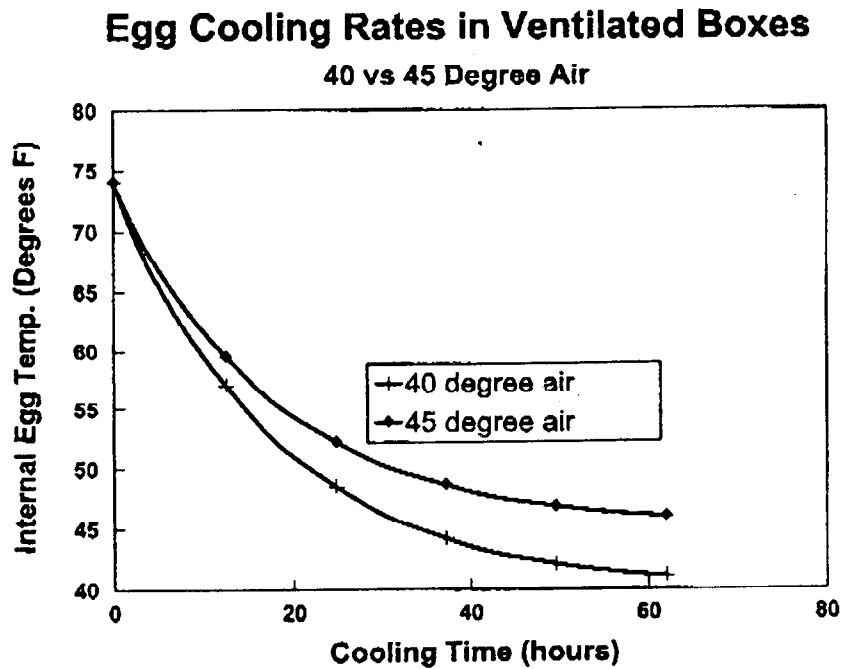


Figure 2.



Ventilating the case boxes reduced the cooling time by half (Figure 1). Because the cool room temperature was above 45°F, eggs were not able to cool to that temperature, but did reach the final temperature of 46.5°F in about 2-1/2 days for the ventilated cases and slightly more than 5 days for the solid wall cases.

If the target internal egg temperature is 45°F, the cool room air must be substantially below that temperature. Using the cooling rate data from our studies, Figure 2 compares the cooling rates of ventilated boxes held in 40°F and 45°F cool rooms. Note that the eggs held in the 45°F cool room didn't quite reach the 45°F target after 2-1/2 days, while the eggs in the colder room achieved 44.2°F within 29 hours (less than 1-1/2 days). This illustrates that by lowering the cool room set point, we can cool eggs more rapidly and to lower temperatures.

In addition to being able to accommodate markets that require cooled eggs, there may be additional benefits realized by rapidly cooling eggs. Our studies demonstrated that rapidly cooled eggs retain higher interior egg quality (albumen height) and lose less weight during the cooling process. Whether these attributes will equate to increased egg value will depend on how marginal the egg weight and quality is relative to regulatory standards or market demand.

Eggs that are packed in fiberboard boxes can be cooled quickly by ventilating the cases. This can be a simple and relatively inexpensive means to cooling these eggs within a short period of time. If faster cooling is desired a fan could be added to circulate air over the eggs or eggs could be force-air cooled.

If the processing plant has the space to accommodate only 3-4 days of processed eggs and the buyer demands cool eggs, the cool room will have to remove the heat from the eggs within this short time period. The ability to

accomplish this task will depend on refrigeration capacity, cool room temperature, initial temperature of the processed egg and the way eggs are packaged and stacked. Plants that process in-line eggs will have to remove more heat in the post-processing cooler than those that cool eggs before processing.

Thermostats in cool rooms should be set well below (4 to 5 degrees) the desired temperature of the egg in order to achieve adequate egg cooling and to accommodate daily fluctuations in egg room temperature due to loading and unloading activity at the docks. If the majority of eggs are to be rapidly cooled, additional refrigeration capacity may be required.

*-Douglas R. Kuney
Area Farm Advisor*

Aline Asmundson Passes Away

Mrs. Aline Asmundson died on June 2, 1999. She was the widow of Vigfus Asmundson. Professor Asmundson came to UC Davis in the 1930s as a poultry geneticist in the former Department of Poultry Husbandry. He was a renowned scientist, winner of the Borden Award, and the first Poultry Husbandry departmental building was dedicated in his honor.

Mrs. Asmundson was a devoted mother to their children and to the many students, especially foreign students, she hosted over the years. She was an outstanding musician; for 43 years she was the organist for St. James Catholic Church in Davis and for 47 years gave music lessons in her Davis home.

A generous soul and wonderful hostess, she loved entertaining old and new friends in her Miller Drive home, close to the campus. For years she hosted the Avian Sciences students who were selected as recipients of the Asmundson Scholarship. As one who was

fortunate enough to be invited to one of those dinners, I can attest that it was a special event.

Even after the death of Professor Asmundson, Mrs. Asmundson maintained her ties with the Poultry Husbandry/Avian Sciences flock. Until poor health prevented her from participating, she was a regular guest at departmental parties. She was often accompanied by her nieces at the poultry picnic and she would frequently lead the caroling at Christmas parties.

The family has requested donations to the V.S. Asmundson Scholarship Fund. Checks should be made payable to U.C. Regents and sent to Animal Science, University of California, Davis, California 95616. Messages to her family may be sent c/o Ruth and Vigfus Asmundson, 5345 Miller Dr. Davis, CA 95616.

*-Francine A. Bradley
Extension Poultry Specialist*

California Egg Quality Assurance Plan (CEQAP) Education

Training for the "Environmental Monitoring" component of the program has been completed. Seventy-eight individuals were certified to collect official samples. This group included 16 veterinarians who are now certified to train others in sample collection. All participants in the training were given a 20 question test before and after the training. Average scores before training were 4.8 incorrect answers and 1.5 after training was completed. These means were found to be different at the 0.0004 level of probability. We feel that this demonstrated the success of the training.

All plan participants should now have revised their plan to include the environmental monitoring component. The revised plan should

have been submitted to the appropriate Regional CDFA, Veterinary Branch Office. If you have not completed this step it should be done immediately. Assistance with plan revision is available from *David Goldenberg (916) 985-1122.

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CQAP Web Page on the Internet

The California egg and poultry quality assurance programs now have their own web page on the internet. To reach this page use <http://animalscience.ucdavis.edu/extension/avian/qap.htm>. This page was prepared under the direction of David Goldenberg with funds from a USDA grant to support quality assurance programs.

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Dr. Moberg Dies Suddenly

Dr. Gary P. Moberg suffered a fatal heart while walking from his car to his office in Meyer Hall on August 13, 1999. Gary was 58 at the time of his death. Dr. Moberg's special interests were physiology, neurobiology and animal behavior. He was best known to the poultry industry for his role as Associate Dean for Animal Biology in the College of Agriculture and Environmental Science at UC Davis. Recently he helped the poultry industry by assisting me to obtain a rehire for Poultry Specialist John Voris who retired from UC on June 14th.

The family has requested that donations be sent to the Gary P. Moberg Scholarship Fund which has been initiated in his memory. Checks should be made payable to the UC Regents and mailed to the Department of Animal Science, Davis, CA 95616.

John Voris Rehired

John Voris, retired Poultry Specialist, will be rehired at 25% time starting in September. The rehire was requested because all Cooperative Extension positions are currently frozen by the University pending completion of a reorganization. John will be working from his home where he can be reached at 559/276-5781. His e-mail address is unchanged (jcv@uckac.edu).

Olivera Family Initiates Student Award at UC Davis

Family of the late Ed F. Olivera, Sr. initiated the creation of a student award for Avian Sciences students at UC Davis. A well known egg producer in Santa Clara County, Mr. Olivera was an outspoken advocate for California's poultry industries. He is remembered as a faithful University of California cooperator. Students who interned at or visited his operations learned not only about commercial chicken egg production, but also about specialty operations such as quail and balut (embryonated duck egg) production. He was very proud when his granddaughter, Tanya, decided to attend UC Davis.

Friends and family have contributed toward the creation of the Ed F. Olivera, Sr. Memorial Award. The name of the first recipient was announced at the Annual Spring Awards Barbecue. Department Chair, Gary Anderson, joined Olive Olivera and her son, Eddie, Jr., as they presented the \$800 check to Jennifer Near. Jennifer was recognized for her demonstrated interest in commercial poultry production and her specific interest in egg and duck production. The Olivera family members were especially pleased that Jennifer's home county is Santa Clara. Growing up in San Martin, she raised numerous breeds and variety of poultry and was very active in 4-H poultry programs.

Their poultry friends at UC Davis are very grateful to the Oliveras for their continuing generosity toward the University of California and students in Avian Sciences.

Calendar

September 14, 1999

California Poultry Industry Quality Assurance Plan Seminar, Modesto, California. This seminar includes Vector and Rodent Control; Weed Control and Management; Writing a Nutrient Management Plan; California Nutrient Management Plan. Registration is \$15.00. For more information contact California Poultry Federation (209) 576-6355.

September 23-24, 1999

California Poultry Federation Annual Meeting & Conference, Piccadilly Inn Hotel, Shaw Avenue, Fresno. For information call (209) 576-6355.

Visit our Web Site at:

<http://animalscience.ucdavis.edu/extension/avian>

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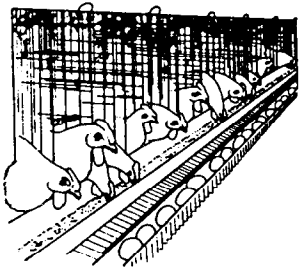
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