



California Poultry Letter

November 1996

1996 Egg Processing, Packaging and Marketing Seminar

Southern California

Tuesday, December 3, 1996
8:00 a.m.

Cooperative Extension Bldg. #140
5 100 University Avenue
Riverside, CA 9252 1

Tel. (909) 787-4555
(909) 787-5043
Fax. (909) 787-5091

Northern California

Wednesday, December 4, 1996
9:30 a.m.

Red Lion Inn
1150 Ninth Street
Modesto, CA 95350

Tel. (916) 752-3513
(916) 752-9040
Fax. (916) 752-8960

Program

Registration: \$50

Welcome and Introduction

Francine A. Bradley, Extension Poultry Specialist, Dept. Avian Sciences, Cooperative Extension, University of California, Davis

National Supermarket Shell Egg Study

Douglas Kuney, Area Poultry Farm Advisor, **Moreno Valley**, **Don Bell**, Poultry Specialist, and **Gideon Zeidler**, Food Engineering Specialist, U.C. Cooperative Extension, Riverside, CA

Moving from HAACP to ISO 9000: The Broader Approach to Food Quality and Safety Programs

Gideon Zeidler, U.C. Cooperative Extension, Riverside, CA

Shell Eggs and Egg Products in the Pacific Rim and in Southeast Asian Markets: Trends and Opportunities

Morton Ernst, President, Ovotec International, Odense, Denmark

Break

Real World Design and Implementation of Egg Quality Assurance Programs in Shell Eggs and Egg Processing Operations

Patricia Curtis, Assoc. Professor and Extension Specialist, Poultry and Egg Processing and Product Technology, Dept. of Food Science, North Carolina State University, Raleigh, NC

Lunch

The Effect of Poultry Diseases on External and Internal Egg Quality

Kenneth Anderson, Extension Poultry Specialist, Dept. of Poultry Science, North Carolina State University, Raleigh, NC

Egg Sweating and Microbial Contamination of Shell Eggs

Ralph Ernst, Poultry Specialist, Dept. of Avian Sciences, University of California, Davis

Potential of Forced-Air Cooling Methods for Packaged Shell Eggs

James Thomson, Agricultural Engineering Specialist, Dept. of Biological and Agricultural Engineering, University of California, Davis, CA

Shell Eggs and Egg Products in European Markets: Trends and Opportunities

Morton Ernst, Ovotec International. Odense, Denmark

Break

What's New in Shell Egg Cleaning and Refrigeration?

Kenneth Anderson, Extension Poultry Specialist, Dept. of Poultry Science, North Carolina State University, Raleigh, NC

Egg Industry Price Outlook for 1997

Don Bell, Poultry Specialist, U.C. Cooperative Extension, Riverside, CA

Adjourn

This seminar is approved for continuing education credit for California's Egg Quality Assurance Program, Quality Assurance Supervisors.

***Have a Happy Holiday Season
and a Prosperous New Year!***

1996 National Poultry Waste Management Symposium

The symposium consisted of three days of interesting oral presentations, discussions, posters and industry exhibits. For those who could not attend, a few highlights are summarized here. The complete proceedings (354 pg.) are available for \$30 from John Blake, Poultry Science Department, Auburn University, Auburn, AL 36849-54 16, telephone 334-844-2640. Make checks payable to 'National Poultry Waste Management Symposium'.

The general session included presentations about environmental regulations. It is clear that poultry producers will be increasingly regulated to assure they do not contribute excessively to air and water pollution. In my opinion most California poultry and egg producers have sound waste handling programs. One thing to check on your ranch is drainage from manure storage areas. This can't be allowed to enter streams or drainage. You can get details about local regulations from your Regional Water Quality District office. Nutrient management plans may be required in the future on ranches using manure for fertilizer or raising livestock or poultry. Also ahead are stricter regulations concerning air quality. Farmers may be required to control the amount of ammonia released into the air.

Spent Hen Disposal

This session was of particular interest to egg producers because of the current low value of **spent** hens. One very unique paper described how mink farmers are buying spent hens at the farm and converting them into valuable mink feed. The mink industry is very modern and profits are excellent. With the decline of the Russian mink industry the world demand for mink pelts is very strong.

One western mink producer indicated that he was paying 3 cents a pound at the ranch for hens. He suggested in private discussion that egg producers could develop a mink farm in Mexico which would utilize all of the spent hens available in Southern California. He nets about 25 cents a pound on the hens he buys by converting them into mink pelts.

Bruce Webster, Poultry Specialist, University of Georgia, discussed development of modified atmosphere killing carts. These use carbon dioxide to euthanize the hens as they are removed from the cages. When the cart is full it is moved out of the house and the hens are dumped into a truck and transported to a rendering plant (see California Poultry Letter, May 1996).

Jim Rich, Member Services Director, Midwest United Egg Producers, spoke about alternative markets for spent hens. They have developed euthanasia carts similar to the Georgia model. There are currently about 50 carts in use with 3.5 million pounds per month going to rendering plants. They have been successful working in cooperation with renderers to have the hens custom processed into spent hen meal. The **farm** can take the meal or get a credit at the current meal price. Spent hen meal is an excellent protein feed for chickens or other livestock. Returns vary with hauling distance. Producers have received from 0 to 1 cent per pound using this disposal method. The results of processing three flocks from one producer are summarized in Table 1.

Ammonia Control

Phillip Moore, USDA-ARS, Soil Scientist, discussed the use of alum (aluminum sulfate) to control ammonia losses **from** poultry litter. This treatment also reduces phosphorus

Table 1. Economic analysis of rendering spent laying hens.

House	3	1	4
Date processed	April 1996	July 1996	September 1996
No. birds	103,125	55,392	95,924
Bird age	102 wks.	78 wks.	117 wks.
Total wt. (lb.)	357,160	178,660	363,900
Ave. wt./bird (lb.)	3.46	3.23	3.79
Lbs. fat	39,286	18,480	38,920
Fat/bird (lb.)	0.381	0.334	0.406
% carcass fat	10.99	10.34	10.69
#'s meal produced	89,390	45,900	87,370
Lbs. meal/bird	0.867	0.829	0.911
% meal/body wt.	25.0	25.7	24.0
Cost Information			
Processing @0.35/lb.	\$12,500.60	\$6,253.10	\$12,736.50
Cost of CO, gas	\$325.00	\$225.00	\$350.00
Trucking	\$1,050.00	\$500.00	\$840.00
Total cost	\$13,875.60	\$6,978.10	\$13,926.50
Fat credit (lbs.)	39,286	18,480	38,920
Value/lb.	\$0.148	\$0.174	\$0.179
Value/bird	\$0.056	\$0.058	\$0.071
Total value of fat	\$5,824.65	\$3,210.90	\$6,762.35
Meal credit (lbs.)	28,990	0	20,510
Credit/lb.	\$0.102	0	\$0.134
Total \$ credit	\$2,967.07	0	\$2,755.38
Credit/bird	\$0.029	0	\$0.029
Net cost	\$5,083.88	\$3,767.20	\$4,408.77
Lb. meal used by producer	60,400	45,900	66,860
Net meal cost to producer/ton	\$165.86	\$164.00	\$131.80

solubility and, therefore, phosphorus runoff when manure is surface applied to fields. Reductions in phosphorus run-off have been demonstrated on small experimental plots and in an entire watershed fertilized with alum-treated poultry litter.

Odor Abatement

Mike Williams, Director of the North Carolina Animal and Poultry Waste Management Center, discussed testing of various odor reduction products. Test systems have been developed which utilize a trained odor panel to evaluate changes in odor production. Results suggest there are differences in the effectiveness of commercial odor control products. Additional testing is needed to evaluate effectiveness in relation to the cost of these products.

Nutrient Management

One section of the Symposium was devoted to this subject. Control of non-point source pollution from agricultural fields is being attempted by development and use of nutrient management plans. These plans consider the nutrient needs of the crop to be planted and the nutrients present in the manure, compost or chemical fertilizer to be used. The concept is to balance crop needs with nutrient application so that excess nutrient losses are minimized.

Several papers discussed the progress which has occurred in development of nutrient management plans for farm land. Some states require these **if the farm** will use a liquid waste system. In some cases they may be required to get approval for a large confinement livestock operation. One farmer's report indicated that the **farm's** plan had resulted in more efficient use of fertilizer and reduced crop production costs.

*Ralph A. Ernst, Poultry Specialist
University of California, Davis*

Current Developments in Marek's Disease

This was adapted from an article by Kenton Kreager in the Proceedings of the 1996 Georgia Poultry Conference

Marek's disease (MD) remains one of the most serious diseases causing economic loss in the layer industry. This is despite the fact that we have recognized Marek's disease for most of this century, have a large body of research about the disease and have a number of good vaccines available. This demonstrates the changing nature of the virus and our need to stay ahead of it with ever improving vaccines and other management methods.

It is becoming more difficult to make generalizations about Marek's disease. The outcome of Marek's disease depends on complex interactions between the genetics of the bird, the competence of its immune system, the vaccines used, and the particular field virus strain involved. Genetic resistance can be developed against one virus, but that resistance may not hold against another field virus. Research has found that certain vaccines may work better in one genetic type of bird than another. This is related to the B blood type system. Thirdly, some of the newer vaccines are known to work better against the more virulent field viruses than the older traditional vaccines. Finally, overriding this three-way interaction is any potential immunosuppression of the birds, from other diseases such as Infectious Bursal Disease (IBD), etc. It has been shown that a **well-**functioning immune system will help keep the MD virus suppressed in the bird.

There is no doubt that bird genetics influence MD resistance. While no commercial layer strain is completely resistant to MD, selection

can be done to gradually improve resistance. Of course, this needs to be kept in balance with selection for the other commercially valuable traits. It has been shown that vaccines work better in more genetically resistant **birds**. In addition, it is our belief that we cannot blindly rely on ever-improving vaccines to be available to control our MD problems. The breeder industry must take some responsibility to provide more genetically resistant varieties. In this regard, Hy-Line operates a 10,000 bird floor grower house strictly for MD resistance selection. We **find** there are distinct differences between strains, pure lines and families within a line that can be used in the genetic selection program. In addition, the new techniques of molecular biology may provide a way to more quickly develop an MD resistant line.

While MD is present to some degree in essentially all flocks, for many layer operations, MD is not a particular problem at this time. The big field problems have tended to emerge on multi-age growing farms where flock-to-flock transmission is very difficult to prevent. We know that chicks are most susceptible to infection their first week of life and that vaccine protection takes several days to develop. We also know that birds will start shedding virus about two weeks **post**-infection, and then persistently shed virus, probably for life. Therefore, any flock older than about two weeks should be considered a potential source of active viral shedding. On multi-age growing **farms**, the problem is most likely airborne transmission of the virus. Most people do a good job of cleaning and disinfecting brooding houses, but once the ventilation fans are turned on, they are probably drawing in contaminated air that has

been exhausted from another house of older pullets. This is virtually impossible to prevent, short of using filtered air systems, as in specific pathogen **free** housing. For this reason, and due to the severity of their MD problems, some operations have changed their placement schedules and converted multi-age growing farms to all-in/all-out placements, so there is some down-time with no birds on the farm. Not everyone may have this opportunity, but it points out that some of our common management practices are causing severe disease losses.

Very virulent virus strains have emerged on some multi-age **farms** which seem to have new characteristics. They tend to cause quicker invasion of the affected tissues, more rapid immunosuppression, and earlier tumor development. Field observations have indicated that these viruses can spread from adult to adult and initiate an outbreak in older layers. This has not been recognized for MD before. Thirdly, these new viruses are not well protected against by the standard HVT and SB-1 MD vaccines. The new “**European-type**” Rispen vaccines (CVI-988) were approved just in time to help counteract the emergence of these new field strains and have proven to provide good protection.

As part of Hy-Line’s MD research, we have tested various vaccines, combinations of products, and administration methods against two of these new very virulent viruses in **Hy-Line W-36** birds. Results of three consecutive trials have indicated that Rispen, whether alone or in bivalent or trivalent combinations, provides better protection than any other licensed products using HVT, SB-1, CR6, or MD11/75. When not using **Rispen**,

combinations of **serotypes** used together seems to improve protection. Trivalent combinations of HVT, SB-1, and either CR6 or MD1 1/75 are better than HVT alone or HVT and SB- 1.

Our philosophy is to use only the minimal number of vaccine serotypes necessary to adequately control MD on a particular farm. Because field viruses seem to be able to adapt and eventually overcome vaccine immunity, we don't want to expose them to our best combination vaccine until it is really necessary. It may be some time until we have a vaccine better than Rispen, so we need to use it wisely. For this reason, we recommend that customers continue to use our standard **HVT/SB-1** vaccine as long as it is working adequately. Then when more protection is definitely needed, we would add Rispen to this to make a trivalent combination. It probably requires a minimum of **0.5-1.0%** Marek's mortality to justify the added expense of the Rispen vaccine.

The other basics we all know about MD prevention still apply, like cleaning and disinfecting brooding/growing houses, avoiding exposure of young chicks to dust contamination from houses of older birds, and preventing immunosuppression from IBD and other diseases. Although MD is changing and becoming more of a challenge, it has proven to still be controllable by going back to the basics of good management and using our vaccine selection wisely.

Kenton Kreager, DVM, ACPV
Hy-Line International

Introducing Our Faculty

Dr. Joan **Jeffrey** has recently joined the faculty of the University of California, Davis, School of Veterinary Medicine in the Department of Population Health & Reproduction. Dr. Jeffrey will be located at the Veterinary Medicine Teaching and Research Center in Tulare, California. Dr. **Jeffrey** is returning to California **after** spending four years as Poultry Extension Veterinarian and researcher at Texas A&M University. She received her DVM **from** Ohio State University in 1988, completed a MS in Poultry Science at Ohio State in 1990 and a Residency in Poultry Diagnostic Medicine at the CVDLS lab in Fresno in 1992. She received her board certification in the American College of Poultry Veterinarians in 1992. Dr. **Jeffrey** originally hails from Nebraska, where her family is still actively involved in turkey production. In her new position Dr. **Jeffrey** will be responsible for statewide extension programs for food safety and poultry health and research focused on diseases of importance to the poultry industry. We are extremely pleased to have Joan on our University poultry team.

Ralph A. Ernst

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Ralph A. Ernst, Poultry Specialist
Cooperative Extension
Avian Sciences Department
University of California
Davis, CA 95616
Tel (916) 752-3513
Fax. (916) 752-8960
email: raernst@ucdavis.edu