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# The Poultry Informed Professional

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## WITH HYGROMYCIN GONE, WHAT ARE TODAY'S WORMING OPTIONS?

James F. Dawe  
Bayer Animal Health  
and  
Charles L. Hofacre  
University of Georgia

### Review of Parasites

Adult roundworms (*Ascaridia galli*) are commonly diagnosed by necropsy in broiler flocks from 4 to 9 weeks of age (depending on slaughter weight), and in breeder pullets and young males from 4 to 25 weeks of age, but rarely older. Infestations cause diarrhea, enteritis, poor absorption of nutrients, stunting, and death. The life cycle is simple and direct. Eggs hatch in the proventriculus or

duodenum, larvae live freely in the duodenum for 9 days, then penetrate the mucosa and cause hemorrhages (9). Young worms enter the duodenum by 17 or 18 days where they reach maturity and begin producing eggs at 28-30 days, which are shed in the feces, and become infective in 10-12 days. Eggs remain viable in the litter for long periods of time.

Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color (\$)	128.92	116.55	130.57	129.60	126.48
Feed cost/lb meat (¢)	12.03	10.97	12.15	12.81	11.91
Days to 4.6 lbs	43	43	43	44	44
Chick cost/lb (¢)	3.78	3.73	3.89	3.56	3.95
Vac-Med cost/lb (¢)	0.09	0.02	0.08	0.05	0.07
WB & 1/2 parts condemn. cost/lb	0.21	0.20	0.18	0.24	0.24
% mortality	4.74	4.86	4.33	5.44	5.34
Sq. Ft. @ placement	0.81	0.75	0.79	0.78	0.74
Lbs./Sq. Ft.	6.82	7.16	6.74	7.31	6.98
Down time (days)	15	13	15	18	13

Data for week ending 03/16/02

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Adult cecal worms (*Heterakis gallinarum*) live in the lumen of the ceca, are small, white, and barely visible when the ceca is opened at necropsy, and are detected by their movement in the cecal contents. Eggs are passed in cecal droppings, become infective in 14 days, embryonate in 24 hours and enter the ceca (9). Earthworms serve as an intermediate host. Cecal worms pose their greatest threat as carriers of *Histomonas meleagridis*, the protozoal agent that causes Blackhead in chickens and turkeys. A Blackhead control program must address cecal worm control and earthworm control in the poultry environment, as well as treatments for Histomoniasis.

*Capillaria obsignata* is the most common capillaria species in chickens. It is a hair-like worm barely visible to the human eye due to its small diameter. The life-cycle is direct, and the prepatent period (egg to adult) is 21-28 days, depending on conditions (9). Adults reside in the mucosa of the small intestine. Deep scraping of the mucosa followed by screening or microscopic examination reveals thread-like adults or eggs. Capillaria infestations cause diarrhea, poor feed conversion, nutritional deficiencies, stunting and death in young birds, and unthriftiness, egg production and shell quality problems in adults. They present the greatest problems in growing pullets and males, and in adult laying hens (heavy breeders).

Tapeworms occasionally present a visual problem in broilers at the processing plant or when segments are visualized by workers picking up eggs at a layer facility. They are generally considered to create little pathology or deleterious effects in the host.

### Hygromycin No Longer Marketed

Hygromycin B (Hygromix™, Elanco) has been withdrawn from the market in the U.S. for sales and marketing reasons. This leaves the U.S. broiler industry with no feed-thru treatment for the control of roundworms (*Ascaridia galli*), cecal worms (*Heterakis gallinarum*), and capillaria worms (*Capillaria obsignata*). This presents a therapeutic challenge, since piperazine is approved for treating roundworms only, and some veterinarians believe it is rapidly losing efficacy. Also, there are currently no FDA licensed wormers for Capillaria, Heterakis, and tape worm infestations in chickens. The organophosphate Meldane™ (Coumaphos) is not used because of its toxicity, low margin of safety and negative effects on egg production. We are not aware of any new anthelmintics under development to fill this treatment void.

### AMDUCA Allows for Alternatives

The Animal Medicinal Drug Use Clarification Act (AMDUCA), issued by FDA/CVM in 1994, allows the veterinarian to prescribe certain drugs in an extralabel fashion. “Extralabel use of a drug may include a route, dosage, duration, frequency, indication or species not included in specific product labels” (1). AMDUCA permits extralabel use when an animal’s health is threatened or the animal is suffering. A veterinarian may use a drug approved for a food animal, in an extralabel manner, if he or she has determined there is no approved animal drug for such use that contains the same active ingredient in the required dosage form and concentration. The practitioner must take steps

**Broiler Whole Bird Condemnation (Region)**

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.197	0.306	0.185	0.325	0.333
% Airsac	0.146	0.098	0.165	0.207	0.153
% I.P.	0.116	0.050	0.106	0.050	0.050
% Leukosis	0.003	0.003	0.001	0.010	0.003
% Bruise	0.011	0.004	0.010	0.008	0.011
% Other	0.018	0.004	0.015	0.009	0.020
% Total	0.491	0.466	0.482	0.609	0.569
% 1/2 parts condemnations	0.458	0.696	0.382	0.451	0.460

Data for week ending 03/16/02

**Broiler Performance Data (Company)  
Live Production Cost**

	Average Co.	Top 25%
Feed cost/ton w/o color (\$)	128.71	121.76
Feed cost/lb meat (¢)	12.14	11.44
Days to 4.6 lbs	44	44
Chick cost/lb (¢)	3.92	3.33
Vac-Med cost/lb (¢)	0.07	0.05
WB & 1/2 parts condemn. cost/lb	0.22	0.16
% mortality	4.90	4.15
Sq. Ft. @ placement	0.77	0.77
Lbs./Sq. Ft.	6.83	7.05
Down time (days)	15	17

Data for week ending 03/16/02

to make a diagnosis, establish a substantially extended withdrawal period, assure the identity of treated animals and assure that time frames for withdrawal are met so that no illegal drug residues occur. Veterinarians can meet their responsibilities regarding withdrawal by adequately informing their clients. Maintaining a record of prescriptions written, with detailed instructions on use as part of the script, is advisable. Dr. Elizabeth Curry-Galvin, DVM, Assistant Director of the Scientific Activities Division of the American Veterinary Medical Association states that “The AMDUCA final rules include a provision for approved animal drugs that, in certain circumstances, are judged ineffective. When, in a particular case, a veterinarian judges an approved drug to be clinically ineffective for its intended use and the practitioner has a basis for coming to this conclusion, extralabel use of that drug or another approved drug is allowed” (2). In the case of piperazine, this interpretation allows a veterinarian to recommend a use rate of piperazine higher than the label indications, or to substitute another wormer if he/she has met the above criteria. Once again, establishment of an extended withdrawal time based on the label for other species and other available data is required of the practitioner when prescribing extralabel in a food animal species. *NOTE:* A review of AMDUCA, 21 CFR, Part 530, Final Rule is recommended.

## Treatment Alternatives

- 1. Tramisol™ (Active ingredient: Levamisole hydrochloride) - Schering Plough.**  
Soluble Drench Powder approved in sheep, cattle, and pigs. Withdrawal for cattle is 48 hrs pre-slaughter, 72 hrs pre-slaughter for sheep and 72 hrs for pigs. Levamisole will not settle out in medication lines. Chicken and turkey dose is 16 mg active levamisole per pound of body weight delivered by proportioner over 3-4 hours as a bolus for capillaria and cecal worms in pullets and hens. There is no effect on hatch, egg production, feed conversion, or body weight when used at 8 and 16 mg/pound of body weight dose. However, in the chicken, at 36 mg/pound, water intake is reduced, at 288 mg/pound, diarrhea occurs, and at 900 mg/pound, 20% mortality occurred. Egg residue clearance time is not known. For roundworms in broilers/pullets, the dose is 8 mg of active levamisole per pound of body weight. This is given as a bolus over 3-4 hours. Tissue withdrawal times and egg withdrawal times must be extrapolated and extended for safety based on data from approved food animal clearances (3,4,5,6,7,8).
- 2. Valbazen® Oral Suspension (Active ingredient: Albendazole) - Pfizer Animal Health**  
Albendazole has been reported to be effective in the treatment of capillaria, ascaridia, heterakis, and tape worms in chickens. It has been labeled only for cattle and sheep. There is no poultry data available. Settling in drinker lines has not been reported as has been seen with other anthelmintics in this class. Cattle require a 7 day withdrawal and sheep require a 7 day withdrawal pre-slaughter. There is no available data on tissue or egg clearance time in poultry. There have been no reported negative effects on the performance of broilers, pullets and hens. Valbazen is supplied in 500 ml, 1 liter, and 5 liter bottles of an 11.36% suspension. In chickens, the reported dose is 10 mg/kg of body weight (personal communication).  
  
The cattle dose is 1 liter of Valbazen 11.36% Suspension per 500 lb as an oral bolus via dosing gun or dose syringe. (4.54 mg albendazole/lb, 10 mg/kg). Sheep dose is 1 liter of Valbazen 11.36% Suspension per 664 animals weighing 50 lbs each (3.4 albendazole/lb, 7.5 mg/kg).
- 3. Synanthic® Bovine Dewormer Suspension, (Active ingredient, 22.5%: Oxfendazole) - Fort Dodge Animal Health**  
Synanthic is reported to be effective for capillaria, ascarids, and heterakis. Synanthic does have activity against cattle tape worms, however, there is no data whether it will work against poultry tapeworms.  
  
There is 225 mg oxfendazole per ml and it is supplied in a 500 ml bottle for cattle. The withdrawal time is 7 days for cattle. There is no tissue-clearance data available for poultry, nor any data available on side-effects in poultry. The cattle dose is 2.05 mg/pound of body weight (4.5 mg/kg B.W.). There is also a 9.06% suspension available in a 1 liter bottle (90.6 mg/ml of oxfendazole). Settling out in water lines without agitation can be a problem (personal communication).

4. **Safe-guard (Active ingredient: 10% suspension, Fenbendazole) - Beef and dairy cattle, oral parasiticide - Hoechst-Roussel**

Effective against capillaria, round, and cecal worms in chickens (not approved in chickens). It is approved for turkeys as a feed additive, 20% premix type A and B, 16ppm (14.6 gm/ton complete feed for 6 consecutive days) for control of adult and larvae round worms and cecal worms.

The cattle dose is 2.3 mg/pound BW (5 mg/kg BW) as an oral bolus. Beef cattle withdrawal is 8 days following the last treatment. For dairy cattle, there is no milk withdrawal time. Safe-guard is supplied in 1 liter and 1 gallon bottles. There may be a problem with settling out in drinker lines without agitation (personal experience).

5. **Ivermectin (1% injectable for cattle)**

Since Ivermectin went off-patent, there are several manufacturers producing it. Ivermectin has been used orally via extra-label scripts to treat Northern Fowl Mite and capillaria infestations. Only mites that are on the birds are killed. The 1% injectable cattle formulation has been used as follows (personal communication):

- 1 ml of 1% Ivermectin injectable + 1 ml. propylene glycol + 2 gal H<sub>2</sub>O, proportion at 1 oz./gal D.W.
- Administer 2 times, 10-14 days apart. There is a 30 day withdrawal (destroy commercial eggs for 30 days post-therapy.)

**Summary**

It is regrettable that the U.S. broiler veterinarian has only one and turkey veterinarians only two approved wormer(s) to administer to poultry. However, the AMDUCA allows the veterinarian to prescribe extralabel use in this situation. We advise that each practicing poultry veterinarian become familiar with AMDUCA. There are several highly effective products available for other food animals. These products can be used as long as the prescribing veterinarian can insure an adequate period of tissue withdrawal prior to slaughter, and destruction of eggs destined for human consumption for a period of time that insures absences of residues.

*NOTE: No endorsement of particular products or their use in chickens is implied by the authors or this publication. This information is provided as a review of current knowledge.*

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# PDRC Receives Generous Gift from Wayne Farms for Eidson Chair



PDRC Director Dr. Stan Kleven (first from left) and Dr. Chuck Hofacre (second from left) are shown with representatives of Wayne Farms: Elton Maddox (center), CEO and President; Mike Roberts (fourth from left), Vice President of Production; and Dr. Don Waldrip, (fifth from left), Director of Health Service and Area Live Production manager.

Wayne Farms has pledged a gift of \$65,000 to help fund the Global Avian Health Initiative, an effort dedicated to improving poultry health worldwide.

Through this initiative, the College of Veterinary Medicine is seeking a total of \$7.65 million in private and public funds to endow the Caswell S. Eidson Eminent Scholar position and to expand facilities at the Poultry Diagnostic and Research Center in Athens.

A faculty member at the College for more than 20 years, Eidson conducted research that led to the development and field application of a vaccine to combat Marek's disease.

He also made significant research contributions in the control of Newcastle disease, infectious bursal disease, and infectious tenosynovitis.

Dr. Hiram Lasher of Lasher Associates, Inc. in Millsboro, Delaware, contributed \$375,000 to establish the fund to honor his longtime friend and colleague.

"I appreciate Wayne Farms' generous pledge of support for the Department of Avian Medicine's Global Poultry Health Initiative," said Dean Keith W. Prasse.

"For over 30 years, the Poultry Diagnostic and Research Center here at Georgia has made tremendous contributions to the success of poultry production. Commitments such as this will certainly improve on that success."



The University of Georgia is committed to the principle of affirmative action and shall not discriminate against otherwise qualified persons on the basis of race, color, religion, national origin, sex, age, physical or mental handicap, disability, or veteran's status in its recruitment, admissions, employment, facility and program accessibility, or services.

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Excerpts from the latest USDA National Agricultural Statistics Service (NASS) “Broiler Hatchery,” “Chicken and Eggs” and “Turkey Hatchery” Reports and Economic Research Service (ERS) “Livestock, Dairy and Poultry Situation Outlook” Reports

### Broiler Eggs Set In 15 Selected States Up 1 Percent

According to the latest National Agricultural Statistics Service (NASS) reports, commercial hatcheries in the 15-State weekly program set 187 million eggs in incubators during the week ending March 23, 2002. This was up 1 percent from the eggs set the corresponding week a year earlier. Average hatchability for chicks hatched during the week was 83 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

### Broiler Chicks Placed Down Slightly

Broiler growers in the 15-State weekly program placed 151 million chicks for meat production during the week ending March 23, 2002. Placements were down slightly from the comparable week in 2001. Cumulative placements from December 30, 2001 through March 23, 2002 were 1.79 billion, up 3 percent from the same period a year earlier.

### Four Additional States in Weekly Program

Beginning May 16, 2001 four additional States were added to the weekly program for broiler eggs set in incubators and broiler chicks placed for meat production. The four additional States are Kentucky, Louisiana, Missouri, and Oklahoma. Data collection and weekly estimates began with the week ending April 7, 2001.

Commercial hatcheries for the 19 States set a total of 209 million eggs in incubators during the week ending March 23, 2002. Broiler growers in the 19 States placed 171 million chicks for meat production during the week ending March 23, 2002. Cumulative placements from December 30, 2001 through March 23, 2002 in the 19 States totaled 2.02 billion.

### February Egg Production Up 1 Percent

U.S. egg production totaled 6.56 billion during February 2002, up 1 percent from last year. Production included 5.57 billion table eggs and 987 million hatching eggs, of which 929 million were broiler-type and 58.0 million were egg-type. The total number of layers during February 2002 averaged 337 million, slightly higher than the average number of layers during February 2001. February egg production per 100 layers was 1,946 eggs, up slightly from the 1,943 eggs in February 2001.

All layers in the U.S. on March 1, 2002, totaled 336 million, slightly lower than a year ago. The 336 million layers consisted of 277 million layers producing table or commercial type eggs, 56.9 million layers producing broiler-type hatching eggs, and 2.63 million layers producing egg-type hatching eggs. Rate of lay per day on March 1, 2002, averaged 70.5 eggs per 100 layers, up 1 percent from the 69.5 eggs a year ago.

Laying flocks in the 30 major egg producing States produced 6.15 billion eggs during February 2002, up 1 percent from a year ago. The average number of layers during February, at 316 million, was slightly higher than year earlier.

### Egg-Type Chicks Hatched Down 10 Percent

Egg-type chicks hatched during February totaled 34.3 million, down 10 percent from February 2001. Eggs in incubators totaled 32.8 million on March 1, 2002, down 8 percent from a year ago.

Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 247,000 during February 2002, up 6 percent from February 2001.

### Broiler Hatch Up 5 Percent

The February 2002 hatch of broiler-type chicks, at 703 million, was up 5 percent from February of the previous year. There were 650 million eggs in incubators on March 1, 2002, up 4 percent from a year earlier.

Leading breeders placed 7.28 million broiler-type pullet chicks for future domestic hatchery supply flocks during February 2002, up 8 percent from February 2001.

### Turkey Eggs in Incubators on March 1 Up 2 Percent From Last Year

Turkey eggs in incubators on March 1, 2002, in the United States totaled 32.6 million, up 2 percent from March 1 a year ago. Eggs in incubators were 2 percent above the February 1 total of 31.9 million. Regional changes from the previous year were: East North Central, down 1 percent; West North Central, up 9 percent; North and South Atlantic, up 2 percent; South Central, down 4 percent; and West, down 7 percent.

### Poults Placed During February Up 2 Percent From Last Year

The 24.3 million poults placed during February 2002 in the United States were up 2 percent from the number placed during the same month a year ago. Placements were down 6 percent from the January 2002 total of 25.9 million. Regional changes from the previous year were: East North Central, unchanged; West North Central, up 8 percent; North and South Atlantic, up 1 percent; South Central, up 7 percent; and West, down 18 percent.

### Broiler Output Exceeding Earlier Expectations

According to the most recent Economic Research Service (ERS) reports, broiler production in 2002 is projected at 32.05 billion pounds, up nearly 3 percent from last year and above earlier expectations. Chick placements through the beginning of March have averaged almost 4 percent higher and live weights are about 2 percent heavier. While this is expected to help boost first-half production 3-4 percent, the rate of growth in the second half is expected to be more moderate. Production growth in first-quarter 2002 is also stronger due to its comparison with first-quarter 2001, which registered a decline. The hatchery egg supply flock on February 1 was 2 percent higher, with productivity in broiler egg production down slightly. Thus, with heavier weights, second-half production is forecast 2-3 percent higher.

### Poultry Industry Faces Bans on Exports

Currently, the U.S. poultry industry is faced with a number of bans on the export of their products. The bans can be divided into two groups. The first is countries that have banned imports of poultry products due to outbreaks of low-pathogenic avian influenza (AI) in Connecticut and Pennsylvania. Countries that have enacted bans relating to the AI outbreaks are Mexico, Japan, and the Philippines.

In these cases the bans are only on poultry products produced in the affected States, so poultry products produced in other States are allowed to be exported to these countries. With the bans restricted to production from only two States, the impact on over all poultry exports is expected to be minor.

The second group is the Ukraine, Moldova, and Russia, which have banned all imports of poultry and egg products from the United States. The stated reason for the ban is the use of antibiotics and other medications in poultry production and the use of anti-microbial rinses in poultry processing.

A ban on poultry imports by Russia could have a strong impact on the domestic poultry industry if the ban is kept in place for an extended time period. In 2001, Russia imported 2.3 billion pounds of broiler products from the United States, 37 percent of total U.S. broiler exports, on a quantity basis. The Russian market is also very important for other chicken and turkey exporters. In 2001, exports to Russia accounted for 45 percent of all other chicken exports and 18 percent of all turkey exports (on a quantity basis). Less than 1 percent of all egg exports went to Russia in 2001, therefore the egg industry would not be strongly impacted by a ban.

**REMINDER**

All previous issues of the Poultry Informed Professional are archived on our website [www.avian.uga.edu](http://www.avian.uga.edu) under the Online Documents and The Poultry Informed Professional links.

### Broiler Whole Bird Condemnation (Company)

	Average Co.	Top 25%
% Septox	0.277	0.244
% Airsac	0.150	0.109
% I.P.	0.080	0.037
% Leukosis	0.004	0.003
% Bruise	0.009	0.013
% Other	0.015	0.007
% Total	0.536	0.412
% 1/2 parts condemnations	0.466	0.331

Data for week ending 03/16/02

# Meetings, Seminars and Conventions

## 2002 April

April 12-13: *Florida Poultry Days*, Contemporary Resort, Orlando, FL. Contact: Florida Poultry Federation, 4508 Oak Fair Blvd., Suite 290, Tampa, FL 33610. Phone: 813-628-4551.

April 14-17: *5th International Symposium on Avian Influenza*, Georgia, USA. Contact: David E. Swayne, 934 College Station Road, Athens, Georgia 30605 USA. FAX: +1-706-546-3161.

E-mail: [AI.Symposium@seprl.usda.gov](mailto:AI.Symposium@seprl.usda.gov) Website: <http://seprl.ars.usda.gov/avian.influenza.symposium.htm>

April 23: *Delmarva Poultry Booster Banquet*, Salisbury, Maryland. Contact: Karen Adams. Phone 302-856-9037

April 24-26: *VIV China 2002*, China International Exhibition Centre, Beijing, P.R. China. Contact: Royal Dutch Jaarbeurs, P.O. Box 8500, 3503 RM Utrecht, the Netherlands. Phone: +31 30 295 5662; Fax: +31 30 295 5709; E-mail: [viv.china@jaarbeur-sutrecht.nl](mailto:viv.china@jaarbeur-sutrecht.nl)

April 25-28: *GPF Annual Meeting*, Callaway Gardens, GA. Contact: Georgia Poultry Federation, P.O. Box 763, Gainesville, GA 30503. Phone 770-532-0473.

## 2002 May

May 1-4: *Western Poultry Disease Conference and Asociacion Nacional de Especialistas en Ciencias Avicolas*, Marriott Casamagna Resort, Puerto Vallarta, Mexico. Contact: Dr. R.P. Chin, 2789 S. Orange Ave., Fresno, CA 93725, USA. E-mail: [rpchin@ucdavis.edu](mailto:rpchin@ucdavis.edu)

May 2-3: *National Breeders Roundtable*, Airport Marriott Hotel, St. Louis, MO. Contact: US Poultry & Egg Association, 1530 Cooleedge Road, Tucker, GA 30084-7303. Phone 770-493-9401.

May 6-8: *VIV Africa 2002*, Ceasars, Johannesburg, South Africa. Contact: Avi Africa. P.O. box 1202, Honeydew 2040, South Africa. Phone: +27 11 794 5453; Fax: +27 11 794 3367; E-mail: [aviafrica@mweb.co.za](mailto:aviafrica@mweb.co.za).

May 6-9: *Pepa Annual Conv.*, Harrah's Stateline Hotel, Lake Tahoe, Nev. Contact: Pacific Egg & Poultry Association, 1521 1st., Sacramento, Calif. 95814. Phone 916-441-0801.

May 8-9: *Broiler Health Management School*, Ohio State University, Columbus, Ohio. Contact: Dr. Teresa Morishita, Department of Veterinary Preventive Medicine, Ohio State University, 1900 Coffey Road, Columbus, Ohio 43210. Phone: 614-292-9453.

May 8-9: *Poultry Processors Workshop*, Sheraton Colony Square Hotel, Atlanta, GA. Contact: U.S. Poultry & Egg Association, 1530 Cooleedge Road, Tucker, GA 30084-7303. Phone: 770-493-9401

May 18: *GPF Night of Knights*, Cobb Galleria, Atlanta, Ga. Contact: Georgia Poultry Federation, P.O. Box 763, Gainesville, Ga. 30503, Phone 770-532-0473.

May 21-23: *Avicola 2002*, La Rural, Buenos Aires, Argentina. Contact: K.J. Krause & Associates, 6550 Rock Spring Drive, Suite 500. Bethesda, Md. 20817-1126. Phone 301-493-5705.

May 27-31: *X International Seminar in Avian Pathology and Poultry Production (In Spanish)*, Georgia, USA. Contact: Dr. Pedro Villegas, Department of Avian Medicine, The University of Georgia, Athens, GA 30602-4875, USA. Fax: +1-706-542-5630;

E-mail: [sem2002@arches.uga.edu](mailto:sem2002@arches.uga.edu)

May 30-June 1: *VIV Poultry Yutav 2002*, Istanbul, Turkey. Contact: Royal Dutch Jaarbeurs, P.O. Box 8500, 3503 RM Utrecht, the Netherlands. Phone: +31 30 295 56 62; Fax: +31 30 295 57 09; E-mail: [viv.yutav@jaarbeursutrecht.nl](mailto:viv.yutav@jaarbeursutrecht.nl)

## 2002 June

June 6-9: *GVMA Convention*, Hilton Head Marriott Beach & Golf Resort, Hilton Head, South Carolina. Phone: 678-309-9800. <http://www.gvma.org>

June 21-22: *Delmarva Chicken Festival*, Seaford, Delaware. Contact: Connie Parvis. Phone 302-856-9037.

## 2002 August

Aug 19-23: *The 7th World Congress of Genetics Applied to Livestock Production*, Le Corum Conference Centre of Montpellier, France: Contact: <http://wcgalp.toulouse.inra.fr>

## 2002 September

Sept. 6-10: *11th European Poultry Conference*, Bremen, Germany. Contact: 11th European Poultry Conference, 2002, Congress Partner, Birkenstr 17, D-28195 Bremen, Germany. Phone: +49 421 303130; Fax: +49 421 303133; E-mail: [Bremen@cpb.de](mailto:Bremen@cpb.de).

Sept. 11: *Delmarva Breeder, Hatchery & Grow-out Conference*, Delmar, Maryland. Contact: Bud Malone, University of Delaware Phone 302-856-7303.

Sept. 24-26: *VIV América Lantina*, Sao Paulo, Brazil. Contact: Royal Dutch Jaarbeurs, P.O. Box 8500, 3503 RM Utrecht, the Netherlands. Phone: +31 30 295 57 09; Fax: +31 30 295 57 09; Email: [viv.america.latina@jaarbeursutrecht.nl](mailto:viv.america.latina@jaarbeursutrecht.nl)

Sept. 24-26: *VIV/AFIA Feed*, Sao Paulo, Brazil. Contact: Royal Dutch Jaarbeurs, P.O. Box 8500, 3503 RM Utrecht, the Netherlands. Phone: +31 30 295 57 09; Fax: +31 30 295 57 09; Email: [viv.feed@jaarbeursutrecht.nl](mailto:viv.feed@jaarbeursutrecht.nl)

## 2002 October

Oct. 6-10: *7th WPSA Asian Pacific Federation Conference*, Conrad Jupiter's Hotel, Gold coast, Queensland, Australia. In conjunction with 12th Australian Poultry & Feed Convention. Hotel Conrad, Jupiters Casino, Gold Coast, Queensland, Australia. Contact: APFC 2002 Conference Managers, GPO Box 128, Sydney, NSW 2001, Australia. Phone: +61 2 9262 2277; Fax: +61 2 9262 3135; E-mail: [apfc2002@tourhosts.com.au](mailto:apfc2002@tourhosts.com.au); Internet: <http://www/tourhosts.com.au/apfc2002>

Oct. 6-11: *3rd International Workshop on the Molecular Pathogenesis of Marek's Disease and the Avian Immunology Research Group Meeting*, Dead Sea, Israel. Contact: MAREKS-AIRG at Target Tours, P.O. Box 29041, Tel Aviv 61290, Israel. Phone: +972 3 5175150; Fax: +972 3 5175155;

E-mail: [mareks-airg@targetconf.com](mailto:mareks-airg@targetconf.com)

Oct. 8: *Delmarva Poultry Industry, Inc.*, Annual Membership Meeting, Delmar, Maryland. Contact: Lori Morrow. Phone 302-856-9037.

Oct. 9-11: *National Meeting on Poultry Health & Processing*, Clarion Resort Fountainbleau Hotel, Ocean City, Maryland, USA. Contact: Karen Adams, Delmarva Poultry Industry, Inc., 16686 County Seat Highway, Georgetown, DE 19947-4881. Phone: 302-856-9037; Fax: 302-856-1845.

## 2002 November

Nov 12-15: *EuroTier 2002*, International Exhibition for Livestock and Poultry Production, Hanover, Germany. Contact: Website: [www.eurotier.de](http://www.eurotier.de)

## 2003 July

July 19-23: *XIII Congress of the World Veterinary Poultry Association*, Denver, CO, USA. Contact: Details are posted on the web site of the American Association of Avian Pathologists. Website: <http://www.avian.uga.edu/~wvpa/>