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Phone (706) 542-5645 Fax (706) 542-5630
e-mail: sclanton@arches.uga.edu

AVIAN INFLUENZA IN THE WORLD

David E. Swayne
Laboratory Director
USDA/ARS/Southeast Poultry Research Laboratory
Athens, Georgia 30605, USA

Introduction

Avian influenza (AI) is a viral disease of poultry caused by type A Orthomyxovirus and has impact on international trade in poultry and poultry products. Two forms of AI exist: 1) mildly pathogenic, and 2) highly pathogenic. Reports of highly pathogenic avian influenza (HPAI) are compiled and listed on the Office International des Epizooties (OIE) website, <http://www.oie.int/>, and in the bimonthly OIE Bulletin, but such reporting is mandatory for member nations. Mildly pathogenic (MP) AI is not on list A or B and thus are not reported to OIE. This report compiles information from OIE, recent scientific literature and credible personal sources on avian influenza in the world.

Broiler Performance Data (Region) Live Production Cost					
	SW	Midwest	Southeast	Mid-Atlantic	S-Central
Feed cost/ton w/o color (\$)	132.57	121.73	134.08	136.30	133.89
Feed cost/lb meat (¢)	12.16	11.43	12.34	13.20	12.33
Days to 4.6 lbs	43	43	43	44	43
Chick cost/lb (¢)	4.09	3.61	3.89	3.57	3.79
Vac-Med cost/lb (¢)	0.05	0.04	0.07	0.04	0.05
WB & 1/2 parts condemn. cost/lb	0.19	0.19	0.14	0.17	0.19
% mortality	4.24	4.66	3.52	4.05	3.71
Sq. Ft. @ placement	0.90	0.79	0.82	0.81	0.82
Lbs./Sq. Ft.	6.10	6.79	6.41	7.00	6.58
Down time (days)	16	13	15	15	16

Data for week ending 10/20/01

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H7N1 MP and HPAI Viruses in Italy

An outbreak of H7N1 MP AI appeared in turkeys of northern Italy in March 1999. By mid-December, the AI virus affected at least 199 farms, mostly meat turkeys, but also turkey breeders, broiler breeders, layers, broilers, and guinea fowl. The problem was primarily respiratory disease with accompanying secondary pathogens or egg production drops. Control strategies used in the outbreak included increased surveillance, quarantine of infected flocks, controlled slaughter and enhanced biosecurity measures. Vaccine was not allowed. Unfortunately, the MP AI virus mutated to become HPAI virus with the first HP case appearing in turkeys on 17 December 1999. By the last outbreak of HPAI on 5 April 2000, 13,732,912 birds were involved in 413 flocks and an additional 3-4 million were depopulated as a pre-emptive action. Birds affected included 8,118,929 layers; 2,692,917 meat turkeys; 1,625,628 broilers; 743,319 broiler breeders; 260,340 quail, ducks and pheasants; 247,379 guinea fowl, 42,276 turkey breeders, 387 ostrich and 1,737 backyard poultry. Following repopulation, an outbreak of velogenic Newcastle disease (vND) occurred in the same geographic region during the summer 2000. In August 2000, H7N1 MP AI virus re-emerged in meat turkeys in northern Italy (southern part of Verona province).

Emergency vaccination has been undertaken as part of the AI control strategy and will be allowed from mid-November 2000 to May 2002 in meat turkeys and table-egg layers in a restricted zone south of Verona. In addition, authorization for vaccine use may be obtained for meat-type guinea fowls, capon farms and cockerel farms. The vaccine does not contain the homologous H7N1 MP AI virus, but an inactivated H7N3 HPAI virus (A/CK/Pakistan/95/H7N3). Currently, a minimum of 100 non-vaccinated sentinels are being used per farm or 50 per house. Ten sentinels are serologically tested each month, and if positive for AI antibodies on agar gel precipitin test (AGP), 10 sentinels are sacrificed and samples taken for virus isolation. Table eggs and meat from vaccinated flocks must be consumed in Italy and cannot be exported to other European Union countries.

Since August 2000, 71 flocks of H7N1 MP AI virus infected birds have been identified. However, among the 210 vaccinated flocks only 1 has had evidence of infection, as determined by serology and virus isolation.

H5N2 MP AI Viruses in Central America

The H5N2 MP AI virus which was first detected in the fall of 1993 continues to circulate in some commercial poultry flocks in Mexico. The number of infected farms has declined since 1995 and no reports of HPAI have been made since June 1995. Control efforts have focused on vaccination with inactivated H5N2 AI vaccines and a recombinant fowlpox vaccine containing an H5 AI hemagglutinin gene insert. Between January 1995 and July 2000, total vaccine use has been 1.3 billion doses of inactivated vaccine and 400 million doses of recombinant fowlpox vaccine.

There have been no evidence for new introductions of MP AI (H5N2) from wild birds, but MP AI (H5N2) has been perpetuated in domestic and confined poultry. An H5N2 MP AI virus appeared in poultry of Guatemala in April 2000 and El Salvador in April 2001. In Guatemala, MP AI virus infections were detected in chickens on 25 commercial premises. Chickens on these premises were depopulated, but the total numbers are unknown. Vaccination with the inactivated H5N2 AI vaccine obtained from Mexico has been allowed, but not the use of the fowlpox recombinant vaccine.

Broiler Performance Data (Company) Live Production Cost

	Average Co.	Top 25%
Feed cost/ton w/o color (\$)	133.70	123.67
Feed cost/lb meat (¢)	12.38	11.41
Days to 4.6 lbs	43	44
Chick cost/lb (¢)	3.94	3.40
Vac-Med cost/lb (¢)	0.05	0.03
WB & 1/2 parts condemn. cost/lb	0.18	0.13
% mortality	3.52	3.42
Sq. Ft. @ placement	0.80	0.78
Lbs./Sq. Ft.	6.47	6.52
Down time (days)	15	15

Data for week ending 10/20/01

Continued on Page 3

Broiler Whole Bird Condemnation (Region)

	SW	Mid-West	S. East	Mid-Atlantic	S. Central
% Septox	0.255	0.350	0.153	0.261	0.225
% Airsac	0.088	0.087	0.085	0.064	0.075
% I.P.	0.035	0.025	0.035	0.034	0.128
% Leukosis	0.002	0.002	0.001	0.007	0.003
% Bruise	0.007	0.002	0.011	0.008	0.013
% Other	0.008	0.009	0.008	0.006	0.006
% Total	0.419	0.480	0.254	0.379	0.470
% 1/2 parts condemnations	0.385	0.575	0.409	0.390	0.380

Data for week ending 10/20/01

Comparison of the hemagglutinin gene from MPAI viruses of Guatemala and El Salvador with other H5 AI viruses has shown a close relationship with the MPAI H5N2 isolated from chickens in Chiapas, Mexico in 1997.

H9N2 MPAI Viruses in Asia

The H9N2 MPAI viruses have been reported to cause morbidity and mortality in Asian countries, primarily the Middle East and in Pakistan. In many cases, the clinical signs and mortality have been the result of secondary bacterial and/or viral pathogens. Infections with H9N2 AI viruses without mortality have been reported in China and Hong Kong. Sequence data of the H9 and N2 gene of H9N2 AI viruses from Saudi Arabia, Iran, Pakistan and Hong Kong by Veterinary Laboratories Agency (D. Alexander, United Kingdom) and SEPRL, respectively, have shown they are all closely related and of the same virus lineage. H9N2 AI viruses were first reported in China in the mid-1990's and spread to the Middle East and Pakistan in the late 1990's. In the Middle East and China, the recent outbreaks of vND has complicated the diagnosis and control of MPAI viruses.

H5N1 HPAI Viruses in Hong Kong

In 1999, H5N1 AI viruses were isolated from fecal material under cages in the Western Wholesale Poultry Market, where geese and ducks were housed. This market only houses waterfowl and all birds entering the market are slaughtered on site. Based on studies at SEPRL, the 1999 H5N1 viruses have the same hemagglutinin gene as the 1997 H5N1 AI viruses, but internal genes were from separate lineage. The internal genes of 1999 H5N1 viruses were most similar to those circulating in domestic geese in south China since 1996 (A/GS/Guangdong/1/96 [H5N1]). These 1999 H5N1 viruses were highly pathogenic for chickens in experimental studies. During 2000, four H5N1 AI viruses were isolated from geese or swabs from goose cages in the wholesale market, and were HP for chickens. These viruses were similar to the 1999 Hong Kong H5N1 and 1996 A/GS/Guangdong/1/96 (H5N1) HPAI virus (D. Suarez, personal communication). No isolates were made from chickens in the wholesale or retail markets.

From December 2000 to April 2001, 29 H5N1 AI viruses were isolated from ducks and geese in the Western Wholesale Poultry Market (L. Sims, personal communication). Some of the internal genes of these viruses differed from A/GS/Guangdong/1/96 and were a different lineage to the 1997 HP avian influenza viruses (L. Sims and K. Shortridge, personal communication). An H5N1 AI virus was isolated from a chicken retail market in February. Increased mortality or clinical signs in birds were not reported. This virus was very similar to A/GS/Guangdong/1/96 (H5N1) and was not re-isolated despite repeated sampling of the market in the following 6 weeks. In mid-May, 10 different retail markets had chickens with confirmed infections by H5N1 HPAI virus and three of these retail markets had chickens with high mortality rates. However, H5N1 infections of chickens was not demonstrated on Hong Kong farms. On 21 May, all goose/duck and chicken wholesale and chicken retail markets were closed, and 1.2 million birds destroyed over 4 weeks (<http://www.info.gov.hk/gia/general/200105/18/0518293.html>, <http://www.who.int/disease-outbreak-news/n2001/may/18may2001.html>). No human cases of influenza A(H5N1) virus have been detected. The strains isolated from these retail markets are genetically similar to the viruses isolated from ducks and geese in December 2000. Repopulation and sales resumed in the markets in mid-June, 2001.

Rapid A. I. Diagnosis

Rapid diagnosis is a necessity in the decision making process for repopulation with birds and re-opening the markets. Traditional techniques of virus isolation take 1-6 weeks to get answers about active virus infections. In response, D.L. Suarez and M.L. Perdue of the Agricultural Research Service (ARS), Southeast Poultry Research Laboratory (SEPRL) have developed a real-time PCR test to detect AI viral genes in oral and cloacal swabs. The test uses a probe to the matrix gene of Type A influenza virus and has high sensitivity and specificity on laboratory specimens. This probe when used in a prototype portable light cycler PCR machine gives a diagnosis in 40 minutes. This test will be evaluated and validated during the epidemiology study of early summer 2001. D. Senne of the National Veterinary Services Laboratories (NVSL) will provide virus isolation services and D.L. Suarez of SEPRL will provide real-time PCR testing in the field.

Acknowledgments

The authors thank Ilaria Capua, David Suarez, Thomas J. Myers, Dennis Senne, Max Brugh, Les Sims, Dennis Alexander, Michael Schwartz and Juan Garcia Garcia for providing information through personal communications.

Call for Papers

51st Western Poultry Disease Conference held in conjunction with the XXXII Convención Annual ANECA, is scheduled May 1-4, 2002, in Puerto Vallarta, Jalisco, Mexico.

Titles for English presentations can be submitted to:
Dr. Barbara Daft via <http://www.vetmed.ucdavis.edu/ce/wpdc>.
(Our call for titles has also been sent by U.S. mail)

Deadline for submission of titles is November 6, 2001. Titles for Spanish presentations, should be submitted to
Dr. Ernesto Soto at aneca@aventel.net
WPC and ANECA hotel and program web sites
will be available in early 2002.

Broiler Whole Bird Condemnation (Company)

	Average Co.	Top 25%
% Septox	0.239	0.229
% Airsac	0.074	0.060
% I.P.	0.061	0.028
% Leukosis	0.003	0.003
% Bruise	0.010	0.008
% Other	0.016	0.003
% Total	0.404	0.331
% 1/2 parts condemnations	0.409	0.296

Data for week ending 10/20/01



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duction. 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 196 million eggs in incubators during the week ending October 13, 2001. Broiler growers in the 19 States placed 161 million chicks for meat production during the week ending October 13, 2001.

September Egg Production Up 3 Percent

U.S. egg production totaled 7.04 billion during September 2001, up 3 percent from last year. Production included 5.99 billion table eggs and 1.05 billion hatching eggs, of which 993 million were broiler-type and 59.0 million were egg-type. The total number of layers during September 2001 averaged 335 million, up 3 percent from the total average number of layers during September 2000. September egg production per 100 layers was 2,104 eggs, slightly above the 2,101 eggs in September 2000.

All layers in the U.S. on October 1, 2001, totaled 336 million, up 3 percent from a year ago. The 336 million layers consisted of 278 million layers producing table or commercial type eggs, 55.9 million layers producing broiler-type hatching eggs, and 2.63 million layers producing egg-type hatching eggs. Rate of lay per day on October 1, 2001, averaged 69.9 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 6.59 billion eggs during September 2001, up 3 percent from September 2000. The average number of layers during September, at 314 million, was up 3 percent from a year earlier.

Egg-Type Chicks Hatched Up 1 Percent

Egg-type chicks hatched during September totaled 36.6 million, up 1 percent from September 2000. Eggs in incubators totaled 32.3 million on October 1, 2001, up 5 percent from a year ago.

Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 225,000 during September 2001, down 19 percent from September 2000.

Broiler Hatch Up 4 Percent

The September 2001 hatch of broiler-type chicks, at 730 million, was up 4 percent from September of the previous year. There were 608 million eggs in incubators on October 1, 2001, up 4 percent from a year earlier.

Leading breeders placed 6.65 million broiler-type pullet chicks for future domestic hatchery supply flocks during September 2001, up 3 percent from September 2000.

Turkey Eggs in Incubators on October 1 Up 3 Percent From Last Year

Turkey eggs in incubators on October 1, 2001, in the United States totaled 30.4 million, up 3 percent from October 1 a year ago. Eggs in incubators were up 1 percent from the September 1 total of 30.0 million. Regional changes from the previous year were: East North Central, up 2 percent; West North Central, up 14 percent; North and South Atlantic, down 3 percent; South Central, down 3 percent; and West, down 6 percent.

Broiler Eggs Set In 15 Selected States Up 4 Percent

According to the latest National Agricultural Statistics Service (NASS) reports, commercial hatcheries in the 15-State weekly program set 176 million eggs in incubators during the week ending October 13, 2001. This was up 4 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 Up 6 Percent

Broiler growers in the 15-State weekly program placed 143 million chicks for meat production during the week ending October 13, 2001. Placements were up 6 percent from the comparable week in 2000. Cumulative placements from December 31, 2000 through October 13, 2001 were 6.02 billion, up 1 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 pro-

Poults Placed During September Down 3 Percent From Last Year

The 22.4 million poults placed during September 2001 in the United States were down 3 percent from the number placed during the same month a year ago. Placements were down 10 percent from the August 2001 total of 25.0 million. Regional changes from the previous year were: East North Central, down 1 percent; West North Central, down 6 percent; North and South Atlantic, up 5 percent; South Central, down 7 percent; and West, down 14 percent.

Higher Production and Exports

According to the most recent Economic Research Service (ERS) reports, poultry (broiler, turkey, and other chicken) output remained strong in 2000, expanding by 2.4 percent compared with 1999, to a volume of 36 billion pounds. Domestic consumption rose by only 1 percent, while a 9-percent increase in exports (mostly dark meat parts) absorbed the increase in production. The 2000 retail poultry price index (measured by the Bureau of Labor Statistics) increased by 1.2 percent. Poultry production is expected to rise by 1 percent in 2001 due to continued low feed costs and increased export sales.

Broilers: Exports Continue To Rise

During 2000, broiler production rose by 2.5 percent compared with the previous year, to 30.5 billion pounds. The increased production was absorbed by higher exports. Since exports are primarily dark meat, large amounts of higher priced breast meat were available for domestic consumption. Discounts at the wholesale level to market the increased quantity of breast meat pressured wholesale prices for breast meat per capita and lowered wholesale prices for whole birds as well. The decline in wholesale prices was not fully reflected in lower net returns to producers because it was partially offset by sustained low feed costs. Wholesale whole broiler prices declined by 3.3 percent in 2000, to 56.20 cents per pound, while the composite retail prices for chicken rose slightly, widening the wholesale-to-retail price spread. In 2001, broiler production is expected to expand more slowly as producers continue to wholesale broiler prices are expected to be 5 percent higher in 2001, as per capita supplies will likely be slightly lower than they were in 2000. Exports of 5.5 billion pounds accounted for almost one-fifth of U.S. broiler production in 2000 and are expected to continue increasing their share of production in 2001.

Russia and Hong Kong accounted for almost half of U.S. broiler exports. Exports to Latvia and Estonia declined by 55 percent, but this was offset by large increases to Russia, Hong Kong, and Singapore. The large increase in exports to Russia and the decline to Latvia and Estonia occurred because Russia restricted transshipments through the Baltic States, diverting poultry shipments directly to Russian ports. Also, exports to Mexico and Canada increased by 22 and 16 percent, respectively, due to a combination of favorable prices and strong economic growth in both countries.

Turkey: Production Increases and Exports Rise, While Prices Decline in 2001

Turkey production in 2000 totaled 5.4 billion pounds, about 2 percent higher than the previous year. Wholesale turkey prices continued to rise as domestic per capita supplies were reduced by increased exports and lower carryover stocks. Wholesale prices averaged 70.5 cents per pound, up 2 percent compared with 1999, while retail prices increased almost 4 percent. While both prices went up, the wholesale price spread widened to 26 cents per pound. The price increases, due largely to a 21-percent growth in exports, are expected to spur an increase in turkey production of 2 percent in 2001. Wholesale turkey prices are forecast to fall 4 percent in 2001.

U.S. turkey exports in 2000 were 458 million pounds and accounted for 9 percent of total production. Turkey exports to Mexico grew 14 percent over the previous year and equaled half of U.S. turkey exports. Shipments increased due to the growth in the Mexican economy. Mexico imports mostly ground turkey and Mechanically Deboned Meat (MDM) turkey that is used mainly in sausage production. Shipments of turkey to Russia, our second largest export market, nearly tripled compared with 1999, accounting for almost 12 percent of U.S. turkey exports. Exports to Hong Kong in 2000 were 43 million pounds, up 28 percent and were 9 percent of U.S. turkey exports. It is expected that 2001 turkey exports will grow by 7 percent, with additional exports to Mexico accounting for most of this increase.

Eggs: Demand Increased in 2000

U.S. egg production, table and hatching, totaled 7 billion dozen in 2000, almost 2 percent higher than the previous year, with similar levels of growth expected in 2001. Table eggs accounted for 85 percent of total production. Wholesale table egg prices averaged 68.9 cents per dozen, up 5 percent over 1999, while retail egg prices decreased by the same percentage, narrowing the wholesale-to-retail price spread. Wholesale prices were below a year earlier for most of 2000, but increased substantially in the fourth quarter when per capita supplies were below the previous year. Eggs were used by retailers as "loss leaders" during the fourth quarter holidays, keeping retail prices low even as wholesale prices rose. Per capita egg consumption rose slightly to 258.3, due to increased demand in the breaking egg market for commercial baking, confections, and the fast food industry. Wholesale table egg prices are expected to rise by 2 percent in 2001.

U.S. egg exports in 2000 were 172 million dozen and accounted for 2 percent of production. Table eggs accounted for just over half of total U.S. egg exports. Japan, Canada, Mexico, and Hong Kong were the largest export markets, receiving nearly three-quarters of U.S. egg exports. The gain in exports to Hong Kong, Japan, and the EU offset the 14-percent decline in exports to Canada. Strong competition from China in the Hong Kong market is expected to limit export growth for U.S. eggs in 2001.

Meetings, Seminars and Conventions

2001 November

Nov. 1-3: *Effective Broiler Breeder Management*, Holiday Inn, Utrecht, Netherlands: contact: Elaine Robson, Positive Action Conferences.
Phone: +44(0)1377 256316;
Fax: +44(0)1377 254663
E-mail: conf@positiveaction.co.uk
Nov. 5: *Salmonella 2001 Conference*, Holiday Inn, Utrecht, Netherlands. Contact: Elaine Robson, Positive Action Conferences.
Phone: +44(0)1377 245663;
Fax: +44(0)1377 254663;
Email: conf@positiveaction.co.uk
Nov. 6-9: *VIV Europe*, 2001, Royal Dutch Jaarbeurs Exhibition Center, Utrecht. contact: RoyalDutch Jaarbeurs, P.O. box 8500, NL 3503 RM, Utrecht, The Netherlands,
Phone: + 31 (0) 30 295 5662;
Fax: + 31 (0) 30 295 57 09.
Nov. 13-14: *AP&EA Breeder/Hatchery Workshop*, Auburn University, Dixon Conference Center, Auburn, AL. Contact: Alabama Poultry & Egg Association, P.O. Box 240, Montgomery, AL 360. Phone: 334-265-2732

2002 January

Jan. 3: *Poultry Mortality Compost Course*, University of Maryland Lower Eastern Shore Research and Education Center, Princess Anne, MD. Contact: Mrs. Linda Williams, Phone 410-651-9111.
Jan. 14-15: *International Poultry Scientific Forum*, Georgia World Congress Centre, Atlanta, Georgia, USA. Contact: Yvonne Vizzier Thaxton, Executive Secretary, SPSS, Mississippi State University, Dept. of Poultry Science, Box 9665, Mississippi State, MS 39762. E-mail: spss@technologist.com
Jan. 16-18: *International Poultry Exposition Atlanta 2002*, Georgia World Congress Centre, Atlanta, Georgia, USA. Contact: US Poultry & Egg Association, 1530 Cooledge Road, Tucker, Georgia 30084-7804, USA. Phone: +1 770-493-9401; Fax: +1 770-493-9257;
E-mail: expogeneralinfo@poultryegg.org;
Internet: www.poultryegg.org

2002 February

Feb. 11-13: *2002 Australian Poultry Science Symposium*, University of Sydney, Sydney, NSW, Australia. Contact: Poultry Research Foundation, University of Sydney, Camden NSW 2570, Australia. Phone: +61 2 46 550 656; Fax: +61 2 46 550 693; E-mail: noelenew@camden.usyd.edu.au, Internet: www.camden.usyd.edu.au/apss.html
Feb. 22-23: *PF Spring Meeting*, Arlington Hotel, Hot Springs, Ark. Contact: Judy Kimbrell, Poultry Federation, P.O. Box 1446, Little Rock, Ark. 72203. Phone 501-375-8131.

2002 March

March 5-6: *Louisiana Poultry Seminar*, Shreveport, LA. Contact: Dr. Theresia Lavergne, Louisiana Poultry Federation, P.O. Box 25100, Baton Rouge, LA 70894-5100. Phone 225-578-2219.
March 19-21: *MPF Conv.*, Touchstone Energy Place, RiverCentre, St. Paul, Minn. Contact: Lara Durban, Midwest Poultry Federation, 2380 Wycliff St., St. Paul, Minn. 55114-1257. Phone: 651-646-4553.
March 21-23: *VIV Canada 2002*, Toronto, Canada. Contact: Royal Dutch Jaarbeurs, PO Box 8500, 3503 RM Utrecht, the Netherlands. Phone: +31 30 295 56 62; Fax: +31 295 57 09. E-mail: canada@jaarbeursutrecht.nl.
Canadian Swine Exporters Association, PO Box 150, Hickson, Ontario, NoJ iLo, Canada. Phone: +1 519 462 2929; Fax: +1 519 462 2417. E-mail: csea@execulink.com

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: AL.Symposium@sepri.usda.gov Website: <http://sepri.ars.usda.gov/avian.influenza.symposium.htm>
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@jaarbeursutrecht.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
May 2-3: *National Breeders Roundtable*, Airport Marriott Hotel, St. Louis, MO. Contact: US Poultry & Egg Association, 1530 Cooledge 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
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
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

Meetings, Seminars and Conventions

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
Sept. 24-26: *VIV América Latina*, 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
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

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; 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
Oct. 9-11: *National Meeting on Poultry Health & Processing*, Sheraton Fountainebleau 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

2003 July

July 19-23: *XIII Congress of the World Veterinary Poultry Association*, Denver, CO, USA. Contact: Details are not currently available but will eventually be posted on the web site of the American Association of Avian Pathologists.