

The Poultry Informed Professional®



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FROM THE DIAGNOSTIC LAB: MYCOPLASMA DIAGNOSTICS AT PDRC

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Avian mycoplasmosis is a significant problem for the poultry industry worldwide due to economic consequences. Control of mycoplasma depends on biosecurity and early detection with regular monitoring. At the UGA-PDRC Diagnostic Lab, we can test for all of the economically significant mycoplasmas affecting the poultry industry. This includes *Mycoplasma gallisepticum* (MG), *Mycoplasma synoviae* (MS), *Mycoplasma meleagridis*, and *Mycoplasma iowae*.

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Broiler Live Production Cost	Average Company
Feed Cost/ton w/o color (\$)	327.986
Feed cost /lb meat (c)	29.314
Days to 4.6 lbs	38.8
Chick cost / lb (c)	5.296
Vac-Med cost/lb (c)	0.042
WB & ½ parts condemn. Cost/lb	0.17
% mortality	3.516
Sq.Ft. @ placement	0.834
Lbs/sq. ft.	7.394
Downtime (days)	21.2

Data for week ending November 26th, 2011

Testing for MS and MG can be done by serology, culture, or molecular analysis (PCR). Testing for *M. iowae* and *M. meleagridis* are primarily tested for by culture and/or PCR at PDRC. There are no serological tests available for *M. iowae*. We have very limited requests for *M. meleagridis* serology, but there are serological tests available. When sampling, it is important to obtain the sample and then properly handle the samples so they can give you the best results once they arrive at the laboratory.

Whole blood and/or serum

Whole blood should be collected and then kept at room temperature to allow for clotting and serum separation. Once the whole blood clots, the serum should be separated from the clot and put into a separate tube for transport to the lab. The use of a centrifuge, if available, is very helpful in separating the clot from the serum. Serum should be kept on cold packs or refrigerated prior to transporting to the lab. **DO NOT FREEZE** serum if intended for plate agglutination. If transporting whole blood to the lab, it is best if it is done on the day of collection. Shipping clotted blood is not recommended. If whole blood gets too hot or cold the red blood cells will lyse causing hemolysis. Hemolyzed samples do not yield reliable test results and testing may not be possible for some tests.

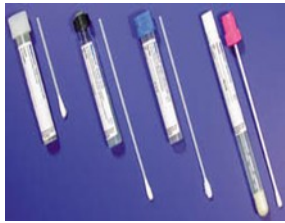


Hemolyzed Serum

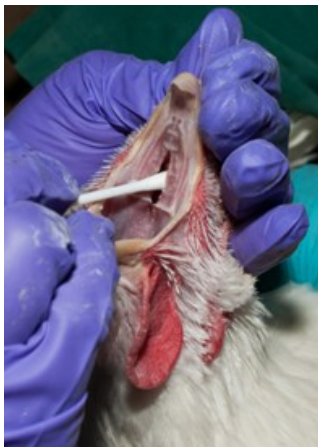


Good Serum

Swabs or Transport swabs



Tracheal swabs and choanal cleft swabs that are intended for mycoplasma culture or PCR testing can be taken using commercially available transport swabs. Transport swabs are swabs that have a transport media that keeps the mycoplasma viable until they reach the lab. For example, the transport swabs that we use at the Poultry Diagnostic and Research Center (PDRC) are a Fisherbrand product and have liquid Stuarts media. Samples that are intended for PCR only may be sent on cotton swabs without media since it is not necessary for the organism to be viable to be detected by PCR. Swabs should be kept cold during transport or when shipping.



Choanal Cleft Swab



Tracheal Swab

Tissues

Tracheas are the most common tissue sent in for culture and/or PCR testing for mycoplasma. Additional sample types may be more desirable depending on suspected mycoplasma species. Dead in shell and poulters are sometimes received in order to culture the esophagus for *M. iowae*. Other fluids such as semen for *M. iowae* and synovial fluid for *M. synoviae* are also submitted. Always keep samples cold when being transported or shipped.

Whatman FTA

Tissue impressions or swabbing of tissues from international sources may be applied to FTA cards. FTA cards should be kept dry and out of direct sunlight. When shipping, from outside of the United States, make sure to have all documents necessary in order to expedite samples through custom. FTA cards are very useful in getting samples into the US from international sources. For domestic sampling, tissue and /or swabs are the optimal samples. Additional information can be found about FTA cards in PIP #120 Sept/Oct 2011.

In all cases if samples are to be shipped to the laboratory, they should be shipped by FedEx, UPS, or other carrier overnight to guarantee that the samples are in the best condition for testing.

Plate Agglutination

Rapid plate agglutination is a quick serological test that allows for serum samples to be screened for MS and MG, by applying a drop of serum on a glass plate and mixing it with a drop of stained antigen. The plate agglutination test will detect infection by mycoplasma sooner after infection but it can also give “false” positives. Reactors are sent for confirmation by hemagglutination inhibition (HI). When collecting sera intended for plate agglutination, make sure that it does not become frozen or it may cause nonspecific agglutination.

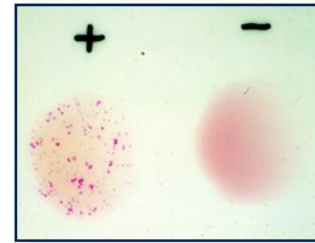


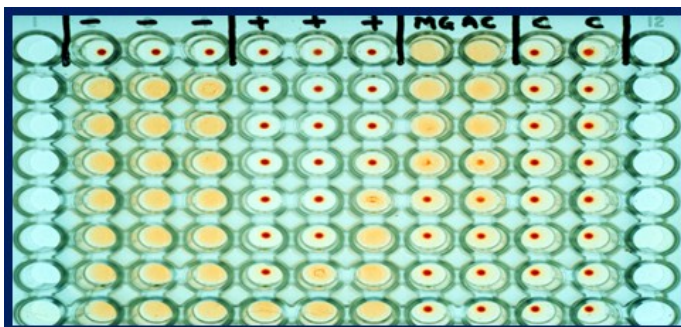
Plate Agglutination

ELISAs

Enzyme-Linked Immunosorbent Assays are performed using ready to use kits that are commercially available. The ELISA test is sometimes not as sensitive as the plate agglutination test and may not detect infection as early as plate tests. However, it is more specific (does not give as many “false” positives). This test can be used as a screening tool for MS and MG or to look at vaccination response. If serum has been frozen we can do the ELISA instead of plate agglutination since ELISA does not have the same problem with nonspecific agglutination. All samples that test positive on an Elisa are sent for confirmation by hemagglutination inhibition (HI).

Mycoplasma HI

Mycoplasma hemagglutination inhibition testing is done in microtiter plates using 4 hemagglutinating units of antigen per test. Antigen for this test is commercially available, though at PDRC the antigen is prepared onsite. It is very important to have good quality serum for HI testing. If the serum has bacterial contamination or any hemolysis this will cause for the test to yield unreliable or invalid results. The HI testing is considered to be highly specific but less sensitive than the plate agglutination test. Infected birds may not test positive until 2-3 weeks or longer after infection. Generally, HI titers at PDRC of 1:40 to 1:80 or greater are considered to be positive, but the interpretation of results should be considered on a per flock basis.

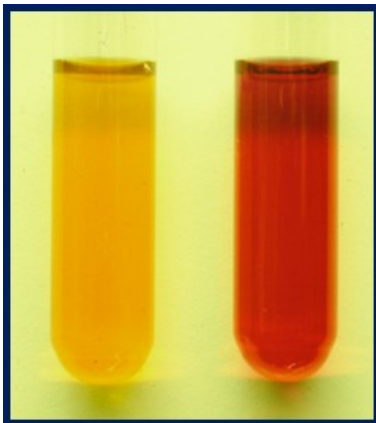


Mycoplasma H.I. Test

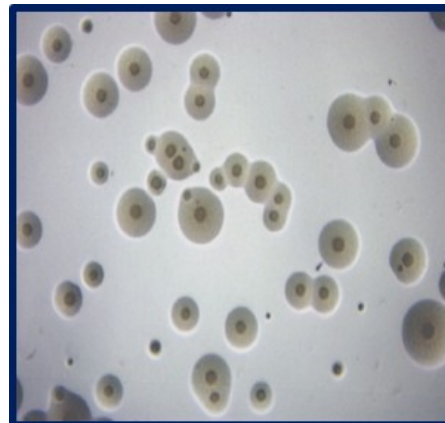
Mycoplasma Culture

Mycoplasma culture is done by putting samples into a selective mycoplasma media to grow more organism to aide in detection and identification. At PDRC, Frey's media is the primary media used for mycoplasma isolation. Frey's media is inoculated by swirling swab in the media and pressing all remaining fluid from swab before discarding swab. When culturing for *M. iowae*, another media, M-ORT, will be used. These cultures are incubated at 37°C for 24 hours. Sometimes agar plates are inoculated at the same time as media, but broth is usually more sensitive. For *M. meleagridis* and *M. iowae* primary isolation onto agar plates maybe be more effective than broth media. Cultures are plated onto agar after 5 days for further isolation and identification.

Mycoplasma culture



Mycoplasma colonies



Mycoplasma PCR and Sequencing

The ongoing advancement in molecular analysis has made the detection and identification of mycoplasma by polymerase chain reaction (PCR) faster and more extensive analysis of the isolate by sequencing. PCR is a very specific and sensitive testing method. PCR amplifies very small quantities of DNA to a detectable level, which can then be visualized using gel electrophoresis or measured by an internal spectrophotometer in real time PCR. At the PDRC Diagnostic Lab we are able to do real time PCR for MS, MG, MI and MM. We are also able to run these tests by conventional PCR and then gel electrophoresis. Further analysis can be done for MS and MG due to the primers used. These primers allow for the PCR product to be further processed and sent for sequencing analysis. The sequencing data obtained can then be compared to other isolate sequences and determine whether the MS or MG in that sample is a vaccine strain or a field strain. It also allows for the comparison of isolates within a company to see if they are the same. Samples for PCR testing should be handled with great care. DNA is very fragile and mishandling of a sample could lead to the

degradation of DNA. Tissues or swabs should be shipped cold or stored in the freezer. At PDRC, we store our samples for PCR in a -80⁰ freezer. Samples should not be exposed to direct sunlight or UV light. Samples should never be touched with bare hands. When using FTA cards they should be handle in the appropriate manner (see PIP #120 Sept/Oct 2011).

As with all testing, you must first start with a good sample to get good results. If there is ever any question as to how to handle a sample you should contact the lab. If you have any other question or would like to submit samples, please visit our website.

<http://www.avian.uga.edu/diagnostic/dxlab.php>

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

Chickens and Eggs

Released November 22, 2011, by NASS, Agricultural Statistics Board, USDA

October Egg Production Up 1 Percent

Please note that beginning with this publication, Missouri will now be published separately in the **Broiler-Type Chicks Hatched** table.

U.S. egg production totaled 7.78 billion during October 2011, up 1 percent from last year. Production included 6.74 billion table eggs, and 1.04 billion hatching eggs, of which 968 million were broiler-type and 70 million were egg-type. The total number of layers during October 2011 averaged 336 million, down slightly from last year. October egg production per 100 layers was 2,317 eggs, up 1 percent from October 2010.

All layers in the U.S. on November 1, 2011, totaled 337 million, down slightly from last year. The 337 million layers consisted of 283 million layers producing table or market type eggs, 50.2 million layers producing broiler-type hatching eggs, and 2.94 million layers producing egg-type hatching eggs. Rate of lay per day on November 1, 2011, averaged 74.7 eggs per 100 layers, up 1 percent from November 1, 2010.

Egg-Type Chicks Hatched Down 8 Percent

Egg-type chicks hatched during October 2011 totaled 37.8 million, down 8 percent from October 2010. Eggs in incubators totaled 38.3 million on November 1, 2011, down slightly from a year ago. Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 266 thousand during October 2011, up 56 percent from October 2010.

Broiler-Type Chicks Hatched Down 7 Percent

Broiler-type chicks hatched during October 2011 totaled 717 million, down 7 percent from October 2010. Eggs in incubators totaled 575 million on November 1, 2011, down 7 percent from a year earlier. Leading breeders placed 6.29 million broiler-type pullet chicks for future domestic hatchery supply flocks during October 2011, down 9 percent from October 2010.

Broiler Hatchery

Released November 30, 2011, by NASS, Agricultural Statistics Board, USDA

Broiler-Type Eggs Set In 19 Selected States Down 6 Percent

Commercial hatcheries in the 19-State weekly program set 194 million eggs in incubators during the week ending November 26, 2011. This was down 6 percent from the eggs set the cor-

responding week a year earlier. Average hatchability for chicks hatched during the week was 85 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler-Type Chicks Placed Down 5 Percent

Broiler growers in the 19-State weekly program placed 156 million chicks for meat production during the week ending November 26, 2011. Placements were down 5 percent from the comparable week a year earlier. Cumulative placements from January 2, 2011 through November 26, 2011 were 7.76 billion, down 3 percent from the same period a year earlier.

Turkey Hatchery

Released November 16, 2011, by the NASS, Agricultural Statistics Board, USDA

Eggs in Incubators on November 1 Down 3 Percent from Last Year

Turkey eggs in incubators on November 1, 2011, in the United States totaled 27.6 million, down 3 percent from November 1, 2010. Eggs in incubators were up 1 percent from the October 1, 2011 total of 27.2 million eggs. **Please note that regional estimates have been discontinued:** NASS will no longer publish regional *Turkey Hatchery* estimates. Only estimates at the United States level will be published due to the limited number of hatcheries involved.

Poults Hatched During October Up 2 Percent from Last Year

Turkey poults hatched during October 2011, in the United States totaled 22.4 million, up 2 percent from October 2010. Poults hatched were down 3 percent from the September 2011 total of 23.2 million poults.

Net Poults Placed During October Up 2 Percent from Last Year

The 21.4 million net poults placed during October 2011 in the United States were up 2 percent from the number placed during the same month a year earlier. Net placements were down 4 percent from the September 2011 total of 22.3 million.

Current Month Charts

Broiler Performance Data Live Production Cost	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
Feed Cost/ton w/o color (\$)	332.28	309.97	332.13	337.05	328.5	327.986
Feed cost /lb meat (c)	29.44	27.21	29.41	31.03	29.48	29.314
Days to 4.6 lbs	39	39	39	39	38	38.8
Chick cost / lb (c)	5.18	5.44	5.55	4.75	5.56	5.296
Vac-Med cost/lb (c)	0.05	0.03	0.07	0.04	0.02	0.042
WB & ½ parts condemn. Cost/lb	0.16	0.18	0.14	0.19	0.18	0.17
% mortality	3.33	3.48	3.64	3.59	3.54	3.516
Sq.Ft. @ placement	0.81	0.81	0.84	0.87	0.84	0.834
Lbs/sq. ft.	7.64	7.2	7.02	7.68	7.43	7.394
Downtime (days)	23	18	23	22	20	21.2

Broiler Whole Bird Condemnation	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
% Septox	0.135	0.197	0.097	0.129	0.092	0.13
% Airsac	0.027	0.033	0.025	0.051	0.032	0.0336
% I.P.	0.009	0.01	0.005	0.039	0.027	0.018
% Leukosis	0	0	0	0.003	0.001	0.0008
% Bruises	0.001	0.001	0.002	0.003	0.002	0.0018
% Other	0.012	0.006	0.016	0.008	0.007	0.0098
% Total	0.184	0.246	0.145	0.232	0.161	0.1936
% ½ parts condemns	0.19	0.22	0.193	0.196	0.302	0.2202

Data for week ending November 26th, 2011

Previous Month Charts

Broiler Performance Data Live Production Cost	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
Feed Cost/ton w/o color (\$)	340.57	319.09	344.78	347.95	341.5	338.778
Feed cost /lb meat (c)	30.33	28.18	30.18	32.01	30.83	30.306
Days to 4.6 lbs	40	39	39	38	39	39
Chick cost / lb (c)	4.93	5.04	5.55	4.73	5.33	5.116
Vac-Med cost/lb (c)	0.07	0.03	0.06	0.03	0.02	0.042
WB & ½ parts condemn. Cost/lb	0.16	0.19	0.13	0.15	0.19	0.164
% mortality	3.32	3.53	3.17	3.45	3.18	3.33
Sq.Ft. @ placement	0.81	0.81	0.85	0.89	0.85	0.842
Lbs/sq. ft.	7.75	7.33	7.05	7.69	7.66	7.496
Downtime (days)	21	17	18	21	19	19.2

Broiler Whole Bird Condemnation	Region					Average Company
	SW	Midwest	Southeast	Mid-Atlantic	S-Central	
% Septox	0.132	0.175	0.083	0.103	0.088	0.1162
% Airsac	0.028	0.034	0.022	0.033	0.029	0.0292
% I.P.	0.008	0.009	0.004	0.011	0.025	0.0114
% Leukosis	0	0	0	0.004	0.001	0.001
% Bruises	0.001	0.001	0.002	0.002	0.002	0.0016
% Other	0.008	0.002	0.01	0.007	0.007	0.0068
% Total	0.177	0.22	0.121	0.16	0.152	0.166
% ½ parts condemns	0.193	0.282	0.189	0.19	0.312	0.2332

Data for week ending October 29th, 2011

Meetings, Seminars and Conventions

2012
January

January 23-24, 2012. **Southern Conference on Avian Diseases (SCAD).** This meeting will be held together with the Southern Poultry Science Society at the International Scientific Forum in Atlanta, GA. For more info, please contact Dr. Mark Jackwood at mjackwoo@uga.edu.

January 24-26, 2012. **International Poultry Scientific Forum/Feed Expo.** Located at the Georgia World Congress Center in Atlanta, GA. Please visit <http://www.ipe11.org/> for more info.

2012
March

March 14-15, 2011. **41st Annual Midwest Poultry Federation Convention 2012.** To be held at the Saint Paul River Centre in Saint Paul, Minnesota. For more info: <http://midwestpoultry.com/>

2012
April

April 1-4, 2011. **61st Western Poultry Disease Conference and ACPV Workshop.** DoubleTree Paradise Valley Resort by Hilton Hotel in Scottsdale, Arizona. For more info, please visit <http://www.cevs.ucdavis.edu/confreg/index.cfm?confid=551>

2012
July

July 9-12, 2012. **Poultry Science Association Annual Meeting.** To be held at the Georgia Center in Athens, GA. For more info, please visit <http://www.poultryscience.org/index.asp?autotry=true&UI.notkn=true>

2012
August

August 4-7, 2012. **AAAP/AVMA Annual Meeting.** To be held in San Diego, CA, at the San Diego Convention Center. Abstracts will be accepted from October 1 - December 1, 2011. Please visit <https://www.avmaconvention.org/avma12/public/enter.aspx>

August 5-8, 2012. **24th World's Poultry Congress and Expo (WPC 2012).** To be held in Salvador, Bahia, Brazil. For more info, please contact www.wpc2012.com.

2012
October

October 17-24, 2012. **116th USAHA Annual Meeting.** The U.S. Animal Health Association will be holding this event at the Greensboro Sheraton Hotel in Greensboro, North Carolina. Please visit <http://www.aavld.org/annual-meeting>

**HAVE A
SAFE AND
HAPPY NEW
YEAR!!**



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.

Reminder

All previous issues of the Poultry Informed Professional are archived on our website www.avian.uga.edu under the Online Documents and The Poultry Informed Professional links.