




The Influence of Light & Volume on Coccidiosis Vaccine Uptake in the Hatchery

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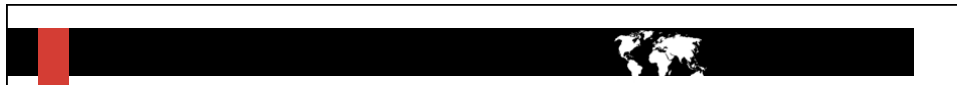
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Hatchery Vaccine Uptake

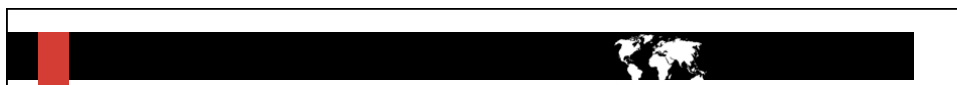


Proper mass
application is critical to
the success of any
broiler vaccination
program.





Hatchery Vaccine Uptake



All live coccidiosis vaccines require oral ingestion.



Hatchery Vaccine Uptake

University of Delaware
Lasher Lab Vaccine Uptake Study
Spray Application was best.

Intestinal Health Magazine, Pages 7-8, Volume 3, 2009



Hatchery Vaccine Uptake

University of Delaware
Lasher Lab Vaccine Uptake Study
Sprayer vs. In ovo

Route	% Vaccine Take
In ovo	25 %
Sprayer	88%
Gavaged (Control)	100%

Based on **individual** bird shed rates 5 to 8 days post-hatch.



Intestinal Health Magazine, Pages 7-8, Volume 3, 2009



Hatchery Vaccine Uptake

Spray Cabinets

Can we Impact Vaccine
Uptake Further?



Hatchery Vaccine Uptake

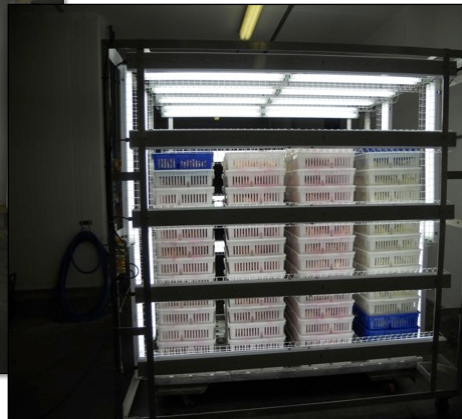
“Increasing relative photointensity at the time of spray application may provide a method of increasing ingestion of spray-applied products”



Caldwell et al. (2001) *Journal of Applied Poultry Research* 10: 107 - 111



Hatchery Vaccine Uptake



Foster Farms PNW






Hatchery Vaccine Uptake

The following spray cabinet studies are based on a **population** of 15 to 45 birds per treatment pen or cage.

All treatments done in triplicate.








Hatchery Vaccine Uptake

Chick Room Light Intensity

Exposure Time	Light Intensity	% Change of Oocyst Shed
20 minutes	88.0 Foot Candle (High)	58 % <i>greater</i> shed than control.
20 minutes	21.0 Foot Candle (Medium)	Control
20 minutes	0.6 Foot Candle (Low)	52% <i>less</i> shed than control.

Merial Study 0511



Hatchery Vaccine Uptake

Timed Chick Room Light Intensity

Post Spray Cabinet Chick Holding Area

Exposure Time Post Spray	Light Intensity	% Comparison of <i>E. maxima</i> Oocyst Shed
5 minutes	80 FC	59% shed rate of gavaged control group.
10 minutes	80 FC	81% shed rate of gavaged control group.
15 minutes	80 FC	85% shed rate of gavaged control group.
20 minutes	80 FC	100% shed rate of gavaged control group.
Control	Gavaged	100% shed rate control group.

Merial Study 0911

Hatchery Vaccine Uptake

Sprayer Light Source





Inspired by Caldwell Paper




Hatchery Vaccine Uptake


Intermittent Timed Chick Room Light Intensity


Post Spray Cabinet Chick Holding Area

Exposure Time Post Spray	Light Intensity	% Comparison of <i>E. maxima</i> Oocyst Shed
Continuous 5 minutes	300 FC	48% shed rate of gavaged control group.
Continuous 10 minutes	300 FC	92% shed rate of gavaged control group.
Intermittent 8 minutes	300 FC	100% shed rate of gavaged control group.
Control	Gavaged	100% shed rate control group.



Merial Study 1111








Hatchery Vaccine Uptake

Sprayer Light Source
Coccidia Oocyst Shed Comparison of *E. maxima*

Sprayer Light Intensity	Exposure Time Post Spray	Post Light Intensity	% Comparison of <i>E. maxima</i> Oocyst Shed
150 FC	Continuous 10 minutes	25 FC	27% of gavaged control group.
300 FC	Continuous 10 minutes	25 FC	85% of gavaged control group.
450 FC	Continuous 10 minutes	25 FC	97% of gavaged control group.
600 FC	Continuous 10 minutes	25 FC	69% of gavaged control group.
Control	Gavaged	N / A	100% shed rate control group.





Merial Study 0212
Merial Study 0312
Merial Study 0612

Hatchery Vaccine Uptake

Light Stimulation Impact on Necrotic Enteritis

Merial Study 0911
Merial Study 0612



Hatchery Vaccine Uptake

Sprayer Light Stimulation

Oocyst Shed Pattern by Days & % Necrotic Enteritis

Sprayer Light Intensity	Post Sprayer Continuous Light Intensity	D14	D18	D21	D28	D35	NE % Mortality
Non-vaccinated	25 FC	2%	5%	6%	9%	78%	3.4 %
300 FC	25 FC	5%	29%	24%	28 %	14%	4.0 %
450 FC	25 FC	15%	63%	5%	11%	6%	0.6 %
Oral Gavaged	25 FC	55%	23%	5%	10%	7%	1.1 %

*All 3 Eimeria species represented.
All groups Clostridium challenged at 19, 20 & 21 days*

Merial Study 060712

Light Intensity Effect on Hatchery Vaccine Uptake

Conclusions



Enhanced light intensity has a positive effect on spray vaccine uptake.


Post spray light stimulation appears to be the most beneficial in vaccine uptake.

Time is not a constraint. Can be accomplished in 10 minutes or less



Proper vaccine uptake tightens oocysts shed pattern.


A positive impact on necrotic enteritis mortality.



Impact of Volume on Hatchery Vaccine Uptake





Hatchery Vaccine Uptake Volume Study


Based on OPGF Days 4-8 post spray.

Volume	25 mls	30 mls
21 ml s (Control)	+33 %	+ 109 %

All 3 Emerica species represented.

Merial Study 0812




Hatchery Vaccine Uptake



Volume Impact on *E. maxima*

Vaccination Group	Volume	Lesion Score
Positive Control	N / A	2.7
Vaccinated	21 ml	0.8
Vaccinated	25 ml	0.7
Vaccinated	30 ml	0.4
Vaccinated	Oral	0.5
Negative Control	N / A	0.0

Challenged Groups Challenged at Day 28. Lesions evaluated Day 34





Merial Study 0213 A

Hatchery Vaccine Uptake

Impact of Volume on Necrotic Enteritis

Merial Study 0213 B

Hatchery Vaccine Uptake

Oocyst Shed Pattern by Days

Vaccination Group	D14	D18	D21	D28	D35	NE % Mortality
Non-vaccinated	0.7	2.6	49.1	32.3	15.3	3.9%
21 ml	20.0	19.0	2.3.0	27.0	11.0	1.8%
25 ml	11.0	46.0	14.0	23.0	6.0	1.1%
30 ml	16.0	35.0	30.0	11.0	8.0	0.7%
Oral	34.0	36.0	18.0	7.0	5.0	0.4%

All 3 Eimeria species represented. All groups placed on built-up litter.
All groups Clostridium challenged at days 19, 20 & 21.



Merial Study 0213 B



Hatchery Vaccine Uptake

Volume Study

Chick Dry Time. Room Temperature 80° F

Volume	21 mls	25 mls	30 mls
Dry Time (Minutes)	10-15	15-20	20-25



Merial Study 0213 A & B
Merial Field Observations



Hatchery Vaccine Uptake Field Observations

% First Week Mortality

	Pre-Vaccine	21 mls	30 mls	Post Vaccine
Complex 1	0.93	0.90	0.85	0.80
Complex 2	N / A	1.03	0.84	N / A
Complex 3	N / A	0.80	0.80	N / A



Reported Field Data 2012



Volume Effect on Hatchery Vaccine Uptake

Conclusions

Increased volume has a positive effect on spray vaccine uptake.

Birds dried in 25 minutes or less.

No negative impact based on % FWM.

Proper vaccine uptake tightens oocysts shed pattern.

A positive impact on necrotic enteritis mortality.





Thank You

