NPIP Update

NVSL *Salmonella* Update

Brenda Morningstar-Shaw
U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Veterinary Services
September, 2012

Safeguarding Animal Health

NVSL Update

- Integration of xMAP molecular serotyping assay
- Modified grading method for NPIP Group D proficiency test
- New *Salmonella* serotyping proficiency panel

NVSL Update

- *Salmonella* Group D Proficiency Test
  - Test for the ability to detect and identify Group D *Salmonella* from drag swabs

	2010	2011	2012
Participants	55	70	73
Mean Score	92%	97%	92%
Score Range	100-44%	100-85%	100%-29%
Below Passing	3	0	N/A*

NVSL Update

- *Salmonella* Group D Proficiency Test
  - In 2012 for the first time a significant number of laboratories used Group D or serotype Enteritidis specific screening tests for the proficiency test
  - As a result, the proficiency test was graded on the basis of Group D results only
  - * Because of the change in grading method, a pass/fail designation was not assigned. 7 labs scored less than 80%

NVSL Update

- Salmonella serotyping proficiency test

	Serogrouping	Serotyping
Participants	22	13
Mean Score	98%	92%
Score Range	100-90%	100-70%

NVSL Update

- Salmonella serotyping Proficiency Test
  - 2012 was first time that the Salmonella serotyping PT was offered
  - 10 isolates were included in the panel
  - 22 individuals from 20 labs participated
  - Grading based only on components each individual tested

Serotyping Summary

Year	No. of Isolates Submitted	No. Clinical	No. Non-Clinical	Research	Misc.	No. of Serotypes
2007	20935	7341	11472	1651	471	273
2008	20735	9328	7640	3117	650	298
2009	15198	5278	8119	1321	480	399
2010	14164	4700	8473	393	561	335
2011	15977	6589	6810	1808	770	289
TOTAL	**87,009**	**33,236**	**42,514**	**8490**	**2932**	

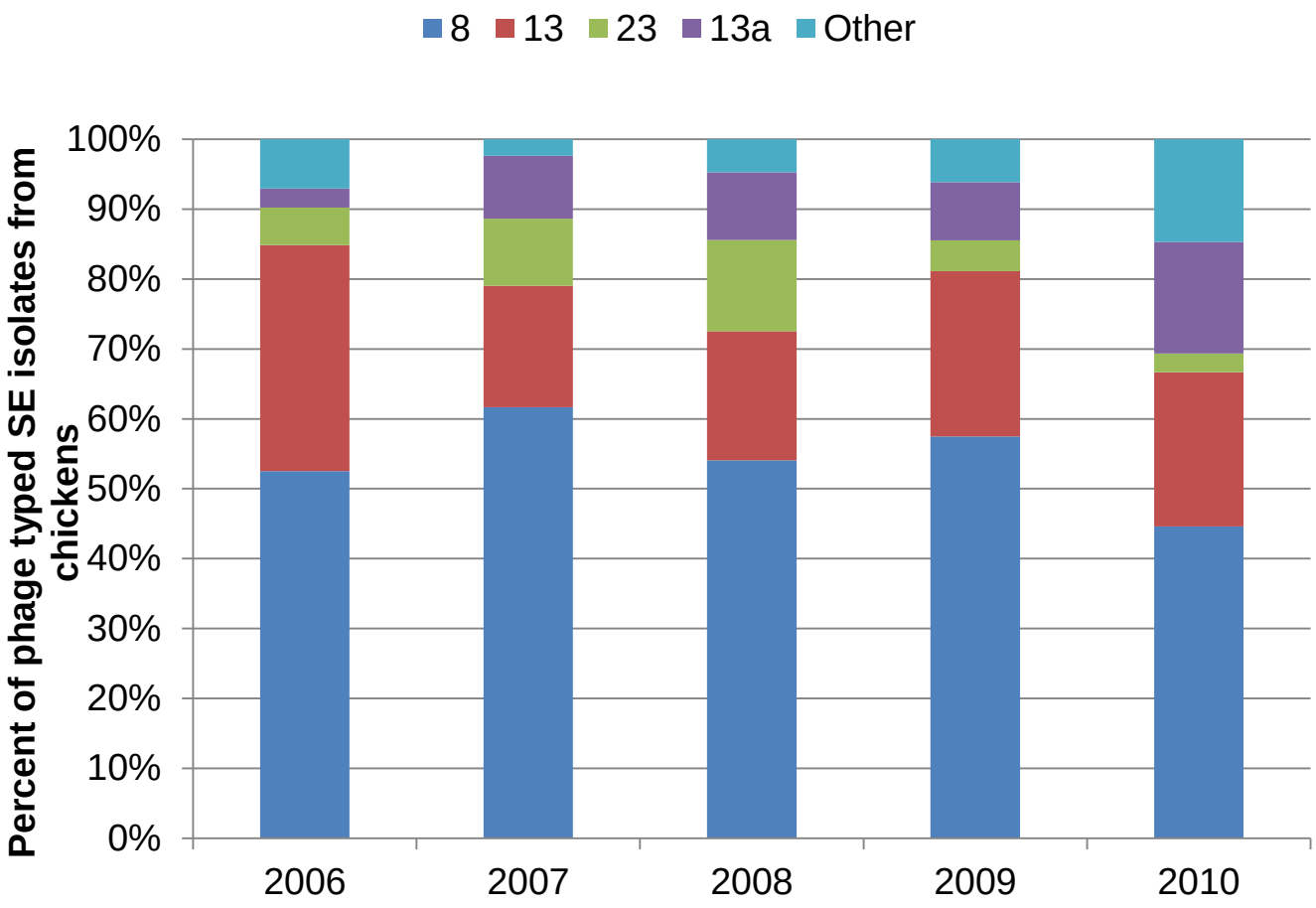
Most Common Serotypes – Chickens 2011

Rank	Clinical	Non-Clinical
1	**Enteritidis**	**Enteritidis**
2	**Kentucky** ↑	**Kentucky**
3	**Typhimurium** ↓	**Senftenberg**
4	**Rough O: g,m: -** ↑	**Mbandaka** ↑
5	**Infantis** ↑	**Heidelberg** ↓

Salmonella Group D

- Chicken submissions, clinical + non-clinical
- 821 Group D isolates
- 776 (95%) were SE
- Other 5%: Javiana, Berta, Ouakam, 9,12:nonmotile, Alabama, Fresno, Miami
- 2 Pullorum cases from backyard flocks
- 1 Gallinarum – international sample

Chicken SE Phage Types



Most Common Serotypes – Turkeys 2011

Rank	Clinical	Non-Clinical
1	**Senftenberg**	**Hadar** ↑
2	**Albany** ↑	**Heidelberg** ↑
3	**Ouakam** ↑	**Saintpaul** ↑
4	**Heidelberg** ↓	**Senftenberg** ↓
5	**Montevideo** ↑	**Muenster**

Molecular Typing

- The xMAP *Salmonella* assay developed by CDC has been implemented at the NVSL
- Maintain ability to perform gold standard of conventional serotyping
- Currently some samples are being tested by xMAP
  - Goal: Initial testing of all isolates via the xMAP assay, complete typing as needed with antisera

Molecular Typing: Observations

- Faster and less cumbersome than conventional serotyping, high throughput
- Eliminates some sera QC issues and subjective interpretation
- Genotype vs. phenotype, not affected by expression
- Cost – less labor intensive, expensive equipment, reagent cost varies

Molecular Typing: SE assay

- SE rule out testing for FDA egg rule
  - Receipt of samples that were not typeable via classic testing
    - Rough O:g,m:-
    - 9,12:poorly-motile
    - 9,12:non-motile
- Salmonella Luminex assay to determine the presence of *sdf* gene
  - *sdf* specific to SE

Bacterial Identification Section

- Brenda Morningstar-Shaw
- Dana Barker
- Ashli Jay
- Tonya Mackie
- Maria Munoz
- Ted Palmer
- Brenda Wyckoff

Brenda.R.Morningstar@aphis.usda.gov
515-337-7565