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Food Safety Through Data Sharing and Socialization

Carl Schroeder

Agricultural Marketing Service

Agricultural Outlook Forum

February 20, 2015

BACKGROUND

U.S. DEPARTMENT OF AGRICULTURE
AMS
AGRICULTURAL MARKETING SERVICE

Nutrition Assistance Programs

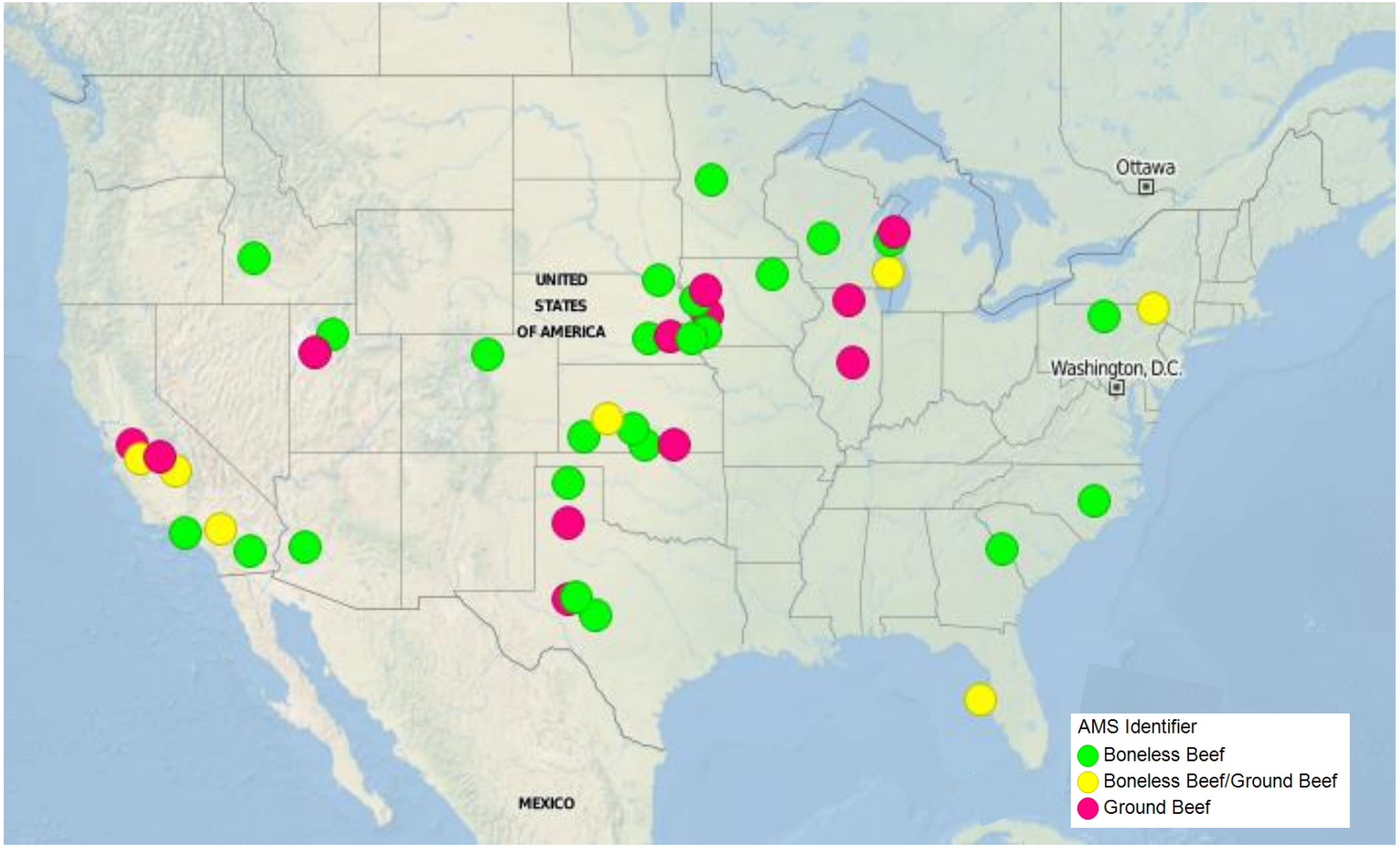
National School Lunch Program

- Richard B. Russell National School Lunch Act
- 31 million school children
- 100,000 nonprofit institutions

Select Commodities—FY2014

Commodity	Total Pounds	Total Cost
Beef	113,336,000	$300,210,943
Poultry	320,368,996	$362,780,582
Pork	16,100,540	$28,195,490
Eggs/Egg Products	17,965,920	$19,318,180
Totals	**467,771,456**	**$710,505,195**

AMS Beef Vendors

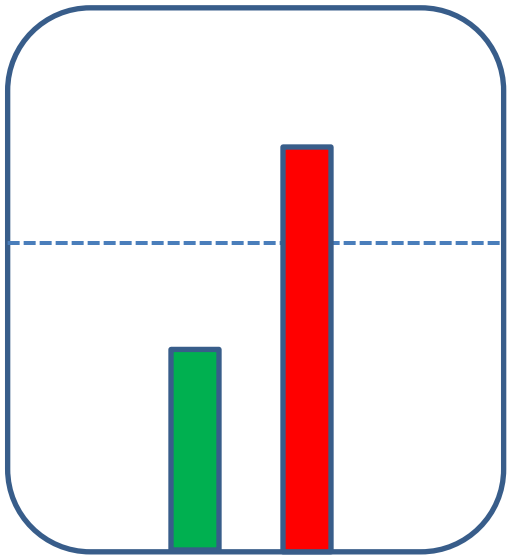


AMS Beef Purchase Specifications

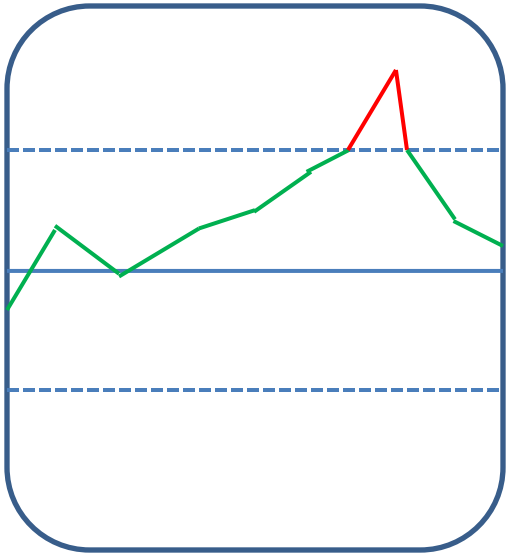
- Vendor application process
- Onsite audits
- Microbiological Testing
  - Indicator Microorganisms
  - Pathogens

AMS Beef Testing Model

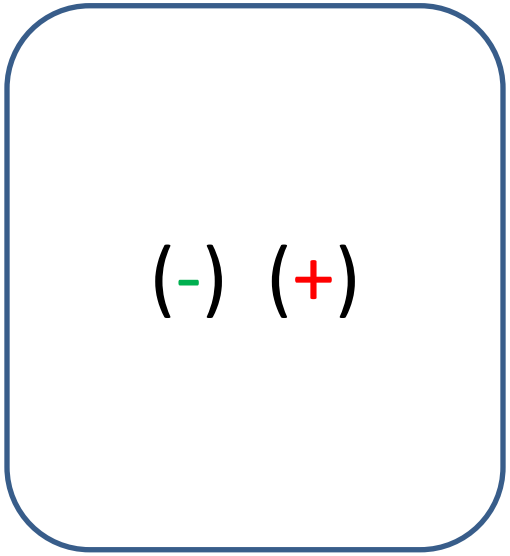
Test every 2,000 lbs. of boneless beef and every 10,000 lbs. of ground beef



Indicator
Critical Limits
(Single Lot)



Process
Control
('Rolling' 20 Lots)



Pathogens
(Single Lot)

Resultant Data*

	Million Lbs. Tested	Lots Tested	No. (%) *E. Coli* O157:H7	No. (%) *Salmonella*	No. (%) APC CL	No. (%) Coliform CL	No. (%) *E. coli* CL
Boneless Beef	116.2	57,510	23 (0.04)	270 (0.47)	57 (0.12)	22 (0.04)	19 (0.03)
Ground Beef	92.3	10,183	6 (0.06)	41 (0.40)	3 (0.03)	2 (0.02)	2 (0.02)
Totals	**208.5**	**67,693**	**29 (0.04)**	**311 (0.46)**	**60 (0.09)**	**24 (0.04)**	**21 (0.03%)**

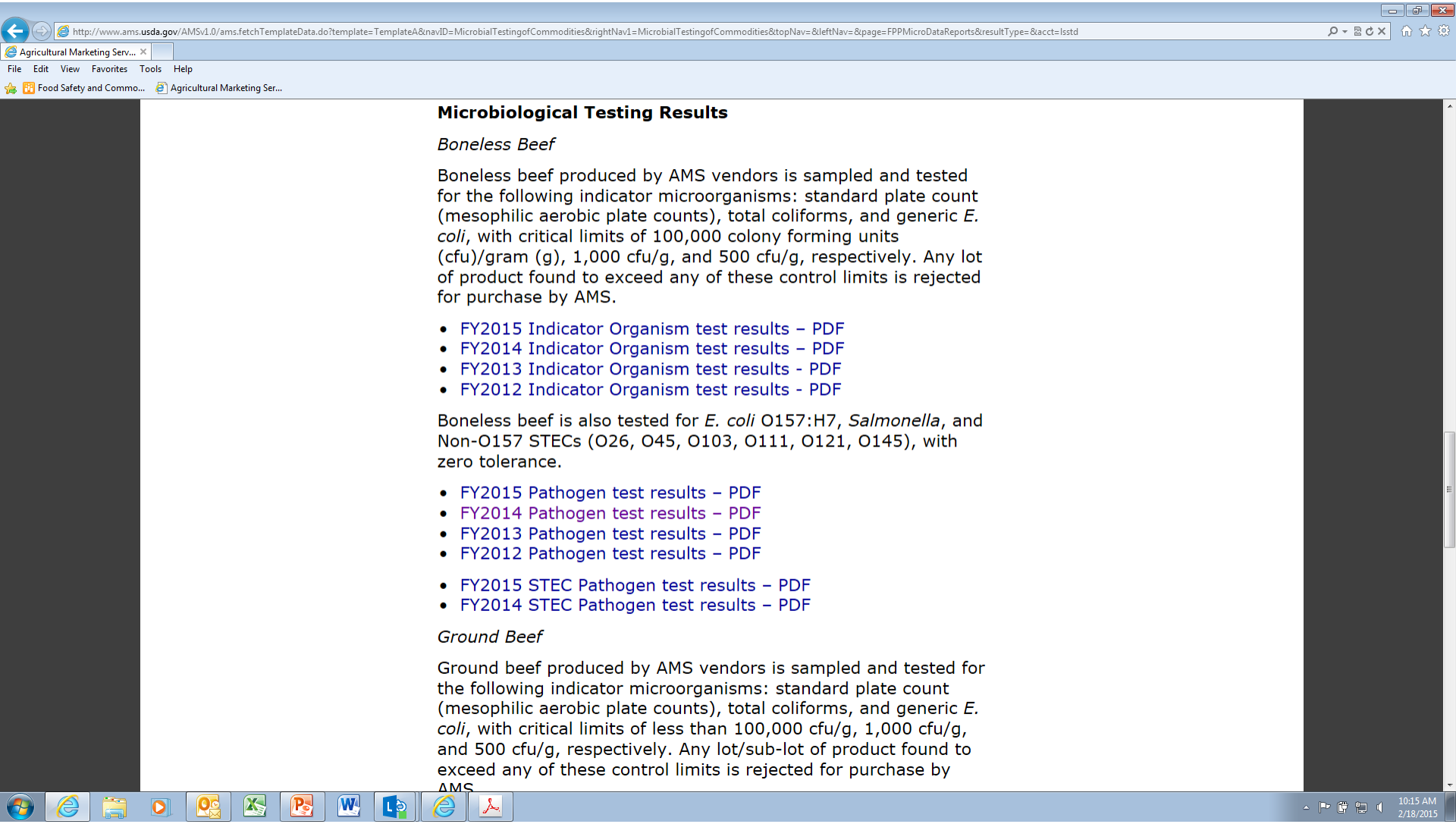
*FY2014

DATA SHARING

www.ams.usda.gov

www.ams.usda.gov

www.ams.usda.gov



Microbiological Testing Results

Boneless Beef

Boneless beef produced by AMS vendors is sampled and tested for the following indicator microorganisms: standard plate count (mesophilic aerobic plate counts), total coliforms, and generic *E. coli*, with critical limits of 100,000 colony forming units (cfu)/gram (g), 1,000 cfu/g, and 500 cfu/g, respectively. Any lot of product found to exceed any of these control limits is rejected for purchase by AMS.

- FY2015 Indicator Organism test results – PDF
- FY2014 Indicator Organism test results – PDF
- FY2013 Indicator Organism test results - PDF
- FY2012 Indicator Organism test results - PDF

Boneless beef is also tested for *E. coli* O157:H7, *Salmonella*, and Non-O157 STECs (O26, O45, O103, O111, O121, O145), with zero tolerance.

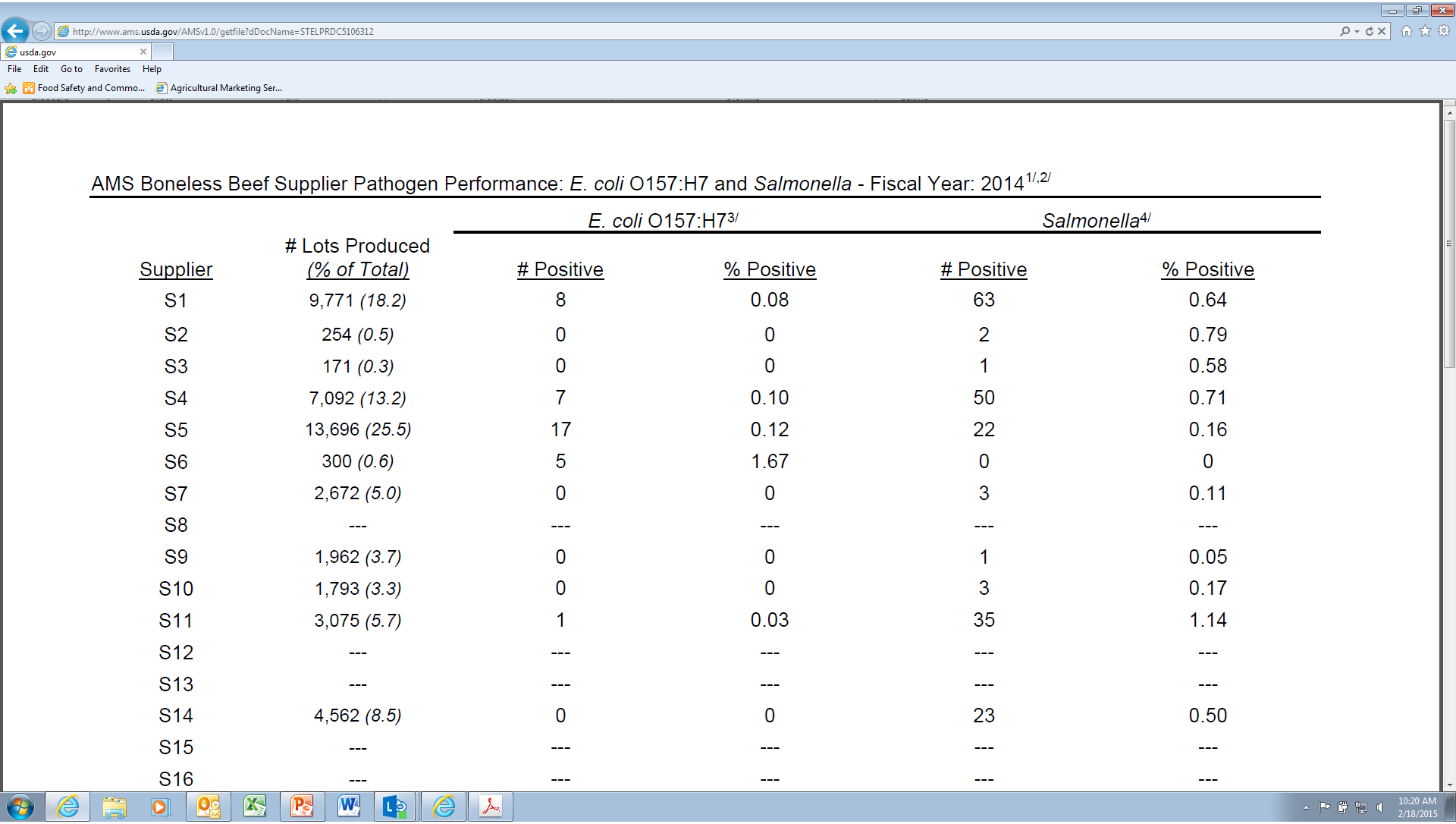
- FY2015 Pathogen test results – PDF
- FY2014 Pathogen test results – PDF
- FY2013 Pathogen test results – PDF
- FY2012 Pathogen test results – PDF

- FY2015 STEC Pathogen test results – PDF
- FY2014 STEC Pathogen test results – PDF

Ground Beef

Ground beef produced by AMS vendors is sampled and tested for the following indicator microorganisms: standard plate count (mesophilic aerobic plate counts), total coliforms, and generic *E. coli*, with critical limits of less than 100,000 cfu/g, 1,000 cfu/g, and 500 cfu/g, respectively. Any lot/sub-lot of product found to exceed any of these control limits is rejected for purchase by AMS.

www.ams.usda.gov



AMS Boneless Beef Supplier Pathogen Performance: *E. coli* O157:H7 and *Salmonella* - Fiscal Year: 2014[1/,2/]

		E. coli O157:H7[3/]		*Salmonella*[4/]	
Supplier	# Lots Produced *(% of Total)*	# Positive	% Positive	# Positive	% Positive
S1	9,771 *(18.2)*	8	0.08	63	0.64
S2	254 *(0.5)*	0	0	2	0.79
S3	171 *(0.3)*	0	0	1	0.58
S4	7,092 *(13.2)*	7	0.10	50	0.71
S5	13,696 *(25.5)*	17	0.12	22	0.16
S6	300 *(0.6)*	5	1.67	0	0
S7	2,672 *(5.0)*	0	0	3	0.11
S8	---	---	---	---	---
S9	1,962 *(3.7)*	0	0	1	0.05
S10	1,793 *(3.3)*	0	0	3	0.17
S11	3,075 *(5.7)*	1	0.03	35	1.14
S12	---	---	---	---	---
S13	---	---	---	---	---
S14	4,562 *(8.5)*	0	0	23	0.50
S15	---	---	---	---	---
S16	---	---	---	---	---

Database Privileges

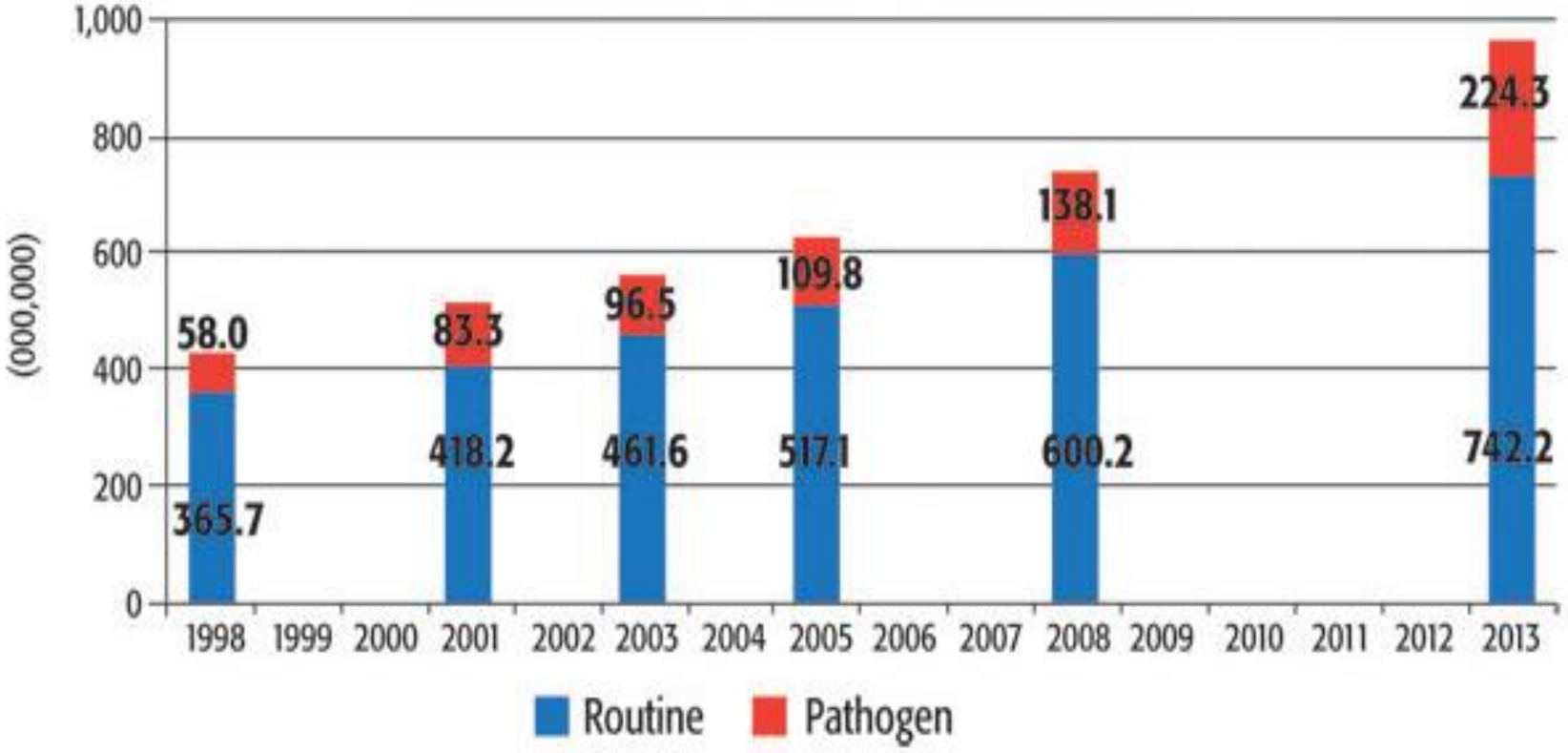
BonelessBeef | Finished Product | Fat

BonelessBeef-MicroTest

Production Date	Lot Number	Material_Code	Sample Selection	Pounds produced	Sample Number	APC	APC CPU	Coliform	Coliform CPU
2/14/2015	C-12	211	Non-SPC	2000	SIL15351444652	9		9	
2/14/2015	C-11	211	SPC	2000	SIL15351444651	9	667.75	9	999.00
2/14/2015	C-10	211	Non-SPC	2000	SIL15351444650	20		9	
2/14/2015	C-9	211	Non-SPC	2000	SIL15351444649	9		9	
2/14/2015	C-8	211	Non-SPC	2000	SIL15351444648	90		9	
2/14/2015	C-7	211	Non-SPC	2000	SIL15351444647	20		9	
2/14/2015	C-5	211	Non-SPC	2000	SIL15351444646	20		9	
2/14/2015	C-4	211	Non-SPC	2000	SIL15351444644	30		9	
2/14/2015	C-3	211	SPC	2000	SIL15351444643	9	662.07	9	999.00
2/14/2015	C-2	211	Non-SPC	2000	SIL15351444642	10		9	
2/14/2015	C-1	211	Non-SPC	2000	SIL15351444641	20		9	
2/13/2015	C-31	211	SPC	2000	SIL15351427692	10	614.14	9	999.00
2/13/2015	C-22	211	Non-SPC	2000	SIL15351427689	10		9	
2/13/2015	C-16	211	Non-SPC	2000	SIL15351427684	9		9	

DATA SOCIALIZATION

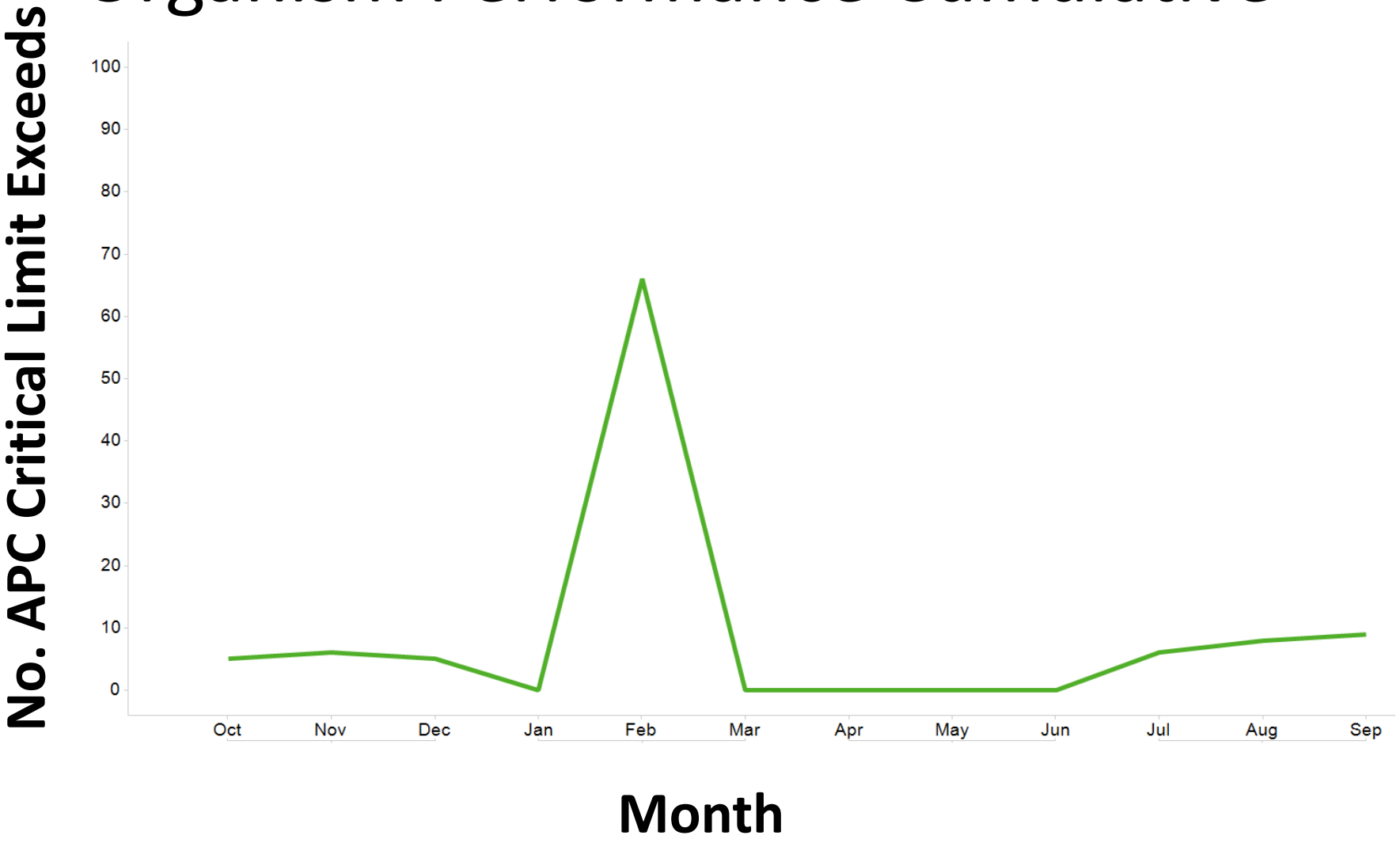
Food Microbiology Tests - Worldwide



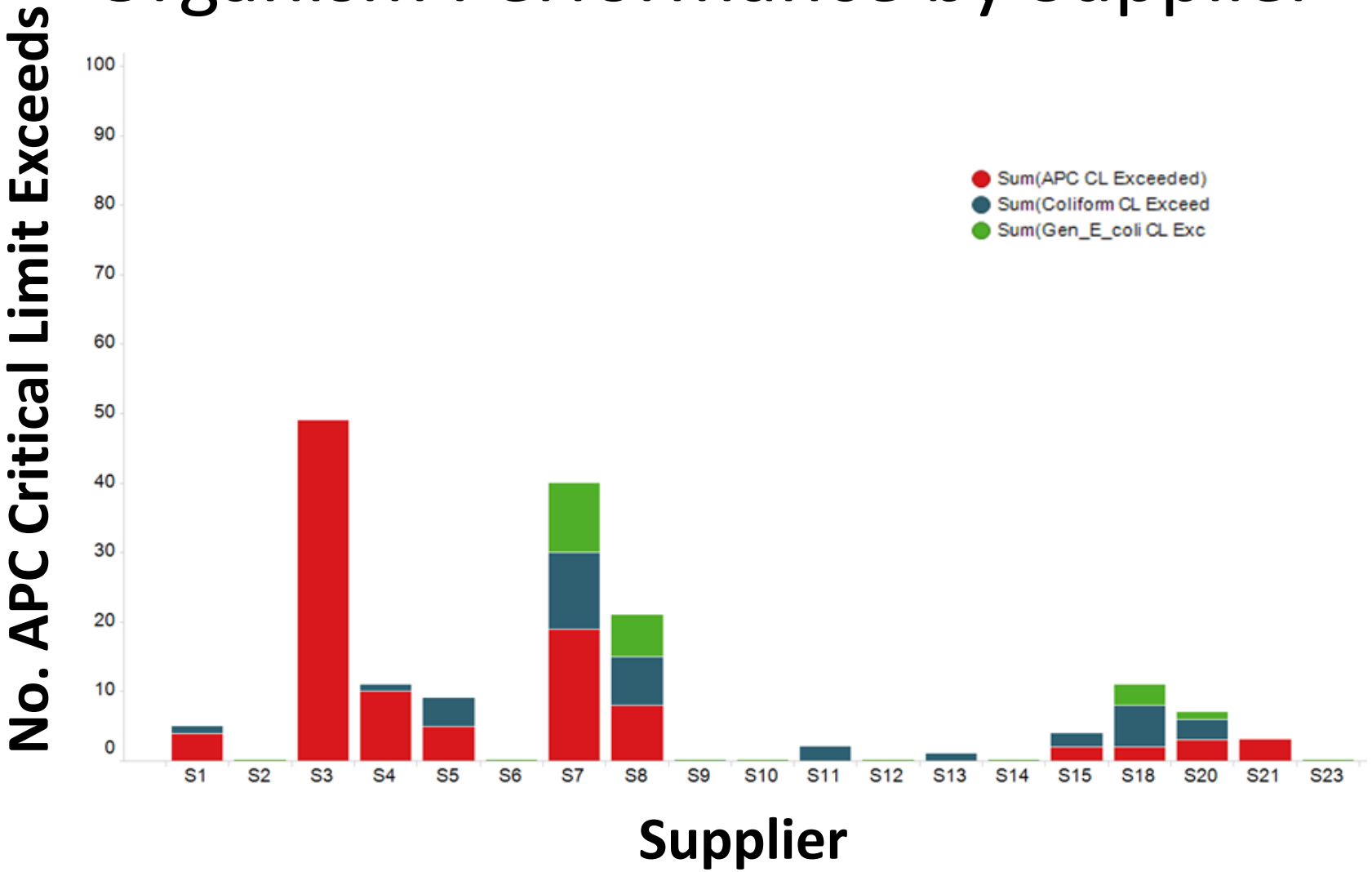
Weschler, T. 2013. Comparison of microbiology testing practices. *Food Safety Magazine.* June/July.

INDICATOR MICROORGANISMS

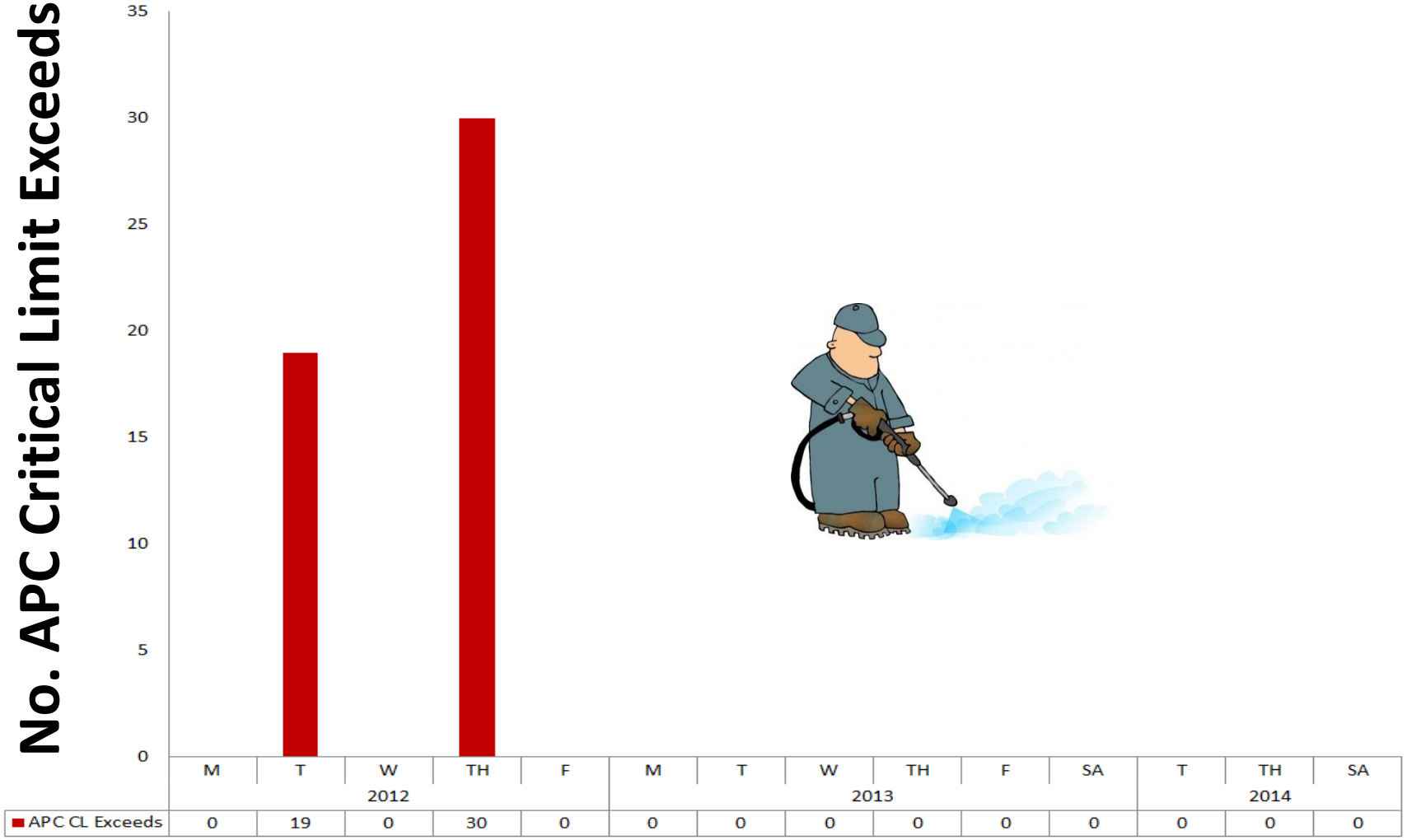
AMS Boneless Beef: FY12 – Indicator Organism Performance Cumulative



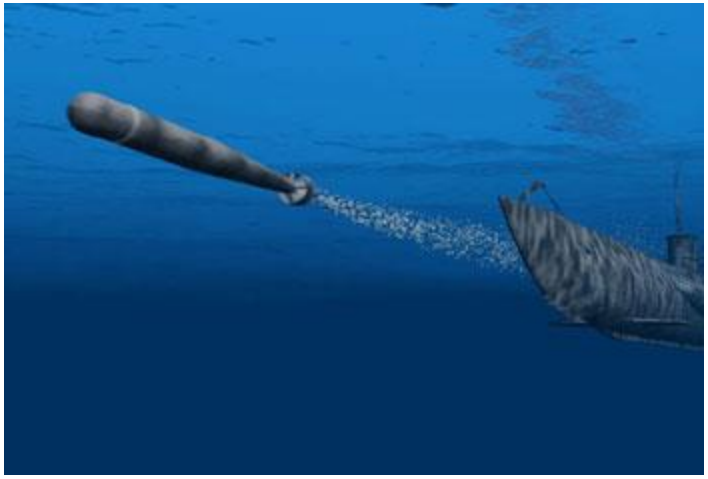
AMS Boneless Beef: FY12 – Indicator Organism Performance by Supplier



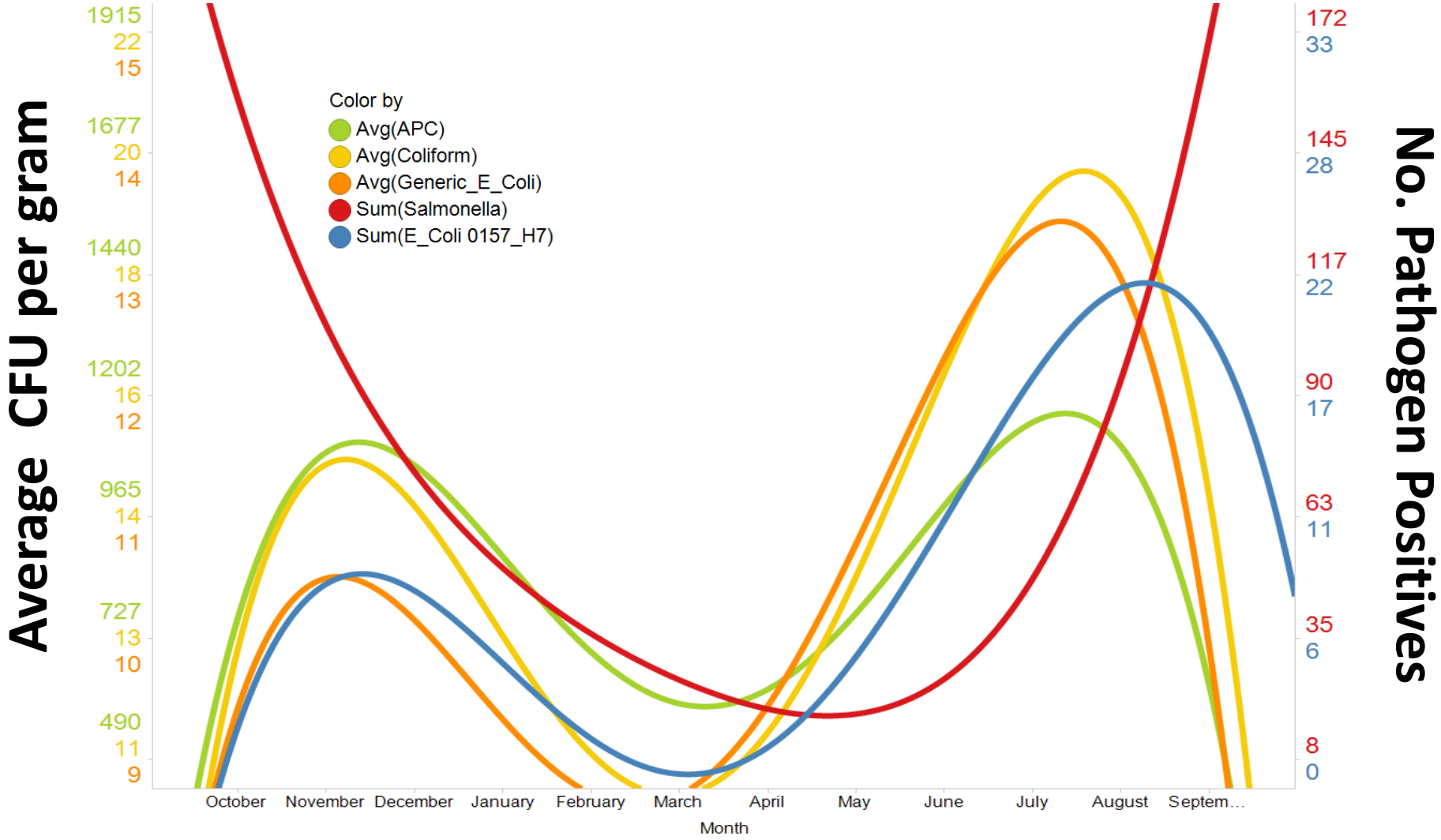
AMS Supplier 3



PATHOGENS

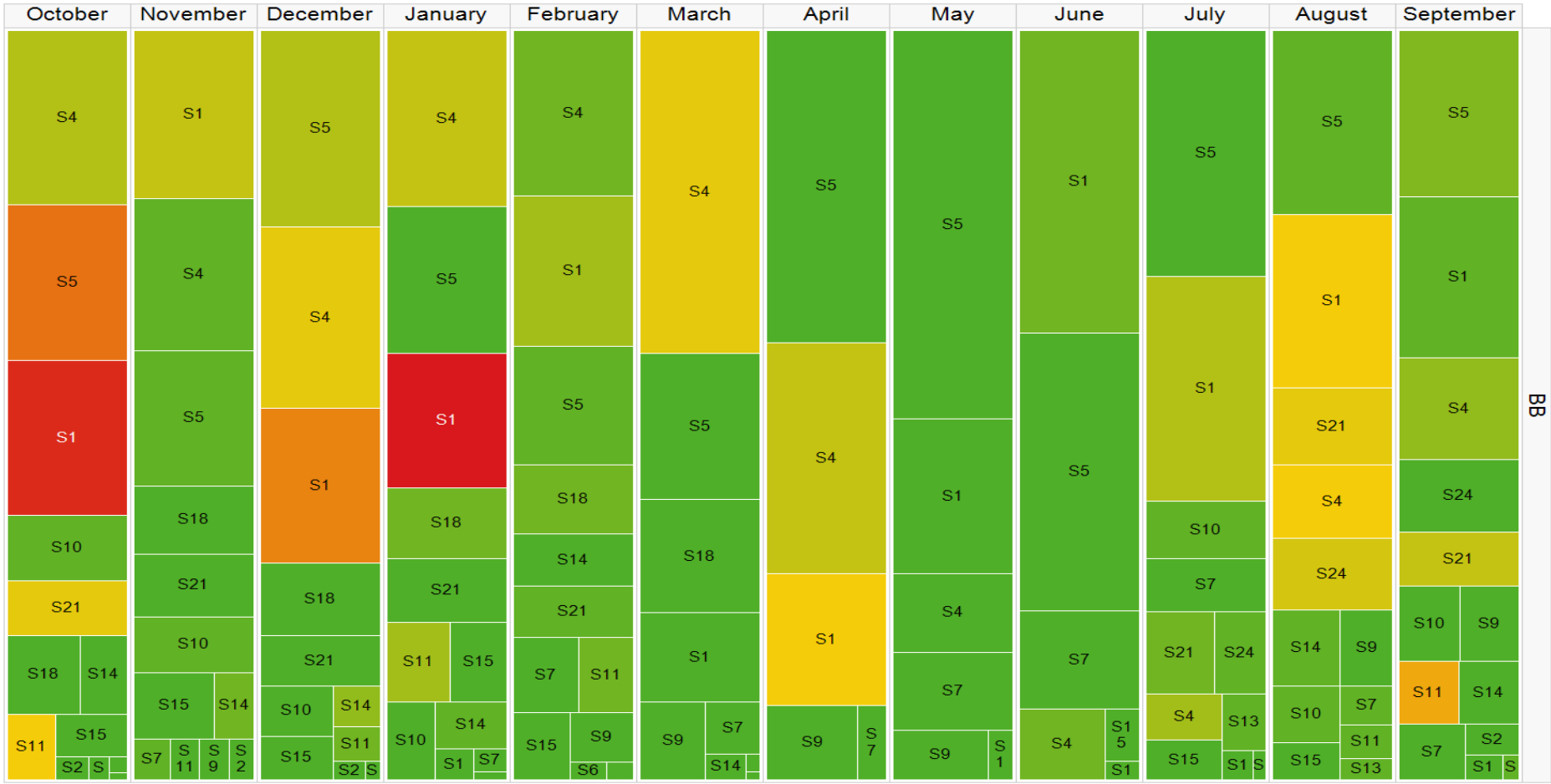


AMS Boneless Beef: FY12-13-14 - Microbiological Trend Analysis

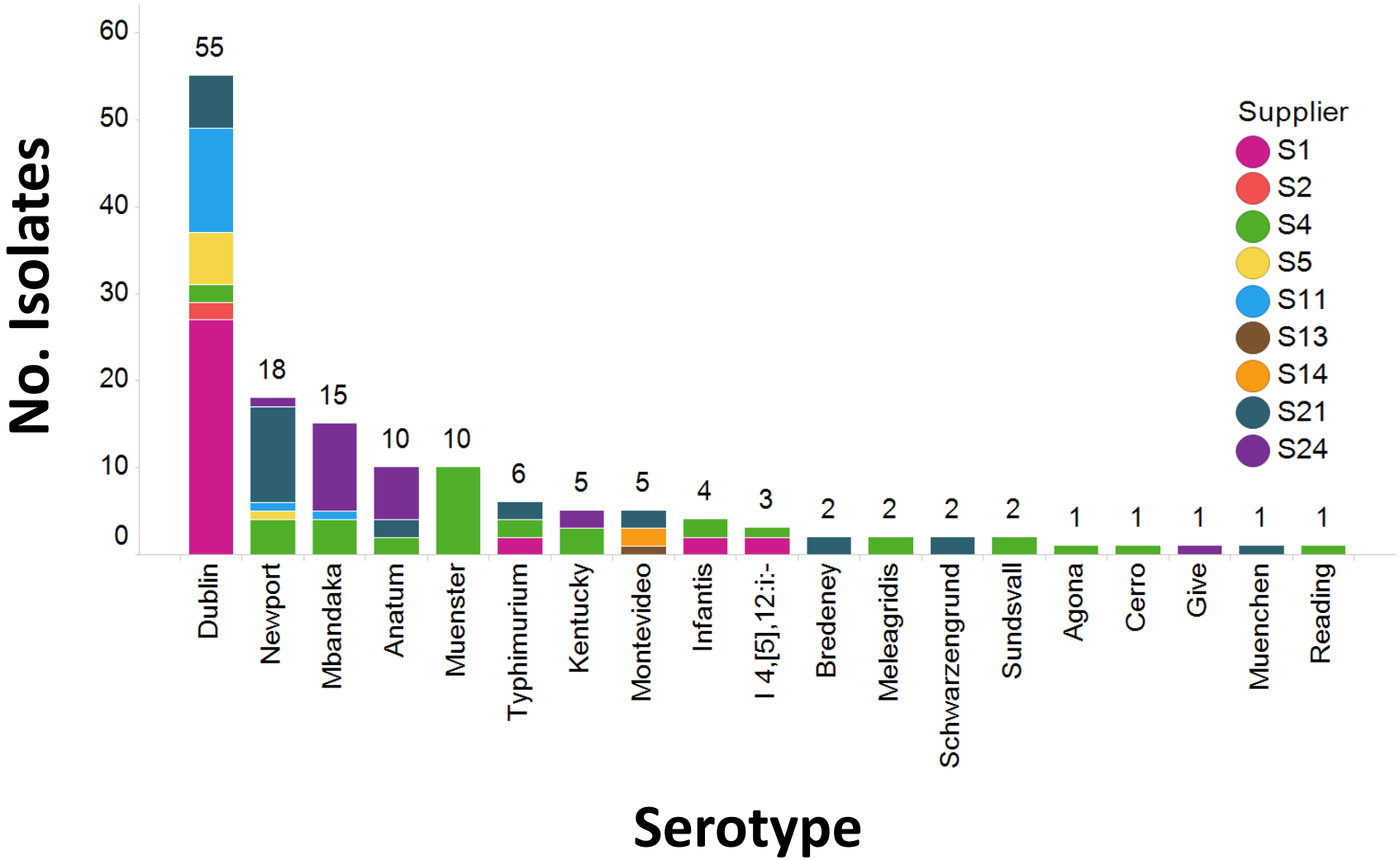


AMS Boneless Beef: FY14: Salmonella Performance x Pounds Produced x Supplier x Month

Color by
Sum(Salmonella)
Max (20.00)
10.00
Min (0.00)
Size by
Sum(Pounds_prod
Hierarchy
Supplier Identifier

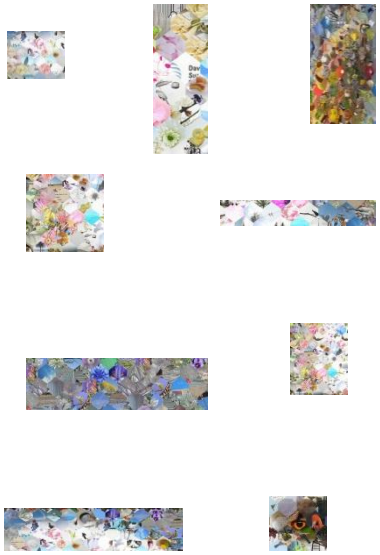


AMS Boneless Beef: FY13-14 - *Salmonella* Serotypes by Supplier



FUTURE OF FOOD SAFETY

Decipher Data



Share and Socialize Data

Collaborative Problem Solving

Acknowledgments

- Rod Bowling
- Chandramohan Chawan
- Darin Doerscher
- Faras Khan
- Terry Lutz
- Steve Whisenant